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PATENTS

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PATENT AND TRADEMARK OFFICE NOTICES

Board of Appeals Decisions Rendered in the Month of June 1975

Examiner affirmed	253
Examiner affirmed in part	50
Examiner reversed	87
Total	390

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

3,120,158, J. M. Macchione, METHOD OF AND APPARATUS FOR PRODUCING TUBES OF POLYGONAL CROSS SECTION; Re. 25,820, same, filed Nov. 18, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c3332, Precision Paper Tube Company v. Schumacher Electric Corporation.

3,139,731, O. E. Liddell, BAND-TYPE BARRIER ENCASMENT FOR PROTECTING TIMBERS AGAINST MARINE BORER ATTACK, filed Feb. 14, 1975, D.C., N.D. Calif. (San Francisco), Doc. C-75-0330 SAW, Osmose Wood Preserving Co. of America, Inc. and Harry W. Stiritz v. City of Redwood City and The Zipper Tubing Co.

3,141,872, Natta, Pino and Mazzanti, POLYMERIZATION CATALYST AND STEREOSPECIFIC POLYMERIZATION OF PROPYLENE THEREWITH, filed Nov. 16, 1972, D.C. Del. (Wilmington), Doc. 4517, Montecatini Edison, S.p.A. v. Enjay Chemical Company. Consent order dismissing this action, Feb. 14, 1975. Same, filed Nov. 16, 1972, D.C. Del. (Wilmington), Doc. 4518, Montecatini Edison S.p.A. v. Phillips Petroleum Company and Diamond Shamrock Corporation. Consent order dismissing this action, Feb. 14, 1975.

3,265,048, L. J. Herbon, COOLING SYSTEM, filed Mar. 3, 1975, D.C., E.D. Mich. (Detroit), Doc. 75-70370, Saf Gard Systems, Inc. v. Service Sales Company et al.

3,311,293, R. A. Moffat, INTEGRAL VACUUM PUMP AND AIR COMPRESSOR, filed Feb. 24, 1975, D.C., N.D. Ill. (Chicago), Doc. 75c595, Gast Manufacturing Company v. Intl. Telephone & Telegraph Corp.

3,313,443, Dial, Habegger and Kays, FLOATING COVER FOR A LIQUID STORAGE RESERVOIR, filed Feb. 16, 1973, D.C.N.J. (Trenton), Doc. C-219-73, Globe Linings, Inc., Howard D. Webb and Arthur M. Lockhart v. Township of Wall. Order of dismissal, Mar. 3, 1975.

3,351,118, M. E. Ward, MEANS FOR SUPPLYING AIR TO A GAS BURNER, filed Oct. 25, 1975, D.C. (District of Columbia), Doc. 74-1561, Andro Corporation v. Weil McLain Co., Inc. Action transferred to U.S. District Court for the Northern District of New York (Utica), Jan. 30, 1975.

3,394,498, Reinitz and Scott, TRAFFIC CONTROL DEVICES, filed Mar. 4, 1975, D.C., N.D. Ill. (Chicago), Doc. 75c698, Safetran Systems Corp. v. Federal Sign & Signal Corp. Same, filed Mar. 7, 1975, D.C., N.D. Ill. (Chicago), Doc. 75c754, Safetran Systems Corporation v. National Electric Control Co. et al. Same, filed Mar. 17, 1975, D.C., M.D. Fla. (Jacksonville), Doc. 75-158-C-J-R, Safetran Systems Corporation v. American Standard, Inc. and Westinghouse Air Brake Company.

3,432,793, Muska, Schacker and McHattie, GROUNDING CONNECTION FOR ELECTRICAL UNIT, filed June 12, 1973, D.C.N.J. (Trenton), Doc. C-S31-73, William A. Muska, James C. Schacker, Earl McHattie and Arrow-Hart, Inc. v. Circle F. Industries. Stipulation and order of dismissal without costs, Mar. 14, 1975.

3,484,632, Opalenik and Corey, VARIABLE SPEED CONTROLLER FOR PORTABLE ELECTRIC DEVICES, filed Sept. 30, 1970, D.C. Conn. (New Haven), Doc. 14052, Arrow-Hart, Inc. v. H. B. Davis Corporation. Stipulation for dismissal of action, Jan. 8, 1975.

3,499,302, Spain, Oliver and Flora, CYLINDER LOCK, filed Feb. 26, 1975, D.C., S.D.N.Y., Doc. 75-C-963 (CLB), Medeco Security Locks, Inc. v. Lock Technology Corp.

3,528,124, Wenstrom and Gorton, Jr., METHOD OF SHUCKING SHELLFISH; 3,662,432, same, APPARATUS FOR Eviscerating Scallops; 3,663,554, same, filed Jan. 17, 1973, D.C., M.D. Fla. (Orlando), Doc. 73-10-Orl-C, Slade Gorton & Company, Inc. v. Robert A. Pearler et al. Consent decree enjoining and restraining defendants from infringing said patents, entered Sept. 24, 1974. Same, filed Nov. 12, 1974, D.C., M.D. Fla. (Orlando), Doc. 74-343-Orl-C-R, Slade Gorton & Co., Inc. v. Taiyo-Canada Ltd., Florida East Seafoods, Inc. and Eiichi Terada.

3,544,267, G. R. Dychdala, CALCIUM HYPOCHLORITE PRODUCT, filed Aug. 2, 1974, D.C., E.D. Tenn. (Knoxville), Doc. C-3-74-229, Pennwalt Corporation v. Olin Corporation. Judgment of dismissal entered upon compromise settlement by the parties out of court, Mar. 11, 1975.

3,560,528, T. Petrzilka, PROCESS OF PRODUCING 6a, 10a-TRANS-6a,7,8,10a-TETRAHYDRODIBENZO (b,d) - PYRANS; 3,668,224, same, filed July 15, 1974, U.S. Court of Claims (District of Columbia), Doc. 255-74, Theodor Petrzilka v. The United States.

3,563,365, H. T. Loberg, ACCUMULATING CONVEYOR, filed Aug. 24, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c2179, Henry Thomas Loberg v. Daniels Material Handling Inc. et al. Patent in suit is valid. It is hereby stipulated that this action is hereby dismissed without prejudice, Nov. 22, 1974.

3,594,964, W. T. Clark, PLANETARIUM PROJECTION DOME, filed Apr. 5, 1972, D.C., E.D. Pa. (Philadelphia), Doc. 72-679, Observa-Dome Laboratories, Inc. v. McGraw-Hill, Inc. and Spitz Laboratories, Inc. Order, defendants' motion for summary judgment is unopposed, and further appearing that there has been no action of either defendant which even arguably infringes the patent in suit. Defendants' motion for summary judgment is hereby granted, Feb. 21, 1973.

3,605,534, W. H. Barr, BOARD CUTTING MACHINE, filed Mar. 7, 1975, D.C., S.D. Tex. (Houston), Doc. CA 75-H-394, Weidman Metal Masters Co., Inc. v. Glass Master Corporation and Fred F. Willson.

3,636,611, I. W. Rosenbaum, APPARATUS FOR SPLICING WIRES, filed Mar. 7, 1975, D.C., S.D.N.Y., Doc. 75-C-1139, General Staple Co., Inc. v. Amtronics Inc. and Jack Garfunkel.

3,662,432. (See 3,528,124.)

3,663,554. (See 3,528,124.)

3,668,224. (See 3,560,528.)

3,705,963, King and Stein, MATRIX SWITCH WITH SLIDE TYPE ACTUATOR AND CONDUCTIVE SPRING COMMON TO GROUND CONTACT AND MOVABLE CONTACT, filed Feb. 11, 1974, D.C. Md. (Baltimore), Doc. 74-153-K, William L. King v. Quadatron, Inc. et al. Case is hereby dismissed pursuant to Federal rules, Civil 41(a), subject to the conditions and provisions set forth in the Memorandum and Order, Feb. 28, 1975.

3,713,126, J. C. Stettner, BURGLAR DETERRENT TIMING SWITCH, filed Mar. 13, 1975, D.C., W.D. Pa. (Pittsburgh), Doc. C.A. 75-309, Novar Electronics v. Data Swift, Inc. et al.

3,722,002, J. Charney, ACETABULAR SOCKETS, filed Mar. 10, 1975, D.C., N.D. Ill. (Chicago), Doc. 75c762, Codman & Shurtleff, Inc. and Chas. F. Thackray Limited v. Howmedica, Inc.

3,728,812, Woolworth, Souza and Landell, TROLLING BUCKET; D. 226,849, same, BAIT BUCKET, filed Feb. 28, 1975, D.C., S.D. Tex. (Houston), Doc. 75-H-352, Woodstream Corporation v. Globemaster Inc. and Trophy Products Inc.

3,746,608, M. Takahashi, SHAPED ARTICLE OF SYNTHETIC RESIN HAVING MECHANICALLY DISORDERED ORIENTATION, filed Mar. 6, 1975, D.C., N.D. Ohio (Cleveland), Doc. C75-79A, C & P Industries, Inc. v. Weld-Loc Systems, Inc. and Ube-Nitto Kasei Co., Ltd.

3,757,825, Givens and Spero, PRESSURE EQUALIZING DEVICE FOR FLUID PRESSURE SYSTEMS, filed Mar. 17, 1975, D.C., N.D. Calif. (San Francisco), Doc. C-75-530-SAW, Reuben Harris Givens v. Theodore P. Spero et al.

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3,774,785, A. J. Gasseling, KILN LAYING APPARATUS, filed Jan. 7, 1975, D.C., E.D. Wash. (Spokane), Doc. C-75-2, Allen J. Gasseling v. Ronald Riel and Alice Riel. Stipulated order of dismissal filed terminating the case, Mar. 4, 1975.

3,814,388, P. Jakob, DYEING PROCESS FOR SYNTHETIC MATERIALS, filed June 28, 1974, D.C.N.J. (Newark), Doc. 74-980, Colortronic Reinhard & Co. KG v. Foremost Machine Builders, Inc. Stipulation of dismissal of action, Mar. 4, 1975.

3,832,837, Burkhart, Fell and Case, WINDROWER HAVING REAR MOUNTED OVERTOP SWINGABLE TONGUE; D. 228,010, same, COMBINED MOWER, CONDITIONER AND WINDROWER, filed Sept. 13, 1974, D.C. Kans. (Wichita), Doc. 74-185-C6, Hcsston Corporation v. Deere and Company. Notice of dismissal, plaintiff hereby voluntarily dismisses the above action pursuant to Rule 41 of the FRCP. Service has not been made on the defendant in this matter, Feb. 20, 1975.

3,838,568, Zurcher and Merles, ELECTRONIC WATCH MOVEMENT MOUNTING AND CONNECTION, filed Nov. 27, 1974, D.C., C.D. Calif. (Los Angeles), Doc. 74-3478-LTL, Hughes Aircraft Company v. Frontier, Inc.

Re. 25,820. (See 3,120,158.)

D. 227,722, M. A. Mendling, COMBINED BED AND STORAGE UNIT; D. 227,723, same, COMBINED BUNK BED AND STORAGE UNIT; D. 227,724, same, COMBINED BED AND STORAGE UNIT; D. 227,725, same, COMBINED BUNK BED AND STORAGE UNIT; D. 232,788, same, COMBINED BED AND STORAGE UNIT, filed Feb. 5, 1975, D.C.N.J. (Trenton), Doc. 75-182, Bunk Trunk Distributors v. Sleepworld, Inc.

D. 226,849. (See 3,728,812.)

D. 227,723. (See D. 227,722.)

D. 227,724. (See D. 227,722.)

D. 227,725. (See D. 227,722.)

D. 228,010. (See 3,832,837.)

D. 232,788. (See D. 227,722.)

Erratum

Under Patent Suits in the OFFICIAL GAZETTE of April 2, 1974, volume 921, page 4, the paragraph beginning with "3,652,825" should be deleted.

Certificates of Correction for the Week of Aug. 5, 1975

Re. 28,348	3,855,244	3,873,229	3,881,499
D. 233,836	3,856,045	3,873,255	3,881,577
3,275,649	3,856,048	3,873,373	3,881,871
3,569,939	3,856,709	3,873,412	3,882,216
3,678,950	3,858,873	3,873,601	3,882,286
3,699,075	3,858,893	3,874,241	3,882,327
3,720,817	3,859,790	3,874,351	3,882,354
3,737,531	3,859,882	3,874,544	3,882,456
3,746,265	3,860,003	3,874,646	3,882,500
3,747,504	3,861,956	3,874,948	3,882,538
3,766,701	3,863,784	3,874,957	3,882,583
3,772,490	3,865,247	3,875,187	3,882,726
3,783,159	3,865,752	3,875,300	3,883,255
3,791,582	3,865,782	3,875,301	3,883,263
3,796,910	3,865,861	3,876,138	3,883,425
3,799,197	3,865,964	3,876,213	3,883,552
3,802,850	3,866,053	3,876,215	3,883,630
3,810,166	3,866,567	3,876,570	3,883,634
3,810,859	3,866,666	3,877,430	3,883,854
3,816,729	3,867,216	3,877,675	3,883,860
3,818,075	3,867,480	3,877,763	3,883,922
3,822,659	3,867,616	3,878,488	3,883,960
3,826,185	3,867,645	3,878,720	3,884,207
3,829,462	3,867,887	3,878,769	3,884,929
3,829,836	3,867,905	3,879,013	3,885,039
3,832,197	3,868,010	3,879,270	3,885,057
3,832,242	3,868,173	3,879,294	3,885,375
3,840,255	3,868,232	3,879,309	3,886,054
3,844,882	3,868,239	3,879,682	3,886,080
3,845,210	3,868,631	3,879,686	3,886,526
3,847,372	3,868,632	3,879,887	3,886,588
3,849,388	3,869,143	3,880,098	3,886,698
3,849,888	3,869,257	3,880,113	3,886,741
3,850,849	3,869,299	3,880,192	3,887,019
3,852,481	3,869,430	3,880,441	3,887,234
3,852,776	3,869,681	3,880,603	3,887,391
3,853,203	3,870,026	3,880,955	3,887,435
3,853,799	3,870,459	3,881,287	3,887,795
3,855,085	3,872,226	3,881,444	

Disclaimers and Dedications

3,365,612.—*Hans Schierholt*, Iserlohn, Germany. DUAL SOURCE SPARK MACHINING POWER SUPPLY. Patent dated Jan. 23, 1968. Disclaimer and dedication filed Apr. 21, 1975, by the assignee, *Amsted Industries Incorporated*.

Hereby disclaims and dedicates to the Public the remaining term of said patent.

3,399,288.—*Hans Schierholt*, Iserlohn, Germany. CIRCUIT BREAKING APPARATUS AND METHOD FOR PULSE OPERATED ELECTRONIC SWITCH. Patent dated Aug. 27, 1968. Disclaimer and dedication filed Apr. 21, 1975, by the assignee, *Amsted Industries Incorporated*.

Hereby disclaims and dedicates to the Public the remaining term of said patent.

Adverse Decisions in Interferences

In the designated interference involving the indicated claims of the following patents, final decisions have been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Reissue Patent No. 26,781, C. J. Frenzel, TRIGGER ACTUATED SWITCH DEVICE, Interference No. 97,893, decided Feb. 25, 1974, claim 14.

Patent No. 3,500,681, H. G. Shively, APPARATUS FOR LOCATING MAXIMUM RADIAL FORCE VARIATION IN A TIRE, Interference No. 98,281, decided Feb. 20, 1975, claim 1.

Patent No. 3,519,627, C. E. Coats and J. D. Nordstrom, CARBOXYL-CONTAINING ETHERS OF AMINO-TRIAZINE/ALDEHYDE CONDENSATES, Interference No. 97,818, decided Jan. 17, 1975, claims 1, 2, 3, 4 and 5.

Patent No. 3,585,070, C. R. Williams, METHOD FOR SIZING TEXTILES, Interference No. 98,183, decided Mar. 26, 1975, claims 1, 3, 4 and 5.

Patent No. 3,655,562, T. S. Chao and A. N. Roush, STABLE SYNTHETIC ESTER LUBRICANT COMPOSITION, Interference No. 98,432, decided Mar. 12, 1975, claim 3.

Patent No. 3,670,242, C. F. McGarvey, A SELECTIVE PAGING RECEIVER AND DECODER EMPLOYING AN ELECTRONIC FILTER MEANS, Interference No. 98,792, decided Apr. 22, 1975, claims 1, 2, 3, 4, 5, 6, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 39, 40, 41 and 42.

Patent No. 3,679,663, J. M. Essery, PIVALOXYLOXY-METHYL HETACILLIN, Interference No. 98,359, decided Mar. 13, 1975, claim 1.

Patent No. 3,702,044, H. A. Balinski, CAVITY SHAFT WALL, Interference No. 98,630, decided Apr. 18, 1975, claims 1, 5, 6, 12 and 20.

Patent No. 3,705,287, N. Saito, K. Kobayashi and S. Takagi, PROCESS FOR SHAPING WORKPIECE BY ELECTRICAL DISCHARGE AND APPARATUS THEREFOR, Interference No. 98,549, decided Apr. 15, 1975, claims 1, 2 and 3.

Patent No. 3,711,556, K. T. Lee, 2-[BIS(P-SUBSTITUTED PHENYL)METHYLENE]ADAMANTANES, Interference No. 98,594, decided Apr. 1, 1975, claims 1, 2 and 3.

Patent No. 3,750,379, F. J. Huspen, COLLAPSIBLE RAKE, Interference No. 98,784, decided Apr. 4, 1975, claim 1.

Patent No. 3,778,674, C. D. Lustig, D.C. GAS DISCHARGE DISPLAY APPARATUS WITH PULSE TRAIN MEMORY SUSTAINING POTENTIAL, Interference No. 98,614, decided Apr. 30, 1975, claims 1, 2, 3, 4, 5, 6 and 7.

Patent No. 3,808,179, N. G. Gaylord, OXYGEN-PERMEABLE CONTACT LENS COMPOSITION, METHODS AND ARTICLE OF MANUFACTURE, Interference No. 98,825, decided Apr. 30, 1975, claim 1.

Disclaimers

3,090,050.—*James Fraser and Edward S. McLean*, Wilmington, Del. EYE AND FACE WASH, Patent dated May 21, 1963. Disclaimer filed May 20, 1975, by the assignee, *Speakman Company*.

Hereby enters this disclaimer to claims 3, 4, 6, 7, 9, 10 and 11 of said patent.

3,349,714.—*Emile P. Grenier*, Ann Arbor, Mich. POWER STEERING PUMP. Patent dated Oct. 31, 1967. Disclaimer filed June 23, 1974, by the assignee, *Ford Motor Company*.

Hereby enters this disclaimer to claims 1 through 6 of said patent.

3,461,003.—*Don M. Jackson, Jr.*, Scottsdale, Ariz. METHOD OF FABRICATING A SEMICONDUCTOR STRUCTURE WITH AN ELECTRICALLY ISOLATED REGION OF SEMICONDUCTOR MATERIAL, Patent dated Aug. 12, 1969. Disclaimer filed Apr. 25, 1975, by the assignee, *Motorola, Inc.*

Hereby enters this disclaimer to claims 1 to 9, inclusive, of said patent.

3,696,868.—*Donald F. Taylor, Jr.*, Dallas, Tex. WELL FLOW CONTROL VALVES AND WELL SYSTEMS UTILIZING THE SAME, Patent dated Oct. 10, 1972. Disclaimer filed May 13, 1975, by the assignee, *Otis Engineering Corporation*.

Hereby enters this disclaimer to claims 1, 4, 8, 12, 13, 17, and 21 of said patent.

3,753,058.—*Alden P. Edson*, Suffern, N.Y. OPERATION OF MAGNETOSTRICTIVE APPARATUS, Patent dated Aug. 14, 1973. Disclaimer filed June 9, 1975, by the assignee, *The International Nickel Company, Inc.*

Hereby enters this disclaimer to claims 8, 9 and 10 of said patent.

3,783,252.—*Richard E. J. Putman*, Pittsburgh, Pa. CONTROL SYSTEM AND METHOD FOR A REVERSED BALL MILL GRINDING CIRCUIT. Patent dated Jan. 1, 1974. Disclaimer filed June 9, 1975, by the assignee, *Westinghouse Electric Corporation*.

Hereby enters this disclaimer to claims 1 to 7 of said patent.

3,803,472.—*Charles E. Konrad*, Roanoke, Va. CONTROLLED VARIABLE TIME RATIO CONTROL CIRCUIT. Patent dated Apr. 9, 1974. Disclaimer filed June 13, 1975, by the assignee, *General Electric Company*.

Hereby enters this disclaimer to all claims of said patent.

3,869,378.—*Andre W. Pollock and James M. Durrett*, West Chester, Pa. COMBINATION CRACKING PROCESS. Patent dated Mar. 4, 1975. Disclaimer filed June 13, 1975, by the assignee, *Sun Oil Company*.

Hereby enters this disclaimer to claim 2 of said patent.

3,869,501.—*Dhafir Yusuf Waddan*, Stockton-On-Tees, England. PROCESS FOR PREPARING 3-PENTENENITRILE. Patent dated Mar. 4, 1975. Disclaimer filed May 22, 1975, by the assignee, *Imperial Chemical Industries Limited*.

Hereby disclaims the portion of the term of the patent subsequent to Nov. 19, 1991.

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for licensing in accordance with the licensing policy of each agency-sponsor.

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Copies of patent applications, either paper copy (PC) or microfiche (MF), can be purchased from the National Technical Information Service (NTIS), Springfield, Va. 22161, at the prices cited. Requests for copies of patent applications must include the patent application number. Claims are deleted from patent application copies sold to the public to avoid premature disclosure in the event of an interference before the Patent Office. Claims and other technical data can usually be made available to serious prospective licensees by the agency which filed the case.

Requests for licensing information should be directed to the address cited below for each agency.

DOUGLAS J. CAMPION,
Patent Program Coordinator,
National Technical Information Service.

ENERGY RESEARCH & DEVELOPMENT ADMINISTRATION
Assistant General Counsel for Patents,
Washington, D.C. 20545

Patent 3,825,735, Command Pulse Generator for Computer-Controlled Machining, Filed Nov. 12, 1973. Patented July 23, 1974. Not available NTIS.

Patent 3,827,910, Homogeneous Cathode Mixtures for Secondary Electrochemical Power-Producing Cells, Filed Nov. 30, 1972. Not available NTIS.

Patent 3,828,274, Electron Beam-Pumped Gas Laser System, Filed Nov. 5, 1971. Patented Aug. 6, 1974. Not available NTIS.

Patent 3,830,721, Hollow Cathode Sputtering Device, Filed Aug. 22, 1973. Patented Aug. 20, 1974. Not available NTIS.

DEPARTMENT OF THE AIR FORCE
AF/JACP, Washington, D.C. 20314

Patent application 412,853, Determination of Methadone in Biological Specimens, Filed Nov. 5, 1973. PC \$3.25/MF \$2.25.

Patent application 490,600, Method and Apparatus for Producing Fatigue Resistant Splices, Filed July 22, 1974. PC \$3.25/MF \$2.25.

Patent application 492,078, Thrust Augmentation System With Oscillating Jet Nozzles, Filed July 26, 1974. PC \$3.25/MF \$2.25.

Patent application 494,934, Non-Penetrating Rib-to-Surface Structural Clip Connector Assembly, Filed Aug. 5, 1974. PC \$3.25/MF \$2.25.

Patent application 494,935, Low Cost, Clipless Stringer Airfoil, Filed Aug. 5, 1974. PC \$3.25/MF \$2.25.

Patent application 497,415, Heat Sink for Microstrip Circuit, Filed Aug. 14, 1974. PC \$3.25/MF \$2.25.

Patent application 497,439, Fiber Optics Connector With Linear X-Y Register, Filed Aug. 14, 1974. PC \$3.25/MF \$2.25.

Patent application 499,228, An Earth Reference Thin-Film Magnetometer Compass Exhibiting Total Tilt Immunity, Filed Aug. 21, 1974. PC \$3.25/MF \$2.25.

Patent application 499,229, Controllable Solid Propulsion System Based on Utilization of a Demand Solid Propellant-Gas Generator, Filed Aug. 21, 1974. PC \$3.25/MF \$2.25.

Patent application 499,938, Antenna Control for Communications Systems, Filed Aug. 23, 1974. PC \$3.25/MF \$2.25.

Patent application 501,724, Temperature Controlled Hybrid Oven, Filed Aug. 29, 1974. PC \$3.25/MF \$2.25.

Patent application 501,725, Series Tuned Spin Coil Supply, Filed Aug. 29, 1974. PC \$3.25/MF \$2.25.

Patent application 501,729, Phase Stable Variable Phase Slope Limiter, Filed Aug. 29, 1974. PC \$3.25/MF \$2.25.

Patent application 501,730, High Resolution Radar Range Tracking System, Filed Aug. 29, 1974. PC \$3.25/MF \$2.25.

Patent 3,827,904, Thermal Stabilization of Polybenzimidazole Fiber Fabrics, Filed Feb. 28, 1973. Patented Aug. 6, 1974. Not available NTIS.

Patent 3,827,911, Preparation of Nickel Electrodes, Filed Feb. 21, 1973. Patented Aug. 6, 1974. Not available NTIS.

Patent 3,830,078, Anti-Frost Apparatus, Filed July 13, 1973. Patented Aug. 20, 1974. Not available NTIS.

Patent 3,831,264, Method of Connecting Substantial Similar Metal Parts, Filed Feb. 22, 1973. Patented Aug. 27, 1974. Not available NTIS.

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Assistant General Counsel for Patent Matters,
Washington, D.C. 20546

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AF/JACP
Washington, D.C. 20314

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Chief, Patent Branch, Bethesda, Md. 20014

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters,
Washington, D.C. 20546

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U.S. DEPARTMENT OF AIR FORCE
AF/JACP, Washington, D.C. 20314

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Patent application 522,369. High Power Resistor. Filed Nov. 8, 1974. PC \$3.25/MF \$2.25.

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Patent application 509,199. Window Wash System. Filed Sept. 25, 1974. PC \$3.25/MF \$2.25.

Patent application 509,201. Dye Sensitized Dichromated Gelatin. Filed Sept. 25, 1974. PC \$3.25/MF \$2.25.

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U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
National Institutes of Health, Chief, Patent Branch,
Bethesda, Md. 20014

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION,
Assistant General Counsel for Patent Matters,
NASA-Code GP-2, Washington, D.C. 20546

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DEPARTMENT OF THE AIR FORCE
AF/JACP, Washington, D.C. 20314

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ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION
Assistant General Counsel for Patents,
Washington, D.C. 20545

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DEPARTMENT OF HEALTH, EDUCATION & WELFARE
National Institutes of Health, Chief, Patent Branch,
Bethesda, Maryland 20014

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DEPARTMENT OF THE NAVY
Assistant Chief for Patents, Office of Naval Research,
Arlington, Va. 22217

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters
NASA-Code GP-2, Washington, D.C. 20546

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Patent 3,869,779. Duplex Aluminized Coatings. Patented Mar. 11, 1975. Not available NTIS.

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PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF JULY 5, 1975

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director.....	10-7-74
Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director.....	10-7-74
Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director.....	11-19-74
Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director.....	10-7-74
Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director....	11-4-74
Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director....	12-4-74
Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director.....	7-2-74
Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director.....	10-8-74
Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director...	12-11-74
Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director.....	12-2-74
Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	
DESIGNS, GROUP 290—C. D. QUARFORTH, Director.....	5-13-74
Industrial Arts; Household, Personal and Fine Arts.	
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—D. J. STOCKING, Director.....	11-14-74
Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director.....	11-21-74
Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—G. M. FORLENZA, Director.....	1-2-75
Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Trolley; Printing; Typewriters; Stationery; Information Dissemination.	
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director.....	10-11-74
Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gear-Ing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director.....	1-2-75
Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	

Expiration of patents: The patents within the range of numbers indicated below expire during August 1975, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,845,625 to 2,849,713 inclusive
Plant Patents..... Numbers 1,740 to 1,745 inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED AUGUST 5, 1975

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

T937,001

THERMAL NUCLEAR REACTOR

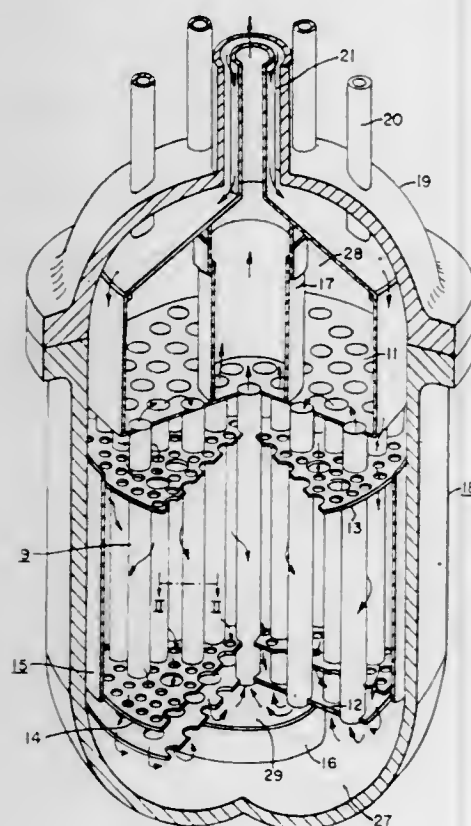
Wilfred H. Comtois, 129 Thornberry Drive, Pittsburgh, Pa. 15235, and John F. Patterson, 2213 Enterprise Drive, Highland, Wash. 99352

Filed Apr. 18, 1973, Ser. No. 352,373

Int. Cl. G21c 15/02

U.S. Cl. 176-51

4 Sheets Drawing. 17 Pages Specification



A thermal nuclear reactor which operates above the critical pressure and temperature of the reactor coolant. The reactor coolant achieves system operating conditions by making three or more passes through a core which is fueled with nuclear material. In one embodiment, the reactor coolant serves as a moderator and as a coolant.

T937,002

TREATMENT OF MASTITIS

Norman G. Baker, 169 Van Houten Ave., Wyckoff, N.J. 07481

Continuation of abandoned application Ser. No. 279,607, Aug. 10, 1972. This application Oct. 23, 1973, Ser. No. 408,366

Int. Cl. A61k 27/00

U.S. Cl. 424-343

No Drawing. 9 Pages Specification

Glycols having from 3 to 4 carbon atoms and at least one terminal group are effective in the treatment of ungulate mastitis. Particularly useful is 1,3 butylene glycol (1,3-BG) which is administered in pharmacologically effective doses.

T937,003

MONO AND DISAZO AMINO-SUBSTITUTED DYE STUFFS

Hans Alfred Stügl, 852 Ocean View Drive, Toms River, N.J. 08753

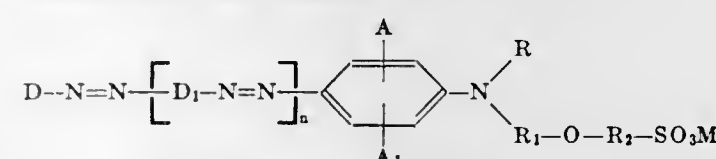
Continuation of application Ser. No. 176,367, Aug. 2, 1971. This application Jan. 14, 1974, Ser. No. 432,917

Int. Cl. C09b 29/00, 29/08, 31/04

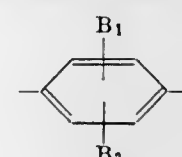
U.S. Cl. 260-158

No Drawing. 30 Pages Specification

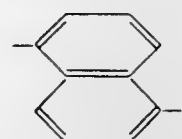
Dyestuffs of the formula



wherein D₁ is a phenylene group of the formula



wherein B₁ and B₂ are each independently hydrogen, C₁₋₅ alkyl, C₁₋₅alkoxy, chloro or bromo or D₁ is a group of the formula



n is 0 or 1; A and A₁ are each independently hydrogen, lower alkyl, C₁₋₅alkoxy, chloro, bromo or acylamino; R is a straight or branched chain alkyl of from 1 to 6 carbon atoms, or said alkyl substituted by cyano, chloro, bromo, C₁₋₄alkoxy or phenyl; R₁ is a straight or branched chain alkylene of from 2 to 6 carbon atoms; R₂ is a straight chain alkylene of from 2 to 4 carbon atoms or said alkylene substituted by methyl or ethyl on not more than 2 carbon atoms of said alkylene; D is a residue of the benzene series, naphthalene or sulfonamidonaphthalene-1 or 2, said D being free from acid solubilizing groups; and D may also be a residue of the heterocyclic series when n is 0; and M is hydrogen, alkali metal or ammonium.

T937,004

DESALINATION EMPLOYING LIQUEFIED NATURAL GAS AND SECONDARY REFRIGERANT

Joseph Seliber, Wilmette, Ill., assignor to Pacific Lighting Service Co., Los Angeles, Calif.

Continuation of abandoned application Ser. No. 154,130, June 17, 1971. This application Apr. 8, 1974, Ser. No. 458,866

Int. Cl. B01d 1/04

U.S. Cl. 62-58

1 Sheet Drawing. 7 Pages Specification

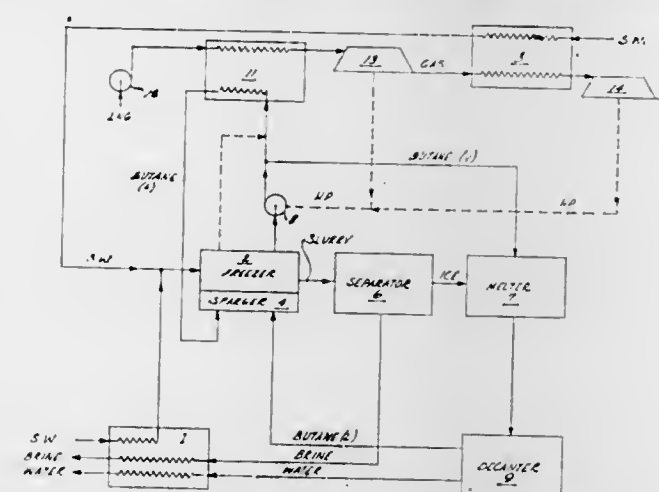
A desalination process wherein ice is formed in saline water by contact with liquid butane is described. The butane vaporized during freezing is compressed and a portion is contacted with ice separated from brine. This condenses butane and melts the ice for recovering fresh

AUGUST 5, 1975

U.S. PATENT AND TRADEMARK OFFICE

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water. The liquid butane is decanted and recycled. Another portion of the butane vapor is brought in heat exchange relation with liquefied natural gas for condensing butane and vaporizing natural gas. The natural gas is expanded through a turbine to produce shaft horsepower for driving the butane compressor. The refrigeration potential and kinetic energy of expansion of the liq-



uefied natural gas are thereby employed for desalination. The temperature in the condensing step is maintained sufficiently below the temperature in the freezing step such that the refrigerant vapor flows from the freezing step to the condensing step without compressing. The apparatus includes means for passing refrigerant vapor directly from the freezer to the condensing means.

T937,005

METAL VESSEL HAVING A COATING OF AN AROMATIC POLYSULFONE RESIN AND A SILICONE RESIN

Joseph A. Vasta, Woodbury, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del. Continuation of abandoned application Ser. No. 340,846, Mar. 13, 1973. This application May 31, 1974, Ser. No. 476,137

Int. Cl. C08g 51/04

U.S. Cl. 260-375 B

No Drawing. 16 Pages Specification

The metal vessel has at least one surface coated with a composition of an aromatic polysulfone resin and a

silicone resin; this coating has excellent release properties, stain and grease resistance, excellent hardness, adhesion and abrasion resistance and the vessel is particularly useful as high quality bakeware and as other cooking containers; the finish applied to the exterior of the vessel provides a decorative protective finish.

T937,006

CHLORINATED BUTADIENE/ALKYL ACRYLATE GRAFTED COPOLYMERS

Okan Max Ekiner, 2315 Empire Drive Kingsridge, Wilmington, Del. 19810

Filed June 24, 1974, Ser. No. 482,789

Int. Cl. S08f 15/00, 191/00

U.S. Cl. 260-876 R

No Drawing. 10 Pages Specification

Polymeric blends of

- a graft copolymer of (1) a chlorinated butadiene selected from chloroprene and 2,3-dichlorobutadiene-1,3, (2), a C₁-C₈ alkyl acrylate or a C₁-C₈ alkyl ester of an unbranched α-(C₁-C₄)alkylacrylic acid, and (3) up to 2% by weight of sulfur; and
- a copolymer of sulfur and a chlorinated butadiene selected from chloroprene and 2,3-dichlorobutadiene-1,3;

the above monomer (a)(2) being copolymerized in part with monomers (a)(1) and (a)(3) and grafted in part onto the resulting copolymer; the proportion by weight of the above component (a)(2) being 40-80% in (a) and 15-60% in the total composition;

the proportion of sulfur in (b) being 0.2-2.0%; and the number average molecular weight between sulfur atoms in (b) being not over 110,000 can be isolated as a continuous, breakage-resistant film from the blend of the latices of (a) and (b) by freezing the latex blend on a roll, provided there is present in the blend 0.3-8.0 parts by weight of methanol, ethanol, isopropyl alcohol, or ethylene glycol for each 100 parts by weight of the latex blend. The isolated polymeric blend is readily peptizable in aliphatic liquids to form sprayable dispersions useful as adhesives.

REISSUES

AUGUST 5, 1975

Matter enclosed in heavy brackets [] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

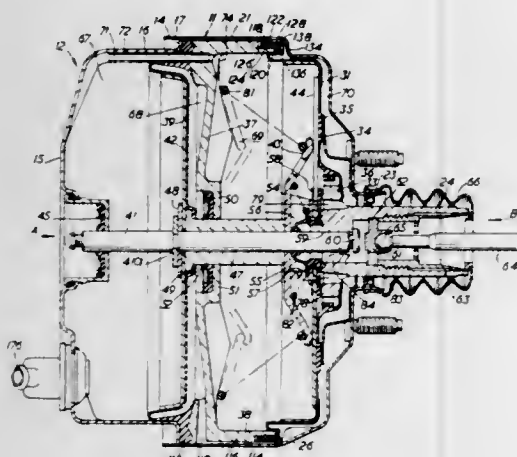
Re. 28,501

SERVO BOOSTERS

Charles Brian Weatherhogg, Harborne, England, assignor to Girling Limited, Birmingham, England
Original No. 3,805,680, dated Apr. 23, 1974, Ser. No. 263,131, June 15, 1972. Application for reissue Sept. 30, 1974, Ser. No. 510,705
Claims priority, application United Kingdom, June 17, 1971, 28365/71; Oct. 21, 1971, 48882/71
Int. Cl. F01b 19/00

U.S. Cl. 92-48

23 Claims



1. A tandem fluid-pressure servo booster comprising a housing, a rigid internal wall within the housing, a movable wall on each side of said rigid internal wall, said walls defining four chambers axially spaced within the housing, a plurality of fluid passageways defined between an internal surface of said housing and the periphery of said rigid internal wall connecting a first pair of said chambers, and a plurality of tubular ducts, within said housing, connecting a second pair of said chambers, said tubular ducts each having an end region located in said rigid internal wall and passing through peripheral regions of one of the said movable walls.

22. A tandem fluid-pressure servo booster comprising a housing, a rigid internal wall within the housing and a movable wall on each side of said rigid internal wall, said walls defining four chambers axially spaced within the housing, a plurality of fluid passageways defined between an internal surface of said housing and the periphery of said rigid wall connecting a first pair of said chambers and a plurality of axially extending fluid ducts connecting a second pair of said chambers, an axially extending rod connecting both movable walls and constituting a common output rod, said axially extending ducts being radially spaced from the axis of said output rod, a first one of said movable walls being axially located on the common output rod by a sleeve member and said movable wall presenting an axially extending resilient lip sealingly engaged with the sleeve.

Re. 28,502

INTRAMEDULLARY ROD

Albert H. Burstein, Shaker Heights, Ohio, and William C. Allen, Gainesville, Fla., assignors to The Sampson Corporation, Pittsburgh, Pa.
Original No. 3,783,860, dated Jan. 8, 1974, Ser. No. 301,473, Oct. 27, 1972. Application for reissue May 6, 1974, Ser. No. 467,147

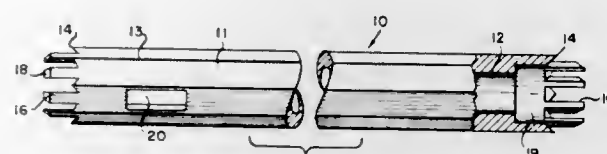
Int. Cl. A61f 5/04

U.S. Cl. 128-92 BC

7 Claims

7. An intramedullary rod for fracture fixation comprising an elongated tube open at each end and hollow throughout, a plu-

rality of longitudinally extending elongated flutes about the external surface of said tube, on at least one end face of said tube the flutes being sharply sloped inwardly at an acute angle to



define a plurality of cutting surfaces, guide means extending axially from said one end face beyond said cutting surfaces and having a guide surface sloped gradually inwardly at an obtuse angle.

Re. 28,503

AUTOMATIC BOWLING SCORER WITH CATHODE RAY TUBE DISPLAY

Ralph Townsend, Welwyn Garden City, England, and James J. Walker, Brookfield Center, Conn., assignors to AMF Incorporated, White Plains, N.Y.
Original No. 3,589,725, dated June 29, 1971, Ser. No. 806,244, Mar. 11, 1969. Application for reissue June 25, 1973, Ser. No. 373,375

Int. Cl. A63d 5/00
(Filed under Rule 47)

U.S. Cl. 273-54 C

40 Claims

TEAM A		1	2	3	4	5	6	7	8	9	10
1	R. ELROD	20	48	67	86	105	124	143	162	181	200
2	G. WILCOX	9	28	47	66	85	104	123	142	161	180
3	T. ENSMAN	30	60	90	120	150	180	210	240	270	300
4	J. JENNINGS	19	38	57	76	95	114	133	152	171	190
5	A. SCHNEIDER	29	58	87	116	145	174	203	232	261	290
MARKS		2	7	12	17	22	27	32	37	42	47

1. In an automatic bowling scorer for presenting a visual display of the history of a game of bowling comprising a cathode-ray tube having a display face, circuit means for control-

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ling the cathode-ray tube so that the display face of the cathode-ray tube is divided into discrete areas representative of the [frame] frames of a game of bowling for at least one player, first means [associated with the face of the cathode-ray tube] adjacent said discrete areas to identify the player associated with the discrete areas representative of the frames of the game, and second means [associated with said display face of the cathode-ray tube] adjacent said discrete areas to identify the frame each discrete area represents.

Re. 28,504

CARTRIDGE-LOADED SOUND MOTION PICTURE PROJECTION

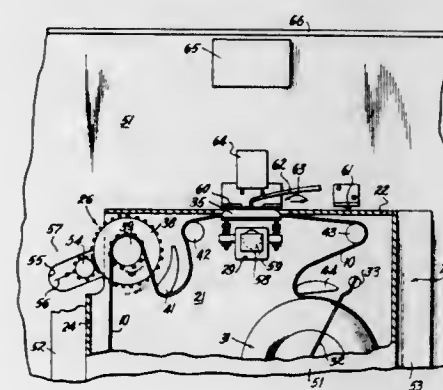
Peter J. Castellano, Deer Park, and Jerry H. Galuten, Elmhurst, both of N.Y., assignors to Audio-Optics Corporation, New York, N.Y.

Original No. 3,778,137, dated Dec. 11, 1973, Ser. No. 292,116, Sept. 25, 1972. Division of Ser. No. 65,869, Aug. 21, 1970. Application for reissue Apr. 24, 1974, Ser. No. 463,698

Int. Cl. G03B 23/02

U.S. Cl. 352-72

10 Claims



1. In combination: a projector including a projection system comprising a shutter, a claw for advancing film one frame at a time, and a resiliently mounted drive pinion; and a cartridge containing film and having a gate in a front wall of said cartridge for holding said film in a position to be projected and engaged by said claw, said cartridge having an opening positioned at the juncture of said front wall and a side wall of said cartridge and a drive wheel for continuously advancing said film mounted in said opening, said drive wheel and said opening being positioned in said cartridge in the path of said pinion so that said pinion is moved laterally of the path of movement of said drive wheel when said cartridge is inserted in said projector, said pinion being biased toward said drive wheel and positioned to engage said drive wheel when said cartridge is partially inserted into said projector and to maintain contact with said drive wheel until said cartridge is fully inserted at which point said pinion is moved past the dead center position of said drive wheel to resiliently hold said cartridge in place, and said projector including a microswitch which is operated to actuate said projector including said claw and said drive pinion, when said cartridge is fully inserted into said projector.

Re. 28,505

6-PHENYL-S-TRIAZOLO[4,3-A][1,4]BENZODIAZEPINES

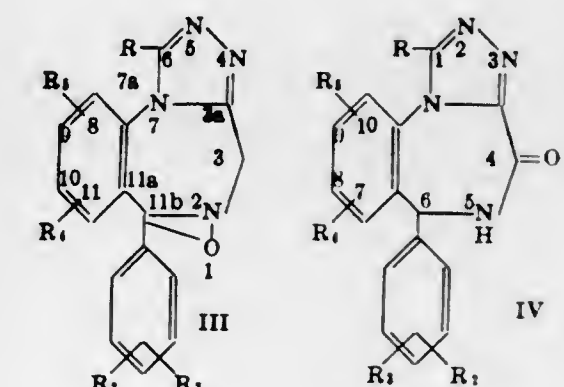
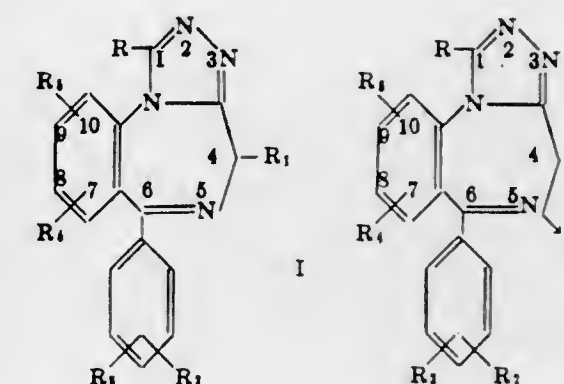
Jackson B. Hester, Jr., Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.
Original No. 3,681,343, dated Aug. 1, 1972, Ser. No. 142,418, May 11, 1971. Application for reissue July 13, 1973, Ser. No. 379,093

Int. Cl. C07d 57/02

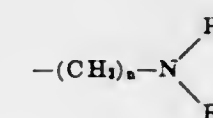
U.S. Cl. 260-239.3 T

4 Claims

[1. A compound selected from the group consisting of those represented by the formulae:



wherein R is selected from the group consisting of hydrogen, lower alkyl of one through three carbon atoms, phenyl, benzyl, nitromethyl, cyanomethyl, lower alkoxyethyl having an alkoxy moiety of one through three carbon atoms;



in which n is an integer of 1 through 2, R' and R'' are each selected from the group consisting of hydrogen and alkyl of one through three carbon atoms and when combined is an alkylidene bridge of four through five carbon atoms; R₁ is selected from the group consisting of hydroxy and lower acyloxy; R₂, R₃, R₄ and R₅ are selected from the group consisting of hydrogen, lower alkyl of one through three carbon atoms, halogen, nitro, cyano, trifluoromethyl, lower alkoxy, lower alkylthio, lower alkylsulfinyl, lower alkylsulfonyl, amino, lower alkanoylamino and lower dialkylamino; and a pharmacologically acceptable acid addition salt thereof.]

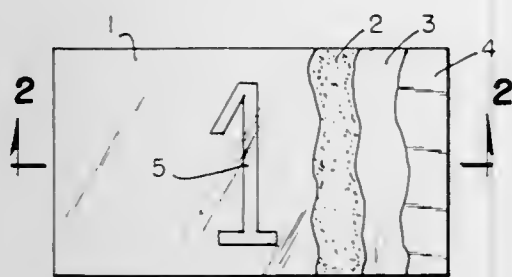
3. [A compound of Formula 1 of claim 1 wherein R is methyl, R₁ is acetoxy, R₂, R₃ and R₅ are hydrogen and R₄ is 8-chloro, namely, 4-acetoxy-8-chloro-1-methyl-6-phenyl-4H-s-triazolo[4,3-a][1,4]benzodiazepine.]

Re. 28,506

INDICIA BEARING ANODIZED ALUMINUM ARTICLES
Harold J. Quaintance, Fairview Park, and Eugene Wainer,
Shaker Heights, both of Ohio, assignors to Horizons Incorporated,
Cleveland, Ohio

Original No. 3,765,994, dated Oct. 16, 1973, Ser. No.
105,493, Dec. 7, 1971. Application for reissue Oct. 15,
1974, Ser. No. 514,750

Int. Cl.² B44F 1/06; B32B 15/08; C25D 5/00; G03C 1/02
U.S. Cl. 428—203 19 Claims



1. A laminated article bearing an image buried within at least one lamina of said article and comprising:
at least one clear supporting panel member;
at least one transparent porous layer consisting of aluminum oxide at least some of the pores of which contain an opaque material distributed in said pores so as to define an image;
and a clear adhesive disposed between said panel and said porous layer and bonding said panel to said porous layer.

Re. 28,507

TELEVISION GAMING APPARATUS

William T. Rusch, Hollis, N.H., assignor to Sanders Associates, Inc., South Nashua, N.H.

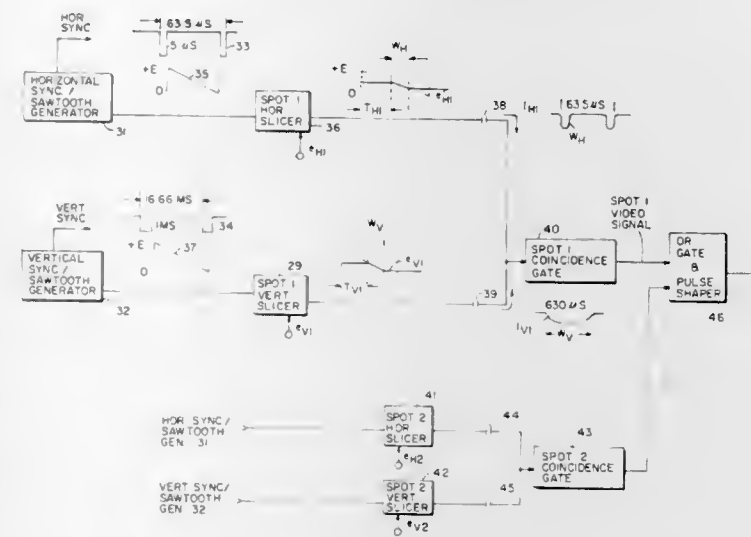
Original No. 3,659,284, dated Apr. 25, 1972, Ser. No. 828,154, May 27, 1969. Application for reissue Apr. 25, 1974, Ser. No. 464,256

Int. Cl.² G08B 5/36

U.S. Cl. 340—324 AD 64 Claims

1. In combination with a standard television receiver, apparatus for generating signals representing a symbol to be displayed on the screen of said television receiver, comprising:

means for generating sync signals;
means for generating a first sawtooth wave;
means for generating a second sawtooth wave;
means coupled to said first sawtooth wave generating means for generating first current pulses proportional to a predetermined slice of said first sawtooth wave; including a first slicer having first and second diodes connected back-to-back with one junction thereof coupled to said first sawtooth wave generating means, a capacitor coupled from the other junction to ground and means for receiving a control signal at said other junction, and first means for differentiating the output from said first slicer;
means coupled to said second sawtooth wave generating means for generating second current pulses proportional to a predetermined slice of said second sawtooth wave; including a second slicer having third and fourth diodes



connected back-to-back with one junction thereof coupled to said second sawtooth wave generating means, a capacitor coupled from the other junction to ground and means for receiving a control signal at said other junction, and second means for differentiating the output from said second slicer;
a coincidence gate coupled to said first and second current pulse generating means;
means for summing the output from said coincidence gate and said sync signals;
an RF oscillator;
means for modulating the output of said RF oscillator with said summed signal; and
means for applying said modulated signal to said receiver.

PLANT PATENTS

GRANTED AUGUST 5, 1975

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,755

NECTARINE TREE

Frederic W. Anderson, Merced, Calif., assignor to
Reedley Nursery, Inc., Reedley, Calif.

Filed Sept. 16, 1974, Ser. No. 506,731

Int. Cl. A01h 5/03

U.S. Cl. Plt.—41

1 Claim

1. A new and distinct variety of nectarine tree, substantially as illustrated and described, which is of large to medium size, vigorous, upright to spreading, and foliated with medium size, lanceolate leaves having a crenate margin, and a very productive bearer of medium to small size, uniform, symmetrical, globose to oblong, clingstone fruit having firm yellow flesh and yellow skin substantially entirely overspread with a deep red; the deep red of the skin of the fruit being—at harvest for shipment—in remarkably attractive full color, while the fruit has firm flesh and an unusually long shelf life.

3,756

NECTARINE TREE

Frederic W. Anderson, Merced, Calif., assignor to
Reedley Nursery, Inc., Reedley, Calif.

Filed Sept. 16, 1974, Ser. No. 506,751

Int. Cl. A01h 5/03

U.S. Cl. Plt.—41

1 Claim

1. A new and distinct variety of nectarine tree, substantially as illustrated and described, which is large, vigorous, spreading, foliated with large-to-medium-size, lanceolate leaves having a crenate margin, and a regular and productive bearer of uniform, medium size, globose, semi-free-to-clingstone fruit having yellow skin substantially overspread with red, and yellow flesh; the variety while generally resembling the Red June nectarine, being essentially distinctively characterized by fruit which ripens about one week earlier, is not quite as firm, and has more mottling on the surface of the skin.

3,757

DWARF PEACH TREE

Frederic W. Anderson, Merced, Calif., assignor to
L. E. Cooke Co., Visalia, Calif.

Filed Sept. 16, 1974, Ser. No. 506,752

Int. Cl. A01h 5/03

U.S. Cl. Plt.—43

1 Claim

1. A new and distinct variety of genetically dwarf peach tree, substantially as illustrated and described, which is of medium size, vigorous, spreading, foliated with large lanceolate leaves having a crenate margin, and

productive of uniform, medium size, symmetrical, globose, freestone fruit having yellow skin partially overspread with red, and yellow flesh; the variety being particularly characterized, in comparison with the Empress dwarf peach tree (the seed parent), by fruit which ripens over a month earlier, is somewhat larger, and is of better eating quality.

3,758

DWARF NECTARINE TREE

Frederic W. Anderson, Merced, Calif., assignor to
L. E. Cooke Co., Visalia, Calif.

Filed Sept. 23, 1974, Ser. No. 508,700

Int. Cl. A01h 5/03

U.S. Cl. Plt.—41

1 Claim

1. A new and distinct variety of brachytic dwarf nectarine tree, substantially as illustrated and described, which is of medium size, spreading, dense, foliated with large, lanceolate, acutely pointed leaves having a crenate margin and short petiole, and a regular and productive bearer of large, oblong, freestone fruit, variable both as to size and form, having yellow skin partially overspread with red, yellow flesh, and a red pit cavity from which the red streaks slightly into the flesh; the fruit, as best compared with that of the Sunburst nectarine, being freestone rather than clingstone, larger, more tender in flesh texture, and ripens about two weeks later.

3,759

NECTARINE TREE

Frederic W. Anderson, Merced, Calif., assignor to
The Burchell Nursery, Inc., Modesto, Calif.

Filed Sept. 23, 1974, Ser. No. 508,701

Int. Cl. A01h 5/03

U.S. Cl. Plt.—41

1 Claim

1. A new and distinct variety of nectarine tree, substantially as illustrated and described, which is vigorous, upright to spreading, open, foliated with medium size, lanceolate leaves with a crenate margin, and a very productive bearer of uniform, symmetrical, globose medium size, freestone fruit having yellow skin substantially overspread with red partially mottled and streaked, yellow flesh, and a red pit cavity with the red streaked into the flesh; the variety, which in general resembles the Red Free nectarine, the seed parent, is characterized, in comparison, by ripening about three weeks later, thus desirably extending the harvest season for such type of freestone nectarine.

PATENTS

GRANTED AUGUST 5, 1975

ERRATA

For CLASS	See PATENT NO.
228-112.....	3,897,623
228-122.....	3,897,624
220-269.....	3,898,227
200-153-SC.....	3,898,420
200-159 B.....	3,898,421

PATENTS

GRANTED AUGUST 5, 1975

GENERAL AND MECHANICAL

3,897,596

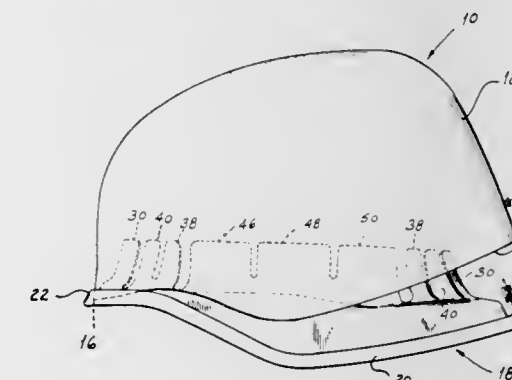
PROTECTIVE HELMET

Jackson A. Aileo, Carbondale, and Leonard P. Frieder, Jr., Dalton, both of Pa., assignors to Gentex Corporation, Carbondale, Pa.

Filed Aug. 26, 1974, Ser. No. 500,547
Int. Cl.² A42B 3/00

U.S. Cl. 2-3 R

54 Claims



1. In a protective helmet an assembly including a hard body having a peripheral edge, a suspension frame, means on said frame forming an upwardly opening peripheral channel adapted to receive said edge, and means for assembling said body on said frame.

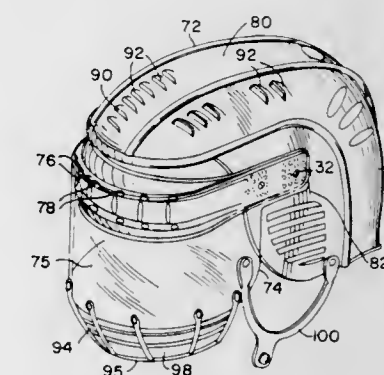
3,897,597

FACE AND HEAD PROTECTOR

Dale R. Kasper, 7 N. 357 Sycamore, Medinah, Ill. 60157
Continuation-in-part of Ser. No. 258,418, May 31, 1972, abandoned. This application July 5, 1973, Ser. No. 376,453
Int. Cl.² A41D 13/00

U.S. Cl. 2-9

8 Claims



1. In a protective apparatus particularly adapted to be worn by persons engaging in activities, such as hockey, presenting dangers of physical injury to the head and face to protect these areas, including a helmet portion, said helmet portion having a top protective section, generally covering the top of the wearer's head, a rear protective section, generally covering the back of the wearer's head, and side protective sections, generally covering the sides of the wearer's head, the improvement including a transparent face protector portion forming an integral part of said protective apparatus and formed of a single sheet of non-breakable material in a generally U-shaped configuration having a generally continuous optically clear front protective area generally covering the face of the wearer and side protective areas disposed on opposite sides of the wearer's head to generally cover the opposite sides of the wearer's head, said front protective area extending downwardly from a forward edge of said helmet portion to generally cover the face, including at least the eyes and nose of the

wearer, said face protector portion being fixedly attached to said helmet portion by a plurality of holding means disposed in the opposite side protective areas of said face protector portion in various selective positions relative to said helmet portion, as desired, said side protective areas encircling the cheeks and generally covering the side regions of the wearer's head to protect these regions, said face protector portion having ventilating means, to allow air to circulate between said face protective portion and the face of the wearer and prevent fogging and heat buildup, and strap means attached to said protective apparatus, said strap means being adjustable to bring said helmet portion of said protective apparatus in close fit relationship with the top and back with the head of the wearer and to position said face protector portion comfortably over the face and cheeks of the wearer to prevent injury thereto.

3,897,598

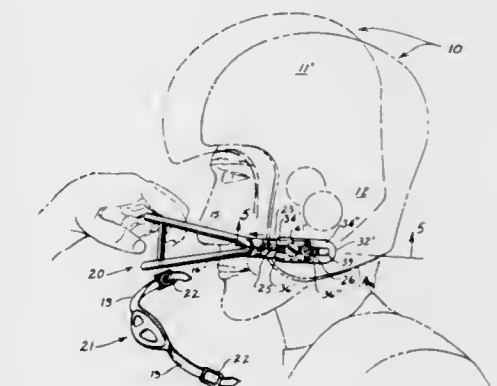
PROTECTIVE HELMET

Daniel Bednarczuk, 153-15 89th Ave., Jamaica, N.Y. 11342, and Arnold T. Milton, 2 Olmstead Rd., Scarsdale, N.Y. 10583

Filed Nov. 4, 1974, Ser. No. 520,551
Int. Cl.² A41D 31/00

U.S. Cl. 2-9

9 Claims



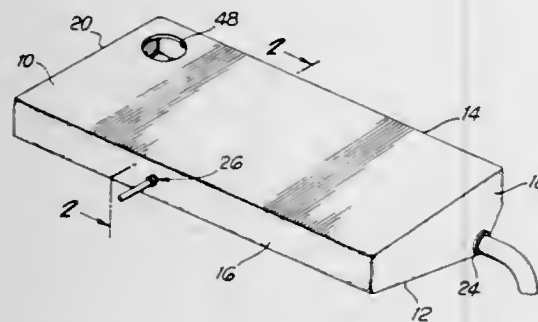
1. A safety helmet, or the like, comprising cover means formed with a recess for receiving and protecting portions of the head of the user; retaining means for removably holding said cover means on the head, said retaining means comprising a plate assembly having walls that form a slide receiving channel, a substantially unitary slotted face-guard slide bar which includes a first snap fastener affixed thereto, a chin strap having at least one second fastener at extremities thereof, said first and second fasteners being cooperatively capable of engaging one another; an adjustable release force means for controlling a predetermined force necessary to enable a predetermined disengagement of said first and second snap fasteners upon forward movement of said slide bar, said release force means comprising a bolt member cooperatively secured to said plate assembly, and a cap member removably secured to said bolt member; said retaining means enabling said predetermined disengagement of said snap fasteners upon forward movement of said slide bar, said plate assembly further comprising a raised cam surface disposed in the path of said second fastener such that contact therebetween will cause a lifting of said second fastener, thereby resulting in said fastener disengagement.

3,897,599

HOLDING TANK WITH QUICK DISCONNECT VALVE
 Richard F. Artzer, 18112 Larkstone, Santa Ana, Calif. 92704
 Filed July 16, 1973, Ser. No. 379,635
 Int. Cl. E04h 3/16, 3/18

U.S. Cl. 4-10

4 Claims



1. In combination with a holding tank having a top wall, a bottom wall and side walls, having an inlet for receiving sewage, and having a valve controlled dump connection for draining sewage therefrom, a sewage agitating and tank cleaning device comprising

- a fitting extending through one of said side walls of said tank, said fitting having a first section external to the tank adapted to be connected to a source of water pressure, and having a second section extending a short distance into said tank, and
- a long, thin, flexible tube mounted upon said internal fitting section and extending entirely within said tank, said tube having a length and a flexibility sufficient to permit the free end of the tube to swing through an arc of approximately 270° when liquid under pressure is caused to flow through said fitting and through the tube, and whereby the tube will thrash about within said tank and project said liquid from the end thereof toward the walls of the tank, thereby to agitate the tank contents by means of both the force of liquid projected from the tube and by the pounding of the tube upon the tank, said fitting comprising an internally projecting portion receiving said tube thereon, an intermediate section having a radially outwardly projecting peripheral flange of a diameter substantially equal to the diameter of said hole, said flange being positioned inside of said tank, said intermediate section having a tapered exterior surface extending from a larger diameter inside said tank to a smaller diameter portion outside of said tank, an externally threaded body section on the fitting adjacent said tank wall, an exterior end section on the fitting, and means interposed between said tank wall and said intermediate fitting section for sealing the fitting to the tank wall.

3,897,600

PRESSURE SEWAGE SYSTEM AND MEANS

Jack Burkholder, Tulsa, Okla., assignor to Robintech, Incorporated, Fort Worth, Tex.
 Continuation-in-part of Ser. No. 162,838, July 15, 1971, abandoned. This application Aug. 20, 1973, Ser. No. 390,114
 Int. Cl. E03d 11/02, 11/00; B60r 16/04

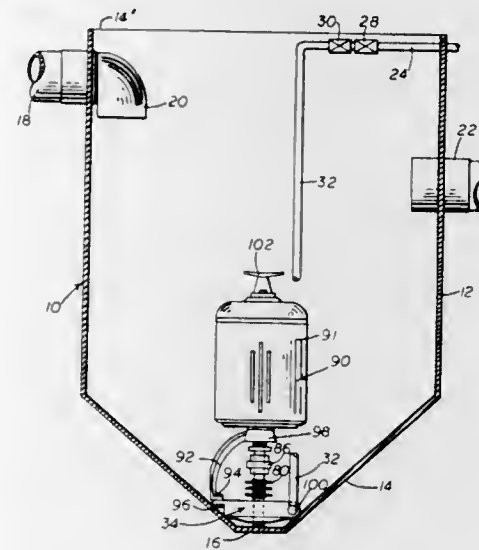
U.S. Cl. 4-10

2 Claims

1. A sewage accumulating and treating unit for receiving gravity-fed sewage through an inlet pipe from a local source, for macerating solids in said sewage and for discharging the resulting effluent under a predetermined pressure into a pressurized sewer main, said unit comprising:

- a. an accumulation tank having downwardly converging walls, with a frustoconical bottom section for receiving said sewage;
- b. a centrally-disposed sewage-treating unit for comminuting solids in said sewage and discharging effluent from said tank, said treating unit normally being submerged below the sewage level in said tank and resting upon and

- being located by said converging walls adjacent to said frustoconical bottom section; and
- c. a relatively small diameter discharge pipe extending upwardly from said treating unit for connection to said pressurized sewer main;



- d. said treating unit including a pump and including a pump and including exposed macerating blades located above said pump but nevertheless close to said bottom section, said blades being rotatable about the central axis of said frustoconical section, to agitate said sewage and swirl it into a vortex while said treating unit operates.

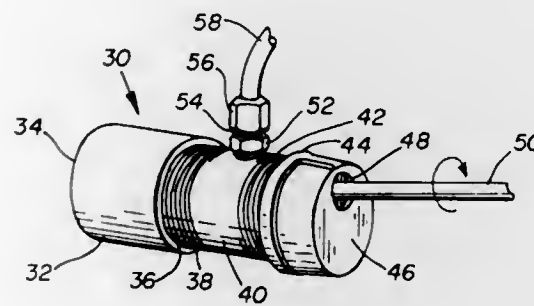
3,897,601

PLUMBING TOOL

Maurice A. Wusterfeld, P.O. Box 404, Lawrence, Kans. 66044
 Filed July 22, 1974, Ser. No. 490,352
 Int. Cl. E03d 11/00

U.S. Cl. 4-255

2 Claims



1. A plumber's tool comprising a hollow cylindrical member having a threaded opening at one thereof for attachment to a drain pipe, the opposite end of said member being closed except for a hole therein for loosely receiving therethrough a rotary cable for a rotary cleaning tool, a conduit connected to said cylindrical member intermediate the ends thereof and at right angles thereto, and a hose connected at one end to said conduit and having an adapter at the other end thereof engageable with a faucet.

3,897,602

PIPE CLEANOUT ACCESSORY

Richard N. Waterbury, Lot 1214, 10001 West Flagler St., Miami, Fla. 33144
 Filed Aug. 26, 1974, Ser. No. 500,409
 Int. Cl. B08B 9/02

U.S. Cl. 15-104.3 SN

6 Claims

1. In combination with an electric motor driven drill having a chuck and pistol type grip, a pipe clean out accessory that includes:

3,897,603

BRUSH FOR APPLYING PAINT, VARNISH, LACQUER AND THE LIKE

Hugo Brennenstuhl, Seestr. 1-Albstr. 24/25, Tübingen-Pfrontdorf, Germany

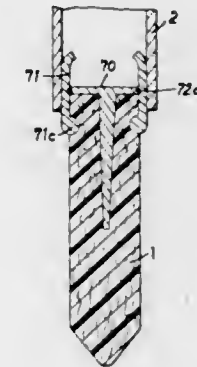
Continuation of Ser. No. 128,052, March 25, 1971. This application June 21, 1973, Ser. No. 372,187

Claims priority, application Germany, Mar. 26, 1970, 7011306[U]; Sept. 22, 1970, 7035025[U]

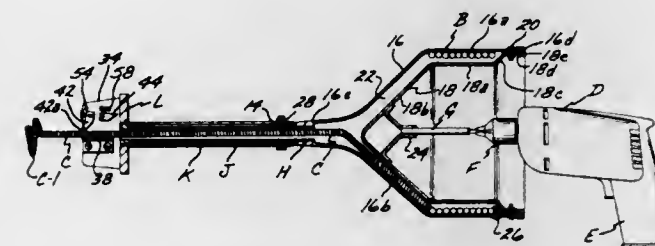
Int. Cl. A46b 15/00; B44d 3/28

U.S. Cl. 15-244 R

1 Claim



- a. a hollow container having an interior surface;
- b. a first means secured to said container that may be removably gripped by said chuck to rotate said container by said motor;
- c. a first elongate tube projecting forwardly from said container that is axially aligned with said first means, said first tube including an outwardly extending stop on a free forward end thereof;
- d. a length of stiff wire that is spirally wound to define a cable having threads on the exterior surface thereof, said cable due to the resiliency thereof frictionally engaging said interior surface of said container with sufficient force that said container and cable tend to rotate as a unit, and a first portion of said cable projecting from said container into said first tube;
- e. a second tube that is rotatably engaged by said first tube and occupies a substantially fixed longitudinal position thereon between said stop and container, said second tube including longitudinal guide means as a part thereof, said guide means having first and second ends;
- f. a third tube supported for longitudinal movement on said second tube, said third tube having first and second ends;
- g. second means extending inwardly from said first end of said third tube that slidably engage said guide means for preventing said third tube rotating relative to said second tube; and
- h. a control assembly secured in a fixed position on said second end of said third tube, said assembly including a pair of laterally spaced plates that are secured to said



second end of said third tube with said cable extending forwardly between said plates, a support extending between said first and second plates on which said cable slidably rests, first and second rigid members pivotally supported between said plates, first and second tensioned helical springs means that at all times tend to pivot said first and second members from first positions where they are out of contact with said cable to second positions where they are in pressure contact with said threads on said cable, manually operable stop means for selectively holding either said first or second member in said first position, with said first member when in said second position capable of advancing said cable forwardly out of said control assembly either by said container, first tube, and cable rotating in a first direction relative to said second and third tubes and control assembly or by manually reciprocating said control assembly, and third tube as a unit relative to said first and second, said cable being advanced by the forward moving portion of each reciprocating stroke, with said second member when in said second position and in engagement with said threads causing said cable to move towards and into said container when said container and first tube are rotated in a second direction relative to said control assembly, second and third tubes, and said cable being moved rearwardly into said container when said control assembly and third tube are reciprocated relative to said first tube, with said rearward movement of said cable occurring on the portion of the reciprocating motion in which said control assembly and third tube move towards said container.

1. Brush for laying on of paints, varnish, lacquer or the like, which comprises a hollow handle part of substantially greater width than thickness having a downward opening therein and an applicator part including a yieldable porous sponge-like material which receives the coating material on the working surface in the form of a thin film, the applicator part further including a member insertable in the opening with a cross-piece and a downwardly projecting extension thereon extending across the greater part of the width and rigid in the direction of its width, said extension being enclosed within the yieldable material, clamping means for releasably holding the applicator part in the handle part, said clamping means comprising clamping jaws extending widthwise of and hinged along the longer sides of the cross-piece for movement between outwardly projecting and downwardly bent positions, said clamping jaws in released condition being spread apart and by insertion of the clamping means in the handle being positioned and clamped between the yieldable material and the inner wall of the handle part, whereby the yieldable material is held in the handle part and against the extension, the clamping jaws being hinged to the cross-piece intermediate their width, thereby extending above and below the cross-piece.

3,897,604

APPARATUS AND PROCESS FOR REMOVING CHIPS FROM BLIND HOLES

Gerald A. Weimer, 214 Peeke Ave., Kirkwood, Mo. 63122

Filed Nov. 19, 1973, Ser. No. 416,810

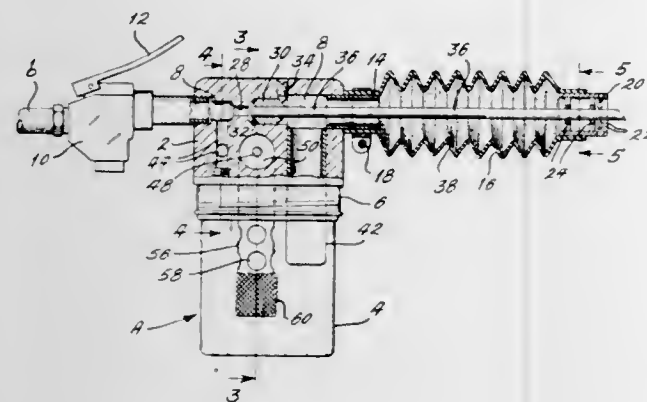
Int. Cl. A47L 5/00

U.S. Cl. 15-344

13 Claims

1. A tool for removing material from a hole in a workpiece, said tool comprising: a base containing a supply passage connected to a source of high pressure air and a return passage having an inlet end and an outlet end, the base also having a venturi cavity and an apertured vacuum tube in communication with the venturi cavity, the base further having a venturi nozzle directed into the venturi cavity and connected with the supply passage so that air is discharged at high velocity from the nozzle into the venturi cavity and creates a partial vacuum in the venturi cavity and the vacuum tube; a rigid container attached to the body and enclosing the vacuum tube and the outlet end of the return passage, the container being considerably larger in cross-section than the vacuum tube and further being sealed to the base so that the vacuum is also induced in the interior of the container and in the return passage; a blowpipe projected from the base through the inlet end of the return passage; a bellows surrounding the blowpipe and being

collapsible in the axial direction, one end of the bellows being secured to the body at the inlet end of the return passage so that the vacuum will also exist in the bellows; a guide encircling the blowpipe for a short axial distance and being attached to the other end of the bellows to position said other end generally concentrically with respect to the blowpipe



irrespective of the axial position of said other end along the blowpipe, whereby when the blowpipe is inserted into the hole the bellows will contract and when air is introduced into the supply passage it passes through the blowpipe to dislodge material in the hole with the material so dislodged being conveyed through the bellows and the return passage to the container where it is collected.

3,897,605 AIR WHIP

Sanford C. Dickinson, Mamaroneck, N.Y., assignor to Ex-Cell Fifth Avenue, Inc., New York, N.Y.
Division of Ser. No. 301,981, Oct. 30, 1972. This application Oct. 9, 1973, Ser. No. 404,644
Int. Cl.² A47L 9/04, 9/08

U.S. Cl. 15—382

9 Claims



1. A device for removing unwanted clinging matter from the surface of an object comprising a base and a hollow open ended tubular member, said member comprising a relatively rigid first portion, a semiflexible second portion and a flexible third portion, means for resiliently mounting said first portion to said base, said second portion being fixedly mounted to said first portion and interposed between said first portion and one end of said third portion, the other end of said third portion extending toward and engaging the surface of the object to be cleaned, and means communicating with said first portion for forcing fluid through said tube at high speeds, whereby said third portion whips violently against said surface to loosen said clinging matter and said fluid emanating from said third portion carries said loosened matter from the vicinity of said surface.

5. The device of claim 1, further comprising a nub at the free end of said whip portion of said tube defining a thickened

wall of said tube, thereby to compensate for excessive wear and to prevent splitting of said tube.

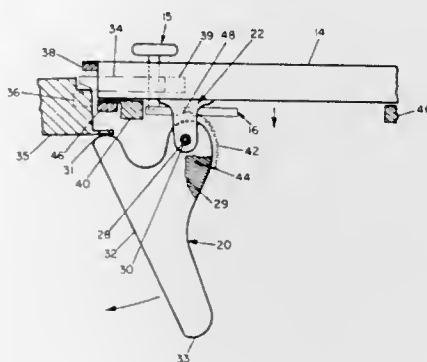
3,897,606

SILENT DOOR CLOSING DEVICE

John Schleining, 2414 Nina Clare Rd., Billings, Mont. 59102
Continuation-in-part of Ser. No. 398,646, Sept. 19, 1973, abandoned. This application Aug. 7, 1974, Ser. No. 495,412
Int. Cl.² E05F 1/00

U.S. Cl. 16—71

3 Claims



1. A silent trailer door closing device comprising a bracket adapted to be attached to the inner side of a trailer door, and an elongated lever body having rounded ends and hub means pivotally connected to said bracket for swinging movement, and a resilient member having connecting means to said lever body and bracket for urging said lever body to a normal position substantially in vertical parallel position with respect to the trailer door, and a trailer door and door frame means against which said lever body operates to exert pressure thus pulling the door inwardly to the closed position by compressing the rubber door and frame seals until the door bolt is firmly latched, wherein an operator can close said door silently by grasping the lever body in its normal position, then pivoting said lever body until the elongated end of said body engages the trailer door frame and said operator exerts sufficient force against said door frame to pull the door inwardly to a fully closed position wherein the rubber door and frame seals have compressed sufficiently to allow the door bolt to fully latch.

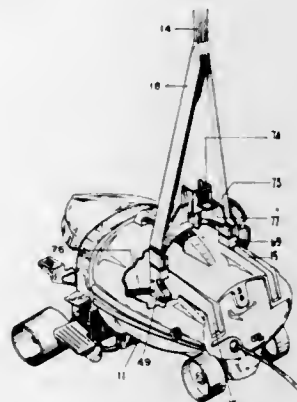
3,897,607

READILY REMOVABLE IMPLEMENT HANDLE

Richard H. Schaffer, and Joseph O. Brent, both of Ocala, Fla., assignors to The Bison Company, Ocala, Fla.
Filed Mar. 19, 1973, Ser. No. 342,743
Int. Cl. A47g 27/04

U.S. Cl. 16—114

21 Claims



1. An implement handle arrangement comprising a handle upon the lower portion of which, insertion means is utilized, and a receiving means having a recess therein of a size for

receiving said insertion means, a slidable member operatively disposed upon and removably secured to said insertion means, with said slidable member being movable between a first position and a second position, said slidable member when disposed in the first position allowing said insertion means to be inserted into said receiving means as well as to be removed easily therefrom, whereas movement of said slidable member to its second position during the time that the insertion means is inside the recess of said receiving means, causing a diminishment of the clearance in the recess, such that said insertion means is locked to said receiving means.

3,897,608

HINGE-LIKE DEVICE FOR CONTROLLING THE INCLINATION OF MOTOR VEHICLE SEAT BACKS

Agostino Impicicche, Via Vistrorio 27, 10155 Turin, Italy

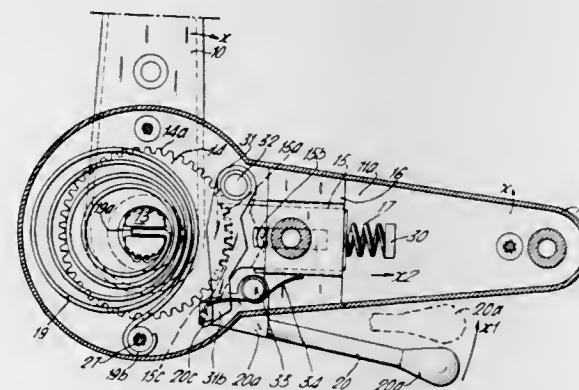
Filed Dec. 20, 1973, Ser. No. 426,868

Claims priority, application Italy, Dec. 22, 1972, 71052/72; Mar. 16, 1973, 67760/73

Int. Cl.² E05D 11/10

U.S. Cl. 16—145

4 Claims



1. A hinge-like device for adjusting the inclination of the back of a seat with respect to the seat, comprising:
a. a body fixed to the seat, a body fixed to the seat back, and a pivot connection between said two bodies,
b. a toothed wheel fixed to a first one of said bodies coaxial with the axis of said pivot connection,
c. a slide slidably mounted on a second one of said bodies, said slide having a toothed sector adapted to mesh with said toothed wheel to prevent relative movement between said two bodies, and said slide having a tooth and an appendage,
d. resilient means constantly urging said slide in a direction to maintain engagement between said toothed wheel and said slide toothed sector,
e. a lever pivotally mounted on said second body, said slide tooth being in the path of pivotal movement of said lever, and
f. a handle pivotally mounted on said second body and movable between a normal position, in which relative movement between said two bodies is prevented, and an actuated position, in which relative movement between said two bodies is permitted, said handle having means engaging said lever to pivot the latter against said slide tooth and move said slide away from said toothed wheel when said handle is moved from its normal to its actuated position, and said handle having an abutment arranged in the path of movement of said slide appendage when said handle is in its normal position to prevent movement of said slide in a direction away from said toothed wheel, said abutment moving out of the path of said slide appendage when said handle is moved to its actuated position.

3,897,609

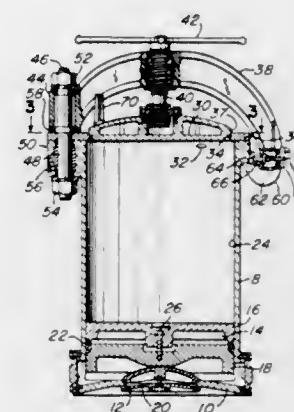
SAUSAGE STUFFER WITH QUICK-RELEASE SAFETY RING

Carl Oscar Schmidt, Jr., Cincinnati, Ohio, assignor to The Cincinnati Butchers' Supply Company, Cincinnati, Ohio
Filed Oct. 1, 1973, Ser. No. 402,194

Int. Cl. A22c 11/06

U.S. Cl. 17—39

6 Claims



1. In a sausage stuffer comprising a cylinder having a axial bore with a piston reciprocable therein and having an open end, an external rigid flange on one end of the cylinder bounding the open end thereof, said flange having an upper, substantially planar face exterior to said bore, a radially projecting boss on one side of said cylinder at said open end, a pivot pin secured at one end in said boss and projecting at its other end upwardly beyond the open end of the cylinder, a yoke pivotally carried at one end thereof on said pivot pin and having securing means on its other end for securing the yoke in position extended across the cylinder open end in spaced relation thereto, and an end closure member carried by the yoke in a position to selectively cover and uncover the cylinder open end, the improvement comprising a quick-release safety ring member having a lower planar face resting flatwise upon the upper face of said flange and having an inner periphery extending radially inwardly into the open end of the boss and serving as a stop for said piston, said pivot pin extending through said ring member and pivotally supporting said ring member for pivotal movement of said ring member away from the open end of the cylinder, and quick-release clamping means operatively connected with said ring member for selectively clamping and unclamping said ring member upon the upper face of the cylinder flange with ease and dispatch for securely though releasably securing the ring member in operative position relative to said flange, said quick-release clamping means comprising at least one open-mouthed slot in the periphery of said ring member, and a non-rotatable bolt element attached to said flange in position to enter said slot incident to relative movement of said ring member and flange to the operative position, and a nut on said bolt element to secure the ring member in position on the flange.

3,897,610

SHRIMP POSITIONING PAWL

Fernand S. Lapeyre, New Orleans, La., assignor to The Laitram Corporation, New Orleans, La.

Filed Apr. 11, 1974, Ser. No. 460,118

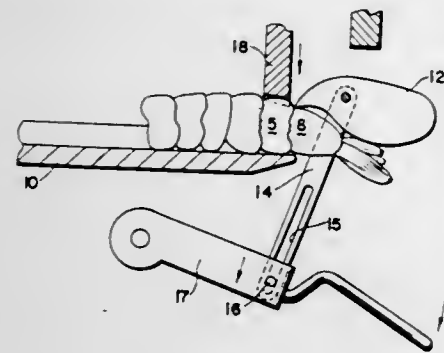
Int. Cl. A22c 29/00

U.S. Cl. 17—71

6 Claims

1. For use with a shrimp supporting surface having a condyle hinge breaking station toward which a headless shrimp with its tail shell on and dorsal side up is advanced, a shrimp positioning pawl for arresting the motion of the shrimp along its major axis with the shell joint between segments five and six at the condyle hinge breaking station comprising a beak-like leading end, counter weighted tail end, a pivot shaft about which pawl is free to pivot so that the free end of the beak-like leading end of the pawl will descend and engage the dorsal

side of the joint between shell segments five and six and arrest the axial motion of the shrimp to position the shell joint be-



tween segments five and six immediately over the condyle hinge breaking station.

3,897,611

EJECTION TONGUE FOR BUCKLE

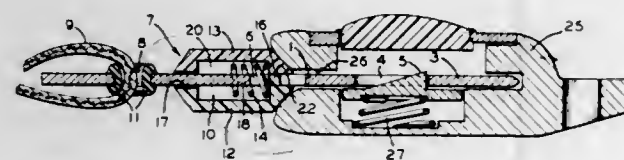
Frederick C. Booth, Birmingham, and Robert L. Stephenson, Sterling Heights, both of Mich., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Oct. 2, 1972, Ser. No. 294,420

Int. Cl.² A44B 11/25

U.S. Cl. 24-230 SL

12 Claims



1. A tongue assembly for locking engagement with a seat belt buckle comprising:

a tongue and a biased tongue-ejecting movable member attached thereto which is placed under tension with respect to the buckle by the act of inserting and latching the tongue within the buckle, whereby, when the tongue is released, it is forceably ejected therefrom;

wherein the biased tongue ejecting member is slideably attached to the tongue for limited travel thereon in a direction parallel to the motion of the tongue on insertion into the buckle, said movable member extending from at least one side of the tongue so that said member contacts the buckle when the tongue is inserted therein, but before it has been introduced a sufficient distance for locking engagement therewith, whereby when the tongue is inserted a sufficient additional distance for locking engagement, it is inserted in opposition to the bias of the movable member, thus leaving the movable member stationary with respect to the buckle throughout the remaining insertion operation, while maintaining a bias against the buckle in a direction to eject the tongue from the buckle when the tongue is released from locking engagement therewith;

wherein the movable member extends through a substantially rectangular opening in the tongue, and is slideably arranged within said opening for limited travel in a direction parallel to the motion of the tongue on insertion into the buckle; and

wherein the movable member extends from both faces of the tongue, and comprises two portions equipped for substantially permanent attachment one with the other through the opening in the tongue with which it cooperates, each portion having a surface in slideable contact with its respective face of the tongue, the contacting surface of these portions being of a somewhat greater length and width than the length and width of the opening.

3,897,612 END ATTACHMENT FOR WATCH BANDS AND SELF-CONTAINED COMPONENT FOR USE IN MAKING THE SAME

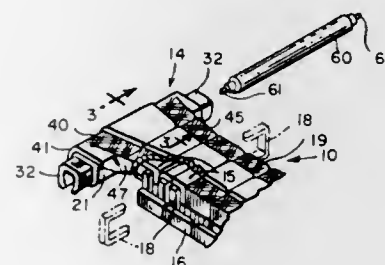
Stephen F. Bert, West Warwick, R.I., assignor to Textron Inc., Providence, R.I.

Filed July 25, 1974, Ser. No. 491,141

Int. Cl.² A44C 5/18

U.S. Cl. 24-265 B

13 Claims



8. A self-contained component for making an end attachment for watch bands adapted to be mounted between spaced lugs of a wrist watch comprising

a generally tubular member formed from a strip of metal, a pair of tabs, one adjacent to one end of said strip and the other adjacent to the other end thereof, the ends of said tabs being bendable towards the interior of said tubular member,

coiled compression spring means within said tubular member, and

a pair of generally tubular inserts adapted to slide within said generally tubular member, each insert being formed from a strip of metal and each insert having a generally rectangular slot formed between the edges of said strip which has an open end and an inner end formed by the edges of a pair of tabs which extend inwardly towards each other from the adjacent ends of said strip,

whereby said component can be assembled by an automatic machine which inserts said coiled compression spring means into said tubular member and then simultaneously inserts said inserts at opposite ends of said tubular member with the open ends of their rectangular slots pointing outwardly and moves them inwardly compressing said spring means until the inner ends of said rectangular slots pass beyond said tabs of the generally tubular member and then bends the ends of said tabs into said longitudinal slots, whereby the inner edges of said tabs of the generally tubular member engage the edges of said tabs which form the inner ends of the rectangular slots of the inserts, thereby to stop outward movements of said inserts by said coiled springs.

3,897,613

TENSION RELEASE CONTROL ELEMENT

Kenneth T. Cornelius, Potomac, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 19, 1974, Ser. No. 452,598

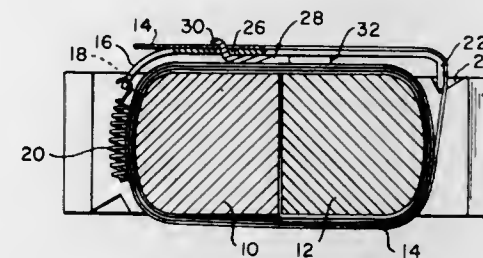
Int. Cl.² B65D 63/00

U.S. Cl. 24-273

8 Claims

1. A quick-release device for an encircling band comprising: a first lever underlying for a substantial portion of its length

said encircling band;
a second lever underlying said first lever and mechanically



interlocked with said first lever and said encircling band; and restraint means for one end of said first lever.

3,897,614

METHOD FOR MANUFACTURING A SEGMENTED
RAISED ANODE FLUORESCENT SYMBOL DISPLAY
TUBE

James B. Armstrong, Phoenix, Ariz., assignor to Sperry Rand Corporation, New York, N.Y.

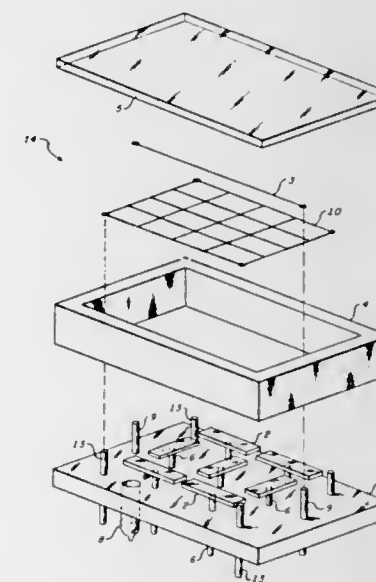
Continuation of Ser. No. 155,956, June 23, 1971, abandoned.

This application Apr. 20, 1973, Ser. No. 353,156 The portion of the term of this patent subsequent to May 30, 1989, has been disclaimed.

Int. Cl. H01j 9/36

U.S. Cl. 29-25.16

2 Claims



1. A method for fabricating an anode array and base assembly of a display tube comprising the steps of

providing a substantially planar non-conductive tube base having electrically conductive anode support pins passing in hermetically sealed relation through the base and extending upward from at least one surface thereof,

providing an electrically conductive sheet having anode segments formed therein in a predetermined pattern and retained within the sheet by tabs connecting each segment to the sheet,

juxtaposing the conductive sheet with the tube base so that each anode segment is positioned adjacent an extending end of a mating anode support pin,

bonding each anode segment to a mating support pin to establish a mechanically rigid electrical connection therebetween such that the anode segments will remain substantially in a common plane upon being disconnected from the electrically conductive sheet,

melting the tabs to sever the anode segments from the remaining portion of the conductive sheet, and applying a luminescent coating to the side of the anode segments viewed in normal use of the tube after severing the anode segments from the remaining portion of the conductive sheet.

3,897,615

METHOD OF MANUFACTURING A GLOW-DISCHARGE
TUBE

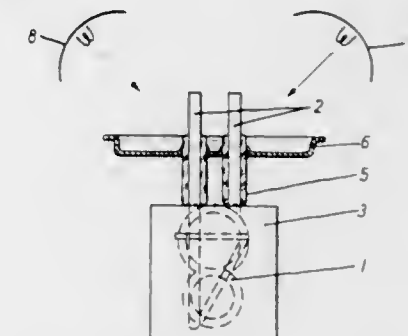
Manfred Schiek, and Heinz Herzog, both of Ulm, Danube, Germany, assignors to Licentia-Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Division of Ser. No. 38,040, May 18, 1970, abandoned. This application May 29, 1973, Ser. No. 364,681

Int. Cl. H01j 9/18

U.S. Cl. 29-25.16

5 Claims



1. In a method for manufacturing a character-indicating, glow-discharge tube having a plurality of character-shaped cathodes each being provided with an electrical lead which supports the respective cathode at a distance from the bottom of the glow-discharge tube envelope, the improvement comprising the steps of:

a. tightly closing said leads by pushing small tubes of glass over each of said leads so that one of the ends of said tubes extends to each of said cathodes,

b. inserting the opposite ends of said small tubes into an opening in the bottom of the glow-discharge tube envelope and

c. connecting said small tubes to the leads and the edges of the opening in the bottom of the glow-discharge tube envelope to obtain a gastight seal by heating said small tubes to melt the portion of said small tubes in said opening so that said small tubes become fused with the leads and the edges of the opening, whereby said small tubes serve to provide both a gastight seal around the leads and to prevent glowing thereof.

3,897,616

METHOD OF MANUFACTURING SPHERICAL
BEARINGS

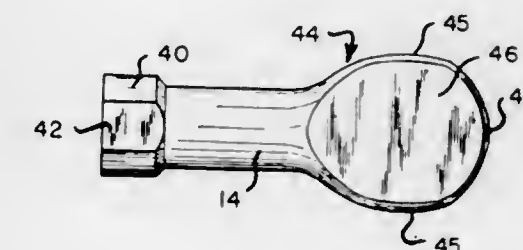
Gordon T. Williams, Newtown, Conn., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Nov. 18, 1974, Ser. No. 524,388

Int. Cl.² B23P 11/00; B21D 53/10

U.S. Cl. 29-149.5 B

7 Claims



1. A method of manufacturing a spherical bearing rod end having an outer member, an intermediate member of yieldable material within and supported by said outer member and an

inner race operationally supported by said intermediate member comprising preforming a rod end blank having a cylindrical section at one end thereof, flattening the cylindrical section to cold form two enlarged faces, forming a bore through said faces thereby leaving a uniformly cold formed annular area to serve as the outer race member, inserting in said bore said intermediate member and said inner race member, interlocking with mechanical interlocking means said intermediate member and inner race member within said bore to effect the bearing support of said inner race member within said intermediate member.

3,897,617

CONTINUOUS WIRE WRAP SYSTEM

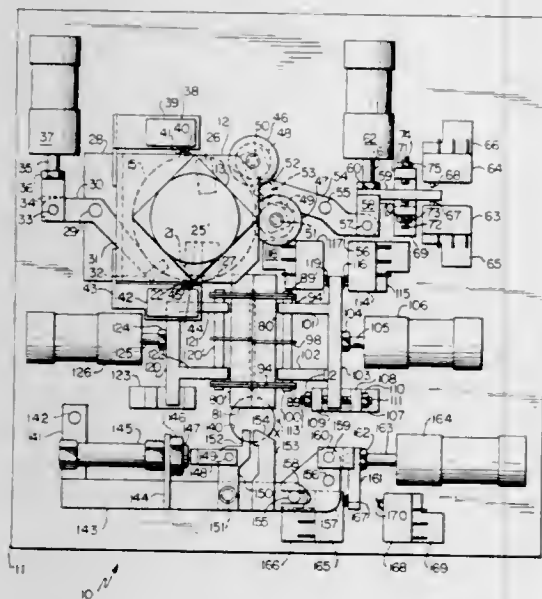
Daniel W. Ackerman, Binghamton; James W. Paton, Johnson City, and Philip A. Ragard, Binghamton, all of N.Y., assignors to Universal Instruments Corporation, Binghamton, N.Y.

Filed July 17, 1974, Ser. No. 489,128

Int. Cl. H01R 43/00

U.S. Cl. 29—203 B

8 Claims



1. An apparatus for preparing a continuous length of wire to be automatically wrapped in sections from point to point continually on a terminal board, said apparatus comprising means to sever said wire into a first and second section and to strip the trailing end of said first section and the leading end of said second section adjacent the point of severance and first position control means to control the position of the leading edge of said second section comprising a rotary advance wheel able to rotate between two fixed stops and a movable dog means to interrupt said movement between said two fixed stops in one rotary direction, said first position control means also functioning to supply said stripped leading end to a wire wrap tool.

3,897,618

POWDER METALLURGY FORGING

Nathan Lewis Church, Warwick, N.Y., assignor to The International Nickel Company, Inc., New York, N.Y.

Division of Ser. No. 238,238, March 27, 1972, Pat. No. 3,837,845. This application Mar. 7, 1974, Ser. No. 448,823. The portion of the term of this patent subsequent to Jan. 22, 1991, has been disclaimed.

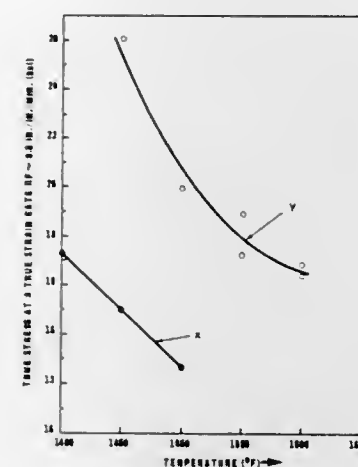
Int. Cl. B22f 3/24

U.S. Cl. 29—420.5

15 Claims

1. In the process of steel powder metallurgy hot forging, the improvement of obtaining a lower flow stress during forging which comprises hot forging low alloy steel powder at a temperature in which the steel powder is characterized by a microstructure consisting essentially of ferrite and austenite, each of these phases being present in a volume percentage of

at least 4% and such that the grains of each mutually coact to retard grain growth of the other during recrystallization.



3,897,619

METHOD FOR PLACING A CONNECTING SLEEVE BETWEEN TWO PIPE SECTIONS

Pierre Thivans, Chevreuse, France, assignor to Campenon Bernard Europe, Paris, France

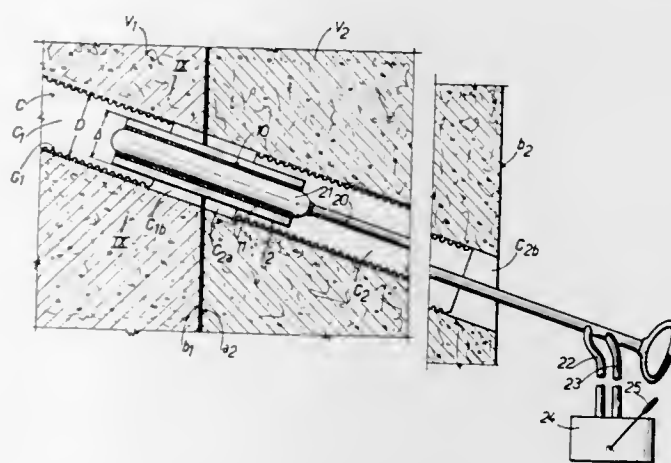
Filed May 6, 1974, Ser. No. 467,294

Claims priority, application France, May 8, 1973, 73.16472

Int. Cl. B23p 17/00

U.S. Cl. 29—421

9 Claims



1. A method of placing in position a connecting sleeve to provide closed continuity and tightness between first and second pipe sections located in end-to-end relationship, with a joint there between, and formed in first and second construction elements respectively, the said first construction element having an end face which is pierced by the said first pipe section, the said second construction element having two opposed end faces which are pierced by the said second pipe section, one of the said end faces of the second construction element being in face to face engagement with the said end face of said first construction element, the method involving the use of a deformable sleeve having radial dimensions substantially smaller than the radial dimensions of the two said pipe sections and comprising the steps of: introducing the said deformable sleeve from outside the two construction elements into the said second pipe section from the end face of the second construction element opposite said one end face thereof; driving the said sleeve along the second pipe section until it occupies a position straddling the said joint between the two pipe sections; and radially expanding the said sleeve to deform it against the internal walls of the two pipe sections such that it acquires a shape which substantially conforms with that of the latter.

3,897,620

METHOD AND MEANS FOR MAKING A WALL SECTION

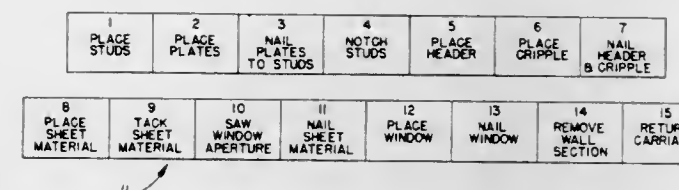
Richard C. Wright, P.O. Box 283, Whitewater, Kans. 67154

Filed July 30, 1973, Ser. No. 370,109

Int. Cl. B23p 21/00

U.S. Cl. 29—430

12 Claims



1. An assembly line means for making a wall section, comprising:

- means for supporting and moving in horizontal position a wall section and having means to temporarily receive and hold stud members, and means to temporarily receive and hold plate members,
- means to place stud members in said means to temporarily receive and hold stud members,
- means to place plate members in said means to temporarily receive and hold plate members,
- means to secure said plate members to said stud members while with said means for supporting a wall section,
- means to place sheet material on an upper surface of said stud members and said plate members while with said means for supporting a wall section,
- means to secure said sheet material to said stud members and said plate members while in said means for supporting a wall section,
- means to cut an aperture in said wall section through said sheet material while said wall section is with said means for supporting a wall section,
- means to place a window assembly in an aperture in said wall section while said wall section is with said means for supporting a wall section, and
- means to secure said window assembly to said sheet material while said wall section is with said means for supporting a wall section.

3,897,621

METHOD OF MAKING A CAM LOCK

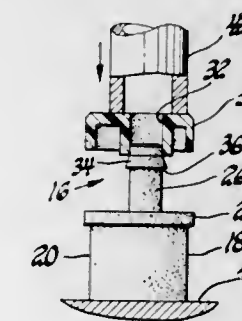
A. Fred Fedrigo, 35750 Industrial Rd., Livonia, Mich. 48150

Filed July 26, 1974, Ser. No. 492,190

Int. Cl. B23P 11/00

U.S. Cl. 29—434

6 Claims



1. A method for making a cam lock for connecting a pole of a first diameter to a pole of a second, larger diameter, comprising the steps of:

forming a first member having a body suited for being connected to the end of the first pole, the first member having a spindle mounted on the body with a longitudinal axis parallel to that of the first pole, and a shoulder carried on the spindle in a position spaced from the body;

forming a cam receivable in the second pole, the cam having an opening for receiving the spindle, the opening

having a diameter less than that of the shoulder but greater than that of the spindle; and mounting the cam on the spindle by disposing the end of the spindle in the spindle-receiving opening and then moving the cam toward the body of the first member to pass the shoulder through the spindle-receiving opening to a position in which the cam is rotatably mounted on the spindle between the shoulder and said body.

3,897,622

FIXING METHOD AND FIXING APPARATUS FOR FIXING TOGETHER BEND PIPE AND STRAIGHT PIPE OF A PIPE HOUSE AT THEIR INTERSECTING POINTS

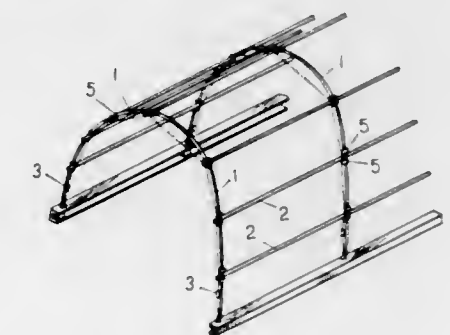
Motoo Utahara, 1-24-7, Okusawa, Setagaya-ku, Tokyo, Japan

Filed Oct. 2, 1973, Ser. No. 402,798

Int. Cl. B21d 39/00

U.S. Cl. 29—452

14 Claims



1. A method of constructing a framework structure of a pipe house which includes a plurality of axially spaced arch bend pipes and a plurality of axially extending straight pipes intersecting said arch bend pipes, comprising the steps of: respectively securing the end portions of said plurality of bend pipes to the ground or a base member so as to form a dome; supporting said plurality of straight pipes against said plurality of bend pipes upon the interior or exterior surfaces of said bend pipes; mounting a plurality of fixing devices at the intersection points of said bend pipes and said straight pipes in such a manner that said fixing devices are secured upon portions of said bend pipes disposed upon opposite sides of said straight pipes; interconnecting said plurality of fixing devices by connecting means which extend between said intersection points and substantially along said bend pipes and arranging said connecting means at said intersection points so as to intersect with each other upon one side of said bend pipes and define with said bend pipes intersection spaces within which said straight pipes are respectively disposed and supported; and tensioning said connecting means so as to press and fixedly secure said straight pipes to said bend pipes.

3,897,623

METHOD FOR UNDERWATER FRICTIONAL WELDING OF METALLIC MATERIAL

Yoshio Tasaki; Noboru Nakayama, both of Nagoya; Hiroshi Kazihara, Kohnan, and Mineo Kosaka, Tsushima, all of Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Sept. 16, 1974, Ser. No. 506,002

Claims priority, application Japan, Sept. 22, 1973, 48-107132

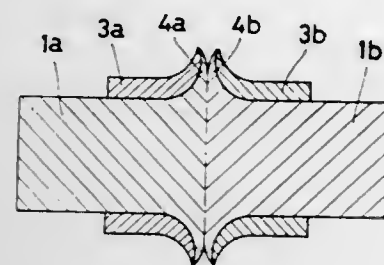
Int. Cl. B23k 27/00

U.S. Cl. 228—112

1 Claim

1. A method for underwater frictions welding of metallic articles, which comprises abutting the terminal faces of the metallic articles against each other, causing relative rotary motion between the abutted terminal faces and welding the two metallic articles by utilizing frictional heat consequently

caused in the abutted terminal faces because of the relative rotary motion and the axial pressure, which method is charac-



terized by wrapping a heat insulating material around the peripheries at the terminal faces of metallic articles prior to welding.

3,897,624

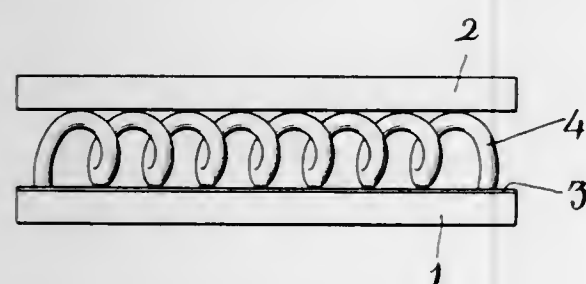
METHOD FOR BONDING CERAMICS WITH METAL
Yoshiteru Hamano, Osaka, Japan, assignor to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Mar. 30, 1970, Ser. No. 23,701

Claims priority, application Japan, Apr. 8, 1969, 44-27452

Int. Cl. B23k 31/02

U.S. Cl. 228-122



1. A method for bonding ceramic material with metal material comprising the steps of forming a thin metallic film on the surface of a ceramic material, inserting at least one metal body deformably shaped between said metallic film on the ceramic material and a metal material to be bonded therewith, and bonding a plurality of spaced contact points on either side of said metal body to the respective materials by firing wherein said at least one metal body is shaped as a coil having a plurality of crests which constitute said contact points.

3,897,625

METHOD FOR THE PRODUCTION OF FIELD EFFECT TRANSISTORS BY THE APPLICATION OF SELECTIVE GETTERING

Jenő Tihanyi, Neuried, and Heinrich Schloetterer, Putzbrunn-Solalinden, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Mar. 28, 1974, Ser. No. 455,589

Claims priority, application Germany, Mar. 30, 1973, 316118

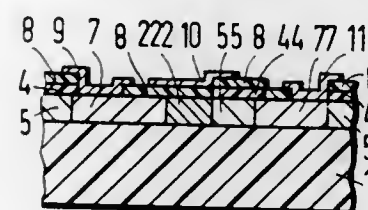
Int. Cl. B01j 17/00

U.S. Cl. 29-571

15 Claims

1. A process for making a field effect transistor having a short channel length which includes providing a layer of silicon doped with an impurity which can be gettered, coating the surface thereof with a protective covering, etching selected portions of the protective covering away to leave certain exposed areas, covering the exposed areas with a layer of gettering material, thereby gettering the region below the gettering layer to reduce the doping concentration in such regions, removing portions of the gettering layer above the spaced low dopant regions while leaving a portion of the

remaining protective covering and a portion of the gettering layer lying immediately adjacent the remaining protective covering, diffusing a dopant of the opposite impurity type into the said low dopant regions to form source and drain regions respectively, removing the remaining protective covering while leaving the remaining gettering layer, covering the



source and drain regions, the high doped region and the remaining gettering layer with an insulating layer, forming electrodes through said insulating layer to said source and drain regions, and forming a gate electrode on said insulating layer above medium doped region between said source and drain regions.

3,897,626

METHOD OF MANUFACTURING A FULL CAPACITY MONOLITHIC MEMORY UTILIZING DEFECTIVE STORAGE CELLS

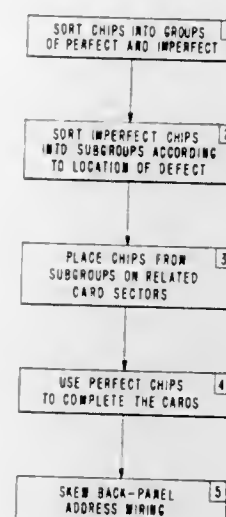
William F. Beausoleil, Hopewell Junction, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 156,637, June 25, 1971, Pat. No. 3,735,368. This application Feb. 20, 1973, Ser. No. 334,181 Claims priority, application Australia, June 26, 1972, 43907/72; Belgium, June 23, 1972, 119120; United Kingdom, June 23, 1972, 4117/72; Canada, June 22, 1972, 145385; France, June 20, 1972, 72.22688; Germany, June 23, 1972, 2230759; Italy, Mar. 24, 1972, 22326/72; Japan, Apr. 19, 1972, 47-38804; Netherlands, June 9, 1972, 7207823; Switzerland, June 13, 1972, 8817/72; United Kingdom, Apr. 5, 1972, 15560/72

Int. Cl. H01L 21/70, 21/98; B01J 17/00

U.S. Cl. 29-574

4 Claims



1. In a method of manufacturing a monolithic memory of the type which is constructed of chips containing a plurality of addressable memory cells, said method utilizing imperfect chips, the steps of:

sorting from said chips a first group of perfect chips and a second group of imperfect chips; sorting from said second group a number of subgroups each consisting of chips having imperfections localized within one known logical chip-sector; arranging in said memory at least one chip from at least one of said subgroups in such a manner that the address of the location within said memory of said one chip bears a known relation to the location on the chip of the imperfect chip-sector of said one chip; and

wiring said memory in such a manner that, when a word is addressed which contains a bit of data to be read from a memory cell in the imperfect sector of said one of said chips, the address of said word may be decoded to indicate which bit in said word is read from said imperfect chip-sector.

3,897,627

METHOD FOR MANUFACTURING SEMICONDUCTOR DEVICES

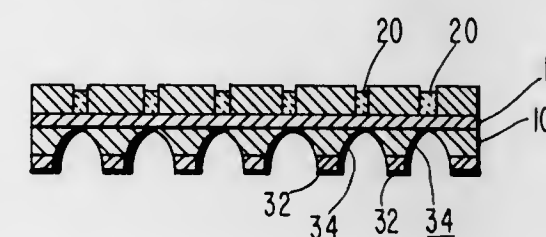
Jerome Barnard Klatskin, Princeton Junction, N.J., assignor to RCA Corporation, New York, N.Y.

Filed June 28, 1974, Ser. No. 484,084

Int. Cl. B01J 17/00

U.S. Cl. 29-578

3 Claims



1. A method of manufacturing semiconductor devices comprising the following steps:

a. depositing a first metal film on one side of a wafer of semiconductor material having opposed sides;
b. forming on said first metal film intersecting strips of a masking material to define device region boundaries;
c. applying a metal layer to said first metal film within said boundaries of each device region;
d. removing portions of the other side of said semiconductor wafer in order to form an array of semiconductor devices, each device being located within an area on said other side which is subtended by the boundaries of a corresponding device region;
e. separating the devices from the array along the strips of masking material to obtain a plurality of individual semiconductor devices.

3,897,628

METHOD OF FORMING A THIN PIEZOELECTRIC BODY METALLICALLY BONDED TO A PROPAGATION MEDIUM CRYSTAL

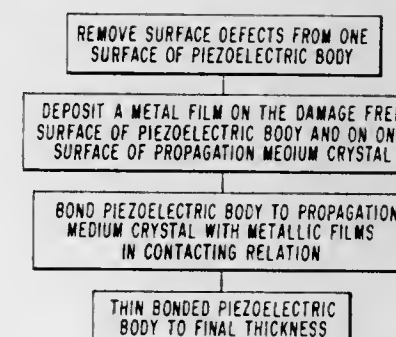
Joseph J. Hanak, Trenton, N.J., and David Michael Stevenson, Topsfield, Mass., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 19, 1973, Ser. No. 417,386

Int. Cl. B01J 17/00

U.S. Cl. 29-580

7 Claims



1. A method of forming a thin body of piezoelectric material bonded to a propagation medium crystal while maintaining the bulk properties of said piezoelectric material comprising the steps of:

a. providing a body of piezoelectric material, said body having surface defects in at least one surface,

b. polishing said one surface of said piezoelectric body until substantially all surface defects are removed,
c. depositing a metallic film on said polished surface of said piezoelectric body and on one surface of said propagation medium crystal, then
d. bonding said metallized surface of said piezoelectric body to said metallized surface of said propagation medium crystal, and then
e. thinning said piezoelectric body, said thinning including ion beam milling.

3,897,629

BLADE FOR A HAIR-CUTTING DEVICE

Christa Liedtke, Essen, Germany, assignor to Dieter W. Liedtke, Essen, Germany

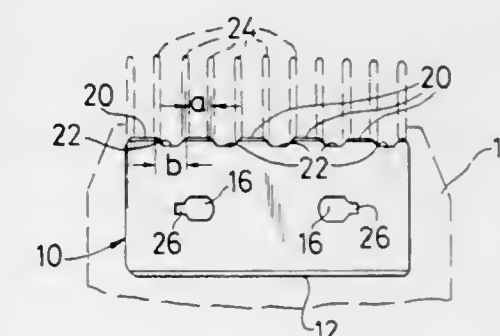
Filed June 10, 1974, Ser. No. 477,953

Claims priority, application Germany, June 12, 1973, 2329708

Int. Cl. B26B 21/08

U.S. Cl. 30-30

13 Claims



1. A blade in combination with a hair-cutting device of the kind having a row of teeth adapted to lie adjacent one longitudinal edge of the blade, said blade having at least one longitudinal edge comprising cutting portions and noncutting portions alternately spaced along the length of said one longitudinal edge, the width of the noncutting portions of the blade being substantially equal to the distance between two teeth of said row of teeth, the blade being disposed in said hair-cutting device so that the noncutting portions and cutting portions of said longitudinal edge are in alignment with the gaps between the teeth.

3,897,630

DOUBLE CAM DRIVE FOR A HEDGE TRIMMER HAVING TWO RECIPROCATING CUTTING BLADES

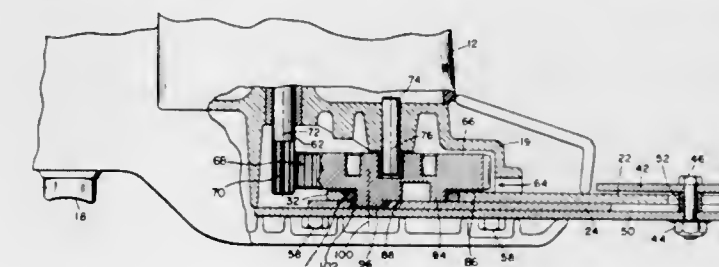
Richard Warmath Glover, Joppa, and Edward Joseph Oldewurtel, Columbia, both of Md., assignors to The Black and Decker Manufacturing Company, Towson, Md.

Filed Apr. 24, 1974, Ser. No. 463,749

Int. Cl. B26b 19/02

U.S. Cl. 30-220

11 Claims



10. In a portable electric hedge trimmer including a housing, electric motor means within said housing, an output shaft driven by said motor, means for supplying energy to said motor, cutter means having two oppositely reciprocated cutting elements and a coupling system for producing reciprocation of said cutting elements upon rotation of said output shaft, the improvement comprising a rotary member driven

about a first axis by said output shaft; first cam means mounted on said rotary member for eccentric movement about said first axis upon rotation of said rotary member; and second cam means mounted on said first cam means for eccentric motion about said first axis upon rotation of said rotary member; said second cam means having a periphery entirely contained within the periphery of said first cam means.

3,897,631

MEANS FOR RETAINING DENTAL INSTRUMENTS WITH CORDS CONNECTED THERETO

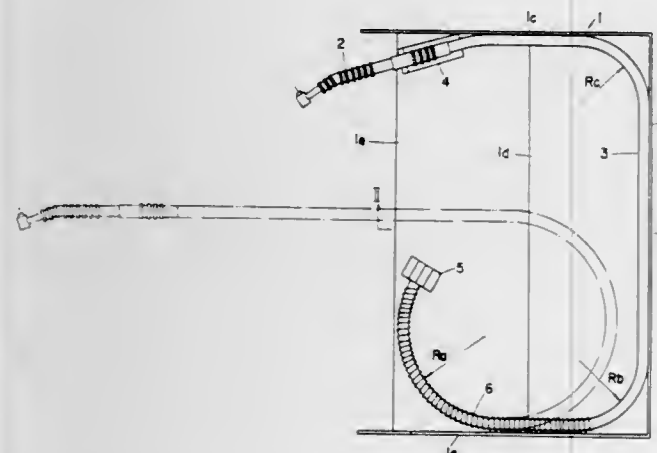
Hiroshi Murata, 4-1-18 Minami-cho, Warabi, Saitama Prefecture, Japan

Filed Jan. 21, 1974, Ser. No. 435,291

Int. Cl. A61c 19/02

U.S. Cl. 32-22

9 Claims



1. Means for retaining dental instruments comprising in combination:

a substantially rectangular-shaped horizontally-oriented housing structure having at least one bottom wall means and at least two side walls upstanding from said bottom wall means, said housing structure having side opening means for providing ingress and egress to and from said housing structure;

at least one elongated flexible bendable cord means having a rearward fixed portion and a forward free portion, the innermost end of said rearward portion secured to the internal side of said bottom wall means;

a coiled spring member encircling said rearward fixed portion of said elongated flexible bendable cord means; said elongated flexible bendable cord means adapted to be stored in a compact coiled manner within said housing structure and adapted to be inserted in and withdrawn from the stored position via said side opening means; and a support member mounted in said housing structure for supporting said forward free portion of said elongated flexible bendable cord means.

3,897,632

DENTAL ARTICULATOR

Richard A. Beu, Eggertsville, N.Y., assignor to Hanau Engineering Company, Buffalo, N.Y.

Filed Mar. 1, 1974, Ser. No. 447,292

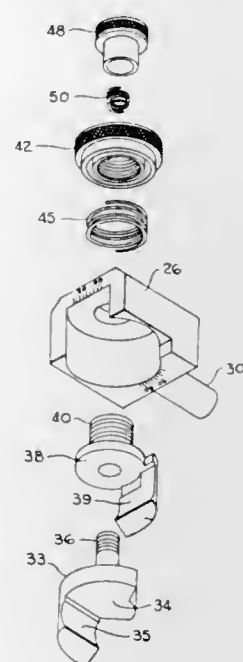
Int. Cl. A61C 11/00

U.S. Cl. 32-32

9 Claims

1. In a dental articulator, a lower member and an upper member, a pair of laterally spaced hinge joints engaging between said lower and upper members, each of said hinge joints including a condylar ball carried by said lower member and an upper support member, said upper support member being rotatably adjustable relative to said upper member on an axis extending in a horizontal transverse direction, superior, posterior and medio-lateral guide surface members carried by said support member, said superior and one of said other two guide surface members being jointly rotatably adjustable on an axis

through the center of said condylar ball and perpendicular to said superior guide surface, and the remaining guide surface member being adjustable independently of said superior and



3,897,633

DRAFTSMAN'S AID FOR PREPARING AXONOMETRIC DRAWINGS AND PROJECTIONS

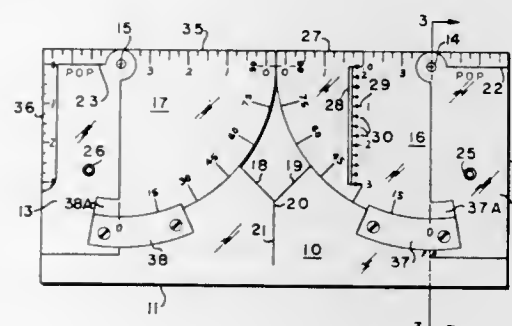
Minton E. Whitt, P.O. Box 558, Farmers, Ky. 40319

Filed Jan. 4, 1974, Ser. No. 430,722

Int. Cl. B43L 13/14

U.S. Cl. 33-77

5 Claims



1. A draftsman's aid comprising: a rigid, flat member having a straight edge along its lower portion and formed along its upper portion with a central notch having symmetrically disposed upwardly inclined relatively short straight edges with right and left arcuate edges extending downwardly from the respective ends of said short edges, upwardly extending right and left support arms affixed to said flat member along its side portions and disposed in a plane above the plane of said flat member, right and left protractors pivotally mounted upon the upper ends of said arms and adapted to revolve in the plane of said flat member and along the arcuate edges thereof, said protractors being mounted in confronting spaced relation in proximity to each other and having scaled straight upper edges along which lines may be drawn representative of the settings of said protractors, and at least one of said protractors having a Y-axis slot therethrough located normally to the straight upper edge of the same protractor whereby markings may be made through said slot upon a worksheet underlying said flat member and which are representative of the selected setting of the slot-equipped protractor.

3,897,634

PRESS BRAKE AID TOOL

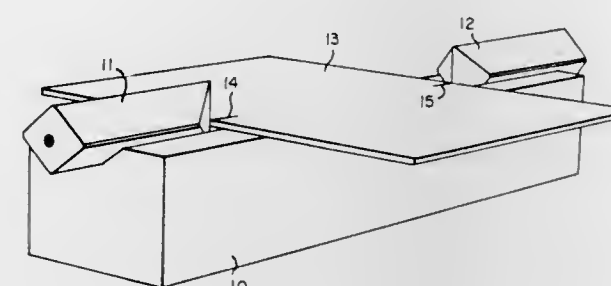
Joseph L. Gagner, P.O. Box 1406, Los Gatos, Calif. 95030

Filed Apr. 22, 1974, Ser. No. 463,119

Int. Cl. G01B 11/27

U.S. Cl. 33-180 R

3 Claims U.S. Cl. 33-203.13



1. Work locating devices for use on a press brake to facilitate positioning of a flat or shell-like workpiece on the fixed die under the movable die of the press brake, said workpiece having an indicia which is to be located in a predetermined orientation with respect to said movable die, the improvement comprising a pair of guide members, each of said members having a pair of faces at one end thereof, said faces forming a wedge-shape with the apex thereof being centrally located on the member, said members being supported on said fixed die on opposite sides of said workpiece so that the apex of one of said members is opposite one end of the indicia on the workpiece and the apex of the other of said members is opposite the other end of the indicia on the workpiece so that the indicia is aligned in predetermined orientation with respect to said movable die.

3,897,635

INSTRUMENTS FACILITATING THE PLOTTING OF A COURSE

Karl Gunnar Magnus Perén, Saltsjöbaden, and Stig Åke Gösta Svensson, Södertälje, both of Sweden, assignors to Malix AB, Saltsjöbaden, Sweden

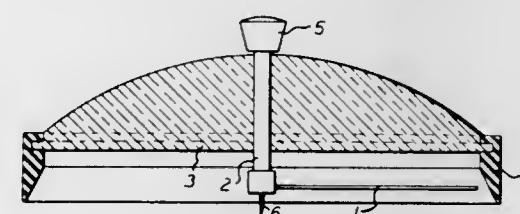
Filed June 7, 1974, Ser. No. 477,337

Claims priority, application Sweden, June 19, 1973, 7308598

Int. Cl. B43L 9/08

U.S. Cl. 33-189

8 Claims



1. An instrument facilitating the plotting of a course from a given point on a chart, a map or the like, comprising a pointer assembly temporarily fixable at and rotatable about said given point into a direction coinciding with the desired course, said pointed assembly comprising a pointer mounted below a transparent graduated lens, characterized in that the pointer is attached to a pin rotatably mounted in a central bore in the lens which is formed as a convex lens, and that the lens is supported by a peripheral ring defining underneath said lens a space for the pointer and consisting at least partly of rubber or like material preventing sliding movement of the instrument on the chart or map, said peripheral support ring having a downwardly tapering cross-section to form a narrow lower edge for engaging the chart or map.

3,897,636

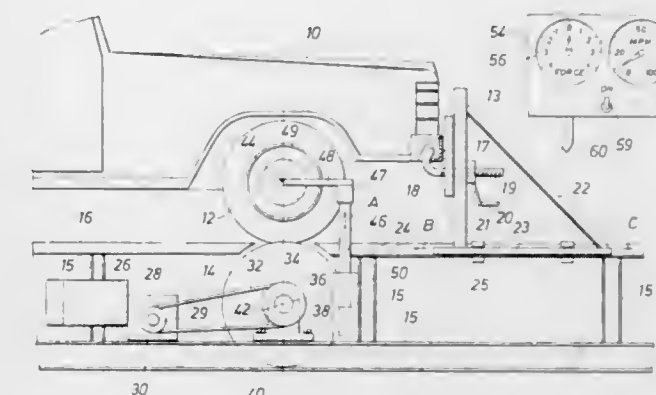
WHEEL ALIGNMENT METHOD AND APPARATUS

Joseph V. Leblanc, 102 N. Delmont East, Conroe, Tex. 77301

Filed Nov. 14, 1973, Ser. No. 415,518

Int. Cl. G01b 7/30

13 Claims



1. A method for paralleling the track of the front wheels of a motor vehicle at highway speeds, comprising the steps of orienting the motor vehicle on a horizontal surface, placing the front wheels of the motor vehicle in contact with a pair of spaced drums adapted for common limited lateral movement on a drive shaft, said drums adapted for common lateral movement by means of a non-extensible connecting means holding said drums in a spaced relationship, adjusting the caster of the front wheels to a common value, aligning the axis of the front wheels vertically over the axis of said drive shaft, rotating said spaced pair of drums together on said drive shaft for driving the front wheels at an rpm equal to average highway speed, determining any condition of divergence of the track of the front wheels from a parallel relationship at said highway speed by determining the tension or compression forces exerted on said connecting means by said spaced drums as a result of side thrust forces excited by said wheels at said highway speed, and adjusting the relative track of the front wheels to a parallel relationship while the wheels are rotating at said highway speed.

3,897,637

LASER LEVEL AND SQUARE

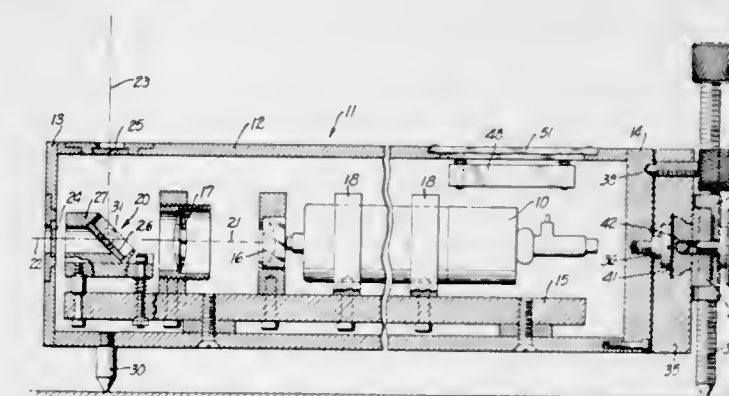
Robert Genho, P.O. Box 3308, Granada Hills, Calif. 91344

Filed Mar. 18, 1974, Ser. No. 451,733

Int. Cl. G02b 7/14; G01b 11/26

U.S. Cl. 33-227

11 Claims



1. In a building level, the combination of: a housing; a laser mounted in said housing; first means for supporting said housing on a surface; second means for simultaneously directing two beams of said laser from said housing along two perpendicular axes;

said first means including first, second and third points carried on said housing, with each of said first and second points including threaded means interconnecting the point and housing for movement of the point relative to the housing for leveling said housing;
a first block mounted on said housing with said first and second points threadedly mounted in said first block substantially parallel to each other; and
means for translating said first block relative to said housing.

3,897,638

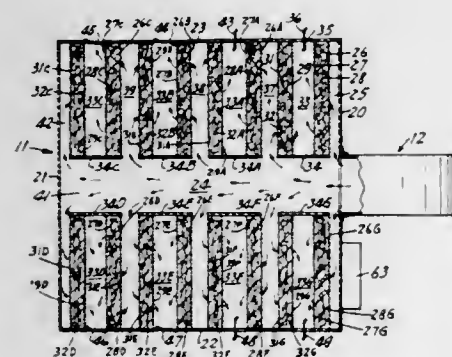
SEQUENCE BATCH DRYING METHOD

Lowell J. Lenz, New Highway 29 North, Alexandria, Minn. 56308

Division of Ser. No. 323,915, Jan. 15, 1973, Pat. No. 3,837,088. This application July 17, 1974, Ser. No. 489,260
Int. Cl.² F26B 7/00, 3/00

U.S. Cl. 34-13

13 Claims



1. A method of drying particulate material in a chamber comprising: storing particulate material in a first column in the chamber, storing additional particulate material in a second column in the chamber removed from said first column; directing hot air to said chamber, permitting sequential flow of hot air through substantially only said first column and then through substantially only said second column to dry the particulate material in said columns, terminating the flow of hot air to said chamber, and subjecting said first and second columns to cool air to decrease the temperature of the particulate material in said columns.

3,897,639

VEHICLE FOR UNDERWATER EXCAVATION BENEATH A STRUCTURE

Frode Johan Hansen, Kingswood, England, assignor to Redpath Dorman Long (North Sea) Limited, Bedford, England
Division of Ser. No. 223,590, Feb. 4, 1972, Pat. No. 3,783,626.

This application June 25, 1973, Ser. No. 373,241
Claims priority, application United Kingdom, Feb. 8, 1971, 4191/71

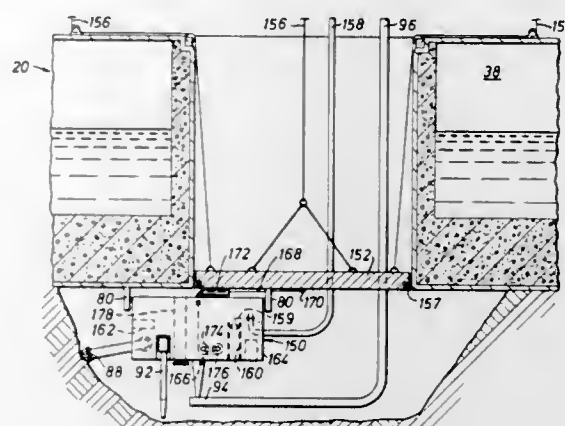
Int. Cl.² E02F 3/88; E02D 25/00

U.S. Cl. 37-56

5 Claims

1. A vehicle for excavating under a structure being founded on a subaqueous bed, said structure having a vertical shaft, the vehicle comprising means for providing positive buoyancy, means enabling the vehicle to contact and move about on an undersurface of the structure, and means for supporting excavating equipment, in combination with a pontoon mounted for movement within said shaft for moving the vehicle into a position from which it can move into contact with said undersurface, said pontoon comprising means to contact the vehicle from above, the vehicle and pontoon being adapted to be

submerged together and to move vertically while submerged in said shaft in said structure, the pontoon having means for



sealing the space between its periphery and the wall of the shaft.

3,897,640

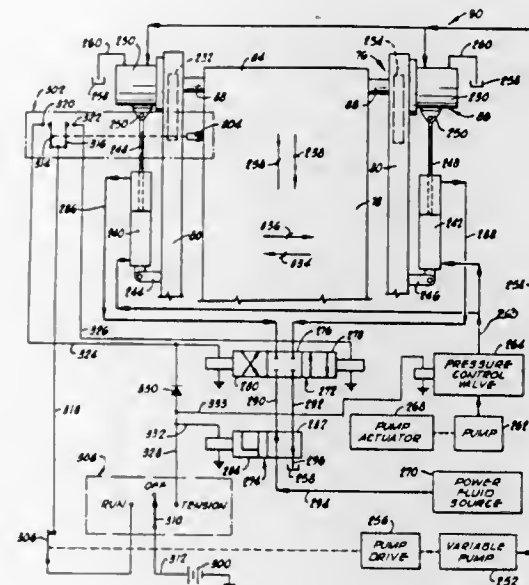
EXCAVATOR, CONVEYOR AND CONVEYOR CONTROL APPARATUS

George W. Swisher, Jr., and Autho Hale, both of Oklahoma City, Okla., assignors to CMI Corporation, Oklahoma City, Okla.

Division of Ser. No. 142,725, May 12, 1971, Pat. No. 3,778,912. This application Sept. 20, 1973, Ser. No. 398,839
Int. Cl. E02f 7/02; B65g 15/64, 23/44

U.S. Cl. 37-110

10 Claims



directly engaging said adapter nose end surface in load transmitting relation thereto.

3,897,643

INTEGRATED HEATER ELEMENT ARRAY AND DRIVE MATRIX

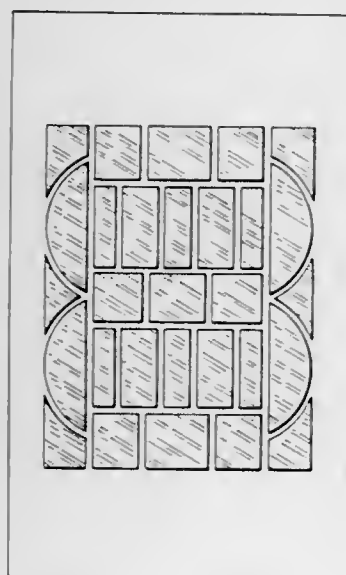
Marvin L. Morris, Jr., Dallas; Hermon L. Pope, Jr., Houston, and Edward M. Ruggiero, Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 848,564, Aug. 8, 1969, Pat. No. 3,631,459. This application Oct. 28, 1971, Ser. No. 193,445. The portion of the term of this patent subsequent to Dec. 28, 1988, has been disclaimed.

Int. Cl. G09f 11/00

U.S. Cl. 40—28 C

3 Claims



1. A thermal display comprising:

- a. an insulating substrate;
- b. a semiconductor wafer having one face mounted on said insulating substrate by an insulating adhesive, said semiconductor wafer comprising a plurality of physically separated wafer parts forming an array, said wafer parts respectively comprising heat dissipative elements of different heights and widths positioned at said one face to provide overlapping boundaries between adjacent elements in diagonal and curved line directions, said heat dissipative elements being electrically and thermally isolated from each other, said wafer parts being formed in a first area of said semiconductor wafer;
- c. means coupled to said heat dissipative elements for selectively energizing said elements;
- d. a plurality of circuit elements formed on said one face in a second spaced area of said semiconductor wafer, the number of said plurality of circuit elements being at least as large as the number of said plurality of heat dissipative elements, said second area having P-N junctions which electrically isolate said plurality of circuit elements from one another through the semiconductor material, said second area of said semiconductor wafer being integral throughout;
- e. conductive means located between said one face and said insulating substrate electrically interconnecting said heat dissipative elements and said plurality of circuit elements, said second area being larger than said first area and the number of said plurality of circuit elements being larger than the number of said plurality of heat dissipative elements, said conductive means comprising diffused conductive tunnels in said one face of said semiconductor wafer between said first and second areas of said semiconductor wafer; and
- f. thermally sensitive means disposed near the opposite face of said semiconductor wafer and thermally coupled to said array of wafer parts.

3,897,644

CARD REGISTER

Heiko Ippen, Dusseldorf, Germany, assignor to Arlac-Werk Heiko Ippen, Hamburg, Germany

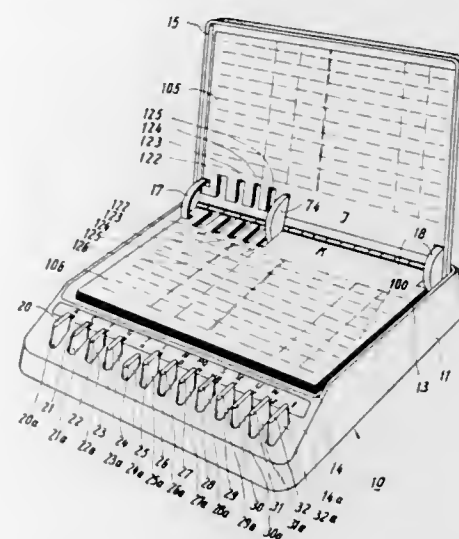
Filed Aug. 1, 1973, Ser. No. 384,615

Claims priority, application Germany, Aug. 9, 1972, 7229538

Int. Cl. B42f 17/34

U.S. Cl. 40—104.01

1 Claim



1. An improvement in a memorandum index comprising a housing having a box-shaped bottom part and a rectangular dish-shaped depression in said bottom part for matingly receiving a rectangular stack of loose sheets or cards, said cards provided with identification marks, each said card being cut along one of the edges in the form of an index, said bottom part having a front portion and a rear portion, lateral guide means mounted at the corners of the rear portion of said bottom part for pivotally mounting the stack of cards, a cover for covering said dish-shaped depression, means for pivotally mounting said cover along the rear transverse portion of said bottom part, a plurality of elongated two-armed levers longitudinally mounted in said bottom part for engaging the cards and having a key body engaging portion at one end extending through cut-outs formed in the forward portion of said bottom part and engaging means formed at the other end, means for pivoting each of said two-armed levers at a mid-portion thereof, and card pivot members contacting said engaging means of said two-armed levers mounted in said means for pivotally mounting said cover so that, by actuation, said key body engaging portion of each said two-armed levers pivots the pivot member corresponding to that two-armed lever and a selected card can be transferred with those cards above it and with the cover into a vertical position with a cover aperture angle of more than 90°, to improvement wherein said engaging means of each of said two-armed levers comprises a bent tongue-shaped end portion extending obliquely and upwardly toward each of said pivot members so as to serve as a braking and locking part and an inclined guide portion extending upwardly in a direction opposite to that of said tongue-shaped end portion, and each said card pivot member comprises a disc-shaped pivot body mounted eccentrically on said means for pivoting said cover, said disc-shaped pivot body comprising a molded body having four lateral side edges, a bearing formed at the intersection of a first one and a second one of said lateral side edge arranged at right angles to each other for receiving said means for pivoting said cover, a third lateral side edge comprising a circular segment connected to said second side edge via an arcuate portion, and a fourth lateral side edge shorter than said second lateral side edge connected at one end to said third lateral side edge and at the opposite end to said first lateral side edge, said circular portion of said third lateral side edge obliquely rising toward said first lateral side edge, wherein by rotating said two-armed lever by pressing said key body engaging portion, the tongue-shaped end portion of the engaging means pivots the respec-

tive pivot body by contact with the circular portion of the third lateral side edge, and thereby raising the respective card and cards thereabove along with the cover and a closure key for closing said cover having a two-armed lever with a key body at one end extending through a further cut-out in said bottom part.

3,897,645

COMPOSITE THREE DIMENSIONAL PICTURE

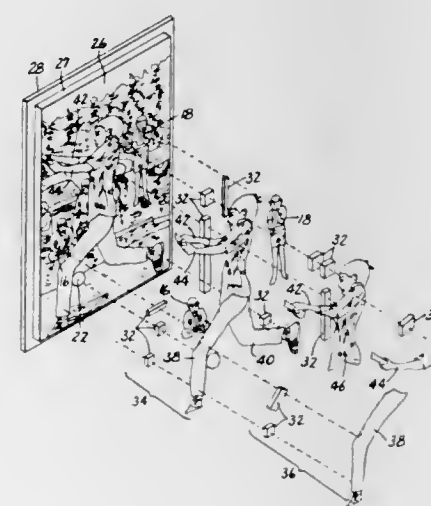
Stuart R. Scheyer, Glencoe, Ill., assignor to Condecor Incorporated, Mundelein, Ill.

Division of Ser. No. 307,476, Nov. 17, 1972. This application Nov. 14, 1974, Ser. No. 523,655

Int. Cl. G09f 11/12

U.S. Cl. 40—160

4 Claims



1. A composite pictorial representation having a three dimensional effect comprising in combination:

- a relatively deep frame structure adapted to receive the composite pictorial representation therein;
- a backing material engageable with the rear portions of said frame structure;
- a composite pictorial representation attached to said backing material and adapted to be viewed from the front side of said frame structure, said composite pictorial representation comprising multiple copies of a picture for which the three dimensional effect is to be achieved, said picture having background, middle ground and foreground subject matter therein, one of said copies of said picture being attached to said backing material, another of said pictures being trimmed to have only middle ground subject matter remaining and still another of said pictures being trimmed so that only the foreground subject matter remains, said middle ground subject matter being attached in overlying spaced relation to said picture attached to said backing material, said foreground subject matter being attached to said attached middle ground subject matter in overlying spaced relation, and selected ones of said foreground and middle ground subject matter portions being individually bent to slopingly converge horizontally and vertically upon subadjacent portions to simulate the natural continuity of the subject matter of the picture and to produce a composite pictorial representation having said background, middle ground and foreground subject matter of said picture appearing in generally successively forwardly spaced relation to provide a visual three dimensional effect of the subject matter of said picture.

3,897,646

REACTOR APPARATUS

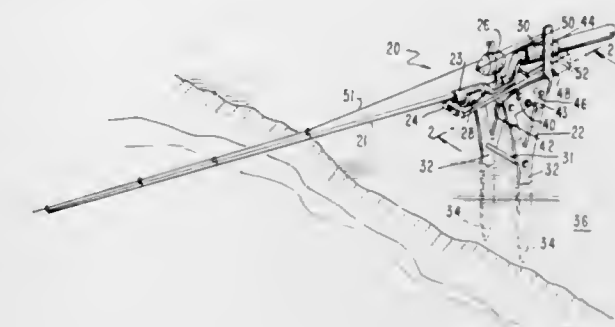
Wilford S. Sheets, 5323 W. Douglas, Wichita, Kans. 67209

Filed Nov. 12, 1973, Ser. No. 414,903

Int. Cl. A01k 97/10

U.S. Cl. 43—15

5 Claims



1. A reactor apparatus for automatically hooking a fish, comprising:

- a. a frame having a pair of sides in a spaced relation and a pair of legs integrally bound to said sides for in use supporting said frame on the terrain;
- b. a rod support means having a first transverse support member mounted between sides of said frame pivotally mounting a rod support member between said sides, a second transverse support member is rigidly mounted between sides of said frame in proximity to said first transverse support member, said rod support member including a first end and a second end and having a means for securing a rod and reel to said rod support member;
- c. means cooperating with said rod support member and said frame for biasing said rod support member towards a generally upright position;
- d. a trigger means having a first trigger member pivotally attached to one side of said frame and having means to engage a fishing line, said means to engage a fishing line is a notch in said trigger member wherein the fishing line from said reel lodges when said rod support member is held in an essentially transverse position with respect to said frame, a trigger pin member rigidly mounted on said rod support member, and extending therefrom, said trigger member having means removably engageable with said trigger pin member, said trigger member being constructed and adapted to in use be disengaged from said trigger pin member by tension in said fishing line, said trigger means being constructed and adapted to in use hold said rod support member in said essentially transverse position with respect to said frame with said trigger member engaged with said trigger pin member and upon disengagement of said trigger member from said trigger pin member releasing said rod support member to move toward said generally upright position; and
- e. a third transverse support member mounted crosswise between said frame sides and positioned lower than said first support member for engaging said rod support member to prevent said means for biasing said rod support member towards the upright position from situating said rod support member in an upright position.

3,897,647

BUCKTAIL FISHING LURE WITH DETACHABLE HOOK

Charles E. Black, Vine Creek Rd., Dogsboro, Del. 19939

Filed Dec. 17, 1973, Ser. No. 425,585

Int. Cl. A01k 85/00

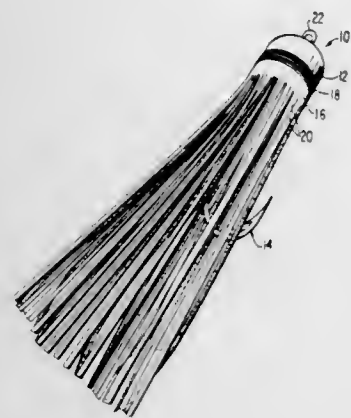
U.S. Cl. 43—42.38

6 Claims

1. A fishing lure comprising:

- a body,
- said body including a longitudinal bore,
- a detachable hook including a rodlike shank portion terminating in a hooked portion at one end,

said shank portion being insertibly received within said bore,
notch means carried by said shank,
spring biased detent plug means carried by said body and
engaged with said notch means to resist axial removal of
the hook shank portion from said longitudinal bore, and



said hook and said body including longitudinally aligned
interfitting means such that upon full insertion of said
hook shank portion into said body longitudinal bore,
engagement between said interfitting means of said hook
and said body maintain said hook portion at a predeter-
mined position relative to said body and said notch means
and said detent plug means in radial alignment.

3,897,648

DIVING PLANE FOR FISHING

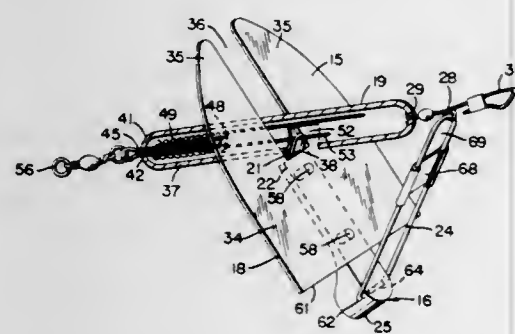
Joseph F. Neary, 1440 Cambridge, Novato, Calif. 94947

Filed Sept. 16, 1974, Ser. No. 506,207

Int. Cl. A01k 95/00

U.S. Cl. 43-43.13

4 Claims



1. A diving apparatus for use in troll fishing comprising: a
release member connectable serially between the leading and
trailing end of a fish line, a planar diving platform being
formed with a base area and a pair of flukes separated to form
a slot with a web formed by the base between said flukes, a
loop connector mounted to said platform at said web between
said flukes, said release member having a first end connect-
able to said leading end of said fish line and a second and
connectable to said trailing end of said fish line, means on said
release member located between said first and second ends to
releasably connect said member to said loop connector, a
spacer member pivotally connected to the first end of said
release member, and to said diving platform weight means
mounted on the bottom of the leading end of said platform,
and means within said release member for releasing the con-
nection to said loop when a predetermined pressure exists
between said first and second end of said release member.

3,897,649

FISHING DEVICE

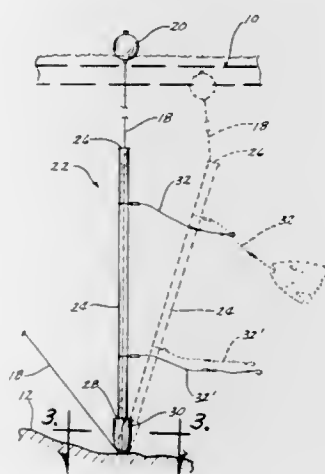
Aller J. Jorgensen, Highway 183, Alma, Nebr. 68920

Filed Jan. 31, 1974, Ser. No. 438,361

Int. Cl. A01k 91/00

U.S. Cl. 43-43.15

4 Claims



1. In combination with a fishing line having a bobber means
secured thereto,
a device for supporting a fishing hook above the bottom of
a body of water comprising an elongated hollow tube
having upper and lower ends, a weight secured to the
lower end of said hollow tube and having an opening
formed therein, at least one hook support secured to said
tube above the lower end thereof, said tube and weight
adapted to have the fishing line movably extending there-
through,
said fishing line movably extending upwardly through said
tube and weight, said bobber means being secured to said
upwardly extending portion of said fishing line whereby
said bobber means and said fishing line will maintain said
tube in a substantially upright position so that said hook
support is positioned above the bottom of the body of
water regardless of the depth of the water.

3,897,650

LURE CONTAINER

Robert G. Pilston, 714 E. 7th Ave., Durango, Colo. 81301

Filed May 8, 1974, Ser. No. 468,213

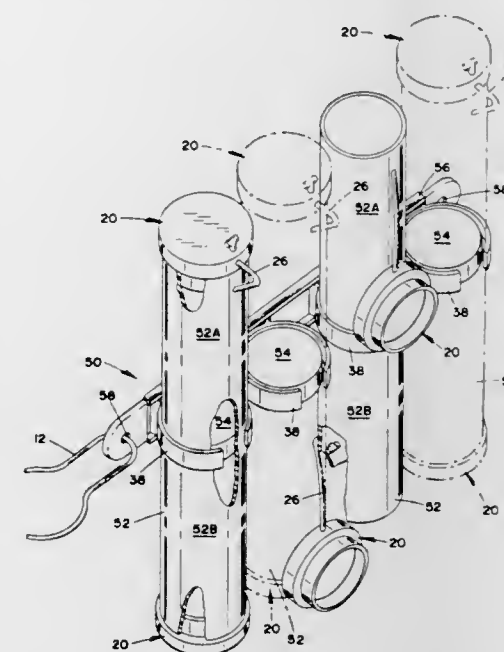
Int. Cl. A01k 97/06

U.S. Cl. 43-54.5 R

14 Claims

1. A lure container adapted to be dependently supported
from a fisherman to protect the fisherman from the hooks of
the lure and protect the lure from damage and snagging other
objects comprising an elongated tubular transparent body
having one end open and adapted to envelop and contain a
lure, a removable lid engageable with the open end of said
body to open and close the body and connector means for
securing the body to a fisherman including a rigid swivel

connector which permits rotation of said body from a first
position in which the open end thereof is up to a second



position in which the open end is down to permit loading and
removal of a lure from the body.

3,897,651

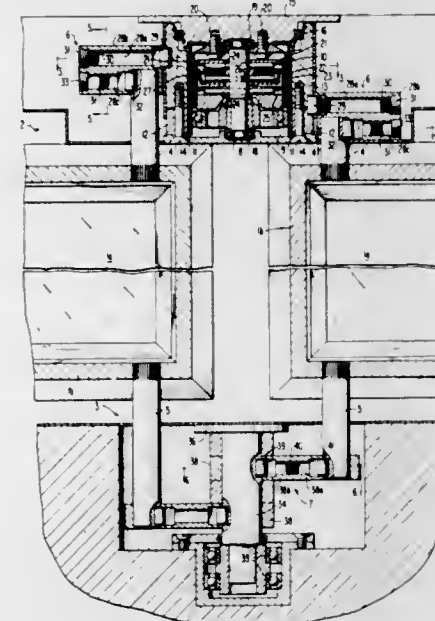
REVOLVING DOOR SPEED CONTROL AND HANGER
MECHANISMAmuel E. Sheckells, Evansville, Ind., assignor to International
Steel Company, Evansville, Ind.

Filed Oct. 19, 1973, Ser. No. 407,845

Int. Cl. E05D 15/02

U.S. Cl. 49-43

10 Claims



1. A revolving door installation comprising a plurality of
door wings positioned between the floor and ceiling of an
entranceway, each door wing including a peripheral frame
having vertical and horizontal portions, a first stub shaft
means rotatably mounted within a recess provided in the
ceiling, a second stub shaft means rotatably mounted within a
recess provided in the floor, upper ring means rotatably
mounted on said first stub shaft means above the ceiling and
lower ring means rotatably mounted on said second stub shaft
means below the floor in coaxial relationship therewith com-
prising a respective upper and lower ring for supporting each

door wing on said first and second stub shaft means, first
detent means connected between said upper ring and said first
stub shaft means and between said lower ring and said second
stub shaft means whereby under normal operating conditions
said upper and lower rings rotate with said first and second
stub shaft means, a first wing shaft having one end fixedly
connected to the horizontal top portion of said peripheral
frame and the other end extending upwardly and rotatably
connected in said upper ring, a second wing shaft having one
end fixedly connected to the horizontal bottom portion of said
peripheral frame and the other end extending downwardly and
rotatably connected in said lower ring, second detent means
connected between said upper ring and said first wing shaft
and between said lower ring and said second wing shaft
whereby under normal operating conditions said door wings
are held in operative radiating position and rotate with said
upper and lower rings, the combination of said first and sec-
ond detent means and the door wing operative under normal
operating condition to prevent rotation of said first stub shaft
means relative to said second stub shaft means, and said first
and second detent means being releasable when a predeter-
mined torque is applied to the door wings allowing the upper
and lower ring means to rotate relative to the first and second
stub shaft means and the door wings to pivot relative to the
upper and lower ring means whereby the door wings are col-
lapsed into compact parallelism.

3,897,652

LIFTING MECHANISM FOR A LARGE WINDOW

Peter Hess, Coburg, Germany, assignor to Metallwerk Max
Brose & Co., Coburg, Germany

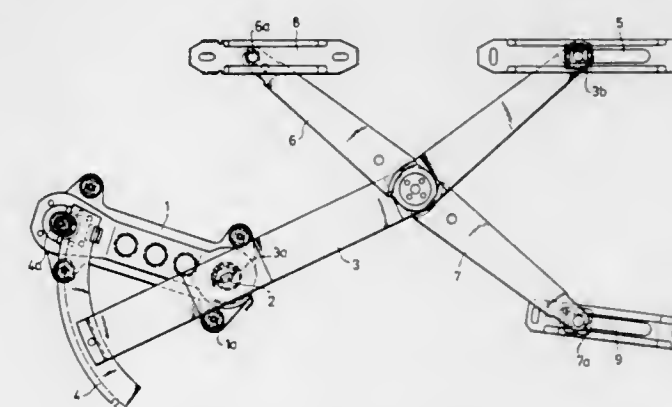
Filed Mar. 25, 1974, Ser. No. 454,603

Claims priority, application Germany, Apr. 26, 1973,
2321185

Int. Cl. E05F 11/44

U.S. Cl. 49-351

8 Claims



1. In a lifting mechanism for a window in the body of an
automotive vehicle, the mechanism including a mounting
member adapted to be mounted on said body, a lifting lever,
first pivot means securing said lever to said member for pivot-
ing movement about a first axis, first and second elongated
arms, second pivot means securing respective first longitudi-
nally terminal portions of said arms to said lever for joint
pivotal movement of said arms relative to said lever about a
second pivot axis spaced from said first axis, engaging means
on respective second longitudinally terminal portions of said
arms remote from said second axis and on a terminal portion
of said lever spaced from said second axis in a direction away
from said first axis, and a plurality of guide means respectively
associated with said engaging means for movably securing the
engaging means on said lever and on said first arm to said
window, and for movably securing the engaging means on said
second arm to said body, the improvement in said second
pivot means which comprises:

a. a projecting shoulder defining a circle on the first termi-
nal portion of each of said arms about said second axis,
1. said lever being formed with an opening therethrough
receiving said shoulders in conforming engagement for

rotation of said first terminal portions about said second axis,

2. said arms being offset from each other in the direction of said second axis and said shoulders entering said opening from opposite axial directions; and
- b. fastening means axially extending in said opening and fixedly connecting said first terminal portions, said fastening means including an axial projection on one first terminal portion remote from said second axis and engaging an opening in the other first terminal portion.

3,897,653

STABILIZER SYSTEM FOR A WINDOW PANEL

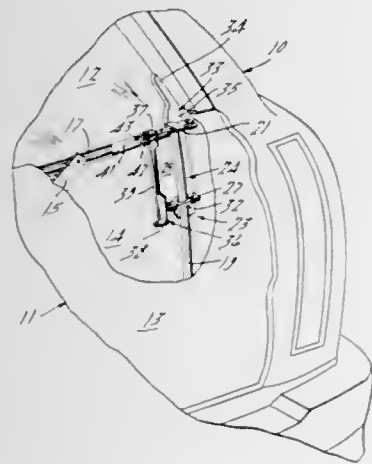
William P. Hayden, St. Clair Shores; Willard J. Hershey, Detroit, and Robert W. Huzzard, Livonia, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Sept. 13, 1974, Ser. No. 505,882

Int. Cl.² B60J 1/17; E05F 1/38

U.S. Cl. 49—375

11 Claims



1. A stabilizer system for a window panel adapted to be lowered into or raised out of a window well in a vehicle body structure by a window regulator mechanism,

the window regulator mechanism being coupled to the window panel through channel means affixed to a lower horizontal marginal portion of the window panel, the stabilizer system including spaced vertical guide rods positioned within the window well beneath the ends of the window panel,

and a stabilizer assembly slidable on each guide rod, each stabilizer assembly having spaced guide means bearing on the respective rod on which it is slidable to contact points spaced along the rod length,

wherein the improvement comprises:

each stabilizer assembly including a vertically elongated support bracket carrying a vertically extending glass run channel receiving a vertical edge of the window panel, and a vertical guide member on each support bracket having interlocking sliding engagement with the channel means,

upon the window panel being lowered each stabilizer assembly moving on its respective guide rod with the window panel to a stop position adjacent the bottom of the window well,

the window panel being further lowerable on the run channels a predetermined distance and maintained during such movement substantially centrally within the run channels by the guide members.

3,897,654

AUTOMOBILE WINDOW OPERATING MECHANISM

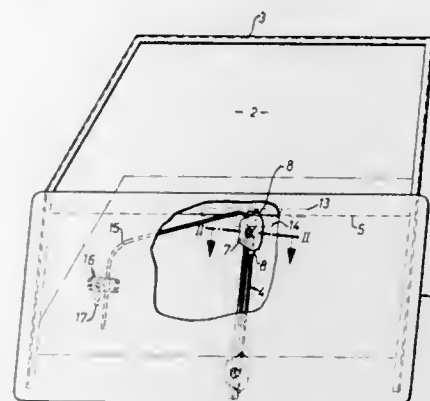
Herbert Kouth, Schoneck, and Hans Dauernheim, Sprendlingen, both of Germany, assignors to H. T. Golde GmbH, Frankfurt, Germany

Filed Mar. 4, 1974, Ser. No. 447,802

Int. Cl.² E05F 1/48

U.S. Cl. 49—352

3 Claims



1. A device for the connection of a flexible cable, of a cable window lifter rigid to push and pull movably guided in a guiding tube provided with a longitudinal slot, to a sliding or rolling carriage itself guided on a central guide bar, whereby the guide bar and the guiding tube are combined to form a unit, said sliding or rolling carriage being connected to a movable window pane, especially a window pane which can be lowered into the body of a motor vehicle, characterized by the fact that an opening 28 is provided in said carriage 7 connected to the window pane 2, an engaging piece secured to the cable and having a flange 21 extending through the opening 28, a moulded member 22 rigidly mounted on the flange 21, said moulded member having a transfer portion extending through the opening 28 dimensioned to have play at right angles to the cable but little clearance in the direction of the cable and a flange portion 29 which projects beyond the ends of the transfer portion and overlies the end edges of the opening whereby said connecting device compensates for slight misalignments in the cable window lifter.

3,897,655

SURFACE-GRINDING MACHINE

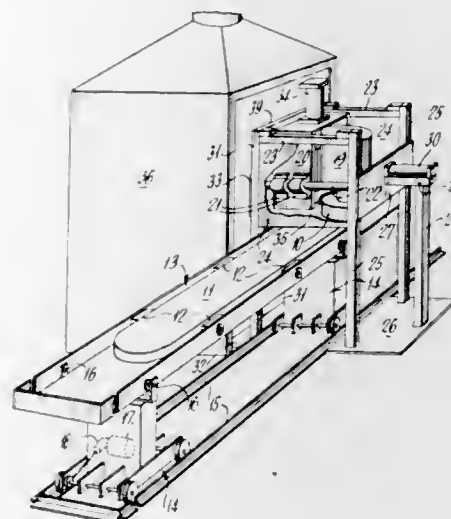
James Douglas Bain, Akron, N.Y., assignor to Amax Inc., New York, N.Y.

Filed May 24, 1974, Ser. No. 473,178

Int. Cl. B24b 7/00, 9/00

U.S. Cl. 51—56

13 Claims



1. A surface grinding machine comprising a work-station frame, horizontally oriented work-supporting means and means for horizontally moving the same with respect to said work-station frame, vertical slide and guide means positioned

by said frame above the path of movement of said work-supporting means, tool-holding means, rotary drive means on said slide means for rotary mounting and drive of said tool-holding means on a vertical axis and in downwardly facing orientation, counter-balance means for said slide means to offset the combined weight of said slide means and of the tool and drive elements carried thereby, and fluid-pressure operated means including a tool-feeding stroke for vertical positioning of the tool in respect of work mounted in said work-supporting means; said fluid-pressure operated means in its tool-feeding stroke connect including a regulated air supply to an accumulator, a throttle-valve connection of said accumulator to said fluid-pressure operated means, and check-valve means connected in shunt across said throttle-valve connection, said check-valve means blocking fluid flow to said fluid-pressure operated means and passing flow from said fluid-pressure operated means; the volume displacement within said fluid-pressure operated means, in reaction to surface undulation of the work, being so small compared to the available air volume in said accumulator, that the tool engages the work with substantially constant force for a range of surface undulations of the work.

3,897,656

MACHINE FOR MANUFACTURING OR TESTING THE TOOTH FLANKS OF INVOLUTE GEARS

Winfried Muller, Ettlingen, and Hans-Ulrich Bertz, Rastatt, both of Germany, assignors to Dr. Ing. Willy Hoffer, Karlsruhe, Germany

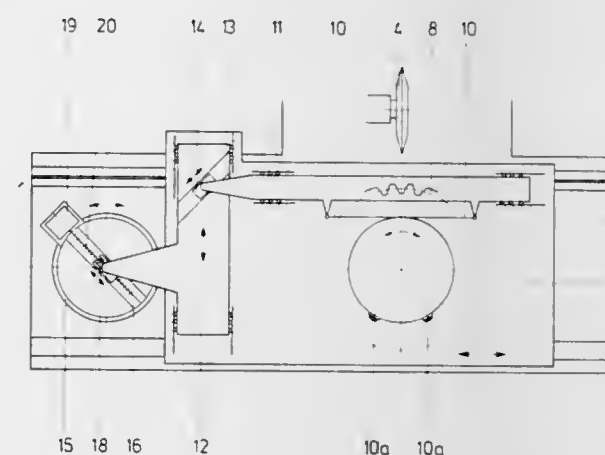
Filed Feb. 5, 1973, Ser. No. 329,856

Claims priority, application Germany, Feb. 8, 1972, 2205819; Feb. 8, 1972, 2205820; Feb. 8, 1972, 2205821

Int. Cl. B24b 5/00; B23b 5/02; G01b 5/20

U.S. Cl. 51—123 G

8 Claims



1. In a machine for operating on involute spur gears and helical gears wherein the work piece performs a rolling off action with respect to a tool, which rolling off motion is composed of a component of purely rotary motion and a component of purely rectilinear motion, first means for producing such motion comprising a machine stand, a table movable on said stand in a rectilinear direction relative to a tool; a work piece holder rotatably on said machine table for rotation about an axis fixed with respect to the table, and perpendicular to the direction of movement of the table and rectilinearly movable therewith, second means forming a track stationary with respect to the stand, a member movable in said track at a transverse angle with respect to the direction of movement of the table, third means operating directly on said member to impart movement to such member in said track, fourth means connecting said member to the table to produce longitudinal motion of the table in response to movement of the member, in the track, and fifth means responsive to the movement of the member in the track to impart turning movement to the work piece support.

3,897,657

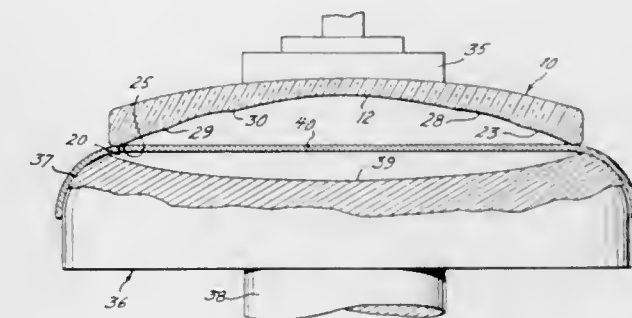
METHOD OF MANUFACTURING CONTACT LENSES AND APPARATUS THEREFOR

Joseph H. Smith, 1600 Wyoming Ave., Forty Fort, Pa. 18704
Continuation-in-part of Ser. Nos. 92,444, Nov. 24, 1970, abandoned, and Ser. No. 217,084, Jan. 12, 1972, abandoned, and Ser. No. 281,234, Aug. 16, 1972, Pat. No. 3,772,832. This application Sept. 13, 1973, Ser. No. 397,005

Int. Cl. B24b 1/00, 13/00

U.S. Cl. 51—125

9 Claims



1. In the method of manufacturing a contact lens wherein the concave lens side is provided with a central base curve, and a plurality of annular peripheral curves successively outwardly of each other and respectively of increased radius of curvature combining to form concentric annular meeting edges at their junctures, the steps which comprise: providing a generally convex lens working tool having a circular portion of diameter greater than the outermost juncture, said circular portion having a non-convex curvature, applying a polishing sheet in covering relation with said tool over said circular portion and the adjacent portion surrounding said circular portion, the radius of curvature of said sheet over said adjacent surrounding portion being less than that of the outermost peripheral curve, arranging said tool relative to said lens to engage the sheet region which is over said circular portion with said outermost juncture, effecting relative rotation between said lens and tool to smooth said outermost juncture, providing a second generally convex lens working tool having a circular portion of a diameter greater than the next outermost juncture, said circular portion of said second tool having a non-convex curvature, applying a second polishing sheet in covering relation with said second tool over the circular portion thereof and the adjacent portions surrounding said second tool circular portion, the radius of curvature of said second sheet over said adjacent portion of said second tool being less than that of the next outermost peripheral curve, arranging said second tool relative to said lens to engage the second sheet region which is over said central portion of said second tool with said next outermost juncture, and effecting relative rotation between said lens and said second tool to smooth said next outermost juncture.

7. Contact lens manufacturing apparatus for smoothing the annular juncture of peripheral curves, said apparatus comprising a holder for holding engagement with the convex side of a lens; and a generally convex lens working tool having a non-convex circular portion of a diameter greater than the outermost annular juncture, and a polishing sheet in covering relation with said tool over said circular portion and the portion adjacent to said circular portion, the radius of curvature of said sheet over said portion adjacent to said circular portion being less than that of the outermost peripheral curve, whereby relative rotation between said tool and lens with the latter engaging the sheet region over said circular portion effects smoothing of the outermost juncture.

3,897,658

METHOD AND APPARATUS FOR FINISHING WORKPIECES UNDER HIGH VIBRATING PRESSURE (TENTATIVE)

Hisamine Kobayashi, Nagoya, Japan, assignor to Shikishima Tipton Mfg. Co., Ltd., Nagoya, Japan

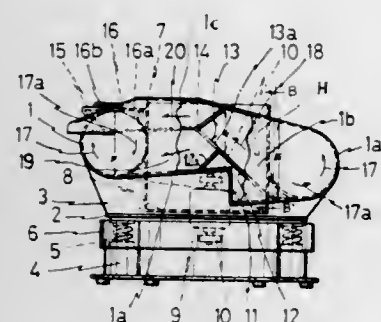
Filed Apr. 17, 1973, Ser. No. 351,966

Claims priority, application Japan, Apr. 17, 1972, 47-38474

Int. Cl. B24b 31/06

U.S. Cl. 51-163

9 Claims



1. An apparatus for vibrating finishing of workpieces under heavy compression force during vibration, comprising a substantially horizontally positioned circular annular vibratory finishing tub, a base, a plurality of springs on said base and supporting said tub thereon, vibrating means on said base having a drive means and a vertical shaft having eccentric weights thereon with one end connected to said drive means and other end connected to said tub, said tub being in the form of a hollow annulus having a mass separating portion and a finishing portion extending around the circumference of said tub from one end of the mass separating portion of the other end thereof, a stationary dam in the bottom thereof at the end of said finishing portion adjacent said other end of said mass separating portion, mass separating means in said means separating portion of said tub adjacent to and above the level of the top of said stationary dam, said tub having a charging opening in the top of said finishing portion adjacent said one end of said mass separating portion and a closure means on said tub for closing and charging opening, said finishing portion having an equal width throughout its circumferential length and having a depth at said charging opening and above said dam less than the depth adjacent the bottom of said dam, and the depth of said finishing portion increasing gradually from said charging opening to the bottom of said dam and from the top to the bottom of said dam.

3,897,659

ULTRASONIC-ACOUSTIC GRINDING WHEEL SETTING STATION FOR AUTOMATIC NUMERICALLY-CONTROLLED MACHINES

John J. Henry, Oak Ridge, Tenn., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Aug. 30, 1974, Ser. No. 501,899

Int. Cl. B24B 49/10

U.S. Cl. 51-165.71

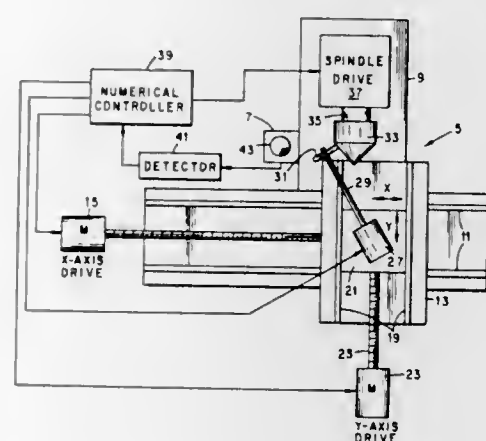
4 Claims

1. In an automatic grinding machine comprising a grinding wheel, means for positioning said grinding wheel over a programmed path relative to a workpiece from a reference position on said machine, a system for detecting contact between said grinding wheel and a contact member positioned at said reference position, comprising:

- a support member for displaceably carrying said contact member, said support being made of a material which readily transmits vibrations in the ultrasonic frequency range generated when said grinding wheel contacts said contact member;
- a holder member for fixedly mounting said support member at said reference position on said machine, said holder member being made of a material which attenuates the

transmission extraneous of ultrasonic vibrations there-through from said machine;

an ultrasonic acoustical transducer mechanically coupled to said support member for detecting ultrasonic acoustic vibrations transmitted through said support member from said contact member when said grinding wheel contacts said contact member and generating an AC output signal



having an amplitude proportional to the amplitude of the acoustic vibrations detected by said transducer; and a detector circuit means responsive to the AC output signal of said transducer for generating a DC control signal when the amplitude of the output signal of said transducer exceeds a preselected value indicative of a known contact force of said grinding wheel against said contact member.

3,897,660

APPARATUS FOR AUTOMATICALLY REMOVING FINS OF CASTINGS

Kenji Chijiwa, and Katsuo Shirahige, both of Chiba, Japan, assignors to Kenji Chijiwa, Chiba, Japan

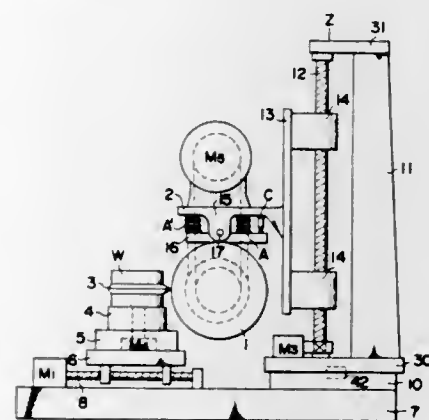
Filed Sept. 11, 1974, Ser. No. 504,930

Claims priority, application Japan, Sept. 17, 1973, 48-104671

Int. Cl. B24b 49/16

U.S. Cl. 51-165.77

9 Claims



1. An apparatus for automatically removing fins of castings characterized by comprising a first air spring means for resisting a component in the normal direction with respect to the hone grinding surface of the contact surface of a hone and work of the grinding resistance applied to the grinding hone, a second air spring means for resisting a component in the tangential direction, a means of feeding said two air spring means with desired air pressure set in response to the fin of the work, a first differential transformer for converting the displacement of said first air spring means to an electric signal, a second differential transformer for converting the displacement of said second air spring to an electric signal, a first motor means for controlling said work in the direction of said component in the normal direction and a second motor means

3,897,661

GEAR-TOOTH GRINDING METHOD AND MACHINE THEREFOR

Isamu Inatomi, and Hisasi Okuwa, both of Koga-machi, Japan, assignors to Seibu Denki Kogyo Kabushiki Kaisha, Koga-machi, Japan

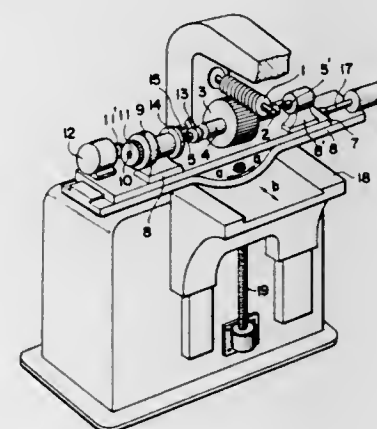
Continuation-in-part of Ser. No. 326,120, Jan. 23, 1973, abandoned. This application Dec. 20, 1974, Ser. No. 535,131

Claims priority, application Japan, Feb. 23, 1972, 47-18803; Apr. 24, 1972, 47-40340

Int. Cl. B24B 1/00, 5/00, 17/00

U.S. Cl. 51-287

1 Claim



1. A method of grinding work gears comprising the steps of: bringing the screw thread of an abrasive grinding worm into direct mesh with a rotatably supported work gear; setting a ratio of the reciprocating speed of said work gear to the rotational peripheral speed of the pitch circle of said work gear within the range of about 0.26 to 4; exerting a torque required for grinding to said work gear; rotating said abrasive grinding worm; and reciprocating said work gear relative to said abrasive grinding worm by a substantial breadth of said work gear relatively and continuously so that more than one reciprocation of said work gear relative to said worm gear is completed during one rotation of said work gear wherein a grinding path is produced on the tooth surface of the work gear in a direction oblique to the tooth thread of the work gear, and reciprocating the work gear relative to the abrasive grinding worm at a substantially constant speed continuously and relatively a number of times so that the tooth surface of the work gear is ground in a crosshatched pattern and finally into a smooth surface.

3,897,662

COORDINATED MODULAR BUILDING CONSTRUCTION

Miroslav Fencel, 59-28 57th Dr., Flushing, N.Y. 11378

Continuation-in-part of Ser. No. 369,562, June 13, 1973, abandoned, which is a continuation-in-part of Ser. No. 294,391, Oct. 12, 1972, abandoned, which is a

continuation-in-part of Ser. No. 289,935, Sept. 18, 1972, abandoned, which is a continuation-in-part of Ser. No. 143,547, May 14, 1971, abandoned. This application May 23, 1974, Ser. No. 472,925

Int. Cl. E04H 9/06; E04C 1/00

U.S. Cl. 52-79

17 Claims

1. A building comprising:
a. an assembly of modules, each module being a hollow, substantially rectangular body having a planar horizontal bottom closure, and a planar horizontal top closure, front end and back end, and planar vertical sidewalls,
b. said modules being arranged to provide a plurality of contiguous bays, each bay being of uniform width, and a plurality of contiguous stories, each story being of uniform height,

- c. said bays comprising a first bay including at least two front to back horizontally aligned and substantially abutting modules, said bays further comprising a second bay including at least one module disposed at the same level as said two modules of the first bay, in overlapping relation with respect to the first bay, said two modules of the first bay and said one module of the second bay forming a first of said stories,
- d. at least one of said bays including a module vertically stacked with respect to the module or modules of said first story with the side walls of the stacked units in vertical alignment and the stacked units overlapping and contiguous, forming a second of said stories,
- e. each module having a depth, MD, extending from its front end to its back end which is:

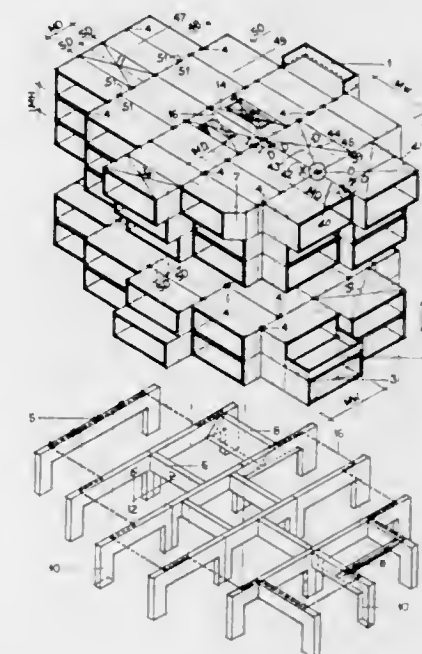
$$MD = n \times SD$$

wherein:

MD = modular depth,

n = a whole number 2,

SD = segmental depth which is at least 2 feet, whereby said modules each comprise at least two segmental depth units of depth SD,



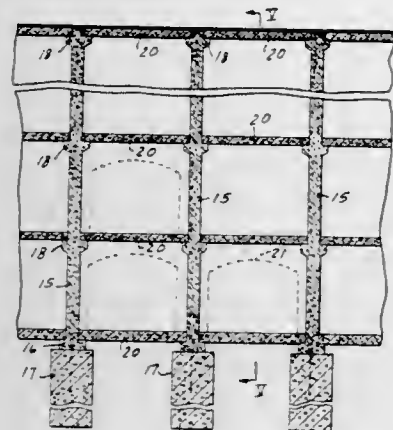
- f. the modules being positioned so that the parallel planes of each module defined by the front end, back end, and each segmental depth unit thereof, are disposed in parallel vertical, coordinating, planes spaced apart SD,
 - g. said modules being assembled so that the building includes at least one module which projects outwardly in the direction of its modular depth beyond an adjacent module by an amount which is:
- $$PD = m \times SD$$
- wherein:
- PD = projection depth,
 - m = a positive whole number less than the value of n for the projecting module,
 - SD = segmental depth,
 - h. each module including connecting means for securing of adjacent modules together, the connecting means of adjacent modules being in complementing relation for inter-connection thereof, to secure the modules together, the disposition of the connecting means being such that there are complementing connecting means for any selected assembly of the modules, as aforesaid, and
 - i. connectors cooperating with said connecting means securing the modules together.

3,897,663 CRYPT STRUCTURE

Michael F. Gaul, Chicago, Ill., assignor to Crypt Systems, Inc., Chicago, Ill.

Filed Feb. 14, 1973, Ser. No. 332,248
Int. Cl. E04h 1/04

U.S. Cl. 52—136



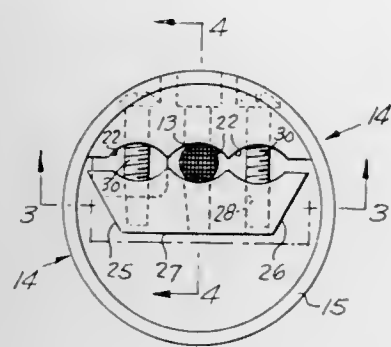
1. In combination in a building constituting a plurality of crypts, a footing, a plurality of vertically extending substantially identical prefabricated one piece walls fixedly secured at their bases to said footing, each of said walls integrally incorporating a plurality of horizontally extending lateral support surfaces, a plurality of equally dimensioned shelves each extending between a pair of walls and supported upon facing respective support surfaces with shelves between walls being vertically spaced to provide crypt openings facing the outside of the building, overhead interconnecting prefabricated roof slab members extending above and across a plurality of said walls and rigidly secured to each thereof, said building having other vertical walls extending perpendicular to at least two of said first-mentioned walls whereby said footing, vertical walls, shelves and interconnecting roof members provide a rigid structure integrating the building and the crypts.

3,897,664 GUY WIRE PROTECTOR

Stephen B. Bogese, II, Roanoke, Va., assignor to Virginia Plastics Company, Roanoke, Va.

Filed Nov. 2, 1973, Ser. No. 412,283
Int. Cl. E04H 12/20

U.S. Cl. 52—147



1. A guy wire protective assembly comprising a sleeve adapted to protectively receive a guy wire, a clamp block means within said sleeve, means securing said clamp block means in said sleeve, said sleeve and clamp block means being formed with a bolt aperture, a movable clamp member pivoted to said clamp block means and having a bolt-receiving aperture registrable with said bolt aperture in one position of said movable clamp member, said clamp member being at times rotatable to a substantially nonobstructing position relative to a guy wire received in said sleeve, and stop means limiting return rotation of said movable clamp member to said

one position, whereby a clamping bolt may be inserted through said bolt aperture into said bolt receiving aperture.

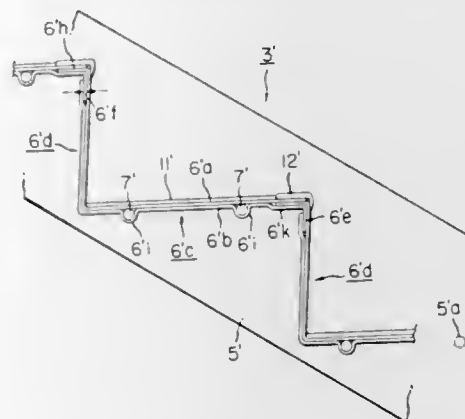
3,897,665 STEEL STAIR ASSEMBLY

Seibun Yokomori, 29-2 Hatagaya 1-chome, Shibuya-ku, Tokyo, Japan

Filed Sept. 3, 1974, Ser. No. 503,046
Int. Cl. E04f 11/00, 19/10

U.S. Cl. 52—188

5 Claims



1. A steel stair assembly comprising, a pair of plate type stringers arranged opposite to each other, and a plurality of L-shaped unitary individual stair units connected with each other and arranged between said stringers, each of said plurality of L-shaped individual stair units composed of at least two sheet steels bonded together and consisting of a tread portion and a riser portion in continuous form, wherein each of said plurality of stair units includes at least one steel rod close fit and positioned in at least one channel provide on the upper sheet or lower sheet or both of said bonded sheet steels substantially in the central portion of said tread portion, and wherein each of said L-shaped individual stair units further includes a downward bent portion provided at one end of the leg portion thereof, a receiving portion provided at the head portion thereof to receive the downward bent portion of the upper one of said plurality of stair units, and an upward bent portion extended from said receiving portion to cover from above one end of the leg portion of said upper stair unit.

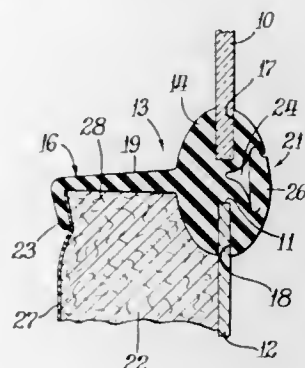
3,897,666 PANEL MOUNTING STRIP WITH INTEGRAL RETAINER

Randall D. McClure, Decatur, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 9, 1973, Ser. No. 404,310
Int. Cl. B60J 1/00

U.S. Cl. 52—400

3 Claims



1. In combination a panel, a frame, compressible insulating material, and panel mounting and insulation securing means for mounting said panel in a corresponding frame and securing said insulation material including

a. an elongated elastomeric strip including an elliptical body portion having a first longitudinally-extending panel-receiving groove disposed substantially along the longitudi-

dinal axis of said elliptical body portion and receiving said panel and a second longitudinally extending frame-receiving groove disposed opposite to and in line with said panel-receiving groove receiving said frame; and
b. insulation-securing means including cantilevered arm means extending longitudinally of said elastomeric strip substantially in a line with the transverse axis of said elliptical body portion, said cantilevered arm means including insulation-gripping means gripping said insulating material and securing it in position adjacent said frame, said gripping means including lip means for compressing said compressible insulating material against said frame, said lip means comprising a projection extending longitudinally along the distal end of said arm means, said projection being angled toward said frame-receiving groove and functioning to compress and secure said insulating material against said frame, and wherein said cantilevered arm means and insulation-gripping means are of integral one-piece construction with said elongated elastomeric strip.

3,897,667 ROOFING PANELS WITH JOINING MEANS

Robert L. Turek, Phoenix, Ariz., assignor to Evans Products Company, Portland, Oreg.

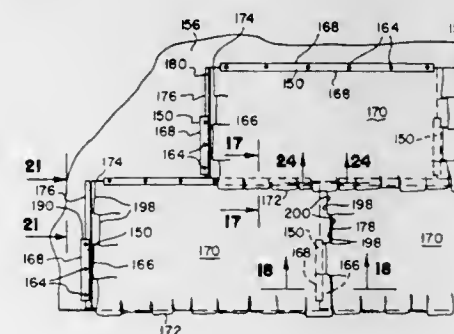
Division of Ser. No. 296,142, Oct. 10, 1972, abandoned, which is a continuation-in-part of Ser. No. 235,331, March 16, 1972.

This application June 17, 1974, Ser. No. 479,765

Int. Cl. E04D 1/34, 1/28, 1/20, 1/26

U.S. Cl. 52—546

7 Claims



1. A roofing panel and associated connecting means comprising in combination: a substantially rigid plastic foam body having normally upper and lower surfaces; said upper surface having a thin, weather resistant sheet bonded thereon having a roof surface simulating configuration; said lower surface being substantially flat and adapted to conform generally to roof sheathing or the like;

said panel having upper and lower longitudinal edges and first and second normally inclined edges disposed at opposite ends of said panel; said panel having said first inclined edge provided with a first ledge portion adapted to extend above and overlap the second inclined edge of an adjacent panel; the lower edge of said panel provided with a second ledge portion adapted to overlap and cover a respective upper edge of an adjacent panel; said panel at said first inclined edge and at said lower edge having a flange receiving groove, said groove being spaced from said lower surface of said panel so as to coincide with the bottoms of said first and second ledges, the thickness of said second inclined edge of an adjacent panel, and with the thickness of the upper edge of an adjacent panel;

and means for joining a plurality of said panels comprising a plurality of identically shaped elongated connecting means, each having a base portion adapted to be fixed contiguous to roof sheathing or the like upon which said lower surface of said panels are disposed, and a web portion extending upwardly from said base portion, and opposed flanges extending outwardly from the said upper part of said web portion; first ones of said connecting means having one of said opposed flanges engaged in said flange receiving grooves in the first inclined edge of each

panel, the other of said opposed flanges overlying said second inclined edge of an adjacent panel; second ones of said connecting means having one of said opposed flanges overlying an upper edge of each panel, the other one of said flanges being engaged in said flange receiving groove at said second edge of an adjacent panel.

3,897,668 WALL PARTITION ARRANGEMENT

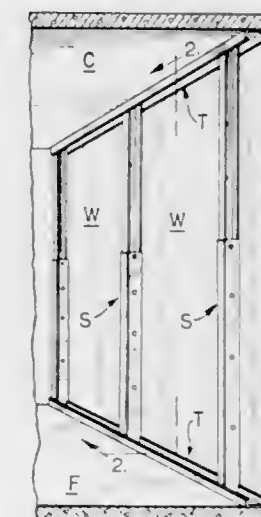
Thomas M. McDonnell, 11 N. Fourth Ave., Maywood, Ill. 60153

Filed Sept. 5, 1974, Ser. No. 503,289

Int. Cl. E04G 25/00; E04H 12/18

U.S. Cl. 52—632

4 Claims



1. In a wall partition arrangement, the combination of:
A. a pair of channel-like, stud retaining, track members affixed to vertically spaced, horizontal surfaces such as a floor and ceiling of a room;
B. a plurality of horizontally spaced, adjustable stud members extending vertically between said track members;
C. a plurality of wall panels secured to said stud members;
D. said stud members each comprising:
a. an opposed pair of elongated channel elements each being generally U-shaped in cross section and including:
i. a center panel;
ii. a pair of integral side panels extending from opposed side edges of said center panel in parallel relation with each other and normal to said center panel;
b. said channel elements having adjacent end portions disposed in lapping, telescoping relation with one portion received within the other with their side panels in sliding engagement with each other to provide a partially enclosed cavity therebetween;
c. tension spring means disposed within said cavity and connected between said channel elements operable to bias said adjacent end portions toward each other and thereby urge the remote end portions of said channel elements away from each other and against said horizontal track members.

3,897,669 CLIP FOR SECURING PLASTERBOARD TO COLUMNS

Samuel B. Uydess, Mamaroneck, N.Y., assignor to Construction Systems, Inc., Hillside, N.J.

Filed July 8, 1974, Ser. No. 486,530

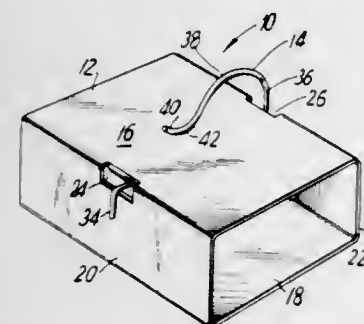
Int. Cl. E04c 3/30

U.S. Cl. 52—713

9 Claims

1. A clip for securing plasterboard to a structural column member, said clip comprising resilient means adapted to clip on to a flange of the structural member, box-like means connected to said resilient means for receiving fasteners which secure the plasterboard thereto, said box-like means including first, second, third and fourth sidewalls connected in sequence

to define a box-like member, said second and fourth sidewalls being provided with at least one opening each, said openings being in alignment with each other to allow communication from an outer surface of said second sidewall through said box-like member to an outer surface of said fourth sidewall, said resilient means including a spring member provided with a body portion, said body portion including a tang extending outwardly in one direction from one end of said body portion and also including a curved portion extending outwardly in another direction from an opposite end of said body portion,



said body portion being disposed within said box-like member with said one end extending through said opening in said second sidewall and with said other end extending through said opening in said fourth sidewall, said tang abutting against said outer surface of said second sidewall to maintain said spring member in position relative to said box-like member with said curved portion being disposed outside said box-like member in a position spaced from an outer surface of said first sidewall, whereby the flange of the structural member is clipped between said curved portion and said outer surface of said first sidewall.

3,897,670

APPARATUS AND METHOD FOR PRODUCING, FILLING AND CLOSING THERMOPLASTIC CONTAINERS

Gerhard P. Hansen, Heerberg 87, D7161 Laufen am Kocher, Germany

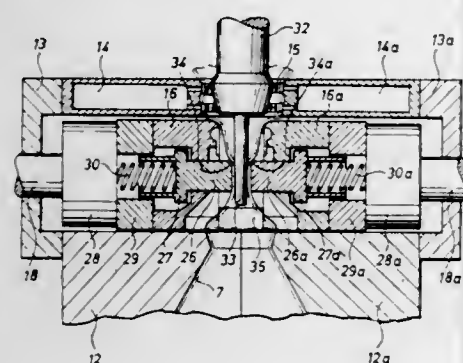
Filed Oct. 25, 1973, Ser. No. 409,464

Claims priority, application Germany, Nov. 15, 1972, 2255869

Int. Cl. B65b 43/00

U.S. Cl. 53—29

8 Claims



8. The method for producing a container from heat-sealable thermoplastic material by blow molding, filling the container, and closing the container, comprising introducing a tubular parison into a blow mold cavity which has a closed end to form the bottom of the container; inserting a composite mandrel having a filling mandrel portion of larger transverse dimension and a calibrating mandrel portion of smaller transverse dimension into the parison, positioning the mandrel portion so that a portion of the parison opposite the bottom of the container is engaged between the filling mandrel portion and a mold member which defines the mold cavity, blowing the parison into container form and filling the container,

withdrawing the filling mandrel portion from the container and maintaining the calibrating mandrel portion in a position within the top of the container, forcing calibrating mold members against a top portion of the container and thereby causing said top portion of the container to conform precisely in size and shape to the calibrating mandrel portion, withdrawing the calibrating mandrel portion from the container; and closing the top of the filled container.

3,897,671

APPARATUS AND METHOD FOR COVERING A LOAD ON A PALLET

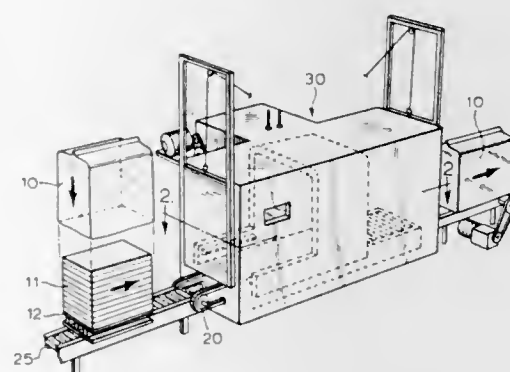
David M. Higgins, Chicago, Ill., assignor to Comptex, Inc., Chicago, Ill.

Filed Aug. 31, 1973, Ser. No. 393,608

Int. Cl. B65b 53/06

U.S. Cl. 53—30

10 Claims



6. A method of covering a load on a pallet with heat-shrinkable film, the steps comprising: moving an inverted bag of heat-shrinkable film over the load on the pallet through a heat-shrinkage area and heat-shrinking the heat-shrinkable film, venting the inverted bag with a movable venting system, said venting system providing negative pressures within the bag, and moving said venting system so as to follow said moving pallet and load and control the venting to sequentially apply negative pressures within the bag during at least a portion of the heat-shrinking operation.

3,897,672

METHOD OF FILLING AND PRESSURIZING AN AEROSOL CAN

Christian T. Scheindel, Star Rt., Randolph Center, Vt. 05061

Filed Sept. 11, 1974, Ser. No. 504,462

Int. Cl. B65b 31/04, 31/06

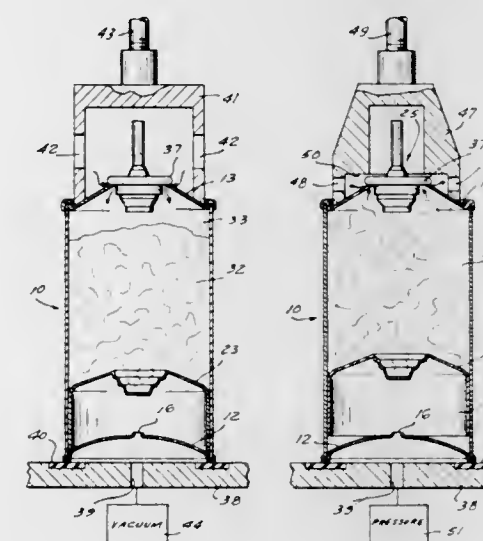
U.S. Cl. 53—37

6 Claims

1. A method of filling and pressurizing a can having a top opening, a bottom wall formed with a hole, and a piston within the can and slidable along the axis of the can, the method comprising the steps of:

- introducing a product to be dispensed through the top opening of the can into the region of the can above the piston,
- placing a valve assembly into the top opening of the can,
- applying a vacuum to the hole in the bottom of the can while permitting air to flow into the can from the top to draw the product toward the top of the piston and thereby fill any voids between the product and piston,
- applying fluid pressure to the hole in the bottom of the

can while permitting air to flow out of the top of the can to move the piston upwardly until the product completely



fills the region of the can above the piston, and e. plugging the hole in the bottom of the can.

3,897,673

NUCLEAR FUEL PELLET LOADING MACHINE

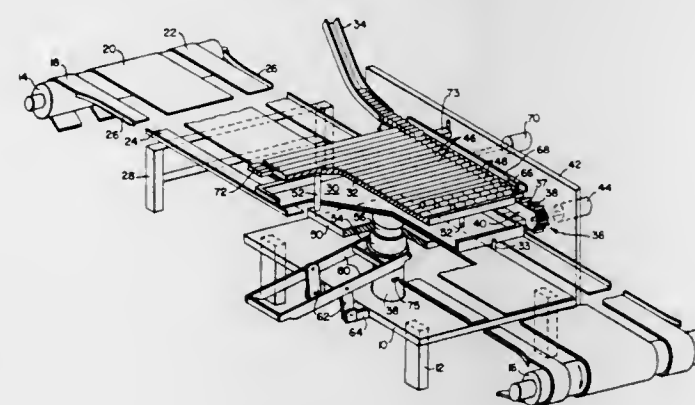
Robert W. Kee, Gibsonia, and John V. Denaro, Leechburg, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 3, 1973, Ser. No. 385,527

Int. Cl. B65b 57/10

U.S. Cl. 53—61

9 Claims



1. Nuclear fuel pellet loading apparatus comprising: a base supporting a removable carrier adapted to hold nuclear fuel pellets; means cooperating with said base for moving said carrier into a predetermined position on the base; stop means on said base engageable by said carrier for stopping movement of the carrier at said predetermined position; pellet feed means adjacent said base for conveying pellets from a source to a position alongside said carrier; and pellet push means alongside said base for transferring the pellets from the feed means onto said carrier, the arrangement being such that upon loading the carrier with pellets the means cooperating with the base moves the carrier away from said predetermined position.

3,897,674

BAGGING MACHINE

David M. Higgins, Chicago, Ill., assignor to Comptex, Inc., Chicago, Ill.

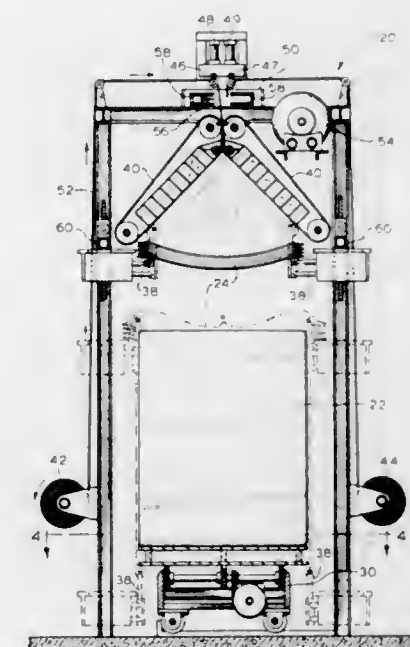
Continuation of Ser. No. 393,588, Aug. 31, 1973, abandoned.

This application Oct. 2, 1974, Ser. No. 511,199

Int. Cl. B65b 11/02, 43/08, 57/12

U.S. Cl. 53—66

29 Claims



1. A bagging machine for covering a load with a bag formed from a tubing of stock material comprising: means for feeding the tubing to a work area for receiving the tubing; vacuum belt means for gripping the tubing, said belt means spreading the tubing to an open position and directing the tubing downward; gathering arm means for collecting the tubing, said gathering arm means receiving tubing from said vacuum belt means as the tubing is directed downward; means for severing the tubing and forming the bag therefrom, the bag being collected on said gathering arm means; and means for lowering said gathering arm means over the load to cover the load with the bag collected on said gathering arm means.

3,897,675

SKIN-PACKAGING MACHINE

Peter Gordon Wilson, Leeds, England, assignor to Baker Perkins Holdings Limited, Peterborough, England

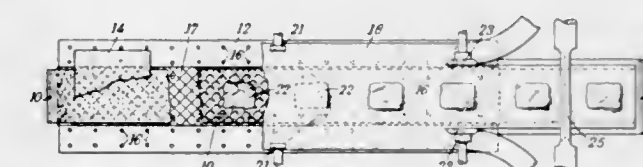
Filed Mar. 5, 1974, Ser. No. 448,272

Claims priority, application United Kingdom, Mar. 14, 1973, 12198/73

Int. Cl. B65b 33/00

U.S. Cl. 53—112 A

3 Claims



1. A packaging machine for the continuous production of air-free skin packages, comprising a suction box, a perforated conveyor arranged for movement over said box, the center section of said conveyor being of open-mesh woven material, a lower impermeable web of thermoplastic material overlying said conveyor at said center section thereof, said lower web

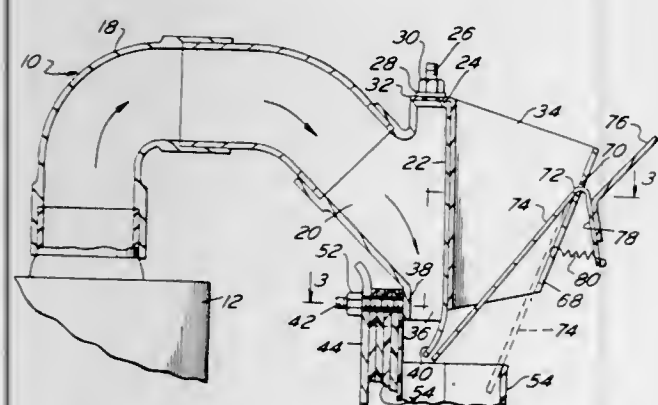
carrying spaced articles to be packaged, a heater for heating said lower web during its movement by said conveyor over said suction box whereby said lower web is drawn against said woven material section to thereby effect a dimpled upper surface therefor, and means for feeding an upper imperforate web of thermoplastic material and guiding its edges into contact with said upper surface of said lower web as the latter moves over said suction box.

3,897,676

OPENING DEVICE FOR THERMOPLASTIC BAGS
Hercules Membrino, 1934 Arch St., Philadelphia, Pa. 19103
Continuation-in-part of Ser. No. 395,542, Sept. 10, 1973. This application Mar. 6, 1974, Ser. No. 448,532
Int. Cl. B65b 43/36

U.S. Cl. 53—189

5 Claims

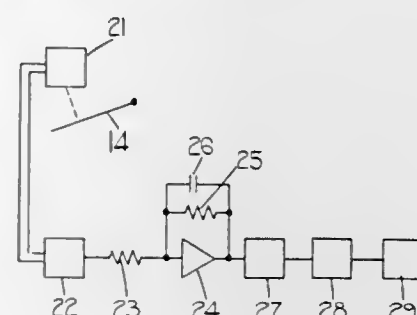


1. A bag opening device comprising a chamber having an inlet for a gaseous fluid and an outlet for said gaseous fluid, hanger means adjacent said outlet for hanging thermoplastic bags in such a manner that the mouths of said bags, defined by a front wall and a rear wall, underlie said outlet, and a baffle plate depending from said chamber, said baffle plate constituting a continuation of one wall portion of said outlet and underlying said outlet, said baffle plate being curved in a manner to deflect the gaseous fluid from said outlet toward the rear wall of a bag hanging from said hanger to open said bag, a chute positioned adjacent said chamber, said chute having an inlet opening and an outlet opening, said outlet opening being adjacent said outlet from said chamber, a gate positioned for pivotal movement within said chute, said gate being pivotally connected to one wall portion of said chute and having one end thereof extending through said outlet opening of said chute, said gate being pivotally movable from a chute-closing position, wherein said gate is in an inclined position within said chute with the said one end engaging said baffle plate, to a full chute-opening position, wherein said gate abuts against the interior surface of said one wall portion of said chute with said one end underlying said one wall portion, said one end being of a length to overlie the mouth of said bag when said gate is in said chute-closing position and to engage the interior surface of the rear wall of said bag when said gate is in said full chute-opening position, and a gate-operating means connected to said gate, said gate-operating means being positioned externally of said chute and being operable to move said gate on its pivotal connection.

3,897,677
HARVESTING MACHINES
Lancelot Phoenix, Birmingham; John William Euclid Walker, Solihull, and Alan George Mather, Sutton Coldfield, all of England, assignors to Lucas Electrical Company Limited, Birmingham, England
Filed Oct. 5, 1973, Ser. No. 403,890
Claims priority, application United Kingdom, May 10, 1972, 45926/72

Int. Cl.² A01D 75/28
U.S. Cl. 56—10.2

3 Claims



1. A harvesting machine comprising in combination a concave and associated cylinder for effecting the required separation of the crop, a rotor for lifting the crop from the ground, an elevator for lifting the crop from the rotor to the cylinder, the elevator being mounted for angular movement about a horizontal axis at its upper end, and means sensitive to the angle of elevation of the elevator and the time for which the elevator is in an elevated position for providing an electrical output control signal if the cylinder and concave are likely to jam, said elevator angle and time sensitive means comprising angle transducer means coupled to said elevator for providing an output electrical signal indicative of the elevation angle thereof, electrical integration means for integrating said output electrical signal, and means responsive to the integrated output of said electrical integration means for producing said electrical output control signal.

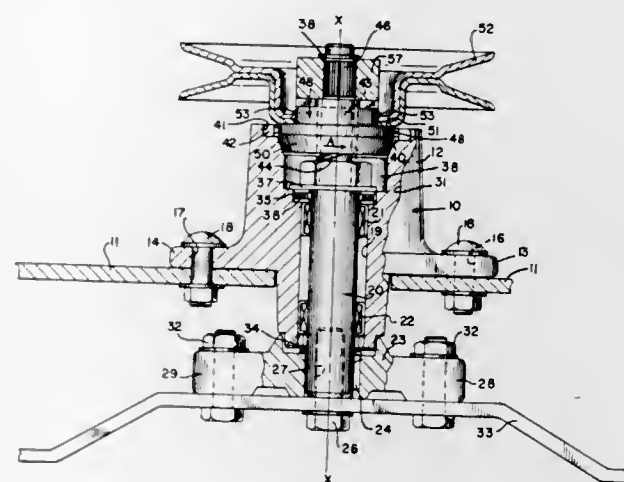
3,897,678
SELF ACTUATING MECHANISM FOR BRAKING A DRIVEN MEMBER UPON DISCONTINUATION OF DRIVE THERETO

James W. Zurek, Lombard, and David A. Fulghum, La Grange, both of Ill., assignors to International Harvester Company, Chicago, Ill.
Continuation-in-part of Ser. No. 133,641, April 13, 1971, Pat. No. 3,722,642. This application Oct. 10, 1972, Ser. No. 296,462. The portion of the term of this patent subsequent to Mar. 27, 1990, has been disclaimed.

Int. Cl.² A01D 35/26

U.S. Cl. 56—11.3

1 Claim



1. In a rotary mower belt driven from a source of power, a housing for said mower, a spindle rotatably mounted in said

housing, a cutting blade attached to the lower end of said spindle for rotation therewith, a sheave mounted on the upper end of said spindle for driving said spindle, said sheave being drivenly connected to said source of power, said sheave having a screw connection to said spindle, a stationary member carried by said housing adjacent to said sheave, said sheave having a lower surface frictionally engaging said stationary member as a result of said source of power being interrupted from said sheave and said sheave being screwed down into braking relation with said stationary member as a result of the inertia of rotation of said blade.

3,897,679

METHOD OF CHEMICAL ANALYSIS AND APPARATUS FOR SUCH ANALYSIS

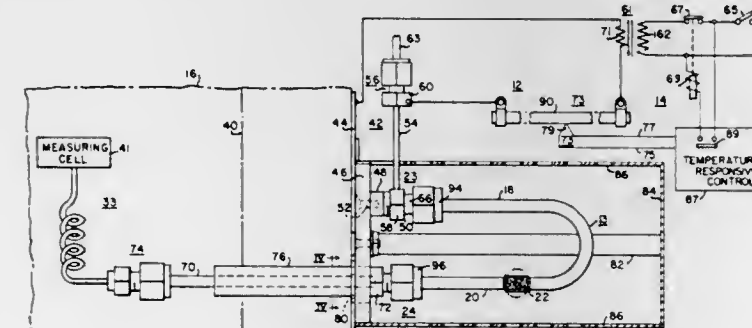
Lloyd V. Guild, Bethel Park, Pa., assignor to Scientific Kit Corporation, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. Nos. 38,346, May 18, 1970, abandoned, and Ser. No. 117,646, Feb. 22, 1971, Pat. No. 3,754,434. This application July 3, 1972, Ser. No. 268,924

Int. Cl.² G01N 31/08

U.S. Cl. 73—61.1 C

16 Claims



1. Apparatus for measuring the quantity of a component in a concentrator, said concentrator including a tube composed of electrically-conducting material having therein an adsorption medium for selectively adsorbing said component from a fluid passing through said medium, said component remaining adsorbed in said medium so long as the temperature of said medium is below a predetermined magnitude and being desorbed when the temperature of said medium is at least at said predetermined magnitude, the said apparatus including: component measuring means, means for connecting said concentrator to said measuring means so that said component, when desorbed from said medium, flows into said measuring means, electrical means, to be connected to said tube, for conducting current of the order of hundreds of amperes through said tube, for supplying a large quantity of heat to said medium in a short time interval for heating said medium to a temperature at least of said predetermined magnitude in a short interval of time of the order of about 10 seconds so that said component is desorbed and transmitted through said measuring means as a pulse, and control means connected to said heating means, including temperature-responsive means, directly responsive to the temperature of said medium, for controlling the heating of said desorbing medium to terminate the supply of heat after said interval of time.

3,897,680

METHOD FOR PREDETERMINING CLAMP FORCE IN MOLDING MACHINES

Volker P. Grundmann, Glastonbury, and Douglas C. Glazier, Sr., Windsor Locks, both of Conn., assignors to Litton Industrial Products, Inc., Berlin, Conn.

Division of Ser. No. 302,931, Nov. 1, 1972, Pat. No. 3,840,313. This application July 1, 1974, Ser. No. 484,706

Int. Cl. G01I 5/00

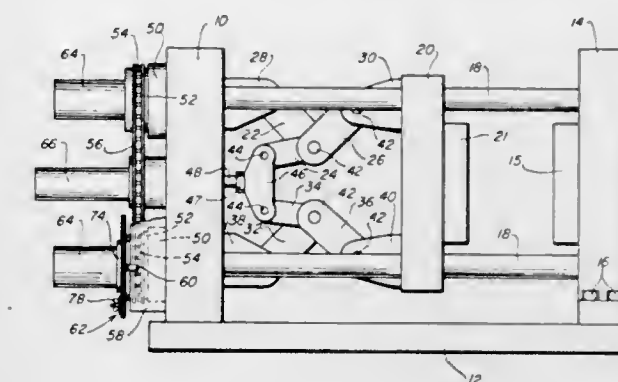
U.S. Cl. 73—88 R

1 Claim

1. The method of predetermining the clamp force of an injection-molding machine having a clamp housing member,

a reciprocable compression mechanism for clamping a mold and a mold height adjustment which comprises:

- adjusting the mold height so that mold halves do not touch if the compression mechanism is extended;
- extending the compression mechanism to its maximum travel;
- decreasing the mold height adjustment until the mold halves are in contact to define a reference point;



- setting an indexable indicator to said reference point;
- retracting the compression mechanism;
- moving the clamp housing member and said indicator from the reference point in a direction which increases clamp force until an index point on said indicator is reached representing the elongation of the tie bars which will result from applying the desired predetermined force to the mold when the compression mechanism is closed; and
- closing the compression mechanism on the mold preparatory to an injection cycle.

3,897,681

FORCE MEASURING APPARATUS OF THE VIBRATORY STRING TYPE

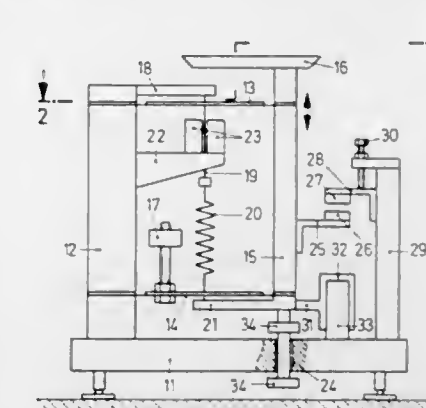
Eugen Meier, Meilen, Switzerland, assignor to Mettler Instrumente AG, Zurich, Switzerland

Continuation-in-part of Ser. No. 252,458, May 11, 1972, abandoned. This application May 11, 1973, Ser. No. 359,258

Claims priority, application Switzerland, June 23, 1971, 9157/71; Sept. 29, 1971, 14174/71; Dec. 8, 1972, 17874/72
Int. Cl.² G01L 1/10

U.S. Cl. 73—141 R

25 Claims



1. Force measuring apparatus of the type including at least one oscillatory string the frequency of oscillation of which affords an indication of the magnitude of a load to be measured, comprising

- a stationary frame member;
- a movable pan carrier member connected for vertical movement between normal no-load and full-load positions relative to said frame member;
- oscillatory string means connected under tension between said frame and pan carrier members, said string means including at least one string member connected at one end with one of said frame and pan carrier members,

and a spring member connecting the other end of said string member with the other of said frame and pan carrier members; and

- d. compensating means for applying a corrective force on said string to compensate for the non-linearity of said string and spring members throughout the entire range of travel of said pan carrier member between said no-load and full-load positions, said compensating means comprising a second string member, and a decoupling spring member independently connecting said second string member between said pan carrier and said frame members in an opposite sense than said one string member, respectively, whereby the tensions of said string members are correspondingly increased and decreased, respectively, upon the application of the load to said pan carrier member.

3,897,682

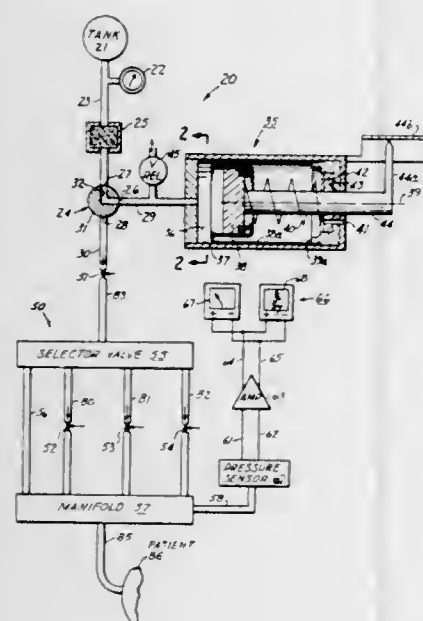
CYSTOMETER SYSTEM AND PRESSURE TRANSDUCER
Albert E. Brooks, Montecito, Calif., assignor to Heyer-Schulte Corporation, Goleta, Calif.

Filed Nov. 15, 1973, Ser. No. 415,966

Int. Cl. G01f 17/00; A61b 5/10

U.S. Cl. 73-149

19 Claims



1. A cystometer system for insufflating a gas into the human body, comprising: a reservoir comprising a chamber including a movable wall whose position, at least in part, determines the volume of the chamber, the movement of said movable wall changing the said volume; biasing means exerting force on the said wall, tending to diminish said volume in opposition to fluid pressure in the chamber; a supply conduit opening into said chamber on the side of said wall to which application of gas under pressure tends to enlarge the chamber; a pressure relief valve in fluid communication with said chamber and discharging to atmosphere whereby to limit the maximum fluid pressure which can be imposed in the chamber; a first selector valve having a first, a second, and a third port, the supply conduit being connected to the said first port; a charging conduit connected to said second port and adapted to be connected to a source of gas under pressure; and an outfeed conduit connected to said third port, said first selector valve being so disposed and arranged as to only interconnect the first port to the second port or to the third port.

3,897,683

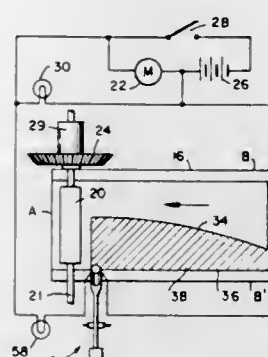
AIRCRAFT TAKEOFF ABORT INDICATOR

Raymond J. Hansen, P.O. Box 727, Sanger, Calif. 93657
Continuation-in-part of Ser. No. 224,211, Feb. 7, 1972, Pat. No. 3,738,165. This application Mar. 16, 1973, Ser. No. 342,155

Int. Cl. G01c 21/10

U.S. Cl. 73-178 T

4 Claims



1. In an aircraft takeoff abort indicator, the combination of:
 - a. a chart holder;
 - b. a chart mounted for linear movement on said holder and having a representation of normal takeoff acceleration versus takeoff time for the aircraft, said chart being generally rectangular and having a conductive area representing the subnormal takeoff acceleration versus takeoff time relationship for the aircraft;
 - c. chart driving means for moving said chart linearly at a constant rate and thereby displacing the takeoff time scale on said chart past a reference point;
 - d. an acceleration indicator at said reference point adapted to indicate on said chart the actual takeoff acceleration of the aircraft versus takeoff time;
 - e. acceleration responsive means responsive to the actual takeoff acceleration of the aircraft for actuating said acceleration indicator;
 - f. a warning indicator; and
 - g. actuating means including a contact engageable with said conductive area and adapted to scan the normal takeoff acceleration versus takeoff time relationship on said chart as it moves linearly, and responsive to subnormal takeoff acceleration of the aircraft, for actuating said warning indicator.

3,897,684

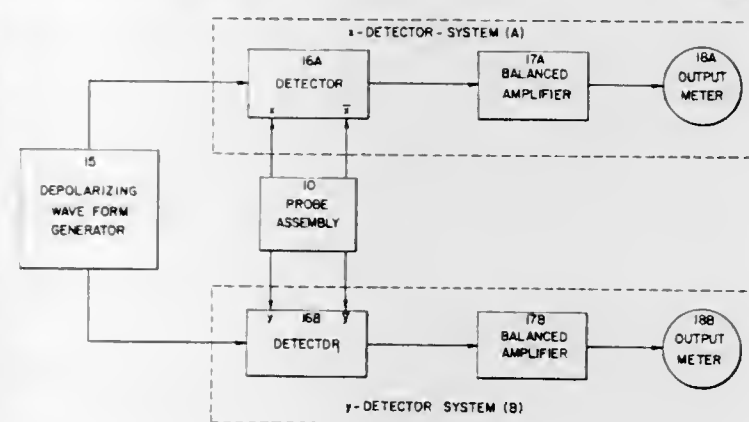
PERMANENT MAGNET TYPE E.M. CURRENT METERS
Rajinder N. Dewan, Suitland, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 25, 1974, Ser. No. 454,505

Int. Cl. G01P 5/08

U.S. Cl. 73-194 EM

2 Claims



1. A permanent magnetic fluid stream flow meter which comprises:

an elongated housing made of nonferromagnetic material; a permanent bar magnet secured within said housing with its long axis coaxial with said housing such that its magnetic lines of flux are perpendicular to the direction of fluid flow to be measured;

at least one pair of oppositely disposed electrodes symmetrically positioned about said permanent magnet and so positioned to be in electrical contact with the fluid to be measured;

a square wave generator means for periodically applying a square wave current to said electrodes with periods of zero bias on said electrodes; and

electrical potential detector means for measuring a potential between said electrodes produced by fluid flow across said magnetic lines of flux during zero bias on said electrodes which is representative of the fluid flow.

3,897,685

MEDICAL THERMOMETER

Rene Beguin, 9 chemin des Vignettes, Conches, Chene-Bougeries (Canton of Geneva), and Hermann Pfeifer, 3 chemin du Foron, Moillesulaz, Chene-Thonex (Canton of Geneva), both of Switzerland

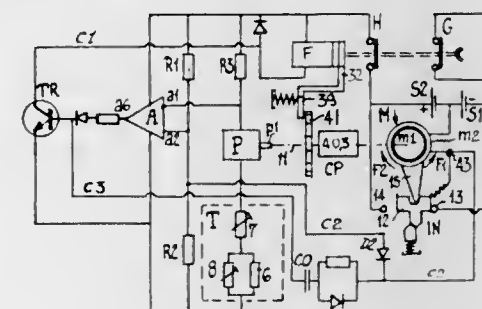
Filed Oct. 29, 1973, Ser. No. 410,918

Claims priority, application Switzerland, Nov. 10, 1972, 16368/72

Int. Cl. G01k 7/24

U.S. Cl. 73-362 AR

2 Claims



1. a medical thermometer comprising a probe containing a thermistor, an electric motor, a potentiometer having a wiper movable between two extreme limit abutments, a mechanical digital counter, driving means for said potentiometer wiper including an electric motor means coupling said counter mechanically with said potentiometer for indicating the position of the potentiometer wiper, an electrical circuit power supply means for said electrical circuit, a resistance comparing bridge connected in said electrical circuit, said thermistor and said potentiometer being included in said bridge whereby for temperatures of said probe between upper and lower limits the bridge can be balanced by a corresponding setting of the potentiometer, balance detecting means in said electrical circuit for detecting balancing of said bridge, control means operable by said balance detecting means for arresting said potentiometer wiper and said driving means when balancing is detected, and further means operable to place the potentiometer wiper at one of its limit abutments and to cause said driving means thereafter to move the potentiometer wiper towards its other limit abutment, said driving means including means for reversing the movement of said potentiometer wiper when said other limit abutment is reached, means rendering said control means inoperable for arresting said potentiometer wiper and driving means during movement of said potentiometer wiper from said one to said other limit abutment and rendering said control means operative during movement of said potentiometer wiper on the opposite direction whereby said potentiometer wiper and driving means are arrested when balance is detected during the latter movement, said counter then displayed the temperature of the probe, wherein said counter is a tape counter which comprises a metal tape, a wheel engaging the tape and secured to the counter input shaft and first and second compartments be-

tween which the tape extends, and wherein said tape is of metal and is prestressed so as to coil up automatically in said compartments.

3,897,686

SPRING SUSPENSION FOR MEASURING INSTRUMENTS
Patrick Lever Willmore, Edinburgh, Scotland, assignor to The Rank Organisation Limited, London, England

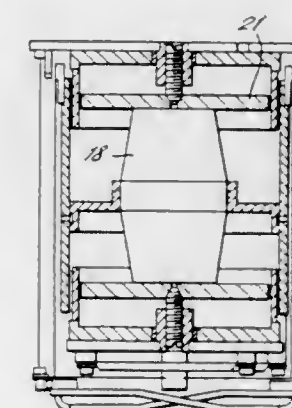
Filed Aug. 27, 1973, Ser. No. 391,124

Claims priority, application United Kingdom, Aug. 25, 1972, 39775/72; Mar. 7, 1973, 11021/73

Int. Cl. G01v 7/00; F16f 1/18

U.S. Cl. 73-382

9 Claims



1. A suspension device for coupling two relatively movable members comprising:
 - an elongate rigid element
 - pivotal attachment means for pivotally attaching one end of said elongate rigid element to a first one of said two relatively movable members
 - at least one elongate resilient element which is curved in the unstressed state
 - means rigidly attaching one end of said at least one elongate curved resilient element to the other end of said elongate rigid element,
 - pivotal attachment means for pivotally attaching the other end of said at least one elongate curved resilient element to a second one of said two relatively movable members, and
 - means for constraining the said two relatively movable members to move in a predetermined path which is such that the path of relative movement of said pivotal attachment means at said one end of said rigid element with respect to said pivotal attachment means at said other end of said resilient element does not intersect said pivotal attachment means at said other end of said resilient element.

3,897,687

COMPOSITE SAMPLER

Robert H. Burberry, 17 Mickey Rd., Shelby, Ohio 44875

Continuation-in-part of Ser. No. 385,395, Aug. 3, 1973, abandoned. This application Sept. 17, 1974, Ser. No. 506,886

Int. Cl. G01N 1/10

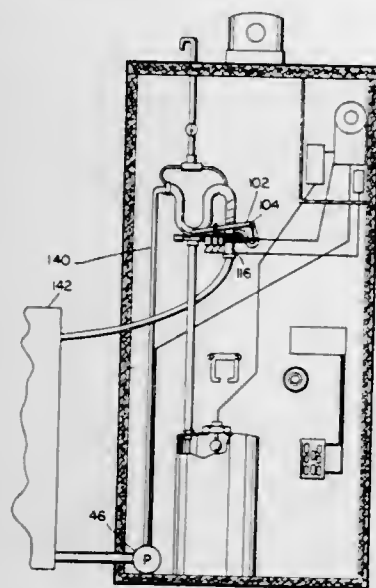
U.S. Cl. 73-422 R

13 Claims

1. A composite sampler for periodically withdrawing a representative sample of a selected volume from a body of liquid, the sampler comprising:

- a. a sampling body having an enclosed liquid passage leading, in an operable position, from an inlet port downwardly to a bottom portion and thence upwardly to an outlet port, said passage being smoothly curved and having a substantially uniform cross sectional area;
- b. an inlet conduit connected between said inlet port and said body of liquid for conveying liquid to said passage;
- c. means connected in communication with said passage for at times pumping liquid through said passage;

- d. a sample withdrawal valve connected in communication with said passage at said bottom portion for at times being opened to exhaust a sample; and



- e. means connected to communication with said passage to permit in input of air to prevent a siphon action.

3,897,688

MICROBIAL SURFACE SAMPLER

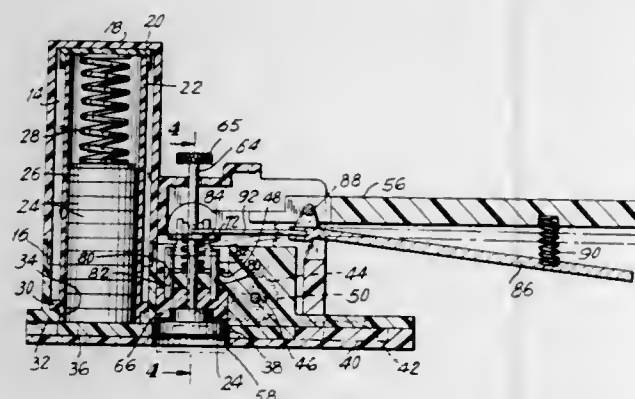
Peter Meserol, East Northport; Phyllis Riely, Northport; Dom Spinosa, Wantagh, and Fred Hodgson, Centereach, all of N.Y., assignors to East/West Medical Products, Inc., Farmingdale, N.Y.

Continuation of Ser. No. 233,450, March 10, 1972. This application Oct. 12, 1973, Ser. No. 405,991

Int. Cl. G01n 1/02; C12k 1/04

U.S. Cl. 73-425

27 Claims



1. A surface sampler device for use with surface sampler discs having surface sampling material positioned on one side thereof comprising housing means having an aperture therethrough dimensioned to permit the passage of a disc therethrough; cartridge means for holding a plurality of said discs mounted on said housing; plunger means mounted in said housing in registration with said aperture; means mounted on said housing for selectively and sequentially feeding each of said discs from said cartridge means into registration with said aperture; and means in said housing for selectively actuating said plunger means to engage said disc through said aperture and to engage the surface sampling material thereof against the surface to be sampled.

15. A culture plate for use with a surface sampler disc having surface material positioned for projection through an aperture therein, comprising a base portion having a plurality of spaced wells formed therein, each of said wells having a bottom wall, and each of said wells being dimensioned to receive one of said discs, each of said wells being formed with a further well of smaller lateral dimension in the bottom surface thereof, said lateral dimension of said further well being selected to receive at least a portion of said projecting surface

sampling material while permitting said surface sampling disc to rest on the bottom well of said first mentioned well; and culture medium received within said further well for engagement by the surface sampling material of a disc positioned within said first-mentioned well.

3,897,689

SAMPLING APPARATUS

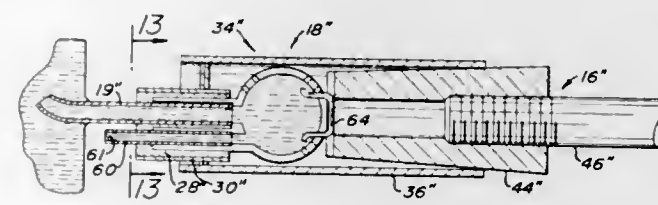
Joseph J. Boron, Medina, Ohio, assignor to Aikoh Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 252,827, May 12, 1972, Pat. No. 3,798,974. This application Jan. 30, 1974, Ser. No. 437,977

Int. Cl. G01n 1/12

U.S. Cl. 73-425.4 R

4 Claims



1. In an apparatus for taking a sample from a flowing stream of molten metal and including a plurality of separable mold forming elements which cooperate to form a mold chamber, and a first-temperature and thermal shock resistant tube extending outwardly from said chamber to direct a molten metal from the stream into the mold chamber, the improvement comprising:

a sample tagging member positioned between said mold forming elements and including a first end portion extending into said chamber and a second end portion extending out of said chamber.

3,897,690

MINIATURE INERTIAL GRADE HIGH SHOCK AND VIBRATION CAPABILITY ACCELEROMETER AND METHOD WITH AXIS ALIGNMENT AND STABILITY FEATURES

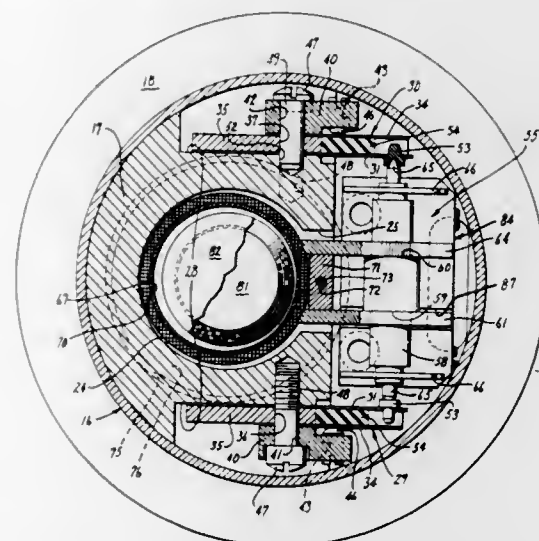
Richard A. Hanson, Concord, Calif., assignor to Systron Donner Corporation, Concord, Calif.

Filed Jan. 15, 1973, Ser. No. 323,783

Int. Cl. G01p 15/08

U.S. Cl. 73-517 B

17 Claims



1. In an accelerometer, a support base, a pair of spaced spring support means attached to the support base, a moving system pivotally supported by said spring support members responsive to acceleration experienced by said support base, pickoff means disposed to sense motion of said moving system relative to said support base for providing output signals related thereto, torquing means responsive to said output signal for restoring said moving system to a neutral position, each of

said spaced spring support means including preload and primary leaf springs, a pivot bearing mounted on each of said primary leaf springs, and engaging said moving system and a viscoelastic material positioned between said preload and primary leaf springs, whereby resonance of the moving system on said spring support means is inhibited by the damping characteristic of said viscoelastic material.

3,897,691

GEAR CHANGING MECHANISM

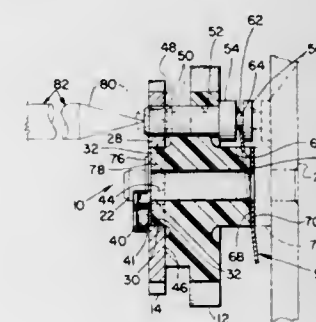
Clayton F. Robinson, Philadelphia, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Filed July 9, 1974, Ser. No. 486,769

Int. Cl. F16h 57/00

U.S. Cl. 74-405

4 Claims



1. A readily detachable change gear assembly comprising, a drive gear member having a central hub extending from one face thereof,

a plurality of hooked fingers extending axially from said face of said drive gear adjacent said hub,

a change gear having a central opening therethrough complementary to said hub of said drive gear, said change gear having further openings therethrough positioned for cooperation with said hooked fingers,

said change gear removably mountable on said drive gear with said central openings embracing said hub and with said fingers extending through said further openings, rotational motion in a first direction of said change gear relative to said drive gear causing the hooked portion of said fingers to frictionally overlay adjacent portions of said change gear clamping said change gear to said drive gear,

said drive gear having an eccentrically located opening therethrough, said change gear having an eccentrically located opening therethrough, said eccentrically located opening in said change gear being so positioned as to be aligned with said eccentrically located opening in said drive gear when said change gear has been rotated to the clamping position relative to said drive gear, and a spring biased pin extending through both of said eccentrically located openings, when said openings are in alignment, whereby to effectively lock said gear against relative rotational movement with respect to each others.

3,897,692

CENTRIFUGAL PROPULSION DRIVE AND STEERING MECHANISM

Arthur N. Lehberger, A.N.L. Research & Manufacturing Co., 256 Winfield Ter., Union, N.J. 07083

Filed Dec. 13, 1972, Ser. No. 314,779

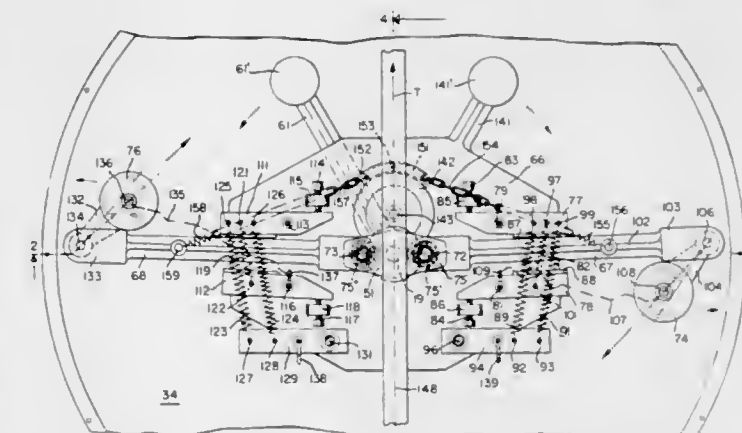
Int. Cl. B60k 1/00; F03g 7/08

U.S. Cl. 74-84 S

6 Claims

1. A centrifugal propulsion drive and steerable mechanism comprising a power-rotated drive shaft, a base plate structure centrally connected to the drive shaft to be rotated thereby, gyratory power work arms respectively pivotally connected at their inner ends to the rotatable base plate structure on the respective opposite sides of the drive shaft evenly radially-spaced therefrom and along a diameter taken through the shaft axis, flyweights with arms respectively pivotally con-

nected to the outer free ends of the respective flyweights power arms and extending in a restrictive manner from the leading edges thereof, a thrust-producing weight arm fixedly carried upon the base plate to be rotated therewith and extending in radially alignment with the shaft axis and outwardly from the base plate, said thrust weight arm extending at an angle generally normal to the diameter alignment of the pivotally connected inner ends of the gyratory power work arms with the base plate, a corresponding reversely driven thrust-producing weight arm rotatably connected to the power-rotated drive shaft to be turned thereabout independently of the base plate, said driven thrust-producing weight arm extending radially outwardly from the drive shaft to the same extent that the fixed thrust weight extends so that their weights will superimpose one another at times of rotation of and in the direction of movement of the mechanism, a counter shaft geared to the power-rotated drive shaft for reverse rotation thereof and to the corresponding of the reversely driven thrust producing weight arm to reversely drive the same in union with and in opposition to the base plate fixed thrust-producing weight arm, said thrust producing weight arms superimposing on the line of directed movement of the mechanism both



forwardly and rearwardly thereof and their thrust strokes or impulses being made with their rearward movement, power arm stops carried upon the base plate structure respectively to allow the respective gyratory power arms to be normally urged in a position thereon out of alignment with the diameter through the drive shaft axis and the pivots of the power arms and in the direction of movement of the mechanism, a pulley lever-like device offset from the drive shaft and free of the base plate and including an extensible cable connected between the gyratory power arms to normally urge them against the forwardly disposed spring biased stops periodically to lessen the effective length of the flyweight gyratory work arms and thereby relax the flyweight gyratory work arms at the time the reversely-operated thrust weight arms are making their effective thrust stroke rearward movements to cause the direction movement of the mechanism, said pulley lever-like device permitting a shortening of its extensible cable and the releasing of the gyratory power work arms and flyweights for maximum power effect with returning of the thrust-producing weights preparatory to their forward superimposed positions for further rearward thrust strokes, whereby power will be supplied to cause directional movement of the mechanism and a vehicle attached thereto.

3,897,693

COUPLING DEVICE FOR GOVERNOR CONTROL

Ronald H. Garman, Pekin, and John P. Mackoway, Jr., East Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed May 29, 1973, Ser. No. 364,940

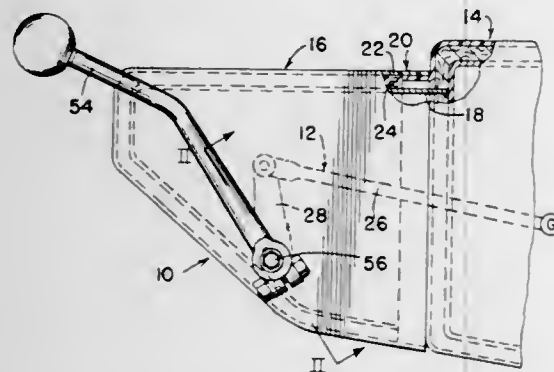
Int. Cl. G05G 7/00; F02D 11/02; E04B 1/99

U.S. Cl. 74-491

6 Claims

1. A mechanism for controlling an engine apparatus comprising: a first casing; shaft means rotatably supported in the first casing; means interconnecting the shaft means and engine apparatus so that the engine apparatus is responsive to move-

ment of the shaft means; a second casing positionable about the first casing; a control lever positioned outward of the first casing; and means interconnecting the control lever with the shaft means, meanwhile allowing disconnection of the control lever from the shaft means so that, upon disconnection of the control lever from the shaft means, the second casing may be positioned about the first casing freely and without interference from the shaft means, and so that, upon interconnection



of the control lever with the shaft means, the control lever is outward of the first and second casings; wherein the means interconnecting the control lever with the shaft means comprise a removable member interconnecting the control lever and the shaft means, wherein, with the interconnecting member interconnecting the shaft means and the control lever, and with the second casing so positioned about the first casing, the interconnecting member is disposed through a wall of the first casing and a wall of the second casing.

3,897,694

PARKING BRAKE OPERATING MEANS INCLUDING A STATIONARY CAM

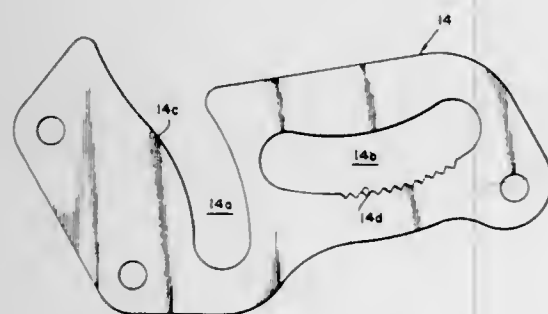
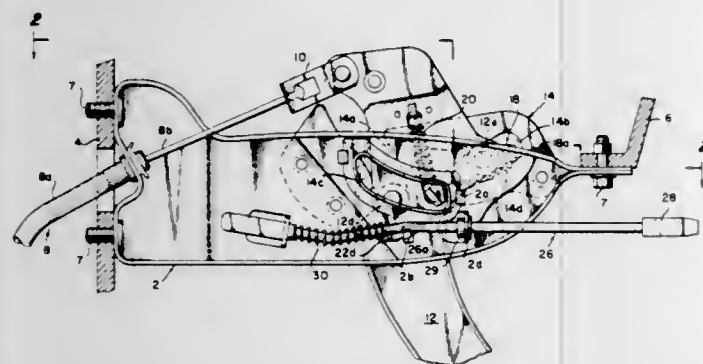
Charles M. Hirst, Jr., 1728 Lakewood, Moberly, Mo.

Filed Sept. 19, 1973, Ser. No. 398,592

Int. Cl.² B26D 9/00

U.S. Cl. 74-516

5 Claims



1. Brake cable operating means for axially displacing a vehicle parking brake cable from a brake-released position toward a brake-engaged position, comprising

- a housing adapted for rigid connection with a vehicle body for axially receiving the free end of said brake cable;
- a foot-operated parking brake lever adapted for connection with the free end of said brake cable;

c. means connecting said lever for pivotal coplanar movement relative to said housing, said connecting means including

1. a cam member rigidly connected in parallel relation with said housing, said cam member including an opening one wall of which defines a first cam surface, said cam member including a wall portion defining a second cam surface;
2. a pair of cam follower members connected with said lever for continuous camming engagement with both said cam surfaces, respectively, said cam surfaces having such a configuration and said cam follower members being so arranged that during the initial pivotal movement of said lever relative to said housing from a brake-released position toward a brake-engaged position, the lever effects relatively fast cable take-up with low mechanical advantage, and during final pivotal movement of the lever, the lever effects relatively slow cable take-up with high mechanical advantage;
- d. pawl and ratchet means for locking said lever in the brake-engaged position, said pawl and ratchet means including a ratchet formed on one wall of said cam opening; and
- e. brake release means for releasing said lever locking means.

3,897,695

LINKAGE SYSTEM, PARTICULARLY FOR AIRCRAFT CONTROL

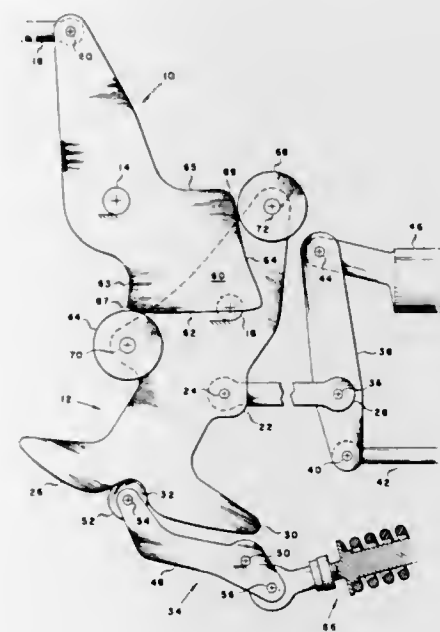
Nels C. Rostad, Glendale, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Feb. 6, 1974, Ser. No. 439,995

Int. Cl.² G05G 7/04

U.S. Cl. 74-516

11 Claims



1. In a control linkage for controllably converting an input signal to a variable output signal, the improvement comprising:

- a dual driving surface cam for providing an input signal and secured for pivotable movement;
 - a follower secured for pivotable movement for providing a variable output signal responsive to said input signal, said follower having dual follower surfaces and a neutral position, said dual follower surfaces being contactable by the respective driving surfaces of said cam, one said follower surface being located upon each side of said neutral position;
- whereby output motion of said follower in response to input motion of said cam is chartable as an inverted S-shaped

curve asymmetrical about the origin, such curve having a relatively low gain portion of response close to the origin on both sides of the origin and a contiguous smoothly connected and smoothly curving, rapidly increasing gain portion at each of its extremities after the low gain portions on both sides of the origin; and

feedback force means comprising

- a pair of lobes on said follower remote from said follower surfaces and extending opposite one another, one to each side of a neutral position substantially centrally thereof,
 - a depressed detent in said follower member at said neutral position,
 - a spring-loaded roller separate from and pivotably mounted adjacent said lobes and normally urged into said detent,
- whereby the shapes of said lobes define the nature and extent of an increasing feedback force at said cam in response to increasing motion of said cam away from a neutral position in said linkage.

3,897,696

GEAR TRANSMISSION

Walter Schröder, Bochum-Stiepel, and Uwe Niemann, Essen, both of Germany, assignors to WGW Westdeutsche Getriebe- und Kupplungswerke GmbH, Herne, Germany

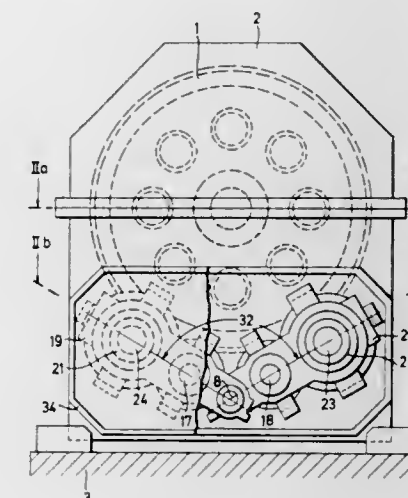
Filed Mar. 16, 1973, Ser. No. 342,067

Claims priority, application Germany, Mar. 16, 1972, 2212757

Int. Cl. F16h 37/06, 57/02

U.S. Cl. 74-665 B

8 Claims



1. In a transmission including two gear trains having intermediate shafts driven by a single drive shaft through at least one respective transmission stage and carrying at least one pinion, respectively, meshing with a gear located between the two intermediate drive shafts each gear train being connectible to a machine driven by the transmission, means to make the meshing of the gear trains to the driven machine self adjustable, comprising a pair of frames wherein the transmission stages are disposed, each of said frames being mounted on one of the intermediate shafts, and each being articulately connected on the other hand to the frame mounted on the other intermediate shaft, each of the frames being pivotally mounted and articulately connected about the drive shaft.

6. In a transmission including two intermediate shafts driven by at least one drive shaft through at least one respective transmission stage and carrying at least one pinion, respectively, meshing with a gear located between the two intermediate drive shafts and connectible to a machine driven by the transmission, the improvement which comprises a plurality of frames wherein the transmission stages are disposed, each of said frames being mounted on the one hand on one of the intermediate shafts, and being articulately connected on the

other hand to the frame mounted on the other intermediate shaft, including one common drive shaft, two pinions having teeth with opposing inclinations mounted on the common drive shaft, a gear wheel mounted on each of said intermediate shafts, and a gear wheel in each of said transmission stages associated with one of said intermediate shafts, respectively, each of said pinions being in meshing engagement with a gear on one of said intermediate shafts, said drive shaft being mounted in said frames of said transmission stages of both said intermediate shafts, said frames having a mutual swivel joint connection therebetween, and wherein said drive shaft has an axis substantially coincident with the axis of said swivel joint connection.

7. In a transmission including two intermediate shafts driven by at least one drive shaft through at least one respective transmission stage and carrying at least one pinion, respectively, meshing with a gear located between the two intermediate drive shafts and connectible to a machine driven by the transmission, the improvement which comprises a plurality of frames wherein the transmission stages are disposed, each of said frames being mounted on the one hand on one of the intermediate shafts, and being articulately connected on the other hand to the frame mounted on the other intermediate shaft, a common pinion carrier supported so as to be movable in the manner of a ball-and-socket joint with respect to the base of the driven machine, said intermediate shafts being mounted in said common pinion carrier.

3,897,697

INFINITELY VARIABLE DRIVE RATIO HYDRO-MECHANICAL TRANSMISSION FOR VEHICLES OR THE LIKE

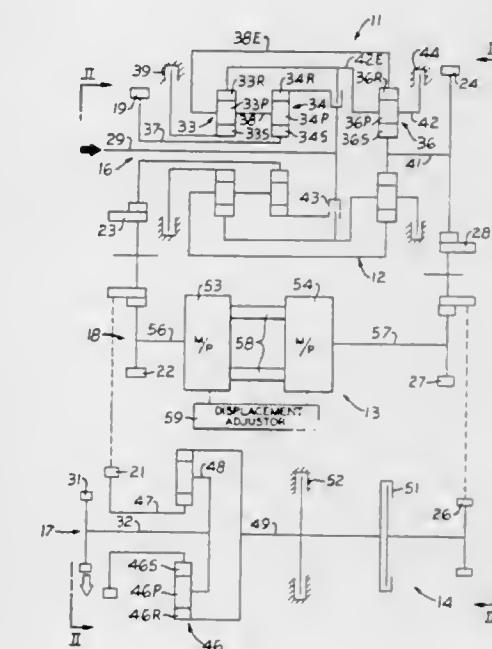
Robert O. Chambers, Winchester, Mass., and Edwin E. Hanson, Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Feb. 1, 1974, Ser. No. 438,668

Int. Cl.² F16H 37/06, 47/04

U.S. Cl. 74-682

6 Claims



1. A power transmission providing a drive ratio which is infinitely variable between predetermined maximum and minimum drive ratios comprising:

- a power input transmission section having rotatable input means and first and second transfer gears and having first planetary gearing means connected between said input means and both of said transfer gears for providing a split input section power flow path from said input means to both of said transfer gears wherein the division of power flow is determined by the relative speeds of said first and second transfer gears, said power input transmission

section further having directional drive conditioning means coupled to said first planetary gearing means for selectively reversing the direction of rotation of said first transfer gear relative to that of said input means and for independently selectively reversing the direction of rotation of said second transfer gear relative to that of said input means,

a hydraulic transmission section having third and fourth transfer gears and having a pair of variable displacement fluid translating devices with interconnected fluid ports for exchanging fluid, one of said devices having a rotor coupled to said third transfer gear and the other of said devices having a rotor coupled to said fourth transfer gear whereby said third and fourth transfer gears may be constrained to rotate at selected relative speeds by adjustment of the relative displacements of said devices,

a power output transmission section having rotatable output means and fifth and sixth transfer gears and having second planetary gearing means for transmitting power to said output means from either of said fifth and sixth transfer gears, and

first drive transmitting means intercoupling said first and third and fifth transfer gears and second drive transmitting means intercoupling said second and fourth and sixth transfer gears.

3,897,698

HYDRAULIC CONTROL DEVICE OF TRANSMISSION
Takashi Ohsaka, Kawasaki, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

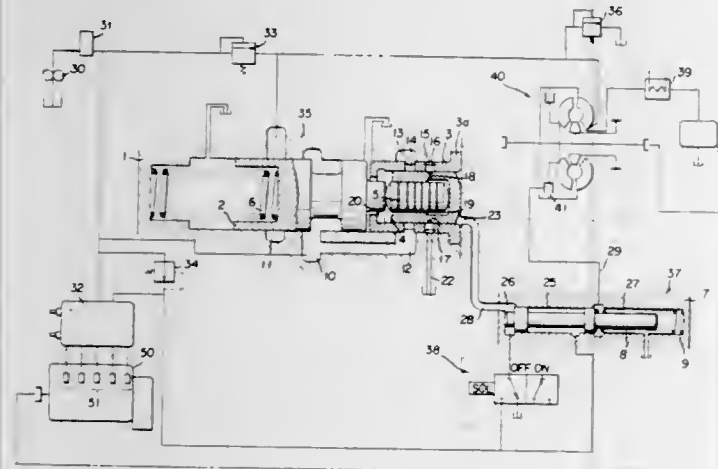
Filed Dec. 21, 1973, Ser. No. 427,336

Claims priority, application Japan, Dec. 21, 1972, 47-45990[U]

Int. Cl. F16h 47/00; B60k 41/22

U.S. Cl. 74-732

4 Claims



1. In a hydraulic control device of power transmission train having a torque converter selectively driven either mechanically or hydraulically, a transmission comprising a plurality of hydraulically operated clutches and gear sets, a first valve means for controlling the hydraulic pressure of the torque converter and clutches, and a second valve means for selecting the speed in the transmission, the improvement comprising a third valve means for controlling the hydraulic pressure of the clutches by reducing the pressure, said third valve means being positioned in a bypass circuit for shortcircuiting the input side of said second valve means and the drain side of said first valve means, a clutch provided in the torque converter for the mechanical driving of the torque converter, fourth valve means for selecting the mechanical drive, said fourth valve means having a pressure chamber communicating with the pressure chamber of said third valve means and a spring chamber communicating with said clutch, and a solenoid valve for controlling said fourth valve means for switching to the mechanical drive, said solenoid valve being operated by an electric signal, wherein the hydraulic pressure for the clutches when said torque converter is mechanically operated is lower

than the hydraulic pressure for the clutches when said torque converter is hydraulically operated.

3,897,699

CHANGE GEAR TRANSMISSION IN GROUP CONSTRUCTION, ESPECIALLY FOR MOTOR VEHICLES IN AGRICULTURE AND CONSTRUCTION

Manfred Hoyer, Bergisch Gladbach-Schildgen, Germany, assignor to Klöckner-Humboldt-Deutz Aktiengesellschaft, Cologne, Germany

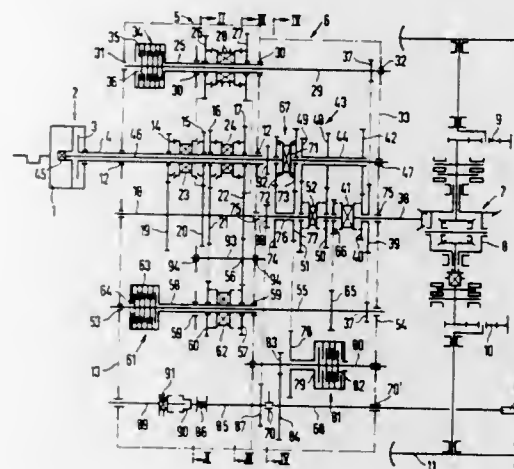
Filed Sept. 10, 1973, Ser. No. 395,766

Claims priority, application Germany, Sept. 9, 1972, 2244342

Int. Cl. F16h 3/08, 37/08

U.S. Cl. 74-745

28 Claims



1. A gear change and reversing transmission in group construction including a main shifting group with several forward shifting steps following a group drive and driven selectively directing in forward driving direction at diverging stepped-up and stepped-down ratios, especially for agricultural and construction vehicles and comprising: a main geared unit having drive shaft means adapted for being driven by a prime mover and having a countershaft (18) parallel to the drive shaft means, a second geared unit having a first input shaft (29) and a second input shaft (55) and an output shaft (38) all parallel to said drive shaft means, first meshing gears on said drive shaft means and countershaft (14, 19; 15, 20; 16, 21; 17, 22) and adapted to be made selectively effective to drive said countershaft, second gears (26, 27) adapted to be selectively coupled to said first input shaft (29) and meshing with gears (20, 22) on said countershaft, a third gear (60) rotatable on said second input shaft and meshing with a gear (21) on said countershaft, a fourth rotatable gear (56) meshing with a gear (22) on said countershaft, a fifth gear (57) rotatable on said second input shaft and meshing with said fourth gear, means (61, 62) for selectively coupling said third (60) and fifth (57) gears to said second input shaft, an eighth gear (39) adapted for selective coupling to said output shaft (38), a sixth gear (37) fixed to said first input shaft (29) and meshing with said eighth gear, and a seventh gear (37') fixed to said second input shaft (55) and also meshing with said eighth gear.

3,897,700

CLOCK SETTING MECHANISM

Arthur W. Haydon, Middlebury, Conn., assignor to Tri-Tech, Inc., Waterbury, Conn.

Filed June 18, 1974, Ser. No. 480,366

Int. Cl. F16h 1/28; G04c 9/00; G06c 15/42

U.S. Cl. 74-801

19 Claims

1. Angular setting means comprising: first and second rotary members rotatable relative to each other; third and fourth planetary rotary members connected to rotate together and drivingly engaging the first and second members, respectively; and

means operable independently of the first and second rotary members for moving the third and fourth planetary rotary members between first and second predetermined orbital

3,897,702

TOOL FOR REMOVING AND INSTALLING WATER METERS

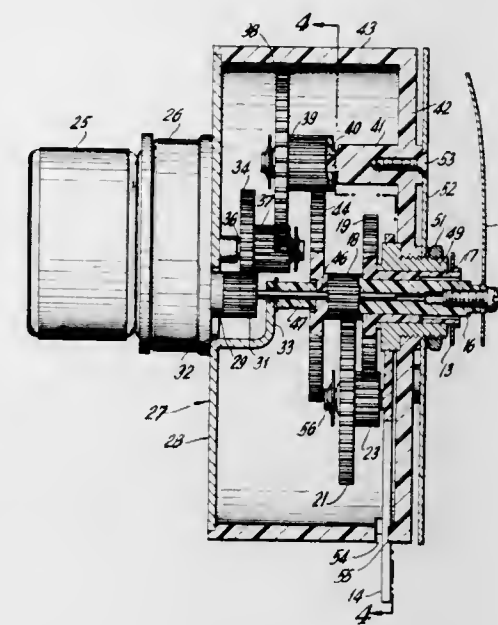
Julio Juno Rovai, 4032 Tokay Dr., Napa, Calif. 94558

Filed Oct. 16, 1974, Ser. No. 507,459

Int. Cl. B25B 13/48

U.S. Cl. 81-119

3 Claims



positions with respect to the first and second members while keeping the third and fourth rotary members engaged with the first and second members.

3,897,701

TORQUE SPANNER WRENCH

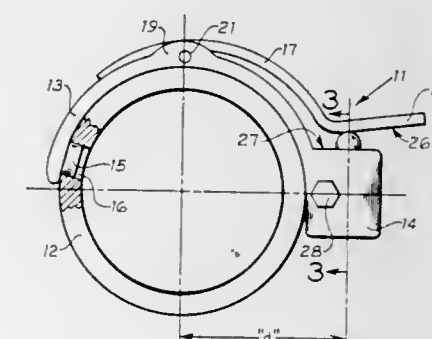
Thaddeus E. Daniels, and Donald J. Repass, both of Indianapolis, Ind., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 20, 1974, Ser. No. 525,533

Int. Cl. B25B 23/14, 13/02

U.S. Cl. 81-52.4 R

7 Claims



1. A wrench for applying a predetermined amount of torque to a cylindrical object comprising, a single arcuate spanner portion shaped to conform to the outer periphery of a cylindrical object to be torqued and having one end terminating with an enlarged boss portion, fastening means on said single arcuate spanner portion engageable with a cylindrical object to be torqued, a hand lever pivotally attached to said arcuate spanner portion, and selective torque regulating means applied to one end of said hand lever for preventing rotation of said hand lever relative to said single arcuate spanner portion whereby a force applied to said one end of said hand lever rotates said cylindrical object and whereupon said one end of said hand lever engages said boss portion when a predetermined amount of torque has been applied to said hand lever.

3,897,703

UNIVERSAL SOCKET

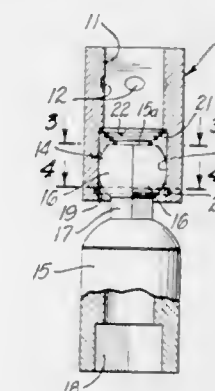
Olin G. Phipps, 3944 Tuller Ave., Culver City, Calif. 90230

Filed Feb. 8, 1974, Ser. No. 440,845

Int. Cl. B25b 13/00

U.S. Cl. 81-177 UJ

1 Claim



1. A device of the class described which comprises an attachment adapted for rotation, a hexagonal socket formed in one end of said attachment, said socket having six substantially straight sides joined by six corners, a hex-ball member having six sides and six corners, said hex-ball member being mounted within said socket, the sides of said hex-ball member being of arcuate configuration along their longitudinal axes, said hex-ball member being pivotable to any desired angle with respect to said attachment, said corners of said hex-ball

member being adapted to fit within and engage the corners of said socket to prevent rotation of said hex-ball member within said socket, a drive member connected to said hex-ball member, said drive member having socket means for engaging the head of a fastening member, said attachment having socket means at the opposite end thereof for removable connection to a tool drive member or the like, and means for preventing free tilting movement of said hex-ball member within said socket, said means comprising a coil spring mounted within said attachment, the end of said hex-ball member facing toward said attachment being flat, one end of said coil spring engaging said flat end of said hex-ball member and exerting pressure thereon to hold said hex-ball member in any angular position to which it is moved, thereby preventing undesired angular movement of said drive member with respect to said attachment, said attachment having means for retaining said hex-ball member substantially permanently within said socket, said means comprising a groove extending around the outer end of said socket and a split-ring spring mounted in said groove, said hex-ball member being unremovable from said socket without first removing said split ring.

3,897,704

THREAD CUTTING ATTACHMENT

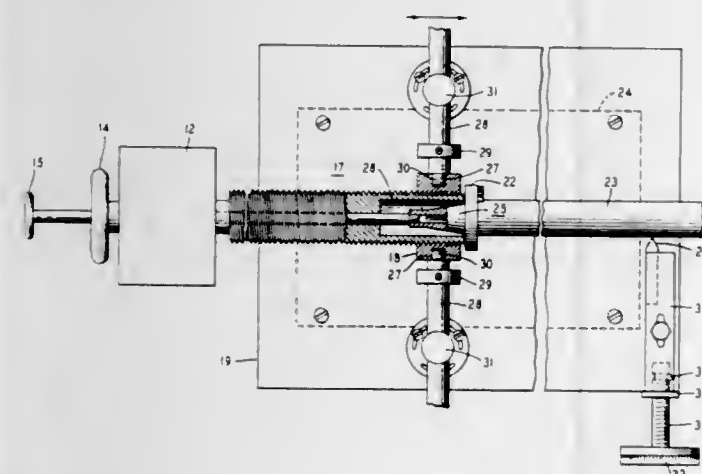
Joseph Schuell, 1802 Summit Ter., Linden, N.J. 07036

Filed Jan. 31, 1974, Ser. No. 438,284

Int. Cl. B23b 1/00

U.S. Cl. 82-5

4 Claims



1. A thread cutting arrangement for a lathe comprising a base plate adapted to be mounted directly on a lathe bed or upon a conventional adjustable crossbed slide assembly, a master nut and mating threaded bar cooperating to guide in the formation of a threaded surface upon a rotating workpiece, an adjustable holder on said base plate adapted to hold said master nut and said bar threaded therein and adapted to impart relative motion between said plate and said bar as said bar is rotated while in threaded engagement with said nut, said threaded bar being shaped at one end for retention by the chuck of the lathe headstock and at its opposite end being equipped with an arrangement to retain and rotate an axially aligned workpiece, a tool post holder integral with said base plate to adjustably position a tool in cutting engagement with said workpiece to scribe a thread pattern thereupon conforming to that of said threaded bar, parallel opposite sides of said nut containing a threaded aperture, and said holder comprises a pair of horizontally disposed glide rods supported above said plate a fixed distance by separate glide rod bearings and from each of said rods at one end thereof and in axial alignment therewith extends a threaded stud adapted to thread into each of said threaded apertures.

3,897,705
DEVICE FOR SLITTING SHEET MATERIAL
 Paul Filleau, Villers-sur-Marne, and Claude Coyon, Montbard, both of France, assignors to Le Metal Deploye, Clamart, France

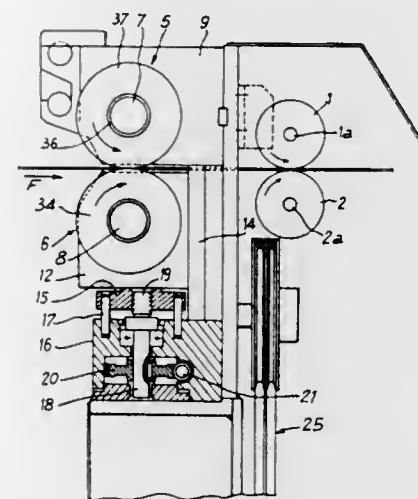
Filed Aug. 5, 1974, Ser. No. 495,082

Claims priority, application France, Aug. 9, 1973, 73.29187

Int. Cl. B23d 25/12; B26d 1/40

U.S. Cl. 83-341

12 Claims



1. In a device for manufacturing slitted sheets suitable for subsequent expansion, said apparatus comprising means for continuously advancing a strip of sheet metal and at least two rotating tools, one positioned on each side of the strip and each carrying cutting members positioned to cooperate to pierce the strip with the cutting members of one tool engaging between those of the other tool, the improvement according to which each tool comprises a circular metallic disc having along its edge a series of notches which are regularly spaced from each other and inclined with respect to the axis of rotation of the tool, a bar of hard material in each notch, each bar having two cutting edges extending parallel to each other and two parallel lateral surfaces and a curved radially outer surface lying in a cylindrical locus coaxial with the axis of rotation of the tool, the angle between each cutting edge and the axis of rotation of the tool on which it is mounted being at least 45°, and the spacing between the notches being such that each bar of one of the tools is received in succession between two corresponding bars on the other tool as the tools rotate.

3,897,706
MAT CUTTER

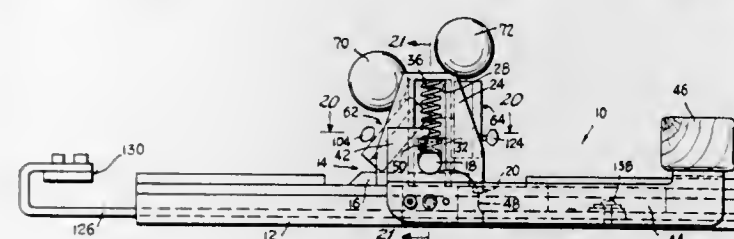
Joseph Martin, c/o Martin Engineering Co., 169-17 Northern Blvd., Flushing, N.Y. 11358

Filed May 21, 1974, Ser. No. 471,867

Int. Cl. B26d 7/02, 1/06, 3/02

U.S. Cl. 83-455

12 Claims



1. A mat cutter construction, comprising in combination:
 a. an elongate base on which sheet stock can be placed for cutting into mats,
 b. a flat, elongate clamp bar coextensive with said base,
 c. means carried by the base and engageable with stock placed thereon, for positioning the latter with portions thereof disposed under the clamp bar,

d. guide means at each end of the base, engageable with the clamp bar to provide for advancing and retracting movement with respect to the base,
 e. cam followers carried by the ends of the clamp bar for effecting movement thereof,
 f. cams pivotally carried by the base and respectively engaging said cam followers,
 g. a pair of arms respectively attached to said cams for actuating the same, and
 h. an elongate handle coextensive with said base and at its ends secured to said arms to operate the same,
 i. said handle rigidly connecting the cams and constituting the sole connecting linkage therebetween,
 j. said handle further being substantially parallel to and coextensive with said clamp bar and being disposed in spaced relation with respect thereto,
 k. movement of said handle causing simultaneous pivoting of said cams and movement of said clamp bar.

3,897,707

STAMPING DEVICE WITH A HORIZONTALLY MOVEABLE STAMPING FRAME

Erwin Kruse, and Ludwig Regenbrecht, both of Gevelsberg, Germany, assignors to Rolf Peddinghaus, Sprockhovel-Haslingenhausen, Germany

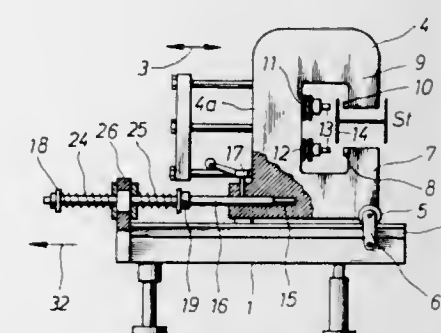
Filed Aug. 2, 1974, Ser. No. 494,344

Claims priority, application Germany, Aug. 10, 1973, 2340528

Int. Cl. B26d 5/08; B26f 1/02

U.S. Cl. 83-560

9 Claims



1. In a stamping device in which a U-shaped frame has a rest position and has a matrix therein and a moveable punch therein spaced from the matrix, said frame adapted to receive a workpiece to be punched and being moveable from said rest position in the direction of the line of action of the punch to engage the matrix with one side of the workpiece while the punch advances in the frame in the opposite direction to carry out a punching operation on the workpiece, and spring means biasing on said frame toward said rest position, the improvement which comprises; a rod connected at one end to the frame and extending therefrom in the direction of movement of said frame, said spring means comprising a pair of springs axially disposed on the rod, inner counterbearings slidable on the rod at the ends of the springs nearest each other, outer counterbearings fixed to the rod at the other ends of the springs, a stationary member between said inner counterbearings and engaging both thereof in the rest position of said frame, and an abutment member fixed to said rod between said inner counterbearings.

3,897,708

ELECTRICALLY OPERATED MUSICAL INSTRUMENT
 Yoshiro Suzuki, No. 7-15 1-chome Shirakawa, Koto-ku, Tokyo, Japan

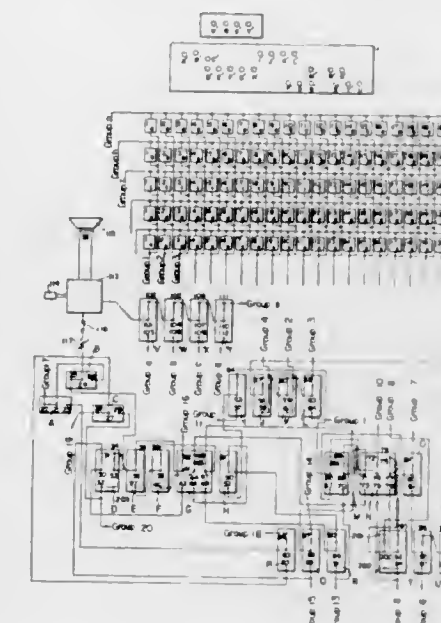
Filed May 23, 1974, Ser. No. 472,688

Claims priority, application Japan, May 24, 1973, 48-58469

Int. Cl. G10C 3/12; G10H 5/02

U.S. Cl. 84-1.01

2 Claims



1. An electrically operated musical instrument including an electrical system comprising a plurality of keys having a normal and an actuated position, a plurality of electrically interconnected change-over switches operated by said keys, an amplifier, and sound generators electrically connected to said switches for selective connection to said amplifier as a function of switch position, the improvement being characterized in that said change-over switches are provided as an assembly comprising a first contact panel having a first plurality of fixed contacts, a second contact panel having a second plurality of fixed contacts and an intermediate contact panel in superposed alignment with said first and second panels and carrying movable contacts adapted to engage the contacts on the first panel in the normal position of the keys and adapted to engage the fixed contacts on the second panel on moving the keys to their actuated position.

3,897,709

ELECTRONIC MUSICAL INSTRUMENT

Teruo Hiyoshi, Hamamatsu, and Eisaku Okamoto, Hamakita, both of Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Apr. 3, 1974, Ser. No. 457,646

Claims priority, application Japan, Apr. 11, 1973, 48-41016; May 7, 1973, 48-50463; Apr. 19, 1973, 48-44526; June 16, 1973, 48-68172; June 13, 1973, 48-71497; Sept. 11, 1973, 48-106413

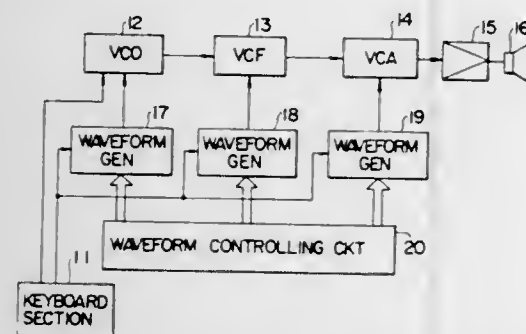
Int. Cl. G10h 1/00, 5/00

U.S. Cl. 84-1.19

8 Claims

1. An electronic musical instrument comprising:
 a keyboard section including a plurality of keys each generating when depressed a voltage signal representing a tone pitch of a depressed key and a trigger signal indicating the operation of said key;
 tone generator means including a voltage controlled oscillator coupled to said keyboard section and generating a tone signal having a frequency determined by said voltage signal representing the depressed key;
 a voltage controlled frequency-variable filter connected to said tone generator means and receiving said tone signal;
 a first controlling voltage waveform generator connected to said keyboard section and said filter and generating

upon operation of a key a voltage waveform having levels and transient times varying with time for controlling said frequency variable filter in accordance therewith; and



a controlling circuit independent of said keyboard section and connected to said waveform generator for supplying voltage information to said waveform generator thereby determining said levels and transient times of the voltage waveform.

3,897,710

AUDIO-VISUAL METHOD AND APPARATUS FOR TEACHING MELODY AND CHORD MANIPULATION OF KEYBOARD MUSICAL INSTRUMENTS

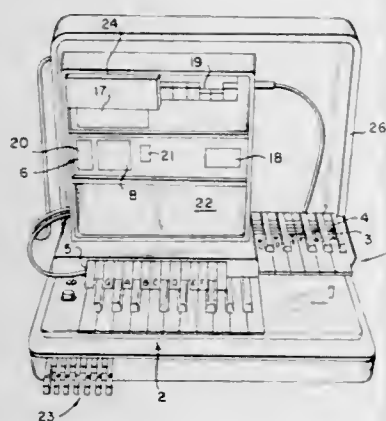
Arthur Robert Schmoeyer, The Cedars Rt. 16, Woolford, Md. 21677

Filed June 21, 1974, Ser. No. 481,879

Int. Cl.² G09B 15/08

U.S. Cl. 84—478

8 Claims



1. A system for instruction in operation of a musical instrument having a keyboard including a first portion including keys to which student response by the right hand is to be directed in playing melody notes and a second portion including keys to which student response by the left hand is to be directed in playing chord notes, said system comprising:

- A. at least two distinct visual indicators, namely
 - a. a first group of indicator lights each of which is visually associated with a respective key of said first portion of said keyboard;
 - b. a second group of indicator lights each of which is visually associated with a respective key of said second portion of said keyboard,
- B. at least two distinct programming media namely
 - a. means for sequentially reading-out a series of still optical indicia, said means comprising
 - a. a film strip comprising a plurality of successive frames of optical cueing indicia indicative of respective chord notes of said second keyboard portion,
 - b. a projector for incrementally advancing said film strip to project successive frames thereof,
 - c. means for sensing the projected cueing indicia of a respective frame throughout the period of projection of said respective frame,
 - b. tape means for storing a pre-recorded program of synchronized audio and visual instructional information, said program including

- a. audio instruction,
- b. cueing signals indicative of times for advancement of said film strip projector to indicate changes in chord note instruction, and
- c. cueing signals including signals occurring in intervals between said advancement cueing signals and indicative of respective melody notes of said first keyboard portion, which notes change during said period of projection,

- C. control means including means for
 - a. continuously advancing said pre-recorded program,
 - b. sensing and audibly reproducing said audio instructions,
 - c. sensing said melody note cueing signals and in response thereto activating respective indicators of said first group,
 - d. sensing said advancement time cueing signals and in response thereto effecting an incremental advancement of said film strip projector, and
 - e. sensing the cueing indicia of the frame being projected and in response thereto effective to activate respective indicators of said second group and to sustain the activation thereof substantially throughout the display of that frame, whereby the melody note indicator lights are activated directly from the pre-recorded program whereas activation of the chord note indicator lights is slaved to the projection of particular frames of said film strip.

3,897,711

MUSIC TRAINING DEVICE

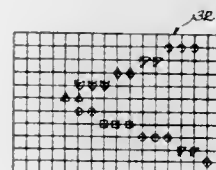
Harvey Brewster Elledge, P.O. Box 95, Stonewall, N.C. 28583

Filed Feb. 20, 1974, Ser. No. 444,135

Int. Cl.² G09B 15/02, 15/08, 15/04

U.S. Cl. 84—479

1 Claim



1. A stimulus-response training device for music students, comprising:
- a visual display board having a plurality of discrete indicator lamps thereon;
 - at least two control means remote from said display board each including a stringless hand-held fingerboard having a plurality of electrical push-button switches thereon for selectively activating individual lamps; and
 - electrical cable means for connecting said control means to said display board whereby at least one student can sequentially duplicate a visual pattern displayed on said display board by an instructor.

3,897,712

PLASTIC HEADED FASTENER ASSEMBLY

Daniel A. Black, Pleasant Hills, Pa., assignor to Textron Inc., Providence, R.I.

Filed Jan. 9, 1974, Ser. No. 431,683

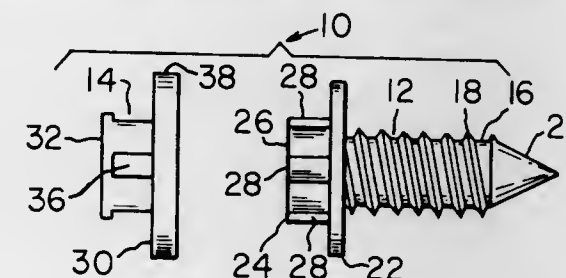
Int. Cl.² F16B 23/00

U.S. Cl. 85—9 R

7 Claims

1. A two piece fastener assembly suitable for installation in the assembled condition comprising:

- A. a metal fastener including a shank extending from a metal head, said head having a plurality of faces, each face including a longitudinal groove and a remaining ungrooved portion; and
- B. a plastic cap having a top surface and a plurality of side faces matingly engaging the metal head and including a



plurality of longitudinal slots extending entirely through the side faces aligned with the ungrooved portions, said ungrooved portions projecting through the slots to define exposed metal wrench engaging surfaces, and a plurality of inwardly extending flutes on the plastic cap keyed into the grooves.

3,897,713

DOUBLE-ENDED STUD

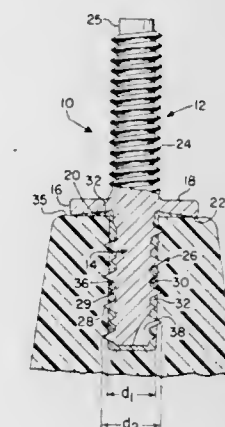
James Eric Gogle, Crystal Lake, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Mar. 6, 1974, Ser. No. 448,601

Int. Cl.² F16B 37/04

U.S. Cl. 85—42

6 Claims



1. A double-ended stud system including coaxially disposed stud shanks separated by an outwardly radiating generally circular rigid flange portion, a first stud shank including a helical thread formed thereon, a second stud shank including a plurality of relatively sharp crested protuberances extending from a root diameter, the sharp crested protuberances being of a generally uniform height along the length of the second stud shank, the flanks of adjacent protuberances being spaced at their juncture with the root diameter providing a plurality of adhesive carrying channels on the shank, a predetermined volume of heat activatable adhesive means carried on said second stud shank and encapsulating the periphery thereof filling the adhesive carrying channels to the crest diameter of the protuberances but not appreciably covering the crests of the protuberances, a recess formed on the face surface of the flange adjacent the second stud shank and extending outwardly and downwardly from the juncture of the second stud shank to a narrow outer peripheral bearing and sealing surface on the flange, the recess being substantially void of adhesive prior to insertion in a bore so that the recess may receive and sealingly retain a predetermined volume of adhesive and provide a controlled bond line beneath the flange as the second stud shank is inserted in a work structure, the face surface of the flange adjacent the first stud shank being essentially a planar surface extending generally perpendicular to the axis of the shanks so that a subsequent attachment load on the first

stud section will be applied substantially to the peripheral bearing and sealing surface.

3,897,714

BURST DISPERSION CONTROL

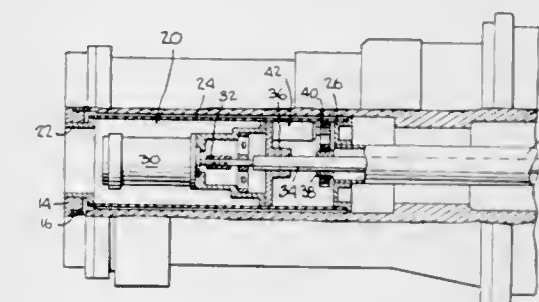
David P. Perrin, Charlotte; Douglas P. Tassie, St. George, and Timothy S. Smith, Essex Junction, all of Vt., assignors to General Electric Company, Burlington, Vt.

Filed Aug. 22, 1973, Ser. No. 390,427

Int. Cl. F41d 7/04

U.S. Cl. 89—12

11 Claims



1. In a Gatling type gun having:
 - a stationary housing;
 - a rotor having a longitudinal axis of rotation with respect to said housing and a plurality of gun barrels with respective gun bolts, each barrel respectively having an aft end fixed to said rotor in an annular row about said longitudinal axis of rotation; and
 - means for rotating said rotor about said axis of rotation;
- the improvement of:
 - means for varying the longitudinal alignment of at least one of said barrels during rotation of said rotor by said means for rotating said rotor, including:
 - control means fixed to and between said stationary housing and the respective distal end of one of said barrels for adjustably varying the longitudinal alignment of said one barrel with respect to said longitudinal axis of rotation, including:
 - a follower fixed to said distal end of said one barrel,
 - a driver engaged with said follower, having the characteristic that translation of said driver relative to said housing provides transverse movement of said follower with respect to said longitudinal axis of rotation, and thereby, said distal end of said one barrel, and
 - adjustable means coupled to and between said housing and said driver for adjustably translating said driver relative to said housing.

3,897,715

VERTICAL BROACHING MACHINE

Herbert Holstein, and Gustav Esser, both of Solingen, Germany, assignors to Oswald Forst Maschinenfabrik und Apparatebauanstalt GmbH, Solingen, Germany

Filed Aug. 26, 1974, Ser. No. 500,356

Claims priority, application Germany, Jan. 4, 1974, 2400235

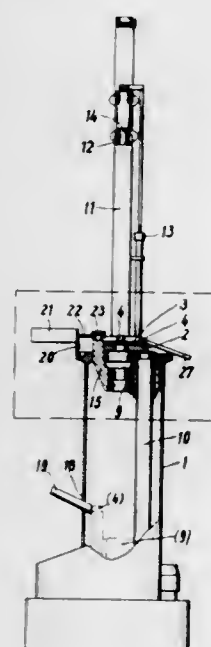
Int. Cl.² B23D 41/06, 41/04

U.S. Cl. 90—71

3 Claims

1. In a vertical broaching machine mounted in a frame and including
- at least one workpiece support mounted on a machining table;
 - a vertically displaceable broaching slide means mounted below the machining table, for pulling at least one broaching tool through at least one workpiece;
 - a vertically displaceable broaching tool feed channel located above said workpiece support;
- the improvement comprising:
- feeding means for elevating workpieces in front of said workpiece support, said feeding means comprising a

vertically displaceable plate, with an upper surface, connected to the broaching slide, said upper surface being aligned with said workpiece support when the broaching slide is vertically displaced to the upward extent of its travel, and



transporting means for receiving said at least one workpiece from said feeding means and transporting it to said workpiece support for broaching.

3,897,716

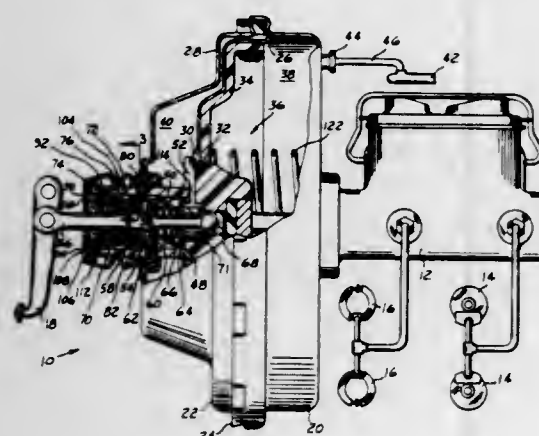
FLOW CONTROL MEANS FOR A SERVOMOTOR
Jerrie K. Ramage, and Delbert J. Gardner, both of South Bend, Ind., assignors to The Bendix Corporation, South Bend, Ind.

Filed Aug. 20, 1973, Ser. No. 389,751

Int. Cl. F15b 9/10

U.S. Cl. 91-29

6 Claims



1. In a servomotor having wall means movable in response to a first fluid flowing through a passageway in a hub means upon movement of a control valve means to establish a pressure differential with a second fluid in response to an input force from an operator, flow control means for providing a flow path commensurate with said input force, said flow control means comprising:

disc means located in said passageway adjacent said control valve means having an axial bore therein and a first series of arcuate slots located adjacent the external periphery thereof, said disc means having an area substantially equal to said passageway;

cylindrical means fixed to and extending rearwardly from said disc means;

cap means fixed to said cylindrical means and surrounding a portion of said hub means for maintaining the cylindrical means in a predetermined position with respect to the hub means, said cap means having an axial bore therein

for establishing a first flow path for the first fluid and a second series of arcuate slots located between the cylindrical means and the internal periphery of the passageway in the hub means;

first filter means located between said disc means and said cap means for substantially filling said axial bore therebetween, said first fluid freely flowing primarily in the first flow path through said first filter during the application of said input force; and

bypass means secured to said disc means for repeatedly establishing an auxiliary secondary flow path for said first fluid through the first series of arcuate slots and the second series of arcuate slots to help meet a flow demand for establishing said pressure differential upon the rate of said input force exceeding a predetermined value.

3,897,717

CONTROL VALVES

Michael Kellner, Stanley, England, assignor to Victor Products (Wallsend) Limited, Wallsend, England

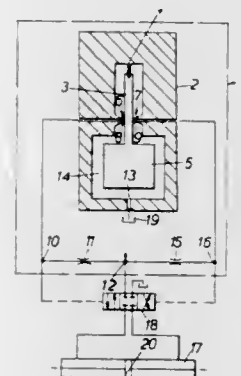
Filed Sept. 19, 1973, Ser. No. 398,705

Claims priority, application United Kingdom, Sept. 28, 1972, 44833/72

Int. Cl. F16k 17/36

U.S. Cl. 91-51

8 Claims



1. A control valve including

a. a support member,

b. fluid inlet means,

c. fluid outlet means,

d. a first pair of fluid conduction paths connected in parallel between the inlet and outlet, each said path containing a fixed restrictor connected in series with a variable restrictor, there being a junction between said restrictors, each variable restrictor including an orifice which is movable with the support member and which cooperates with obstructing means to control the resistance to the flow of fluid through the respective path, the obstructing means being held substantially in a predetermined attitude by a mass suspended from the support member so that the attitude of the obstructing means is substantially independent of the attitude of the support member within a range of attitudes, whereby a fluid pressure differential between the junctions of the paths varies with the attitude of the support member within said range; and

e. a second pair of fluid conduction paths as aforesaid, each having a said orifice in a plane at an angle to the aforesaid orifices, the obstructing means of said second pair of paths also being held substantially in a predetermined attitude by said mass.

3,897,718

WALL MEANS FOR A SERVOMOTOR

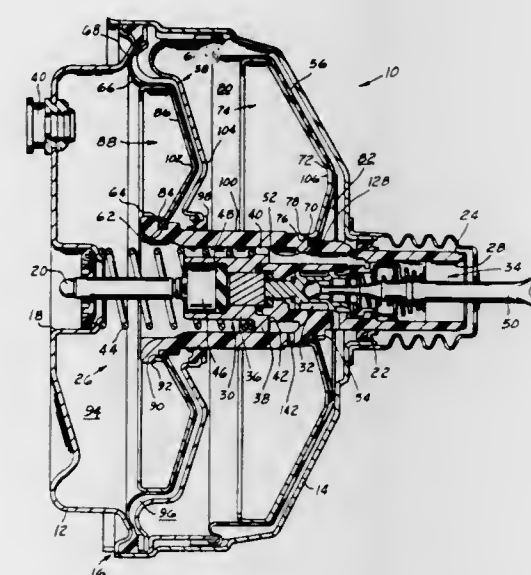
Delbert J. Gardner, and Maxwell L. Cripe, both of South Bend, Ind., assignors to The Bendix Corporation, South Bend, Ind.

Filed July 30, 1973, Ser. No. 383,931

Int. Cl. F01b 19/00; F15b 13/06; F16j 3/02

U.S. Cl. 91-411 A

1 Claim



1. A servomotor comprising:

a housing having a front shell and a rear shell joined together to form a cavity therein;

hub means having a continuous cylindrical body which extends from the interior of said cavity through the rear shell, said cylindrical body having an external periphery with a first ledge located between a first shoulder and a first groove therein and a second ledge located between a second shoulder and a second groove, therein said cylindrical body having an axial bore therein;

control valve means located in said axial bore adjacent the rear shell for actuating the servomotor in response to an operator input;

reaction means located in said axial bore for transmitting an output force carried through the hub means to an output member;

partition means having an outer diameter connected to the housing and an inner diameter which surrounds the cylindrical body between the first shoulder and the second groove to divide the cavity into separate front and rear volumetric areas;

first diaphragm means having an outer diameter secured between the partition means and the rear shell and an inner diameter with a first bead located in the first groove to divide the rear volumetric area into a first vacuum chamber and a first power chamber;

first backing plate means abutting a major portion of said first diaphragm means having an outer diameter free to move in said rear volumetric area and an inner diameter with a first sleeve attached thereto and located on said first ledge, said first sleeve having a first face radially compressing the first bead into the first groove to seal the first vacuum chamber from the first power chamber, said first diaphragm means urging a second face of said first sleeve against the first shoulder of the hub means to prevent relative movement therebetween, said first backing plate means responding to a pressure differential created between the first vacuum chamber and the first power chamber upon actuation of said control means to transmit a first axial operational force through the first sleeve into said continuous cylindrical body;

second diaphragm means having an outer diameter secured between the partition means and the front shell and an inner diameter with a second bead located in the second groove to divide the front volumetric area into a second vacuum chamber and a second power chamber;

second backing plate means abutting a major portion of said second diaphragm means having an outer diameter free to move in the front volumetric area and an inner diameter with a second sleeve attached thereto and located on said second ledge, said second sleeve having a first face radially compressing the second bead into the second groove to seal the second vacuum chamber from the second power chamber, said second diaphragm means urging a second face of said second sleeve against the second shoulder of the hub means to prevent relative movement therebetween, said second backing plate means responding to a pressure differential created between the second vacuum chamber and the second power chamber upon actuation of said control means to transmit a second axial operational force through said second sleeve means into said continuous cylindrical body, said first and second axial operational forces being combined to produce said operational force; and

resilient means having one end connected to the front shell and the other end guided by the interior of the cylindrical body into direct engagement with the reaction means for urging the hub means and associated first and second backing plate means and first and second diaphragm means toward the rear shell upon termination of an operator input.

3,897,719

FLOW AND PRESSURE REGULATING CONTROL FOR HYDRAULIC MOTORS

Joe D. Tipton, Garland, Tex., assignor to Gardner-Denver Company, Dallas, Tex.

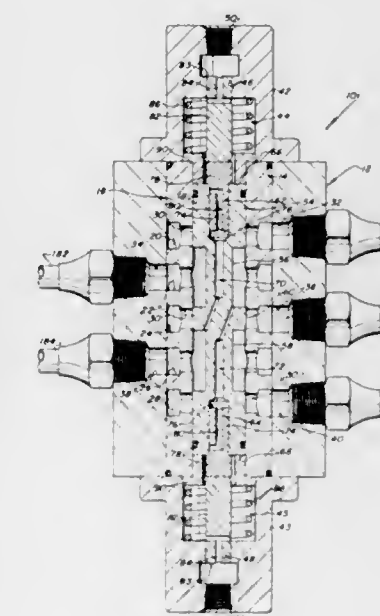
Division of Ser. No. 261,885, June 12, 1972, Pat. No.

3,799,200. This application Dec. 13, 1973, Ser. No. 424,512

Int. Cl. E21C 5/06; F15B 13/042

U.S. Cl. 91-433

4 Claims



1. In combination with a rock drill feed mechanism including an elongated support, drill means mounted for reversible movement along said support, and a pressure fluid operated motor for moving said drill means reversibly along said support;

control means for said motor including a source of pressure fluid, a pair of conduits interconnecting said source of pressure fluid and said motor and the improvement characterized by:

a control valve interposed in said conduits between said source and said motor, said control valve including:

a valve closure member disposed in said housing and movable to control the flow of pressure fluid through said conduits;
 pressure fluid operated means including opposed chambers in said housing and actuating means disposed in each of said opposed chambers and responsive to pilot pressure fluid from a source admitted to one of said opposed chambers to move said closure member to provide for flow of pressure fluid through one of said conduits to said motor; and,
 means comprising movable valve means movable in response to a predetermined pressure in said one conduit for blocking the communication of pilot pressure fluid to the other of said opposed chambers and for communicating pressure fluid to said other opposed chamber from said one conduit to cause said actuating means in said other opposed chamber to move said closure member in opposition to the movement caused by the admission of pilot pressure fluid to said one chamber whereby the pressure of fluid supplied to said motor through said one conduit is controlled in accordance with the pressure of pilot pressure fluid admitted to said one chamber.

3,897,720

METHOD OF MAKING ENVELOPE WITH INSERT

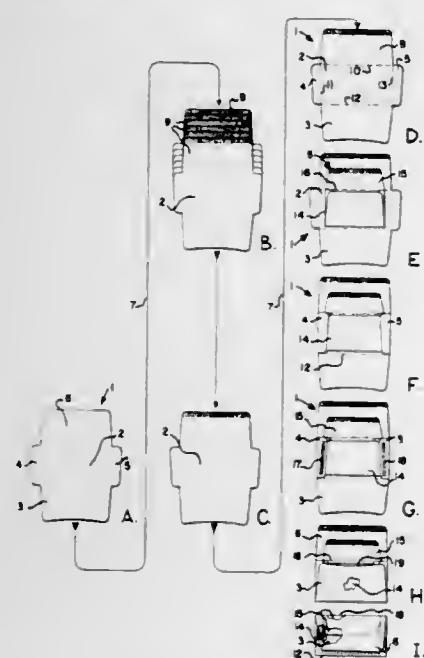
Walter L. Hiersteiner, Kansas City, Mo., assignor to Tension Envelope Corporation, Kansas City, Mo.

Filed Jan. 21, 1974, Ser. No. 434,858

Int. Cl.² B31B 39/26

U.S. Cl. 93-61 R

5 Claims



1. A method of producing an envelope associated with a folded insert comprising:

- conveying along an operational path an envelope blank having a front panel and an outwardly projecting bottom flap and an outwardly projecting closure flap and a score line between said front panel and closure flap,
- bringing an insert having a first section and an outwardly projecting second section and a score line therebetween into overlying contact with said blank in a position where said first section overlies said front panel and said second section overlies said closure flap and said blank score line coincides with said insert score line,
- folding said bottom flap inwardly over said front panel while said insert remains in said position, thereby pocketing said first section between said front panel and said bottom flap with said second section projecting therefrom, and
- folding said closure flap and said second section simultaneously over said bottom flap and along said respective score lines, whereby said second section extends between said closure flap and said bottom flap.

3,897,721

FUMEHOOD WITH COMPENSATING AIR SUPPLY

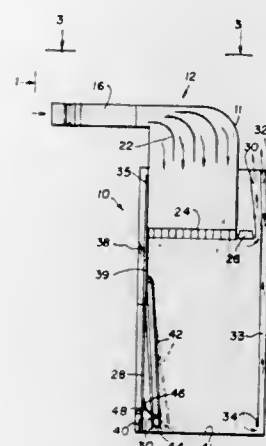
Warren Fuhst, Katonah, N.Y., assignor to The Rochelle Corporation, Fairfield, N.J.

Continuation-in-part of Ser. No. 349,034, April 9, 1973, abandoned. This application July 3, 1974, Ser. No. 485,514

Int. Cl.² F23J 11/00; B01D 51/00

U.S. Cl. 98-115 R

13 Claims



1. A fume hood which receives and diffuses into the interior chamber a compensating make-up air supply of low velocity air and supplying with said low velocity air a greater part of the hood exhaust volume, said fume hood including: (a) a fume hood enclosure of metal and having side walls, a top and bottom; (b) an access opening formed in and through a front wall of said fume hood; (c) a substantially vertically disposed, selectively movable door carried by said front wall and by which the access opening into the hood interior and work space is covered and uncovered; (d) means for receiving and distributing through a plenum positioned in the top of the hood an outside source of high volume, low pressure air; (e) louvers mounted in said plenum and adjusted so as to feed like amounts of air at like velocities through a multiplicity of downwardly directed outlets so that the downward flow of air with the door closed is distributed evenly over the work space in the hood, said plenum and the adjustably mounted louvers having their discharge position above the work space of the hood and occupying at least two-thirds of the cross-sectional area of the hood and with the source of high volume, low pressure air fed through said plenum and louvers providing at least seventy percent of the exhaust volume from said hood; (f) an air inlet means formed in the front wall of the fume hood and a short distance above the access opening and providing an inlet from the room into the interior of the hood, said air inlet positioned so that when the movable door is at its upper limit said inlet is substantially closed by said door and when the door is moved to its down position the inlet is open to the room, this inlet when the door is in a closed position providing a supply of air from the room of not more than thirty percent of the exhaust volume of the hood; (g) a front duct extending from the room to a position where at its lower end it is at about the upper edge of the access opening in the front wall, said duct having its rear wall substantially parallel to the front wall and a short distance therefrom this duct is closed to the supply of high volume, low pressure air, the door movable in said duct and as the door is in closed condition an air current is guided to direct a flow of air from said access opening down the inner surface of the door when and while the door is in a closed or nearly closed condition, said duct providing a downwardly guided air flow from the access opening into the mid-portion of the work area of the hood without room supplied air flow disrupting the controlled air flow in the hood; (h) a discharge inlet positioned at the upper rear portion of the hood, this upper discharge inlet connected to an exhaust system for removing the inlet air flowing into the hood, this upper discharge inlet disposed to accommodate about one-half of the exhaust volume; (i) a discharge inlet positioned at the rear lower portion of the hood and disposed to accommo-

date the remaining one-half of the exhaust volume, this lower inlet connected by an appropriate duct work to the exhaust system which is connected to the upper discharge inlet, and (j) a deflector carried on the inner portion of the door and movable therewith, said deflector disposed downwardly and inwardly so as to deflect and direct inwardly the downwardly flowing air adjacent the closed door and directing said flow of air toward the discharge inlet positioned at the rear lower portion of the hood, said deflector when the door is in its closed condition sealing the bottom of the door and the front of the hood to assure that the hood is closed except for the low pressure, high volume air through the plenum and the air from the room which is fed in through the air inlet above the door and through the front duct forming a portion of the front face of the hood.

3,897,722

FOOD PREPARATION DEVICE FOR USE WITH A COOKING GRILL

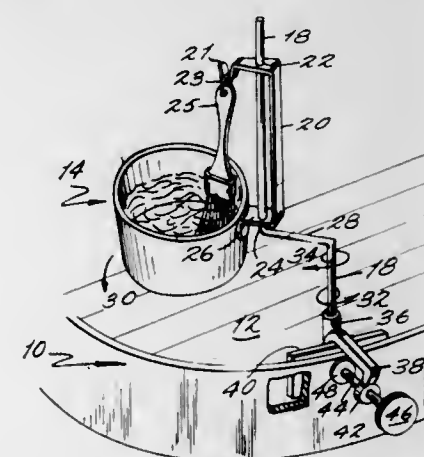
Frank D. Harris, P.O. Box 86, Homosassa Springs, Fla. 32647

Filed Nov. 19, 1973, Ser. No. 417,114

Int. Cl.² A47J 27/52

U.S. Cl. 99-345

8 Claims



1. A food preparation device to be used with a cooking means, said cooking means having an interior heated portion at least partially surrounded by a rim in which said device comprises:

- a main support means;
- securing means pivotally connecting said support means adjacent to the rim for disposing said support means upwardly from the rim, said securing means being mounted adjacent to the rim;
- a container means for holding a liquid to be applied to a food pivotally attached to said support means; and
- means for applying the liquid to food being cooked in the cooking means, said applying means being supported by said support means and at least partially confined by said container and readily removable therefrom; said pivotally connected support means arranged to dispose said container interiorly and exteriorly of the rim in a plane substantially parallel to a top surface of the cooking means.

3,897,723

MEAT EMULSION PROCESSING APPARATUS

Ben H. Lucy, Jr., Trussville, Ala., and Robert N. Terrell, La Grange, Ill., assignors to The Griffith Laboratories, Inc., Chicago, Ill.

Filed Dec. 26, 1973, Ser. No. 428,252

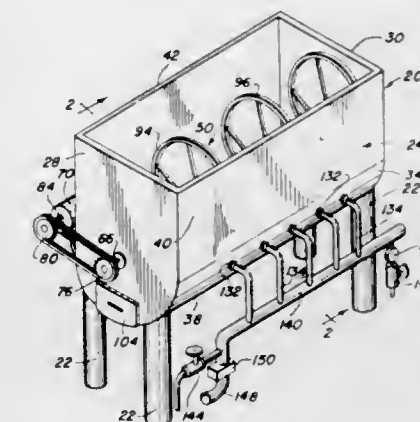
Int. Cl. A21c 1/00

U.S. Cl. 99-467

7 Claims

1. In a processing vessel for the preparation of meat mixtures and meat food mixtures of the type used in the manufacture of comminuted meat food products such as fine and coarse emulsified products as well as sectioned and formed meat and meat food products, said emulsions containing proteinaceous materials and fat components, said vessel including

blending means supported in said vessel for agitating and mixing vessel-contained material including meat product components to provide a homogeneous blend thereof, the improvement comprising a plurality of spaced fluid inlet means including through passages communicating between the exterior and the interior of said vessel, said passages terminating in steam outlet means opening into



3,897,724

COLLAPSIBLE DEVICE FOR STACKING AND BUNDLING OF PUBLICATIONS

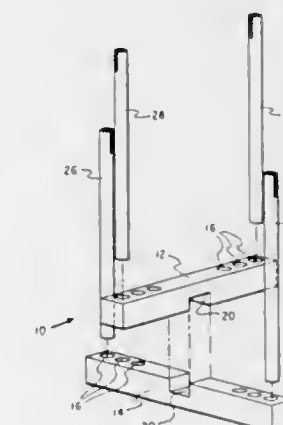
William S. McDonald, 11015 S.E. Woodhaven Pl., Milwaukie, Oreg. 97222

Filed Mar. 15, 1974, Ser. No. 451,453

Int. Cl. B65b 13/18

U.S. Cl. 100-34

7 Claims



1. A collapsible device for use in stacking and bundling publications, said device comprising:

- multiple base members having upper surfaces for supporting said publications, each of said base members including interlocking mating engagement means for engaging one another in a collapsible horizontal configuration with said respective upper surfaces of said base members substantially coplanar, said engagement means including interlocking means for preventing substantial movement between said base members in any horizontal direction while readily permitting vertical movement between said base members, so as to permit said base members to be selectively engaged or disengaged from one another by said vertical movement to provide ready collapsibility;
- a plurality of upright members, each adapted to be detachably connected at its lower end to one of said base members;

c. a plurality of connecting means on said base members for detachably connecting said upright members thereto and supporting them in alternative upright positions defining the four sides of stacking enclosures of different rectangular horizontal cross-sections, said connecting means being positioned so as to permit said upright members to be selectively supported in alternative positions approximately 1 inch apart in the length and width directions respectively of said stacking enclosures and being positioned so as to form a maximum stacking enclosure having dimensions of approximately 12 by 15 inches.

3,897,725

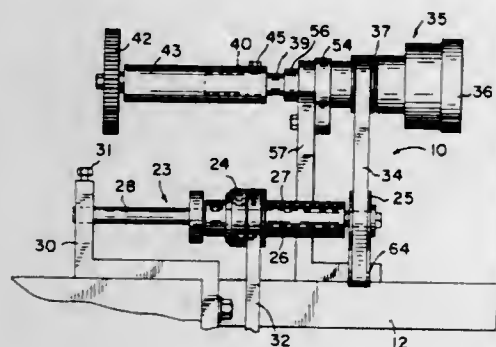
APPARATUS FOR REGISTERING OBJECTS OF REVOLUTION FOR PRINTING

Charles H. Derrickson, Chicago, Ill., assignor to American Screen Printing Equipment Company, Chicago, Ill.
Filed Feb. 25, 1974, Ser. No. 445,221

Int. Cl. B41f 17/22

U.S. Cl. 101—38 R

8 Claims



1. An apparatus for accurately registering objects of revolution relative to a screen printing press having a screen assembly and a squeegee assembly movable relative to one another to assure that the printing of each object will always be initiated from a designated reference position on that object, including a centering and positioning chuck mounted on a shaft extending outwardly from said screen printing press, said object to be printed being positioned on said chuck, said chuck and said object being angularly movable about a central axis of said shaft relative to said shaft to a designated reference position by drive means operatively connected to said chuck, said drive means including a first pulley associated with said chuck, said first pulley having a generally cylindrical, smooth exterior surface, and a second pulley rotatable about a central axis thereof relative to said printing press, said second pulley being operatively connected to said first pulley by a first belt, and said second pulley being operatively connected to a drive pulley by a second belt, said drive pulley being rotatable to cause said second pulley to be rotated about said central axis thereof, thereby imparting angular movement to said first pulley through said first belt, such that said first pulley and said chuck and said object positioned thereon are moved angularly in a selected direction relative to said shaft to said designated reference position, said shaft having registration means mounted thereon to engage said object and stop rotation of said first pulley and said object in said designated reference position, said smooth surface of said first pulley being in intimate, contacting relationship with a portion of an exterior surface of said first belt such that as the angular movement of said first pulley and said object is stopped by the engagement of said registration means with said object in said designated reference position, the limited frictional forces created between the engaging surfaces of said first pulley and said first belt permit continued movement of said first belt in said selected angular direction while allowing said chuck and said object to be moved with said shaft in an opposite angular direction for printing.

3,897,726 WASHING DEVICE FOR A BLANKET CYLINDER OF AN OFFSET PRINTING PRESS

Rudi Junghans, Wilhelmsfeld, Germany, assignor to Heidelberg Druckmaschinen Aktiengesellschaft, Heidelberg, Germany

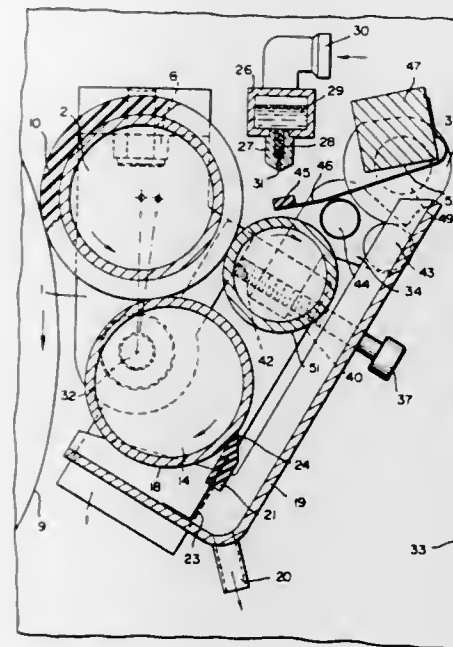
Continuation of Ser. No. 308,341, Nov. 21, 1972, abandoned.
This application May 17, 1974, Ser. No. 470,946

Claims priority, application Germany, Nov. 24, 1971, 2158185

Int. Cl. B41f 35/06; B41f 41/06

U.S. Cl. 101—425

9 Claims



1. In an offset printing press having a blanket cylinder, a washing device adjustable with respect to the blanket cylinder and comprising a rotary washing roller having a soft covering and being in frictional driving engagement with and traversible relative to the blanket cylinder, means for wetting said washing roller with wash solution, a collecting vessel underlying said washing roller, a doctor roller having a firm surface located in continuous frictional engagement with said washing roller, a doctor blade abutting said firm surface of said doctor roller for guiding therefrom into said collecting vessel ink washed off the blanket cylinder with the wash solution, a distributor roller having a firm surface engaging said soft covering of said washing roller at a location behind said doctor roller in the rotary direction of said washing roller, said distributor roller being wettable with fresh wash solution, a drip tube mounted above said distributor roller and extending along substantially the entire length thereof, said drip tube having a plurality of nozzles formed with nozzle openings, and further including sealing means, said nozzle openings being closable by said sealing means, a shifter rod revolvable about an axis that extends parallel to said drip tube, leaf spring means secured to said shifter rod and having a free end, said sealing means being carried by said leaf spring means at said free end thereof, said shifter rod being adjustable about said axis to two successive indexing positions wherein said sealing means closes said nozzle openings and to a third indexing position wherein said nozzle openings are kept open.

3,897,727 METHOD OF PRODUCING WEB UNITS

James B. Fulk, P.O. Box 947, Los Gatos, Calif. 95030

Filed Oct. 9, 1973, Ser. No. 404,501

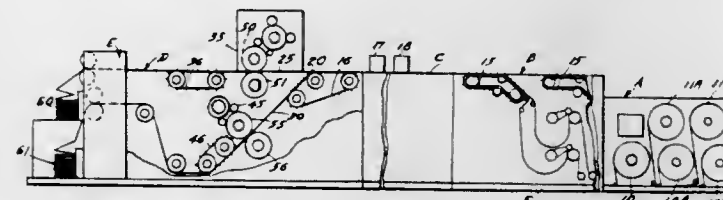
Int. Cl. B65h 41/00

U.S. Cl. 101—426

7 Claims

1. A method of making graphic copies of indicia on multiple paper webs in a continuous operation comprising, providing multiple paper webs with a substrate of pressure responsive marking material between adjacent webs,

pulling the webs into assembled superimposed contiguous relationship, processing all of the webs simultaneously while they are moving in superimposed contiguous relationship, all of said superimposed webs being identically processed by said processing operation, separating the assembled webs into an upper section and a lower section, each containing a plurality of superimposed contiguous webs, moving the webs of the upper section as a unit in an upper first plane, moving the webs of the lower section as a unit in a lower second plane,



crash printing the webs of the upper section simultaneously while they are moving continuously in said first plane, each of said webs of the upper section being identically imprinted by said continuous printing operation, crash printing the webs of the lower section simultaneously while they are moving continuously in said second plane, each of the webs of the lower sections being identically imprinted by said continuous imprinting operation, each of said imprinting operations on said lower web section occurring substantially directly beneath the imprinting operation of the upper web section and processing the webs of the respective sections as independent units into separate stacks.

3,897,728

DENSE CORE IMPLOSION CHARGES

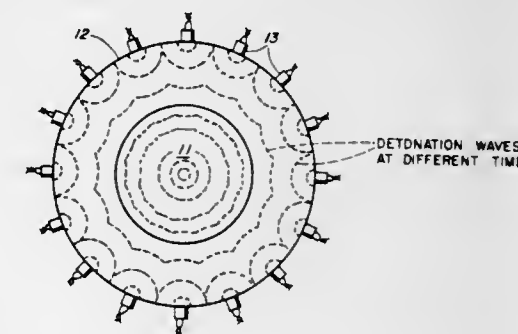
Hyman M. Sternberg, and Dante Piacesi, Jr., both of Silver Spring, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 29, 1965, Ser. No. 510,736

Int. Cl. F42b 22/00

U.S. Cl. 102—10

7 Claims



1. An improved implosion system which produces an increase in shock-wave energy at a substantial distance from the center of the charge, said system comprising:

a solid explosive charge having a spherical geometry and symmetry, said explosive charge including a core of high explosive and an outer shell of high explosive, said core of high explosive having a detonation velocity less than the detonation velocity of said shell of high explosive and the speed of sound in the detonation products of said core being less than the speed of sound in the detonation products of said shell,

means including a plurality of detonators uniformly spaced on the surface of said charge for directing a plurality of simultaneously initiated divergent shock-waves inwardly of said charge and for producing a resultant convergent uninterrupted shock-wave front converges within said charge which completely encloses a progressively smaller

volume of said charge as said shock-wave front to a point at the center of said charge.

3,897,729

CARTRIDGE FOR FIREARMS

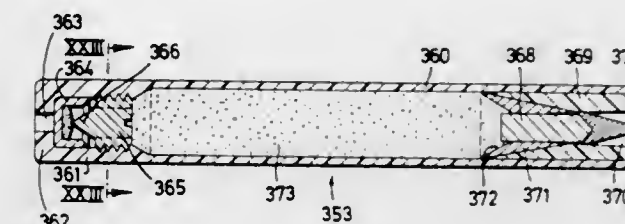
Hans-Ludwig Schirneker, Am Berg 396, A 6833 Klaus, Austria

Division of Ser. No. 138,978, April 30, 1971, Pat. No. 3,817,148. This application Jan. 28, 1974, Ser. No. 437,051
Claims priority, application Germany, May 2, 1970, 2021597; Jan. 7, 1971, 2100434

Int. Cl. F42B 5/02

U.S. Cl. 102—38

6 Claims



1. A cartridge for a hand firearm comprising an extremely low-calibre bullet with a body of heavy metal surmounted by a tip of a relatively soft metal and comprising a shell with a cross-section that is uniform over its entire length and in which both a detonator and also the bullet are accommodated with complete cover, said cartridge shell containing a holder for the bullet in the form of a cylindrical piston formed of resilient plastic material pressed into the front end of said shell, wherein the inner end of said cylindrical piston is provided with a conical metal insert which accommodates a bullet and which during firing presses said resilient piston as a seal against the inner wall of the cartridge shell.

3,897,730

PENETRATING SPEAR WITH SUSPENDED WARHEAD

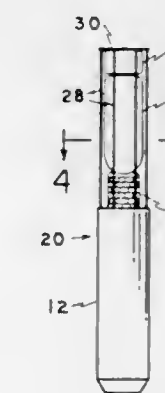
Carlo Riparbelli, San Diego, Calif., assignor to General Dynamics Corporation, Pomona, Calif.

Filed June 21, 1973, Ser. No. 372,126

Int. Cl. F42B 13/28

U.S. Cl. 102—52

2 Claims



1. A penetrating spear comprising:
an elongated, solid metal, penetrating stem;
a warhead disposed behind said penetrating stem;
a crushable honeycomb shock absorber means disposed between said penetrating stem and said warhead;
a warhead connector plate disposed behind said warhead;
a plurality of tensioned resilient cables extending between said penetrating stem and said warhead connector plate to resiliently suspend said warhead behind said penetrating stem;
propulsion means operably affixed behind said penetrating stem to accelerate the spear to an optimum velocity before impact with an intended target; and

a plurality of aerodynamic surfaces operably disposed around said penetrating stem and said propulsion means to control and stabilize the spear during flight.

3,897,731

TIME DELAY FUSE

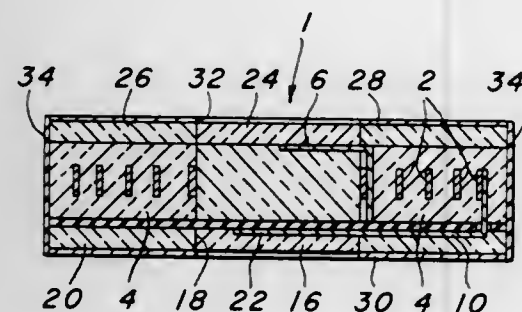
Donald E. Bowman, Baltimore, Md., assignor to Catalyst Research Corporation, Baltimore, Md.

Filed Oct. 30, 1961, Ser. No. 149,483

Int. Cl.² C06C 5/00

U.S. Cl. 102-85

7 Claims



1. A time delay fuse comprising a consolidated body of noncombustible insulating fibers having enclosed therein a winding fuse path having two ends consisting of a portion of said non-combustible insulating fibers coated with a combustible composition which evolves substantially no gas on burning, said fuse path being defined and spaced from itself by said uncoated fibers, said ends of the fuse path being exposed on the surface of the consolidated body.

3,897,732

HYPERVELOCITY PROJECTILE

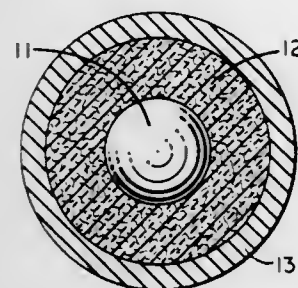
Walter W. Atkins, 7417 Yellowstone Dr., Alexandria, Va. 22312, and Mario A. Persechino, 5700 Roberts Dr., Brinkley Manor, Temple Hills, Md. 20031

Filed Mar. 21, 1962, Ser. No. 181,491

Int. Cl.² F42B 11/26

U.S. Cl. 102-92.3

2 Claims



1. A spherical hypervelocity projectile which comprises a solid spherical central core of high strength metal, a fiberglass filament winding wound about said central core, and a plastic, high-speed material secured about said filament winding.

3,897,733

HIGH BULK DENSITY EXTRUDED PROPELLANT FOR SMALL ARMS CARTRIDGES

Ludwig Stiefel; Marvin E. Levy, both of Philadelphia, Pa., and Martin Silverstein, Westmont, N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 19, 1973, Ser. No. 342,927

Int. Cl.² F42B 5/16; C06B 25/26

U.S. Cl. 102-104

12 Claims

1. An extruded propellant for small arms cartridges of 0.30 caliber and smaller ammunition, said propellant having a minimum bulk density of 0.932 gm/cc and comprising cylindrical grains having a length to outer diameter ratio of approx-

imately 0.9 to 1.1, and wherein said propellant grains comprise at least 85% colloided nitrocellulose, by weight, said colloided propellant grains being substantially non-fibrous.

3,897,734

SWITCH FOR A RAILROAD TRANSPORTATION SYSTEM EMPLOYING A ROTATING DRIVE SHAFT

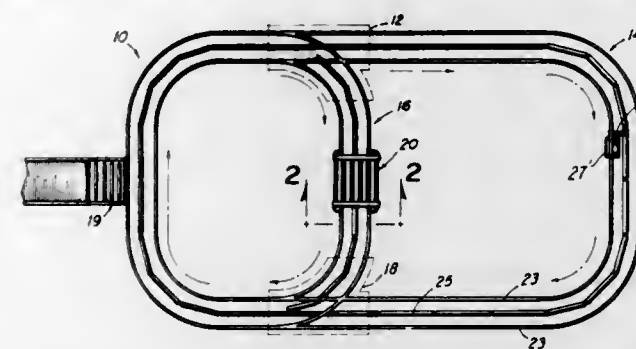
Max Welton Watts, Tiger, Ga., assignor to Aid Corporation, Clayton, Ga.

Filed Mar. 25, 1974, Ser. No. 454,446

Int. Cl. E01b 25/12

U.S. Cl. 104-130

4 Claims



1. A switch for a railroad transportation system comprising parallel car supporting rails defining railroad tracks which bifurcate at a switching station into two branch tracks; rotatable drive shafts extending along a line between said parallel car supporting rails and which bifurcate at said switching station into first and second branch lines; a first car supportable swing gate rail mounted at said switching station for movement between a position traversing said first branch line and a position aside said first branch line; and a second car supportable swing gate rail mounted at said switching station for movement between a position traversing said second branch line and a position aside said second branch line.

3,897,735

MEANS FOR STOPPING CARS IN A RAILROAD TRANSPORTATION SYSTEM EMPLOYING A ROTATING DRIVE SHAFT

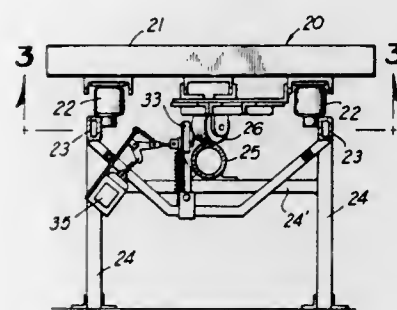
Max Welton Watts, Tiger, Ga., assignor to Aid Corporation, Clayton, Ga.

Filed Mar. 25, 1974, Ser. No. 454,447

Int. Cl. B61b 13/12

U.S. Cl. 104-166

21 Claims



1. Apparatus for controlling the velocity of a car adapted to be driven in a predetermined direction of car travel over rails by a drive shaft rotatably mounted along the rails, said apparatus comprising a drive wheel; means for mounting said drive wheel to said car for rotation about an axis oriented obliquely with respect to said predetermined direction; a brake wheel; means for mounting said brake wheel to said car for rotation about an axis oriented in general alignment with said predetermined direction; and means for moving said drive and brake wheels relative to said car whereby said drive and brake wheels may be alternately moved into and out of frictional engagement with said drive shaft to alternatively drive and brake the car.

3,897,736

PEDESTAL WEAR PLATE

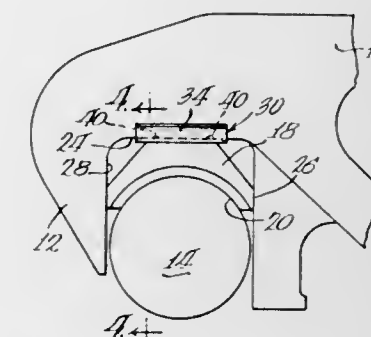
Carl E. Tack, Elmhurst, Ill., assignor to Trans Dyne, Inc., Chicago, Ill.

Filed June 27, 1974, Ser. No. 483,648

Int. Cl.² B61F 5/32, 5/38, 5/50, 15/20

U.S. Cl. 105-225

8 Claims



1. A wear plate for installation on a downwardly facing surface in the pedestal opening of the side frame of a railway truck, said wear plate comprising a base adapted to cover and protect a portion of said downwardly facing surface, a pair of lips joined to and extending upward from opposite sides of said base, said lips being resiliently engageable in clamped relationship with opposite sides of the pedestal above the downwardly facing surface thereof to hold said base in position, and means between said base and said pedestal for minimizing relative movement therebetween.

3,897,737

RESILIENTLY BIASED SIDE BEARING

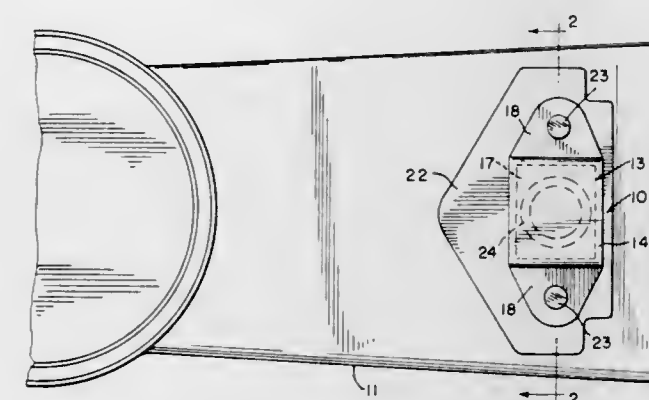
Louis Dean Davis, Homewood, Ill., assignor to Amsted Industries Incorporated, Chicago, Ill.

Filed Sept. 27, 1973, Ser. No. 401,197

Int. Cl. B61f 5/14, 5/50; F16c 17/04

U.S. Cl. 105-199 CB

5 Claims



1. In a railway vehicle having a truck bolster and an underframe bolster supported on said truck bolster, a side bearing comprising a cover member having a transverse wall disposed between said truck bolster and said underframe bolster, pin means fixed to one of said bolsters mounting said cover member for sliding movement between said underframe bolster and said truck bolster, and resilient means interposed between said transverse wall and one of said bolsters to bias said transverse wall into frictional engagement with the other of said bolsters.

3,897,738

FOLDING SNACK TABLE

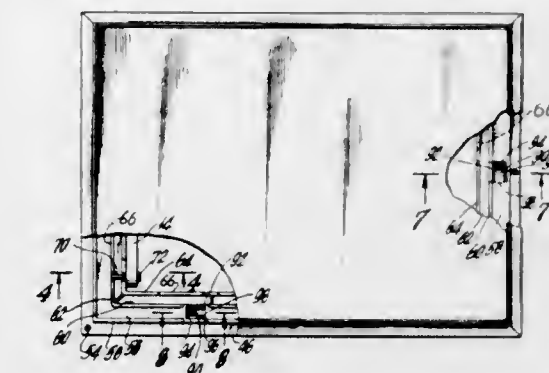
Stuart E. Minsky, Woodbury, and Irving Metelitz, Douglaston, both of N.Y., assignors to Artex-Green Corporation, Brooklyn, N.Y.

Filed June 21, 1974, Ser. No. 481,744

Int. Cl.² A47B 3/02, 3/06

U.S. Cl. 108-119

7 Claims



1. A folding snack table comprising in combination:
a. a support surface;
b. a first, plastic open frame section positioned above said support surface;
c. a second plastic open frame section positioned below said support surface;
d. fastener means for securing said first frame section to said second frame section whereby the marginal edges of said support surface are captured therebetween;
e. a plurality of legs pivotally secured to and depending from said second frame section; and
f. resilient means cooperating with one of said frame sections for urging the marginal edges of said support surface in a direction towards said other frame section, said resilient means comprising a plurality of hinged fingers that extend at an angle to and away from the plane of said one frame section that is adjacent said support surface, said fingers being deflected in a direction away from their normal position when said first and second frame sections are secured to each other.

3,897,739

FLUID BED COMBUSTOR FOR OPERATION AT ASH FUSING TEMPERATURES

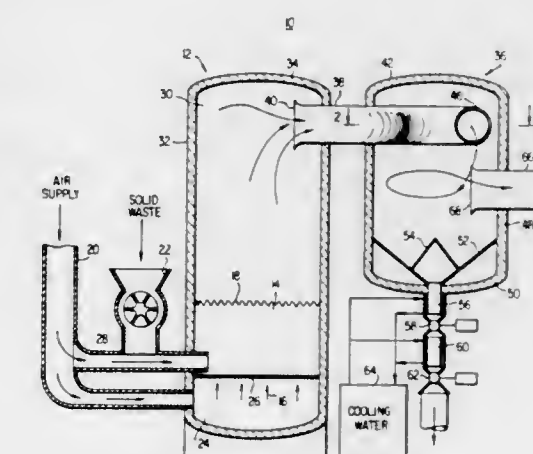
Gerhardt O. Goldbach, San Jose, Calif., assignor to Government of the United States Environmental Protection Agency, Washington, D.C.

Filed Oct. 30, 1974, Ser. No. 519,328

Int. Cl.² F23G 5/00

U.S. Cl. 110-8 F

6 Claims



1. In a fluidized bed combustor which burns waste materials of the type that produce sticky ashes, salts and molten metals which form slag that adheres to the interior surfaces of the combustor, the combination comprising:

- a. a fluidized bed disposed within a combustion chamber having intake and exhaust sides;
- b. a pressurized air supply coupled to the intake side of said fluidized bed;
- c. a pressurized source of waste material coupled to the intake side of said fluidized bed;
- d. means coupled to said exhaust side of said fluidized bed for removing said sticky ashes, salts and molten metals and exhaust gases from said combustion chamber while they are at or above the temperature at which the sticky ashes, salts and molten metals begin to adhere to said interior surfaces of the combustor, said means comprising an exhaust system which maintains the velocity of said sticky ashes, salts and molten metals entrained within said exhaust gas below a velocity which produces their agglomeration on interior surfaces of said combustion chamber and said exhaust system.

3,897,740

DOUBLE REVOLVING LOOPER FOR SEWING MACHINES

Werner Barthel, Dresden, and Walter Schlawitz, Meissen, both of Germany, assignors to VEB Nahmaschinenwerk Wittenberge, Wittenberge, Germany

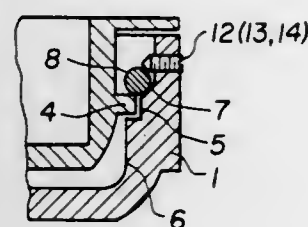
Filed Nov. 12, 1973, Ser. No. 415,261

Claims priority, application Germany, Jan. 22, 1973, 0516835

Int. Cl.² D05B 57/14

U.S. Cl. 112-228

8 Claims



1. A sewing machine hook comprising a body, and a bobbin case disposed in the body, said body defining a radially disposed circular track, said bobbin case having a generally radial flange including a surface cooperating with said track, an elastic, split retaining ring spaced from said track and limiting movement of said surface of the flange axially from said track, a plurality of screw-threaded elements disposed in corresponding ones of angularly spaced screw-threaded openings extending radially through the body, radially inner ends of said elements being tapered and contacting said ring to be constituted as means, upon adjustment of the radial position of the elements within the screw-threaded openings, for varying the axial spacing of said ring from said track.

3,897,741

FLOATING DOCK STRUCTURE, AND THE RELATIVE SERVICE GANGWAY

Alfredo Martini, Monza, Italy, assignor to Patentwerke Anstalt, Vaduz, Liechtenstein

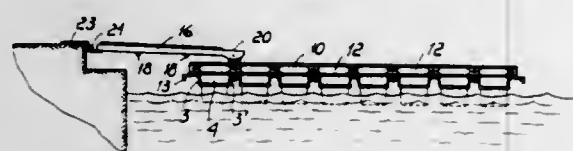
Filed Jan. 14, 1974, Ser. No. 433,427

Claims priority, application Italy, Mar. 12, 1973, 21477/73

Int. Cl. B63b 35/38

U.S. Cl. 114-0.5 F

6 Claims



1. A floating dock structure comprising a first pair of spaced apart parallel channel sections extending lengthwise to the

dock structure and having sea facing and land facing ends, a second pair of spaced apart parallel channel sections extending widthwise to the dock structure, one of said widthwise extending channel sections rigidly connecting said sea facing ends of said first pair of lengthwise extending channel sections and the other of said widthwise extending channel sections rigidly connecting the land facing ends of said lengthwise extending channel sections, thereby to form a rectangular frame delimiting a closed perimeter, each of said channel sections having a web and channel flanges on the opposite edges of said web, a number of floating members within said perimeter, each of said floating members consisting of a container having a top and a rectangular bottom wall and side walls arranged to defining a rectangular cross-section of said container, said side walls of the container having a flange formation on the outer surface thereof in an intermediate position between said top and said bottom wall and extending substantially parallel to said bottom wall, angle sections extending crosswise to said rectangular frame, said angle sections having each angle flanges extending transverse to each other, one of said angle flanges being arranged to cooperate with one side wall of said container above said flange formation thereof and having a lower edge thereof abutting against said flange formation, and the other of said angle flanges being arranged to cooperate with one of said channel flanges, at least one of said angle flanges being selectively fixed to said side wall and said channel flanges, thereby to form a rigid structure consisting of said rectangular frame and said containers, a plurality of covering members on said containers forming a walkway surface for the floating dock.

3,897,742

DEEP SUBMERGENCE PRESSURE COMPENSATOR

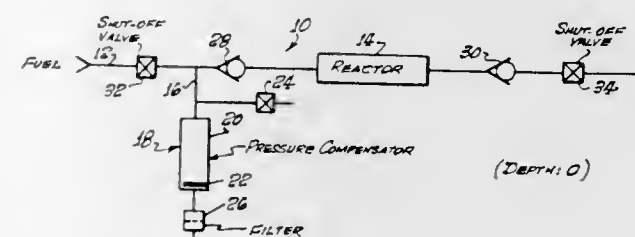
Robert T. Hoffman, Kailua, Hawaii, assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 4, 1973, Ser. No. 366,940

Int. Cl.² B63G 8/00

U.S. Cl. 114-16 E

5 Claims



1. An underwater fluid system comprising:
 - a main fluid line for receiving fuel at one end and supplying gas at the other end;
 - a shut-off valve connected to the main fluid line at each respective end;
 - a reactor connected within the main fluid line for reacting the fuel with a catalyst and producing the gas;
 - a secondary fluid line connecting the main fluid line to the ambient pressure environment;
 - a pressure compensator connected in the second fluid line; the volume of the system V_s being equal to the volumes of the of the main fluid line between the shut-off valves, the reactor, the pressure compensator, and the secondary fluid line to the pressure compensator;
 - said pressure compensator including a piston and cylinder combination;
 - said cylinder and the remainder of the system containing a fluid which is pre-pressurized at a value P_p above ambient pressure which is approximately one third the intended operating pressure P_o of the system;
 - the volume of the cylinder V_c being approximately equal to the volume of the remainder of the system V_r ; and
 - the entire system including the cylinder having a structural strength which is capable of withstanding first the interior

pressure P_p and then an exterior pressure equal to approximately P_p .

3,897,743

MULTI-HULL CONVERTIBLE CARGO CARRIER SUBMARINE

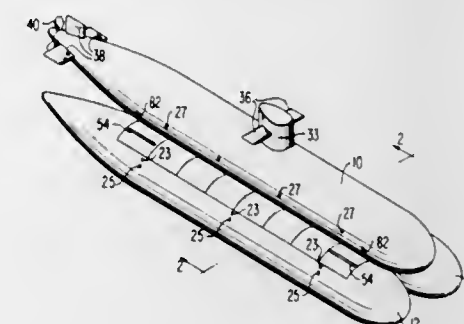
Marten Leonard Schoonman, 906 N. Elam Ave., Greensboro, N.C. 27408

Filed Feb. 11, 1974, Ser. No. 441,598

Int. Cl. B63g 8/00

U.S. Cl. 114-16 R

15 Claims



1. A convertible submarine tanker for petroleum products, said tanker comprising:
 - a cylindrical power tube hull,
 - passive dual cylindrical cargo tube hulls separate from said power tube hull and fixedly coupled together in lateral alignment,
 - means for selectively controlling ballasting of said cylindrical power tube hulls and said dual cargo tube hulls to control their submergence independently, and
 - means for detachably coupling the upper, oppositely facing sides of said dual cargo tube hulls to respective lower sides of said power tube hull for suspending the cargo tube hulls therefrom when said power tube hull is centered in overlying position with respect to said dual cargo tube hulls;
- whereby, said dual cargo tube hulls may be selectively submerged to permit said power tube hull to move into centered, overlying position with respect to said dual cargo tube hulls and subsequently submerge into contact therewith and said coupling means operated to couple said hulls together for subsequent unitary vessel movement with minimal total draft for the multi-hull submarine tanker.

3,897,744

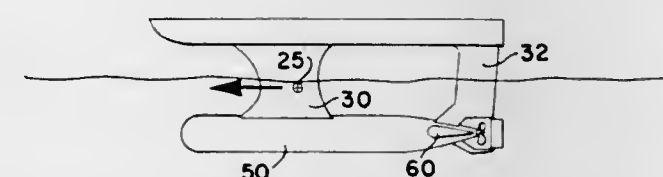
HIGH SPEED SEMISUBMERGED SHIP WITH FOUR STRUTS

Thomas G. Lang, 5354 Calle Vista, San Diego, Calif. 92109
Division of Ser. No. 200,252, Nov. 18, 1971, which is a division of Ser. No. 20,204, March 17, 1970, Pat. No. 3,623,444. This application Mar. 27, 1972, Ser. No. 238,681

Int. Cl.² B63B 1/12

U.S. Cl. 114-61

1 Claim



1. A high speed marine vessel having a static and dynamic stability comprising:
 - a platform member;
 - two parallel elongate hulls operationally disposed below the level of surface waves laterally separated a distance equal to at least two hull diameters each hull is provided with a canard fin mounted on the forward portion of each hull for improving said stability;

a first water surface piercing strut member shaped with a hydrofoil cross-sectional configuration for reduced spray and wave drag and reaching from the forwardmost extensions of each elongate hull and a second water surface piercing strut member shaped with a hydrofoil cross-sectional configuration for reduced spray and wave drag and reaching from the aftmost extensions of each elongate hull to support said platform member, both of the first strut members lie in the same forward lateral projection and both of the second strut members lie in the same aft lateral projection, said first strut members and said second strut members are sized to present a reduced lateral water projection area and are sufficiently longitudinally separated to enhance said stability; and

a pair of opposed cantilevered vanes reaching toward one another from separate ones of said elongate hulls operationally disposed below the level of said surface waves mechanically coupled to said hulls and longitudinally disposed to ensure the creation of the vanes' dynamic center of vertically exerted pressure substantially aft the centroid of said marine vessel to yet further improve said stability.

3,897,745

FENDER CLEAT

Ralph Hutchings, Port Carling, Ontario, Canada

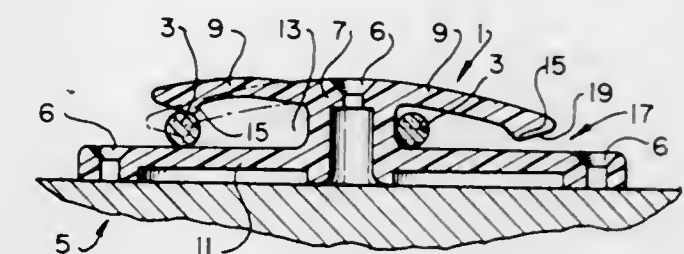
Filed Aug. 16, 1973, Ser. No. 388,791

Claims priority, application Canada, June 29, 1973, 175317

Int. Cl. B63b 21/06

U.S. Cl. 114-218

6 Claims



1. A cleat for retaining a replaceable fender adjacent the hull of a boat, whereby the fender may be left hanging outside the vessel without fear of loss, said cleat comprising a unitary integral body having a base of elongate form and a central upstanding part from which a pair of arms extend radially outwards in opposite directions overlying opposite ends of the base, said arms being separated therefrom by a distance greater than the diameter of a line and defining therewith a line-receiving recess on each side of the central part of the body, each arm having ends remote from said upstanding part defining with said base a restricted opening to said recess, said cleat being fabricated in a resilient material whereby each said arm can be resiliently displaced away from said base to permit passage of a line into said recess.

3,897,746

SUBMARINE EMERGENCY TOWING RIGGING SYSTEM

Robert D. Jamieson, Bowie, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 16, 1974, Ser. No. 433,644

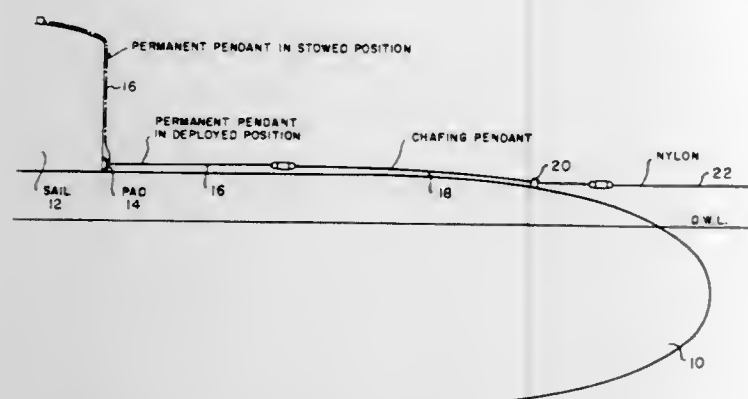
Int. Cl.² B63B 21/04

U.S. Cl. 114-235 A

5 Claims

1. Means for rigging a towline to a submarine, using a man on the sail of the submarine rather than on the deck, comprising, in combination:
 - a permanent pendant permanently secured at one end to the sail at the bow end of the sail, the other end of the pendant being removably attached to the top of the sail at a position reachable by a man standing at the top of the sail;
 - a chafing pendant for attachment at one end to the removably attachable end of the permanent pendant;

a towline attachable at one end to the other end of said chafing pendant; and
a split chock located near the bow end of the deck side of the hull of the submarine, said chock being of the type containing a closed loop within a pair of curved arms,



said chock normally being located below the outer shell of the hull, but each section being independently elevatable from a remote location to extend outside the hull, so that each section can capture said towline when it is swept into its part of the loop section.

3,897,747

SHIFT INDICATOR MECHANISM

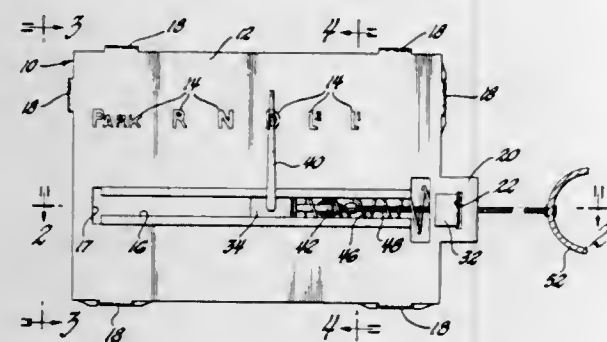
Corrado F. Biazzo, Davison, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 21, 1974, Ser. No. 499,309

Int. Cl. G09F 9/00

U.S. Cl. 116—36

3 Claims



1. A shift indicator mechanism comprising front and rear plate members, said front plate member having a row of suitable shift indicator indicia formed thereon, first and second lateral slots formed in said front and rear plate members, fastener means operatively connected to one of said front and rear plate members for securing said plate members in an abutting relationship, a trough-like pocket formed in said rear plate member, spring retainer means having an opening formed therethrough formed on one end of said pocket, first and second parallel slots formed in said respective front plate member and along the bottom of said pocket, first and second stop means formed on one end of said respective first and second parallel slots, a pointer body slidably mounted in said pocket, means formed on the peripheral surface of said pointer body for slidable cooperation with said respective first and second parallel slots, a vertical pointer formed on said means in slidable cooperation with said first parallel slot and extending to said row of indicia, connector means formed on a face of said pointer body, spring means compressed a predetermined amount between said face of said pointer body and said spring retainer means of said pocket for urging said means in slidable cooperation with said respective first and second parallel slots toward said respective first and second stop means, a cable connected at one end thereof to said connector means and extending through said spring means and said opening formed through said spring retainer means, adapted for selectively urging said pointer linearly past said indicia against the force of said spring means.

3,897,748
APPARATUS FOR CONTROLLING TONER
CONCENTRATION OF DEVELOPER IN
ELECTROSTATIC DEVELOPMENT

Masao Hirata; Shigeru Inowa; Tatsuo Ohto, and Kiyoshi Kimura, all of Tokyo, Japan, assignors to Konishiroku Photo Industry Co. Ltd., Tokyo, Japan

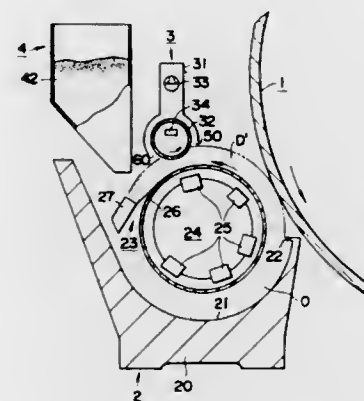
Filed May 16, 1974, Ser. No. 470,362

Claims priority, application Japan, May 25, 1973, 48-57831

Int. Cl. B05C 11/00; G03G 15/00

U.S. Cl. 118—7

10 Claims



1. An apparatus for controlling toner concentration of a developer in electrostatic development comprising a developer receptacle; means in the form of a magnetic brush for conveying the developer through a developing state, an electrically conductive rotatable probe placed in contact with said brush whereby toner in the developer is attached to the probe, said measuring means comprising a light source to illuminate said probe and a photoelectric element to detect the light from said probe; and means for controlling a replenishing amount of the toner to said receptacle based on the result of the measurement.

3,897,749

DRY POWDER FINGERPRINTING APPARATUS

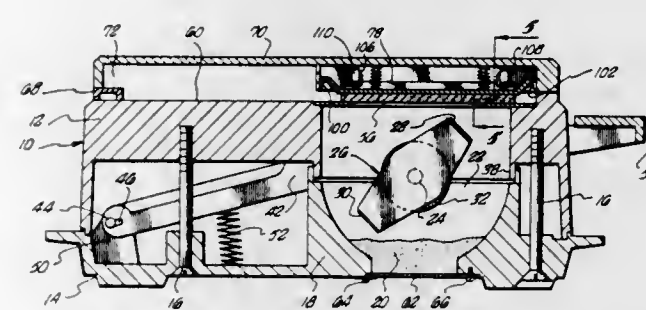
Richard L. May, Manhattan Beach; Frederick Roy Chilton, Palos Verdes Estates, and Edward Henry Robinson, Torrance, all of Calif., assignors to Identicator Corporation, San Francisco, Calif.

Filed Feb. 5, 1973, Ser. No. 329,753

Int. Cl. A61B 5/10

U.S. Cl. 118—31.5

14 Claims



1. A fingerprinting apparatus for developing a fingerprint impressed on the surface of a medium comprising:
a housing;
a container mounted in the housing and adapted to hold a supply of magnetizable powder;
a powder door on the bottom of the container to permit access for inserting magnetizable powder;
a support member adapted to supportively receive the medium and having an aperture communicating with the container whereby at least a portion of the medium can be operatively exposed to the magnetizable powder in the container;

a spring biased closure member adapted to be biased to close the aperture and prevent the escape of the magnetizable powder;
resilient means on the surface of the closure member adapted to seal the aperture;
at least one magnet movably mounted within the container to operatively contact the magnetizable powder and carry at least a portion of the powder across the aperture in the support member to enable the magnetizable powder to contact and adhere to the fingerprint impressed on the medium;
means for moving the magnet in the container; and
means for removing excess powder including a second magnet member fixedly extending adjacent one edge of the aperture.

3,897,750

ELECTROPHOTOGRAPHIC APPARATUS

Klaus Gunder, Darmstadt, Germany, assignor to Hoechst Aktiengesellschaft, Wiesbaden-Biebrich, Germany

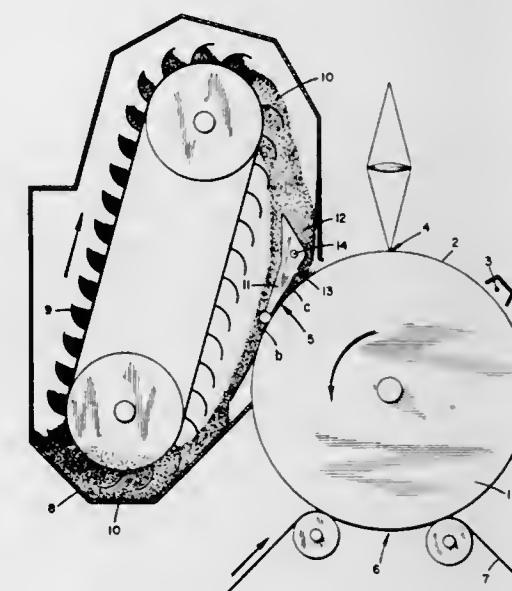
Filed Dec. 21, 1972, Ser. No. 317,123

Claims priority, application Germany, Dec. 24, 1971, 2164494; Oct. 16, 1972, 2250703

Int. Cl. G03G 13/00

U.S. Cl. 118—637

8 Claims



1. Electrophotographic apparatus which comprises a developing station for developing an electrostatic charge pattern and means for moving a carrier having such a pattern thereon over a predetermined path past the station, the station comprising a developing electrode which can be connected to a voltage source and beneath which the pattern can be developed by means of a developer of which at least a part adheres to the charged zones of the pattern, the position of said developing electrode in relation to the path of the carrier being adjustable, said developing electrode being pivotally mounted on a shaft which extends across the path of the carrier, is parallel to said shaft, is at right angles to the direction of movement of the carrier, and is connected to two bars mounted on either side of the developing electrode, each bar being provided with a projection which extends outwards from the bar and beyond the respective side of the path of the carrier, each projection having an internally threaded bore therethrough for receiving an adjusting screw and the housing of the apparatus comprising a stop for the end of each adjusting screw.

3,897,751

CAGE FOR CONTINUOUS INFUSION

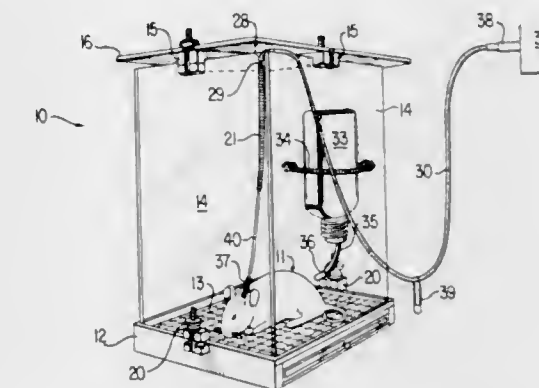
Pietro M. Gullino, Bethesda, Md.; Flora H. Grantham, Washington, D.C.; Donald M. Hill, Frederick, and Jesse Rowland, Bethesda, both of Md., assignors to The United States of America as represented by the Assistant Secretary of the Department of Health, Education and Welfare, Washington, D.C.

Filed July 10, 1974, Ser. No. 487,032

Int. Cl. A01K 29/00

U.S. Cl. 119—15

7 Claims



1. An animal cage for use in continuous infusion of animals in a laboratory environment, comprising: a square-shaped base; four vertical side walls removably mounted upon said base; preferably a cross-shaped frame mounted on the upper portion of the side walls, one arm of the frame engaging each of the side walls, a vertical hole located at the confluence of the cross arms of the frame, the hole having an interior rim; a horizontal groove in the upper surface of the cross-shaped frame which connects said hole with the intersection of two of the cross arms; a ring and tubing arrangement which extends through said hole with the ring resting on the interior rim in said hole, the tubing extending below the ring and being attached to a spring; a catheter extending from the exterior of the cage through the groove in the cross-shaped frame, then through said ring and tubing arrangement and said spring, said catheter having means at one end outside the cage for connection to a source of infusate and means at the other end for connection to the animal occupying the cage; and a cover for the cage, said cover being releasably attached to the upper edge of the side walls.

3,897,752

BROODER DEVICE

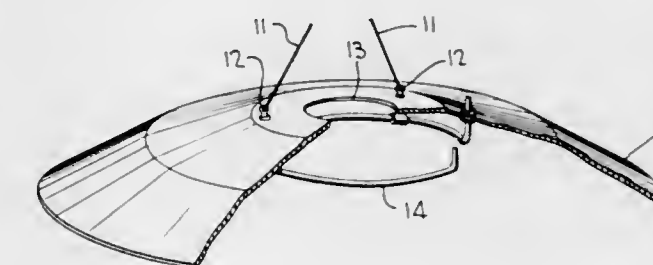
Jack E. Greene, P. O. Box 2591, Little Rock, Ark. 72203

Filed Aug. 23, 1971, Ser. No. 173,958

Int. Cl. A01K 31/20

U.S. Cl. 119—33

2 Claims



1. A brooder device comprising, a conical hover, a metal sheath ring-shaped infrared heating element mounted to said hover at the top inner surface thereof for heating-up said hover so as to effect heat by radiation thereof, elongated bolt means spacing said heating element from said hover, elongated suspension means interconnected at one end thereof with said bolt means for suspending the device from a support, a thermostatic control device operatively interconnected with said heating element.

said heating element and being mounted on said hover for controlling the temperature of said heating element depending on the temperature of said hover and the air surrounded by said hover, and the major portion of the top of said hover inwardly of said bolt means having a central opening therein for admitting air to circulate therethrough within said hover which, when heated up by said heating element, produces heat by convection.

3,897,753

MEANS AND METHOD FOR SELECTIVELY CONTROLLING ANIMALS

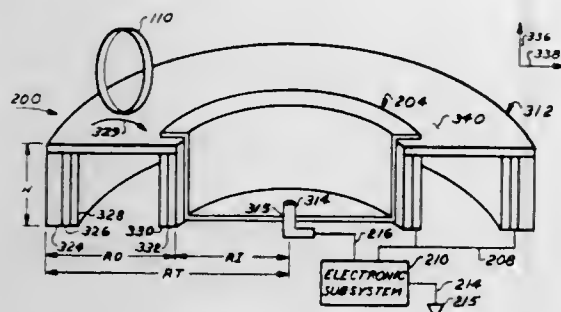
Barry Thomas Lee, 22715 Clarendon St., Canoga Park, Calif. 91364, and Gilbert Peter Hyatt, 11101 Amigo Ave., North Ridge, Calif. 91324

Filed Jan. 31, 1974, Ser. No. 438,328

Int. Cl. A01k 5/02

U.S. Cl. 119-51 R

25 Claims



1. A system for selectively controlling access of an animal, said system comprising:

- identification means for identifying a selected animal;
- detecting means for generating an identification signal in response to the identification means;
- means for controlling access in response to the identification signal, said controlling means including means for generating an electric shock in response to the identification signal.

3,897,754

LPG VAPORIZER

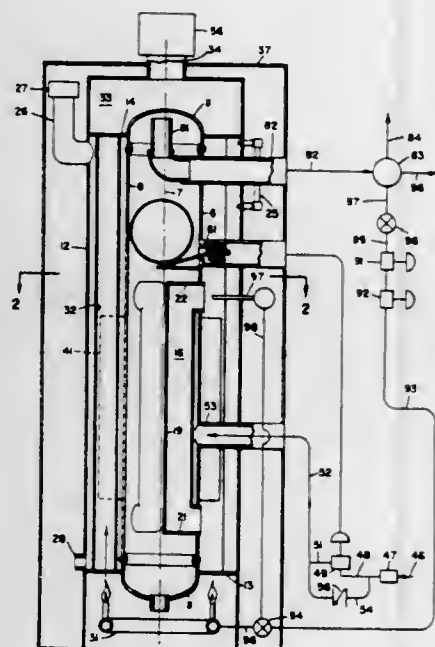
James B. Jerde, San Leandro, Calif., assignor to Ransome Gas Industries, Inc., San Leandro, Calif.

Filed Oct. 16, 1974, Ser. No. 515,326

Int. Cl. F22B 7/00, 35/00

U.S. Cl. 122-156

4 Claims



1. An LPG vaporizer comprising an elongated pressure vessel generally symmetrical about an upright axis, a water jacket substantially surrounding said pressure vessel, means

forming upright flues extending through said water jacket and arrayed around said pressure vessel, a combustion chamber adjacent the lower end of said pressure vessel and opening to said flues, means in said combustion chamber for burning fuel, a flue chamber adjacent the upper end of said pressure vessel and opening to said flues, thermo-syphon tubes parallel to said axis extending at least partially through said pressure vessel and open at the upper and lower ends thereof to said water jacket, an LPG inlet to said pressure vessel, and an LPG outlet from said pressure vessel.

3,897,755

EXHAUST GAS RE-CIRCULATING TYPE ROTARY PISTON ENGINE

Motoyuki Hayashida; Kuniyuki Toyama, and Masanori Kurokawa, all of Hiroshima, Japan, assignors to Toyo Kogyo Company Limited, Hiroshima, Japan

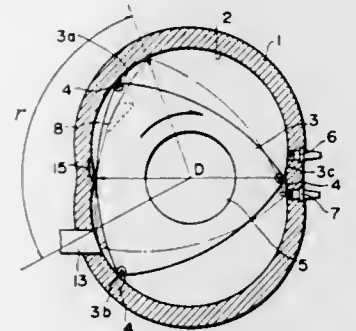
Filed May 9, 1973, Ser. No. 358,569

Claims priority, application Japan, May 26, 1972, 47-62610

Int. Cl. F02b 53/04

U.S. Cl. 123-8.13

2 Claims



1. In a rotary piston internal combustion engine comprising: a casing including a trochoidal inner peripheral wall, a rotary piston having at least three apices and an apex seal on each apex, means for eccentrically, rotatably mounting said rotary piston within said casing and forming between the rotary piston and the housing a plurality of working chambers performing suction, compression, explosion-expansion, and exhaust as said rotary piston rotates therein, a suction opening within the casing, and an exhaust port provided within the casing peripheral wall, the improvement comprising: a blind recess of given length and width provided within said trochoidal inner peripheral wall as a circumferential position within the range defined by the position of one of said apex seals which has just passed by said exhaust port and the position of that apex seal advanced therefrom in the direction of rotation where the chamber railing that apex seal is about to communicate with the suction opening by rotation of said rotary piston; whereby, said blind recess communicates the exhaust chamber solely to the suction chamber around each apex seal as the apex seal passes over the blind recess to effect exhaust gas re-circulation between said chambers.

3,897,756

TANDEM ROTOR ROTARY ENGINE

Lewis E. Upchurch, 31 Reservoir Ave., Revere, Mass. 02151

Filed July 9, 1973, Ser. No. 377,213

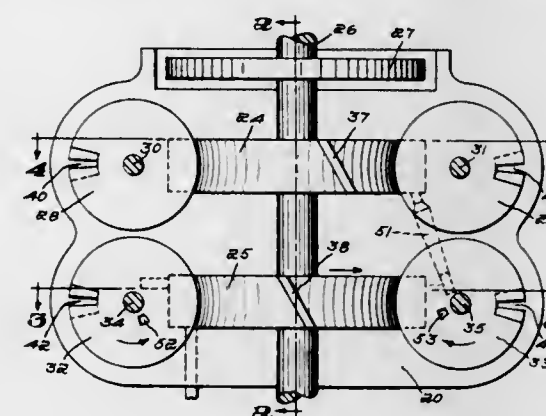
Int. Cl. F02b 53/08

U.S. Cl. 123-8.23

5 Claims

1. A rotary engine comprising: a housing enclosing a first rotor chamber and a second rotor chamber; a drive shaft passing through said chambers; a first rotor disposed in said first rotor chamber and a second rotor disposed in said second rotor chamber, said rotors being disposed in tandem on said drive shaft, and each rotor having a generally radially projecting vane sweeping its respective chamber; a first rotary gate projecting into said first rotor chamber and a second rotary gate projecting into said second rotor chamber, each of said gates having an aperture to permit passage of its respective vane, said rotors and gates being driven in synchronization

with said drive shaft to bring the apertures into the respective chambers so as to allow each vane to pass therethrough, an intake opening and an outlet opening disposed on opposite sides of said first gate and communicating with said first rotor chamber, an inlet opening and an exhaust opening disposed on opposite sides of said second gate and communicating with said second rotor chamber, a combustion chamber in the housing between the two rotor chambers, said combustion



chamber having a receiving end and a discharge end with the chamber tapering outwardly from the receiving end, the discharge end of the combustion chamber leading into said second rotor chamber through said inlet opening thereby introducing the expanding fluid into the second rotor chamber, transfer means for periodically connecting the receiving end of said combustion chamber to said outlet opening to tangentially introduce compressed fluid into said receiving end, and means in said combustion chamber for initiating combustion.

3,897,757

CONVERSION DEVICE ENABLING A GASOLINE ENGINE TO BE FUELED WITH HYDROGEN

Lawrence Abello, Bombay, India, assignor to Canadian Jesuit Missions, Toronto, Canada

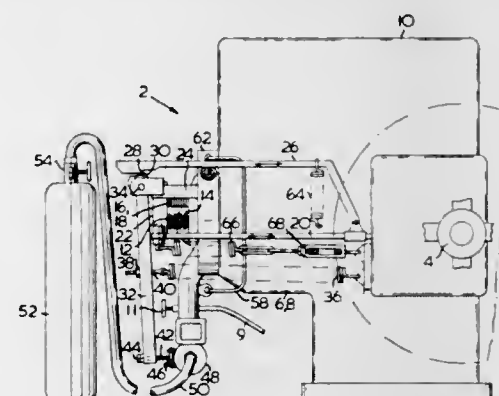
Filed Feb. 16, 1973, Ser. No. 332,815

Claims priority, application Canada, Oct. 20, 1972, 154350

Int. Cl. F02b 75/12

U.S. Cl. 123-1 A

7 Claims



1. A positive displacement internal combustion engine adapted to use hydrogen gas comprising:
means for controlling the admission of air to a combustion space thereby defining an air intake stroke;
a hydrogen supply means;
means for connecting said hydrogen supply to said combustion space;
means for predetermining a time during the air intake stroke;
a normally closed valve means in said hydrogen supply connecting means;
means for opening said valve means for a brief period which is substantially independent of the engine speed; and
means connecting said time predetermining means to said valve opening means whereby a pulse of hydrogen is

produced and conveyed to said combustion space, at a predetermined time during the air intake stroke.

3,897,758

ROTARY INTERNAL COMBUSTION ENGINE

Gerald Francis Humiston, South Barre, and Barton Lester Cotton, Barre, both of Vt., assignors to Pollution Control, Inc., South Barre, Vt.

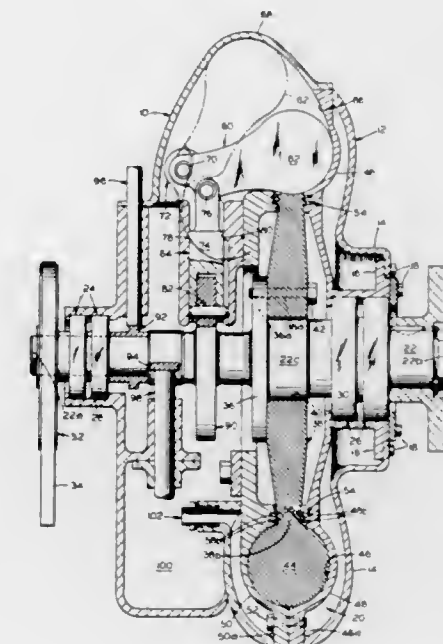
Continuation of Ser. No. 313,268, Dec. 8, 1972, abandoned.

This application July 8, 1974, Ser. No. 486,593

Int. Cl. F02b 53/00; F01c 1/00

U.S. Cl. 123-8.49

3 Claims



1. A rotary internal combustion engine comprising:
a. a housing including a casing comprising a pair of spaced side walls joined at the outer ends thereof and each having an inwardly extending portion formed thereon in opposed relation to each other outwardly of the center thereof operable to define a first chamber in said housing at the center thereof and an annular combustion chamber spaced radially from said first chamber formed by said inwardly extending portions and said outer ends of said pair of side walls;
b. a shaft supported in said first chamber of said housing for rotation therein substantially axially of said annular chamber;
c. a disc including a solid body portion having a bore formed at the center thereof, said shaft being received in said bore for mounting said disc thereon for rotation therewith and with said solid body portion rotating within said first chamber of said housing;
d. three pistons formed integrally with said solid body portion of said disc in spaced relation 120° apart on the periphery thereof and so as to project radially outwardly thereof, said three pistons extending into said annular combustion chamber for movement therethrough as said disc rotates;
e. valve means including three valve members and means supporting said three members in equally spaced relation relative to each other in said housing axially of said annular combustion chamber for movement into and out of said annular combustion chamber to intermittently divide said annular combustion chamber into a plurality of closed sections of equal size and out of said annular combustion chamber to enable said three pistons to move through said annular combustion chamber, said means supporting said three valve members for movement into and out of said annular combustion chamber comprising three support assemblies, each of said three support assemblies comprising a support formed in said housing in juxtaposed relation to

said annular combustion chamber, a first pivot pin operatively connecting a corresponding one of said three valve members to said support for movement relative thereto, a guide means provided in said housing in juxtaposed relation to said first chamber, a yoke supported in said guide means for movement relative thereto, a second pivot pin operatively connecting said corresponding one of said three valve members to one end of said yoke to cause said corresponding one of said three valve members to pivot about said first pivot pin between a first position wherein said corresponding one of said three valve members is inserted into said annular combustion chamber to divide said annular combustion chamber into a plurality of closed sections and a second position wherein said corresponding one of said three valve members is removed from said annular combustion chamber to permit said three pistons to pass thereby, and camming means including a pin supported on said yoke at the other end thereof and a cam supported on said shaft for rotation therewith, said cam including a pair of cam tracks operable for receiving said pin therebetween, said pair of cam tracks and said pin being cooperable together to cause said yoke to move within said guide means and thereby said corresponding one of said three valve members to move between said first and second positions thereof in accord with a predetermined time cycle as said shaft rotates;

- f. intake means formed in said housing independent of said valve means and in communication with said annular combustion chamber for injecting fuel into said annular combustion chamber for combustion therewithin, said intake means including three injection means spaced 120° apart around said annular combustion chamber, one of said three injection means being located on the upstream side of each of said three valve members;
- g. exhaust means formed in said housing independent of said valve means and communicating with said annular combustion chamber for exhausting therefrom the waste products produced during combustion of the fuel within said annular combustion chamber, said exhaust means including three exhaust ports formed in said annular combustion chamber 120° apart, one of said three exhaust ports being formed in said annular combustion chamber on the downstream side of each of said three valve members; and
- h. said shaft being rotatably driven by the pressure of the gases in said plurality of closed sections acting upon said three pistons, the gases being generated from the combustion of the fuel in said annular combustion chamber.

3,897,759

PLUG HOLE OF A ROTARY PISTON ENGINE

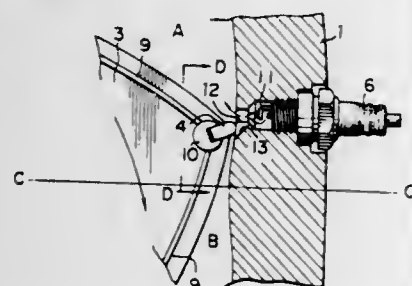
Yoshio Sasaki, and Tsuyoshi Yamazaki, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed May 31, 1974, Ser. No. 475,182

Claims priority, application Japan, May 14, 1974, 49-42036
Int. Cl. F02b 53/12

U.S. Cl. 123-8.09

5 Claims



1. A plug hole of a rotary piston engine, said engine being of the type comprising a casing composed of a center housing

having a trochoidal inner peripheral surface and side housings closing opposite sides of said center housing and a polygonal rotor adapted to rotate eccentrically in said casing with its apex seals provided at its apex portions contacting said inner peripheral surface of said center housing, said plug hole comprising a plug mounting hole and an ignition hole which communicates with said plug mounting hole and opens to said inner peripheral surface of said center housing at a position located behind the short axis of trochoid as seen in the rotational direction of the rotor, characterized in that said ignition hole is formed with a notch at a front portion thereof as seen in the rotational direction of the rotor, said notch operating to lead combustible gases residing in a trailing portion of a preceding combustion chamber performing a combustion stroke into said plug mounting hole when one of said apex seals traverses said ignition hole.

3,897,760

VALVE TIMING OVERLAP CONTROL FOR INTERNAL COMBUSTION ENGINES

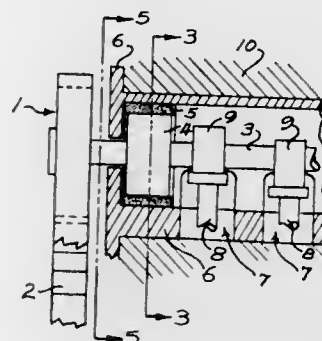
Charles A. Hisserich, 447 Cabrillo St., Costa Mesa, Calif. 92627

Filed Oct. 9, 1973, Ser. No. 404,651

Int. Cl. F01L 1/34

U.S. Cl. 123-90.16

5 Claims



1. An internal combustion engine comprising:
a camshaft having journals and cam lobes;
cam follower means having single cam-engaging faces and disposed to open poppet valves upon engagement by said lobes respectively; and
displacement means to vary the distance between the axis of said camshaft and said cam-engaging faces to vary the angles of revolution of said camshaft during which said lobes engage said faces, wherein
said faces are end portions of axially-movable valve lifters, and
said displacement means comprises an eccentric tubular member having internal bushings carrying said journals, angular displacement of said member about its axis causing variation of said distance by displacement of the axis of said camshaft,
whereby said displacement means vary the valve timing overlap of said engine.

3,897,761

HYDRAULIC CLEARANCE COMPENSATING DEVICE

Volkmar Fleischer, Herrenkamp, and Johannes Friedl, Wolfsburg, both of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Filed Sept. 11, 1973, Ser. No. 396,220

Claims priority, application Germany, Sept. 16, 1972, 2245666

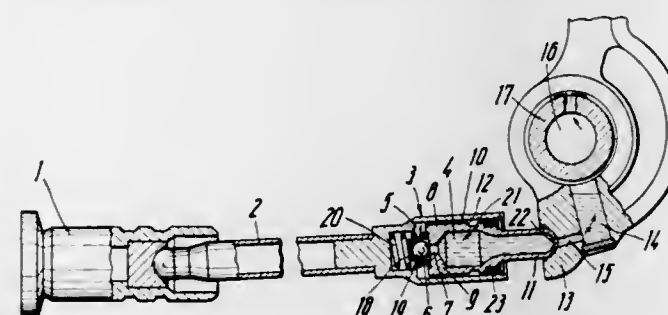
Int. Cl. F01I 1/14

U.S. Cl. 123-90.55

5 Claims

1. A hydraulic clearance compensating system for controlling the motor valves of an internal combustion engine, comprising:
a rocker arm having an oil flow channel and an oil ventilating space formed therein;

a hydraulic clearance compensating device including a cylinder and a piston which is longitudinally displaceable with said cylinder, said piston and cylinder having a ring gap therebetween;
an antechamber in said piston;
means, including a port in said antechamber, sealingly communicating with said rocker arm for establishing a fluid-tight oil flow path between said antechamber and said oil ventilating space;



a pressure chamber adjacent one end of the cylinder which is communicatively connected to said antechamber within the piston by means of a non-return valve, said antechamber having means to hold oil supplied by said rocker arm, said antechamber receiving oil solely by way of said oil flow path and a transverse bore means communicating between the ring gap and the antechamber by which oil leaking from the pressure chamber is recycled back to the antechamber, the antechamber being otherwise sealed and having means to exclude air from said antechamber and said pressure chamber.

3,897,762

FUEL SYSTEMS FOR ENGINES

Christopher Robin Jones, Solihull; Malcolm Williams, Glastonbury, and Geoffrey Albert Kenyon Brunt, Alcester, all of England, assignors to C. A. V. Limited, Birmingham, England

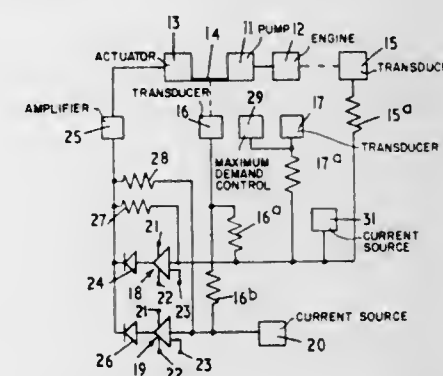
Filed Apr. 4, 1973, Ser. No. 347,699

Claims priority, application United Kingdom, Apr. 4, 1972, 15354/72

Int. Cl. F02m 39/00; F02b 3/00

U.S. Cl. 123-139 E

2 Claims



1. A fuel injection system for a compression-ignition engine, comprising in combination a pump for supplying fuel to the engine, an electro-mechanical actuator coupled to the pump to determine the pump output, a drive circuit for controlling the electro-mechanical actuator, first, second and third transducers producing respectively output voltages representing engine speed, pump output and demanded pump output, a first operational amplifier connected as a summing amplifier and having its inverting input connected through resistors to the second and third transducers, said first amplifier producing an output representing the difference between the actual and demanded pump outputs and also serving to restrict the maximum pump output to a predetermined value, a second operational amplifier connected as a summing amplifier and

having its inverting input connected through resistors to the first and second transducers, a discriminator coupling the outputs of the amplifiers to the drive circuit, the arrangement being such that until a predetermined engine speed is attained, the discriminator couples the first amplifier to the drive circuit, but when said predetermined engine speed is reached, the discriminator couples the second amplifier to the drive circuit to limit the maximum engine speed, the maximum engine speed being varied with pump output by the second amplifier, a first low resistance feedback circuit connected between the output terminal and the inverting input of the first operational amplifier, a switching device in said feedback circuit, means for turning said switching device on when the output of the first amplifier reaches a predetermined level, a second low resistance feedback circuit connected between the output terminal and the inverting input of the second operational amplifier, a second switching device in said second feedback circuit, and means for turning the second switching device on when the output of the second amplifier reaches a predetermined value.

3,897,763

FUEL SYSTEM FOR ENGINES

Malcolm Williams, Solihull; Geoffrey Albert Kenyon Brunt, Glastonbury, and Christopher Robin Jones, Alcester, all of England, assignors to C. A. V. Limited, Birmingham, England

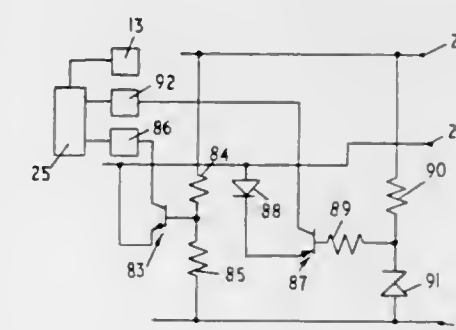
Filed Apr. 4, 1973, Ser. No. 347,730

Claims priority, application United Kingdom, Apr. 4, 1972, 15340/72; Apr. 4, 1972, 15355/72

Int. Cl. F02m 39/00; F02b 3/00

U.S. Cl. 123-139 E

4 Claims



1. A fuel system for an engine, comprising in combination, a pump for supplying fuel to the engine, an actuator for controlling the amount of fuel supplied to the engine, a power amplifier for supplying power to the actuator, a control circuit for controlling the amount of power supplied to the actuator by the power amplifier, means for supplying to the control circuit signals indicative of the actual speed of the engine, the pump output and a manually determined demand signal, a power supply circuit for connection to a source of supply, said power supply circuit having three output lines and incorporating means maintaining the voltage of one of the lines relative to one of the other lines at a predetermined percentage of the voltage between the other lines, said power supply circuit providing power for the control circuit, a first check circuit for checking the voltage on said one line relative to the voltages on said other lines, and a second check circuit for checking the actual voltage on said one line relative to one of the other lines, said check circuits when operated serving to prevent operation of the power amplifier thereby cutting off the supply of power to the actuator.

3,897,764

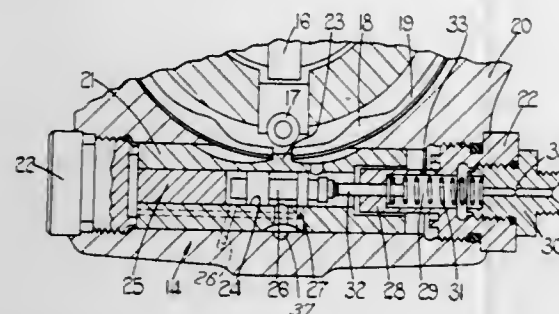
LIQUID FUEL INJECTION PUMPING APPARATUS Istvan Bakti, Northolt, England, assignor to C. A. V. Limited, Birmingham, England

Filed May 18, 1973; Ser. No. 361,845

Int. Cl.² B44D 1/22

U.S. Cl. 123-139 AQ

3 Claims



1. A liquid fuel injection pumping apparatus for supplying fuel to internal combustion engines which apparatus comprises in combination: an injection pump including a plunger operable by a cam, the injection pump being driven in timed relationship with an engine to which fuel is to be supplied; feed pump means for supplying fuel to the injection pump during the filling stroke thereof; fuel control device means for controlling the quantity of fuel supplied to the injection pump during the filling strokes thereof, the pressure of fuel intermediate the injection pump and the control device means increasing as the quantity of fuel supplied to the injection pump is increased; fluid pressure operable piston means for adjusting the setting of said cam thereby to control the timing of delivery of fuel to an engine; pressure responsive servo valve means for controlling the application of liquid under pressure to one end of the piston means; fluid pressure means which varies in accordance with the speed of an engine; said fluid pressure means being applied to the servo valve means to cause movement thereof against the action of a spring thereby to allow liquid under pressure to act on the piston means, and fuel pressure operable means acting on said servo valve means in addition to the action of the spring; passage means through which said fuel pressure operable means is subjected to fuel under pressure from intermediate the injection pump and the control device means whereby the position of the fluid pressure operable piston means and thereby the timing of injection of fuel to an engine will vary in accordance with the speed of that engine and also in accordance with the quantity of fuel which is being supplied to that engine; said fuel pressure operable means comprising a push rod slidable in a plug serving to close one end of a cylinder containing the piston means, a spring chamber defined in said plug, said spring being located in said chamber, one end of said push rod being located in said chamber and serving as an abutment for said spring, and the fuel under pressure intermediate the injection pump and control device being supplied to said chamber, whereby the push rod transmits the spring force to the servo valve means and also the force generated by the pressure intermediate the injection pump and control device means acting on the push rod.

3,897,765

CARBURETOR CRANKING FUEL FLOW RATE CONTROL

Robert S. Harrison, Grosse Ile; John D. Medrick, Plymouth, and Alvin P. Nowroski, Livonia, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 4, 1974, Ser. No. 430,819

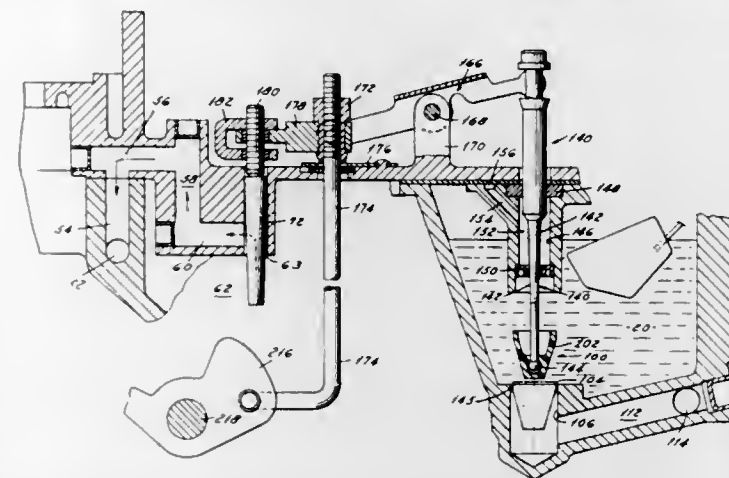
Int. Cl.² F02M 17/00

U.S. Cl. 123-179 G

5 Claims

1. An engine cranking fuel supply system comprising, a carburetor having an induction passage connected to fresh air at one end and adapted to be connected to the engine intake manifold at the other end, a fuel port opening into the passage,

and dual fuel supply means connected to the port for the induction of varying amounts of cranking fuel to the port as a function of changes in temperature from a predetermined level, the dual fuel supply means including first and second fuel passages each connected at one end to the fuel port and at its other end to a source of fuel, the first passage containing a valve variably movable between flow and no flow positions, the second passage containing an on-off valve movable to block and unblock the second passage, the second passage also containing flow control means variably movable in the



second passage for modulating the rate of flow of fuel through the second passage, means biasing the valves towards no-flow positions blocking the first and second fuel passages, means responsive to an engine cranking operation to move the on-off valve to an on-flow position permitting the induction of cranking fuel through the port from the second passage, and temperature responsive means connected to both the first passage valve and the flow control means for modulating the rate of flow of fuel through both the passages as a function of changes in temperature from a predetermined level.

3,897,766

APPARATUS ADAPTED TO OPTO-ELECTRICALLY MONITOR THE OUTPUT OF A PRIME MOVER TO PROVIDE SIGNALS WHICH ARE FED BACK TO THE INPUT AND THEREBY PROVIDE CONTROL OF THE PRIME MOVER

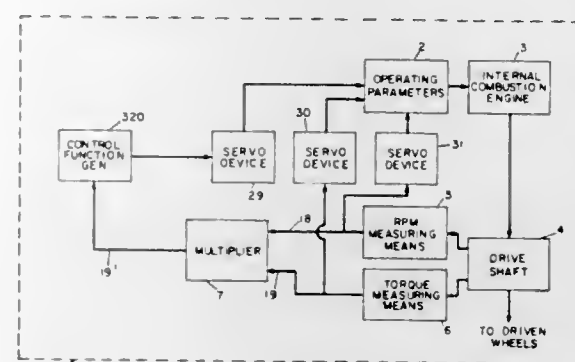
George W. Pratt, Jr., Wayland, Mass., and Paul G. McMullin, Peekskill, N.Y., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 141,486, May 10, 1971, abandoned. This application Oct. 10, 1973, Ser. No. 405,186

Int. Cl.² F02P 1/00; G01L 3/02; F02P 5/04

U.S. Cl. 123-146.5 A

21 Claims



1. Apparatus that comprises, in combination, an automobile engine, a mechanical member whose transmitted torque is related to the output torque of the engine, means measuring said torque and developing a time averaged electric output signal as a function of the torque, noise filter means associated with the means measuring said torque and operable to remove spurious mechanical and noise signals from the output signal,

control function generator means connected to receive said time averaged output signal as a first input and operable to develop therefrom feedback control signals, and feedback control means connected to receive the feedback control signals and operable to adjust automatically the operating parameters of the engine, the operating parameters being at least one of spark advance, fuel to air ratio, and fuel input to the engine.

3,897,767

INTERNAL COMBUSTION ENGINE IGNITION

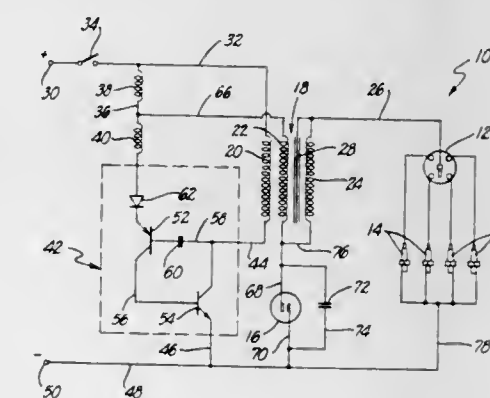
Carroll G. Gordon, Menlo Park, and Raymond C. Graham, Santa Clara, both of Calif., assignors to Edwin Melville Edwards, Menlo Park, Calif.

Continuation-in-part of Ser. No. 297,480, Nov. 13, 1972. This application Oct. 1, 1973, Ser. No. 402,460

Int. Cl.² F01P 3/06

U.S. Cl. 123-148 E

5 Claims



1. In an internal combustion engine ignition system having a power supply, a transformer having primary and secondary coils, a primary circuit including an oscillator connected across the terminals of the power supply and to the transformer primary coil, a secondary circuit including spark gap means connected in series with the secondary coil and said system also having switch means for controlling the operation of the oscillator, the improvement which comprises:

means for opening and closing said switch means in accordance with engine speed, the transformer having a second primary coil which is connected in series with the switch means between the terminals of the power supply, the oscillator means being connected to one terminal of the power supply through the first mentioned primary of the transformer and in addition being connected across the power supply, the first mentioned primary coil and the second primary coil being positioned adjacent to one another so as to be inductively coupled, the oscillator means being responsive to the coupling of the first mentioned and second primary coils so as to continuously operate at an amplitude which varies depending upon whether the switch means is open or closed and at a frequency which varies depending upon whether the switch means is open or closed.

3,897,768

COMPRESSION RELIEF MECHANISM

Wallace E. Thiel, New Holstein, Wis., assignor to Tecumseh Products Company, Tecumseh, Mich.

Filed Nov. 19, 1973, Ser. No. 416,977

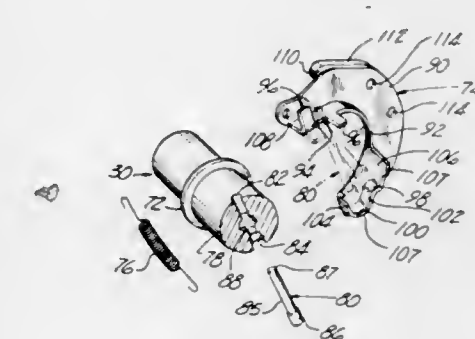
Int. Cl. F01I 13/08

U.S. Cl. 123-182

39 Claims

17. In an internal combustion engine having a cylinder, a piston reciprocable in the cylinder and defining therewith a combustion chamber, a camshaft with a fixed cam thereon having a fixed profile for operating an exhaust valve, the camshaft and the cam being driven in timed relation with the

speed of reciprocation of the piston, a poppet-type exhaust valve yieldably biased to a normally closed position and operable to control the flow of gases from the combustion chamber to an atmosphere external of the engine, and a follower operatively associated with the exhaust valve in tracking relation with the cam such that rotation of the cam by the camshaft opens and closes the exhaust valve in timed relation with reciprocation of the piston, a compression relief mechanism comprising in combination: a yoke partially surrounding at least a portion of the camshaft adjacent the cam and terminating in a pair of spaced apart free ends, said yoke being pivotally mounted adjacent one free end thereof on the camshaft adjacent the cam for pivotal movement in a plane generally transverse to the axis of rotation from a first position to a second position in response to a centrifugal force acting on said yoke when the engine operates at a running speed in excess of a predetermined maximum cranking speed, a spring having generally opposed ends and being connected adjacent said opposed ends thereof to said yoke adjacent said free ends of said yoke and extending between said free ends such that together said yoke and said spring completely surround said portion of the camshaft adjacent the cam, said spring yieldably retaining said yoke in said first pivotal position when the engine is driven at a speed below said predetermined maximum cranking speed, and an actuator carried by the camshaft for engagement with the follower and responsive to movement of said yoke to said first position to lift the follower and partially open the exhaust valve when it would otherwise nor-



mally be closed during the compression stroke of the engine and to movement of said yoke to said second position to move the actuator out of operable engagement with the follower.

33. In an internal combustion engine having a combustion chamber, an exhaust valve yieldably biased to a normally closed position and operable to an open position to permit the flow of gases from the combustion chamber to an atmosphere external of the engine, and a camshaft with a cam thereon having a profile for operating the exhaust valve to its open and closed positions, a compression relief mechanism comprising in combination: a passage extending transversely through the camshaft adjacent the cam, a plunger received in said passage, a yoke adjacent the cam, said plunger in assembly continuously extending through a portion of said yoke to mount said yoke on the camshaft for pivotal movement in a plane generally transverse to the axis of rotation of the cam from a first position to a second position in response to a centrifugal force acting on said yoke when the engine operates at a running speed in excess of the cranking speed of the engine, means yieldably retaining said yoke in said first position when the engine is driven at said cranking speed, and means operably connecting said plunger and said yoke and responsive to movement of said yoke to its first position to move said plunger to a first position to at least partially open the exhaust valve when the cam would otherwise allow it to close and responsive to movement of said yoke to its second position to move the plunger to a second position permitting the exhaust valve to close when allowed to do so by the cam.

3,897,769

SECONDARY COMBUSTION CHAMBERS FOR
INTERNAL COMBUSTION ENGINES

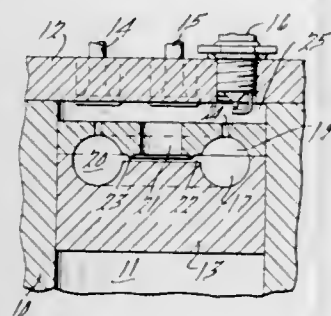
Joseph A. Jozlin, 2911 Bart Ave., Warren, Mich. 48089

Filed July 18, 1973, Ser. No. 380,297

Int. Cl. F02b 23/00

U.S. Cl. 123-191 R

3 Claims



1. A secondary combustion chamber for providing burning stage of the fuel mixture in an internal combustion engine by delaying the burning of a portion of the fuel mixture; the engine having means defining a primary combustion chamber, a moving member in the primary chamber, fuel mixture intake leading to the primary chamber, combustion products exhaust leading from the primary chamber, and an igniting element communicating with the primary chamber; said secondary combustion chamber comprising, means forming a closed self-sealed cavity constituting a secondary combustion chamber adjacent said primary chamber, and means forming at least one port communicating between said primary chamber and said closed self-sealed cavity of said secondary chamber; upon the compression cycle of the moving member, the fuel mixture being compressed in the primary chamber and introduced into said closed self-sealed cavity of said secondary chamber under pressure via said port; upon the power cycle of the moving member, the igniting element fires the fuel mixture in the primary chamber which burns with resulting first stage expanding flaming gasses and resultant pressure driving against the moving member and the first stage flaming fuel communicates ignition to the fuel mixture in said port which burns and communicates ignition to the fuel mixture in said closed self-sealed cavity of said secondary chamber effecting second stage expanding flaming gasses emitting from said port with second stage resultant added pressure driving against the moving member.

3,897,770

WATER-COOLED RECIPROCAL PISTON ENGINE
WITH A SINGLE PIECE INTEGRAL CYLINDER AND
CYLINDER HEADHermann Mettig, Rodenkirchen, and Bernhard Medenus, Bensberg-Lustheide, both of Germany, assignors to Klöckner-Humboldt-Deutz Aktiengesellschaft, Cologne, Germany
Filed Oct. 15, 1973, Ser. No. 406,250

Claims priority, application Germany, Oct. 13, 1972, 2250210

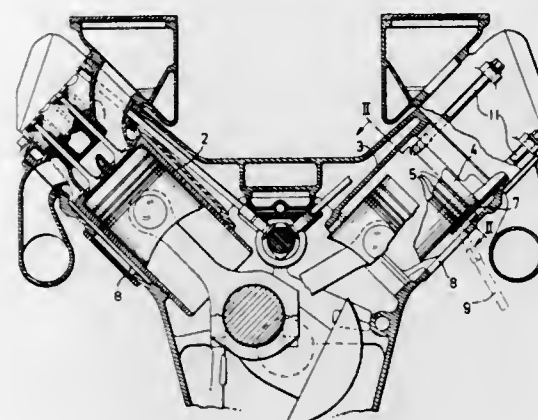
Int. Cl. F02f 1/18

U.S. Cl. 123-193 CH

1 Claim

1. A water-cooled reciprocable piston engine which includes in combination a cylinder head, a cylinder forming one single integral piece with said cylinder head, a piston skirt with a free end and being provided with piston rings and being reciprocable in said cylinder, a cylinder mantle housing extending upwardly as far as to said cylinder head and surrounding said cylinder head to form a water chamber therewith and having a laterally closable opening therein freely accessible for piston assembly in said cylinder and which in the axial direction of said piston extends over a length greater than the

axial extension of the range of said piston rings and in the upper dead center position of said piston extends from that



end of said piston ring range which is closest to the free end of said piston skirt to approximately said free end of said piston skirt.

3,897,771

APPARATUS FOR THE INTERRUPTION OF FUEL
SUPPLY IN AN INTERNAL COMBUSTION ENGINE

Gerhard Stumpp, Stuttgart, Germany, assignor to Robert Bosch G.m.b.H., Stuttgart, Germany

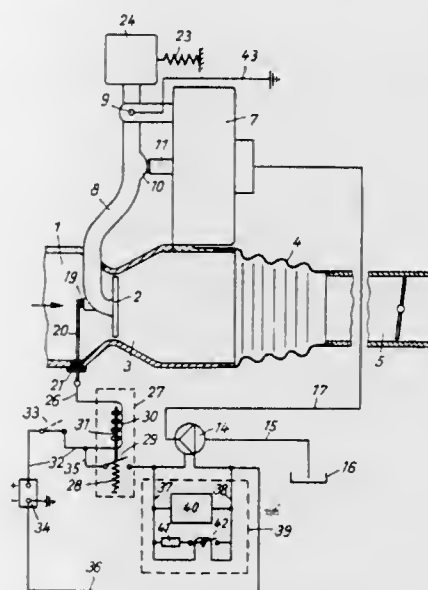
Filed Oct. 2, 1973, Ser. No. 402,901

Claims priority, application Germany, Oct. 7, 1972, 2249235

Int. Cl. F02b 77/08

U.S. Cl. 123-198 DB

9 Claims



1. A fuel supply system for an internal combustion engine comprising, in combination an air suction tube, a fuel supply means, an ignition switch, an apparatus for interruption of fuel supply including

- control means in said fuel supply means for cutting off fuel;
- electrical contact switch means;
- a voltage source connected in series with said electrical contact switch means, said ignition switch and said control means, said electrical contact switch means, said ignition switch means and said control means for series connected to one another;
- relay means mechanically coupled to said electrical contact switch means for opening said contact switch means when actuated, said relay means including a winding;
- means including circuit completing contact means in series with said winding, said ignition switch and said voltage source for actuating said relay means; and
- means positioned within said suction tube and responsive to flow of air therein for opening said circuit completing contact means whenever air flows in said suc-

tion tube to deactivate said relay means by interrupting current flow in said winding.

3,897,772

MACHINE FOR CUTTING PRECIOUS STONES

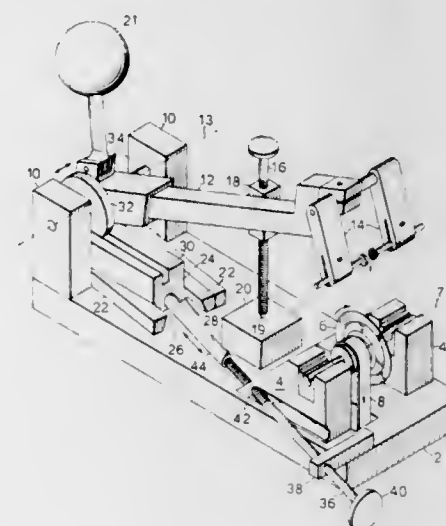
Joseph Averbuch, 10 Dizengoff St., Tel Aviv, Israel

Filed Nov. 12, 1974, Ser. No. 523,163

Int. Cl. B28d 5/00

U.S. Cl. 125-30 R

9 Claims



1. A machine particularly useful for cutting diamonds and other precious stones, comprising: a stationary frame; a holder for rotatably mounting a tool on the frame about a rotary axis; a swingable arm pivotally mounted at one end on the frame about a pivotal axis parallel to the tool rotary axis and carrying a workpiece holder on its opposite end such as to enable bringing the workpiece into engagement with the tool; a fixed guide member fixed to the stationary frame; a movable guide member mounted for movement with respect to the fixed guide member towards and away from the tool rotary axis; one of said guide members being formed with a first slot, and the other of said guide members being formed with a first projection received in said slot, both slot and projection extending towards the tool rotary axis at an oblique angle thereto; said movable guide member being formed with a second slot extending towards the tool rotary axis at a right angle thereto; a second projection carried by the swingable arm and received in the second slot; said second projection being formed with a rounded surface to permit the projection to roll in the second slot during the pivoting of the swingable arm; and an adjusting device for adjustably moving the movable guide member towards and away from the tool rotary axis to adjustably shift the pivotally mounted end of the swingable arm axially of its pivotal axis.

3,897,773

DAMPER

Peter W. Burt, and Dean P. Unthank, both of Louisville, Ky., assignors to Henry Vogt Machine Co., Louisville, Ky.
Division of Ser. No. 322,019, Jan. 8, 1973, Pat. No. 3,805,884.

This application Nov. 7, 1973, Ser. No. 413,500

Int. Cl. F23i 13/02

U.S. Cl. 126-285 R

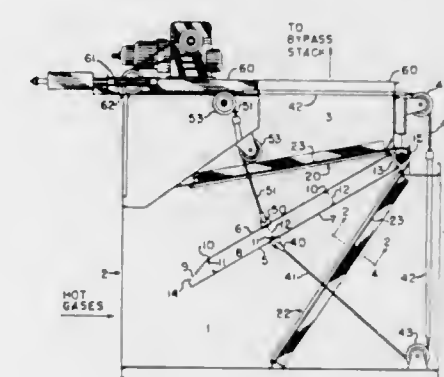
6 Claims

1. Apparatus for controlling the flow of hot gases in a gas stream which includes:

- a duct having upstream and downstream portions,
- a damper blade, mounted entirely within said duct and movable between open and closed positions, said damper blade comprising:
 - a supporting frame,
 - metal plates mounted on both sides of said frame to form spaced apart walls; and
 - a nose portion at one end;
- the improvement in said damper blade of means for equalizing the stress on said walls and for equalizing the

temperature of said walls relative to each other, which comprises:

- a gas space, defined by said walls and by said frame for directing the flow of hot gases between said walls along the length of said damper blade for reinjection back into said gas stream, said gas space being:
 - generally coextensive with said walls, and
 - in direct heat exchange relation with said walls; and
- inlet ports in the nose portion of said damper blade and outlet ports at the opposite end of said damper



blade said ports being in communication with said gas space and with said duct and serving as gas passages for the flow of a portion of said hot gases through said gas space.

- the further improvement wherein said inlet ports are in communication with the upstream portion of said duct for directing a portion of said hot gases into said gas space and outlet ports are in open communication with said downstream portion of said duct, so as to reinject said portion of said hot gases back into the gas stream.

3,897,774

SIGNAL PROCESSING CIRCUIT

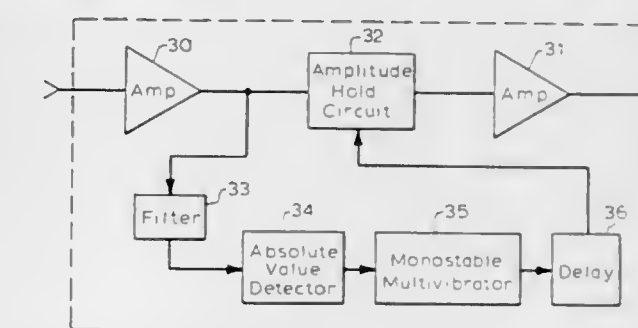
Thomas H. Burdick, Deerfield, and Richard A. Johnson, Round Lake, both of Ill., assignors to Baxter Laboratories, Inc., Morton Grove, Ill.

Filed Jan. 28, 1974, Ser. No. 437,110

Int. Cl. A61B 5/04

U.S. Cl. 128-2.06 R

20 Claims



1. A signal processing circuit for use in conjunction with a data collection system wherein an analog input signal is sampled at periodic spaced time intervals and applied to an analog-to-digital converter to develop a digital output signal for causing said system to respond to a transient pulse appearing in said analog input signal between said periodic samplings, said signal processing circuit comprising, in combination: pulse discrimination means for producing a control signal in response to the occurrence of said transient pulse; and means including an amplitude hold circuit responsive to said control signal for maintaining the instantaneous level of said analog input signal as applied to said analog-to-digital converter constant for a predetermined hold period following the occurrence of said transient pulse such that the amplitude of said pulse is sampled by said converter and converted to a corresponding digital output signal.

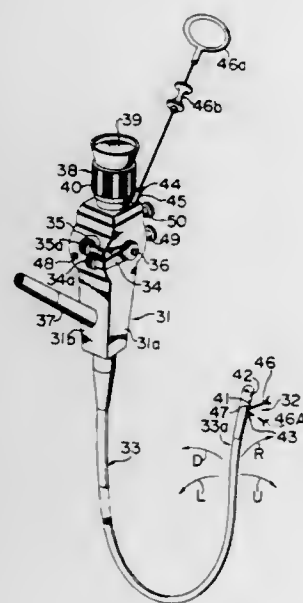
3,897,775

ENDOSCOPE WITH FACILE BENDING OPERATION
 Hiroyuki Furihata, Tokyo, Japan, assignor to Olympus Optical Company, Ltd., Tokyo, Japan
 Filed Aug. 19, 1974, Ser. No. 498,462
 Claims priority, application Japan, Aug. 30, 1973, 48-101038

Int. Cl. A61b 1/00

U.S. Cl. 128—6

11 Claims



1. An endoscope with facile bending operation comprising a control unit including an eyepiece assembly of an observation optical system; a distal end portion for housing the objective assembly of the observation optical system; a flexible tube for connecting the control unit with the distal end portion and including a bending section at its end nearer the distal end portion, said flexible tube internally housing an optical fiber bundle which provides an optical coupling between the eyepiece and objective assemblies of the observation optical system; a flexure controlling wire having its one end secured to the distal end portion and extending through the flexible tube to the control unit; a pulley having its axle rotatably mounted within and projecting externally of the control unit, the other end of the flexure controlling wire being secured to the pulley; a flexure controlling lever having its one end secured to that portion of the axle of the pulley which projects externally of the control unit, the flexure controlling lever being extended and folded so as to have its free end reach a surface adjoining the surface of the control unit through which the axle projects; and a finger engaging member formed on the free end of the lever and adapted to be operated lengthwise of the control unit to rotate the pulley through the axle.

3,897,776
CLAVICLE SPLINT

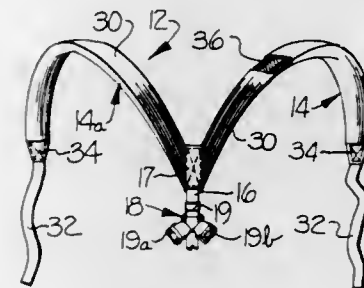
John F. Gaylord, Jr., Matthews, N.C., assignor to Medical Specialties, Inc., Charlotte, N.C.
 Filed Mar. 22, 1974, Ser. No. 453,770
 Int. Cl. A61f 5/04

U.S. Cl. 128—87 R

10 Claims

1. A clavicle splint for bracing the shoulder region of the body without biting into the body of the wearer and thereby causing discomfort to the wearer and without tending to impinge the brachial artery or the radial, ulna, and median nerves, said splint comprising
 a relatively short vertically extending back strap,
 a pair of shoulder straps connected at the upper end of said back strap and extending upwardly from said back strap at an acute equal angle to either side of the vertical, each of said shoulder straps comprising
 a. a porous core of resilient foam material defining a rear portion immediately adjacent said back strap and adapted to overlie the back and shoulders of the

wearer, a forward portion adapted to pass through the axilla of the wearer, and an outer end, said core having a cross-sectional configuration which varies along the length thereof and including a generally rectangular cross-sectional configuration along said rear portion, and a generally semi-circular cross-sectional configuration along said forward portion to thereby present a rounded surface in contact with the axilla of the wearer and provide increased comfort and reduce the tendency of the strap to bite into the body and impinge the brachial artery and the radial, ulna, and median nerves, said core further being formed with an arcuate curva-



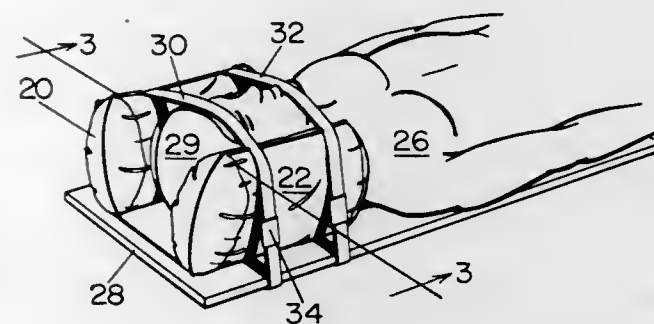
ture along the longitudinal length thereof so as to tend to naturally encircle the shoulder and axilla of the wearer when placed thereon and thereby alleviate the tendency of said core to buckle upon being positioned on the body of the wearer,
 b. an outer porous fabric cover surrounding said core and extending along the longitudinal length thereof, and
 c. a tape secured to said outer end of said core and extending for a distance sufficient to reach the lower end of said back strap when the shoulder strap is positioned over the shoulder and through the axilla, and attachment means at the lower end of said back strap for securing each of said tapes to said back strap.

3,897,777
HEAD RESTRAINT

Robert D. Morrison, Worthington, Ohio, assignor to Morrison Medical Products Company, Columbus, Ohio
 Filed May 23, 1974, Ser. No. 472,529
 Int. Cl. A61F 13/00

U.S. Cl. 128—133

6 Claims



1. A body restraint for immobilizing a body part of a person, said restraint comprising:
 a. a pair of spaced, resilient, pillow-like major lobes joined at an inner side of each by a relatively central web; and
 b. a supporting and drawing means comprising a casing of flexible sheet material extending laterally around said major lobes and said web and having a circumferential dimension less than the corresponding peripheral dimension of said spaced lobes and web but great enough to permit a body part to be lowered against the casing intermediate said major lobes for depressing said casing into a sling for receiving and supporting a body part and simultaneously drawing said major lobes inwardly into clamping engagement with said body part.

3,897,778

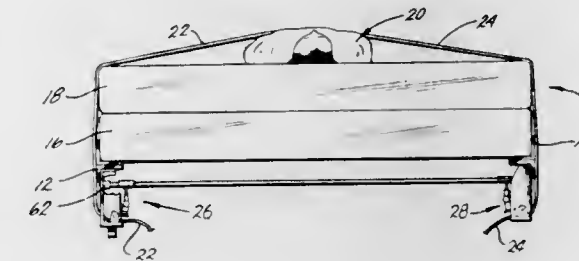
QUICK-RELEASE BUCKLE AND BODY HARNESS ARRANGEMENT

Elliott Forbes-Robinson, and Christina Ethel Forbes-Robinson, both of Glendale, Calif., assignors to Elliott Forbes-Robinson, Glendale, Calif.

Filed Nov. 2, 1973, Ser. No. 412,312
 Int. Cl. A61G 7/06

U.S. Cl. 128—134

16 Claims



1. A harness device for holding a patient in a hospital bed comprising: harness means adapted to securely engage a patient's body, said harness means including a pair of elongated strap portions, a pair of releasable buckle means for securing one of the strap portions adjacent one side of the bed and for securing the other of said strap portions adjacent the other side of the bed, means for securing one of said buckle means adjacent said one side of the bed and for securing the other of said buckle means adjacent said other side of the bed, and quick release means connected to both buckle means for simultaneously releasing both strap portions to release the harness from the bed.

3,897,779

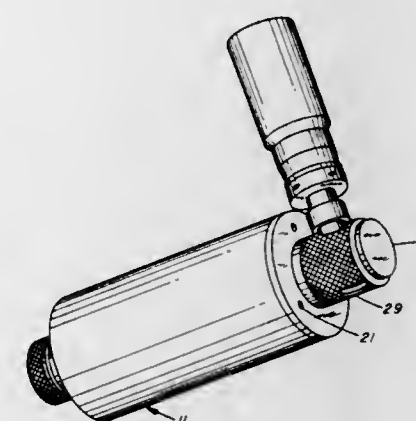
TRIAMCINOLONE ACETONIDE INHALATION THERAPY

Lloyd Frank Hansen, Campbell Hall, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Filed June 27, 1973, Ser. No. 374,177
 Int. Cl. A61M 15/02

U.S. Cl. 128—266

1 Claim



1. A method of treating asthma which comprises dispensing a measured dose through a metering valve into a deceleration chamber of a suspension in a chlorofluoroalkane propellant of finely divided triamcinolone acetonide having 95% by weight within the particle size range of about 0.5 to 10 microns, the individual particles of which are substantially separated, mixing with additional air, and inhaling, by inspirational air velocity only, into the lungs of the subject, holding the inspired air for a short time to permit a substantial portion of the particles of triamcinolone acetonide to be deposited along the lung surface, and exhaling.

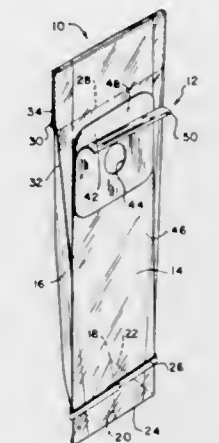
3,897,780

COLOSTOMY APPLIANCE ADHESIVE PATCH FOR FASTENING SAME TO THE BODY
 Robert E. Trousil, 195 Continental View Dr., Boulder, Colo. 80303

Filed July 30, 1973, Ser. No. 384,016
 Int. Cl. A61f 5/44

U.S. Cl. 128—283

4 Claims



1. The colostomy appliance which comprises: a fluid-tight flexible bag closed at its lower end, a thin pliable fabric patch of stretchable non-woven fibrous material fixedly attached to the rear wall of the bag, a layer of non-drying pressure-sensitive adhesive coating the exposed face of the patch, and a silicone impregnated rip-strip overlying the adhesive-coated face of the patch defining a removable protective cover therefor.

3,897,781
OSTOMY DEVICES

Elayne R. Marsan, Minocqua, Wis., assignor to Marsan Manufacturing Co., Inc., Wausau, Wis.

Filed Sept. 28, 1973, Ser. No. 401,696
 Int. Cl. A61f 5/44

U.S. Cl. 128—283

2 Claims



1. An ostomy appliance for use with an expendable drainage pouch, said appliance comprising:
 a base gasket having substantially planar front and back surfaces including,
 a centrally disposed aperture,
 means for orienting and supporting an expendable pouch on said gasket planar front surface about said aperture, said orienting and supporting means including,
 a tubular flange, having operative top and bottom portions as well as inner and outer surfaces, annularly disposed about said aperture on said gasket planar front surface, the operative top portion of said flange being dimensioned to extend outwardly from said surface a distance sufficient to permit orientation of said pouch about said aperture and to support said pouch upon the outer surface thereof, the operative bottom portion of said flange being dimensioned to extend outwardly from said surface

a lesser distance than said top portion, said lesser distance being sufficient to permit orientation of said pouch about said aperture and insufficient to permit substantial accumulation of waste material on the inner surface thereof, the distance of outward extension of said tubular flange from said gasket planar front surface diminishing uniformly from top to bottom portions; and means for mounting said base gasket with said back surface adjacent the abdominal wall of the user.

3,897,782

BODY FLUID BARRIER FILMS

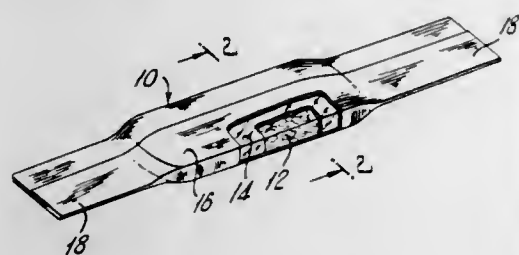
Deger C. Tunc, East Brunswick, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Filed Jan. 7, 1974, Ser. No. 431,455

Int. Cl. A61f 13/16

U.S. Cl. 128—290

13 Claims



1. In a product for contacting body fluids, a barrier film comprising an alkali salt of a sulfated cellulose ester resin, said resin having a degree of sulfate substitution satisfactory to render said film resistant to said body fluids and dispersible in a water closet.

3,897,783

ADHESIVELY SUPPORTED SANITARY NAPKINS

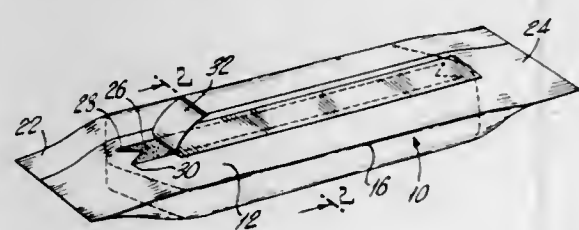
James A. Gnocchio, Summit, N.J., assignor to Personal Products Company, Milltown, N.J.

Filed Feb. 15, 1974, Ser. No. 442,707

Int. Cl. A61f 13/16

U.S. Cl. 128—290 R

6 Claims



1. In an elongate sanitary napkin provided with pressure-sensitive adhesive disposed on the bottom surface thereof for attaching said napkin to a supporting garment, the improvement wherein there is provided means for insuring ready releasability of the napkin and garment, said means comprising providing said pressure-sensitive adhesive in the form of a single band extending longitudinally of said bottom surface and being centrally disposed thereon with respect to the longitudinal sides thereof, said band of adhesive terminating at at least one end thereof in at least one peak.

3,897,784

SANITARY NAPKIN

Harry Fitzgerald, Green Bay, Wis., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed July 24, 1974, Ser. No. 491,357

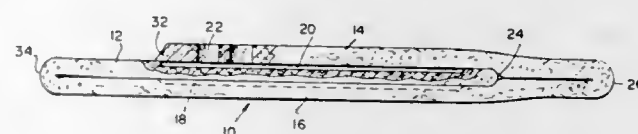
Int. Cl. A61f 13/16

U.S. Cl. 128—290 R

9 Claims

1. A body fluid absorbent pad adapted for contact with body areas comprising a central portion and first and second end portions said portions being longitudinally joined to each other by transverse folds to form a three-ply stacked absor-

bent means, said first end portion defining an upper body contacting ply having a plurality of discreet fluid contacting holes there through, said second end portion defining an



intermediate ply having a plurality of fluid directing embossment ribs communicating with said holes, said central portion defining an absorbent bottom ply.

3,897,785

HARNESS FOR A DISPOSABLE URINAL

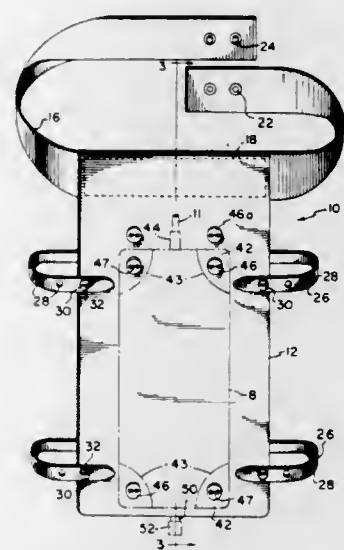
Homer D. Barto, Jr., 423 W. Slosson Ave., Reed City, Mich. 49677

Filed Oct. 24, 1973, Ser. No. 409,155

Int. Cl. A61f 5/44

U.S. Cl. 128—295

10 Claims



1. A support harness for supporting a urine collecting container on a person including comprising; an elongated support means adapted to extend along one side of a person's leg; waist band means connected to the upper end of said support means for vertically supporting said support means from the waist of said person; means for detachably mounting a urine collecting container of said support means to be supported thereby; and at least one leg band means, substantially shorter than said waist band means and connected to the lower portion of said support means, for loosely passing around the opposite side of said leg to inhibit movement of said support means and said bag outwardly away from said person's leg.

3,897,786

DISPOSABLE MYRINGOTOMY APPARATUS

Robert E. Garnett, Memphis, and Dwain C. Ray, Cordova, both of Tenn., assignors to Richards Manufacturing Company, Memphis, Tenn.

Division of Ser. No. 112,933, Feb. 5, 1971, abandoned. This application Aug. 25, 1972, Ser. No. 283,738

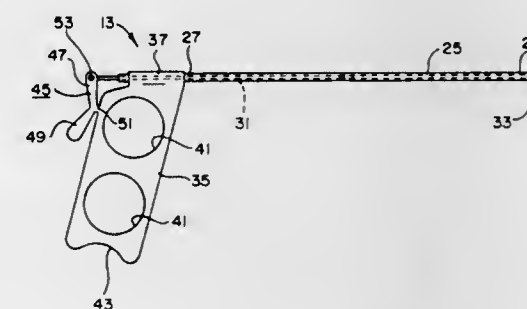
Int. Cl. A61b 17/34

U.S. Cl. 128—303 R

2 Claims

1. Disposable myringotomy apparatus for performing an operation which includes placing a myringotomy tube in the tympanic membrane of the ear, said apparatus comprising a disposable inserter including an elongated sleeve having a proximal end and a distal end, a plunger slidably extending through said sleeve and being positionable in a forward position in which said plunger extends beyond the distal end of

said sleeve to establish a protruding portion for receiving a myringotomy tube thereon for placement into a myringotomy opening in the tympanic membrane of the ear, a handle attached to said sleeve adjacent the proximal end thereof, a trigger having an upper portion and a lower portion, a flexible connecting portion integrally formed with said trigger intermediate the upper and lower portions thereof and integrally



formed with said handle, said trigger at said upper portion thereof being pivotally attached to said plunger at the distal end thereof, said trigger being initially in a first position to hold said plunger in said forward position and being movable by pressure on said lower portion to move said plunger and retract said protruding portion into said sleeve to push the myringotomy tube off the end of said plunger for retention in the myringotomy opening.

3,897,787

POWER SOURCE DEVICE FOR AN ELECTRIC SURGICAL KNIFE

Yuji Ikuno, Fuchu and Yutaka Kato, Tama, both of Japan, assignors to Olympus Optical Company, Ltd., Tokyo, Japan

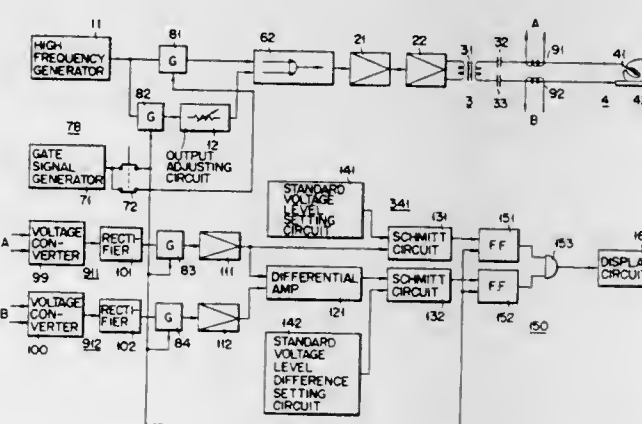
Filed Dec. 27, 1973, Ser. No. 428,892

Claims priority, application Japan, Dec. 29, 1972, 48-1562

Int. Cl. A61b 17/36

U.S. Cl. 128—303.14

13 Claims



1. A power source device for supplying high frequency electrical signals on first and second output lines which are respectively adapted to be connected to active and fixed electrodes of an electrosurgical knife, comprising: means for generating a high frequency signal; means for supplying a high frequency signal to first and second output lines; selector means connected to said supplying means for selectively passing said high frequency signal to said supplying means or for attenuating said high frequency signal before passing same to said supplying means; level detecting means coupled to said supplying means for detecting the voltage level of the high frequency signal supplied to said first output line; level difference detecting means coupled to said supplying means and to said level detecting means for detecting a difference between the voltage levels of output signals corresponding to the signals appearing on said first and second output lines;

level comparison means for comparing the voltage level of an output signal from said level detecting means with a first fixed voltage level; level difference comparison means for comparing the voltage level of an output signal from said level difference detecting means with a second fixed voltage level; determining means responsive to the output signals from both said level comparison means and said level difference comparison means for determining whether or not the signals supplied to said first and second output lines are "normal" so as to render an electric knife in a normal conduction state; and indicating means responsive to the output of said determining means for indicating whether or not said signals supplied to said first and second output lines are "normal".

3,897,788

TRANSFORMER COUPLED POWER TRANSMITTING AND ISOLATED SWITCHING CIRCUIT

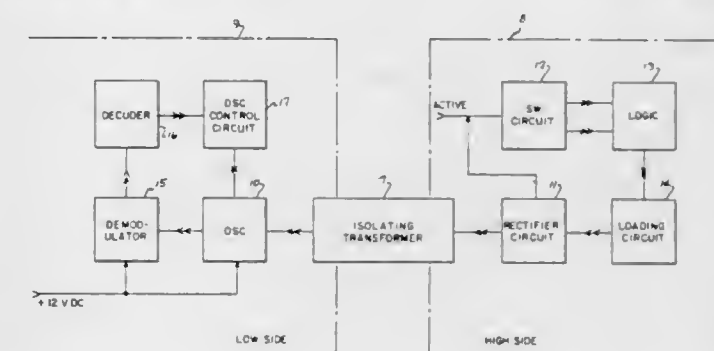
David W. Newton, Boulder, Colo., assignor to Valleylab, Inc., Boulder, Colo.

Filed Jan. 14, 1974, Ser. No. 433,059

Int. Cl. A61b 17/36

U.S. Cl. 128—303.14

12 Claims



1. In an electrosurgical apparatus having a power generator and a utilization instrument, a power transmitting and isolating control circuit to transmit power from the power generator to the utilization instrument and to transmit mode information from the utilization instrument to the power generator, the said transmitting and isolating control circuit comprising: mode control means at said utilization instrument; transformer means; transformer loading means connected with said transformer means to load the same; load control means responsive to said mode control means and connected with said transformer loading means for establishing a predetermined loading on said transformer means by said transformer loading means; power generating means connected with said transformer means; sensing means connected with said power generating means to sense the loading of said transformer means; and power generating control means connected with said sensing means and responsive to said loading sensed by said sensing means to thereby control the mode of operation of said power generating means.

3,897,789

ACUPUNCTURE APPARATUS

Stanley J. Blanchard, 4 Washington Square, New York, N.Y. 10012

Filed Sept. 13, 1973, Ser. No. 396,699

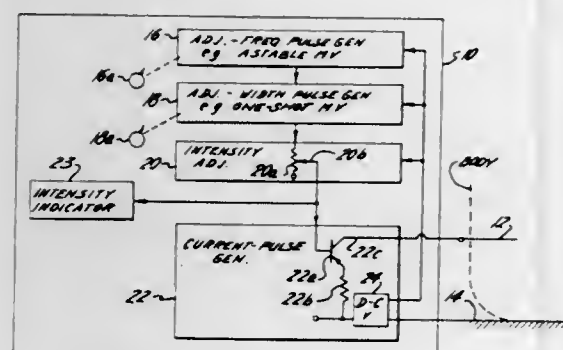
Int. Cl. A61B 17/40

U.S. Cl. 128—303.18

4 Claims

1. Acupuncture apparatus including multiple metal electrodes at least one of which is a needle of about five thousandths of an inch thick and about one-half inch to 6 inches in length for insertion into a patient's body at an acupuncture point and electrical energizing means for oppositely energiz-

ing said needle and another of said electrodes, said electrical energizing means including means for providing pulses to the needle in the frequency range between a value approaching zero and 2,000 pulses per second, and said energizing means



having impedance means for regulating the current supplied to said needle having a minimum impedance of about 1 megohm at the pulse frequency, whereby the needle is supplied with essentially constant current which is affected only secondarily by varied body-impedances of patients.

3,897,790

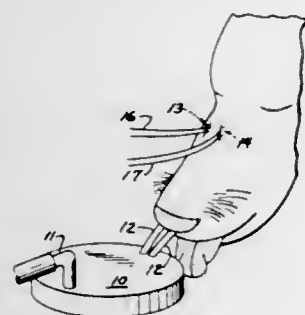
METHOD FOR CONTROLLING VASCULAR RESPONSES
James H. Magilton, and Curran S. Swift, both of Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Continuation-in-part of Ser. No. 171,575, Aug. 13, 1971, Pat. No. 3,776,241. This application Aug. 8, 1973, Ser. No. 386,605

Int. Cl. A61f 7/00

U.S. Cl. 128—400

8 Claims



1. A method of treating animals comprising: selecting an animal from the class consisting those mammals having a single internal carotid artery carrying blood to the brain; and locally irrigating the region of the face or nasal passage drained by the angularis oculi and other facial veins with a fluid at a predetermined temperature sufficiently different from the normal body temperature of said mammal to override the venous temperature control system and thereby control the flow of blood to the brain of said animal.

3,897,791

SUBSTITUTE SMOKING MATERIAL EMPLOYING DEGRADED CELLULOSE

Koichi Yasui, and Shigeo Katsuyama, both of Nobeoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Aug. 8, 1972, Ser. No. 278,871

Claims priority, application Japan, Aug. 12, 1971, 46-61137; Oct. 8, 1971, 46-92028[U]; Oct. 13, 1971, 46-93715[U]; Nov. 17, 1971, 46-106962[U]

Int. Cl. A24b 15/00

U.S. Cl. 131—2

4 Claims

1. A substitute tobacco material comprising a degraded cellulose having an average D.P. of up to 95 and prepared by treating a cellulose with an alkali followed by aging of the resulting alkali cellulose with an oxygen-containing gas, and

sodium cellulose glycolate in which the degree of substitution of carboxymethoxy group is between 0.6 and 1.0 percent aqueous solution thereof has a viscosity of between 80 and 1,800 centipoises at 20°C., the said degraded cellulose being contained therein in an amount at least 75 percent by weight of said material.

3,897,792

DEGRADED CELLULOSE FOR USE IN SMOKING MIXTURES

Koichi Yasui, and Shigeo Katsuyama, both of Miyazaki, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 278,871, Aug. 8, 1972. This application June 28, 1974, Ser. No. 484,138

Claims priority, application Japan, Aug. 12, 1971, 46-61137; Oct. 8, 1971, 46-92028[U]; Oct. 13, 1971, 46-93715[U]; Nov. 17, 1971, 46-106962[U]

Int. Cl. A24b 15/00

U.S. Cl. 131—2

6 Claims

1. A method for the manufacture of a tobacco substitute material comprising a degraded cellulose, characterized by steeping a cellulose in an alkali thereby converting the cellulose to alkali cellulose, aging the alkali cellulose with an oxygen-containing gas at a temperature of up to 100°C. until there is obtained an aged cellulose having an average D.P. up to 95 and that portion thereof having a D.P. of over 110 constituting up to 10 percent thereof, and thereafter neutralizing the aged cellulose.

3,897,793

SMOKING MIXTURE

Colin James Webster, West Kilbride, Scotland, assignor to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 125,806, March 18, 1971. This application Aug. 20, 1974, Ser. No. 499,089

Claims priority, application United Kingdom, Mar. 23, 1970, 13861/70

Int. Cl. A24b 03/14, 15/00

U.S. Cl. 131—2

10 Claims

1. A smoking mixture for cigars, cigarettes and pipes as a tobacco replacement said mixtures comprising
a. a smoke-producing fuel selected from the group consisting of alpha cellulose, oxidized carbohydrates, sodium carboxymethylcellulose, and aldol condensation products prepared by acid or base catalyzed condensation of a compound of the formula



(or a precursor thereof) wherein R^1 and R^2 which may be the same or different, each represents a hydrogen atom, or an alkyl, hydroxyalkyl or formyl group

b. 0.5 to 25 percent by weight protein which is essentially pure and free of residual fat, said protein being capable of supporting combustion and being selected from the group consisting of albumin, casein, peptone, haemoglobin, wool, maize, wheat, soyabean and groundnut protein and functioning to reduce off-odors or off-flavors of the smoke from said fuel

c. up to 4 percent by weight of carotenoid to mask any protein off-notes of the smoke from said mixture.

3,897,794

GROOMING IMPLEMENT

John W. Branch, 333 E. Ontario, Apt. 3801B, Chicago, Ill. 60611

Filed Mar. 11, 1974, Ser. No. 449,697

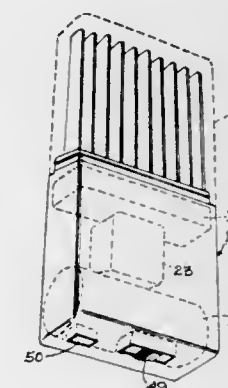
Int. Cl. A45D 24/00

U.S. Cl. 132—11 A

6 Claims

1. A pocket-sized hair comb comprising

- a hollow casing providing an open end and a removable cover therefor,
- means within said casing for mounting a plurality of combing teeth thereto,
- a plurality of elongated combing teeth carried in spaced parallel relation by said mounting means and extending longitudinally of the open end of said hollow casing.



- a motor and a rotatable driven shaft within said casing,
- teeth-oscillating means within said casing movable in a reciprocal linear plane transversely to the long axis of said teeth by said rotatable driven shaft of said motor, and
- means provided by each of said combing teeth coupling said teeth to said oscillating means for oscillating said teeth about their longitudinal axis.

3,897,795

DENTAL FLOSS AND METHOD OF MAKING SAME

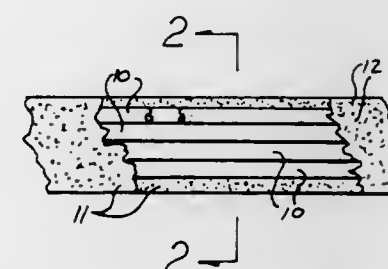
Walter H. Engel, Southport, Conn., assignor to Centrix, Inc., Fairfield, Conn.

Filed July 30, 1973, Ser. No. 383,888

Int. Cl. A61c 15/00

U.S. Cl. 132—89

11 Claims



1. A dental floss comprising:

- a plurality of fibers,
- a readily salvia soluble binder comprising a detergent and a dental hygienic substance dispersed along the fibers and adhered thereto by said detergent binder whereby said binder reduces the surface tension of said salvia to permit said hygienic substance to more effectively act on one's teeth.

3,897,796

DENTAL FLOSS

Forrest E. Erickson, 6317 N. Kirkwood, Chicago, Ill. 60646

Filed Aug. 27, 1974, Ser. No. 500,852

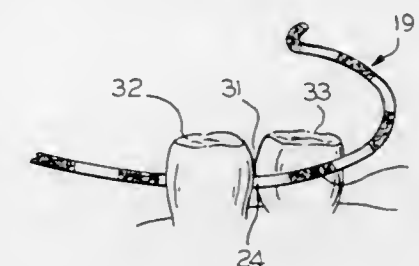
Int. Cl. A61c 15/00

U.S. Cl. 132—89

9 Claims

1. A dental floss for use in removing mucous plaque from the interproximal space of teeth,

sections of said floss being colored, and alternate sections of said sections being uncolored whereby



the user of the dental floss can more readily distinguish those sections which have already been used.

3,897,797

APPLICATOR ROLLER CLEANER HAVING ADJUSTABLE SPRAY HEADER

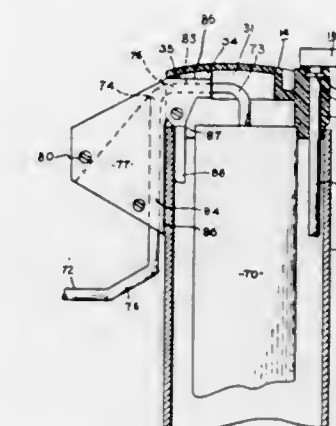
Orrin Marshall Wright, Fullerton; Gordon G. Jarosek, Westminster, and Willis E. Swanson, Granada Hills, all of Calif., assignors to Optiwatch Enterprises, Fullerton, Calif.

Filed Nov. 26, 1973, Ser. No. 418,893

Int. Cl. B08b 3/02

U.S. Cl. 134—113

10 Claims



1. A device for cleaning of a roller applicator and the like which comprises:

- a generally upright and open-ended tubular housing;
- a supporting base member secured to the lower end thereof to support said lower end over a drain station and provide substantially unimpeded liquid drainage from said housing;
- a lid with means for its removable attachment to the upper end of said housing in a sealing relationship thereto;
- roller applicator bail engagement means carried on the undersurface of said lid to removably engage and secure the bight of the bail of a single roller applicator in a position with the roller of said applicator being supported in a vertical and substantially coaxial position within said housing;
- bracket means carried by one of said housing and said roller applicator bail to removably engage and secure said bail to said housing;
- a liquid spray header comprising an elongated tubular member closed at one end and bearing a longitudinal row of apertures;
- means to supply a pressured source of liquid to the open end of said tubular member;
- through aperture means carried by said lid in which said tubular member is mounted coextensively within and to one side of said tubular housing with freedom of pivotal movement of said tubular member about its longitudinal axis in a fixedly adjustable manner whereby the angle of impingement of liquid spray from said apertures onto said roller can be varied;

i. indicia carried on said lid and cooperative index means carried by said tubular member to indicate angular orientation of said aperture to said roller to provide selection between positions of maximum spray penetration for roller cleaning and maximum roller rotation for roller drying.

3,897,798

METHOD AND APPARATUS FOR MONITORING AND CONTROLLING HALOGEN LEVELS IN A WATER TREATMENT SYSTEM

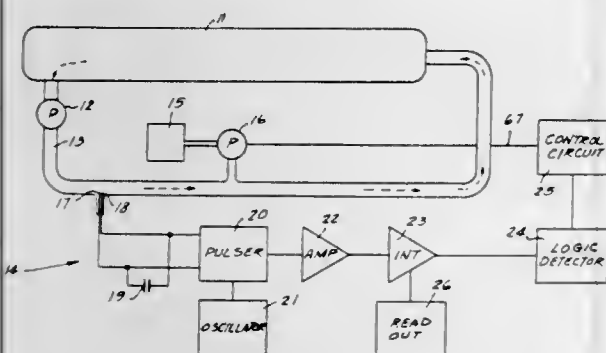
Donald P. De Vale, Rt. 1, Sycamore, Ill. 60178

Continuation-in-part of Ser. No. 181,813, Sept. 20, 1971, Pat. No. 3,724,474. This application Feb. 26, 1973, Ser. No. 335,795

Int. Cl. G05d 11/08, 21/02

U.S. Cl. 137-5

10 Claims



1. Apparatus for measuring the content of a substance having a predetermined redox potential in a liquid comprising: probe means including a pair of capacitively coupled electrodes disposed in the liquid;

means for periodically pulsing said electrodes with a voltage pulse having a peak value slightly above the predetermined redox potential of the substance to store a charge in the capacitance thereacross, the stored charge decaying between pulses via the liquid between the said electrodes at a rate governed by the content of the substance in the liquid;

means for sensing the charge across said electrodes and operable to generate a substance level indication signal; and

display means operable in response to the substance level indication signal to provide a visual display of the substance content.

3,897,799

HERMETIC SEAL ARRANGEMENT FOR SLEEVE VALVE

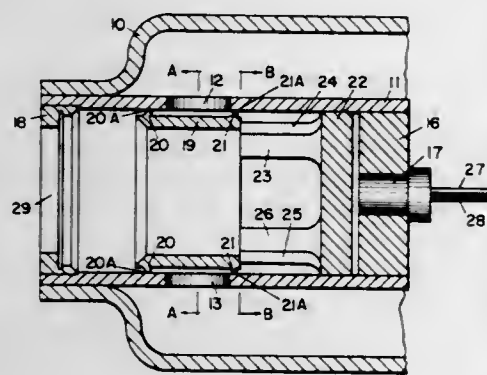
John T. M. Lee, Phoenixville, Pa., assignor to ICI United States Inc., Wilmington, Del.

Filed Mar. 19, 1973, Ser. No. 342,779

Int. Cl. F16k 17/14, 17/40

U.S. Cl. 137-68

3 Claims



1. In a sleeve valve for containing high pressure fluid comprising a shell having a port therein, a closure across said shell, a sleeve slidable within said shell into separate positions in

which said port is covered and uncovered, and operating means for applying force to slide said sleeve such that said port is uncovered to allow fluid to pass through said port through said sleeve, the improvement wherein said sleeve is sealed to said shell by at least 1 frangible sleeve ring flange seal having a thickness, internal radius and external radius, located on each side of said port continuously bonded to said shell and said sleeve such that pressurized fluid will not pass through said port when said slidable sleeve covers said port, said sleeve ring flange having a relatively small thickness compared with said shell and a sufficiently large inside/outside radius differential that the required force applied by said operating means to slide said sleeve and break said sleeve ring flange seals is less than the force required to shear said flanges by applying force along their outside radius.

3,897,800

REVERSING FLOW VALVE

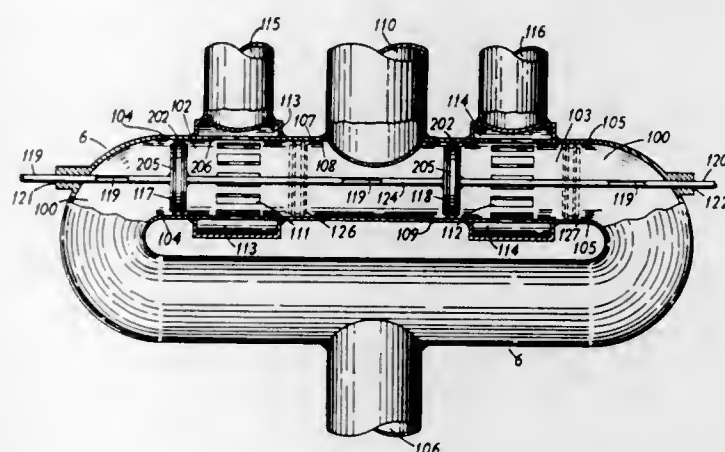
Joseph M. Tyrner, Brookside, and William E. Watson, Mt. Tabor, both of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Division of Ser. No. 218,605, Jan. 17, 1972, Pat. No. 3,773,066, which is a continuation of Ser. No. 877,720, Nov. 18, 1969, abandoned. This application July 12, 1973, Ser. No. 378,749

Int. Cl. F16K 11/07

U.S. Cl. 137-309

4 Claims



1. A valve structure comprising:

- a. first and second manifold chambers;
- b. first and second cylinder chambers;
- c. an inlet port provided in the first manifold chamber;
- d. an outlet port provided in the second manifold chamber;
- e. a first port provided in the first cylinder chamber;
- f. a second port provided in the second cylinder chamber;
- g. a piston provided in each of the first and second cylinder chambers, each piston having a first position therein which permits communication between said inlet port of said first manifold chamber and said first port of said first cylinder chamber and communication between said second port of said second cylinder chamber and said outlet port of said second manifold chamber;

h. said pistons being slideably arranged in said first and second cylinder chambers for movement over the first and second ports thereof and being fixedly mounted on a single piston rod;

i. drive means connected to said piston rod for inducing said rod to reciprocate, thereby effecting sliding motion of the pistons within said first and second cylinder chambers and causing movement of the pistons to a second position in said cylinder chamber which terminates communication between said inlet port of said first manifold chamber and said first port of said first cylinder chamber and communication between said second port of said second cylinder chamber and said outlet port of said second manifold chamber and which provides communication between said inlet port of said first manifold chamber and said second port of said second cylinder chamber and

between said first port of said first cylinder chamber and said outlet port of said second manifold chamber;

j. said pistons having sealing surfaces and said first and second ports and said sealing surfaces having widths extending in the direction of movement of said pistons, the width of each of the sealing surfaces being less than that of the port over which it moves and the shortest distance between the sealing surfaces being greater than that between the first and second cylinder chamber ports, whereby said pistons and first and second ports of said first and second cylinder chambers provide uninterrupted communication between said inlet port of said first manifold chamber and said first and second ports of said first and second cylinder chambers, and uninterrupted communication between said first and second ports of said first and second cylinder chambers and said outlet port of said second manifold chamber during said movement of the pistons to the second position, said pistons moving over the first and second ports for a distance which represents a small fraction of the total distance traveled by the pistons during said movement to the second position.

3,897,801

STRETCH PIPE IRRIGATION SYSTEM

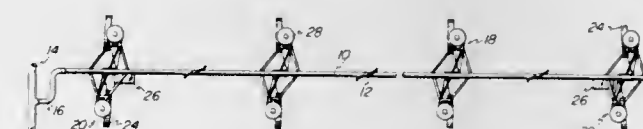
Rufus J. Purtell, Brownfield, Tex., assignor to Tri-Matic, Inc., Brownfield, Tex.

Filed Oct. 11, 1974, Ser. No. 514,121

Int. Cl. B05B 3/18

U.S. Cl. 137-344

8 Claims



1. In an irrigation system having

- a. a pipe adapted to have sprinklers placed thereon,
- b. a plurality of vehicles having wheels movingly supporting the pipe,
- c. power means on each vehicle for moving the vehicle,
- d. said pipe connected to a source of water under pressure,
- e. THE METHOD OF KEEPING THE PIPE STRAIGHT AND THE VEHICLES IN ALIGNMENT COMPRISING:
- f. stretching the pipe by angling the wheels on at least one end vehicle outward.

3,897,802

PILOT VALVE OPERATOR FOR SAFETY RELIEF VALVE

Harold Eugene Bass, Pineville, La., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed June 17, 1974, Ser. No. 479,695

Int. Cl. F16k 17/32, 31/12

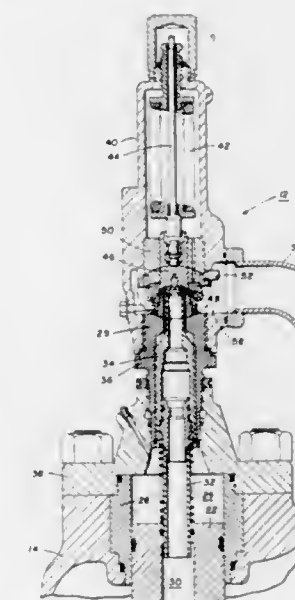
U.S. Cl. 137-478

13 Claims

1. A safety relief valve adapted for effecting relief of over-pressure in a fluid system comprising in combination:

- a. body means defining an inlet passage adapted to receive fluid pressure from the system to which the valve is exposed;
- b. seat means surrounding the downstream end of said inlet passage;
- c. disc means operably movable toward and away from said seat means for cooperating with said seat means to open and close said passage to fluid flow at magnitudes of fluid pressure above and below set pressure, respectively;
- d. resilient gasket means supported on one of said disc means or said seat means adapted to cooperate with a seating surface on the other of said disc means or said seat means for effecting a pressure seal closure therebetween in the closed position of said disc means; and

e. communicating means operatively effective during the closed position of said disc means to communicate system pressure in said passage into an exposed relation with the upstream side of said seal closure.



3,897,803

PRESSURE CONTROL DEVICE

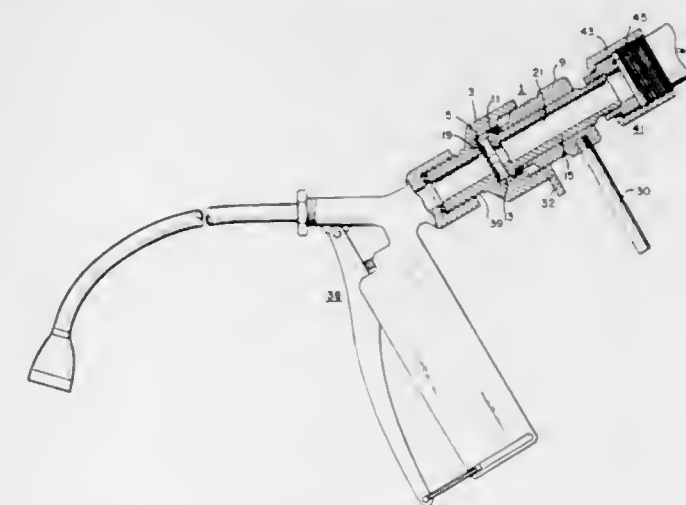
James S. Stevenson, 4230 St. Andrews Rd., Oakland, Calif. 94605

Filed July 23, 1973, Ser. No. 382,027

Int. Cl. F16k 15/06

U.S. Cl. 137-524

6 Claims



1. A pressure control device comprising a housing having a plurality of walls, one of said walls having a valve opening therein for flow communication through said wall, a valve in said housing spanning said valve opening and having a stem passing through another wall of said housing facing said wall with the valve opening, said one wall and said another wall being mounted for longitudinal adjustment with respect to one another, said valve having an external shoulder and at least one substantially radial passage and said valve stem having a longitudinal passage flow-connecting with said substantially radial passage, said hollow stem terminating at its exposed end in means for coupling a hose thereto and an O-ring about said valve stem, between said valve shoulder and a surface of said other wall of said housing which faces said first wall, to function upon adjustment of said walls as a combined seal and

spring to seal said stem and offer opposition to opening movement of said valve in response to application of fluid pressure to said valve.

3,897,804

SWING CHECK VALVE

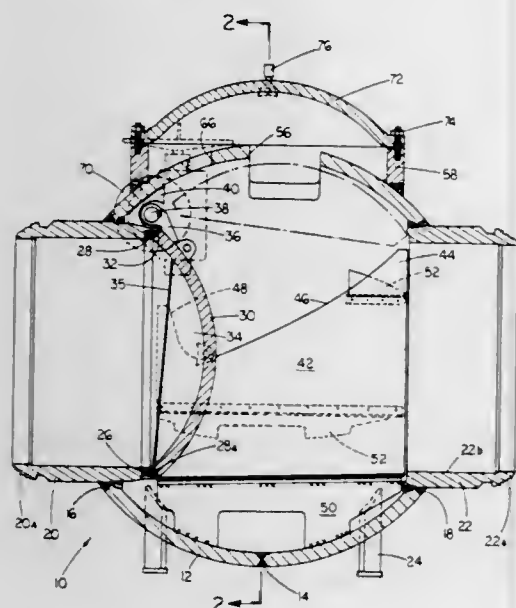
Frank Eugene Buck, Tiburon; Donald E. Graham, San Leandro; Larry A. Battaglia, Benicia, and Harry Fred Burger, San Francisco, all of Calif., assignors to Valve Systems International, Inc., Bala Cynwyd, Pa.

Filed June 27, 1973, Ser. No. 374,085

Int. Cl.² F16K 15/03

U.S. Cl. 137-527.8

6 Claims



1. A swing check valve comprising:
 - a housing with upstream and downstream flow passageways of circular cross-section; and
 - an enlarged, spherical central body section intermediate said flow passageways;
 - a valve seat in the housing surrounding said upstream flow passageway;
 - a valve clapper having a generally circular sealing surface;
 - a pivot mounting on said housing supporting said clapper for movement between a closed position with said sealing surface engaging said valve seat and an open position at an angle thereto; and
 - a generally cylindrical liner centered in said central section extending between and coaxial with said flow passageways;
- said liner being substantially of the diameter of said downstream flow passage closely adjacent thereto and merging therewith over most of the circumference thereof but embracing said valve seat around a major portion thereof opposite said pivot mounting, just enough of said liner intermediate the ends thereof being removed to accommodate said valve clapper in open position.

3,897,805

THREE-WAY LEVER CONTROL FOR ACTUATING A PLURALITY OF VALVES

Robert Casey, Washington, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 265,427, June 23, 1972, Pat. No.

3,795,280. This application Sept. 21, 1973, Ser. No. 399,631

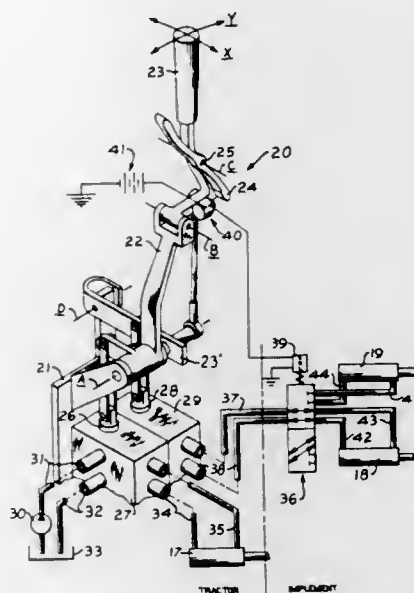
Int. Cl.² F16K 11/18; G05G 9/04

U.S. Cl. 137-637

3 Claims

1. A three-way lever control adapted to actuate separate valves comprising a stationary support and an articulated handle having a first arm, adapted to actuate a first valve, pivotally mounted on said support for pivotal movement about a first axis, a second arm, adapted to actuate a second valve, pivotally mounted on said first arm for pivotal movement about a second axis disposed transversely relative to said first

axis, and a third arm, adapted to actuate a third valve, pivotally mounted on a side of said second arm for pivotal movement about a third axis disposed at least generally parallel to said second axis, said third arm being pivotally mounted at a mid-portion thereof on said second arm and comprising a first lever portion extending upwardly along said second arm for



- simultaneous actuation therewith and a second lever portion extending downwardly in close proximity to an electrical switch means mounted on said second arm whereby movement of said second lever portion upon movement of said first lever portion will engage and actuate said electrical switch means.

3,897,806

LIQUID FLOW DIVERSION ARRANGEMENT

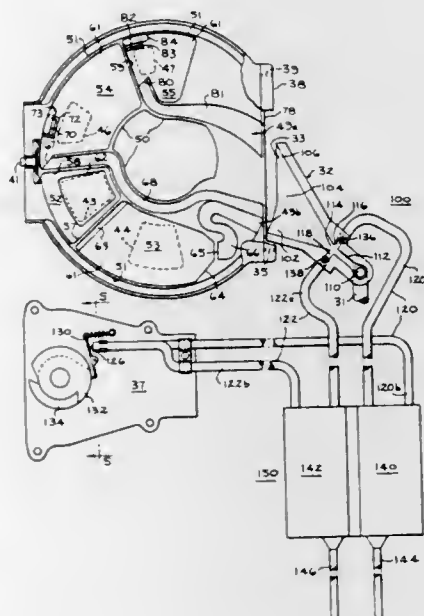
Richard A. Waugh, and Ved P. Gakhar, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Oct. 15, 1973, Ser. No. 406,535

Int. Cl.² D06F 39/02

U.S. Cl. 137-832

6 Claims



1. A liquid flow diversion arrangement including a liquid diverter having a main inlet for liquid to enter, a liquid outlet providing a plurality of exit paths, and at least one control port coupled to ambient, the arrangement further including means for closing the control port from ambient for determining through which exit path liquid entering the main inlet will

emerge, and means coupled between the control port and its closing means for accumulating liquid emerging from the control port and dimensioned for preventing audible sonic oscillations in the liquid flow diversion arrangement, wherein the improvement comprises:

- means associated with the accumulating means for draining liquid accumulating therein and being dimensioned to act as a closed valve with respect to the control port, while allowing liquid to drain automatically from the accumulating means when a sufficient head has been built up therein.

3,897,807

MANIFOLED TANK CARS FOR UNIT TRAIN SERVICE

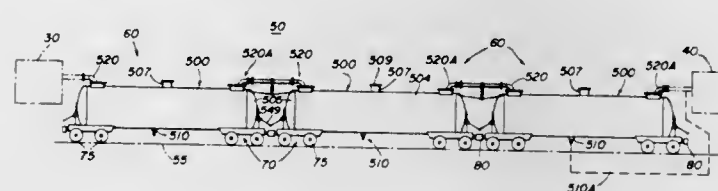
Doug Hurst, Montreal W., Canada, and Erling Mowatt-Larssen, Warren, Ohio, assignors to General American Transportation Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 186,846, Oct. 6, 1971, abandoned. This application Oct. 5, 1973, Ser. No. 403,828

Int. Cl. B67b 3/04

U.S. Cl. 141-98

48 Claims



1. A railway tank car adapted for interconnection in fluid communication with associated like tank cars by flexible connecting conduits for accommodating consecutive loading of fluid ladings, said tank car comprising a wheeled chassis structure provided with chassis coupling means for coupling to the chassis of associated like cars, a tank mounted on said chassis structure, two lading conduits respectively coupled to said tank adjacent to the opposite ends thereof in fluid communication therewith and each extending outwardly therefrom adjacent to the top thereof, and conduit coupling means on each of said lading conduits for coupling at the top of said tank to an adjacent end of an associated flexible connecting conduit to place said tank in fluid communication with the tanks of adjacent like tank cars while safely accommodating the relative motions between the adjacent tank cars in transit, whereby said tank may be connected to associated like tanks in a series through which fluid lading may flow to accommodate consecutive loading thereof while the position of said lading conduits adjacent to the top of said tank safely accommodates the relative motions between the adjacent tank cars in transit.

3,897,808

PORTABLE SIPHON APPARATUS

Tobias Stewart, Jr., P.O. Box 10A, Gray, Ga. 31032

Filed Feb. 2, 1973, Ser. No. 329,191

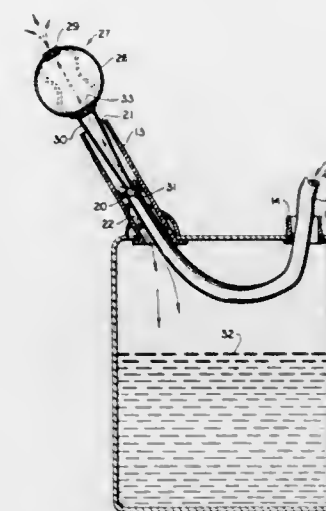
Int. Cl.² B65B 3/04, 3/06

U.S. Cl. 141-323

4 Claims

1. Siphon apparatus comprising:
 - receptacle means for receiving a quantity of liquid and including a pouring spout in communication with said receptacle means, said pouring spout being positioned at an upper location on said receptacle means and having a pouring opening;
 - a fluid conduit having a proximal end within said pouring spout in spaced apart relation therewith to provide liquid flow communication between said receptacle means and said pouring opening and having a distal end for communication with a source of liquid to be siphoned, said proximal end being disposed within said spout inwardly of said pouring opening and facing toward said pouring opening; and

pump means enterable into said pouring spout from a position outside of said pouring opening for selective fluid flow engagement with said proximal end of said fluid conduit and operable to reduce atmospheric pressure



- within said fluid conduit at least to an extent causing the introduction of liquid from the source through said conduit to said pouring spout for introduction into said receptacle means.

3,897,809

TILTABLE MEASURING TRAP WITH REMOVABLE DISPENSING DRAWER

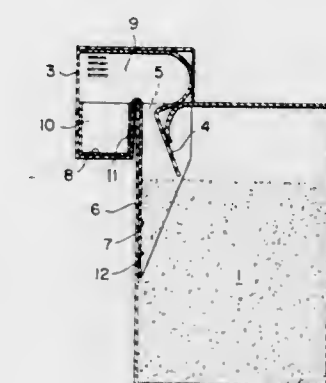
Nathan Steinberg, Brooklyn, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed June 21, 1974, Ser. No. 481,675

Int. Cl.² B65B 1/06

U.S. Cl. 141-330

2 Claims



1. A box accessory for incremental removal of predetermined portions of powder from a box, said box accessory comprising

- a housing having a puncturing part for puncturing a box of powder to form a hole in the box next-adjacent a side of the box and a clamping part for clamping the side of the box in a manner whereby the housing covers the hole formed in the box, said housing comprising a pair of segments extending at substantially right angles to each other, one of the segments covering and supporting the puncturing part and covering the hole formed in the box and the other of the segments extending along the outside of the side of the box adjacent the hole and housing the container; and
- a cup-like container removably housed in the housing in a manner whereby when the box is turned upside-down, powder from the box enters the housing in the area of the cup and when the box is then turned right-side-up, powder in the housing fills the container.

3,897,810

SEALED FLUID COUPLING

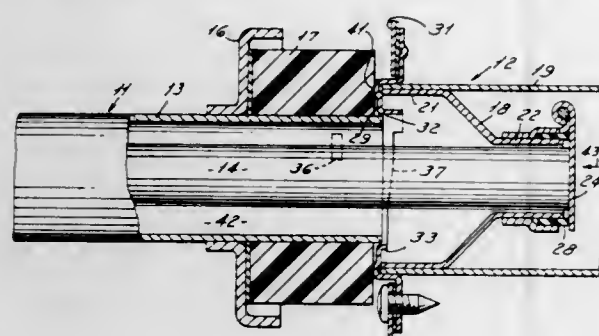
Lawrence E. Arnett, Wayne, and William G. Roven, Southgate, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed July 5, 1973, Ser. No. 376,642

Int. Cl.² B65B 3/18

U.S. Cl. 141—346

1 Claim



1. A fluid coupling for liquid flow in a downstream direction and vapor flow in an upstream direction comprising a male component and a female component,

said male component comprising a fuel pump nozzle including a first rigid cylindrical member for the delivery of liquid and a second rigid cylindrical member for the receipt of vapors concentrically positioned about said first member,

said first member and said second member having fixed relative positions with said first cylindrical member extending axially past the end of said second cylindrical member,

one or more tabs extending radially outwardly from said second member,

and resilient seal means fastened about said second member,

said female component being positioned within the inlet pipe of an automotive vehicle fuel tank,

said female component including an element having an opening of size sufficient to receive said second member, said opening including one or more peripheral recesses corresponding to said one or more tabs to permit the passage of said tabs through said opening,

said element including a portion extending axially inwardly from said opening having cam surfaces engageable with said tabs when said tabs are rotated in a given direction relative to said element following passage of said tabs through said recesses,

said female component including a generally funnelshaped insert, said insert including a downstream spout portion having a generally oval shape with a minimum cross sectional dimension of sufficient magnitude to receive said first cylindrical member,

and gate means pivotally mounted to the end of said insert spout, said gate means being resiliently biased to close the end of said spout, said gate means being displaceable to an open position by said first cylindrical member being inserted through said insert spout,

the end of second member and the seal means being axially spaced upstream of said first member such that said gate means is closed until the second member is received within said female component and the seal means is axially compressed against said female component.

3,897,811

NOTCHING MACHINE

Nolan B. Nelson, Greensboro, N.C., assignor to Nelson Machine Grinder Company, Inc., Greensboro, N.C.

Filed May 2, 1974, Ser. No. 466,145

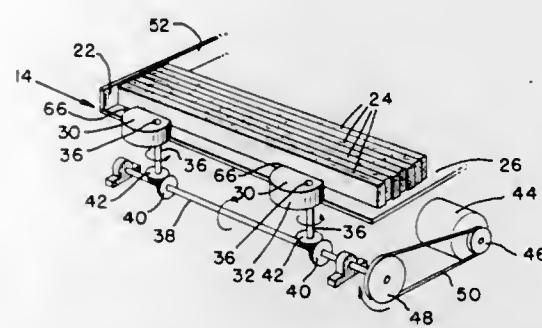
Int. Cl.² B27C 1/12, 5/02; B65G 47/04

U.S. Cl. 144—242 R

9 Claims

1. In a machine for notching stock material advanced to at least one rotary cutter assembly; a frame, means mounted

upon said frame for supporting in flat longitudinally abutting relation a plurality of elongated pieces of stock material, stop means for limiting longitudinal displacement of elongated pieces of stock material, and feed means for simultaneously



advancing a plurality of longitudinally abutting pieces of stock material to the cutter assembly and for displacing longitudinally the stock material into engagement with said stop means for aligning the pieces of stock material.

3,897,812

SCREW DRIVER

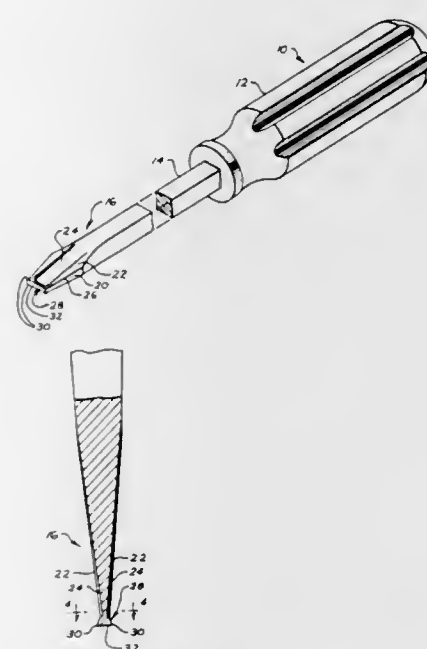
Edward T. Arnn, 505 Country Ln., Louisville, Ky. 40207

Filed May 28, 1974, Ser. No. 473,840

Int. Cl. B25b 15/00

U.S. Cl. 145—50 A

4 Claims



1. A screw driver comprising a shank and a blade integral therewith, the blade having generally converging sides and generally converging edges terminating integral with a foot portion, which protrudes outwardly from the incline of the blade faces to provide a gripping means, said blade including torque transmitting ribs, integral with said sides, and extending along the opposed edges of said blade terminating at said foot portion, said foot portion defining the lower most portion of said blade and being generally isosceles trapezoidal in cross-section with its base lying furthest from the shank in a substantially flat plane perpendicular to the axis of said shank at the lowest extremity of the blade thereby being engageable with the bottom of the slot in a screw head, said foot portion further having its inwardly tapered sidewalls extending across the entire width of the blade and being engageable with the parallel sidewalls of a screw head slot, said base of said foot portion and said respective inwardly tapered sidewalls defining wedge-like bits comprising said gripping means engageable with opposed sides of a screw slot to removably hold a screw thereon and cut a groove in the parallel sidewalls of a screw head slot upon application of a torque to said shank.

3,897,813

RECAPPED RADIAL CARCASS TIRE

Henri Verdier, Beauregard-L'Eveque, France, assignor to Compagnie Generale des Etablissements Michelin, raison sociale Michelin & CIE, France

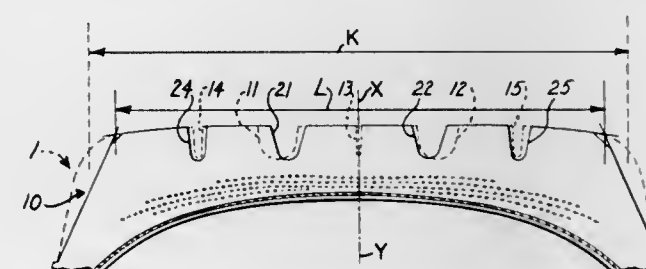
Filed Apr. 3, 1973, Ser. No. 347,400

Claims priority, application France, Apr. 6, 1972, 72.012203

Int. Cl.² B60C 11/06

U.S. Cl. 152—209 R

10 Claims



1. A recapped radial carcass tire for heavy road vehicles having a recap tread whose pattern includes a plurality of circumferential zigzag grooves of different widths located at different distances from the central plane of the recapped tire, said recap tread being a retread of an original radial carcass tire which had a tread whose pattern included a plurality of circumferential zigzag grooves of different widths located at different distances from the central plane of the original tire, the circumferential grooves of the recap tread which are furthest away from the central plane of the recapped tire being wider than the corresponding circumferential grooves of the original tire tread, whereby the zone of maximum flexure in the sidewalls of said recapped tire is nearer to said recap tread than was the corresponding zone of said original tire.

3,897,814

TIRE TREAD BELT

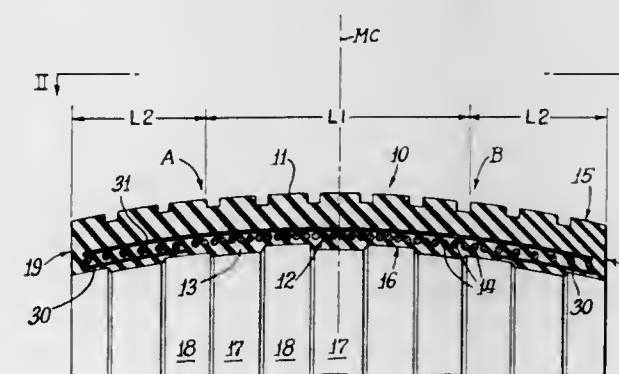
Charles E. Grawey, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Mar. 11, 1974, Ser. No. 449,941

Int. Cl.² B60C 9/18, 11/02, 15/00

U.S. Cl. 152—361 R

12 Claims



1. An improved tire tread belt comprising a cylindrical elastomer belt having an outer cylindrical wear surface including a tread and at least one internal symmetrical cylindrical reinforcing ply of circumferentially disposed reinforcing elements, said cylindrical reinforcing ply extending substantially the full width of said belt with elastomer disposed between and surrounding said reinforcing elements, said reinforcing elements being distributed in said cylindrical ply with decreasing concentration from the middle thereof to its edges so the concentration of said reinforcing elements is denser in the mid portion of the tire belt than at the edge portions.

3,897,815

APPARATUS AND METHOD FOR DIRECTIONAL SOLIDIFICATION

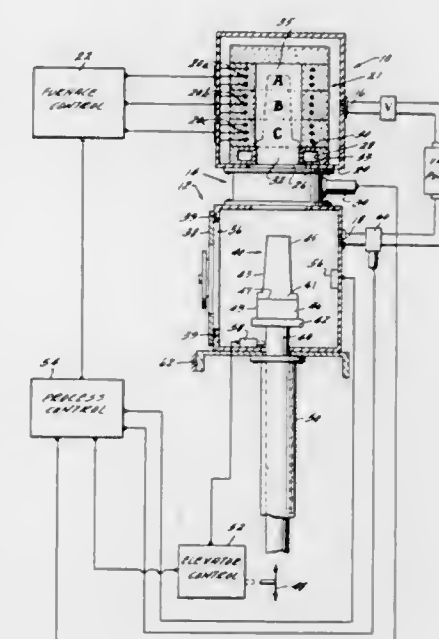
Russell W. Smashey, Loveland, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Nov. 1, 1973, Ser. No. 411,925

Int. Cl. B22d 25/06

U.S. Cl. 164—127

7 Claims



1. In a method for directionally solidifying an article in a casting furnace from a molten metal cast into a casting mold having a mold foot and outer lateral walls, wherein heat is first removed from the molten metal through cooling means connected with the mold foot and then heat is removed concurrently through the mold foot and the lateral walls by causing relative motion between the mold and a chill member to move a solidifying metal zone through the mold, the chill member having a central opening defined by a chill wall and a chill top surface;

the improvement comprising, in combination, the steps of: providing the chill member with a chill wall and the casting mold with an outer lateral wall, each of said walls configured to be closely adjacent one to the other during the relative motion between the mold and the chill member, with the chill wall circumferentially disposed about the outer lateral wall, the lateral wall enclosing a single article casting chamber communicating with the mold foot;

causing molten metal to be deposited in the casting chamber with the mold foot closely adjacent the chill wall at the chill top surface; while at the same time,

applying a first amount of heat selectively toward the mold outer lateral wall in a first furnace area immediately above the chill top surface to heat the wall when in the first area sufficiently to maintain the metal in substantially the molten state; and concurrently,

applying a second amount of heat, less than the first amount but sufficient to maintain the metal in substantially the molten state, selectively toward the mold outer lateral wall when in a second furnace area above the first area; while,

removing heat from the metal progressively during relative motion between the mold and the chill member through the means connected with the mold foot and through the chill wall at a rate sufficient to substantially solidify the metal as it traverses adjacent the chill top surface.

3,897,816

FOUNDRY PATTERN ASSEMBLY

Keizo Nishiyama, Handa; Takeo Hiraiwa, and Kohshi Iwata, Nagoya, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Geisakusho, Kariya-shi, Japan

Division of Ser. No. 177,942, Sept. 7, 1971, Pat. No.

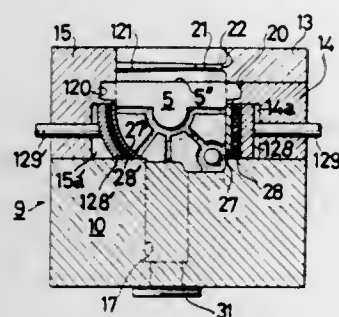
3,756,309. This application Mar. 28, 1973, Ser. No. 345,819

Claims priority, application Japan, Sept. 7, 1970, 45-78320

Int. Cl.² B22C 7/06

U.S. Cl. 164—230

4 Claims



1. The pattern assembly for preparing a composite core having a larger main core with a smaller previously formed auxiliary core section imbedded therein, said auxiliary core section having a casting space therein, said pattern assembly comprising a plurality of pattern members relatively movable between non-operable positions remote from each other and operable positions adjacent each other wherein said pattern members define a mold cavity, at least one of said pattern members having means for keeping said smaller auxiliary core section in position within said cavity during the formation of said larger main core thereabout and cover means mounted on said section members for covering said casting space during the formation of the larger core section around the smaller core section.

3,897,817

SAND CASTING MOLD

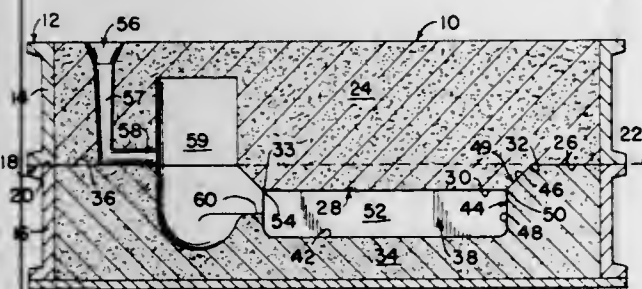
John R. Nieman, Pekin, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 27, 1973, Ser. No. 391,992

Int. Cl.² B22C 9/02

U.S. Cl. 164—364

6 Claims



1. An improved sand casting mold comprising; a pair of mold elements separable along a main parting plane formed therebetween;

means forming a substantially closed casting chamber in such casting mold with the entire casting chamber being disposed in spaced offsetting relation to said main parting plane; and

auxiliary parting line means extending in interconnecting relation between said main parting plane and said casting chamber.

3,897,818

PROCESS AND APPARATUS FOR COOLING ARTICLES WITHIN A STEAM CHAMBER

Gerard Champel, Montelimar, France, assignor to Etablissements Joseph Lagarde Societe Anonyme dite, Montelimar, France

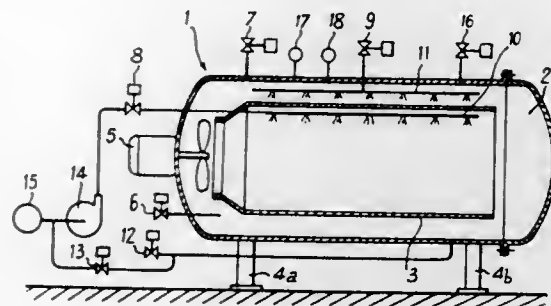
Filed Jan. 25, 1974, Ser. No. 436,649

Claims priority, application France, Jan. 29, 1973, 73.03017; Apr. 16, 1973, 73.13743; Sept. 21, 1973, 73.33892

Int. Cl. F28f 7/00

U.S. Cl. 165—1

19 Claims



1. Process of rapidly cooling containers located in a chamber having an at least partially vaporous atmosphere, said process comprising the steps of introducing into said chamber a cooling liquid which does not come into contact with the containers and a compressed gas which maintains the pressure within the chamber substantially constant while the vapor condenses, and then spraying into the chamber, while still controlling the pressure therein, a cooling liquid which does come into contact with the containers and the temperature of which decreases progressively.

3,897,819

REGENERATOR FOR GAS TURBINE ENGINE

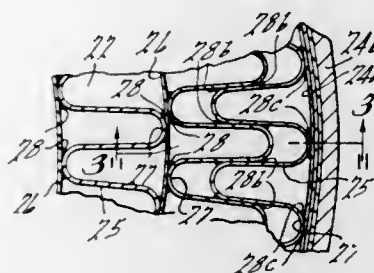
George J. Huebner, Bloomfield Hills, and James H. Whitfield, Royal Oak, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Feb. 22, 1973, Ser. No. 334,554

Int. Cl. F28d 19/00

U.S. Cl. 165—8

9 Claims



1. In a rotatable regenerator for a gas turbine engine, a drum type matrix adapted during engine operation for flow therethrough in one axial direction of comparatively cool high pressure inlet air at one region and for flow therethrough in the opposite axial direction of comparatively hot low pressure exhaust gas at a second region to effect an axial temperature gradient in said matrix between axially opposed hot and cold faces thereof, a rim for said matrix, sealing means for securing said rim to said matrix at a fluid seal to prevent gas flow circumferentially therebetween and for accommodating cyclic thermal and pressure induced forces tending to rupture said seal comprising radially outer and inner circumferentially arranged sealing members positively secured to said rim and adjacent portion of said matrix respectively and interfitting at a plurality of circumferentially spaced locations in radially sliding fluid sealing relationship throughout the major axial extent of said matrix from said hot face, and means for distributing said pressure induced forces around the circumference of said matrix throughout the remaining axial extent thereof

3,897,820

WALL PANEL STRUCTURE

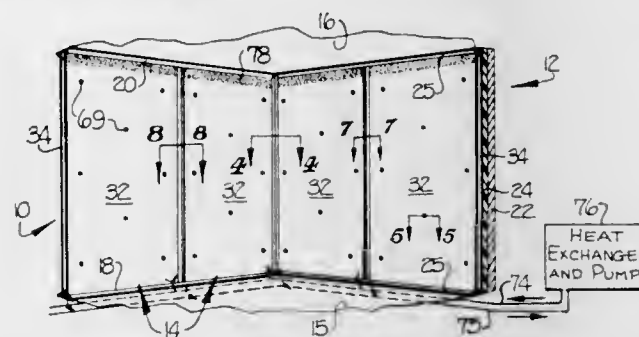
Earl Bangle Teeter, Jr., 1216 Crescent Ave., Gastonia, N.C. 28052

Filed Sept. 13, 1973, Ser. No. 396,986

Int. Cl. F24h 9/08

U.S. Cl. 165—56

13 Claims



1. A decorative wall panel suitable for use in connection with an interior or exterior wall in a home or the like, said wall panel comprising

first and second rectangular panel members disposed in spaced apart, parallel relationship and defining a four sided peripheral edge with first and second sides extending parallel to each other in a vertical direction and third and fourth sides extending parallel to each other in a horizontal direction, at least one of said first and second panel members comprising a light transmitting material, means for sealably interconnecting said first and second panel members about said peripheral edge to define an enclosed open chamber therebetween,

means for introducing a fluid into said enclosed chamber at a plurality of locations extending along substantially the full length of said first side of said peripheral edge, means for withdrawing the fluid from said enclosed chamber at a plurality of locations extending along substantially the full length of said second side of said peripheral edge,

and

means for circulating a fluid through said introducing means and said withdrawing means and across said enclosed chamber, whereby the fluid may be caused to flow across said enclosed chamber and with the flowing fluid being visible through said light transmitting panel member.

3,897,821

HEAT TRANSFER COIL

Momir Babunovic, Des Peres, and Harry J. Wiskoski, Florissant, both of Mo., assignors to Barry-Wehmiller Company, St. Louis, Mo.

Filed Aug. 3, 1973, Ser. No. 385,432

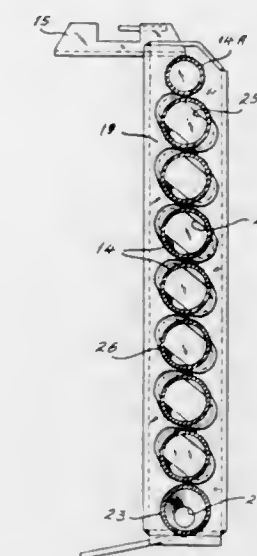
Int. Cl. F28f 9/18

U.S. Cl. 165—175

1 Claim

1. In a heated fluid carrying coil construction for container washers using caustic washing solution in which the coil is emersed to heat the caustic solution, the improvement which consists in spaced elongated headers each having a face sheet formed with a plurality of oblong apertures having the major dimensions thereof oriented at substantially the same angle of 50° to 55° to the elongation of said header face sheets, fluid conducting pipes extending between said header face sheets, each pipe having a round body and fluid drain facilitating end portions flattened to an oblong shape for fitting into said face sheet oblong apertures, said angle of orientation of the oblong apertures placing said round bodies of said pipes in abutment throughout substantially the full length thereof between said end portions to block the free flow of the washing solution

therebetween, and welding means applied around said flattened end portions of said pipes to secure said end portions into said face sheets and form a fluid seal bead around the



3,897,822

WELL VALVE APPARATUS

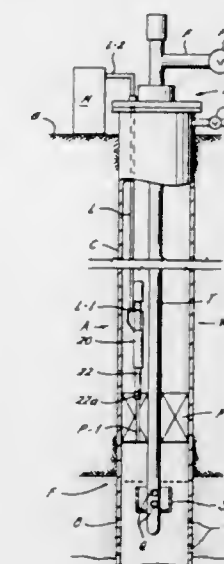
James D. Mott, Houston, Tex., assignor to Hydril Co.

Filed Mar. 18, 1974, Ser. No. 451,976

Int. Cl.² E21B 43/12

U.S. Cl. 166—72

13 Claims



1. Flow control apparatus for use at a subsurface location in a well producing gases in sufficient quantities to hinder pumping of the well liquids to the surface by providing a separate valve controlled flow path to the surface for the well gases, including:

a packer adapted for securing with a well tubing for effecting an annular fluid tight seal between a well casing and the well tubing and having a central flow passage formed through the packer communicating with the well tubing for enabling flow of the well liquids through said packer, said packer having a second opening formed there-through spaced from and parallel to said central flow passage for enabling flow from below the packer to the surface through said well casing, said second opening being of smaller flow area than said central flow opening and disposed outwardly of said central flow passage; valve means including a substantially tubular valve body having a longitudinal bore formed therethrough and connected with said packer to be positioned parallel to the well tubing between the well tubing and the well casing

with said bore in flow communication with said second opening of said packer and having a movable valve closure member disposed in said bore for movement to and from an open position for enabling flow through said second opening of said packer and a closed position for blocking flow through said second opening of said packer, said valve means including means for urging said valve closure member to the closed position with said valve closure member movable to the open position to enable flow responsive to a control signal communicated to the valve from the surface exteriorly of the well tubing; and

said tubular valve body having an enlarged eccentric outer portion shaped for positioning in close fitting relationship between the well casing and the well tubing for forming an upwardly facing connection for receiving the control signal from the surface and enabling use of a more compact tubular valve body for positioning in the well between the well casing and well tubing.

3,897,823

ROTATABLY RELEASABLE CASING HANGER AND PACKING RUNNING APPARATUS

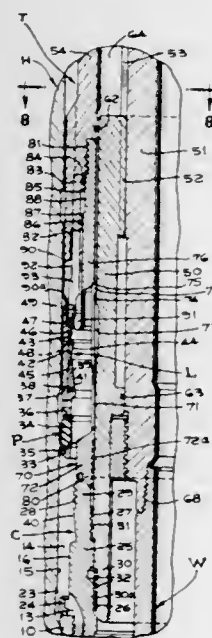
Arthur G. Ahlstone, Ventura, Calif., assignor to Vetco Off-shore Industries, Inc., Ventura, Calif.

Filed Aug. 5, 1974, Ser. No. 494,824

Int. Cl.² E21B 33/03, 23/00

U.S. Cl. 166-120

40 Claims



1. Apparatus for effecting a seal between a wellhead and a hanger disposed in the wellhead for supporting a tubular pipe string extending into the well bore comprising: a running tool having a body structure connectable to a running pipe string; means releasably connecting said body structure to said hanger; packing means; means releasably connecting said packing means to said body structure to enable said packing means to be set in sealing relation to said hanger; locking means for locking said packing means in sealing relation to said hanger including a locking member actuatable said packing means to lock said locking means; said body structure having means responsive to fluid pressure outside said running pipe string to set said packing means in sealing relation to said hanger; and said body structure having means responsive to fluid pressure outside of said running pipe string for actuating said locking member longitudinally.

3,897,824

BLOWOUT PREVENTER TESTING APPARATUS

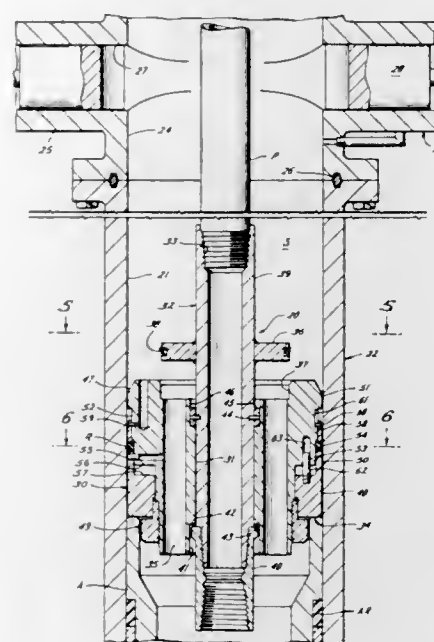
Edmund A. Fisher, Houston, Tex., assignor to Cameron Iron Works, Inc., Houston, Tex.

Filed Sept. 5, 1974, Ser. No. 503,308

Int. Cl.² E21B 33/12

U.S. Cl. 166-188

5 Claims



1. Apparatus for use in pressure testing a blowout preventer which includes a housing having a bore therethrough sealably connected to the upper end of a wellhead, with its bore forming an upward continuation of the bore through the wellhead, and closure means mounted within the housing for extension into the bore to seal about a pipe string therein, said apparatus comprising a body, means on the body for suspending it from a pipe string, so that it may be raised and lowered therewith within the bores, and providing a bore therethrough adapted to form a continuation of the lower end of the pipe string, when the body is so suspended, said body also having means thereon for supporting it within the wellhead bore, when so lowered, and for sealing against the wellhead bore, when so supported, at least one opening through the body by-passing said sealing means, valve means mounted on the body for moving between positions opening and closing said by-pass openings, and means for holding the valve means in open position to permit well fluid to pass therethrough, as the body is lowered into supported position, and for moving the valve means from open to closed position, when the body is so supported, so that, when the sealing means is sealed against the wellhead bore, the closure means on the preventer may be closed on the pipe string in order to enclose a space about the string vertically intermediate the body and closure means into which fluid under pressure may be introduced, and for moving the valve means from closed to open position, when the test is completed, to permit well fluid to pass through the by-pass opening as the body is lifted from supported position within the well bore, the bore through said body being open to flow upwardly therethrough so as to relieve test fluid pressure should it not be held by said sealing means.

3,897,825

WELL TESTING APPARATUS

Gilbert H. Tausch, Houston, Tex., assignor to Camco, Incorporated, Houston, Tex.

Filed May 15, 1974, Ser. No. 468,834

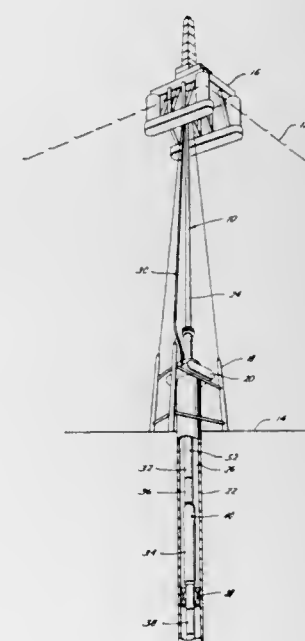
Int. Cl.² E21B 43/12

U.S. Cl. 166-224 A

4 Claims

1. A well testing apparatus for use in a well having a casing and a blowout preventer comprising:
a well conduit adapted to be positioned inside the casing and extend above and below the blowout preventer whereby the preventer may close on the exterior of the

conduit and an annulus is provided between the exterior of the conduit and the interior of the casing,
a control passageway leading from the annulus to the well surface for controlling the pressure in the annulus,
a circulating valve connected in the conduit for opening and closing communication between the interior and the exterior of the conduit,
a safety valve connected in the conduit below the circulating valve, said safety valve controlling fluid flow through the conduit, and including,



a valve closure member moving between open and closed positions and actuated by piston means,
a closed pressure chamber acting on the piston means for biasing the valve to a closed position,
a control port exposed to the annulus and acting on the piston means in a direction to open the valve for controlling the actuation of the valve by pressure in the annulus and control passageway, and
a landing nipple in the conduit for supporting additional equipment in the conduit.

3,897,826

METHOD FOR WELL WORKOVER OPERATIONS

Stanley O. Hutchison, Bakersfield, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 274,684, July 24, 1972, Pat. No. 3,840,072. This application Apr. 29, 1974, Ser. No. 465,003

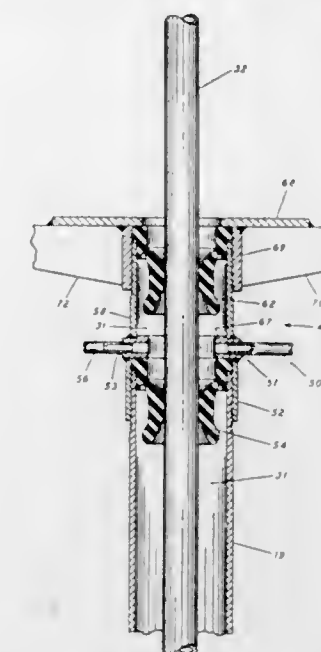
Int. Cl. E21b 33/124, 47/10

U.S. Cl. 166-250

1 Claim

1. A method of well workover comprising connecting a tubular section to the upper portion of a well casing, inserting a tubing stinger into the well through said tubular section, said tubular section having a larger interior diameter than the exterior diameter of said tubing stinger, packing off the annular space in spaced apart locations between said tubular section and said tubing stinger with an upper pack off means and a lower pack off means to form an annular chamber, forming a first port in said tubular section to establish communication with said annular chamber, forming an auxiliary port in said tubular member to establish communication with said annular chamber, flowing a fluid through said first port into said annu-

lar chamber to cool said pack off means, flowing fluid out of said annular chamber through said auxiliary port and monitor-



ing the outflow from said auxiliary port to determine if the lower pack off means has failed.

3,897,827

LIGNOSULFONATE GELS FOR SWEEP IMPROVEMENT IN FLOODING OPERATIONS

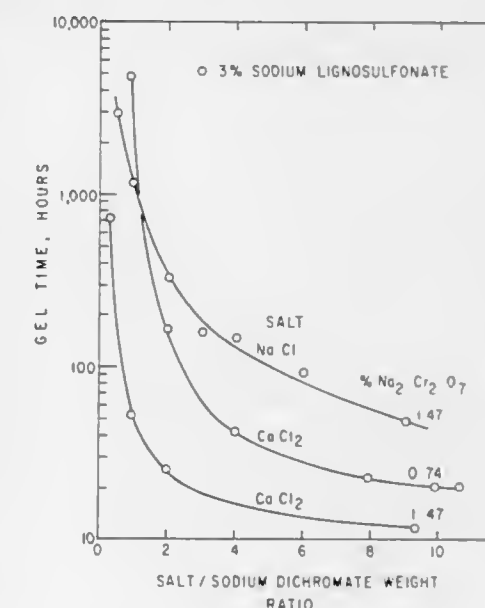
Betty J. Felber, Tulsa, Okla., and Lowell R. Smith, Houston, Tex., assignors to Standard Oil Company, Chicago, Ill.

Filed July 18, 1974, Ser. No. 489,657

Int. Cl.² E21B 43/22

U.S. Cl. 166-270

10 Claims



1. In a method for the recovery of oil from an underground deposit thereof, said deposit being penetrated by an injection well and by a producing well, in which method a flooding medium is injected into said deposit through said injection well to displace oil toward said producing well, and wherein said flooding medium tends to channel through relatively high permeability strata in said deposit, resulting in a non-uniform flood front, the improvement which comprises introducing into said deposit an aqueous gel-forming solution of a water-soluble lignosulfonate containing from about 2 to about 20 weight percent reducing sugars, and having dissolved in said solution a mixed activator of a water-soluble dichromate and a water-soluble salt selected from the group consisting of alkali metal and alkaline earth metal halides, sulfates, nitrates and carbonates, said dichromate being present in an amount from about 0.15 to about 2.5 weight percent and the salt-dichromate weight ratio ranging from about 1:1 to about 55:1,

said ratio varying inversely with the concentration of the dichromate, said solution being in an amount sufficient to flow into said high permeability strata, allowing said solution to set in said high permeability strata to form a gel therein, thereafter introducing said flooding medium into said deposit through said injection well, and recovering oil from said producing well.

3,897,828

METHOD AND APPARATUS FOR ACTUATING AN OPERATING MEANS FOR AN AUTOMATIC FIRE EXTINGUISHING APPARATUS

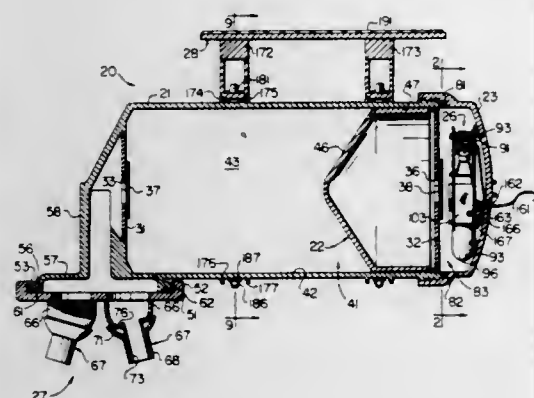
John A. Glover, 421 S. Dwight St., Dallas, Tex. 75211

Filed May 31, 1974, Ser. No. 475,160

Int. Cl. A62c 37/30

U.S. Cl. 169-43

13 Claims



1. A method of triggering an actuating means for a fire extinguishing apparatus in a fire protection system for a defined area, which comprises the steps of:

- inhibiting the actuating means for the apparatus with a fusible inhibiting element which is not in direct thermal contact with the area protected by the system;
- positioning a thermally conductive filament in the area protected by the system; and
- placing the filament in thermal communication with the fusible inhibiting element whereby a sufficient portion of the heat energy in the protected area is transferred to the fusible element through the conductive filament to melt the fusible element when the thermal activity in the protected area rises above a predetermined level.

3,897,829

AIRBORNE FIRE SUPPRESSION UNIT

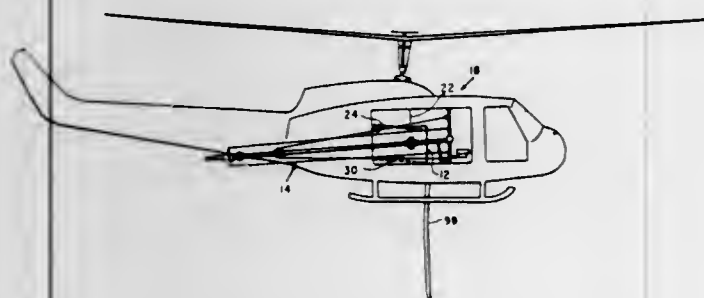
Ward R. Eason, McMinnville, Oreg., assignor to Evergreen Helicopters, Inc., McMinnville, Oreg.

Filed May 31, 1973, Ser. No. 365,426

Int. Cl. A62c 27/30

U.S. Cl. 169-53

19 Claims



1. In an aircraft, a fire suppression unit comprising in combination:

- a. a tank for holding a fire extinguishing fluid;
- b. means for mounting said tank to said aircraft;
- c. a fluid-dispensing nozzle coupled by fluid conduit means to said tank;

d. an elongate boom assembly and boom mounting means adjacent one end thereof for securing said boom assembly to said aircraft in a position so as to extend the other end of said boom assembly laterally from said aircraft, said mounting means being attached to said aircraft at respective locations above and below said boom assembly and including means for permitting said boom assembly to reciprocate laterally about said mounting means;

e. means for mounting said nozzle to the extended end of said boom assembly including pivotal means for permitting said nozzle to reciprocate about said extended end of said boom assembly in a plane substantially perpendicular to the plane of said lateral reciprocation of said boom assembly; and

f. control means operable from within said aircraft for regulating the lateral position of said boom assembly with respect to said aircraft and also for regulating the pivotal position of said nozzle with respect to said boom assembly.

3,897,830

SOIL CULTIVATING IMPLEMENTS AND SUPPORTING ROLLERS

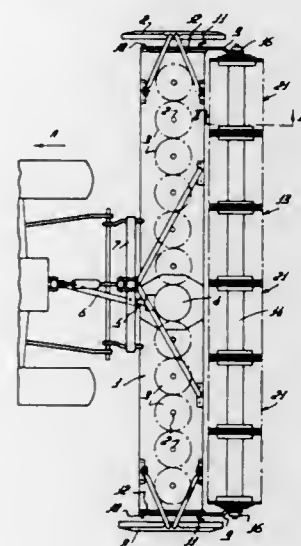
Cornelis van der Lely, 7, Brushchenrain, Zug, Switzerland

Filed Apr. 11, 1973, Ser. No. 350,197

Int. Cl. A10b 33/16

U.S. Cl. 172-68

11 Claims



9. A cultivator as claimed in claim 1, wherein said rotary member is pivoted to said frame with a pair of arms having adjustment means and the latter is fixable to said frame to vertically adjust the position of the rotary member with respect to the remainder of said cultivator.

3,897,831

ROTARY HARROWS WITH SCREENS

Cornelis van der Lely, 7, Bruschenrain, Zug, Switzerland

Filed Jan. 4, 1973, Ser. No. 320,873

Claims priority, application Netherlands, Jan. 5, 1972, 7200086

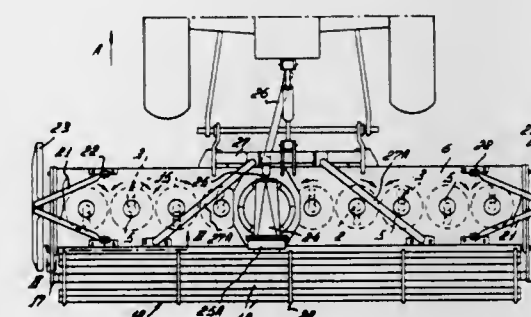
Int. Cl. A01b 33/12

U.S. Cl. 172-112

12 Claims

1. A rotary harrow comprising a frame having a transverse frame portion and drive means for driving a plurality of adjacent soil-working members rotatably mounted on said frame portion in a row extending transverse to the direction of travel, each soil-working member rotatably mounted on an upwardly extending shaft and having tine means comprising at least one tine that is offset relative to said upwardly extending shaft, said drive means being connected to rotate adjacent soil-working members in opposite directions, said one tine having an upper fastening portion secured to a generally horizontal support and a downwardly extending soil-working portion, said generally horizontal support being connected to said upwardly extending shaft, whereby said tine is rotated through

a circular path, protective screen means supported on said frame portion and comprising a screen depending downwardly therefrom, said screen being positioned entirely below said frame portion and extending between the shafts of two adja-



cent soil-working members, said screen extending at least 180° around the shaft of one soil-working member of said adjacent soil-working members, said screen extending downwardly to terminate at a level adjacent the bottom of the tine fastening portion of said one soil-working member.

3,897,832

AGRICULTURAL TOOL BAR

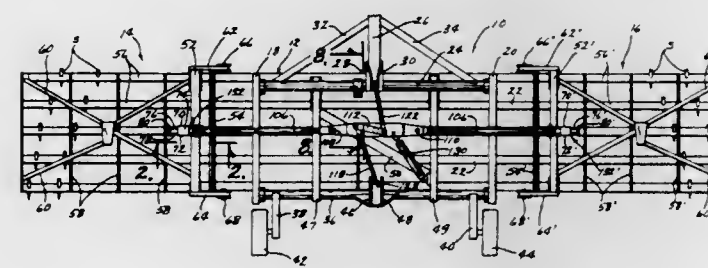
Alton O. Leedahl, Cedar Falls; Thomas K. Wilhelm, and John L. Krizek, both of Waterloo, all of Iowa, assignors to Dunham Lehr, Inc., Richmond, Ind.

Filed Aug. 19, 1974, Ser. No. 498,256

Int. Cl. A01b 49/00, 73/00, 59/044

U.S. Cl. 172-311

11 Claims



1. An agricultural tool bar comprising, a center frame having rearward and forward portions and opposite side portions, a tongue means secured to said center frame and extending forwardly therefrom for connection to a prime mover, an axle tube rotatably mounted on said center frame, a wheel means operatively secured to said axle tube adapted to be selectively moved into and out of ground engagement upon rotation of said axle tube, first and second wing frames pivotally secured to the opposite side portions of said center frame, a bell-crank apparatus rotatably mounted on said center frame, first connection means pivotally connecting said bell-crank apparatus and said axle tube whereby rotation of said bell-crank apparatus causes said axle tube to be rotated, second and third connection means pivotally connecting said bell-crank apparatus and said wing frames whereby rotation of said bell-crank apparatus causes said wing frames to be pivoted relatively to said center frame, and a power means connected to said bell-crank apparatus so that actuation of said power means causes said center frame to be moved relatively to the ground and also causes said wing frames to pivot relatively to said center frame.

3,897,833

CYLINDER TRUNNION MOUNTING

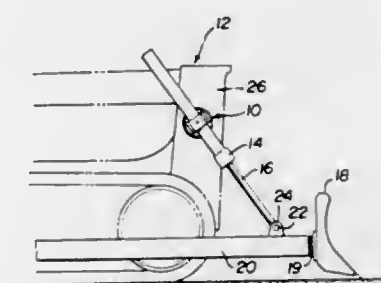
Claude M. Frisbee, Bettendorf, Iowa, assignor to J. I. Case Company, Racine, Wis.

Filed Jan. 28, 1974, Ser. No. 437,454

Int. Cl. E02f 3/76

U.S. Cl. 172-809

25 Claims



1. A combination tractor and earth working implement, including a tractor side wall having a trunnion mounting therein, said tractor side wall having an opening therein, and said trunnion mounting comprising:

- an outer race having an outer peripheral configuration complementary with the opening in the tractor side wall, said outer race being positioned within the side wall opening and being welded to and coplanar with said tractor side wall and having an axis of rotation perpendicular to said wall, the outer race having a circular opening perpendicular to said axis and a groove around the periphery of said opening facing toward said axis and forming approximately half a bearing raceway,
- an inner race having a generally cylindrical base with a diameter substantially equal to, but slightly less than, the diameter of said outer race opening, an annular groove around the periphery of said base and complementary with the outer race groove defining approximately the other half of the bearing raceway, said inner race rotationally secured within said outer race by a plurality of ball bearing elements within the raceway defined by the complementary, concentrically aligned grooves, at least a portion of said raceway being coplanar with said tractor side wall,
- a support assembly projecting outwardly from said inner race and including means for rotationally supporting an additional element about an axis perpendicular to the outer race axis of rotation;
- said portion of the raceway being coplanar with the tractor side wall such that the cantilevered moment on the side wall is reduced;
- said outer race having a ball bearing installation port including a bore extending from an outer exposed surface of said outer race to the raceway, said port forming an angle with the plane of said tractor side wall.

3,897,834

TORQUE AND TURN WRENCH APPARATUS

John A. Swopsher, Holly, and Vernon A. Riddell, Mt. Clemens, both of Mich., assignors to La Salle Machine Tool, Inc., Warren, Mich.

Filed Mar. 27, 1974, Ser. No. 455,277

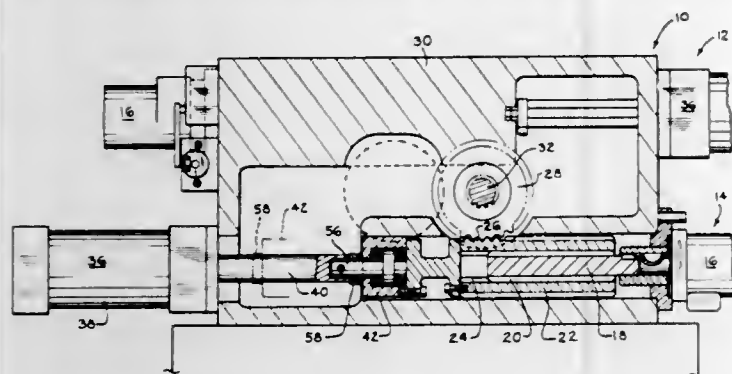
Int. Cl. B25B 23/14

U.S. Cl. 173-12

5 Claims

1. Apparatus comprising a drive shaft having external spline teeth, a tubular worm telescoped over said drive shaft and having internal spline teeth meshingly engaged with said drive shaft spline teeth, a worm gear arranged in a driven relation with said worm, motor means connected in a driving relation

to said drive shaft and operable to rotate said drive shaft to in turn rotate said worm and drive said worm gear, and power



means connected to said worm and operable to move said worm axially of said drive shaft so as to drive said worm gear.

3,897,835

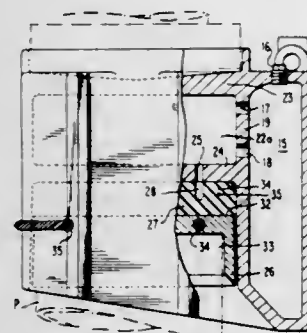
PILE DRIVER DRIVE CAP

Leonard L. Frederick, 15 Crestview Ter., Whippany, N.J. 07981

Division of Ser. No. 142,174, May 11, 1971, Pat. No. 3,817,091. This application Feb. 21, 1974, Ser. No. 444,688 Int. Cl.² E02D 7/14

U.S. Cl. 173-131

9 Claims



1. A drive cap for a pile driving machine comprising, in combination: a body portion including a plurality of intercommunicating liquid cooled chambers, parallel spaced walls forming at least portions of one of said chambers, one of said parallel spaced walls forming a support surface, a removable adapter means arranged to be seated over a pile member and a resilient, impact block of elastomer material interposed between said support surface and said adapter means for transmitting force to the top of the pile member.

3,897,836

APPARATUS FOR BORING THROUGH EARTH FORMATIONS

J. Michael Hall, Annapolis, Md., and Louis L. Clipp, McLean, Va., assignors to Exotech, Incorporated, Gaithersburg, Md. Filed Oct. 18, 1973, Ser. No. 407,484

Int. Cl. B05b 3/14; E21b 7/18

U.S. Cl. 175-93

2 Claims

1. A rotary drilling bit for drilling wells of the type employed in petroleum exploration and production which comprises:

a bit body; a plurality of leg members projecting downwardly from the bit body and spaced around a central axis of said bit body; a bearing member mounted on each of the leg members and having the axis thereof directed downwardly toward the central axis of the bit body; a conical bit element rotatably carried by each of the bearing members; and

means for forming pulsed jets of liquid comprising a nozzle block carried by the bit body having at least one opening therethrough and a bore therein transverse to the nozzle block opening;

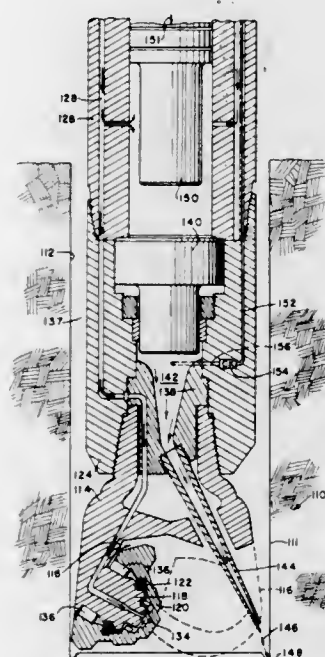
piston means slidable within said nozzle block opening; valve means in said nozzle block transverse bore and defining with said piston means a compressible chamber in said nozzle block;

said valve means including a valve body, having a discharge opening adapted to be positioned in line with said nozzle block opening, said valve body being slidable within said transverse bore between a first valve position in which said valve body discharge opening is aligned with said nozzle block opening to provide a discharge path for said compressible chamber and a second valve position in which the compressible chamber is closed;

liquid supply means for supplying liquid charge material to said chamber;

valve control means for controlling movement of said valve body between the first valve position and the second valve position;

bias means for normally urging said piston means from said nozzle block to enlarge said compressible chamber;



impelling means for rapidly acting on said piston means to compress said compressible chamber against the urging of said bias means and expel liquid charge material from said compressible chamber out said discharge opening as a pulsed liquid jet, including means for selectively controlling operation of said valve control means to selectively cause:

a. when the impelling means is not acting on said piston means to position said valve body in the second valve position and

b. upon activation of said impelling means to compress said compressible chamber, to position said valve body in the first valve position, prior to actual expulsion of the liquid charge from the chamber; and

at least one nozzle arranged to direct said pulsed jet to a point outward of the conical elements and just below the lowermost surface of the conical elements.

3,897,837

BORING APPARATUS

Carl R. Peterson, Boxford, Mass., assignor to Rapidex, Inc., Gloucester, Mass.

Filed Mar. 5, 1974, Ser. No. 448,245

Int. Cl.² E21B 9/24; E21C 23/00

U.S. Cl. 175-228

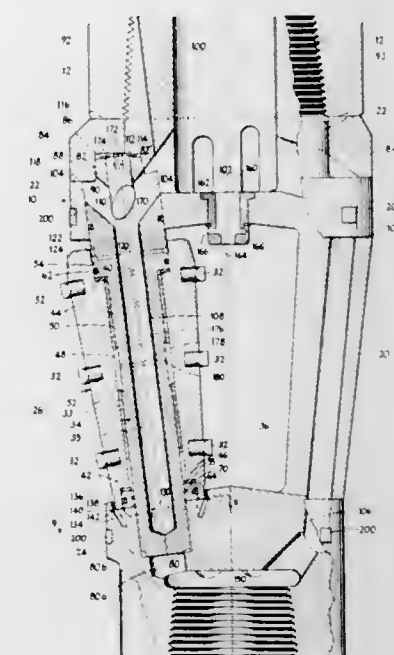
22 Claims

1. Boring apparatus comprising

a frame having a primary axis of rotation and a flushing fluid inlet, and

a plurality of hole-enlarging assemblies mounted on said frame and having separate axes of rotation radially outward of said primary axis, each said assembly having

a working member rotatable about its respective said axis of rotation for acting upon the wall of the hole being bored, means defining a flushing fluid passage extending along the direction of said respective axis to below said working member and communicating with said inlet, and



a nozzle in communication with said passage below said working member, said nozzle having an orifice opening in a direction having at least a component directed upwardly, for directing flushing fluid upwardly along the periphery of said working member.

3,897,838

NUCLEAR REACTOR POWER PLANT

Samuel Brittan Hosegood, Wareham Dorset, England, assignor to United Kingdom Atomic Energy Authority, London, England

Continuation of Ser. No. 58,497, July 27, 1970, abandoned.

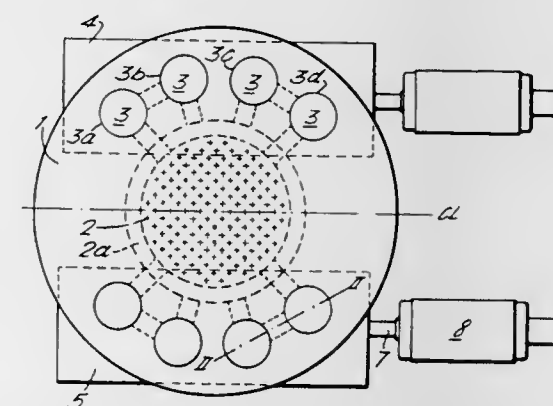
This application Feb. 8, 1973, Ser. No. 330,627

Claims priority, application United Kingdom, Aug. 6, 1969, 39484/69

Int. Cl. G21c 15/00

U.S. Cl. 176-60

9 Claims



1. A nuclear reactor power plant comprising an upright main prestressed concrete pressure vessel containing a gas-cooled nuclear reactor, a pair of subsidiary concrete pressure vessels disposed laterally beneath the main pressure vessel and spaced therefrom in side by side relationship with the vertical axis of the main pressure vessel extending therebetween, each of the subsidiary pressure vessels defining a cavity extending generally horizontally, two pairs of elongated pods within the thickness of the prestressed concrete walls of the main pressure vessel, the axes of each pair of pods extending downwardly to penetrate the cavity of a said subsidiary pressure vessel, a reactor coolant circulator and a circulator turbine drivingly connected thereto disposed in tandem in one of each pair of pods, a cooler disposed within the other of each pair

of pods, a power turbine in each of said cavities, an alternator drivingly connected in tandem to each power turbine, a first series of ducts extending generally vertically between the pods and the cavities of the subsidiary pressure vessels, a second series of ducts extending generally horizontally between the pods and the reactor core, and means including said first and second series of ducts for connecting the reactor core, the circulator turbines, the power turbines, the heat rejection side of the coolers, the coolant circulators and the heat-receiving side of the coolers in series so as to form two closed reactor coolant circuits whereby the reactor coolant is used to drive the power and circulator turbines of the power plant.

3,897,839

SKI SNOW DEFLECTOR

Michel Brisebois, Roxton Falls, Canada, assignor to Bombardier Limited, Valcourt, Canada

Filed Nov. 15, 1974, Ser. No. 524,217

Claims priority, application Canada, May 15, 1974, 199960

Int. Cl.² B62B 19/04

U.S. Cl. 180-5 R

12 Claims



1. A snowmobile ski with an upper surface adapted to be attached to a steering member and an underside comprising a longitudinal running surface, a snow deflection member positioned adjacent a longitudinal edge of and projecting beneath said underside whereby in operation forward movement of said snowmobile ski will deflect snow laterally of the ski.

3,897,840

STEERING AND SPEED CONTROL SYSTEM

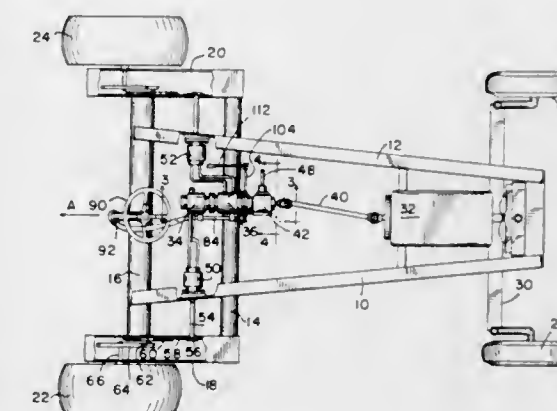
Herbert W. Molzahn, and John E. Van Wagner, both of Hamilton, Canada, assignors to International Harvester Company, Chicago, Ill.

Filed July 19, 1974, Ser. No. 489,973

Int. Cl.² B62D 11/04

U.S. Cl. 180-6.48

1 Claim



1. In a vehicle having a pair of drive wheels, a hydrostatic drive unit for each drive wheel including a pump of variable displacement and a motor driven thereby, a control apparatus comprising:

means mounting said pumps in tandem and in coaxial alignment for driving by a common mechanical input;

a control arm pivotally connected to each pump for varying the respective output to each motor, said control arms

being disposed for pivoting movement in a common plane;

a rotatable and axially shiftable control shaft disposed parallel to the aligned axes of said pumps and within said plane, said control shaft including a pair of externally threaded portions of opposite pitch;

a pair of internally threaded trunnions pivotally connected to the respective pair of control arms and respectively threadedly received on said pair of externally threaded portions, whereby rotation of said control shaft causes said control arms to pivot in opposite directions to vary the pump displacements relative to each other;

a steering control accessible to a vehicle operator for selectively rotating said control shaft to effect selective turning of the vehicle;

a speed control lever pivotally supported on the vehicle accessible to a vehicle operator;

means including a non-threaded trunnion received on said control shaft operatively coupling said control lever to said control shaft for shifting said control shaft back and forth within said plane to pivot said pump control arms in unison thereby varying the pump outputs to said motors to vary the speed of the vehicle, said non-threaded trunnion being sized to permit rotation of said control shaft relative thereto;

a pair of stops on said control shaft flanking said non-threaded trunnion;

and a spring operative between said non-threaded trunnion and said stops to permit limited axial movement of said control shaft relative to said non-threaded trunnion.

3,897,841

IMPLEMENT POWER DRIVE TRAIN

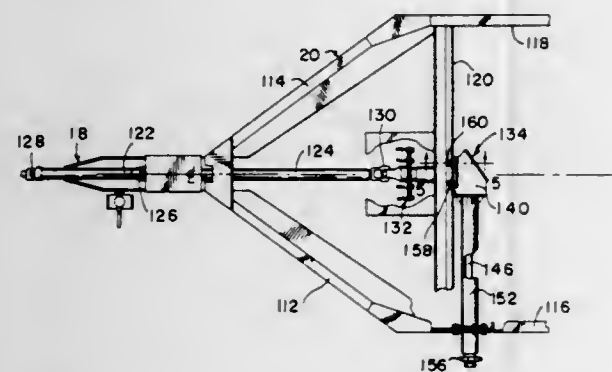
Carmen S. Phillips, and Patrick L. May, both of Memphis, Tenn., assignors to International Harvester Company, Chicago, Ill.

Filed Sept. 23, 1974, Ser. No. 508,483

Int. Cl.² B60D 7/04

U.S. Cl. 180—14 R

11 Claims



1. In an implement adapted to be towed behind a PTO-equipped tractor and having power driveable components, the improvement comprising:

a frame including a pair of forwardly extending side wall members on opposite sides of the longitudinal center line of the implement, a transversely extending brace connected between the side wall members, and a draft tongue structure extending forwardly from the side wall members;

power input shafting supported on the draft tongue structure and adapted for transmitting power from the PTO to the implement;

a gear box unit having an input shaft coupled to said input shafting and an output shaft extending at substantially a right angle therefrom and projecting through one of said side wall members, said gear box unit including gearing for transmitting drive power from said input shaft to said output shaft through said angle, said gear box unit further including a housing for said gearing and an elongated tubular neck disposed about said output shaft in rigid

connection to said housing at one end and to said one side wall member at the other end;

and means resiliently suspending said housing from said brace from minimizing transfer of deflection loads between said frame and said gear box unit.

3,897,842

MOTORCYCLE FRAME CONSTRUCTION AND MEANS FOR CONTROLLING THE HEIGHT OF THE CYCLE SEAT IN ACCORDANCE WITH THE SPEED OF THE CYCLE

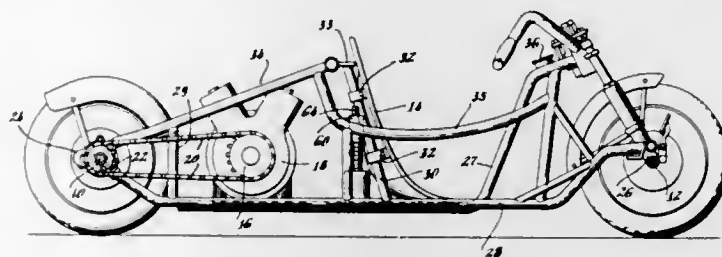
David F. Rheume, Box 110, Alfred, Maine 04002, and Eskil L. Karlson, 43 Westover Ln., Stamford, Conn. 06902

Filed June 25, 1973, Ser. No. 372,948

Int. Cl. B62d 37/06

U.S. Cl. 180—29

7 Claims



1. A motorcycle comprising a pair of wheels a frame suspended between the wheels from the wheel axles a first power means control means for the first power means and means for driving one of the wheels from the first power means a seat, means for supporting the seat from the frame while permitting the seat to be raised and lowered through a range of vertical positions, a second power means, and means for sensing the speed of the cycle and controlling the second power means to raise and lower the seat on its support means in response to and in proportion to the acceleration and deceleration of the motorcycle.

3,897,843

ELECTRIC MOTORIZED WHEEL

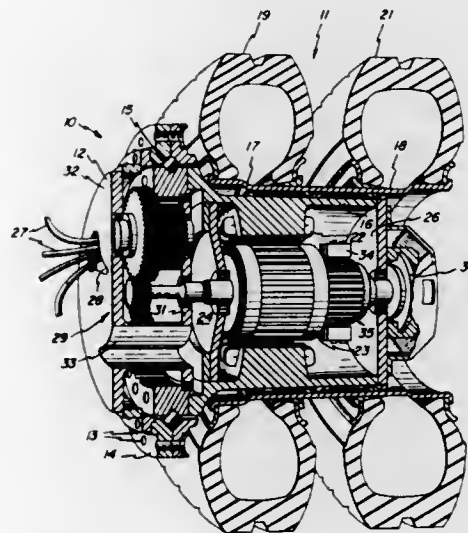
Martin J. Hapeman, Edinboro, and Hjalmar A. Olson, North East, both of Pa., assignors to General Electric Company, Erie, Pa.

Filed Nov. 29, 1973, Ser. No. 420,139

Int. Cl. B60I 7/00

U.S. Cl. 180—65 F

15 Claims



1. An improved electric drive motor assembly for traction vehicles of the type wherein a motor armature assembly is connected by gearing means to cause rotation of wheel means

mounted concentrically on the periphery of a motor frame comprising:

- said motor frame concentrically surrounding said motor armature and comprising radially inwardly extending bearing support members displaced along the longitudinal axis of said motor armature;
- said motor armature being rotatably secured by said bearing support members;
- wheel hub means rigidly secured to the outer periphery of said motor frame;
- gear drive means connected intermediate said armature and said motor frame to impart propulsion torque to said wheel hub means;
- base frame means adapted to secure said drive motor assembly on its inboard side to the frame of a vehicle, said base frame means comprising flange means;
- said motor frame comprising a portion located solely on the inboard side of said motor armature and concentrically arranged with said flange means;
- multidirectional bearing means disposed intermediate said flange means and said portion of the motor frame and adapted to transmit the load between said base frame means and said motor frame, said bearing means being constructed to accommodate thrust, radial and overturning loads, whereby said electric drive motor assembly is adapted to be overhung from said vehicle frame and supported solely by said multidirectional bearing means.

3,897,844

SUSPENSION MODIFYING MEANS FOR LEAF SPRING SUSPENSIONS

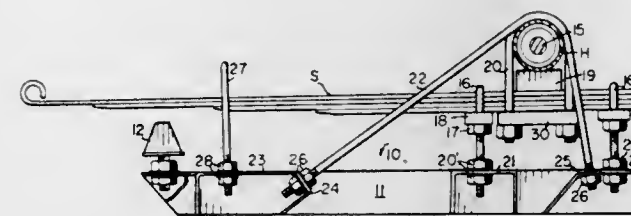
Harold Ross Chevalier, 8640-125th Ave., Edmonton, Alberta, Canada

Filed Dec. 15, 1971, Ser. No. 208,323

Int. Cl. F16f 1/22

U.S. Cl. 180—71

14 Claims



1. In an automotive vehicle of the type having a chassis, a transverse drive axle housing, a pair of ground-engaging rear wheels driven by axles rotatable in said axle housing, and a pair of longitudinal leaf suspension springs having their medial portions attached respectively to left and right terminal portions of said axle housing and having their ends linked with said chassis, said leaf suspension springs being subject to bending due to vehicle loading and subject also to flexing by torque-induced rotative movement of said axle housing about longitudinal and transverse axes on application of predetermined forward driving torque to said axles; suspension-modifying elements for equalizing driving wheel traction comprising:

- a pair of longitudinal beam members secured by their one ends to said vehicle axis housing adjacent respective points of attachment of said leaf suspension springs thereto, said beam members extending forwardly in vertical alignment with their associated leaf springs, the lengths of said elements being such that their other ends are disposed adjacent respective forward portions of the associated springs, bumper elements carried by said other ends of said beam elements having thrust surfaces, and means to adjustably space said thrust surfaces from associated leaf springs in a direction opposite to the direc-

tion in which said forward ends are displaced by said torque-induced rotative movement of said axle housing.

3,897,845

POWER STEERING SYSTEM

Alexander Von Löwis of Menar, Mauren, Germany, assignor to Robert Bosch G.m.b.H., Stuttgart, Germany

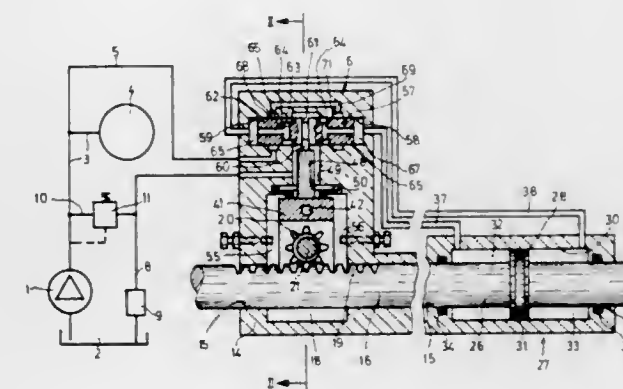
Filed Mar. 20, 1974, Ser. No. 453,026

Claims priority, application Germany, Apr. 10, 1973, 2317836; May 26, 1973, 2327006

Int. Cl. B62d 5/06

U.S. Cl. 180—148

8 Claims



1. A hydraulic power steering system comprising, in combination:

- a rack rod;
- a pinion disposed on an end of a steering shaft;
- servomotor means including a double acting piston, said servomotor means being coupled to said rack rod for assisting steering motion thereof;
- means for supplying hydraulic fluid to said servomotor means;
- control valve assembly means;
- motion transmitter means for transmitting rotation motion and rotational direction of said steering shaft to said valve assembly means, said motion transmitter means including:
 - means defining a substantially fixed axis of rotation;
 - lever means pivotable about said fixed axis of rotation; and
 - means for connecting said lever means to said control valve assembly;
- steering housing means, said lever means, said end of said steering shaft having said pinion thereon and said control valve assembly means all being positioned within said housing means and said rack rod being guidable through said housing means;
- aperture means in said housing means, said end of said steering shaft being mounted on said lever means and said lever means exiting from said steering housing means without guidance via said aperture means;
- resilient shaft seal means for sealing said aperture means with respect to said steering housing means in radial direction;
- bearing means at an entrance into said steering housing means; and
- a coupling member and at least two universal joints, said steering shaft being carried in said bearing means at said entrance into said steering housing means, being connected to said steering shaft end carrying said pinion, and being radially borne in said lever means by said coupling member and said at least two universal joints.

3,897,851

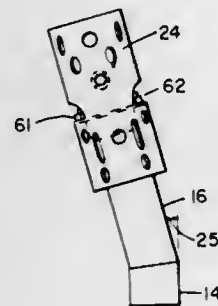
MUFFLER FOR TWO CYCLE DIESEL PILE HAMMER
 Russel L. Heacox, Tiburon, Calif., assignor to P & Z Company, Inc., South San Francisco, Calif.

Filed June 26, 1974, Ser. No. 483,205

Int. Cl. F01N 3/06

U.S. Cl. 181-36 R

9 Claims



1. A muffler for a two cycle internal combustion engine having a common intake and exhaust port comprising: a perforated cylindrical sleeve; a conduit communicating from said common intake and exhaust port to one of the open ends of said sleeve; means for mounting said sleeve and conduit to said common port; and, an obstructing member mounted transverse of said perforated sleeve over the outlet of said conduit.

3,897,852

DIAPHRAGM SILENCER ASSEMBLY FOR ENGINE MUFFLER

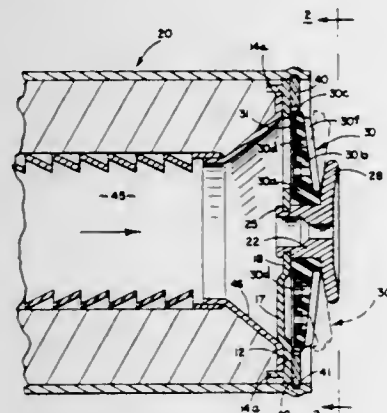
Edward H. Hoffman, and Clifford F. Kennedy, both of Simi Valley, Calif.

Continuation-in-part of Ser. No. 296,072, Oct. 10, 1972, Pat. No. 3,779,340. This application Aug. 23, 1973, Ser. No. 391,148

Int. Cl. F01n 1/00

U.S. Cl. 181-45

3 Claims



1. A diaphragm assembly for use in an engine muffler to provide inertial dampening and to afford valve action comprising:

- a flexible circular diaphragm element having a plurality of apertures formed therethrough to provide pressure relief for high back pressure,
- a ring member having a flat faced portion and an inside diameter slightly less than the diameter of said diaphragm element,
- a central post,
- a spider structure for supporting said central post from said ring member, said diaphragm element being mounted over said central post in concentric relationship therewith, with the peripheral edges of said diaphragm element abutting against the flat faced portion of said ring member.

a member attached to one end of said central post for limiting the movement of said diaphragm element in response to the exhaust gas pressure, and means for feeding the exhaust gas received by the muffler from the engine to said diaphragm element, the outer portions of said diaphragm element being free to move away from said ring member in response to exhaust gas pressure, and with the edges thereof in sealing engagement against said ring in response to back pressure from the ambient atmosphere.

3,897,853
SILENCER

Eyvind Frederiksen, Soborg, Denmark, assignor to A/S Silentor, Vedbaek, Denmark

Continuation of Ser. No. 309,305, Nov. 24, 1972, abandoned.

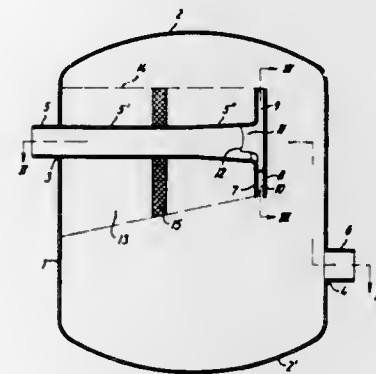
This application Jan. 14, 1974, Ser. No. 433,423

Claims priority, application Denmark, Nov. 24, 1971, 5760/71

Int. Cl. F01N 1/08

U.S. Cl. 181-57

11 Claims



1. A silencer for gaseous fluid flows including a casing forming an expansion chamber, inlet and outlet pipes communicating with said chamber into which one end of said inlet pipe is extended, and a cross-plate diffuser comprising an apertured plate flaring from the end of said inlet pipe and forming a generally curved extension thereof, and an unapertured plate spaced axially from and extending substantially parallel to the outer portion of said apertured plate, the outer portions of said plates being spaced radially from a wall of said casing and forming together a slot through which the fluid flow from the inlet pipe enters said expansion chamber as a curtain flow laterally to the flow direction in said inlet pipe, the average radius of curvature of said extension being at least as great as the width of said slot.

3,897,854

EXHAUST MUFFLER FOR INTERNAL COMBUSTION ENGINES

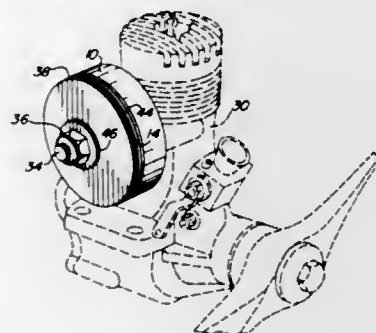
William A. Rhodes, 4421 N. 13th Pl., Phoenix, Ariz. 85014

Filed Apr. 19, 1974, Ser. No. 462,359

Int. Cl. F01n 1/16

U.S. Cl. 181-64 A

9 Claims



1. An exhaust muffler for internal combustion engines comprising: a generally hollow body having an open end; said body having a peripheral edge at said open end; said peripheral

3,897,856

VIBRATION DAMPER

Andre Lucien Pineau, 12, Rue de Bearn, 92 Saint-Cloud, France

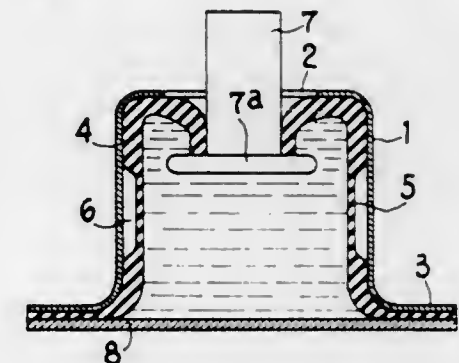
Filed Feb. 15, 1974, Ser. No. 442,826

Claims priority, application France, Feb. 19, 1973, 73.05729

Int. Cl. F16f 9/08

U.S. Cl. 188-1 B

22 Claims



1. A vibration damper comprising a rod for supporting a load to be suspended, and outer cylindrical body which is coaxial with the rod and has a lower open portion and an upper portion which defines an aperture for the passage of an end portion of the rod which extends into the body, a plate closing the lower portion of the body, the body and the plate defining a space containing a viscous liquid, a layer of an elastomeric material lining an inner surface of the body and having an upper portion coaxial with and integral with the rod, the layer defining a portion of reduced thickness which portion defines with the inner surface of the body a chamber for compensating for variations in volume of the inner space of the damper resulting from displacements of the rod under the effect of the load and deformations of the upper portion of the layer of elastomeric material which result therefrom.

3,897,855

PORTABLE PHARMACY SYSTEM FOR IN-PATIENTS IN HOSPITALS AND CARE CENTERS

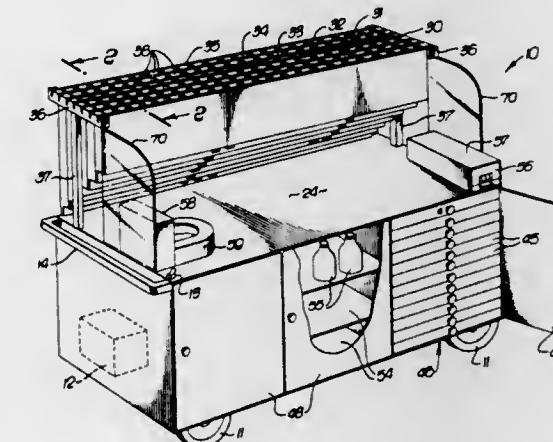
Richard J. Patterson, 2170 Century Park East, Los Angeles, Calif. 90067

Continuation-in-part of Ser. No. 334,138, Feb. 20, 1973, abandoned. This application Mar. 29, 1974, Ser. No. 456,040

Int. Cl. E04h 3/04

U.S. Cl. 186-1 R

8 Claims



1. In a pharmacy system for use in hospitals and the like, the combination comprising

- a. a traveling cart sized to be traveled about corridors in a hospital or the like and into different rooms in selected proximity to different in-patients, the cart having a top work surface,
- b. a plurality of dispensable drugs carried on the cart to be readily identified, removed for dispensing to a patient and latter replaced on the cart, there being packets containing the drugs, the packets for each particular drug sequentially connected in a hanging strip so that the lowermost packets may be torn-off the strip, as needed, there being multiple of said strips as defined, the strips hanging vertically in rows on the cart, with the bottoms of all strips exposed to access from one side of the cart, and including multiple supports for said strips and structure on the cart removably mounting the supports so that the strips hang downwardly from above and toward the work surface to be accessible from one side of the cart, and
- c. means on the cart for mounting different patient's drug prescription records and in a predetermined sequence so that the pharmacist upon arrival at each room may quickly determine the drugs to be dispensed to the patients in that room,
- d. the supports comprising panels removably supported in parallel vertical relation by said structure on the cart, the panels having vertically elongated flat interior surfaces thereon, the strips frictionally and slidably supported by said surfaces to hang in banks of rows, sequentially successive panels in a rearward direction away from said one side of the cart having lowermost generally horizontal edges which extend progressively closer to the level of said top surface, each strip extending below the lowermost edge of the panel immediately frontwardly thereof and successive strips in said rearward direction projecting downwardly closer to said top surface level.

3,897,857

WHEELCHAIR HUB BRAKE

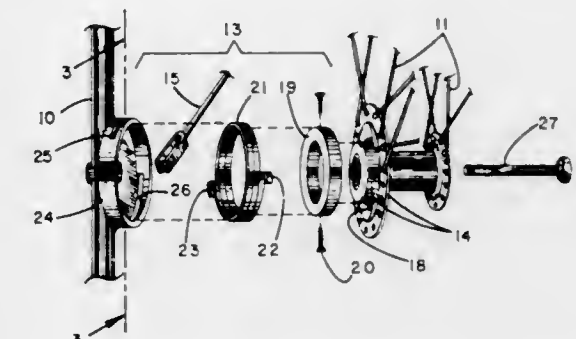
Keith S. Rodaway, Culver City, Calif., assignor to Everest & Jennings, Inc., Los Angeles, Calif.

Filed June 3, 1974, Ser. No. 475,526

Int. Cl. B60t 1/06

U.S. Cl. 188-2 F

5 Claims



1. In combination with a wheelchair including a frame structure rotatably supporting first and second main wheels, a hub brake assembly including:

- a. a circular plate forming part of the hub portion of said first wheel for rotation therewith, said plate defining an annular cavity coaxial with the wheel axis;
- b. an annular brake lining fitted within said annular cavity so that the overall width of the wheel hub assembly is not appreciably increased;
- c. a helical spring of rectangular cross section surrounding said brake lining and including radially extending first and second ends terminating in connecting means;
- d. an anchoring cover member secured to said frame structure coaxial with the axis of rotation of said wheel and

dimensioned to circumferentially fit within said annular cavity without engaging said circular plate to surround said spring and brake lining, said cover member including a peripheral connecting means to which said first end of said spring is secured and a peripheral window opening through which said second end of said spring passes;

e. a rod having one end coupled to said second end of said spring; and,

f. an actuating means including a link element pivoted at a first pivot point to said frame structure and including a spaced second pivot point connected to the other end of said rod such that rocking movement of said link element exerts a pulling movement on said rod to circumferentially contract said helical spring into circumferential engagement with said annular brake lining thereby exerting a frictional drag thereon to brake said wheel.

3,897,858

CLOSED LOOP TYPE DISC BRAKE

Shunichi Toshida, and Takashi Ozora, both of Tokyo, Japan, assignors to Nissan Motor Company Limited, Yokohama, Japan

Division of Ser. No. 295,116, Oct. 5, 1972, Pat. No. 3,844,384.

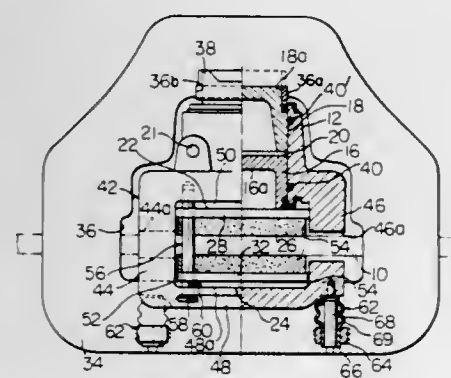
This application Dec. 12, 1973, Ser. No. 424,008

Claims priority, application Japan, Oct. 20, 1971, 46-83172; Oct. 20, 1971, 46-83173

Int. Cl. F16d 65/14

U.S. Cl. 188-73.4

2 Claims



1. A disc brake for a motor vehicle comprising, in combination, a rotatable braking disc, a stationary hydraulic cylinder having inner and outer pistons slidable in opposite directions which are substantially parallel to an axis of said braking disc, said pistons defining a fluid chamber into which pressurized fluid is supplied when a braking action is to be initiated, directly and indirectly actuated friction pad assemblies positioned adjacent to both faces of said braking disc, said directly actuated friction pad assembly being in abutting engagement with said inner piston and thereby forced against said braking disc when the inner piston is moved by said pressurized fluid, a pair of pad-retaining pins fixed at their one ends with said hydraulic cylinder and supporting said directly and indirectly actuated friction pad assemblies, a yoke movable in a direction parallel to said axis of the braking disc and carrying the movement of said outer piston to said indirectly actuated friction pad assembly against said braking disc when said outer piston is moved by said pressurized fluid, a braking torque absorbing structure integrally formed with said hydraulic cylinder and including a pair of leg portions extending substantially in parallel to said axis of the braking disc, said pair of leg portions having said edges extending in parallel to said axis of said braking disc respectively facing side edges of said friction pad assemblies, and said friction pad assemblies bearing at their side edges against one of said side edges of said leg portions for passing a braking torque on said friction pad assemblies to said braking torque absorbing structure when the assemblies are forced against said braking disc, a pair of guide means for guiding said yoke in a direction substantially parallel to said axis of the braking disc, each of said guide means including a support secured to said yoke and having

therein a bore, a bushing disposed in said bore of said support, and a guide pin rigidly connected to an end of the leg portion of said braking torque absorbing structure and slidably inserted through said bushing into said bore of said support, said guide pin being directed in parallel to the direction of movement of said friction pad assemblies.

3,897,859

CLUTCH FRICTION PLATE CONSTRUCTION

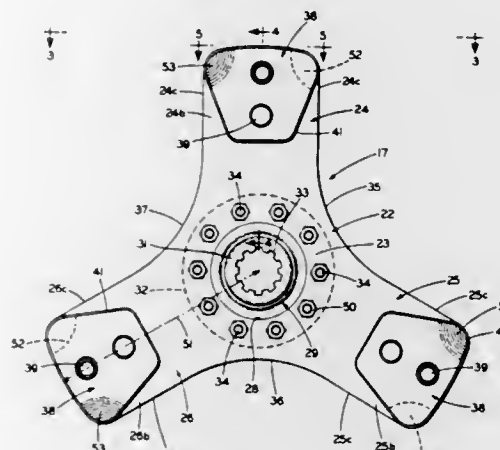
John A. Norcia, 2906 Sussex St. N.W., Canton, Ohio 44718

Filed Sept. 28, 1973, Ser. No. 401,666

Int. Cl. F16d 13/40, 13/68, 3/70

U.S. Cl. 192-107 C

3 Claims



1. Clutch friction plate construction for a high performance vehicle clutch assembly including a generally flat metal plate formed with a central opening; a central area of the plate circumferentially surrounding the opening; hub means mounted on the plate axially aligned with the central opening for mounting the plate on a vehicle transmission input shaft; the plate having three circumferentially spaced leg members formed integrally with the central area and extending radially outwardly from said central area; the three leg members being circumferentially equally spaced from each other; the leg members having generally flat opposite faces; friction pad means mounted on said opposite leg faces at the outer end of each leg member; said friction pad means being formed of a metallic compound material; the total of the maximum arcuate widths of the outer ends of the three leg members where the friction pad means thereon are located, being less than one-third of the total circumference of the clutch friction plate measured at said outer leg ends; and the total of the maximum arcuate widths of the friction pad means also being less than one-third of the total circumference of the clutch friction plate measured at said outer leg ends.

3,897,860

WET CLUTCH WITH COOLANT DISTRIBUTOR

Howard O. Borck, Detroit; Robert W. Zirbes, Rochester, both of Mich., and Leo W. Cook, Chicago, Ill., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Nov. 19, 1973, Ser. No. 416,919

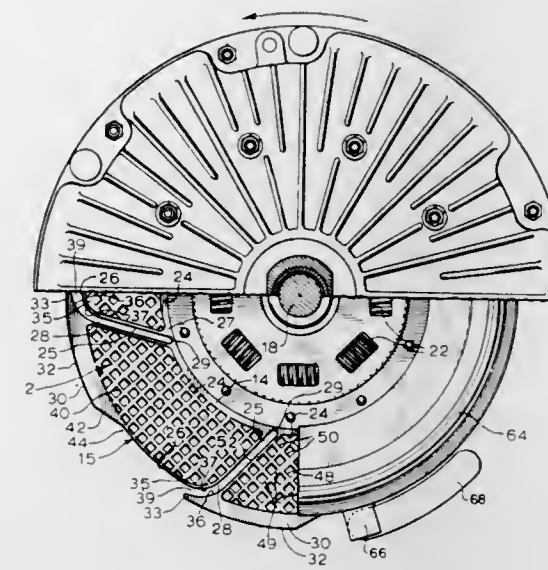
Int. Cl. F16d 13/72

U.S. Cl. 192-113 B

12 Claims

1. A clutch assembly comprising driving and driven members rotatable about a common axis, said members having relative rotation when said clutch assembly is disengaged or when said clutch is not fully engaged, at least one of said members comprising a plate having friction clutching surface means thereon, and diagonal through slots subdividing said plate into a series of circumferentially spaced segments, the other of said members including a flywheel and a pressure plate flanking said first mentioned plate and in engaged position closing the lateral sides of said slots in said first mentioned plate and defining fluid passage means within said slots, and

diverter means on the outer periphery of each segment providing a coolant fluid scooping surface projecting in a direction



counter to the direction of relative rotation between said members such as to direct fluid into the adjacent slot.

3,897,861

INFLATABLE EVACUATION SLIDE INTERMEDIATE RELEASE SYSTEM

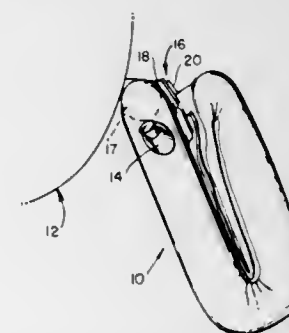
Ralph A. Miller, Monmouth Beach, and Edward H. Smialowicz, Point Pleasant, both of N.J., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Aug. 13, 1973, Ser. No. 387,997

Int. Cl. B65G 1/10; A62B 1/20

U.S. Cl. 193-25 B

13 Claims



1. Inflatable slide apparatus for evacuation from an elevated egress to a lower surface, comprising:

a fluid distensible member, of a generally elongate configuration when fully inflated, disposed in an uninflated, folded configuration at the elevated egress with one end secured thereto; and

means to restrain said fluid distensible member in a lengthwise half folded configuration during inflation thereof until a minimum gas pressure, sufficient to fully extend said member to contact the lower surface, is developed in said member,

said half folded restraining means including primary restraint means responsive to muscle forces generated by the pressurization of said member and secondary restraint means isolating said primary restraint means from random transient deployment forces,

said primary restraint means comprising a frangible link disposed between the two opposed ends of said fluid distensible member and said secondary restraint means includes at least one pair of butterfly hook and pile fastener elements disposed intermediate the half fold crotch and the two ends of said fluid distensible member, one of each pair of elements affixed to the lower half of said member and the other of each pair of elements affixed to the upper half of said member.

3,897,862

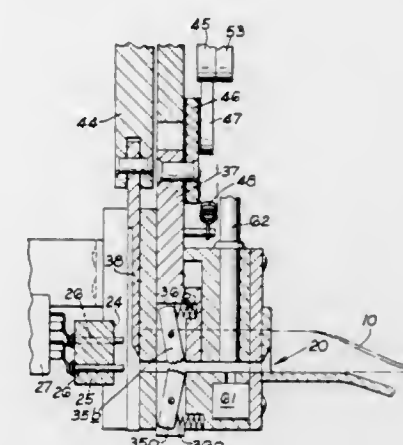
TICKET SYSTEMS

Alec Patrick James, Birmingham, England, assignor to National Research Development Corporation, London, England
Filed May 16, 1973, Ser. No. 360,739

Int. Cl. G07f 1/06

U.S. Cl. 194-4 C

24 Claims



1. A cancelling machine for use in a ticket system employing season tickets, said machine comprising:

a jaw adapted to receive the end portion of a length of ticket material inserted therein,

means for sensing the cross-sectional configuration and dimensions of the length of ticket material being inserted, the sensing means including:

a. a ticket presence sensor for detecting the presence of a length of ticket material in said jaw and for providing a signal indicative of the presence of said ticket material;

b. a thickness sensor having means detecting whether the length of ticket material is of at least as great as a predetermined thickness and providing a signal indicative of the presence of sufficiently thick ticket material; and

c. a plurality of ticket-configuration sensors arranged to detect the presence of ticket material within a respective plurality of pre-selected regions of the jaw and to provide signals in response to such detection;

means for severing and removing unit lengths from the total length of ticket material inserted in said jaw, provided the ticket material is sensed to have a predetermined cross-sectional configuration and dimensions; and a motor-driven rotary mechanism for operating the severing means by performing one complete revolution for each usage of the machine.

3,897,863

CART RECEPTION AND REWARD MECHANISM

Albert Leland Peggs, Duarte, Calif., assignor to Cart Saver, Inc., San Francisco, Calif.

Filed June 27, 1974, Ser. No. 483,651

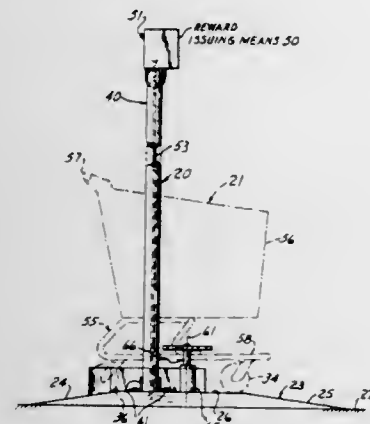
Int. Cl. G07f 1/06

U.S. Cl. 194-4 R

23 Claims

1. A mechanism for receiving a cart having a frame and wheels, which mechanism issues a reward as a consequence of the return of such a cart, said mechanism comprising: a platform defining a cart path; an unlatching plunger, a reward plunger and a latching plunger, all passing through and projecting above the platform, each said plunger having an upper end which is movable up and down relative to the platform, each said plunger being disposed in said path so as to be moved as a consequence of contact by a wheel of a cart when the car moves along the path in a first direction of motion, the plungers being so disposed and arranged along the path that, when the cart is in a first unlatching position, a second reward-disseminating position, and a third latching position along the path, the unlatching plunger, reward plunger and latching plunger will respectively be moved in that sequence; a unidirectional

turnstile having an axis of rotation, said turnstile being rotatable in a first direction around said axis of rotation as a consequence of a cart's movement along the path in said first direction to permit movement of the cart, and non-rotatable in a second direction reverse to the first direction, whereby to prevent the movement of a cart in the second direction which has entered the turnstile, said turnstile having a portion disposed at an elevation above the platform so as to limit the lifting of a cart which is restrained by the turnstile to a vertical movement less than an increment required to actuate the reward plunger when the cart is at the reward-issuing position; an actuating rod movable in an actuating direction and in a return direction; interlinking means pivotally mounted to said platform, and linked to said actuating rod and to said reward plunger, movement of said reward plunger moving the actuating rod in the actuating direction, the actuating rod, interlink-



ing means, and reward plunger together constituting a reward linkage; biasing means biasing the actuating rod in said return direction, and also biasing the reward plunger to a position above the platform, thereby to oppose that movement of said reward plunger which would actuate the actuator rod; a latch having a latched and an unlatched position, said latch, when in its latched position, preventing movement of the reward linkage that enables the actuating rod to move in its actuating direction, and when in its unlatched position, permitting said movement; and latch-actuating linkage connected to the unlatching plunger, to the latching plunger, and to the latch, whereby movement of the unlatching plunger from one position to another moves the latch-actuating linkage to move the latch to the unlatched position, and movement of the latching plunger from one position to another moves the latch-actuating linkage to move the latch to the latched position.

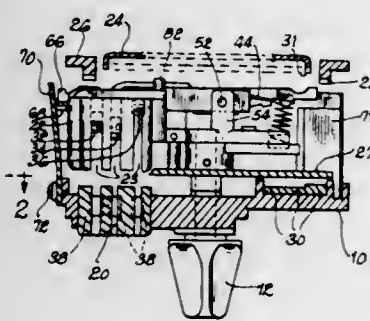
3,897,864 PARKING METER WITH SLUG DETECTING MECHANISMS

Rinaldo Sciacero, Arlington Heights, and Leonard J. Weber, Broadview, both of Ill., assignors to Qonaar Corporation, Elk Grove Village, Ill.

Filed Feb. 21, 1974, Ser. No. 444,293
Int. Cl. G071 5/02

U.S. Cl. 194-74

19 Claims



1. In a construction wherein checks are adapted to be received in a coin slot and held for determining eligibility for

things vended by the construction, the improvement comprising check holding means adapted to hold proper checks in a vertical position at a location while allowing passage of slugs beyond the location, said holding means comprising a first engaging means positioned adjacent the bottom of said slot and adapted to engage each vertically disposed check at a first point on the edge of check, said point being located below a line extending horizontally through the center of the check, a check receiving element situated behind said slot, and a second engaging means formed on said element and positioned to engage each vertically disposed check at a second point on the edge of the check on the opposite side of the check, said second point being located above said first point whereby any slug having a diameter less than the distance between said points will not be held by said engaging means.

3,897,865

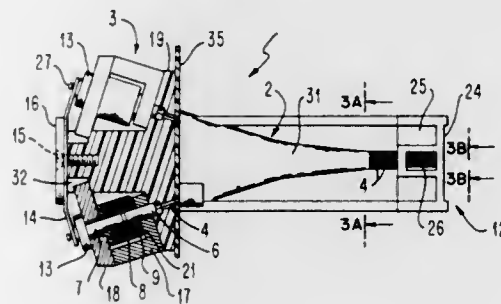
DOT PRINTING APPARATUS

Daniel P. Darwin, Boca Raton; Brandt M. Griffing, Delray Beach, and Harry S. Kiel, Boca Raton, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 11, 1973, Ser. No. 423,833
Int. Cl. B41J 3/05

U.S. Cl. 197-1 R

7 Claims



1. Dot printing head apparatus, comprising:
a plurality of elongated, flexible, axially extendable, double-ended, printing elements, each having an impact surface upon one end thereof;
a supporting means for supporting said printing elements, said supporting means having a continuous solid geometrical surface;
said surface of said supporting means being generally concave and varying continuously in cross-sectional form from an approximate circle to an approximate rectangle, with said rectangle being approximately as wide as the cross-sectional dimension of one of said printing elements and as long as the combined cross-sectional dimensions of said printing elements;
guide means for confining said printing elements to lie on said geometrical surface; and
means connected to the ends opposite said impact surfaced ends of said printing elements for extending said elements.

3,897,866

VERTICALLY INSERTABLE TYPEWRITER RIBBON CARTRIDGE

Hans W. Mueller, Cortland, N.Y., assignor to SCM Corporation, New York, N.Y.

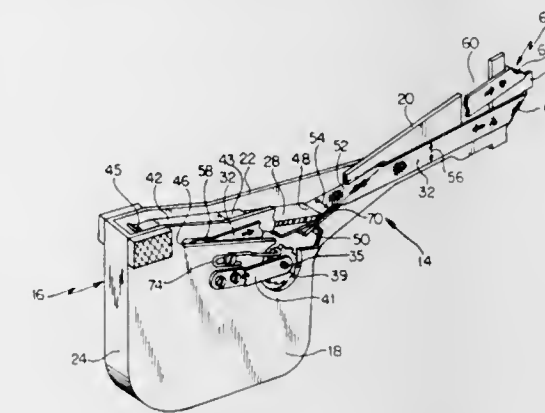
Filed Nov. 12, 1973, Ser. No. 415,262
Int. Cl. B41J 33/14, 35/04, 35/28

U.S. Cl. 197-151

18 Claims

1. A ribbon cartridge removably insertable in a typewriter, the typewriter having a ribbon cartridge carrier adjacent a print point of the typewriter for receiving and supporting said ribbon cartridge, said ribbon cartridge comprising:
a housing having peripheral and side walls for enclosing therein a ribbon in a first orientation wherein the plane of

the ribbon surface is perpendicular to said side walls and generally in planar alignment with said peripheral walls; a single integral arm laterally extending from said housing in planar alignment with said side walls for guiding the ribbon on and there along from said housing on one side of the typewriter print point to the typewriter print point



and thereafter guiding the ribbon back to the housing on the same side of the typewriter print point; and means for altering the ribbon from said first orientation in said housing to a second orientation in planar alignment with said single integral arm on and along said single integral arm to the typewriter print point and then back to said first orientation.

3,897,867

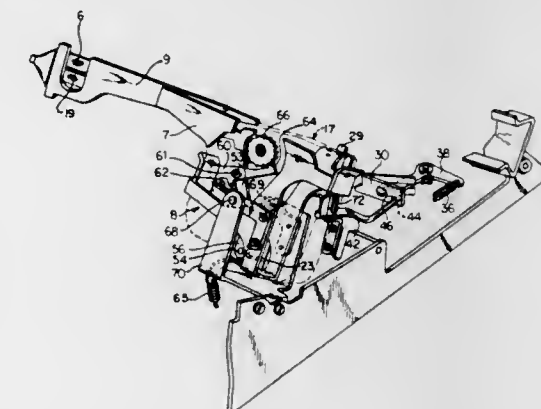
RIBBON FEED MECHANISM FOR INK RIBBON CARTRIDGES

Richard E. Shattuck, Cortland; Robert M. Du Ross, Homer, and James Greggains, Truxton, all of N.Y., assignors to SCM Corporation, New York, N.Y.

Filed Nov. 12, 1973, Ser. No. 415,274
Int. Cl. B41J 33/14

U.S. Cl. 197-151

11 Claims



1. A ribbon feed mechanism for a ribbon cartridge in a typewriter having a frame, a ribbon lift mechanism and a print point, the ribbon cartridge having a single arm for guiding a ribbon from the ribbon cartridge to a position near the print point and thereafter guiding the ribbon back along said arm to the ribbon cartridge and having a ribbon advancing means including a ratchet, the ribbon feed mechanism comprising:

- a ribbon cartridge carrier pivotally supported on the frame for supporting the ribbon cartridge, the ribbon cartridge arm engaging the ribbon lift mechanism causing the ribbon cartridge arm to pivot the ribbon cartridge and the ribbon cartridge carrier to shift the ribbon between the position near the print point and the print point;
- a first driving means supported on said ribbon cartridge carrier for engaging and actuating the ratchet of the ribbon advancing means; and
- a second driving means supported on the frame coupled to said first driving means for transmitting motion to said first driving means for actuating the ratchet driven ribbon

advancing means independent of the pivotal movement of the ribbon cartridge carrier.

3,897,868

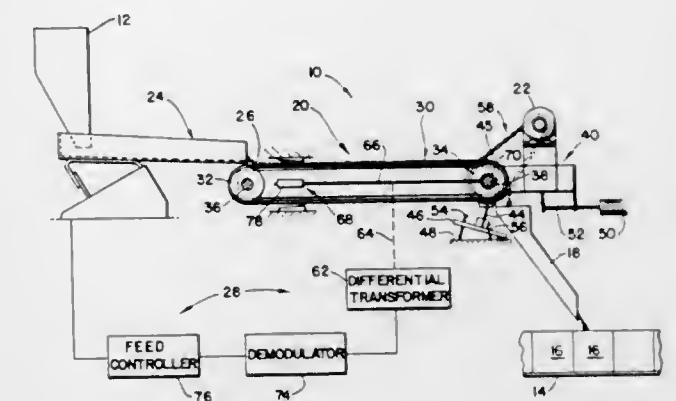
CONSTANT RATE FEEDER

Horace L. Smith, Jr., Richmond, Va., assignor to Smitherm Industries, Inc., Richmond, Va.

Filed July 1, 1974, Ser. No. 485,008
Int. Cl. B65G 43/08

U.S. Cl. 198-37

10 Claims



1. A constant rate feeder for bulk materials which comprises the combination of: a constant speed conveyor having a discharge end and a feed end; means for supplying material to the feed end of the conveyor; means for detecting vertical motions of said conveyor resulting from changes in the amount of the material thereon; control means having as an input a signal generated by said motion detecting means for so regulating the operation of said material supplying means as to decrease the rate of supply of material to the conveyor as the amount of the material thereof increases and vice versa; and magnetic damping means capable of exerting a restoring force which increases in proportion to the magnitude of vertical movement of the conveyor for magnetically damping the vertical motions of said conveyor.

3,897,869

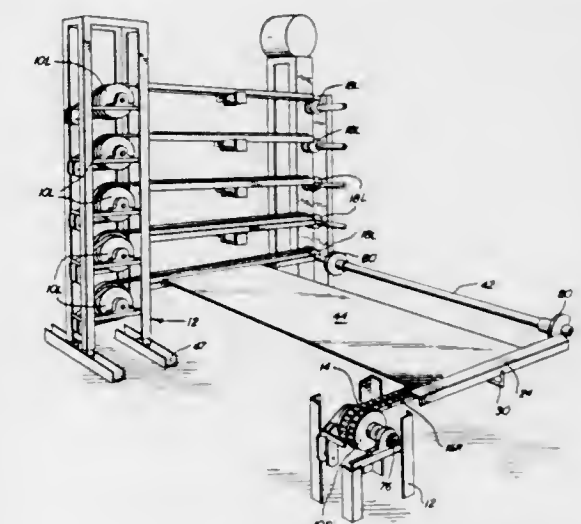
CONVEYOR CONSTRUCTION

Vesta F. Michael, Big Spring, Tex., assignor to Fiber Glass Systems, Inc., Big Spring, Tex.

Filed June 28, 1973, Ser. No. 374,511
Int. Cl. B65g 25/06

U.S. Cl. 198-218

10 Claims



1. A conveyor comprising flexible discrete strips in side by side relation and movable into spaced and abutting dispositions, means engaging opposed, outer side portions of said strips and urging said strips toward each other into a clamping relationship whereby an object positioned between said strips while said strips are in spaced arrangement may be clampingly

engaged by opposed inner side portions of said strips, and means for engaging end portions of each of said strips and for moving said strips while in clamping relationship about an annular surface; said strips comprising chain belt segments having projecting pins, the pins of one belt being located between the pins of the other belt when said belts are in tight abutting relationship.

3,897,870

APPARATUS FOR SINGLE FEEDING EVENLY WIDE TIMBER

Olli Heikinheimo, Helsinki, Finland, assignor to Plan-Sell Oy, Helsinki, Finland

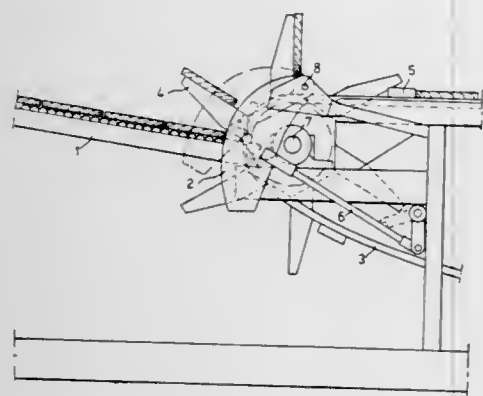
Filed June 21, 1974, Ser. No. 481,848

Claims priority, application Finland, Aug. 20, 1973, 2598/73

Int. Cl. B65g 25/00

U.S. Cl. 198—241

2 Claims



1. An improved apparatus for single feeding evenly wide timber and of the type having a base; a frame on a base; a first conveyor attached to the frame for feeding the timber transversally as a single layer mat thereon; a second conveyor attached to the frame for transversal single feeding the timber transferred from the first transversal feed conveyor to the second transversal single feed conveyor; a propeller rotatably attached to the frame between the first and second conveyors by means of a substantially transversal horizontal shaft and having substantially radial extensions adapted to lift the timber one at a time from the first conveyor and transfer the timber onto the second conveyor; and means for actuating the conveyors and propeller, the improvement comprising:

a limiting member fitted to the frame beside the propeller and having a side facing the first conveyor to stop the timber on the first conveyor; and adjusting means fitted to the limiting member and the frame in order to spatially adjust the side of the limiting member in relation of the tip of the extension seen in the direction of the first conveyor, in accordance with the width of the timber in that direction.

3,897,871

PRINT ALBUM STORAGE CASE INSERT

Gerald B. Zinnbauer, Carmel, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed July 26, 1973, Ser. No. 383,010

Int. Cl. B65d 1/34

U.S. Cl. 206—73

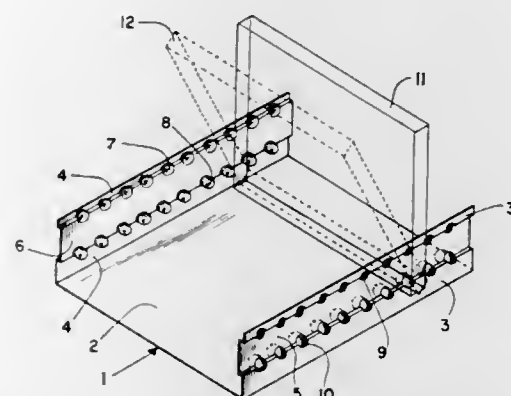
6 Claims

1. A print album storage container insert comprising:
a. a base section;
b. a first side section integrally connected to said base section, said first side section having a plurality of resilient protuberances extending inwardly therefrom, said protuberances being formed in two essentially parallel rows, said rows disposed essentially parallel to the top edge of

said first side section and containing equal numbers of equispaced protuberances disposed in aligned pairs at essentially a right angle to said top edge, the row of protuberances nearest said top edge having a resiliency which allows for from about 50 to about 100 percent deformation under force with a subsequent return to the original configuration and form when said force is removed; and
c. a second side section integrally connected to said base opposite said first side section, said second side section having a plurality of protuberances similar in number to the protuberances in said first side section and disposed similarly thereto and in a mirror image thereof, said protuberance also having resiliencies similar to those in said first side section.

4. A print album storage container comprising:

a. a container having a first and a second side, a first and a second end, and a bottom connected with said sides and said ends at essentially a right angle;



b. a plurality of resilient protuberances extending inwardly from said first side, said protuberances being formed in two essentially parallel rows, said rows disposed essentially parallel to the junction of said side with said bottom and containing equal numbers of equispaced protuberances disposed in aligned pairs at essentially a right angle to said junction between said side and said bottom, the uppermost row of protuberances having a resiliency which allows for from about 50 to about 100 percent deformation under force with a subsequent return to the original configuration and form when such force is removed; and
c. a plurality of protuberances extending inwardly from said second side, said protuberances being similar in number to the protuberances in said first side and disposed similarly thereto and in a mirror image thereof, said protuberances also having resiliencies to those in said first side.

3,897,872

MULTIPLE ARTICLE CARRIER AND METHOD

Earl J. Graser, Monroe, La., assignor to Olinkraft, Inc., West Monroe, La.

Filed Oct. 3, 1973, Ser. No. 403,086

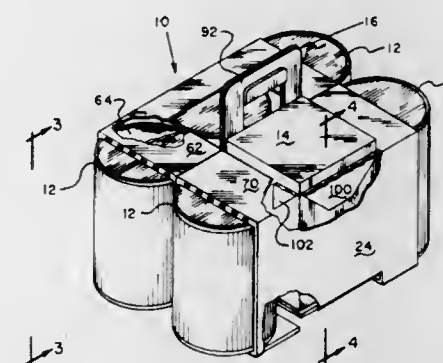
Int. Cl. B65D 85/54; B56D 85/62

U.S. Cl. 206—146

28 Claims

1. An elongated blank designed to be formed into a multiple article carrier having opposite sides, said blank comprising:
a bottom panel, a side panel hingedly attached to said bottom panel, a top panel hingedly attached to said side panel, opposed means spaced from said side panel for interconnecting said top panel to said bottom panel; the top, bottom and side panels and said opposed means extending between the opposite sides of said carrier so as to define an open ended cell therebetween when said blank is formed into a carrier;
said top panel including retaining means at one of the opposite sides of said carrier;
said bottom panel including raisable means between the opposite sides of said carrier, first means on said raisable means and said retaining means for engaging opposed and

spaced portions of an article in the cell between said raisable means and said retaining means and for preventing movement of the article in any direction therebetween when said blank is formed into a carrier; and



said raisable means including second means arranged to support another article adjacent the engaged article when said blank is formed into a carrier.

3,897,873

CROWN-SUPPORT CARRIER

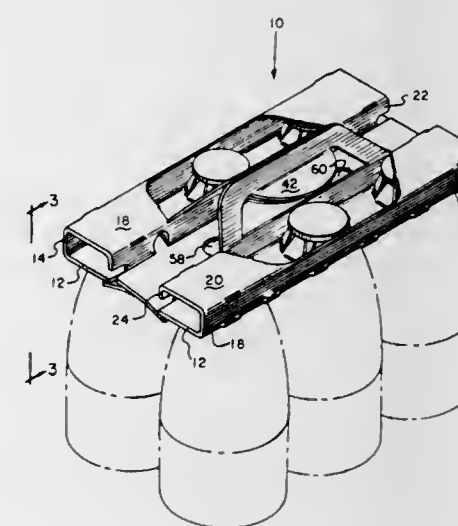
Earl J. Graser, Monroe, La., assignor to Olinkraft, Inc., West Monroe, La.

Filed Mar. 20, 1973, Ser. No. 343,034

Int. Cl. B66C 1/10; B65D 75/00

U.S. Cl. 206—153

11 Claims



1. An improved crown support carrier for a plurality of objects comprising:

a. a bottom panel for receiving the plurality of objects;
b. a pair of side wall panels hingedly connected to said bottom panel;
c. a pair of crown cover panels, hinged connected to said side wall panels;
d. a pair of substantially vertical elevation panels, hingedly connected to said crown cover panels;
e. a top panel and a securing panel each hingedly connected to a respective elevation panel and extending to the opposite elevation panel to restrain its motion;
f. recessed handle means, formed from at least one crown cover panel and associated with the restrained elevation panel so that when said handle means is utilized, the weight of the objects is carried by the restrained elevation panels.

3,897,874

PRESSURIZED STORAGE CONTAINER

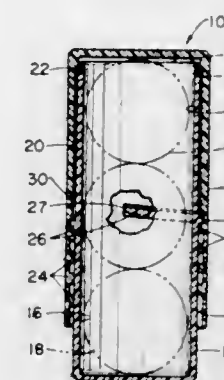
Gex B. Coons, 5641 Collax Ave., North Hollywood, Calif. 91601

Filed June 10, 1974, Ser. No. 477,603

Int. Cl. B65d 41/04, 53/02, 85/00

U.S. Cl. 206—315

7 Claims



1. A pressurized container comprising:
a body having an interior chamber to be pressurized;
a rigid cap for compressing air in said interior chamber, said cap being longitudinally and bodily movable relative to said body from an initial position to a completely closed position;

first means located between said cap and said body to establish an air-tight connection therebetween, said first means causes establishment of said air-tight connection when said cap and body are in said initial position and maintains said air-tight connection during movement of said cap in either direction between said completely closed position and said initial position, thereby resulting in gradual change in pressure in said interior chamber as said cap moves in either direction between said positions, said first means including pressure maintaining means, said pressure maintaining means connects with said first means only when said cap is in said completely closed position thereby insuring substantial non-leakage over a period of time of the pressurized air within said interior chamber; and

second means mounted on both said cap and said body, said second means capable of interlocking to effect movement from said initial position to said completely closed position and to result in securement of said cap upon said body in said completely closed position.

3,897,875

SORTING CONVEYORS

Christopher Hawthorn Luckett, London, England, assignor to British Railways Board and Sorting Systems Limited, both of London, England

Filed May 20, 1974, Ser. No. 471,588

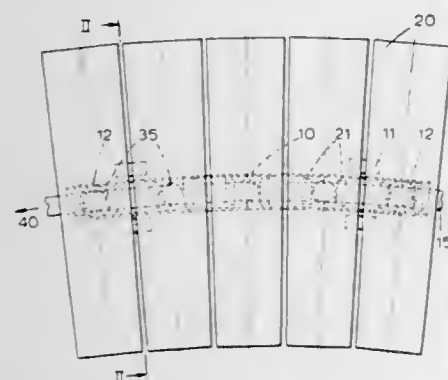
Int. Cl. B07C 7/00

U.S. Cl. 209—124

10 Claims

1. A circular sorting conveyor of the kind which includes at least one circular carousel comprising a number of radially extending, tiltable, segmental panels or slats, which are arranged for movement unidirectionally about a circular path, there being means for tilting at least one selected panel, so that an article resting thereon can slide on to a discharge chute or apron arranged internally of the circular path of movement of the panels, characterized in that each individual segmental panel or slat is mounted upon a pivot about which it is tiltable

inwardly of the circular path of movement of the panels, from a substantially horizontal disposition, the axis of such pivot



3,897,876

DISPLAY AND STORAGE RACK

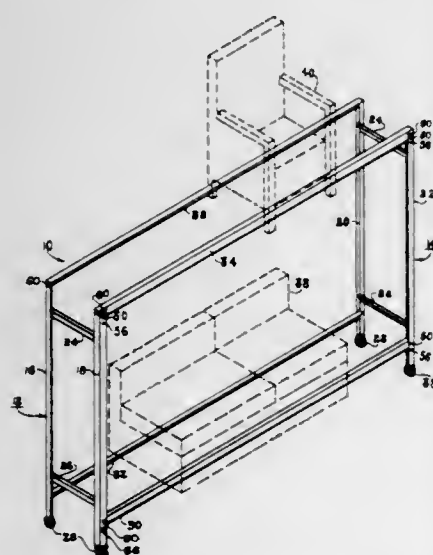
Sol Feldman, Philadelphia, Pa., assignor to Oxford Metal Products Co., Inc., Philadelphia, Pa.

Filed Dec. 20, 1973, Ser. No. 426,547

Int. Cl.² A47F 7/30

U.S. Cl. 211-27

3 Claims



1. A multi-tiered display and storage rack comprising a plurality of vertical corner post members formed of elongated steel angle members connected front to rear to form end frames;
- a plurality of pairs of horizontal support members formed of elongated steel angle members adapted to be coupled to said corner post members to complete the rack framework and for support of furniture thereon;
- and a plurality of coupling joints and devices for connecting the ends of said support members to said corner post members, the improvement therein of each of said coupling joints and devices including
- a plate fastened to and projecting from an end of each of said horizontal members and being mounted to the vertical leg thereof and extending parallel thereto and transversely to the longitudinal axis of said horizontal member, a bayonet coupling including a headed pin and an elongated mating hole, said pin and mating hole being aligned and respectively located on said coupling plate and said corner post members,
- and a bolt, and aligned bolt holes in said corner post member and the vertical leg of said horizontal member,
- said coupling devices being located on said members so that the ends of said horizontal and vertical legs of said horizontal support members bear against and nest within and butt against the inside angle faces of said vertical corner post members.

said coupling devices being positioned in pairs at a plurality of elevations on said vertical corner post members to establish locations for said horizontal support members, whereby said rack is readily assembled and sturdily coupled.

3,897,877

APPARATUS FOR POSITIONING AND ORIENTING PALLETIZED ARTICLES

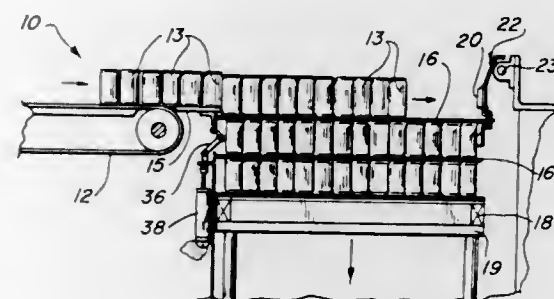
Richard H. Vandermeer, Golden, and Robert L. Simmons, Lafayette, both of Colo., assignors to Goldco Industries, Inc., Golden, Colo.

Filed Aug. 22, 1973, Ser. No. 390,639

Int. Cl.² B65G 57/00

U.S. Cl. 214-6 P

7 Claims



1. Apparatus for positioning and orienting articles in a palletized load, comprising: in a palletizing apparatus, a plurality of support arm assemblies each having an articulated lower portion and each being movably mounted for positioning in an extended, substantially vertical position, and a retracted position, at least three positioning guide members disposed in a common horizontal plane and at about right angles to one another with an open side, the positioning guide members each being supported by at least two of said support arm assemblies at positions above the articulated portion of the support arm assemblies, at least three orientation guide members disposed in a common horizontal plane and at about right angles to one another, the orientation guide members each being supported by at least two of said support arm assemblies which also support at least one positioning guide member, the orientation guide members being supported at positions on the articulated portion of the support arm assemblies, separator sheet positioning means supported by the articulated portion of the support arm assemblies at a position between the positioning guide member and the orientation guide members, means operably connecting the support arm assemblies, and activation means for extending and retracting the support arm assemblies concurrently and the positioning guide members, separator sheet positioning means and orientation guide members thereon.

3,897,878

NUCLEAR REACTOR REFUELLING MACHINE

John Malcolm Peberdy, Huncote, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Sept. 24, 1973, Ser. No. 400,061

Claims priority, application United Kingdom, Oct. 2, 1972, 45433/72

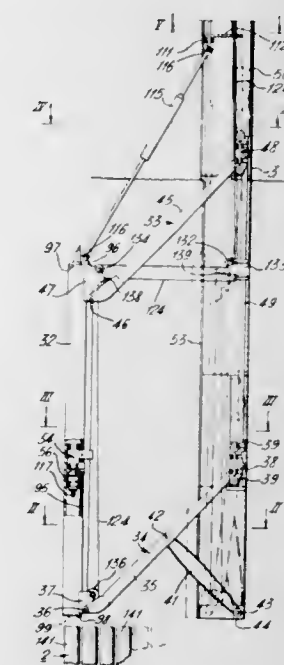
Int. Cl. G21c 19/10

U.S. Cl. 214-18 N

3 Claims

1. In a nuclear reactor refuelling machine for the charging and discharging of fuel assemblies into and out from the core structure of a nuclear reactor, a main support tube for passing through a cover of a nuclear reactor core containing vessel in rotatable manner; a gripper guide tube disposed with longitudinal axis parallel to the longitudinal axis of the support tube, the gripper guide tube having a longitudinal slot; a pair of parallel linkages extending between the main support tube and the gripper guide tube, the gripper guide tube being movable

on the linkages radially inwardly and outwardly relative to the main support tube; a fuel element gripper assembly in said gripper guide tube and having a gripper carriage and a gripper head, the gripper head being rotatable relative to the gripper carriage about the longitudinal axis common to the guide tube and gripper assembly, the gripper carriage having a projection



extending radially through said slot for connection with drive means for displacing the gripper carriage along the longitudinal axis of the gripper guide tube; and means extending along the main support tube for actuating the parallel linkages, for displacing the gripper assembly within the gripper guide tube and for rotating the gripper head relative to the gripper carriage.

3,897,879

VEHICLE TOWING APPARATUS

Leslie Bubik, Toronto, Canada, assignor to Vulcan Equipment Company Limited, Toronto, Canada

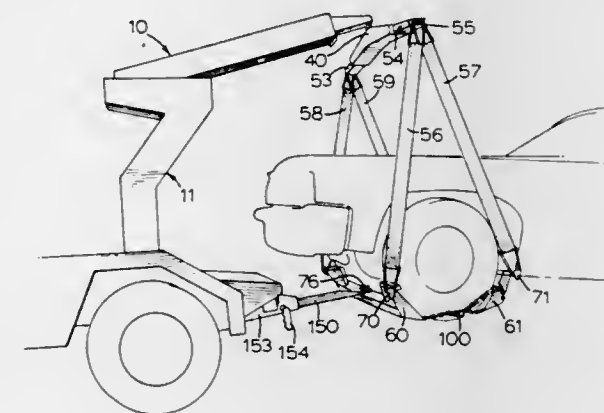
Filed Aug. 13, 1973, Ser. No. 387,664

Claims priority, application Canada, June 26, 1973, 174907

Int. Cl. B60p 3/12

U.S. Cl. 214-86 A

4 Claims



1. Apparatus for lifting and towing vehicles comprising: a boom support adapted to be mounted on a towing vehicle, a boom of variable length pivotally mounted on said boom support for movement about a horizontal axis, said boom being positionable to extend from the rear end of the towing vehicle, sling support means connected to the boom, flexible sling means connected to and depending from said sling support means, a rigid member extendable across and beneath a vehicle to be towed and engageable with said towed vehicle, means on said rigid member and on said sling means for securing said rigid member to said sling means forwardly

and rearwardly of the wheels and outwardly thereof at one end of the towed vehicle.

first power means for moving said boom about said axis to lift said one end of the towed vehicle off the ground when said rigid member is secured to said sling means by said securing means, second power means for varying the length of said boom so as to move said lifted one end of said towed vehicle towards the towing vehicle, and a rigid tow bar connectible between said rigid member and said towing vehicle.

3,897,880

HAY HANDLING APPARATUS

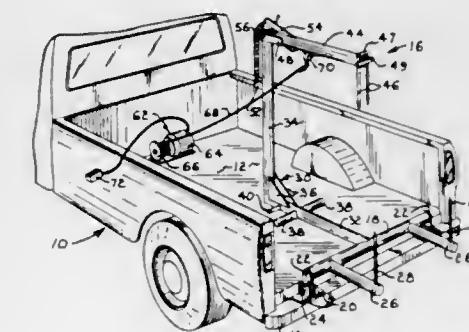
Robert J. Waske, Grant City, and Francis D. Hughes, Denver, both of Mo., assignors to Francis Donald Hughes, Denver, Mo.

Filed Mar. 6, 1974, Ser. No. 448,500

Int. Cl. B60p 1/00

U.S. Cl. 214-147 R

9 Claims



1. Apparatus adapted to be releasably mounted on a utility vehicle characterized by a generally horizontal load-carrying member at the rear of the vehicle for moving a bale of hay onto said vehicle for transport by the vehicle, without interference with other uses of the vehicle when the apparatus is removed therefrom, said apparatus comprising:

a first support member adapted to be pivotally coupled with the vehicle adjacent the rearward edge of said load-carrying member and movable about an axis from a first position generally perpendicular to said load-carrying member through an arc of approximately 90° to a second position generally parallel to said load-carrying member; first lance means coupled with said first support member and projecting laterally from the first member away from the rear of the vehicle for piercing said bale; a second support member rigidly coupled with said first member and projecting laterally from the first member in generally the same direction as said first lance means to extend over and along the longitudinal dimension of said bale; second lance means coupled with said second member and movable from a retracted position and a position generally parallel to and opposing said first lance means for piercing said bale, said retracted position being at least 90° removed from said bale piercing position; biasing means for urging said second lance means into said retracted position; and power means for moving said second lance means against the action of said biasing means and into said bale piercing position after said first lance means has been driven into the bale by movement of the vehicle in the direction of the bale, said power means also being adapted to pivot said first member about its axis from said first position to said second position whereby to move said bale onto said vehicle.

3,897,881

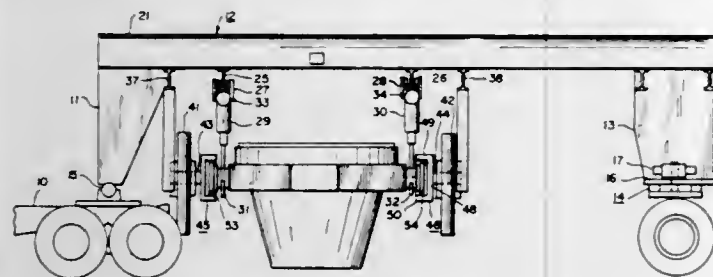
SIDE-DUMPING SLAG POT CARRIER

Gibson E. Brock, R.D. 5, Persimmon Rd., Sewickley, Pa. 15143

Filed May 1, 1974, Ser. No. 465,864

Int. Cl. B65g 65/04

U.S. Cl. 214-317



1. In an over-the-road vehicle comprising a powered tractor unit, a powered trailing-end unit having one axle only, and an elongated load-carrying bridge supported at its front and rear ends by the tractor unit and trailing end unit respectively, the improvement comprising means for picking up and dumping a slag pot or the like provided with trunnions comprising a pair of hook means suspended from the bridge and spaced from each other longitudinally thereof, coupling means affixed to the bridge in a vertically and horizontally fixed position relative thereto and adapted to make connection with the slag pot trunnions while it is suspended above ground in the hook means, means for raising and lowering the hook means relative to the coupling means, and means for rotating the coupling means so as to tip the slag pot about its trunnions in the hook means, whereby the trunnions are elevated to a position in which said coupling means are coupled to said trunnions prior to the dumping of said slag pot.

3,897,882

ROLL-OFF CONTAINER

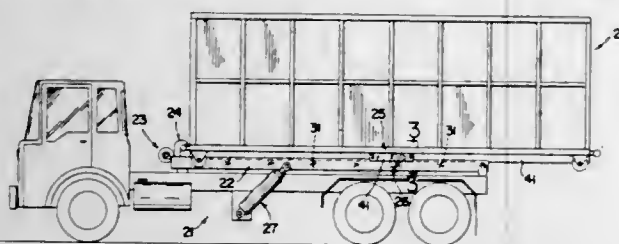
Hyman Budoff, Akron, Ohio, assignor to Hybud Equipment Corporation, Akron, Ohio

Filed Apr. 16, 1974, Ser. No. 461,362

Int. Cl. B60P 1/64

U.S. Cl. 214-517

2 Claims



1. A roll-off container for use with a truck chassis having a rearwardly directed frame with means of hoisting and positioning said container thereon, by engaging either end of said container, the forward end of said frame having a container positioning means for overlying engagement of either end of said container, said frame having intermediate the ends thereof an upwardly projecting and rearwardly directed container engaging member, the underside of said container carrying thereon a frame engaging means, characterized in that, said frame engaging means on said container is an assembly having a connector element positioned for captivation by said container engaging member on said frame, said connector element being transversely directed and having attached to each end thereof a carrier block which is slidably moveable relative to said container and confined within a channel beam attached to and extending longitudinally along the underside of said container, said assembly further having forward and rearward stop elements positioned within said channel beam to establish the maximum extent of the relative movement of said connector element.

3,897,883

SUSPENSION DEVICE FOR ELECTRICAL EQUIPMENT

Rolf V. Cederström, Skyllbergsgatan 5, 124 45 Bandhagen, Sweden

Filed Mar. 11, 1974, Ser. No. 450,104

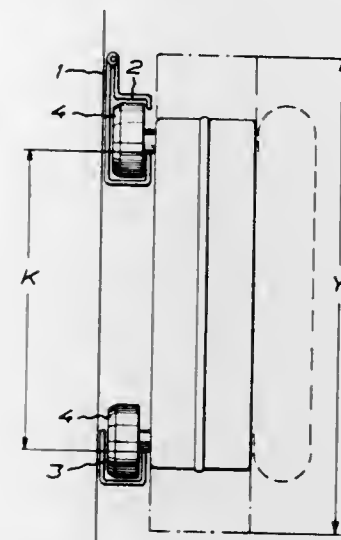
Claims priority, application Sweden, Mar. 15, 1973, 7303593

7 Claims

Int. Cl. B65d 25/24

U.S. Cl. 220-18

10 Claims



1. A device for detachable and lockable suspension of equipment, wherein the device comprises at least one attachment adapted to be secured to a wall or like support and, also, at least one fixing element cooperating with said attachment and arranged on the object to be suspended, said attachment includes an upwardly open recess into which a downwardly extending part of the fixing element placed on the outside of said object is adapted to be inserted and at least one such attachment is provided with a flap-like movable element which, in one position, permits insertion and removal of fixing elements respectively in and from the recess of the attachment but, in another position, locks the fixing elements inserted in said recess.

3,897,884

DRUM CLOSURE

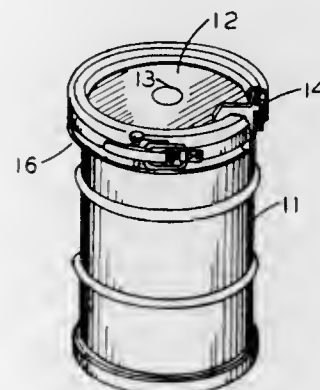
Richard F. Lankenau, 1207 Bonita Ave., Mt. View, Calif. 94040

Filed May 15, 1973, Ser. No. 360,457

Int. Cl. B65D 45/32, 45/34

U.S. Cl. 220-320

3 Claims



1. An improved closing ring assembly for open top drums in which the top seam around the perimeter of the drum is cut from the outside of said drum about halfway down the seam allowing a substantial portion of said seam to remain both on the drums side and on its cover, allowing the entire top of the drum to be removed in one piece, comprising a closing split ring provided to clamp the cover on the drum, said ring being formed in a channel section with the top flange being longer to fit over the top chime on the cover and the lower flange being smaller to fit against the drum under the portion of the seam remaining on the drum, a closing device for the ring, the

upper flange being tapered downward at its outer perimeter to provide a downward clamping effect as the ring is drawn tight around the drum and cover by the closing device, a space provided in the channel section of the closing ring, a gasket located in the space which is pulled into the cut in the top seam of the drum from the side and makes an air tight seal as the split ring is closed by the closing device.

3,897,885

CASSETTE STORAGE UNIT WITH SLIDING COVER

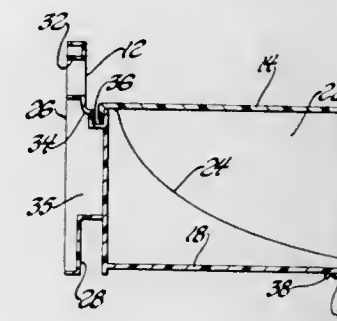
James E. Joyce, 878 Darien Cir., Rochester, Mich. 48063

Filed Nov. 30, 1972, Ser. No. 310,743

Int. Cl. B65d 43/12, 1/24

U.S. Cl. 220-345

7 Claims



1. A container and slide cover combination comprising: a container having a back wall, a floor, and a pair of spaced side panels, said container having an open top and front, a cover mounted on said container and slidable laterally relative thereto to provide access to the container and any contents thereof, said cover comprising a top plane portion for covering the top of said container and a front plane portion for covering the front of said container, said top plane portion having a lip extending over and around said back wall to prevent forward displacement of said cover relative to said container, said front having a second lip extending over and externally around said floor to be flush with the bottom thereof to prevent upward displacement of said cover relative to said container whereby when said container is open the contents may be removed by displacement substantially flush with said floor and forwardly of said container, said lips providing the exclusive sliding support for said cover relative to said container, said cover being free from interior projections and appendages so as to afford free lateral sliding displacement relative to the container without mechanical interference therewith, said container further comprising stiffener ribs formed integrally with said back wall and externally of said container, and a laterally extending step formed integrally with and along the top of said back wall to define a laterally extending guide groove for the end portion of said top plane portion of said cover.

3,897,886

DELIVERY MECHANISM FOR PACKAGING MACHINE

Kenneth Winston Franklin, 4 Tennyson Rd., Stratford-upon-Avon, England

Filed June 14, 1974, Ser. No. 479,436

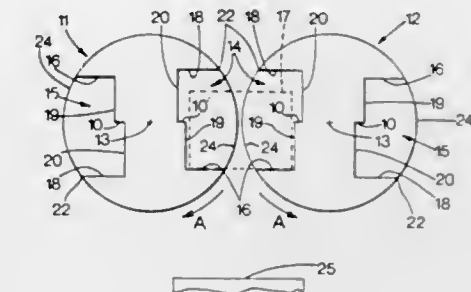
Int. Cl. B65h 3/00

U.S. Cl. 221-222

9 Claims

1. A delivery mechanism, for articles such as packets, including two elongate delivery members which are rotatable about parallel axes contained in a generally horizontal plane and are drivable in unison in opposite senses, a channel defined by each delivery member, each said channel extending from one end of the delivery member parallel with the axis of rotation of the delivery member, article feed means positioned adjacent said one ends of the delivery members for feeding an article into said channels from said one ends axially of said delivery members, a support surface and a stripping surface defined by each said channel, the channels being positioned so

that whenever the delivery members are at a loading station the support surfaces will lie below the said generally horizontal plane for jointly supporting the article fed into said channels, rotation of said delivery members from the loading station causing the support surfaces to release the article for downward delivery, said stripping surfaces being positioned for engagement with the article at or after the point of release



of the article by the support surfaces, a base surface defined by each said channel which interconnects the corresponding support and stripping surfaces and which will extend each side of the said generally horizontal plane whenever the delivery members are at the loading station, each base surface being shaped so that it will not engage the article before the article is released by the support surfaces.

3,897,887

REMOTELY CONTROLLING AND METERING LIQUID DISPENSATION

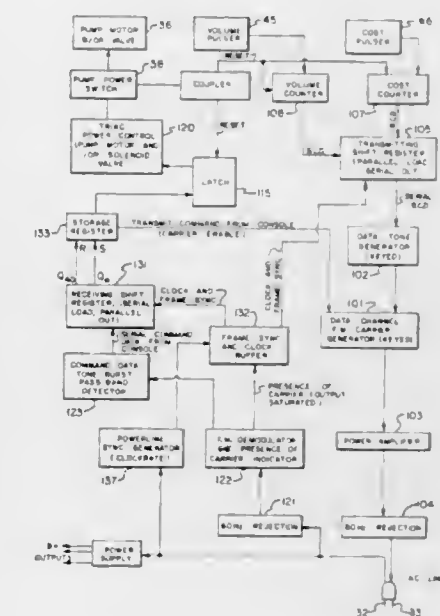
Michael Goldberg, Worcester, Mass., assignor to Banyon Research Corporation, Worcester, Mass.

Filed Sept. 4, 1973, Ser. No. 394,066

Int. Cl. B67D 5/26

U.S. Cl. 222-26

6 Claims



1. Apparatus for controlling and metering product dispensation comprising, means defining a central console unit at a central location for transmitting to and receiving from a plurality of remote stations at a corresponding plurality of remote locations, means defining a remote station at each remote location, dispensing means having an electric motor energized with electrical energy received over conventional electrical

power lines at each of said remote locations having computer means for indicating the amount of material dispensed, said power lines also intercoupling said central and remote stations, a single central location transceiver at said central location and a remote location transceiver at each of said remote locations respectively intercoupled by said power lines, means for converting information provided by said computer means into representative digital data signals characteristic of the amount of material dispensed during the time interval beginning with restoration of said computer means to a predetermined initial condition, means for storing said representative digital data signals at each of said remote locations as the product is being dispensed, means including said transceivers and said power lines for transmitting control signals from said central location to each of said remote locations for enabling and disabling said dispensing means and for initiating reset of said computer means to said predetermined initial condition and the latter means for storing to a corresponding initial condition, means including said transceivers for interrogating each of the remote location storage means and transmitting the stored digital data therein from each of said remote locations to said central location, means at said central location responsive to the transmitted digital data signals for providing a visual display of the amount dispensed at each remote location represented by said transmitted digital data signals, and means for synchronizing the transmission of said digital data signals with the electrical energy of powerline frequency carried by said power lines, said transceivers including sources of radio frequency carriers and means for modulating said carriers with said control signals and said digital data signals for providing modulated carrier signals transmitted over said power lines by transmitter portions of said transceivers and demodulated by receiver portions of said transceivers.

3,897,888

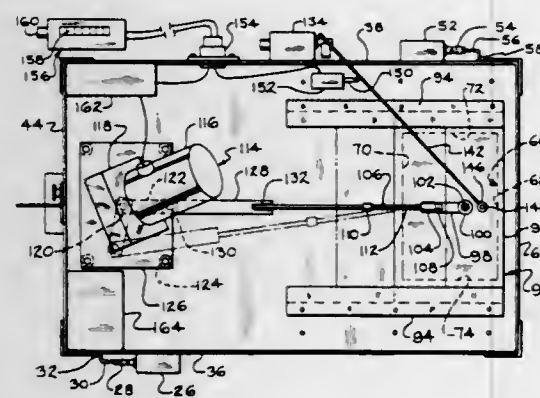
METERING APPARATUS FOR PARTICULATE MATERIAL

Theodore H. Grau, Sioux Rapids, Iowa, assignor to Toledo Stamping & Manufacturing Co., Toledo, Ohio
Filed Mar. 11, 1974, Ser. No. 449,902

Int. Cl. B67d 5/22

U.S. Cl. 222-38

13 Claims



1. Metering apparatus for feeding a quantity of particulate material from a source of supply to another location, said apparatus comprising a bin, a first plate, a first rod pivotally supporting said plate in said bin, a first switch outside said bin and mounted on said apparatus in communication with said first rod for said plate, an electrical outlet box mounted on said apparatus and connected to said switch, means for connecting a power supply to said outlet box and said switch for supplying power to said outlet box when said switch is closed

and said plate is in a first position with the power to said outlet being off when said switch is open and said plate is in a second position, a second plate, a second rod pivotally supporting said second plate in said bin and spaced from said first plate, a second switch outside said bin and mounted on said apparatus in communication with said second rod, said second switch being closed when said second plate is in a first position, and said second switch being open when said second plate is in a second position, said bin having an opening in a bottom portion thereof, a gate mounted for reciprocation across said opening, a gate motor for reciprocating said gate, means connecting a second power supply to said motor and to said second switch, said motor being on when said second switch is closed, and said motor being off when said second switch is open.

3,897,889

APPARATUS FOR METERING, BLENDING AND CONVEYING

Erich August Hindermann, Am Fischerbreuel 17, D-4034 Angermund, Germany

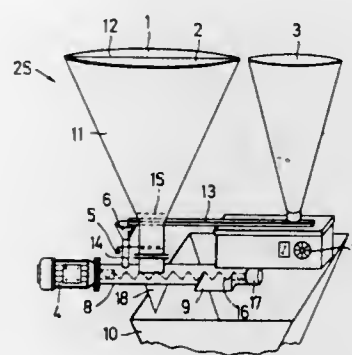
Filed Mar. 28, 1974, Ser. No. 455,857

Claims priority, application Germany, Apr. 3, 1973, 2316558; Oct. 4, 1973, 2349826

Int. Cl. B67D 5/60

U.S. Cl. 222-132

5 Claims



1. Apparatus for metering, blending and conveying bulk material consisting of two or more flowable constituents, said apparatus comprising:

- a first funnel-shaped container for receiving individual constituents, said first container having a vertical partition, an opening near its lower end and an outlet fitted with individually adjustable sliding gates for controlling discharge of the individual constituents;
- a screw conveyor comprising a housing in the form of a generally horizontally extending rigid tube into which the outlet from said container discharges, the screw conveyor possessing at its discharge end a radially downwardly oriented discharge opening; and
- a metering device comprising a second funnel-shaped container having a variably driven vibratable chute connected thereto and a gravity tube for conducting material leaving the vibratable chute into the screw conveyor, said chute penetrating said opening in said first container, said housing constituting means for supporting and connecting together all the other parts of the apparatus including said first and second containers and the other parts of said metering device.

3. Apparatus for metering, blending and conveying bulk material consisting of two or more flowable constituents, said apparatus comprising:

- a first funnel-shaped container for receiving individual constituents, said first container having an outlet fitted with individually adjustable sliding gates for controlling discharge of the individual constituents;
- a screw conveyor comprising a housing in the form of a generally horizontally extending rigid tube into which the outlet from said container discharges, the screw conveyor

possessing at its discharge end a radially downwardly oriented discharge opening; and a metering device comprising a second funnel-shaped container having a variably driven vibratable chute connected thereto and a gravity tube for conducting material leaving the vibratable chute into the screw conveyor and also comprising a metering pump for discharging liquid to said screw conveyor; said metering device and said metering pump being mounted together upon a pivotal plate to be swung as desired into their appropriate operative positions to bring them optionally into use; said housing constituting means for supporting and connecting together all the other parts of the apparatus including said first and second containers and said metering device.

3,897,890

AUTOMATIC DISPENSER

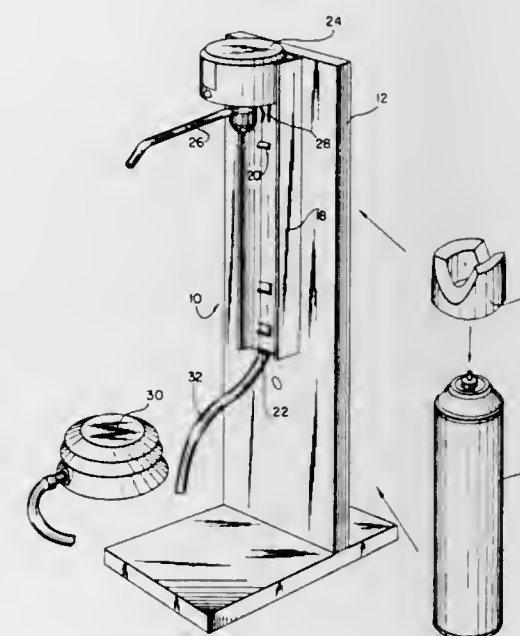
Richard Charles Jente, Ladue, Mo., assignor to W. R. Grace & Co., New York, N.Y.

Filed Jan. 10, 1974, Ser. No. 432,774

Int. Cl. B67D 5/06

U.S. Cl. 222-179

2 Claims



1. A dispenser which comprises in combination, a foot-operated pneumatic pump, an expandable diaphragm, tubing connecting in fluid communication the foot-operated pneumatic pump and the expandable diaphragm, a housing containing the expandable diaphragm, a dispensing nozzle engaging plate having a cup-shaped upper configuration containing said diaphragm within the housing and movably disposed relative to said diaphragm, said housing having support notched sections near a lower portion thereof, a wire spring engaging said notched sections and disposed to retain the dispensing nozzle engaging plate within the housing, said plate disposed in contact with an aerosol valve stem engaging member having a passage to receive and dispense material exiting the aerosol valve stem, an aerosol container having an exit valve stem, said aerosol container removably secured to a support surface, the aerosol container being retained to said support surface by a spring biased, vertically disposed clamp having means engaging an upper rim and a lower rim portion of the aerosol container, whereby contents of the aerosol container are released by depressing the foot-operated pneumatic pump and causing the diaphragm to downwardly depress the valve stem by means of the dispensing nozzle engaging plate and the aerosol valve stem engaging member.

3,897,891

POLYESTER INJECTION ASSEMBLY

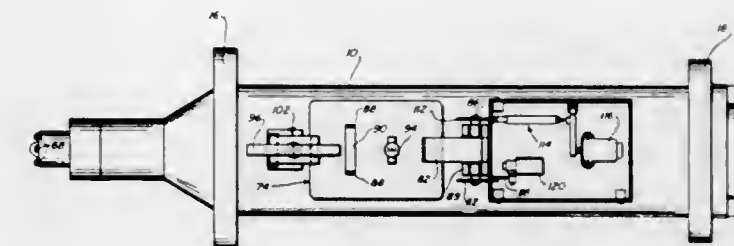
Volker R. Grundmann, Glastonbury, and Douglas C. Glazier, Sr., Windsor Locks, both of Conn., assignors to Litton Industrial Products, Inc., Berlin, Conn.

Filed Aug. 6, 1973, Ser. No. 385,730

Int. Cl. B29f 1/06

U.S. Cl. 222-263

7 Claims



1. Apparatus for injecting plastic into an associated mold through a nozzle comprising a stuffing cylinder, an injection cylinder relatively smaller than and coaxially joined at one end to said stuffing cylinder and to said nozzle at its other end, a piston mounted within said stuffing cylinder for movement toward and away from said injection cylinder, an injection plunger extending coaxially through said piston for movement toward and into and away from and out of said injection cylinder to inject plastic through said nozzle, means for introducing plastic into said stuffing cylinder while said piston is positioned away from said injection cylinder and while said plunger is positioned within said injection cylinder, hydraulic means for operating said piston and injection plunger, and cyclically operable control means operable on said hydraulic means for operating in sequence, a. said piston toward said injection cylinder to compress said plastic in said stuffing cylinder, b. retracting said injection plunger from said injection cylinder to allow said plastic to be forced into said injection cylinder by said moving piston, and c. advancing said injection plunger into said injection cylinder to inject plastic therein through said nozzle into said mold.

3,897,892

CUSTOM FORMED WIG BLOCK

James L. Waters, Rt. 8, Box 296, Greensboro, N.C. 27406

Filed Mar. 11, 1974, Ser. No. 449,745

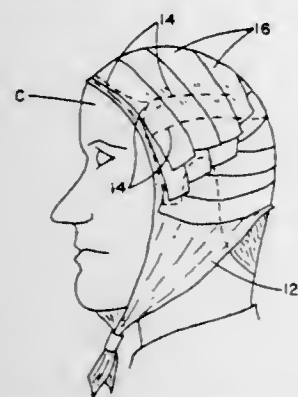
Int. Cl. A45d 44/14; D06c 15/00

U.S. Cl. 223-66

2 Claims

1. A custom molded wig block useful for the manufacture and storage of a hairpiece, said block being formed of a lightweight, rigid, molded, polymeric foam material having a density range of 2½ to 10 pounds per cubic feet and hardness of 10-75 on the Shore A scale, the surface of said block lying

immediately beneath said hairpiece, when in place thereon, including a pattern of undulations and creases which conform



exactly to the configuration of the corresponding area of a prescribed customer's head.

3,897,893

GARMENT HANGER

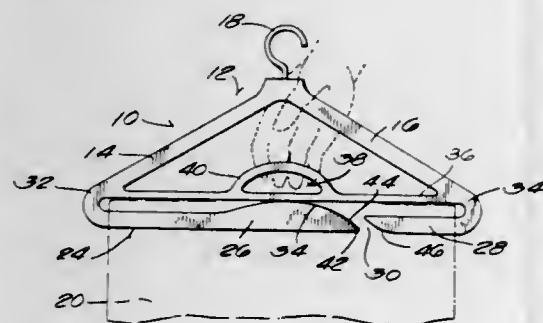
Henry M. Lemmenes, 616 Cochrane St., Waupun, Wis. 53963

Filed June 10, 1974, Ser. No. 477,966

Int. Cl.² A47J 51/14

U.S. Cl. 223-91

12 Claims



1. A garment hanger comprising
 - a main support including a pair of downwardly and outwardly diverging arms, each having a lower end portion; an elongated, stationary support bar extending generally horizontally from the lower end portion of one of said arms and having an upper surface over which a pair of trousers or the like can be foldably suspended and which includes a central located, upwardly convex section having an uppermost surface;
 - a slot associated with said support bar for providing an entrance passage through which the folded trousers or the like can be slipped edgewise onto said support bar; and
 - a resilient, generally horizontally extending clamping member located above said support bar and having at least one end fixedly and integrally connected to the lower end portion of one of said arms, the resilient character of said clamping member permitting a central portion thereof to be moved vertically relative to said support bar to a raised position where said clamping member is spaced from said convex section to permit the folded trousers or the like to be slipped over said support bar without interference and to return to a normal position where said clamping member central portion clamps the trousers or the like against the uppermost surface said convex section.

3,897,894

PACK FRAME TOP BRACKET

John S. Lawrence, Ogden, Utah, assignor to Browning Arms Company, Morgan, Utah

Filed Jan. 14, 1974, Ser. No. 433,300

Int. Cl. A45f 3/10

U.S. Cl. 224-25 A

8 Claims

1. In a backpack frame for hikers having at least two spaced, upright coplaner side supports, the improvement which comprises a top shelf extension formed from:
 - a pair of side extension members of approximately equal length, each of which carries releasable means to connect the lower portion thereof in longitudinally adjustable relationship to the upper portion of either of said side supports thereby selectively extending the effective lengths of said side supports to above the head of a hiker wearing said frame;
 - a pair of coplaner lateral extension members of approximately equal length extending from attachment to and approximately normal to the upper ends of respective said side extension members; and
 - a connection member extending from attachment between the distal ends of said lateral extension members approximately parallel the plane defined by said lateral extension members such that said side extension members, said lateral extension members and said connection member define a top shelf for said frame which may be selectively positioned either to the front of said frame above the head of a hiker wearing such frame or rearwardly of said frame.

3,897,895

SKI CARRIERS

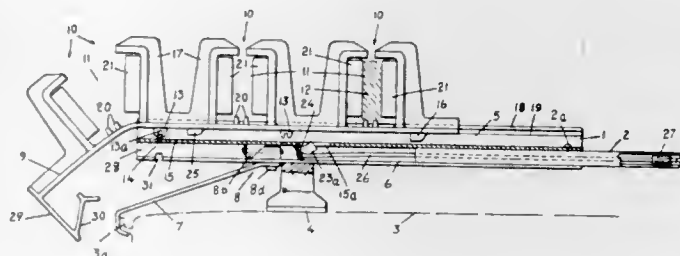
Clifford D. Read, Toronto, Canada, assignor to A. L. & W. Limited, Bramalea, Canada

Filed Mar. 21, 1974, Ser. No. 453,209

Int. Cl. B60r 9/04

U.S. Cl. 224-42.1 B

12 Claims



1. A pair of carriers for mounting on the roof of an automobile each carrier comprising an elongated guideway, an elongated flexible strip having ends, said strips being slidable longitudinally of the guideway, at least one pair of risers fast with and extending upwardly from the strip with a gap between them in which a load can be clasped by the risers, the strip being at least partially slidable longitudinally out of the guideway whereupon the strip can be flexed to widen said gap and allow a load to be removed or inserted between the risers, means for holding the strip substantially fully inserted in the guideway, and means for releasably mounting the guideways of said pair of carriers parallel to each other and transversely of the automobile on the roof.

3,897,896

FRICTION WELDING APPARATUS WITH CHUCK MEANS

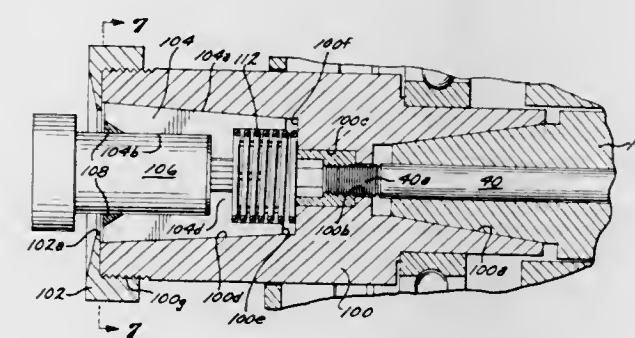
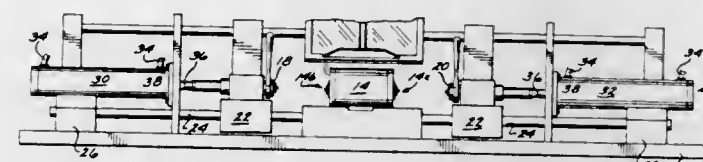
Johan August Louw, Orange, and Robert Earle Ghiselin, Costa Mesa, both of Calif., assignors to Textron Inc., Santa Ana, Calif.

Filed Apr. 4, 1973, Ser. No. 347,974

Int. Cl.² B23K 19/02

U.S. Cl. 228-2

10 Claims



1. Welding apparatus for welding together workpieces by heat generated from engagement of relatively moving workpieces comprising in combination, first and second relatively moveable workpiece holders one of which is adapted to rotate a workpiece and the other of which is adapted to retain a workpiece against rotation, means for moving said workpiece holders relative to each other to effect engagement of said workpieces, chuck means for one of said workpieces fixed to the respective workpiece holder for movement therewith and comprising a member formed with a tapered opening, and means on said one workpiece comprising a taper formed substantially complementally of said tapered opening, said taper means on said one workpiece engaging said tapered opening to thereby provide the only means for retaining said workpiece non-rotatable relative to its holder throughout engagement of said workpieces.

3,897,897

METHOD AND APPARATUS FOR PRODUCING AN ASSEMBLY BY FRICTION WELDING

Ronald L. Satzler, Metamora, and Marion R. Calton, East Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 344,979, March 26, 1973, Pat. No. 3,831,459, which is a division of Ser. No. 148,780, June 1, 1971, Pat. No. 3,750,263. This application July 15, 1974, Ser. No. 488,704

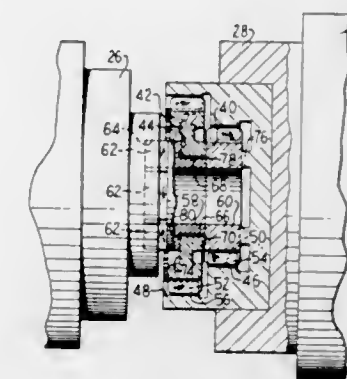
Int. Cl. B23k 27/00

U.S. Cl. 228-2

1 Claim

1. A friction welding machine for welding cluster gears and comprising, a first fixture having a plurality of axially spaced gear retaining rings and an axial thrust back-up surface, each of said retaining rings having inwardly projecting elements adapted to engage the outwardly projecting teeth of a cluster gear, a second fixture having a recessed, non-circular opening shaped to provide both rotational driving torque and axial thrust to a complementary shaped end of a gear connecting member, and means for applying relative axial and rotary movements between said fixtures to accommodate a friction welding engagement between the gears and the connecting

element, whereby the gears can be held in the first fixture in predetermined angular alignment and can be welded together



by the gear connecting element without any clamping action in the fixtures.

3,897,898

APPARATUS FOR ENGAGING A FLANGE

Kiyoshi Hirose; Kaoru Shiozawa, both of Ichihara, and Yuzi Saito, Yokosuka, all of Japan, assignors to Mitsui Shipbuilding and Engineering Co., Ltd., Tokyo, Japan

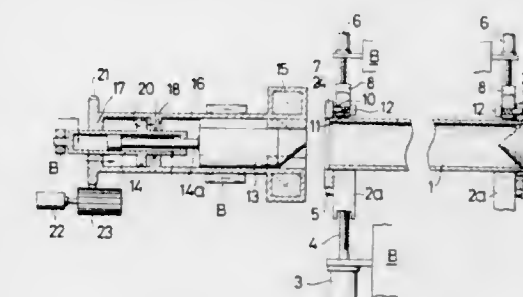
Filed May 24, 1973, Ser. No. 363,499

Claims priority, application Japan, June 1, 1972, 47-54887

Int. Cl. B23k 9/12

U.S. Cl. 228-49

2 Claims



1. Apparatus for positioning a centrally-apertured flange on the exterior of one end of a pipe, comprising:
 - radially adjustable jaw means for receiving, gripping and releasing said pipe;
 - flange-supporting means secured to and extending from said jaw means to permit said flange to rest on said flange-supporting means in a position adjacent and beyond said one end of said pipe with at least a portion of the central aperture of said flange aligned with the position of the axis of said pipe when said pipe is gripped in said jaw means;
 - motor means for radially adjusting said jaw means to grip or release said pipe as desired, and to support said flange in said position when so desired;
 - center means having an end tapering from a diameter smaller than that of the inside of said pipe to a diameter larger than that of said central aperture in said flange;
 - means mounting said center means for reciprocation along the axis of said pipe when said pipe is gripped in said jaws; and
 - controllably actuatable motive means for moving said end of said center means along said axis of said pipe from a retracted position entirely outside of said pipe and flange to an advanced position within said flange and pipe thereby to move said flange into position of said end of said pipe.

3,897,899

PLASTIC FOAM CUP AND METHOD FOR PRODUCING IT

Richard W. Schuff; Roy E. Moore; John A. Noel, all of Phoenix, and Arthur Fibish, Tempe, all of Ariz., assignors to Dart Industries, Inc., Los Angeles, Calif.

Division of Ser. No. 730,360, May 20, 1968, abandoned. This application Apr. 8, 1970, Ser. No. 31,037

Int. Cl.² B29D 27/00

U.S. Cl. 229—1.5 B

5 Claims



1. A method for producing plastic foam cups, consisting in: selecting a mass of foamable plastic beads with a foaming agent therein, and of a size such that 75 percent to 85 percent of said mass includes beads of approximately 40 mesh per inch size, and 15 percent to 20 percent of said mass includes beads of approximately 45 mesh per inch size; then subjecting said mass of beads to sufficient heat to partially expand them to a size ranging from 14 to 30 mesh per inch size and a density ranging between 68 and 80 grams per liter; then introducing a quantity of said partially expanded beads into a cavity of a mold, wherein the walls thereof are spaced apart a distance ranging between 0.065 inches and 0.085 inches, then heating said mold to cause expanding of said partially expanded beads in said cavity; and subjecting said expanding beads in said cavity to steam to substantially finish the expansion of said beads to a density ranging between 55 and 65 grams per liter; then shutting off said steam and cooling said mold; and then removing a plastic cup from said mold.

3,897,900

OPENING ARRANGEMENT FOR DRUMHEAD CARTONS

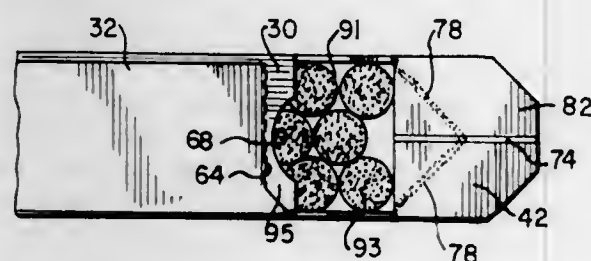
Dennis M. Gorski, Allendale, and George Vrana, Ridgewood, both of N.J., assignors to Rexham Corporation, New York, N.Y.

Filed Aug. 6, 1973, Ser. No. 386,159

Int. Cl. B65d 5/54

U.S. Cl. 229—17 R

2 Claims



1. A one-piece sheet material blank for an end-fillable carton adapted to be end sealed with a sealing membrane comprising: first end wall, first side wall, second end wall, second side wall and glue flap panels; parallel vertical score lines consecutively articulating said panels; dust flaps at each

end of said first and second end walls; first and second horizontal fold lines articulating said dust flaps to said first and second end walls; major flaps articulated at each end of said first and second side walls along said first and second horizontal fold lines; said first dust flap at the top of said second end wall having at least one substantially vertical score line extending therethrough adjacent the central region thereof; the edge of said first top dust flap opposite said first horizontal score line having opposed beveled corners forming an opening tab thereon; the ends of said major flaps adjacent said first top dust flap having cutout portions; the end wall to which said first top dust flap is articulated having a plurality of substantially interconnected score lines adjacent said first horizontal fold line; a separate first breakaway panel formed in said first major top flap at the end thereof adjacent said first top dust flap; said first breakaway panel being defined by a cut having a straight portion and a semi-circular portion, an L-shaped discontinuous cut and said cutout portion of said first major flap; and a second breakaway panel formed in said second major top flap at the end thereof adjacent said first top dust flap; said second breakaway panel being defined by a substantially L-shaped discontinuous cut and said cutout portion of said major flap.

3,897,901

ROTARY DEPOSITORY CONSTRUCTION

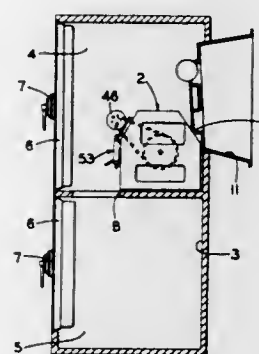
Leo J. Grosswiller, Jr., and Paul A. Leipelt, both of Canton, Ohio, assignors to Diebold, Incorporated, Canton, Ohio

Filed June 10, 1974, Ser. No. 477,769

Int. Cl.² B65G 11/04

U.S. Cl. 232—44

5 Claims



1. In rotary depository construction, a housing having front and side wall means open at the rear, deposit slot means formed in the front wall means; rotor means journaled in the housing having a drum; drum top, bottom and side walls forming an elongated center security deposit-receiving passageway in the drum generally rectangular in cross section and being open at one end and having a second end; pusher means mounted in the passageway normally located at said second end and movable between said second and open passageway ends; the drum being provided with cover means extending from the open to the second passageway end; the drum normally being located at a "home" position and being rotatable in one direction to a "deposit" position, and also being rotatable in the other direction from the "deposit" position past the "home" position to an "eject" position, and also being rotatable from said "eject" position in said one direction back to said "home" position; motor means for rotating the drum rotor selectively between said "home", "deposit" and "eject" positions; the drum cover means closing the deposit slot at all times when the drum is out of "deposit" position, the open passageway end being aligned with the deposit slot when the drum is in "deposit" position to receive deposited material through the deposit slot and open end; complementary tongue and groove means formed in the pusher means and passageway top and bottom walls extending longitudinally of the passageway; photocell means mounted on the drum projecting a light beam across the passageway operative to sense the receipt of deposited material in the passageway adjacent to

the pusher means; said motor means including drum rotor drive means and means for energizing the drum motor drive means when the drum is in "home" position to rotate the drum in said one direction from "home" to "deposit" position; interruption of the photocell means light beam upon arrival of deposited material in the passageway adjacent the pusher means when the drum is in "deposit" position activating the drum motor drive means to rotate the drum in the other direction from "deposit" to "eject" position; pusher means drive means mounted on the drum for moving the pusher means between said second and open passageway ends; said motor means also including limit switch means and limit switch actuators on the housing and drum operatively connected with the drum motor drive means; and said limit switch means being actuated on arrival of the drum at "eject" position to stop the drum motor drive means and to start the pusher means drive means to move the pusher means from said second to said open passageway end to eject deposited material from the open end of said passageway at said "eject" position.

3,897,902

PHASE SEPARATING TUBE

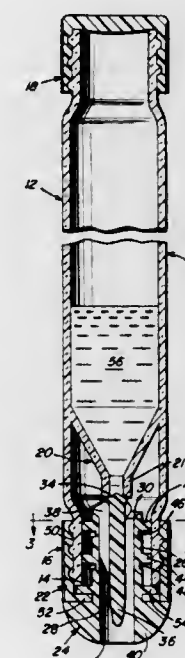
Mario Yanez, Jr., Miami, Fla., assignor to Sindco Corporation, Coral Gables, Fla.

Filed Feb. 1, 1974, Ser. No. 438,800

Int. Cl.² B04B 9/12

U.S. Cl. 233—26

8 Claims



1. A phase-separating tube, comprising, in combination:
 - a. a hollow member provided with an opening and arranged for holding a predetermined quantity of a liquid;
 - b. a plug arranged selectively covering the opening; and
 - c. means for selectively dispensing liquid from the hollow member at variable rates of flow, the hollow member being provided with a cone mounted within the hollow member and arranged converging toward the opening thereof, the plug having an outer rigid part and a flexible inner part, the inner part forming the means for dispensing, and including:
 - i. a hollow cylindrical portion having an internal wall defining a flow path from an end of the cylindrical portion adjacent the cone through the cylindrical portion and to an end thereof forming an outlet of the plug;
 - ii. a conical portion connected to the cylindrical portion at the end thereof adjacent the cone and arranged for sealing engagement with an outlet of the cone; and
 - iii. a rod connected to the conical portion and arranged extending coaxially through the cylindrical portion toward the outlet forming end thereof, whereby the rod

forces the flow of liquid along its surface, preventing any liquid flow on the internal wall of the hollow cylindrical portion and the wetting of the outer rim of the outlet where potentially hazardous liquids may otherwise come in contact with the hands of the operator or any other surface.

3,897,903

THERMALLY REGULATED CENTRAL HEATING SYSTEM

Bernard Claude Race, Pont-A-Mousson, France, assignor to Pont-A-Mousson S.A., Pont-A-Mousson, France

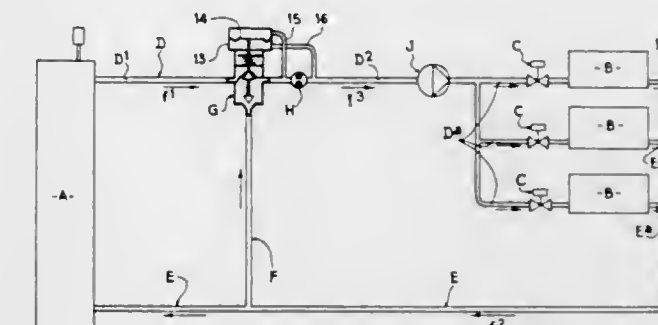
Filed Nov. 29, 1973, Ser. No. 420,349

Claims priority, application France, Dec. 20, 1972, 72.45401

Int. Cl. F24d 3/02

U.S. Cl. 237—8 R

22 Claims



1. A thermally regulated central heating system comprising a hot fluid generator, radiators, a hot fluid supply pipe connecting the generator to the radiators, a cooled fluid return pipe connecting the radiators to the generator, a three-way mixer valve inserted in the hot fluid supply pipe, a cooled fluid recycling pipe connecting the return pipe to the mixer valve, the mixer valve having means defining a first inlet way, a second inlet way, and an outlet way, means defining a valve aperture associated with said first inlet way and a valve aperture associated with said second inlet way, and valve closure means co-operative with said valve apertures for varying the flow of fluid through the first inlet way valve aperture and the second inlet way valve aperture, control means for controlling the closure means of the mixer valve and responsive to a differential pressure which is a function of the mixed fluid supply flow to the radiators, the mixture valve dividing the supply pipe into a hot fluid supply pipe section connected to said first inlet way and a mixed fluid supply pipe section connected to said outlet way, said mixed fluid supply pipe section and a part of said return pipe upstream of the connection of said recycling pipe to said return pipe forming part of a pipe circuit in which a fluid circulating pump is inserted, restriction means in said mixed fluid pipe section, two pressure take-off pipes connecting said control means to points of said mixed fluid supply pipe section located respectively upstream and downstream of said restriction means, and thermostically controlled flow regulating means inserted in said mixed fluid supply pipe section.

3,897,904

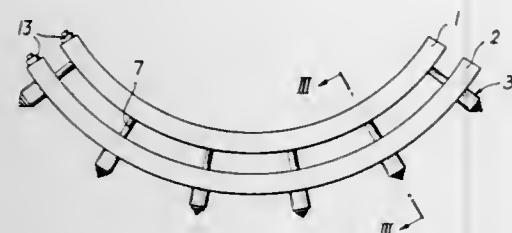
APPARATUS FOR PRODUCING ARTIFICIAL SNOW
Karl Kiegerl, Deutschlandsberg, Austria, assignor to Hans Krapinger, Stmk., Austria

Filed Feb. 21, 1974, Ser. No. 444,388

Int. Cl. A01g 15/00; E01h 13/00

U.S. Cl. 239—14

4 Claims



1. An apparatus for producing artificial snow, which comprises

mixing chamber means defining at least one mixing chamber adapted to be filled with water, said mixing chamber means comprising a wall,

a discharge nozzle connected to said mixing chamber, an air inlet pipe having an outlet opening in said mixing chamber, and

a water supply pipe directly connected to said wall and having a water outlet opening through which said water supply pipe communicates with said mixing chamber, said water outlet opening being smaller in area and in diameter than the cross-section of said mixing chamber and smaller in diameter than the internal diameter of said water supply pipe so that said water supply pipe is formed with a turbulence-producing edge defining said water outlet opening.

3,897,905

ELECTROSTATIC SPRAYING NOZZLE

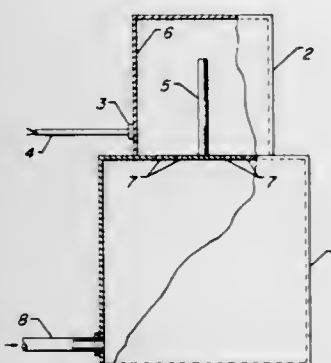
Thomas D. Tadewald, La Crosse, Wis., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Oct. 19, 1973, Ser. No. 408,140

Int. Cl. B05b 5/00; F23d 11/28

U.S. Cl. 239—15

11 Claims



1. An electrostatic spraying nozzle, at least a portion of an inner surface thereof consisting of a polymeric material containing a pyropolymeric semi-conducting organic refractory oxide material, and means for applying an electric potential to said polymeric material containing a pyropolymeric semi-conducting organic refractory oxide material whereby an electrical charge is imparted to the material being discharged through said nozzle.

3,897,906

COOLING DEVICE FOR STRANDS THAT ARE TO BE CAST CONTINUOUSLY

Ernst Bachner, Linz, Austria, assignor to Vereinigte Österreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft, Linz, Austria

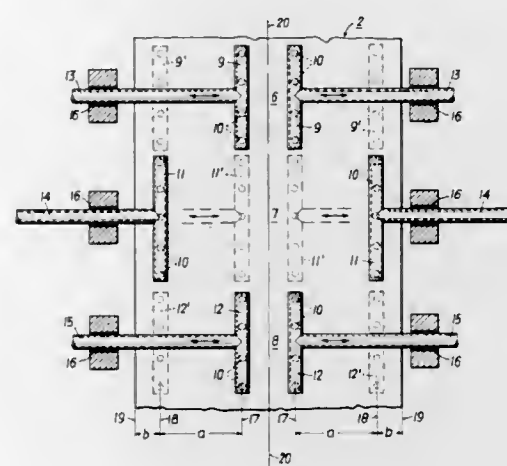
Filed July 17, 1974, Ser. No. 489,358

Claims priority, application Austria, July 27, 1973, 6612/73

Int. Cl. B05b 3/18; B22d 11/12

U.S. Cl. 239—187

5 Claims



1. In a cooling device for strands that are to be cast continuously, in particular for flat steel slabs of different widths, said strands having edges and a pair of parallel flat surfaces, said cooling device comprising a plurality of spray nozzles distributed over the width and along a given length of the strand, the spray nozzles being connected to pipe conduits for supplying them with a coolant, the improvement in which the spray nozzles are movable along horizontal straight line paths within a displacement range less than the width of said strand, said paths being transverse to the strand surface.

3,897,907

EXHAUST NOZZLE STRUCTURE

Rowan Herbert Colley, Sunnyhill, England, assignor to Rolls-Royce (1971) Limited, London, England

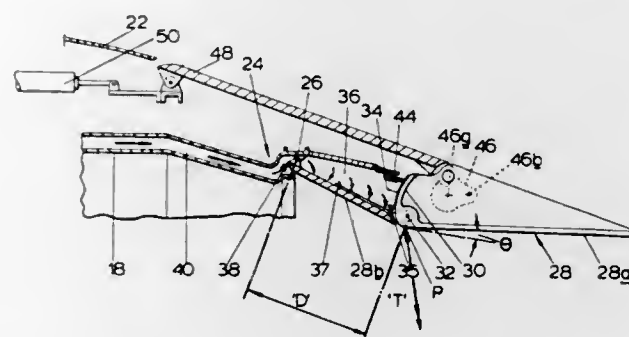
Filed Apr. 25, 1974, Ser. No. 464,236

Claims priority, application United Kingdom, May 2, 1973, 20965/73

Int. Cl. B64C 15/00

U.S. Cl. 239—265.39

11 Claims



1. A gas turbine engine jet pipe exhaust nozzle structure comprising:

at least a set of movable throat defining flaps and a jet pipe downstream end portion having an inner surface and a terminal edge, each of said flaps of said set having an upstream portion extending into and pivotally connected at its upstream end to the inner surface of said jet pipe downstream end portion at a position upstream of its terminal edge and a downstream portion extending out of and downstream of said jet pipe downstream end portion; sealing means between said jet pipe downstream end portion at or adjacent its terminal end and each of said

flaps, said upstream portion of said flaps and said jet pipe downstream end portion defining a pocket; and means for supplying a pressurized gas to said pocket which acts on the upstream portion of each of said flaps to counteract radially outward pressure exerted on each of said flaps by normal gas flow through the nozzle structure.

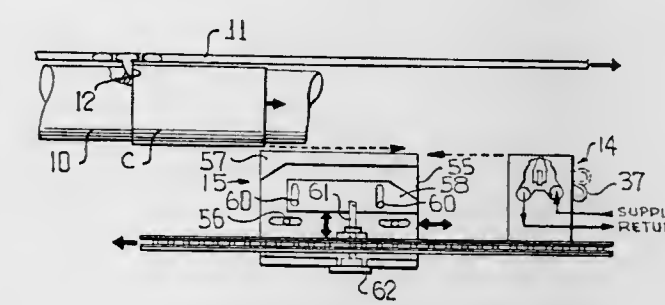
3,897,908

TRAVELING OUTSIDE SIDE-STRIPING SPRAY GUN
Raymond F. Galitz, La Grange Park, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed July 17, 1970, Ser. No. 55,654

Int. Cl. B05b 1/30

U.S. Cl. 239—586



1. A spray gun comprising a housing, a supply passage in said housing, a spray orifice opening directly out of said supply passage, a shaft mounted for rocking movement within said housing, and a valve element mounted on said shaft within said housing for sealing engagement with said housing around said spray orifice, said supply passage including a reservoir within said housing, a wall of said reservoir being arcuately concentric to said shaft, said spray orifice opening through said arcuate wall, and said valve element being in wiping contact with said arcuate wall and sealable therewith around said spray orifice, said valve element being slidably mounted on said shaft for generally radial movement towards and away from said arcuate wall, and means within said reservoir urging said valve element against said arcuate wall.

3,897,909

MILLING APPARATUS

Douglas Morley, Halifax, England, assignor to August's Limited, England

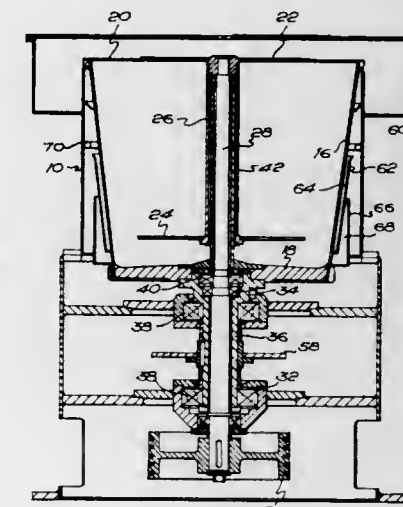
Filed Apr. 1, 1974, Ser. No. 457,113

Claims priority, application United Kingdom, May 19, 1973, 23985/73

Int. Cl. B02C 21/00

U.S. Cl. 241—65

7 Claims



1. A milling machine comprising a bowl having an external cooling jacket into which water may be introduced to cool the bowl, said jacket being defined by a first plate extending

around the bowl so as to provide a first cavity between the bowl and first plate, and a second plate extending around the first plate so as to provide a second cavity between the first and second plates, said first and second cavities being in communication at the lower ends thereof, and the top of the first cavity being open and the top of the second cavity being located so that cooling fluid introduced into the first cavity through the open top thereof flows down the first cavity then up the second cavity and then over and outwardly of the top edge of the second cavity.

3,897,910

SHAKEOUT AND CRUSHING APPARATUS

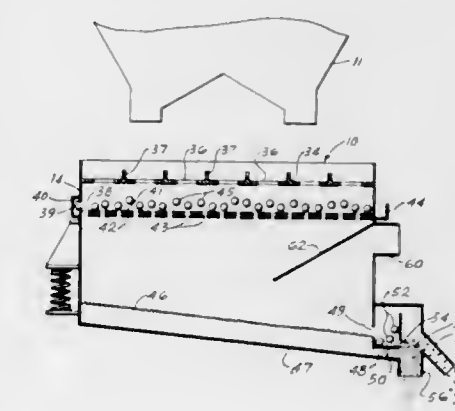
Vagn Deve, East Washington, Pa., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Apr. 5, 1974, Ser. No. 458,371

Int. Cl. B02c 17/02

U.S. Cl. 241—77

6 Claims



1. A shakeout and crushing apparatus for reclamation of friable material comprising a base, a housing mounted on said base, means for imparting orbital vibration to said housing, said housing containing a first upper porous deck, a second porous deck, and a third porous deck the openings in each deck being progressively smaller than the preceding one, the second deck being located beneath the first deck being located beneath the first deck, the third deck being located beneath the second deck, so that material passing through the openings in the first deck fall onto the second deck, and material passing through the second deck fall onto the third deck, a fourth deck positioned beneath and off to one side of the third deck in such a manner that material not passing through the third deck falls onto it, a plurality of crushing balls located above and supported by both the second and fourth decks to aid in the disintegration of the lumps of foundry sand, and discharge means for permitting removal of properly sized sand particles from both the third and fourth decks.

3,897,911

CREEL FOR AUTOMATIC WINDING MACHINE

Alfred L. Morton, Ranko, N.C., assignor to Pharr Yarns, Incorporated, McAdenville, N.C.

Filed June 18, 1974, Ser. No. 480,570

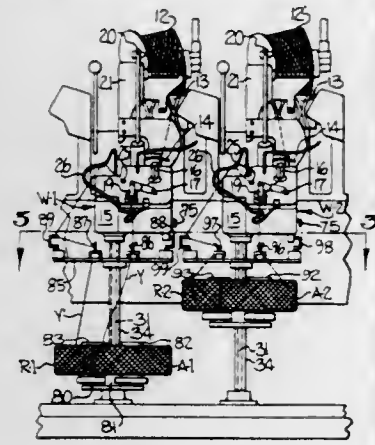
Int. Cl. B65H 54/20

U.S. Cl. 242—35.5 R

2 Claims

1. In an automatic winding machine including a plurality of winding stations equally spaced along at least one side of said machine and means for winding yarn from an active supply package and onto a take-up package at each of said winding stations, means at each station for detecting the exhaustion of yarn on an active supply package, and means for presenting a reserve supply package to active position for winding onto said take-up package upon exhaustion of the active supply package, the combination therewith of an improved creel for supporting large diameter active and reserve supply packages at each of said winding stations, said creel comprising

- a. first rotatable yarn package support means positioned at alternate winding stations and at a predetermined level below said corresponding take-up package and being operable to rotate the reserve package to an active position upon exhaustion of the yarn on the active package,
- b. second rotatable yarn package support means positioned at intervening winding stations and at a level above the level of the upper ends of the active and reserve supply packages supported on said first rotatable yarn package support means at said alternate winding stations



so that rotation of the large diameter supply packages at adjacent winding stations will not interfere with each other, and

- c. a yarn control cross-bar supported on each of said first and second rotatable yarn package support means and being rotatable therewith, said yarn control cross-bars being positioned at the same level at both said alternate and said intervening winding stations and including yarn guiding means carried thereby for directing yarns from said reserve and active supply packages to said winding stations.

3,897,912

DEVICE FOR AUTOMATICALLY WINDING MATERIAL ONTO A CORE ROLL

Yoshiharu Tajima, No. 20-15, Kameari 2-chome, Katsushika-ku, Tokyo, Japan

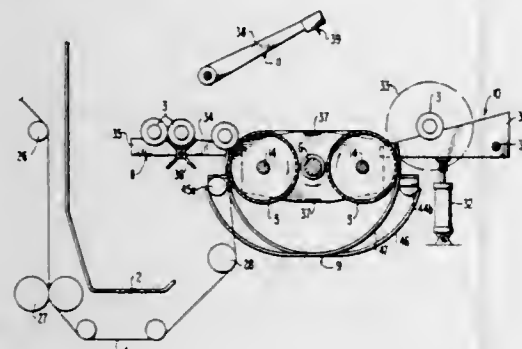
Filed Feb. 19, 1974, Ser. No. 443,575

Claims priority, application Japan, Feb. 16, 1973, 48-18970

Int. Cl. B65h 19/20

U.S. Cl. 242-56 A

10 Claims



1. A device for automatically winding a predetermined amount of an indefinite length web onto a core roll comprising:

- a. means to rotate the core roll to cause a web to be wound on its outer surface,
- b. means to supply an indefinite length web material to said rotating means in contact with said outer surface of said core roll,
- c. core roll supply means to supply one core roll at a time to said core roll rotating means,
- d. core roll take up means to support said core roll after said web has been wound thereon,

- e. transfer means to transfer said core roll from said core roll supply means to said take up means, having a plurality of transfer rollers rotatable about axes perpendicular to the direction of travel of the web, and two arm members rotatably supporting each end of said transfer rollers, said arm members being rotatable about a central axis parallel to the transfer rollers axes,
- f. means to rotate each of the transfer rollers with respect to said arm members,
- g. means to rotate said arm members about the central axis, and
- h. cutting means to cut off a predetermined length of web after a portion has been wound onto said core roll.

3,897,913

LOCKING MECHANISM FOR A VEHICLE RESTRAINT BELT RETRACTOR

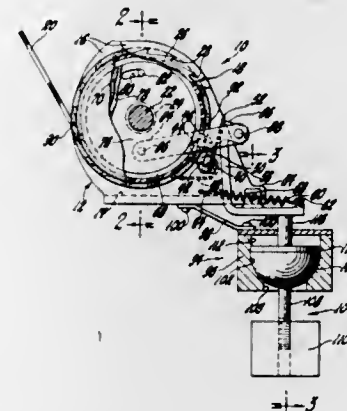
Arlis Hall, Clawson, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 28, 1974, Ser. No. 474,016

Int. Cl. B65h 75/48

U.S. Cl. 242-107.4

3 Claims



1. In a vehicle occupant restraint belt retractor including a housing adapted to be mounted on a vehicle, a belt reel rotatably mounted on the housing for movement in belt winding and unwinding directions and including locking surfaces spaced circumferentially about the axis of reel rotation, a restraint belt secured to the reel so as to be wound and unwound therefrom during the reel rotation, and a winding spring normally biasing the reel in the belt winding direction, a locking mechanism for the retractor comprising:

- a locking member pivotally mounted on the housing for movement between a locking position in engagement with one of the reel locking surfaces to prevent belt unwinding and a nonlocking position out of engagement with the reel to allow belt unwinding;
- an unlocking spring normally biasing the locking member to the nonlocking position with a torque T_1 ;
- a control member mounted on the housing for movement from a first position to a second position so as to engage the locking member and move the same to the locking position;
- a clutch arrangement extending between the belt reel and the control member and frictionally clutched to the reel so that belt unwinding urges the control member toward the second position by an effort that tends to move the locking member to the locking position with a torque T_2 , torque T_2 being less than torque T_1 so that belt unwinding does not normally move the locking member to the locking position and thereby terminate such unwinding, and the clutching of the reel to the control member tending to move the control member from the second position to the first position when the winding spring winds the belt on the reel with the locking member initially in the locking position so that this movement of the control member allows the normal bias of the unlocking spring to move the locking member to the nonlocking position and thereby permits subsequent belt unwinding;

a vehicle acceleration or deceleration responsive inertia arrangement mounted relative to the retractor housing and having a movable portion that engages the control member to move this member to the second position in response to abrupt vehicle acceleration or deceleration of a predetermined level and to thereby move the locking member to the locking position against the bias of the unlocking spring, belt unwinding during such vehicle acceleration or deceleration causing the clutch arrangement to cooperate with the inertia arrangement in moving the control member so as to move the locking member to the locking position and this cooperation lessening the level of vehicle acceleration or deceleration necessary to cause the movement of the locking member to the locking position against the bias of the unlocking spring; and overcenter means alternately biasing the control member to either the first or second position by an effort that holds the locking member in the locking position with a torque T_3 , torque T_3 being greater than torque T_1 so that the unlocking spring does not move the locking member from the locking position to the nonlocking position without the assist of the clutch arrangement as the belt is wound on the reel, and torque T_3 being less than the total of torques T_1 and T_2 so that the unlocking spring and the clutch arrangement act against the overcenter means to move the locking member from the locking position to the nonlocking position as the belt is wound on the reel.

3,897,914

WIRE ROPE AND STRAND UNREELING APPARATUS

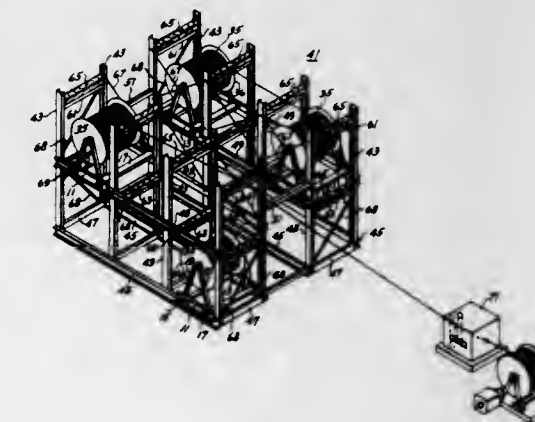
William J. McCarthy, Coopersburg, and Charles R. Nippert, Sr., Allentown, both of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Jan. 8, 1974, Ser. No. 431,816

Int. Cl. B65h 49/00

U.S. Cl. 242-129.6

10 Claims



1. Apparatus for dispensing wire cable comprising:
 - a. a metal framework adapted for the support of a plurality of pallets having reels rotatably mounted thereupon,
 - b. each pallet being comprised of
 - i. a rigid structural base comprised of,
 - a'. two structural side base members having planar web portions and having oblong orifices through the webs of said structural members and spaced a distance apart to accommodate the forks of a fork lift truck,
 - b. tubular structural members superimposed over the orifices of (a') and rigidly securing the side members together,
 - ii. a metal A-frame secured to each of the side members,
 - iii. an axle passing between the tops of the A-frames adapted to rotatably support a reel mounted parallel to the side frames,
 - iv. semi-circular troughs mounted atop said A-frames and designed to fit closely about the ends of said axle with a minimum of longitudinal play between the axle and the troughs,

- c. said metal framework being comprised of vertical and longitudinal structural members, the longitudinal members being adapted to support the tubular members of said pallets with the structural base members of said pallets positioned adjacent to and outside of each longitudinal member of the frame,
- d. said metal framework defining at least two tiers of pallet accommodating unreeling positions with a working platform positioned between the tiers adjacent to each upper of pallet accommodating positions and arranged so that the ends of the pallet bases extend partially beneath the working platform,
- e. a means to support wire strand from said reels to one end of said metal frames, and
- f. strand measuring means mounted adjacent to said frame in position to measure cable being drawn from said reels on said pallets.

3,897,915

PACKAGE HOLDER FOR TEXTILE MACHINES

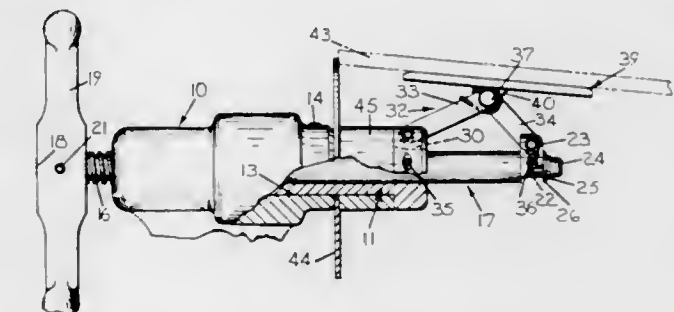
Edward S. Budzyna, East Douglas, Mass., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Nov. 13, 1974, Ser. No. 523,259

Int. Cl. B65H 49/36

U.S. Cl. 242-130.1

4 Claims



1. A package holder for textile machines which comprises:
 - a. a support housing;
 - b. an elongated sleeve assembled in and extending outwardly from said housing with a flange member forming the outer end thereof;
 - c. a spindle receivable into and movable longitudinally within said sleeve;
 - d. a collar member carried on one end of said spindle;
 - e. means including a plurality of pairs of connected link elements defining scissor linkage interconnecting said flange member with said collar member;
 - f. a gripping pad pivotally carried on each of said pairs of link elements; and
 - g. means mounted on the end of said spindle opposite said collar member for manually affecting longitudinal movement of said spindle and movement of the gripping pad carried by each pair of said link elements in one direction to lock a yarn package thereon and in the opposite direction to release this yarn package therefrom.

3,897,916

MAGNETIC THREAD BRAKE

Karl Isac Joel Rosen, Villa Haga, S-52300 Ulricehamn, Sweden

Filed Dec. 26, 1972, Ser. No. 318,178

Claims priority, application Germany, Jan. 3, 1972, 2200058

Int. Cl. B65h 59/16, 59/24

U.S. Cl. 242-155 M

8 Claims

1. A magnetic thread brake comprising a thread guide roller which is adapted for receiving thread wrapped therearound and which is at least in part of magnetizable material, means rotatably mounting said roller for rotation about its axis, a rotatably fixed braking plate positioned adjacent and axially movable relative to said roller, a permanent magnet of circular cross section positioned radially offset from said axis and with

3,897,921

INTERLOCKING TRACK CIRCUITS

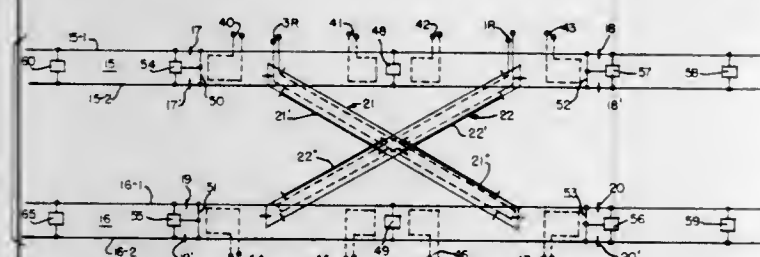
Jon F. West, Palmyra, and Klaus H. Frielinghaus, Rochester, both of N.Y., assignors to General Signal Corporation, Rochester, N.Y.

Filed Sept. 7, 1973, Ser. No. 395,110

Int. Cl. B611 21/00

U.S. Cl. 246—34 CT

7 Claims



1. In an interlocking territory including a pair of main-line tracks interconnected by at least one crossover track intersecting both said main-line tracks, said interlocking territory defined between insulated rail joints in each of said main-line tracks, an improved signaling and control arrangement including unswitched track circuits in said main-line tracks within said interlocking territory, comprising,

a single rail track circuit on said crossover track, a pair of track circuits on each of said main-line tracks within said interlocking, each of said track circuits comprising a transmitter inductively coupled to said track and a track bond common to two of said track circuits, and a plurality of track bond means connected across said main-line tracks outside said interlocking territory and means connecting each of said track bond means to said main-line tracks inside said interlocking territory.

3,897,922

FISHING POLE HOLDER

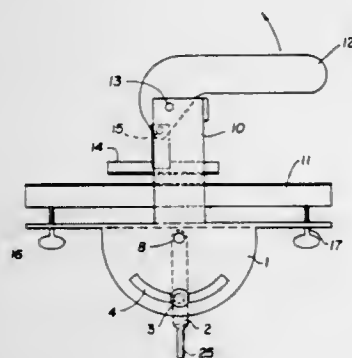
Oswald R. Keen, Arcadia, Fla., assignor to The Raymond Organization, Inc., New York, N.Y.

Filed Aug. 28, 1973, Ser. No. 392,281

Int. Cl. A47g 21/14

U.S. Cl. 248—42

3 Claims



1. A fishing pole holder, comprising a plate;

a pivot arm extending from the plate substantially coplanar therewith whereby the plate is rotatable around the axis of the pivot arm;

fastening means affixing the pivot arm to the plate in a manner whereby the plate is rotatable in its own plane to a predetermined extent relative to the pivot arm, the fastening means comprising an arcuate cutout in the plate, a releasable clamp on an intermediate point of the pivot arm guided in the cutout and a pivot pin at an end of the pivot arm pivotally affixing the pivot arm to the plate;

clamping means mounted on the plate for clamping a fishing pole in position in a plane substantially parallel to the plane of the plate, the clamping means comprising a frame affixed to the plate, a substantially elongated sub-

stantially V-shaped cross-sectioned first clamping member adjustably mounted in the frame in a plane substantially parallel to the plane of the plate, a handle pivotally affixed to the frame and a substantially V-shaped cross-sectioned second clamping member pivotally affixed to the handle in a manner whereby the handle is rotatable in the frame to selectively move the second clamping member into and out of operative clamping proximity with the first clamping member; and supporting means for pivotally supporting the pivot arm.

3,897,923

CURVATURE MAINTAINING DEVICE

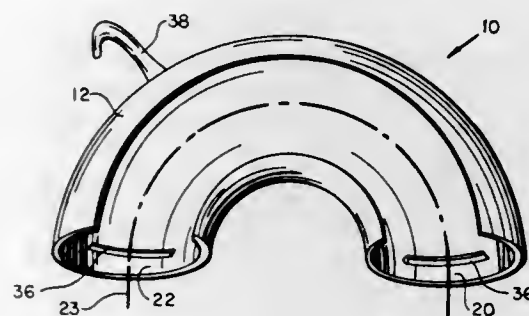
Bruce A. Paepke, and Buddy J. Zent, both of Chardon, Ohio, assignors to Ball Corporation, Muncie, Ind.

Filed Dec. 13, 1971, Ser. No. 207,364

Int. Cl. F161 3/02

U.S. Cl. 248—75

4 Claims



1. A device adapted for maintaining at least a portion of a flexible conduit in a predetermined fixed curvilinear position, said device comprising a hollow shell open at opposite ends and having a top section positioned between said opposite open ends and defining a top curvilinear path having a curvature greater than 90°, a bottom section positioned between said opposite open ends and defining a bottom curvilinear path having a curvature complementary to that of said top curvilinear path, said bottom section being positioned within said top curvilinear path, and opposite side sections extending between said opposite open ends, at least one of said side sections connecting said top section with said bottom section and the other of said side sections defining an opening positioned between said top section and said bottom section, whereby said shell is adapted to receive through said opening at least a portion of a flexible conduit so that at least a portion of the latter is held in a fixed curvilinear position determined by the curvature of said top and bottom sections of said device.

3,897,924

COLLAPSIBLE SUPPORT

Gregory Edward Cook, Chicago, Ill., assignor to Harold J. Baer; Harold J. Baer, Jr. and Lawrence J. Baer, all of Grand Rapids, Mich.

Filed Jan. 10, 1974, Ser. No. 432,417

Int. Cl. F16m 11/32

U.S. Cl. 248—164

7 Claims

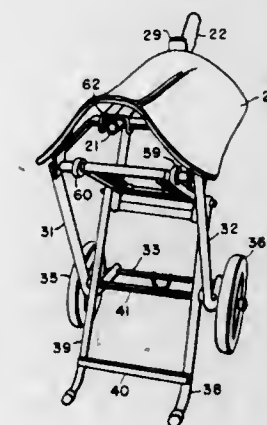
1. A collapsible support including a frame and folding leg means mounted for articulation with respect to said support frame, wherein the improvement comprises:

a first section of said leg means, said first section being pivotally connected at the normally upper extremity thereof to said frame;

a second section of said leg means, said second section being pivotally connected to said first section at an intermediate point thereon;

link means pivotally connected at one end to the normally upper extremity of said second section, the opposite end of said link means being pivotally connected to said frame

at a point thereon remote from the connection of said first section thereto; and



3,897,925

WALL PLUG

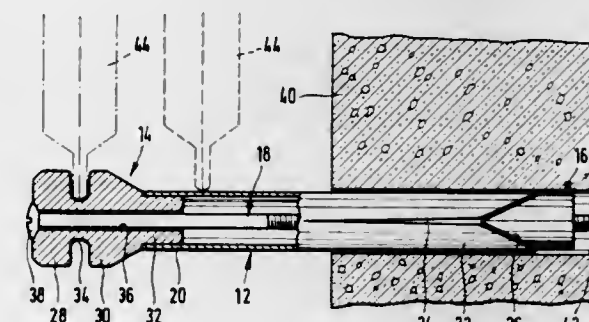
Max Mayer, Ravensburger Str. 16, 7778 Markdorf, Germany

Filed Dec. 5, 1973, Ser. No. 421,810

Int. Cl. E04G 3/00

U.S. Cl. 248—216

6 Claims



1. A wall plug for supporting objects, such as radiators or the like, comprising

a sleeve member having a front end portion and a longitudinally slotted rear end portion for insertion into a borehole of a wall,

a supporting member mounted adjacent the front end portion of said sleeve member, having an at least partly circumferential slot for accommodating an edge or the like of said object,

a wedge member adjacent the rear end portion of said sleeve member, having a wedge-shaped or conical surface for penetrating and expanding said sleeve member, and a screw member extending axially through said sleeve member and interconnecting said supporting member and said wedge member in which said supporting member has a first portion substantially greater in diameter than said sleeve member and a second portion separated from said first portion by said slot and tapering in rearward direction so as to attain a rear diameter substantially equal to the diameter of said sleeve member, the tapering part of said second portion forming a sliding surface over which the object being supported can move into the slot in said supporting member.

3,897,926

HANGER BRACKET

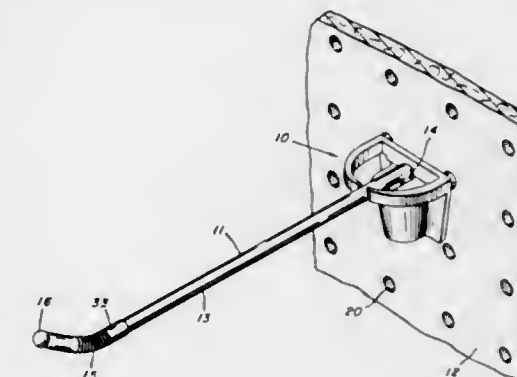
Joseph R. Silver, Pittsburgh, Pa., assignor to Armstrong Store Fixture Corporation, Pittsburgh, Pa.

Filed June 14, 1974, Ser. No. 479,367

Int. Cl. E06B 7/28; A47F 5/00

U.S. Cl. 248—223

6 Claims



latch means operable to disengageably fix the angle of intersection of said first and second sections with respect to each other, said latch means being pivotally connected to said frame coaxially with the pivotal connection of said first leg section to said supporting frame.

1. In a hanger bracket for use in conjunction with a hook member, said hook member having a downwardly depending portion and a shank portion, said hanger bracket having a substantially planar back portion and having a hook receiving portion formed integrally with and extending forwardly of said back portion, said hook receiving portion containing a substantially vertically extending aperture adapted to receive the downwardly extending portion of the hook member, the improvement comprising:

a pair of laterally spaced, arcuately shaped, resilient arms, integrally formed with and extending forwardly of said back portion and beyond said hook receiving portion, the end portions of said arms terminating in opposed spaced relationship to center the hook member in relation to the hanger bracket to return the hook member to said center position whenever the hook member is laterally displaced.

3,897,927

PROGRESSIVE MOLDING APPARATUS WITH ADJUSTABLE LOCATING MEANS

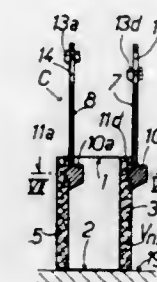
Jean M. Muller, Suresnes, France, assignor to Societe d'Etudes de Genie Civil et de Techniques Industrielles, Paris, France

Filed July 17, 1973, Ser. No. 380,107

Int. Cl. E04G 11/20

U.S. Cl. 249—20

2 Claims



1. An installation for prefabricating in succession a series of consecutive sections of an elongated civil engineering work, each section consisting of a precast molded element of concrete-like material having two mutually opposite end-faces and a side surface extending between said two end-faces in a longitudinal direction from one to the other of said two end-faces, said installation being designed for molding a new element of the series against an end-face of an immediately previous, already-molded element of the series, and comprising:

a number of longitudinal main mold members at least some of which are interconnected together to form a unitary main longitudinal shuttering projecting in longitudinal prolongation of said previous, already-molded element,

said main shuttering having two longitudinally spaced end regions including a first end-region which is proximal with respect to said previous element and a second end-region which is distant with respect thereto;

means interconnecting said main shuttering and said previous, already molded element for accurately positioning said main shuttering with respect to said previous element, said means including at least three mutually spaced, non-aligned abutment devices near said proximal end region of said main shuttering and each engaging with a respective complementarily shaped locating print formed in the side surface of said previous, already molded element; and

at least three auxiliary mold members located at said distant end region of said main shuttering, each in respective longitudinal alignment with a corresponding one of the said abutment devices for molding in said new element of said series, locating prints for subsequent engagement with said abutment devices during the molding of the next element of the series; wherein the improvement comprises:

at least one rectilinear, elongated guideway fixed in position with respect to said main longitudinal shuttering and extending in the longitudinal direction of said shuttering at said distant end region thereof in longitudinal alignment with one of the said abutment devices; a slide-block integral with said one of said auxiliary mold members which corresponds to said one abutment device and slidable along said longitudinal guideway whereby said one auxiliary mold member is adjustable along a longitudinal path with respect to said main longitudinal shuttering; and

clamping means for locking said adjustable auxiliary mold member in any preselected position along said longitudinal path.

3,897,928

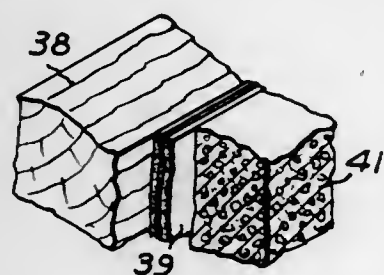
MOLD HAVING ELECTRICAL HEATING FILM FOR TREATING CAST MATERIAL

Paul Eisler, 57 Exeter Rd., London, N.W. 2, England
Continuation of Ser. No. 12,957, Feb. 20, 1970, abandoned, which is a continuation-in-part of Ser. No. 549,681, May 12, 1966, Pat. No. 3,283,284. This application Sept. 15, 1972, Ser. No. 289,346. The portion of the term of this patent subsequent to May 5, 1987, has been disclaimed.

Int. Cl. B28b 21/78

U.S. Cl. 249—78

5 Claims



1. The combination of molding apparatus adapted to receive a high-density body of curable material the solidification of which can be accelerated by heat and which requires a further cure after initial solidification, comprising an electric resistance heating film positioned in extended form disposed in position to receive at least a portion of the body adjacent to one side of the film, means disposing during the curing cycle the film in good heat conductive relationship over its whole surface to contact the body of material to thereby induce by thermal conduction into the body a temperature greater than ambient, the film comprising a disposable element adapted for only a temporary use including a heater element with a conductive layer of minute thickness and of an area distributed over and occupying at least the major portion of the area of the film, electrical coupling means for connect-

ing the film to a supply of electrical energy, and including mold structure separate from and removable from said film while disposed in heat conductive relationship on said body including removable mold elements to hold the body in a predetermined shape during only the initial stages of solidification and cooperative mold and film structure causing said film to remain in thermal contact with said body after said mold is removed.

3,897,929

RECESSED SPRUE BUSHING FOR A THREE-PLATE MOLD SET

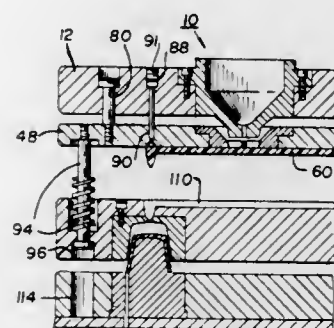
James H. Hartmann, Northbrook, Ill., assignor to National Tool and Manufacturing Co., Kenilworth, N.J.

Filed Aug. 12, 1974, Ser. No. 496,919

Int. Cl. B28B 7/10; B29F 1/14

U.S. Cl. 249—105

8 Claims



1. In a tri-plate mold set as used in injection molding by and in a press using an extending sprue, said tri-plate mold set including a top plate which is associated with and aligned with a stripper plate by appropriate lost motion and guide means, said stripper plate also associated with a first mold plate and having aligning means and a lift means by which said first mold plate is lifted by the stripper plate at a determined time period during the mold opening action by the press mechanism after termination of the injection molding cycle and for use with this mold set a sprue bushing improvement including: (a) a recessed sprue bushing having a through sprue passageway and having its outer surface formed and sized for a compatible mounting in a precisely formed through aperture in a top plate of a three-plate mold set and including means for securing this bushing at a fixed position in the top plate, said bushing having a sprue receiving cavity which is formed with its inner and lower end at a selected taper providing a conical recess terminating at a spherically radiused socket, said sprue bushing having a lower portion which extends beyond the lower surface of the top plate in which it is to be mounted, said extending portion having at least its lower outer surface formed with a precise taper, and (b) a stripper plate bushing sized for a compatible and fixed mounting in a precisely formed through aperture in a stripper plate associated and aligned with said top plate, said stripper plate bushing including means for securing this bushing in a position in the stripper plate so that the axis of the stripper plate bushing and the recessed sprue bushing are in coincidence, said stripper plate bushing having a tapered aperture therethrough, this aperture having at least its lower portion sized for precisely receiving and engaging the precisely formed lower tapered extending end portion of the sprue bushing and when the top plate and the stripper plate are brought into a contiguous relationship the tapered end of the extending portion of the sprue bushing engages the receiving taper to provide a molten plastic shut-off at the lower surface of the sprue bushing and the stripper plate bushing.

3,897,930

HOT TOP SUSPENSION SYSTEM FOR INGOT MOLD

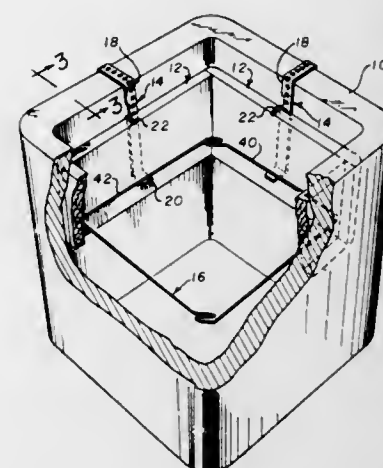
James Edward Young, Chadds Ford, Pa., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed May 18, 1973, Ser. No. 361,675

Int. Cl. B22d 7/10

U.S. Cl. 249—106

6 Claims



1. A hot top support system for an ingot mold comprising: a plurality of sideboards each having inner and outer surfaces; outwardly expandable means for acting against each said sideboard inner surface to urge said sideboard outer surface into close contact with the inner surface of a sidewall of said mold; and

a hanger for each said sideboard, said hanger including a shank portion located intermediate said sideboard and said mold inner surface and adapted to be dependently supported by said mold, a support ledge below said shank portion and extending inwardly beyond the inner surface of said sideboard for vertically supporting contact with said sideboard and said expandable means, and a locking tab therewith positioned above said support ledge near the top of a said sideboard supported thereon and operative to maintain said sideboard and hanger in closely adjacent relationship.

3,897,931

MULTIPLE MOLDING APPARATUS

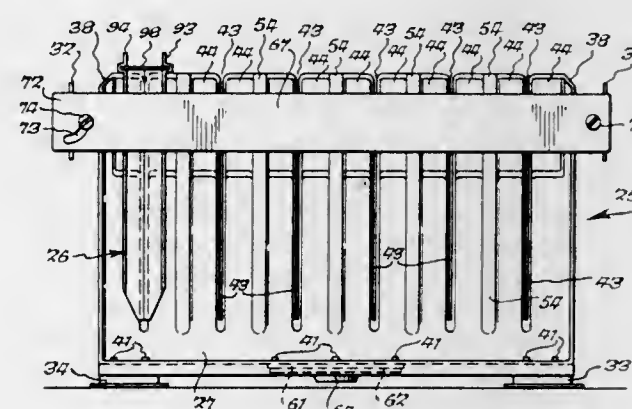
George H. Hake, 11154 Broadway, Alden, N.Y. 14004

Filed May 18, 1973, Ser. No. 361,579

Int. Cl. B41B 11/50

U.S. Cl. 249—164

24 Claims



1. Multiple molding apparatus comprising: at least three laterally spaced, upright, clamping plates secured at their respective opposite ends to a pair of end cross members that extend transversely of said clamping plates; each of said clamping plates having a plurality of longitudinally spaced slots extending downwardly from the upper marginal edge thereof, said slots in each clamping plate being in lateral alignment with slots in each of the other clamping plates for receiving therein separate, independent molds that extend

generally normal to said clamping plates and project beyond at least two of said clamping plates; a pair of vertically extending edges defining each slot and adapted to bear against the opposite marginal sides of a mold in said slot; and means for applying longitudinal compressive force to the opposite ends of said clamping plates for urging said edges toward each other for clamping said molds therebetween, the outer pair of said clamping plates being inclined slightly outwardly in an upwardly diverging relation relative to a vertical plane extending through the intermediate clamping plate.

3,897,932

ACTUATOR DRIVE FOR FLUID CUT-OFF APPARATUS

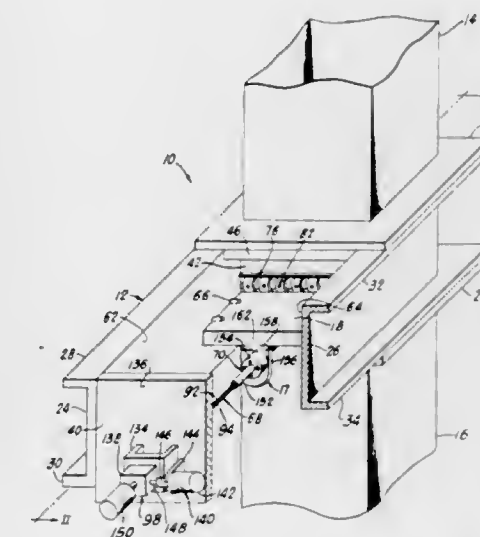
Elden Arnold Hale, Pikesville, Md., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 245,880, April 20, 1972, Pat. No. 3,789,879. This application Nov. 19, 1973, Ser. No. 417,238

Int. Cl. F16K 31/04, 3/314

U.S. Cl. 251—133

4 Claims



1. Fluid cut-off apparatus for a gas conduit, comprising: a pair of axially aligned conduits defining a space therebetween; an enclosure connecting said conduits and closing said space to surrounding atmosphere, said enclosure including an opening substantially perpendicular to said conduits; a closure in said opening movable into said space for preventing passage of fluid from one of said conduits to the other; a first sealing element extending the width of said closure and acting against a wall of said enclosure and against an adjacent first surface on said closure; a second sealing element being distinct and separate from said first sealing element and extending the width of said closure and acting against said wall and against an adjacent second surface on said closure opposite to said first surface, for preventing the escape of fluid between said first and second surfaces on said closure and said wall; a plurality of resilient retaining means mounted on said wall and equally spaced along the width of said first and second surfaces for continuously urging said first and second sealing elements against said wall and against said first and second surfaces to reduce the escape of said fluid between said first and second sealing elements and said first and second surfaces; and an actuator means for moving said closure into and out of said enclosure, said actuator means including: a rotatable screw shaft means extending substantially parallel to the path of travel of said closure; and a linking means connecting said screw shaft means to said closure.

for moving said closure into and out of said space upon rotation of said screw shaft means.

3,897,933

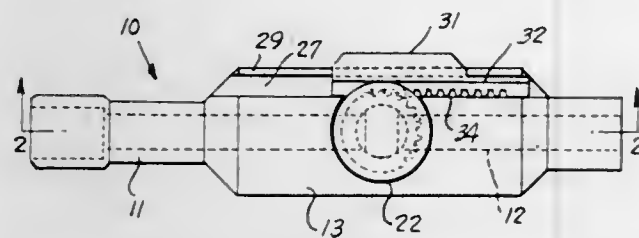
VACUUM VALVE

Fred A. Christenot, 413 S. 13th St., Livingston, Mont. 59047
Filed Dec. 20, 1973, Ser. No. 426,468

Int. Cl. F16k 31/53

U.S. Cl. 251-248

3 Claims



1. A thumb actuated vacuum valve comprising an elongate body having a generally rectangular cross section and four side faces, a longitudinal bore extending completely through said body, a transverse bore extending through said body opening through one of said side faces and extending to and opening through an opposite parallel side face intersecting said longitudinal bore, a pair of parallel outwardly opening grooves formed in opposed side faces adjacent one of said side faces through which said transverse bore opens, a rotary valve plug mounted in said transverse bore for rotation therein with said plug having the bore extending therethrough adapted to be aligned with the longitudinal bore in said body upon rotation of said plug, gear teeth around a portion of the diameter of said plug adjacent one end of said plug, a hand actuated slide on said body, a pair of bars on said slide engaging in said groove for mounting said slide for sliding movement along said body, and gear teeth on one of said bars meshing with the gear teeth on said plug for rotating said plug upon sliding movement of said slide.

3,897,934

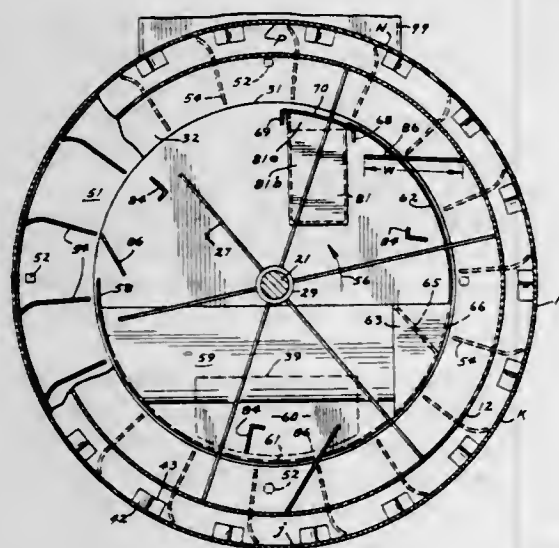
PARTICULATE MATERIAL MIXING MACHINE HAVING SEALING MECHANISM

Charles E. Phillips, Box 65, Downsville, Wis. 54735
Filed Aug. 23, 1974, Ser. No. 494,209

Int. Cl. B01f 9/06

U.S. Cl. 259-3

18 Claims



1. In a machine for mixing particulate materials, a drum, means for mounting the drum to revolve about a substantially horizontal axis in one normal angular direction, said drum having a tubular wall and a rear wall at one axial end thereof, said tubular wall having a front annular edge portion, a stationary hood enclosing the opposite end of the drum, said hood having an end wall adjacent said front edge portion and a tubular wall portion having a first annular part of substantial

axial length surrounding said front edge portion and a second part extending between said first part and said hood end wall, annular seal means mounted on at least one of the first part and the drum for providing a seal between the first part and the drum, and a generally annular flange mounted on the front edge portion axially between the seal means and the hood end wall and extending radially toward the first part to within close proximity of the first part, said flange being mounted to rotate with the drum, the improvement comprising said annular flange having a plurality of circumferentially spaced cut outs adjacent the radially outer peripheral portion thereof and vanes that extend toward the seal means in the direction of normal rotation of the drum for directing material back through the cut outs toward the hood end wall as the drum is rotated in said normal direction, said vanes at least in part being located radially between the drum and said first part.

3,897,935

APPARATUS FOR THE PREPARATION OF A PHOTOGRAPHIC EMULSION

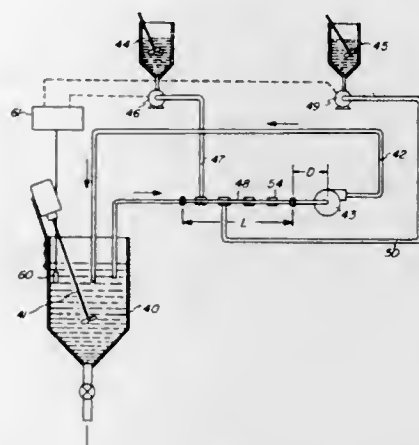
Donald M. Forster, and Gerald J. Culhane, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 305,764, Nov. 13, 1972. This application
Aug. 29, 1974, Ser. No. 501,564

Int. Cl. B01F 5/04

U.S. Cl. 259-4

7 Claims



1. Apparatus for preparing a photographic emulsion, the combination comprising:

- first means for containing a bulk quantity of a peptizer solution;
 - second means for containing a bulk quantity of a salt solution;
 - third means for containing a bulk quantity of a silver salt solution;
 - means operatively connected to the first means for moving the peptizer solution in a prescribed flow path;
 - means arranged in the flow path and interconnected between the first means and the moving means for dividing the flow of peptizer solution between each of two separate and discrete chambers for a predetermined length of the flow path after which the divided flows combine;
 - means interconnecting the second means to one of the chambers for introducing a flow of the salt solution into the one chamber for mixing with the flow of peptizer solution being moved therethrough; and
 - means interconnecting the third means to the other of the chambers for introducing a flow of the silver salt solution into the other chamber for mixing with the flow of peptizer solution being moved therethrough;
- the combined divided flows mixing and precipitating the emulsion.

3,897,936

TRANSPORTABLE ROTARY MIXERS

Roland Berthold, and Adolf Brenner, both of Schweinfurt, Germany, assignors to SKF Industrial Trading and Development Co. B.V., Amsterdam, Netherlands

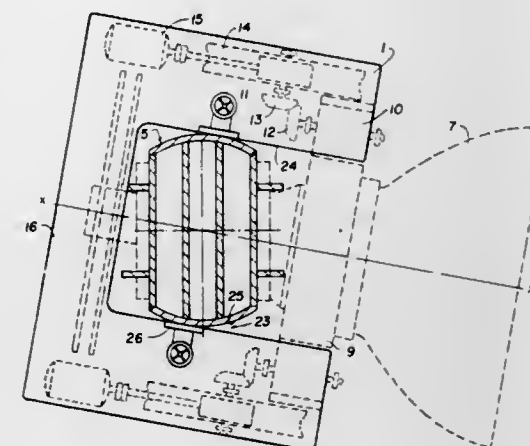
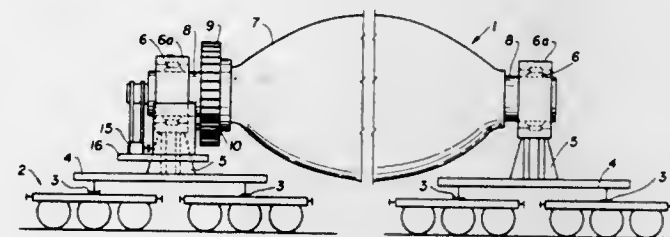
Filed June 7, 1973, Ser. No. 367,805

Claims priority, application Germany, June 24, 1972, 2231051

Int. Cl. B22d 41/12

U.S. Cl. 259-89

5 Claims



1. A transportable rotary mixer particularly for pig-iron and the like comprising a container having a shaft at each end, each shaft being rotatably journaled in a rocker bearing pivotally mounted on a base supported on a movable carriage, at least one end having a driven gear wheel secured to its shaft for driving said container, a platform straddling said base substantially parallel to the side walls of said base, and slidably resting on the surface of said side walls, said shaft at said one end of said container having a central bore, a pin axially extending outwardly of said bore being journaled against rotation therewith and to accompany the pivotal movement thereof with respect to said bore, means fixedly connecting said pin to said platform for conjoint movement of said pin and platform, and relative movement of said pin with respect to said base, and means mounted on said platform for driving said driven gear.

3,897,937

EXTRUDER SCREW

A. Paul Limbach, 11 Woodmont Dr., Downingtown, Pa. 19335
Filed Aug. 30, 1973, Ser. No. 393,118

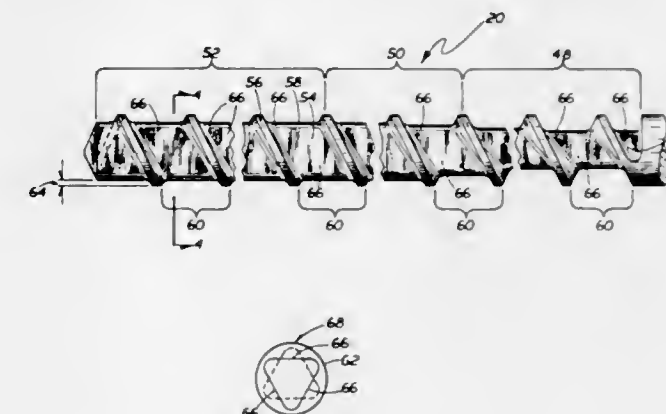
Int. Cl. B29B 1/10

U.S. Cl. 259-191

10 Claims

1. An elongated extrusion screw having a central axis and comprising a central root having a round cylindrical surface of a first predetermined radius and having a helical thread disposed about said surface along a length thereof to form at least one flight, said flight having a land of a second predetermined radius, said root including at least one portion in at least one flight lying adjacent said land and defining a planar depressed surface whose maximum distance from the central axis in the

radial direction is less than the dimension of the first radius, the remaining portion of the root of said flight also lying



adjacent said land and having said round cylindrical surface of said first predetermined radius.

3,897,938

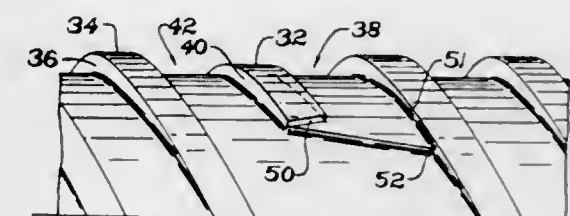
APPARATUS FOR REFINING POLYMERIC MATERIAL

Heung T. Kim, Avon Lake, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio
Division of Ser. No. 279,697, Aug. 10, 1972, Pat. No. 3,867,079. This application Apr. 24, 1974, Ser. No. 463,512

Int. Cl. B29B 1/06

U.S. Cl. 259-191

2 Claims



1. An extruder for processing polymeric material having a cylinder with an inlet opening and a discharge opening; a feed screw rotatable in said cylinder; said feed screw having a primary flight and a secondary flight cooperating to define a primary groove and a secondary groove; said secondary groove progressively increases in cross-sectional area; said primary groove progressively decreases in cross-sectional area; said primary flight providing a greater clearance space between its outer surface and said cylinder than the outer surface of said secondary flight and said cylinder; the depth of said primary groove diminishes in dimension to equal the clearance space between said primary flight and said barrel; and the axial width of said primary groove being constant.

3,897,939

LIQUID INJECTION MOLDING APPARATUS

Fritz Hostettler, Freehold, and Peter U. Graefe, Brick Town, both of N.J., assignors to Inter-Polymer Research Corporation, Farmingdale, N.J.

Division of Ser. No. 352,076, April 17, 1973, Pat. No. 3,853,446. This application Aug. 9, 1974, Ser. No. 496,086

Int. Cl. B29B 1/06

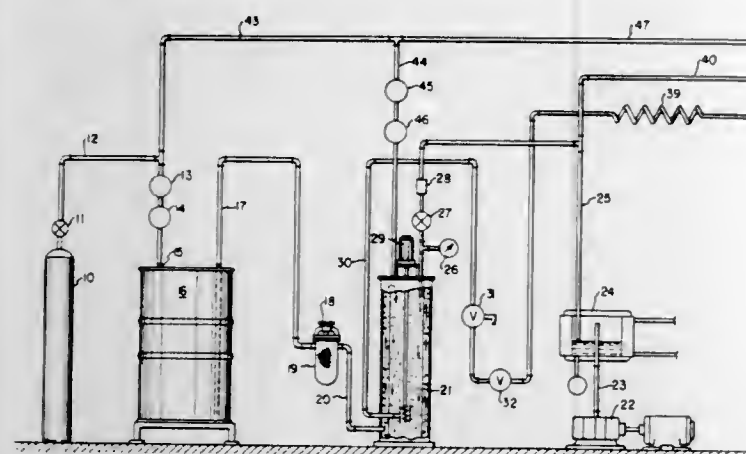
U.S. Cl. 259-191

2 Claims

1. An apparatus for the delivery of multi-component thermosetting reaction mixtures to a liquid injection mold having holding tanks for storing each component of the reaction mixture under vacuum and recirculating and metering pumps for recirculating each component to its respective holding vessel between injection cycles and alternately delivering metered amounts of each component to a mixing and injecting unit during the injection cycle, wherein the improvement comprises:

- a. means for continuously recirculating one part of each reaction component to its respective holding tank while simultaneously delivering the other part of the reaction

component to a metering, mixing and injecting unit for injecting a predetermined amount of homogeneous reaction mixture into the injection port of a mold under substantially constant pressure only for the duration of the injection cycle;



- b. means for permitting discharge of the reaction mixture from the metering, mixing, and injecting unit into the injection port of the mold only for the duration of the injection cycle;
- c. means for maintaining substantially constant pressure for that part of the reaction component being recirculated to its respective holding tank, regardless of the state of operation of means (b).

3,897,940

LEVEL CONTROLLING SHOCK-ABSORBER

Pierre Gele, Rue du Pic, 65 Lalubere, France

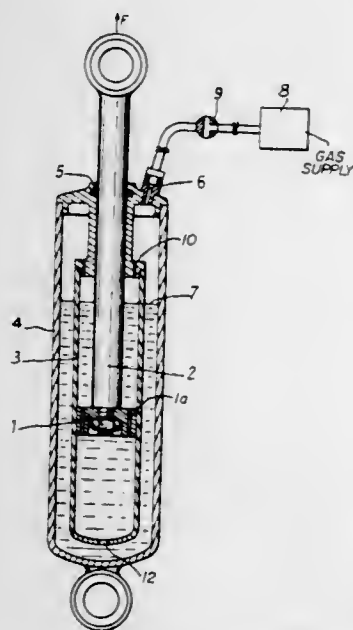
Filed Jan. 28, 1974, Ser. No. 436,958

Claims priority, application France, Oct. 25, 1973, 73.38008

Int. Cl.² F16F 5/00

U.S. Cl. 267-64 R

4 Claims



1. A level-correcting shock-absorber for vehicles of the type having a suspended and non-suspended part and associated with a supply of compressed gas, comprising an outer oil-filled tube provided at its upper end with a depending axially bored sleeve, an inner tube carried by the lower end of said sleeve and including a passageway for the oil from the outer tube into the inner tube, a piston slidingly carried inside the inner tube, a piston rod carrying said piston extending through the outer tube and the axial bore in the sleeve, means for selectively connecting the upper end of the inside of the outer tube above the oil level therein with the supply of compressed gas, means adapted for pivotally connecting the piston rod and the outer

tube respectively with the two parts of the vehicle, the pressure transmitted through the oil to the piston rod balancing the load on the vehicle.

3,897,941

REINFORCED FLUID SPRING

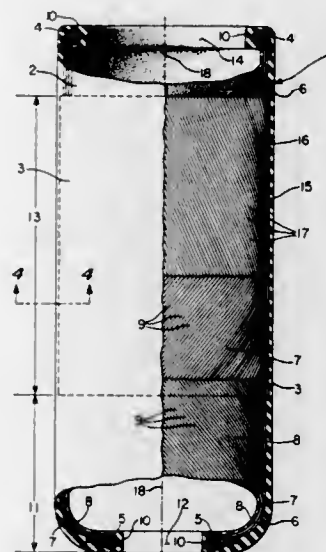
Arthur B. Hirtreiter, and Karl K. Kluss, both of Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Mar. 28, 1974, Ser. No. 455,756

Int. Cl. F16f 3/10

U.S. Cl. 267-65 B

25 Claims



1. A flexible, resilient tubular member of the type used in a fluid pressure system in which the member is subjected to external forces acting substantially coincident to and along its longitudinal axis and thereby undergoes movement causing a rolling motion forming a rolling lobe in at least one peripheral end portion of the member, said member comprising a hollow body of flexible polymeric material having tension resisting reinforcement therein, said body having a flexible portion at one peripheral end thereof and a connecting portion extending longitudinally of said member between said flexing portion and the opposite peripheral end thereof, at least one-half of the length of said connecting portion including at least one layer of deformation resisting reinforcement coextensive and integrally formed therewith, said deformation resisting reinforcement comprised of a plurality of metallic elements disposed around the circumference of said connecting portion and extending generally longitudinally of said member to support said tension resisting reinforcement and provide said connection portion with increased rigidity and a stable axial configuration under conditions of normal use.

3,897,942

COMPRESSIBLE AND EXPANSIBLE CHAMBERS

Anthony McNamee, 63 St. James Rd., Prescott, England

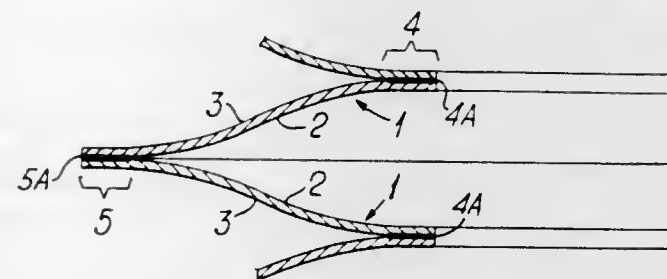
Filed Nov. 28, 1972, Ser. No. 310,182

Claims priority, application United Kingdom, Nov. 30, 1971, 55443/71

Int. Cl. F16f 5/00

U.S. Cl. 267-122

5 Claims



1. Compressible metallic bellows comprising a plurality of concave, sheet metal annuli axially aligned and joined one to

another at their inner and outer margins respectively so that the concavities of the annuli are alternately facing towards and away from one another, in which each annulus in its neutral condition comprises:

- at least one flat outer margin lying in a first plane;
- at least one flat inner margin lying in another plane parallel with said first plane;
- a curved portion disposed between and continuous with said flat inner and outer margins;
- the shape of the curved portion being such that over its length between said inner and outer margins, a sinusoidal curve is generated so that when the bellows is axially displaced, the shape of the curved portion conforms to a sinusoidal curve over at least a part of its length, and when said bellows are compressed, the curved portions are flattened with respect to each other.

3,897,943

TIRE BREAKER BELT STOCK

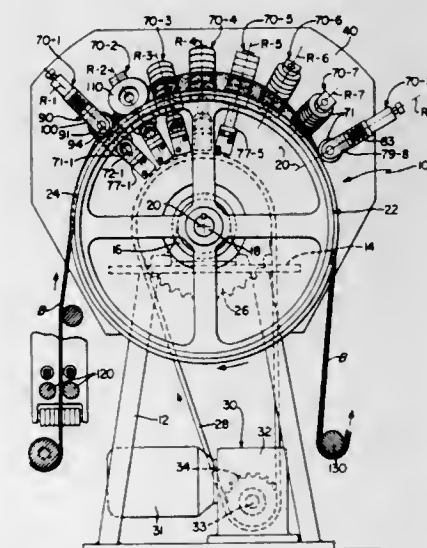
William J. Head, Rollingen, and Georges Goedert, Gilsdorf, both of Luxemburg, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Dec. 5, 1973, Ser. No. 421,898

Int. Cl.² B65H 45/22

U.S. Cl. 270-86

10 Claims



1. The method of folding tire cord or wire ply stock continuously about a predetermined fold line extending longitudinally of a running length of such stock to supply folded belt stock for later use in making tires comprising, continuously engaging said stock with an arcuate edge lying in a plane normal to said axis such that said fold line lies parallel and close to said plane and a first portion of the width of said stock at one side of said fold line is disposed in non-slip contact with and on said surface and the remaining portion of the width of said stock is disposed off said surface beyond said edge, rotating said cylindrical surface and said stock about said axis while supplying said stock in its unfolded state continuously to said surface as said surface moves through a first position thereof and removing said stock in its folded state as said surface moves through a second position thereof remote from said first position, and between said first and said second positions displacing said remaining portion of the width of said stock progressively angularly about said fold line first outwardly relative of said axis and then inwardly toward said surface to engage respective portions of the width of said stock in direct face-to-face contact from said fold line to form said belt.

3,897,944

METHODS AND APPARATUS FOR PERFORMING A FUNCTION RELATIVE TO A CARD

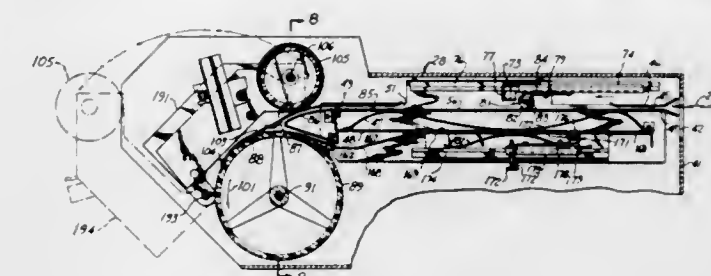
Frederic F. Grant, Bellflower, Calif., assignor to Bell & Howell Company, Chicago, Ill.

Filed Nov. 30, 1973, Ser. No. 420,735

Int. Cl. B65h 5/00

U.S. Cl. 271-3

15 Claims



1. In a method of performing a function relative to a card, the improvement comprising in combination the steps of: bending the card into a curved shape with the aid of an applied force; generating motive power with part of said applied force and storing said generated motive power; performing said function relative to said bent card; unbending said bent card with the aid of said stored motive power; and regulating the unbending of said bent card in relationship to the performance of said function relative to said card.

7. In apparatus for performing a function relative to a card, the improvement comprising in combination: means for bending the card into a curved shape; means connected to said bending means for generating and storing motive power; means for performing said function relative to said bent card; and means coupled to said motive power generating and storing means for unbending said bent card with the aid of said motive power, said means for unbending said bent card include means for regulating the unbending of the bent card in relationship to the performance of said function relative to the card.

3,897,945

APPARATUS FOR AUTOMATICALLY REGISTERING AND COMBINING TWO SHEET MEMBERS

Maurice J. Faltot, Morris Plains, and Helmut Voltmer, Park Ridge, both of N.J., assignors to NJM, Inc., Hoboken, N.J.

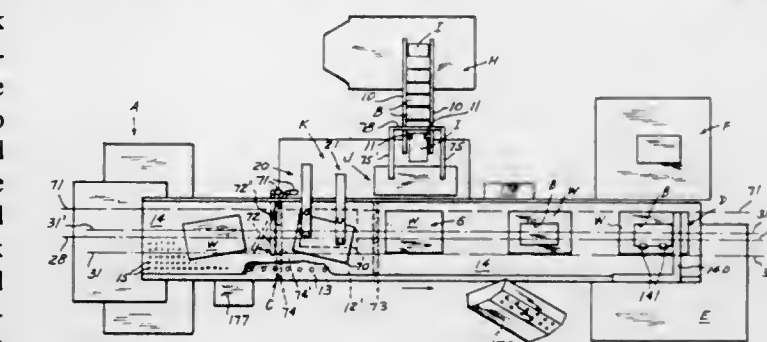
Division of Ser. No. 280,673, Aug. 14, 1972, Pat. No.

3,856,607. This application July 17, 1974, Ser. No. 489,431

Int. Cl. G05g 15/00

U.S. Cl. 271-227

3 Claims



1. Apparatus for automatically registering articles being conveyed toward a station, comprising means for carrying a plurality of the articles in successive relation along a given path, a plurality of sensing means movable over said carrying means and each capable of developing a signal when sensing a given reference line on an article conveyed by said carrying means, means for moving said sensing means independently until each has found the given reference line, gripping means

associated with each sensing means and capable of gripping the article at different locations thereof when its associated sensing means has found such reference line, and means for moving the gripping means in coactive relation to shift the articles gripped thereby until said given reference line is brought into given registration with a second reference line in a given fixed position.

3,897,946

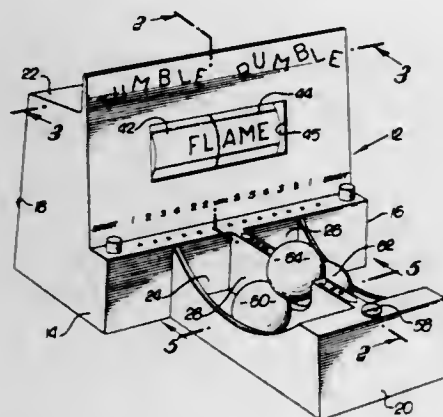
REACTION INDICATING DEVICE

Alfred G. Massicotte, 4752 Green Ave., Los Alamitos, Calif. 90720

Division of Ser. No. 152,885, June 14, 1971, Pat. No. 3,784,197. This application Dec. 11, 1973, Ser. No. 423,801 Int. Cl. A61b 5/16

U.S. Cl. 273-1 R

16 Claims



1. An indicating apparatus comprising: A supporting structure; at least two changeable position reaction members carried by said supporting structure; one mobile indicator member supported at least in part by said reaction members; a barrier means separating at least in part each of said reaction members from the rest of said reaction members; a directing means to force said indicator member to associate with one of said reaction members when the position of at least one of said reaction members is sufficiently changed to remove support from said indicator member; a retention means to confine said reaction members to separate home positions where support is provided for said indicator member until one of said reaction members is forced to change positions so as to cause said indicator member to move, at least in part, to that side of said barrier means corresponding to the particular reaction member that underwent change in position thereby indicating which one of said reaction members was first to undergo a change in position.

3,897,947

GAME APPARATUS

Russell H. Heffley, Jr., 1533 Lochinvar Dr., Fort Wayne, Ind. 46825

Filed Oct. 11, 1973, Ser. No. 405,575

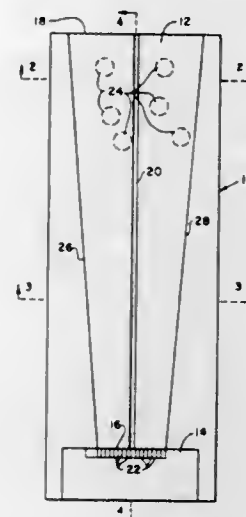
Int. Cl. A63b 69/36

U.S. Cl. 273-35 B

15 Claims

1. A game apparatus comprising a green-like target having a plurality of target zones, a plurality of impact responsive signal generators, each of said target zones having at least one said signal generators operatively connected to said zone, whereby an object impacting on each of said target zones will create a signal, a signal selector circuit including level detector, gate and delay circuits operatively connected to said signal generators, a plurality of scoreboard drivers operatively connected to said selector circuit and each of said target zones, each of said target zones having one of said level detector circuits connected to each of said signal generators, each of said target zones having one of said gates connected to each of said level detector circuits at least one of said drivers being connected to said gates of each of said target zones, said delay circuit connected to each of said gates and drivers, a golf tee

and a scoreboard, said scoreboard having a plurality of means for visually registering impacts on said target zones, said registering means being connected to said drivers, said scoreboard being positioned adjacent to said tee, said scoreboard being



viewable by both left-handed and right-handed golfers addressing a ball on said tee, said registering means of said scoreboard being arranged in groups, one of said groups being connected to at least one of said target zones.

3,897,948

FOOTBALL PLACE-KICKING DEVICE

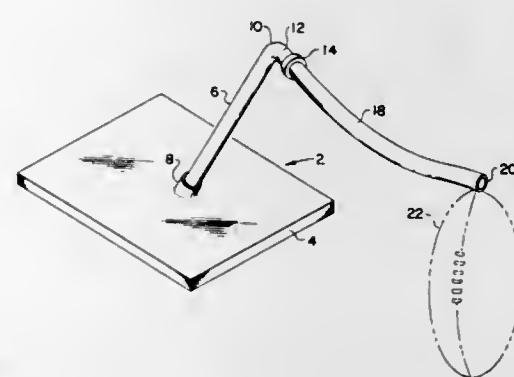
Roy R. Gerela, 760-2D Carriage Rd., Pittsburgh, Pa. 15220

Filed Nov. 16, 1973, Ser. No. 416,587

Int. Cl. A63B 67/00

U.S. Cl. 273-55 B

3 Claims



1. A portable place-kicking device for holding a standard dimensioned football in a substantially upright position on a playing surface comprising:

a generally horizontal base;

a rigid shaft member connected to said base and extending upwardly from said base to a height above said football in said substantially upright position, said shaft having a major portion at an acute angle to the plane of said base; and

an elongated semi-rigid arm mounted to said shaft member at its upper end, said arm having its free end extending downwardly toward said playing surface and projecting beyond the edge of said base to engage an upper end surface portion of said football in substantially single point contact; said arm being deformable but having a proclivity to resume an original shape.

3,897,949

ELECTRIC FOOTBALL GAME

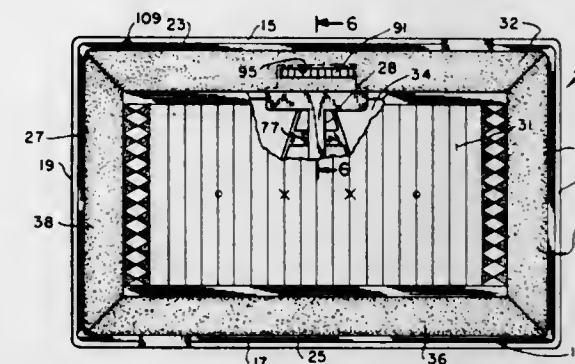
Dennis G. Wyman, 4 Crestline Ct., Owings Mills, Md. 21117

Filed July 25, 1973, Ser. No. 382,579

Int. Cl. A63f 7/06

U.S. Cl. 273-94 R

2 Claims



1. An electric football game comprising a frame, spaced indicia means including spaced translucent windows on said frame, yardage indicating indicia adjacent respective ones of said windows, said yardage indicating indicia including first and second oppositely arranged indicia, an electric light mounted on said frame behind said windows and movable to align with selected ones of said windows, first and second play operators independently movable on said frame by first and second players, respectively, linkage means interconnecting said operators and said electric light and causing said light to move in response to movement of said operators to align with different ones of said windows, first and second play selection indicia on said frame adjacent said first and second operators, respectively, said first and second play selection indicia being identical, each of said operators having pointer means registering with the adjacent play selection indicia, said first and second yardage indicating indicia each including independent, oppositely arranged offensive and defensive yardage indicating indicia, whereby said first and second operators can be used for offensive and defensive, or defensive and offensive play selection, respectively, and switch means in series with said electric light and an electric power source, whereby said offensive and defensive players select offensive and defensive plays by moving their respective operators so that the pointer means thereon register with the play selection indicia representing the offensive and defensive plays selected, and whereby said electric light is moved to align with the window adjacent the yardage indicating indicia representing the result of the offensive and defensive plays selected, said first yardage indicating indicia being used when said first and second operators are used for offensive and defensive play selection, said second yardage indicating indicia being used when said first and second operators are used for defensive and offensive play selection, respectively, whereupon actuation of said switch means lights said aligned window and registers said yardage.

3,897,950

VOLLEYBALL TRAINING DEVICE

Dennis Herbert Keller, 4510 El Camino Corto, La Canada, Calif. 91011

Filed Aug. 30, 1974, Ser. No. 501,969

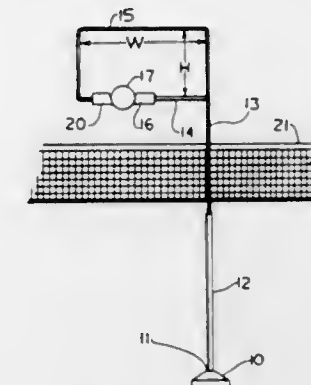
Int. Cl. A63B 71/02

U.S. Cl. 273-95 R

8 Claims

1. A volleyball training device comprising a standard to be positioned adjacent to a volleyball net; a generally C shaped operating head with its opening on the lower side thereof, said operating head engaging such standard with one generally vertical side coincident with the top of the standard; said lower side including a pair of arm members having spaced end portions in generally horizontal alignment wherein said opening therebetween is less than the diameter of a vol-

leyball and wherein the ends of said arm members will cradle a volleyball with the major portion exposed, where



by a volleyball player may strike a volleyball supported in said cradle portion and propel the ball from said cradle.

3,897,951

PINBALL GAME APPARATUS

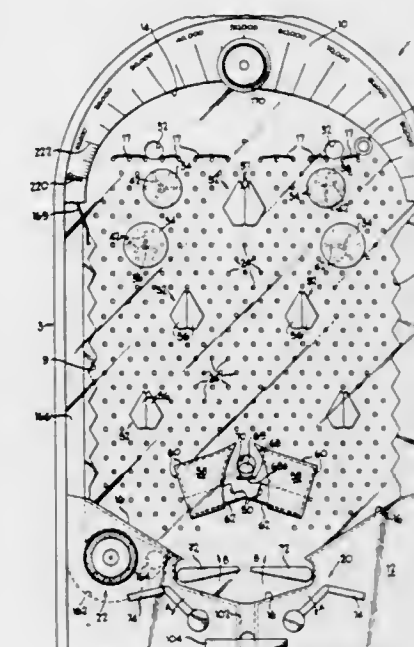
Howard J. Morrison, Deerfield, and Albert G. Keller, Chicago, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Apr. 4, 1974, Ser. No. 457,962

Int. Cl. A63D 3/02

U.S. Cl. 273-121 A

17 Claims



1. In a pinball type game including a housing having an inclined playing surface over which a ball may be propelled, at least one ball to be propelled on said playing surface, and at least one target mounted on the playing surface, the improvement wherein said target comprises:

an aperture in the playing surface through which a ball may enter;

cover means associated with said aperture, said cover means being movable between an aperture closing position wherein said ball cannot enter said aperture and an aperture exposing position wherein said ball can enter said aperture; and

a manually actuatable flipper assembly for keeping a ball in play and operatively connected to said cover means for moving said cover means between said closed and exposing positions in response to actuation of the flipper assembly.

3,897,952

SKILL TYPE PROJECTILE GAME

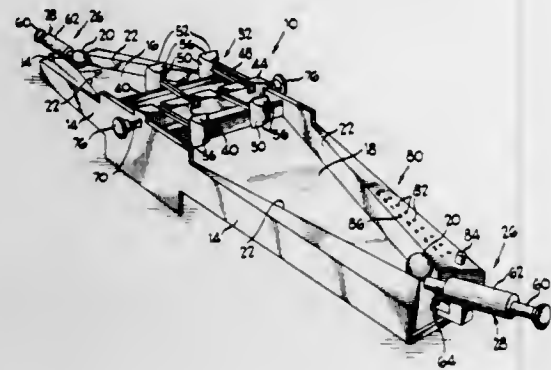
Jeffrey D. Breslow, Highland Park, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.

Filed Mar. 4, 1974, Ser. No. 447,874

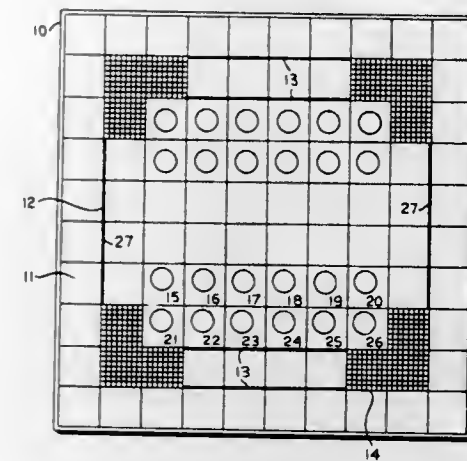
Int. Cl.² A63D 3/02

U.S. Cl. 273—122 R

5 Claims



and adjacent the top and bottom edges of the board, the remaining 36 squares being arranged in six rows, the upper-



most and lowermost rows each having six squares and the four central rows each having eight squares.

5. A game device, comprising:

a plurality of launchable objects;

a game board having two opposing playing areas with divider means therebetween, each playing area having at least one launching station for receiving at least one of said launchable objects;

a plurality of targets movably mounted on the game board in the area of said divider means for movement from one side of said divider means to the other side of the divider means;

selectively operable launching means at each launching station for propelling said objects therefrom toward said targets whereby said objects striking said targets move the targets from one side of the divider means to the other as the players attempt to be the first to move all the targets to the opposing player's side of the divider means; and means movably mounted in the area of said divider means for selectively positively blocking movement of said targets by engagement therewith, said movable blocking means including a shaft mounted on said divider means in proximity to said targets, said shaft being movable between a locked position and an unlocked position, and including a plurality of detents in alignment with said targets to permit movement thereof when the shaft is in the unlocked position and to prevent movement of the targets when the shaft is in the locked position with said detents out of alignment with the targets.

3,897,953

BOARD GAME APPARATUS

John Hovnanian, 25 Cobb St., Medford, Mass. 02155

Filed July 23, 1974, Ser. No. 490,929

Int. Cl.² A63F 3/02

U.S. Cl. 273—131 AB

1 Claim

1. A board game apparatus comprising a board and two sets of playing pieces, each set consisting of a single large piece, a single piece of somewhat smaller size, and ten pieces smaller than the last mentioned piece; said board having on its surface two sets of lines parallel to the sides of the board, the lines of one set being perpendicular to those of the other set, whereby 88 squares of equal size are provided, 36 of said squares forming a continuous path around the periphery of the board, the remaining squares being within said path and forming a major playing area having at each of its corners an area equivalent in size and shape to three squares, said areas being of distinctive appearance and forming an L-shaped figure, two rows of four squares each between legs of the L-shaped figures

15. An apparatus for distributing playing cards, comprising: means defining a known number of card receiving stations; means operative to move said playing cards in turn into said card receiving stations; means for pseudo-randomly selecting one of said card receiving stations for each playing card to be distributed; means responsive to said selecting means for controlling said moving means so as to move each playing card in turn into its selected card receiving station; means periodically determining, during distribution of the playing cards, how many playing cards have been distributed to each card receiving station; and automatic means, including electrical logic means, responsive to said determining means for periodically changing, during the distribution of the playing cards, the probability of selection of each card receiving station, in accordance with the number of playing cards remaining to be distributed and the number of playing cards already distributed to each card receiving station.

3,897,954

AUTOMATIC CARD DISTRIBUTOR

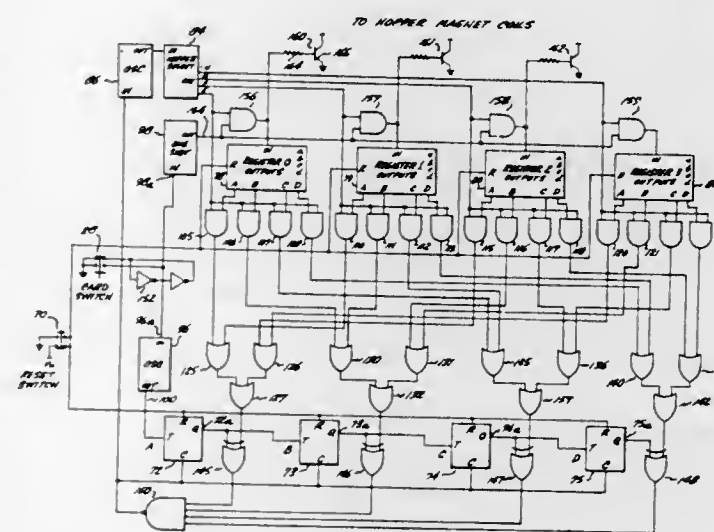
J. David Erickson, 10612 Durland Ave., N.E., Seattle, Wash. 98125, and Richard A. Kronmal, 4607 - 95th N.E., Bellevue, Wash. 98004

Filed June 14, 1974, Ser. No. 479,294

Int. Cl. A63f 1/14

U.S. Cl. 273—149 R

19 Claims



3,897,955

ADJUSTABLE STYLUS ASSEMBLY

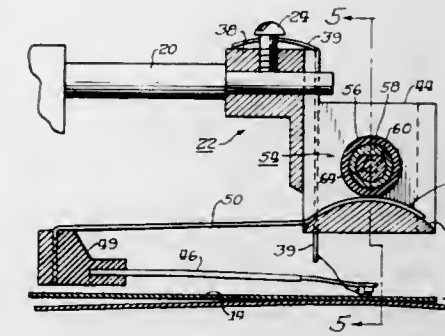
George R. Dickinson, Norridge, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Oct. 24, 1974, Ser. No. 517,692

Int. Cl.² G11B 3/02

U.S. Cl. 274—37

3 Claims



1. An adjustable stylus assembly for optimizing the output of a stylus while maintaining a predetermined contact pressure between the stylus and the information bearing track of a record irrespective of the angle of attack of the stylus relative to the track, said assembly comprising:

a stylus;

a mounting head comprising a bearing surface having a predetermined curvature and further including an adjustable driver disposed adjacent said bearing surface; means for supporting said stylus comprising a driven portion having a curvature corresponding substantially to that of said bearing surface and interposed between said bearing surface and said driver;

said stylus supporting means further including a member coupled to said driven portion for positioning said stylus at a location corresponding substantially to the effective center of curvature of said bearing surface; and means for adjusting said driver to displace said driven portion of said stylus supporting means along said bearing surface to establish a desired angle of attack for said stylus while maintaining the spacing between said stylus and said bearing surface substantially constant and, thereby, said predetermined contact pressure between said stylus and said track.

3,897,956

OIL SEAL MEMBER FOR USE IN ROTARY INTERNAL COMBUSTION ENGINE

Noriyuki Kurio, Hiroshima, and Keiichi Shin, Ageo, both of Japan, assignors to Nippon Piston Ring Co., Ltd., Tokyo, Japan

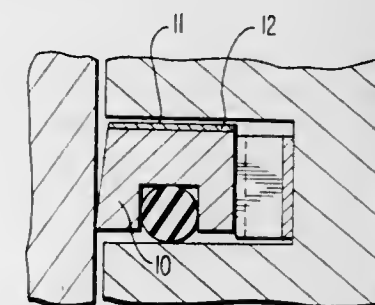
Filed May 3, 1973, Ser. No. 357,052

Claims priority, application Japan, May 6, 1973, 48-053069

Int. Cl. F01c 19/02

U.S. Cl. 277—81

5 Claims



1. A seal construction for a rotary combustion engine comprising, in combination:

a housing composed of spaced end walls and an annular wall interconnecting the end walls to form a cavity, a rotary piston pivotably mounted within said housing cavity and having axial end faces disposed adjacent to the inner

surfaces of said end walls and having a peripheral surface cooperating with the annular wall of the housing to define a plurality of working chambers therebetween, an annular groove provided on each end face of the rotary piston,

an annular sealing ring axially slidably positioned in said annular groove, said sealing ring having an axial outer end face at an angle with the inner face of the end wall with the axial outer and radial inner peripheral edge of the ring pointing towards the inner face of the end wall, a generally rectangular groove formed within the radially inner peripheral surface of said ring,

an annular rubbery O-ring seal member disposed within said rectangular groove within said ring to hermetically seal the radially inner peripheral surface of said ring with the annular oil seal groove receiving the same,

spring means disposed in said annular groove and urging said annular sealing ring axially outward of said groove so that the axial outer end of the radial inner peripheral edge of the ring engages with the inner surface of the end wall for efficient scraping of oil therefrom;

the improvement comprising:

a hardened layer formed on the radially outer peripheral surface to provide sufficient wear resistivity to said oil seal ring to insure low lubricating oil consumption regardless of superannuation of the oil ring during operation of the engine.

3,897,957

RING SEAL, ASSEMBLY AND METHOD OF MANUFACTURING

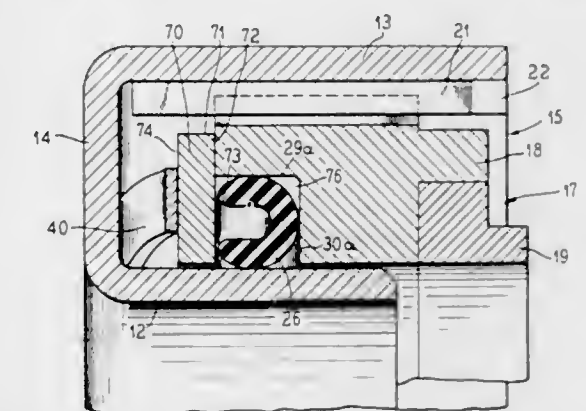
Dale J. Warner, Oaklawn, Ill., assignor to Gits Brothers Manufacturing Co., Chicago, Ill.

Continuation-in-part of Ser. No. 263,858, June 19, 1972, abandoned. This application Feb. 12, 1974, Ser. No. 441,835

Int. Cl. F16j 15/40

U.S. Cl. 277—85

4 Claims



1. A seal assembly comprising: a seal housing, the housing being U-shaped in cross section having inner and outer diameter axially directed legs interconnected at one axial end by a bight wall, a seal ring assembly including a seal associated first ring received in said housing, said first ring having an axial end interior of said housing opposite said bight wall and a second axial end projecting from said housing, a ferrule interior of said housing having at least a portion thereof disposed between the said axial end of said first ring and the bight wall, a spring disposed in said housing between said ferrule and said bight wall, said spring effective to urge said ferrule against said first ring whereby said first ring is urged away from said bight wall, a second seal ring disposed in said housing, a chamber in said housing defined by the inner diameter leg of said housing, a radial wall of said first ring, and an axial wall of said first ring, said second seal ring being dimensioned to be freely received within said chamber, said second seal ring being C-shaped in cross section and being formed of a resilient material with legs of the C-shape contacting the inner diameter leg of the housing and the axial wall of the first ring, the legs being resiliently displaceable axially inwardly towards one towards one an-

other by the sealing contact with the said axial wall and inner diameter leg, the secondary seal ring being free from axial compressive forces generated by said spring, the chamber closed opposite said radial wall by at least a portion of said ferrule, the ferrule positioned and dimensioned with respect to the secondary seal to restrict rotation of the secondary seal ring, said secondary seal ring having an annular groove extending thereinto from a surface thereof forming the C-shaped cross section, the groove having walls, and the walls being free of contact with other elements of the seal assembly whereby the walls of the groove are free to swell inwardly towards one another to accommodate swelling of the secondary seal.

3,897,958 SKI BINDING

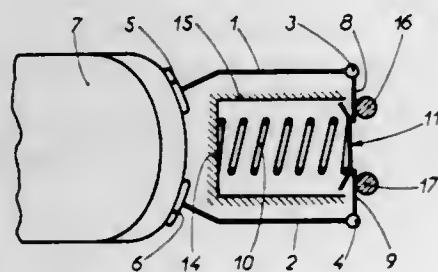
Bernard Sentou, Cluses, France, assignor to Mitchell S.A., France

Filed June 25, 1973, Ser. No. 373,266
Claims priority, application France, June 29, 1972, 72,23917

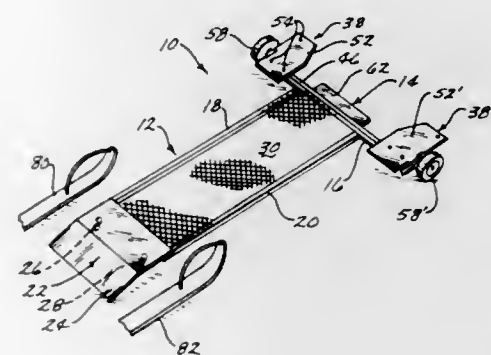
Int. Cl. A63c 9/00

U.S. Cl. 280—11.35 T

4 Claims



1. A safety ski binding, comprising:
two levers, each having first and second ends;
two jaw means, each provided on the first end of one of said levers, for jointly holding a boot sole and for lateral movement to release the boot sole in response to a lateral force acting on the boot;
spring means for elastically urging the second ends of both levers in a longitudinal direction for the holding of the boot sole by said jaw means;
an intermediate plate between the spring means and the second ends of the levers, said plate having a central face transverse of said longitudinal direction, having two lateral faces contiguous with and rearwardly inclined to said central face and having rear surfaces of said central and lateral faces which hold said plate substantially centered on said spring means; and
means for so mounting said levers, relative to said intermediate plate, that (a) the second ends of both levers bear on said transverse face when the jaw means hold the boot sole, (b) the second end of one lever moves outwardly over said transverse face of said plate held substantially centered on said spring means, towards the respective inclined face, to relatively strongly compress said spring means in response to an initial lateral movement of the respective jaw means while the jaw means continue to hold the boot sole, and (c) the second end of said one lever moves outwardly onto the respective inclined face to at most relatively weakly further compress said spring means in response to further lateral movement of the respective jaw means to release the boot sole.



3,897,959 SNOWMOBILE DOLLY

Raymond L. Haffner, 407 Avenue "S" West, Fort Dodge, Iowa 50501

Filed May 23, 1974, Ser. No. 472,626

Int. Cl. B62B 3/00

U.S. Cl. 280—79.1

7 Claims

1. A dolly for a snowmobile, comprising,
a first frame means having rearward and forward ends, said first frame means including means for supporting the track of the snowmobile thereon,
a caster wheel means secured to the rearward end of said first frame means for supporting said rearward end above the supporting surface,
a second frame means comprising a pair of spaced apart wheeled ski support means,
said second frame means having rearward and forward ends,
means pivotally securing said second frame means, about a horizontal axis, to the forward end of said first frame means,
said first and second frame means being relatively movable between a first position, and a second position,
said first frame means being substantially horizontally disposed when in its said first position,
said second frame means being substantially horizontally disposed when in its said first position,
the forward end of said first frame means extending downwardly towards the supporting surface when in its said second position,
the rearward end of said second frame means extending downwardly towards the supporting surface when in its said second position,
each of said ski support means including a support plate means normally positioned above the supporting surface and having rearward and forward ends, the rearward ends of said support plate extending downwardly towards the supporting surface when said first and second frame means are in their said second position to facilitate the skis of the snowmobile to move upwardly thereon as the snowmobile is driven forwardly relative to the dolly, said support plates being spaced outwardly of said first frame means
the majority of said ski support means being positioned forwardly of the pivotal connection of said first and second frame means so that the weight of the snowmobile on said ski support means will automatically cause said first and second frame means to move from their said second positions to their said first positions.

3,897,960 METHOD AND MEANS FOR ENABLING ACCESS TO VEHICULAR COMPARTMENT

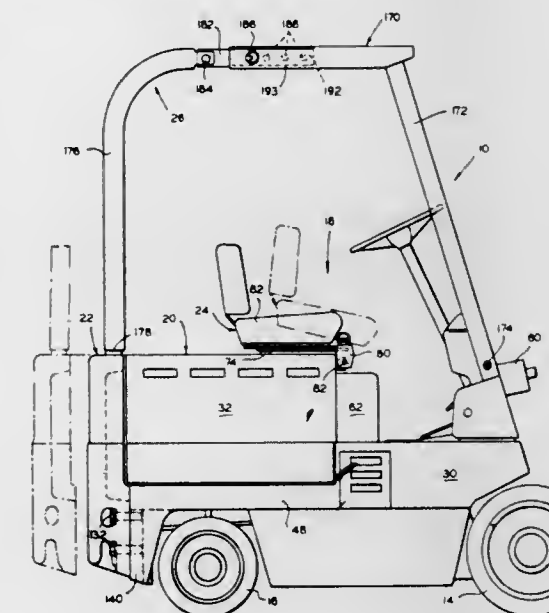
Henry L. Cosby, Hickory Corners, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Division of Ser. No. 34,713, May 5, 1970. This application Mar. 24, 1972, Ser. No. 237,830

Int. Cl. B62d 25/06

U.S. Cl. 280—150 C

1 Claim



1. An overhead guard for industrial vehicles comprising on one side thereof front and rear vehicle mounted inverted generally L-shaped aligned and facing rail portions, the upper generally horizontal legs of which terminate in overlapping relatively adjustable end portions providing on said side an inverted generally U-shaped guard rail, the front and rear legs of which rail are rigidly and non-pivotably connected to respective front and rear vehicle body portions, said overlapping end portions being adjustable longitudinally in relation to each other so as to vary selectively the effective length of the guard rail for vehicles varying in length between the locations of connection thereof to the front and rear portions of the vehicle, and the opposite side of said guard comprising front and rear vehicle mounted inverted L-shaped aligned and facing rail portions, the upper generally horizontal legs of which terminate in spaced and facing relation to each other, and generally horizontal connecting means for closing the said space to provide on said opposite side an inverted generally U-shaped guard rail, the front and rear legs of which are also rigidly connected to respective front and rear body portions, said connecting means being adjustable also to vary selectively the effective length of the guard rail for vehicles varying in length between the locations of connection thereof to the front and rear portions of the vehicles, said connecting means being also movably connected to one of said upper horizontal legs for opening the said space.

3,897,961 INFLATABLE RESTRAINT APPARATUS

Maurice B. Leising, Clawson, and John J. Lenosky, East Detroit, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed May 2, 1973, Ser. No. 356,643

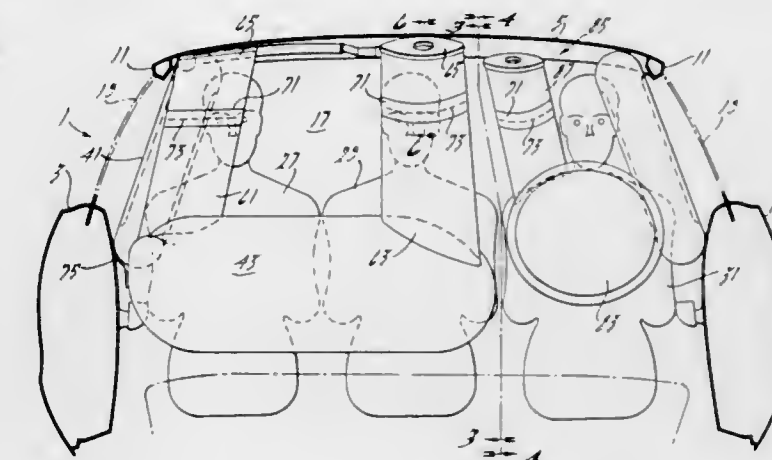
Int. Cl. B60R 21/08

U.S. Cl. 280—150 AB

10 Claims

1. Restraint apparatus for an occupant of a vehicle having a roof, an instrument panel and an occupant compartment under said roof and rearwardly of said instrument panel, comprising a source of gas, inflatable bag means, storage means adjacent said roof for holding said inflatable bag means in a collapsed condition, said inflatable bag means comprising a laterally extending bag portion and a plurality of tube means spaced apart from each other and connecting said portion to

said source of gas, said tube means and portion of said bag means being inflated by the passage of gas through said tube means into said portion of said bag means, said portion of said bag means when inflated, being spaced from said roof and held away therefrom by said tube means, said tube means and said one portion of said bag means providing an open space



located above said one portion of said bag means, between said spaced tube means and below said roof and at least one inflatable stub-shaped projection extending forwardly from said portion for engaging said instrument panel whereby said bag means provides a downward and rearward force on said occupant

3,897,962 GAS GENERATOR NOZZLE

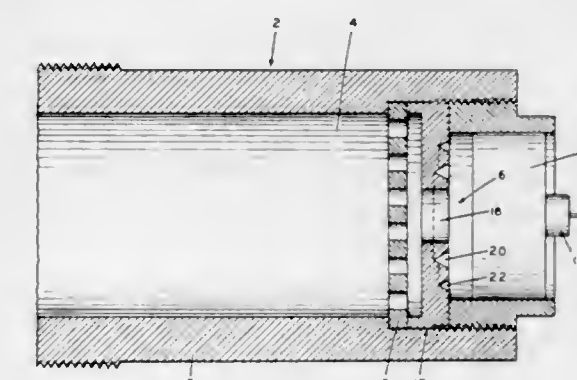
John J. Sack, Bloomfield Hills, Mich., assignor to Allied Chemical Corporation, New York, N.Y.

Continuation of Ser. No. 124,705, March 16, 1971, abandoned. This application June 20, 1973, Ser. No. 371,794

Int. Cl. B60r 21/08

U.S. Cl. 280—150 AB

2 Claims



1. In a gas generator for inflation of at least one bag including a combustion chamber means provided with a combustible material and an ignition means to ignite said combustible material to generate large volumes of gas, the improvement comprising a nozzle for regulating the gas flow into said gas bag, said nozzle provided with an orifice in the center thereof, said nozzle disposed in said combustion chamber means directly in the flow of said gas from said combustible material, prior to any other apparatus for treating said gas and prior to the passage of said gas through any other orifices, said nozzle provided with at least a first pressure sensitive failure point and a second pressure sensitive failure point, each of said failure points disposed on structure surrounding said orifice and being adapted to fail and thus to increase the orifice size, said first failure point disposed closer to the center of said orifice than said second failure point, said first failure point arranged to fail prior to said second failure point, the size of said orifice increasing gradually in a direction outward from the center of said orifice by removal of part of said structure and enlargement of the preexisting orifice as a function of the increased pressure in said combustion chamber means.

3,897,963

PASSIVE SAFETY DEVICE FOR A VEHICLE

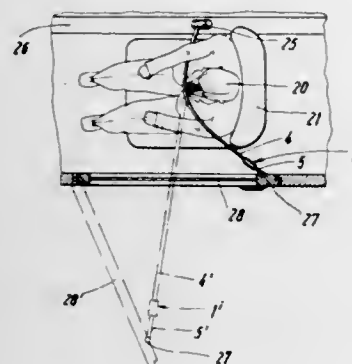
Ulrich Seiffert, Braunschweig, and Burckhard Strüwe, Fallersleben, both of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Filed Oct. 31, 1973, Ser. No. 411,190

Claims priority, application Germany, Nov. 10, 1972, 2254952

Int. Cl.² B60K 21/10; A44B 11/26

U.S. Cl. 280—150 SB



1. A passive safety device for a passenger vehicle comprising:

- a. a safety belt extending transversely of an associated seat in the vehicle and adapted to engage a portion of the body of the passenger when seated in the seat, said safety belt being divided into two distinct portions;
- b. first means for permanently securing an end of one of said portions of said safety belt to an associated door on the vehicle, the door being movable so that said safety belt can be selectively engaged with and disengaged from the body of the passenger;
- c. second means for permanently securing an end of the other of said portions of said safety belt to the vehicle, said second securing means being spaced from said first securing means a distance equal to at least a portion of the width of the seat and in a direction transverse of the seat; and
- d. a sole releasable coupling mechanism including a male buckle part attached to the free end of one of said portions of said safety belt, said male buckle part having a cutout therein, a female buckle part adapted to receive at least a portion of said male buckle part and attached to the free end of the other of said portions of said safety belt, said female buckle part including catch means for engaging said male buckle part and actuating means for disengaging said catch means from said male buckle part, and a pin connected between said male and female buckle parts for maintaining said male and female buckle parts in engagement with each other until a load is exerted on said safety belt exceeding a predetermined release load, the predetermined release load being no greater than impact loads normally exerted on a safety belt when in use during a vehicle accident, said catch means including a lug engagable with and disengagable from said cutout in said male buckle part, said cutout extending lengthwise of said safety belt a distance greater than a corresponding dimension of said lug by a length at least equal to a dimension of said pin measured lengthwise of said safety belt in a shear plane of said pin, wherein relative movement between said male and female buckle parts is permitted for shearing said pin without disengagement of said male and female buckle parts until said actuating means is manually actuated.

3,897,964

IDENTIFICATION CARDS AND METHOD FOR MAKING THE SAME

Satoshi Oka, Matsudo; Junro Tawara, Fussa; Akira Ohmameuda, Kasukabe, and Kazumasa Uda, Yokohama, all of Japan, assignors to Dai Nippon Printing Co., Ltd., Tokyo, Japan

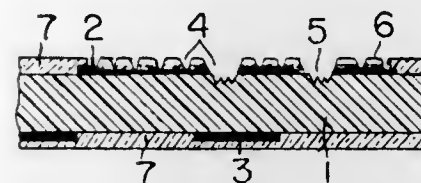
Filed May 17, 1972, Ser. No. 253,940

Claims priority, application Japan, Dec. 8, 1971, 46-99267; Feb. 28, 1972, 47-19662

Int. Cl. B42d 15/00; G09f 3/02

U.S. Cl. 283—7

8 Claims



1. An identification card comprising a base, a contrasting layer having a different color compared to said base positioned in at least a portion of said base, a plurality of cutout portions into the surface of said layer including first and second preselected cutout portions being of different depths, the depth of said first cutout portions extending through said layer and through the surface of said base to expose preselected varying areas of said base, the depth of said second cutout portion extending to less than the thickness of said layer, and said exposed areas of said base within said cutout portions forming an image in contrast to the remaining area of said surface of said layer.

3,897,965

DOOR LOCK DEVICE

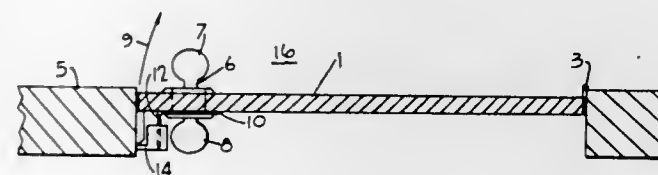
John R. Miller, Sacramento, Calif., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Oct. 2, 1974, Ser. No. 511,123

Int. Cl. E05c 3/00

U.S. Cl. 292—194

1 Claim



1. A door lock device for a door mounted on hinges in a door frame and having a knob stem extending therethrough and door knobs mounted thereon, the door being openable by rotation about its hinges in a direction from one door knob to the other, said door lock device comprising:
 - a door plate having a bore formed therethrough for accommodating the knob stem and a lock member extending therefrom substantially perpendicularly thereto and having a serrated edge substantially perpendicular to the door plate, said door plate being mounted on the door under the door knob from which the door moves in opening; and
 - a frame plate affixed to the door frame in operative proximity with the door plate and having pin-type means pivotally affixed thereto for releasably engaging the serrations in the serrated edge of the lock member of the door plate to lock the door and prevent it from being opened.

3,897,966

CHAIN DOOR LATCH ASSEMBLY

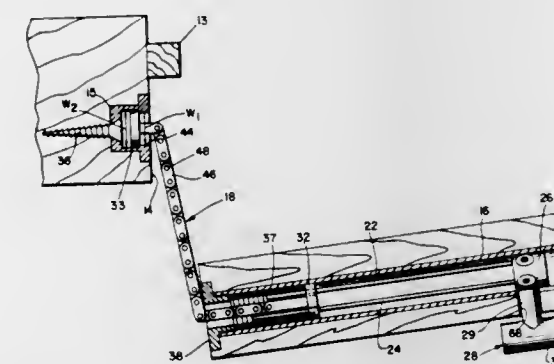
Harry C. Draughon, Sr., 4371 Glenwood Rd., Apt. F-9, Decatur, Ga. 30032

Filed June 27, 1974, Ser. No. 483,545

Int. Cl.² E05C 17/06

U.S. Cl. 292—264

12 Claims



1. A combination door latch and safety chain assembly comprising:

- chain means having a plurality of links serially interconnected with pivot means so as to be flexible in only one plane, said one plane being perpendicular to a second plane passing through said pivot means;
- support means for positioning said chain means with respect to a door;
- receiver means securable to a door jamb to engage said chain means, said chain means being extendable between said door and said jamb; and
- selector means for selectively orienting said chain means with respect to said door, whereby said chain means when engaged with said receiver means is flexible in said one plane to allow movement of said door, said movement being when said chain is oriented with the second plane of said pivot means thereof aligned substantially parallel to said door, and said chain means being inflexible in said one plane to prevent movement of said door when said chain is oriented with the second plane of said pivot means substantially perpendicular to said door.

3,897,967

PROTECTIVE STRIP FOR MOTOR VEHICLES, ESPECIALLY PASSENGER MOTOR VEHICLES

Bela Barenzy, Maichingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Germany

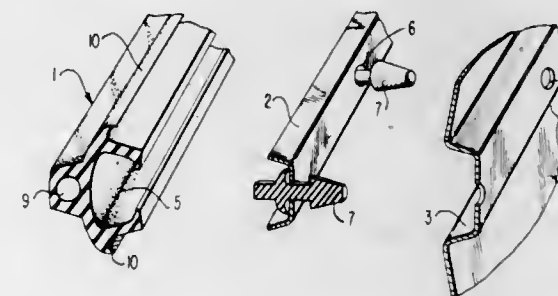
Filed Mar. 9, 1973, Ser. No. 339,878

Claims priority, application Germany, Mar. 9, 1972, 2211363

Int. Cl. B60j 11/00; B60r 19/08; E04f 19/02

U.S. Cl. 293—1

18 Claims



1. A protective strip for motor vehicles having a vehicle body covering provided with a recess having upper and lower walls which taper inwardly for accommodating the protective strip, the protective strip comprising: an elastic profile means, a longitudinal slot means provided in said profile means substantially along the entire length thereof, a substantially C-shaped cavity provided in said elastic profile means and defined by a pair of spaced leg portions disposed substantially

parallel to the upper and lower walls of the recess provided in the body covering, said longitudinal slot means opening into said substantially C-shaped cavity, a retaining profile means receivable in said substantially C-shaped cavity and extending substantially along the entire length thereof, said retaining profile means consists of a bar U-shaped in cross section having spaced leg portions projecting in a direction away from the body covering and extending substantially parallel to the upper and lower walls of the inwardly tapering recess of the body covering so that a dove-tail-shaped construction results, said leg portions of said retaining profile means pressing said leg portions of said substantially C-shaped cavity against the walls of said recess, fastening means for fastening the retaining profile means of the protective strip to the body covering, and bore means provided in the retaining profile means for receiving said fastening means to secure the protective strip to the body covering.

3,897,968

ASPIRATOR-TYPE CONTACT LENS FITTING AID

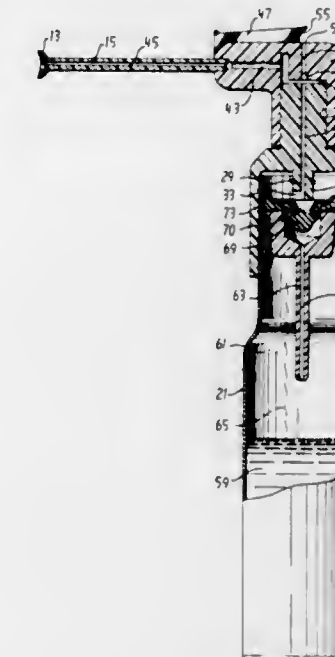
Robert E. Allen, Jr., Laurel, Md., assignor to DU-AL Corporation, Laurel, Md.

Filed Mar. 8, 1974, Ser. No. 449,504

Int. Cl. A61f 9/00

U.S. Cl. 294—1 CA

10 Claims



1. A contact-type lens fitting aid for use with a portable aerosol-like can of pressurized gas, said fitting aid comprising: a single soft, resilient suction cup of a size for entering between human eyelids for gripping lenses positionable on eyeballs, said suction cup having an opening therein for providing communication between a gripping side of said suction cup and a suction passage;

a suction creating device comprising:

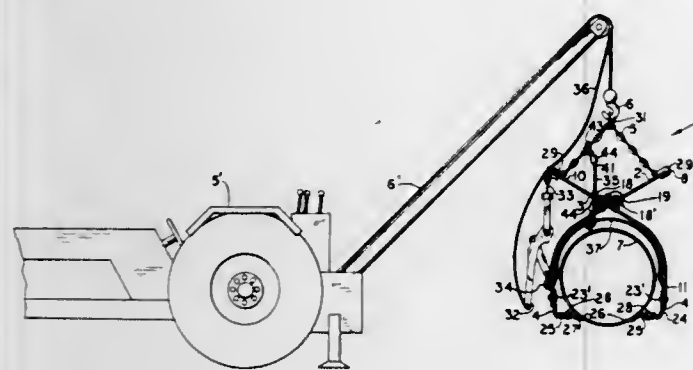
- a valve actuator means for selectively controlling a valve which controls the flow of said pressurized gas from said aerosol-like can to a narrow passage;
- a directing means for defining said narrow passage and for directing flow from said gas source means along said narrow passage; and
- a means for defining said suction passage to intersect said narrow passage, whereby said gas flow creates a suction in said suction passage which causes said suction cup to grip said lenses.

3,897,969 GRAPPLE

Clarence L. Dike, Box 55A, Rt. 1, Oak Grove, Mo. 64075
Filed May 13, 1974, Ser. No. 469,240
Int. Cl. B66c 1/30

U.S. Cl. 294—118

7 Claims



1. A grapple for use with a crane for lifting elongate objects such as pipe, said grapple comprising:
 - a. at least one pair of crossed arms with each arm having an upper and lower end;
 - b. pivot means operably connected to said arms intermediate the upper and lower ends thereof and permitting pivoting movement of said arms;
 - c. a pair of elongate angle jaw members in generally parallel and opposed relation with each jaw member being secured to a respective arm adjacent the lower end thereof, said jaw members being movable toward and away from one another in response to movement of said arms and being engageable with a substantial length of an object positioned between said jaw members when said jaws move toward one another;
 - d. a flexible member extending between and connected to the upper ends of said arms for connection to a lifting device whereby lifting of said arms effects movement of said jaw members toward one another for clamping engagement with opposite sides of the object;
 - e. leverage means operably connected to each of said arms for shortening the distance between the upper end of one arm and the lower end of the other arm to effect movement of said jaw members away from one another;
 - f. a safety means operably connected to said arms and said flexible member selectively preventing said jaw members from moving away from one another if one of said flexible members and said arms should break.

3,897,970

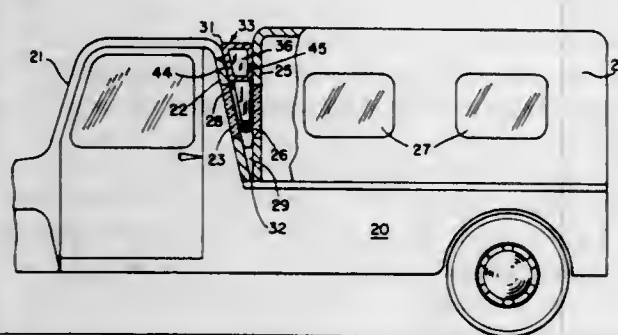
INFLATABLE, DETACHABLE GAP FILLER FOR CAMPER CAPS

Herbert H. Gattenby, Rt. 28, R.F.D. 3, Derry, N.H. 03038
Filed Sept. 4, 1973, Ser. No. 393,724

Int. Cl. B60P 3/32

U.S. Cl. 296—23 MC

1 Claim



1. In combination with a pick-up truck having a cab with a windowed rear wall and a camper cap with a windowed front wall, said windowed front wall being spaced by a predetermined gap from said windowed rear wall;

an inflatable filler, or seal, of soft, resilient, air impervious material normally folded into a flat, compact package, said filler being partially inflatable, and erectable, into self supporting inverted, U-shaped configuration with an upper portion extending from one side of said cap and cab to the other, above said window and with a pair of integral tapered side portions, each extending down along one of the opposite sides of said windows; said upper and side portions being of hollow quadrangular cross section and having flat forward and rearward walls with enlarged beads extending peripherally therearound; air tube and valve means in one said side portion for enabling full inflation of said filler to detachably lodge the same in said gap in frictional contact with said cab and cap walls, but to permit dislodgment by deflation for folding the same into said package.

3,897,971

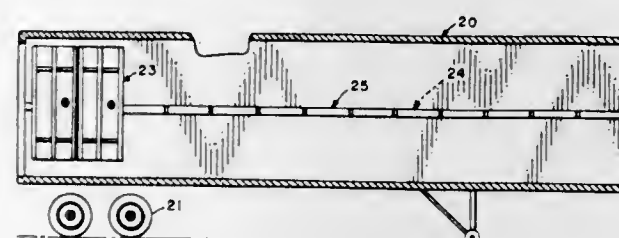
TRAILER INSTALLATION

John J. Evans, Chicago, Ill., assignor to DDT, Inc., Chicago, Ill.
Filed June 17, 1974, Ser. No. 479,752

Int. Cl. B61d 3/06

U.S. Cl. 296—24 R

10 Claims



1. A freight carrying installation comprising a body having a height greater than its width,
 - a. positionable deck for supporting merchandise between the sidewalls of said body about midway the body height and including a plurality of elongated deck members arranged in side-by-side relation along the body length, each of said members being adapted in a first position to extend upwardly along one body sidewall and in a second position to extend across the width of said body, each of said members having two longitudinally extending grooves in the surface thereof facing upwardly when said member is in said second position, said grooves extending to the one end of said member adjacent said one sidewall when said member is in said second position,
 - a. first pivot means in each groove spaced from said one end of said member,
 - a. second pivot means on said one sidewall aligned with each first pivot means,
 - a. rigid link interconnected between each first and second pivot means, said link retracting to an unobstructing position within each said groove and being parallel with the deck in a horizontal load carrying position, and,
 - a. support rail on the other sidewall of said body for the other end of each member whereby each member is pivotal from a vertical storage position to said horizontal load carrying position.

3,897,972

REINFORCED DUMP BODY

George E. Logue, 321 Winters Ln., Montoursville, Pa. 17754
Filed Oct. 29, 1973, Ser. No. 410,323

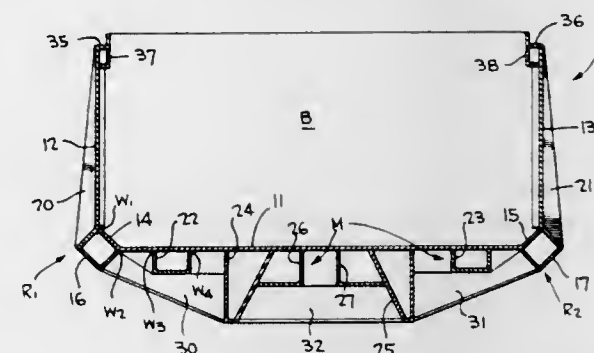
Int. Cl. B60p 1/28; B60h 1/18

U.S. Cl. 296—28 D

10 Claims

1. A reinforced dump body including two side walls having a top and bottom edge and a floor adjacent the bottom edge, the improvement comprising a plurality of longitudinal reinforcement members extending underneath the floor and attached along the upper edges to said floor, a longitudinal flange turned upwardly at approximately 45° along the sides, an outside channel rail adjacent the bottom edge, one of said

channel rail and said flange being formed integrally with a respective one of said floor and said side walls, said channel rail mating with said flange and forming substantially a rectangular corner rail, a plurality of laterally tapered side buttress members extending from the top edge of said side wall downwardly to the upper face of said rail and merging smoothly with both, at least one inner sill member of said reinforcement



members adjacent the longitudinal center of said floor extending below the others and said side rail, and cross supports for interconnecting said reinforcement members tapering from the lower face of said corner rail to the outer side face of said inner sill member and merging smoothly with both, whereby a full C-clamp structure is formed in cross section for said body by said cross supports, corner rails and buttress members for maximum strength and rigidity of said body.

3,897,973

BLOOD DRAWING CHAIR

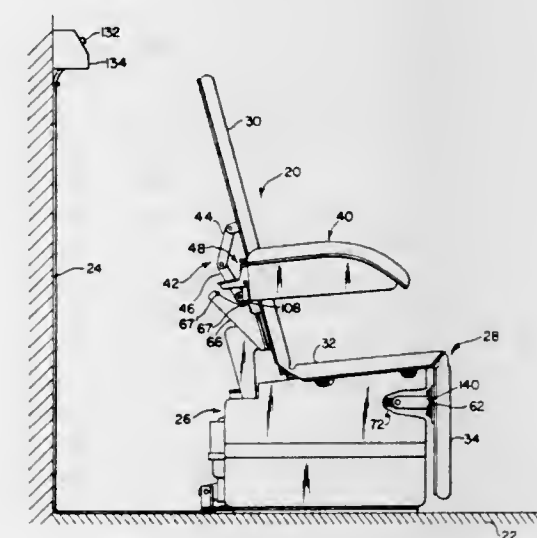
Larry K. Long, Tempe; William F. Jackson, and John W. Winter, both of Phoenix, Ariz., assignors to Amerco, Inc., Phoenix, Ariz.

Filed June 5, 1973, Ser. No. 367,262

Int. Cl. A47c 7/035

U.S. Cl. 297—75

5 Claims



1. A blood drawing chair comprising:
 - A. a base assembly including:
 - i. a fixed base;
 - ii. a rectilinearly movable seat assembly mounted on said fixed base;
 - B. a back hinged to the rear of said seat assembly;
 - C. a chair front leg rest hinged to the front of said seat assembly;
 - D. an arm assembly articulated to said back operable to permit maintaining the arm assembly in an erected position said articulation comprising a bracket assembly interconnecting said arm assembly and said back, including pivotally interconnected link arms respectively attached at ends thereof to said back and said arm assembly, and arm brake pad means interconnected between said con-

nected ends of said link arms, said link arms being operable to allow articulation of said arm assembly to raised or lowered positions and further including pawl indexing means, operable to selectively maintain said arm assembly in said erected position through contact with arm stop blocks fixedly positioned relative to said chair back, whereby said arm assembly can be selectively maintained in said erected position during said movement of said seat assembly,

E. actuating means for rectilinearly moving said seat assembly with respect to said fixed base; and

F. means operable upon said movement of said seat assembly forwardly or rearwardly to simultaneously pivot said chair front leg rest and said back with respect to said seat assembly to a patient reclining position or a patient sitting position respectively.

3,897,974

CANTILEVERED SEAT FOR MOTORCOACH VEHICLES OR THE LIKE

Chester J. Barecki, Grand Rapids, Mich., assignor to American Seating Company, Grand Rapids, Mich.

Continuation-in-part of Ser. No. 211,423, Dec. 23, 1971, Pat.

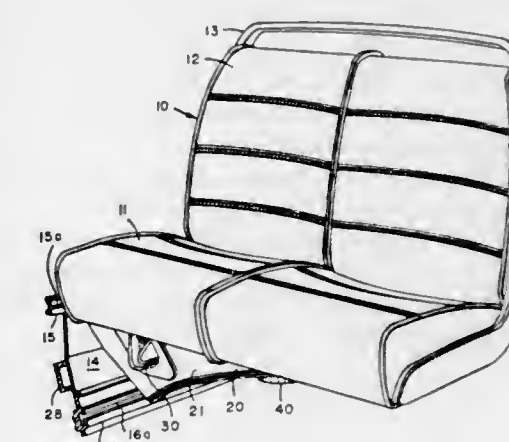
No. 3,747,979. This application July 19, 1973, Ser. No.

380,753

Int. Cl. A47c 7/02; B60n 1/02

U.S. Cl. 297—451

18 Claims



1. In a multi-passenger seat for a vehicle, the combination comprising: a horizontal seat frame having two elongated horizontal stretcher members and cross frame means interconnecting said stretcher members at laterally spaced locations to form a rigid structure; an inclined arcuate truss frame located beneath said horizontal stretcher members and including forward and rear inclined arcuate truss frame members rigidly attached at their upper ends adjacent said stretcher members respectively and inclined downwardly from said attachments the curvature of said truss frame members being upwardly toward said horizontal seat frame thereby providing by said arcuate shape less underseat obstruction from the inclined truss member and a resultant greater leg and foot room; and means for mounting the wall ends of said stretcher members and the lower ends of said inclined arcuate truss frame members to the wall of said vehicle at a location above the floor, said seat being characterized in there being no connection between said seat and the floor of the vehicle.

3,897,975

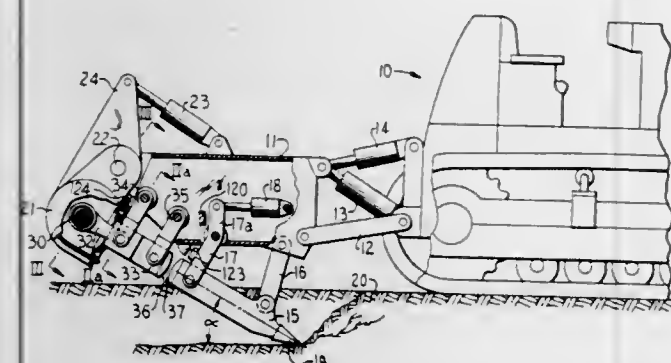
METHOD FOR FRACTURE OF MATERIAL IN SITU WITH STORED INERTIAL ENERGY

Delwin E. Cobb; Carl L. Kepner, both of Peoria; Wayne E. Roberts, Pekin, and Albert L. Woody, Peoria, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 133,262, April 12, 1971, Pat. No. 3,770,322. This application Aug. 27, 1973, Ser. No. 377,324 Int. Cl.² A01B 35/00; E01C 23/09

U.S. Cl. 299-14

5 Claims



1. A method of fracturing a rock formation, said method comprising the steps of:

- mounting a ripper shank on a frame for oscillatory movement relative thereto;
- manipulating the fracturing tip of said ripper shank into engagement with a surface of a rock formation;
- storing rotary inertial energy in a massive balanced rotating flywheel by continuously rotating said flywheel;
- transmitting portions of said energy on demand to said shank in the form of high energy impact blows by the further steps of,
- translating the rotary motion of said flywheel to oscillatory motion by eccentric means,
- positioning impact means adjacent said shank for intermittent engagement therewith, and
- interconnecting said eccentric means and said impact means by means of rigid means journaled for rotation on said eccentric means for establishing a positive connection of said eccentric means to said impact means for imparting movement of said impact means intermittently into engagement with said shank.

3,897,976

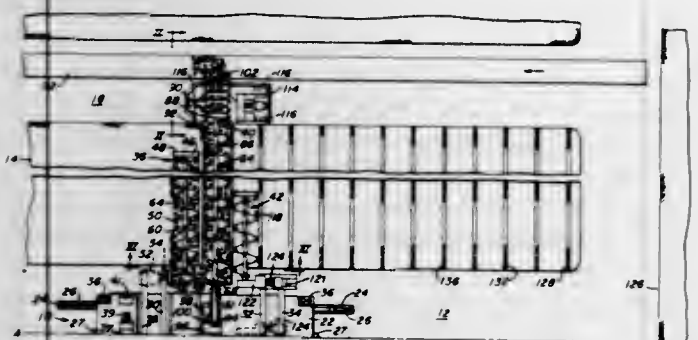
AUGER MINING MACHINE

Alex J. Gallis, 608 Killarney Dr., Apt. No. 3, Morgantown, W. Va. 26505

Filed July 12, 1974, Ser. No. 487,966 Int. Cl.² E21C 27/22

U.S. Cl. 299-56

8 Claims



1. An auger mining machine comprising,
- a frame portion having propelling means for moving said frame portion over the ground,
 - a plurality of oppositely positioned auger units mounted in spaced parallel relation on said frame portion transversely relative to the longitudinal axis thereof, said auger

units including a first string of drilling augers and a second string of conveying augers, power means drivingly connected to each of said auger units for rotating said auger units at a preselected speed, guide means positioned transversely on said frame portion for supporting said auger units for movement on said frame portion, first conveyor means positioned in material receiving relationship with the end portions of said drilling augers and said conveying augers adjacent to said frame portion for transferring dislodged material from said drilling augers to said conveying augers, and second conveyor means positioned in material receiving relationship with the end portions of said conveying augers distant from said frame portion for receiving and transporting dislodged material away from said conveying augers.

3,897,977

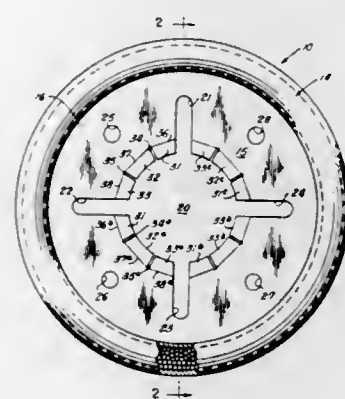
WHEEL BALANCER

Michael de Meurisse, Belvedere, Calif., assignor to Pacer Products, Inc., Sunnyvale, Calif.

Filed June 21, 1973, Ser. No. 372,261 Int. Cl.² B60B 13/00

U.S. Cl. 301-5 BA

6 Claims



1. A wheel balancer mountable on a brake drum of a vehicle, the brake drum having a substantially vertical outer surface, a central hub means extending horizontally outwardly of the vertical surface and a plurality of equidistantly spaced lug bolts located about the hub means and extending horizontally outwardly of the vertical surface, said wheel balancer including: a circular body having a central planar portion adapted to abut the vertical outer surface of a brake drum, said body having a central aperture for receiving the hub means of the drum and a plurality of slots extending outwardly from said central aperture and in communication therewith for receiving the big bolts of the drum and for accommodating various stud patterns; a circular tube secured to said body concentric with said central tube providing a circular closed passage; and a liquid and small shot in said passage and free to move therein.

3,897,978

METHOD AND DEVICE FOR HIGH CONCENTRATE PNEUMATIC CONVEYING OF POWDER OR GRANULAR MATERIAL

Ryuichi Aoki, Yokohama, and Noboru Kawakami, Tokyo, both of Japan, assignors to Fuji Paudal Kabushiki Kaisha, Osaka, Japan

Filed Aug. 3, 1973, Ser. No. 385,562 Claims priority, application Japan, Aug. 10, 1972, 47-80608; Dec. 12, 1972, 47-124870

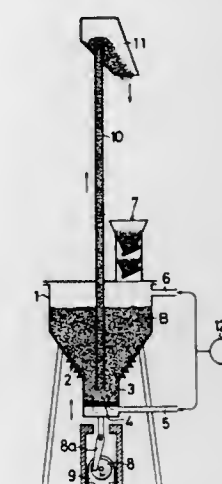
Int. Cl.² B65G 53/40

U.S. Cl. 302-56

2 Claims

1. A device for high concentrate conveying of a granular material comprising in combination: a closed hopper type container means for containing the material to be conveyed;

a material inlet means with a double damper connected to the top of the container means; a conveyor duct having an axis and an equalized diameter lower end opening to be positioned in the lowest portion of the material placed in the container means, the duct extending through the container means to an upper portion thereof; an oscillating means comprising means linked to a movable bottom portion movably connected to the upper half portion of the container means for imparting relative reciprocating movement between the material and duct



and giving the material in the vicinity of the opening a reciprocating motion in the same direction as the axis of the conveyor ducts; and air supplying means for supplying a small amount of air to the material comprising a plate disposed in the movable bottom portion and formed with a number of apertures having a smaller diameter than the granules of the material and a gas supply pipe for supplying a gas from outside the plate therethrough, whereby there is produced a rodlike stream of the material within the conveyor duct in the direction of transport.

3,897,979

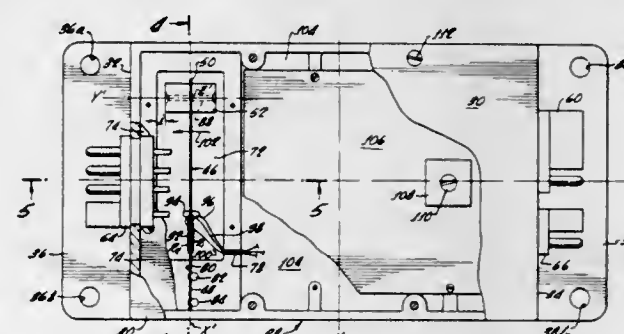
TRAILER BRAKE CONTROL SYSTEM

Dan P. Vangalis, San Juan Capistrano, and George K. Burdick, Mission Viejo, both of Calif., assignors to Vantronics, Inc., Costa Mesa, Calif.

Filed July 15, 1974, Ser. No. 488,273 Int. Cl. B60t 8/24

U.S. Cl. 303-24 BB

14 Claims



12. In combination, a wheeled trailer having an electric brake system including electric brake coils and an electric power line running to the brake coils, the trailer having a longitudinal axis and a forward end; and, an inertial and gravitational sensitive brake control device serially interposed in said electric power line, said brake control device comprising a housing having a closed compartment filled with a damping liquid, an elongated flat spring mounted as a cantilever in the closed compartment and having a free end with a weight affixed thereto, the elongated flat spring being oriented in a plane approximately normal to the longitudinal axis of the trailer with the spring extending laterally of the trailer approximately parallel to the wheel axes thereof, means for detecting flexure of the spring in the forward direction of the trailer, and

3,897,980

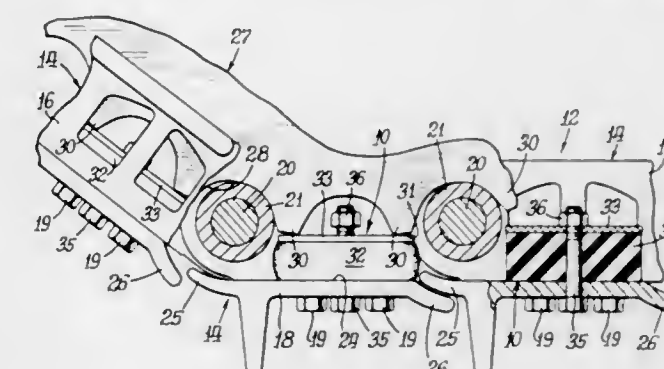
SPROCKET TOOTH ENGAGING TRACK NOISE SUPPRESSION MEANS

Delbert D. Dester, Washington; Roger L. Boggs, East Peoria; Harold L. Reinsma, Dulay, and Maurice E. Young, Washington, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 5, 1974, Ser. No. 458,243 Int. Cl. B62d 55/20

U.S. Cl. 305-57

10 Claims



1. A track chain for a track-laying vehicle having a plurality of link means articulately coupled together by pin and bushing means, said bushing means being adapted to be driven by sprocket means to drive said track chain at least one of said link means including noise attenuating means for reducing the noise associated with driving said track chain, said noise attenuating means including resilient spring means mounted upon said one link means between its associated bushing means, said noise attenuating means further including wear plate means directly engaging said spring means and adapted for directly engaging the radially outermost teeth portions of said sprocket means.

3,897,981

PLASTIC GUIDE FOR DRAWER

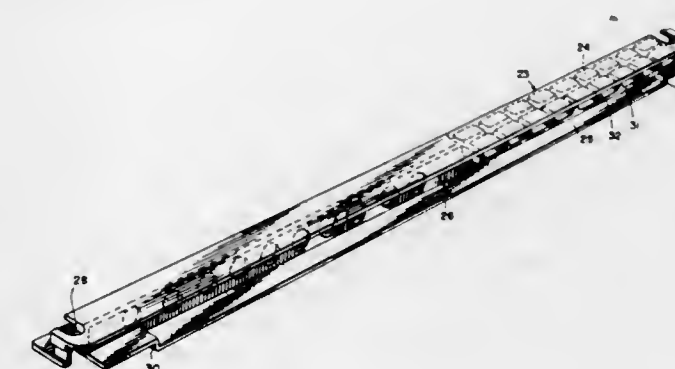
Edward L. Kaplan, Northbrook, and Gerhard Cless, Skokie, both of Ill., assignors to Kenneth H. Gutner, Highland Park, Ill.

Continuation-in-part of Ser. No. 372,228, June 21, 1973, Pat. No. 3,846,001. This application Jan. 16, 1974, Ser. No. 433,908

Int. Cl. F16c 17/00

U.S. Cl. 308-3.6

2 Claims



1. A drawer guide adapted to be mounted on a furniture piece to guide the movement of a drawer positioned over the front and rear parting rails of said furniture piece and equipped with a channel shaped slide comprising a unitary elongated plastic element having upper and lower integral horizontally extending flanges integrated by a

vertically extending web which extends substantially over the element length to define a generally I-shape and transverse section and equipped with an aperture adjacent each end for receiving a fastener to secure the element to said parting rails,

said element further including an integral reinforcement on the underside of said top flange, said reinforcement extending rearward from the front of said guide no more than about 50% of the length of the guide bat at least 3 inches to provide increased resistance to vertical flexure incident to drawer removal, said reinforcement having a planar underside over most of its length to afford good sliding contact with a drawer slide, said reinforcement including a longitudinally extending rib providing said underside and extending on each side of said web, said rib being further integrated to said upper flange and said web by a plurality of longitudinally spaced apart transversely extending webs.

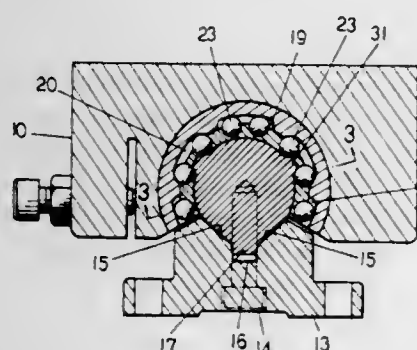
3,897,982 SLIDE WAY BEARING

Hiroshi Teramachi, Higashi-Tamagawa, Setagaya-ku, Tokyo, Japan

Filed Sept. 20, 1973, Ser. No. 399,327
Int. Cl. F16c 17/00, 19/00, 29/00

U.S. Cl. 308-6 R

5 Claims



1. A slide way bearing comprising, in combination, an elongated bed; an elongated track shaft secured to said bed to extend therealong and project thereabove, at least that portion of said track shaft projecting above said bed having a circular cross section, and said track shaft having plural, angularly spaced ribs extending in parallel relation longitudinally thereof; a sleeve, having a C-shaped cross-section conforming, in arcuate extent, to substantially the cross section of said upwardly projecting portion of said track shaft; said sleeve being formed with pairs of longitudinal sleeve grooves in its inner surface, with one sleeve groove of each pair being deeper than the other sleeve groove of the pair, the sleeve grooves of each pair having their opposite ends interconnected by arcuate grooves; a ball retainer, having a C-shaped cross-section conforming in arcuate extent substantially to the arcuate extent of said upwardly projecting track shaft portion, telescoped in said sleeve and embracing said projecting portion of said track shaft; said ball retainer being formed with pairs of longitudinal retainer grooves in its outer surface, with one retainer groove of each pair being deeper than the other retainer groove of the pair, and the retainer grooves of each pair having their opposite ends interconnected by arcuate grooves; said retainer grooves being aligned with said sleeve grooves and each deeper retainer groove having a slotted bottom and being aligned with a shallower sleeve groove, said sleeve and retainer grooves conjointly forming oval race ways for balls; each of said ribs being disposed between a pair of race ways whose slotted retainer grooves are juxtaposed to the rib; and balls in each of said race ways; said sleeve, said ball retainer and said ribs being relatively arranged in a manner such that balls in said race ways, when in said slotted retainer grooves, are in load bearing contact with said track shaft, said sleeve and said ribs, and, when in said deeper sleeve grooves,

are out of contact with said track shaft and said ribs and are free of load.

3,897,983 AIR BEARING

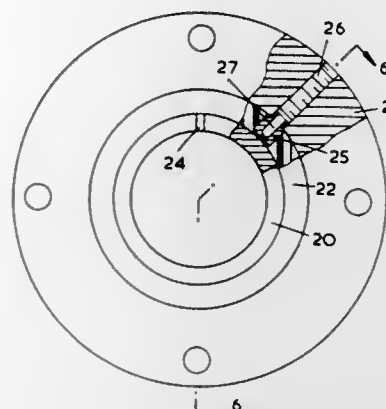
John Anthony Hindle, Leeds, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Sept. 26, 1973, Ser. No. 400,813
Claims priority, application United Kingdom, Sept. 26, 1972, 44306/72

Int. Cl. F16c 27/06; F16f 1/38

U.S. Cl. 308-26

6 Claims



1. An air bearing, comprising an inner split ring of a resilient refractory material, a rigid outer ring, a ring of an elastomeric material located between the inner and outer rings and supporting the inner ring with respect to the outer ring, and means for varying the resilience of said elastomeric ring.

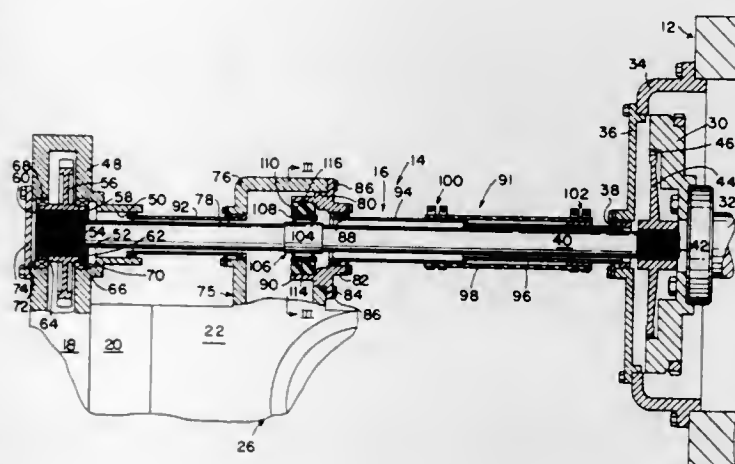
3,897,984 ADJUSTABLE RESILIENT SUPPORT APPARATUS

Jesse E. Matheny, Jr., Decatur, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed June 24, 1974, Ser. No. 482,516
Int. Cl. F16C 35/04

U.S. Cl. 308-62

9 Claims



1. Apparatus for controlling oscillation of a shaft rotatably supported by first and second spaced-apart shaft support means, said apparatus comprising:
third shaft support means positioned between the first and second support means and comprising a support body, means associated with said support body for exerting a radial preload force on said shaft, and means associated with said support means for selectively varying the magnitude of said radial preload force on said shaft.

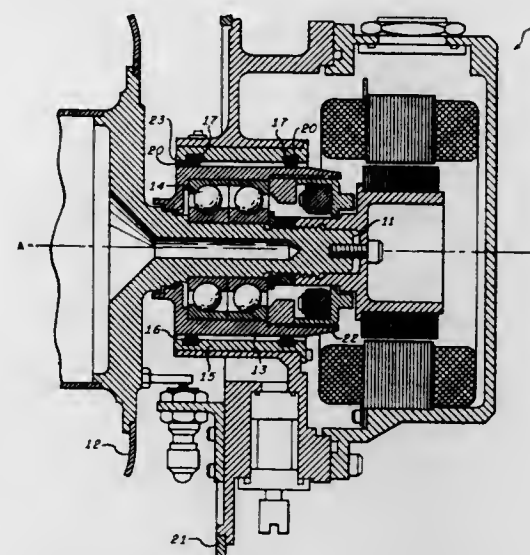
3,897,985 ALIGNING MEANS FOR BEARINGS

Lawrence P. Davis, and James E. Crutcher, both of Phoenix, Ariz., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Dec. 4, 1972, Ser. No. 312,241
Int. Cl. F16c 19/10

U.S. Cl. 308-176

9 Claims



1. A bearing support for a rotating shaft subject to translation along its axis of rotation comprising housing means having a clearance bore therein, bearing means disposed within said bore and adapted to support said shaft therein for rotation about said axis, said shaft and bearing means being subject to translational motion along said axis with respect to said housing means, and at least one annular shaped O-ring resilient means being annularly and radially resilient disposed within a perimetrical groove formed in the surface of said clearance bore between said housing means and said bearing means for maintaining said shaft substantially aligned along said axis with respect to said housing means, said annular shaped resilient means being free to rotate about its circumferential axis in said clearance bore in response to translational motion of said shaft thereby accommodating translational and radial motion between said shaft and said housing means along said axis with only minimal frictional resistance.

3,897,986 BEARINGS

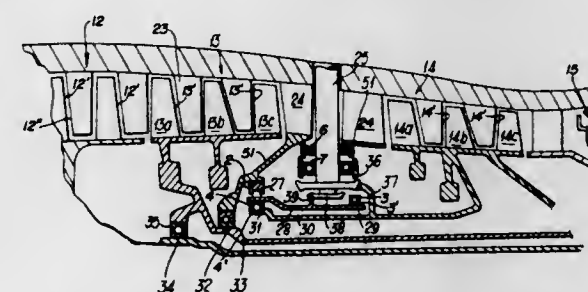
William J. Davies, Ambaston, and Noel Harry Hooke, Etwell, both of England, assignors to Rolls-Royce (1971) Limited, London, England

Filed Nov. 19, 1973, Ser. No. 417,086
Claims priority, application United Kingdom, Dec. 8, 1972, 56757/72

Int. Cl. F16C 19/00

U.S. Cl. 308-183

10 Claims



1. A bearing arrangement for supporting a first member for relative rotation to a second member comprising two rolling element bearing assemblies, each rolling element bearing assembly comprising two bearing races having a circumferen-

tially extending array of rolling elements interposed therebetween, and an intermediate member, means attaching one race of one said bearing assembly to said first member, and means attaching one race of the other said bearing assembly to said second member, and means attaching the other race of each said bearing assembly to said intermediate member, and means whereby the intermediate member is rotated at a speed significantly lower than that of the speed of at least one of said first member and said second member and in an opposite sense thereto.

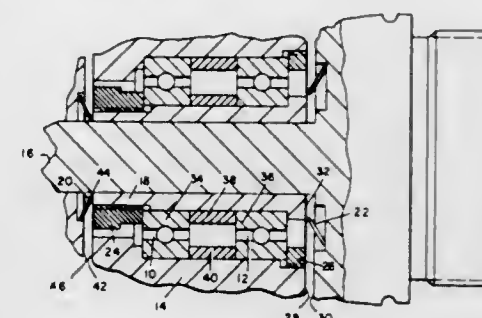
3,897,987 BEARING PROTECTION ASSEMBLY

Angelo A. Colao, Bedford, Mass., assignor to Sanders Associates, Inc., South Nashua, N.H.

Filed Apr. 18, 1974, Ser. No. 462,142
Int. Cl. F16C 27/00

U.S. Cl. 308-184 R

6 Claims



1. In an assembly including a first member and a second member and at least one bearing having a rolling element therein intermediate the first and second members for permitting relative rotation therebetween, apparatus for providing protection of the bearing from destructive loads due to high momentary acceleration of the assembly, comprising:
means for supporting said bearing for lateral translation;
and
means for providing a surface such that the inner and outer races of said bearing will under high acceleration undergo lateral translation and come to stop simultaneously at said surface.

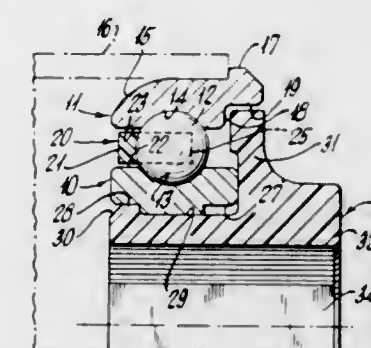
3,897,988 BEARING FOR A CONVEYOR ROLL OR THE LIKE

Thorn W. Dickinson, Kensington, and Roger W. Parkinson, Plainville, both of Conn., assignors to Textron Inc., Providence, R.I.

Filed Feb. 22, 1974, Ser. No. 444,962
Int. Cl. F16c 33/64, 33/66

U.S. Cl. 308-189 R

16 Claims



1. Antifriction-bearing means, comprising inner and outer race rings with plural bearing balls riding the races of said rings and radially spacing said rings, an annular retainer substantially closing the space between said rings on one axial side of said balls, said retainer having plural ball-receiving pockets and being engaged to and retained by said balls in said pockets, and a flanged bushing engaged to the bore of the

inner race ring upon insertion from the axial side opposite said one axial side, the flange of said bushing being axially adjacent said opposite axial end of the inner race ring and extending radially outwardly thereof in the direction of said outer race ring to substantially close the space between said bearing rings on the said opposite axial side of said balls.

3,897,989

DISPLAY AND STORAGE DEVICE

Rene Grandi, 113 rue de la Liberation, 38, Bourgoin, Jallieu, France

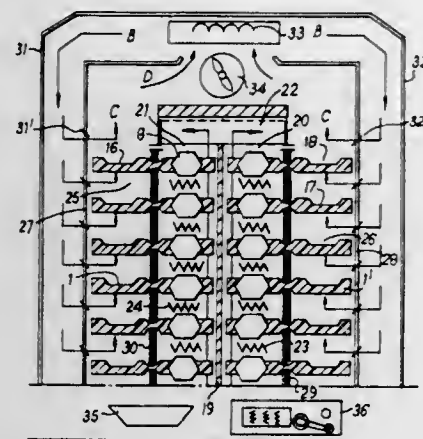
Filed Dec. 4, 1973, Ser. No. 421,520

Claims priority, application France, Dec. 6, 1972, 72.44646

Int. Cl.² A47B 47/00, 77/08

U.S. Cl. 312-236

5 Claims



1. A display and storage device, for the distribution of cooled and preheated foods on a supporting unit, comprising a compartmented dielectric, isothermal insulating surface having a double symmetrical concave groove on both faces axially dividing said surface and a perforated surface on one side of said groove, said device having no space that is not accessible for cleaning, and no counter-backing off making manufacture complex.

3,897,990

APPARATUS FOR INSPECTION OF FERRO-MAGNETIC BILLETS

Harald Chr. Bjerke, Osteras, Norway, assignor to Elkem-Spigerverket A/S, Oslo, Norway

Division of Ser. No. 403,602, Oct. 4, 1973, Pat. No. 3,845,383.

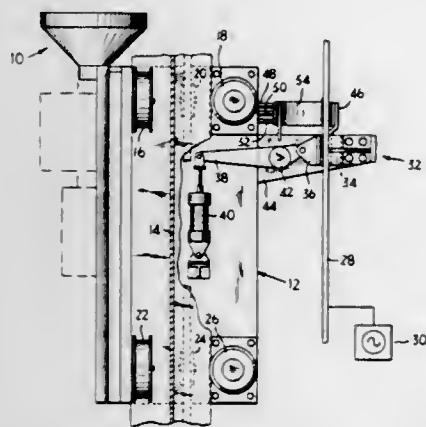
This application July 29, 1974, Ser. No. 492,428

Claims priority, application Norway, Oct. 10, 1972, 3620/72

Int. Cl. H01r 39/00

U.S. Cl. 339-5 A

10 Claims



1. In an apparatus for the inspection of elongated ferro-magnetic objects:

- a. a conical chuck disposed to bear against the elongated ferro-magnetic object;

- b. means for supplying electric current through the conical chuck to the elongated ferro-magnetic object whereby the elongated ferro-magnetic object is magnetized;
- c. means for applying to the magnetized elongated ferro-magnetic object a powder comprising finely divided iron or iron alloys and a coloring agent in powder form which, upon heating, will adhere to the surface of the elongated ferro-magnetic object; and
- d. means for supplying to the elongated ferro-magnetic object through the conical chuck an alternating electric current of sufficient intensity to cause the coloring agent to adhere to the elongated ferro-magnetic object.

3,897,991

ZERO INSERTION FORCE CONNECTOR

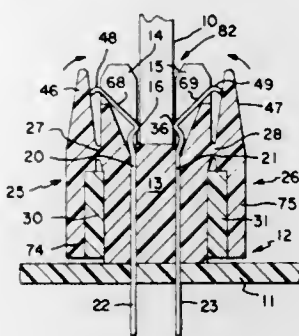
James Pritulsky, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 15, 1974, Ser. No. 442,955

Int. Cl. H01r 13/62

U.S. Cl. 339-75 MP

13 Claims



1. A circuit board connector comprising a housing and a plurality of contacts retained therein;

said housing comprising a first elongated main portion having a pair of parallel ledges extending along the length thereof with their inner surfaces defining a slot to receive the edge of a first circuit board therein;

at least one of said ledges comprising a plurality of ribs forming parallel grooves therebetween which are perpendicular to said ledges;

each of said plurality of contacts having a first end portion thereof secured in said main portion of said housing and the other end portion thereof extending into one of said grooves and configured to have a section thereof extending towards the inner surface of said ledge which defines one side of said slot and with the end of said other end portion extending away from said slot and towards the outer surface of said ledge;

said housing further comprising an elongated plate extending along the length of said housing and secured to said housing by a flexible, hinge-like element which extends along at least a portion of the length of said housing and is parallel to the center line of said elongated plate;

a first section of said plate on one side of said hinge-like element extending over the said other ends of said contacts;

a second section of said plate on the other side of said hinge-like element having its inner surface comprising a series of inclined planes extending longitudinally along said plate; and

an actuator means comprising an elongated flat strip with one of its two major surfaces formed into a series of inclined planes configured to mate with the inclined planes on said plate;

said flat strip insertable in between said main portion of said housing and said second section of said plate, and movable longitudinally in a first direction to cause said mated inclined planes to move with respect to each other, thereby pivoting the said plate about said hinge-like means to cause said first section of said plate to press down upon the ends of said other end portions of said contacts and thereby actuate said sections of said

contacts down into said slot and against mating contacts provided on the edge of said circuit board inserted in said slot.

3,897,992

CRIMPING CONNECTOR MEANS FOR FINE WIRES

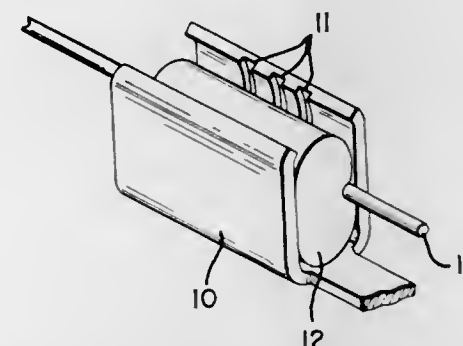
Charles Harry Weidler, Lancaster, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed July 17, 1974, Ser. No. 489,230

Int. Cl.² H01R 11/08, 11/20

U.S. Cl. 339-97 C

19 Claims



1. A crimp type connector for connecting to a fragile wire comprising:

- a conductive metal barrel having an irregularly formed inner surface; and
 - elastomeric material positioned in said barrel and gripped firmly by said barrel when said barrel is crimped;
- said fragile wire positioned securely between said elastomeric material and the irregularly formed inner surface of said barrel and forced to follow generally the irregularly formed inner surface of said metal barrel when said barrel is crimped.

3,897,993

WIRE CONNECTING DEVICE HAVING IMPROVED WIRE TRIMMING MEANS

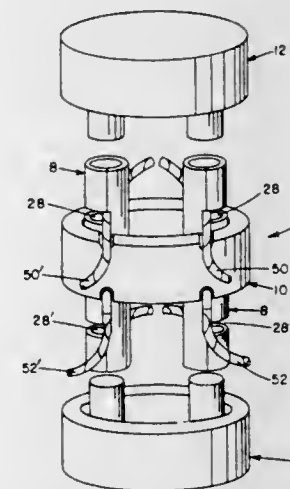
James Earl Fleischhacker, Clearwater, and Henry George Wasserlein, Jr., North Seminole, both of Fla., assignors to AMP Incorporated, Harrisburg, Pa.

Filed May 8, 1974, Ser. No. 468,037

Int. Cl. H01r 9/08

U.S. Cl. 339-99 R

6 Claims



1. A device for trimming the end of a wire and establishing an electrical connection with the trimmed wire, said device comprising:

- a tubular metallic terminal member having an open end and an axially extending seam,
- an axially extending wire-receiving slot in said terminal member extending for at least partially the length of said terminal member, said slot coinciding with said seam, said slot having a wire-receiving end which is proximate to said open end,

locating means on said terminal member for locating a wire with its axis extending transversely of the axis of said terminal member, transversely of, and in alignment with, said wire-receiving end of said slot, and across shearing edge portions of said terminal member which are on the side of said terminal member which is opposite to the side on which said wire-receiving end of said slot is located, and

insulating cover means, said cover means having flange means which is movable over, and into surrounding relationship with, said terminal member, said insulating cover means having an integral stuffing and shearing member projecting therefrom in the same direction as said flange means and beyond said flange means, said stuffing and shearing member being dimensioned to fit snugly within said terminal member whereby,

upon locating said wire on said terminal member and moving said cover member onto said terminal member, said stuffing and shearing member moves past said wire and said wire is sheared by the cooperative action of said stuffing and shearing member and said shearing edge portions of said terminal member, and said wire is thereafter moved into said wire-receiving slot.

3,897,994

ELECTRICAL CONNECTOR ASSEMBLY PRODUCTION

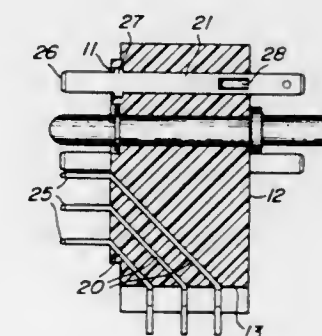
Dom Errichiello, Bloomington, Ill., assignor to Motorola, Inc., Chicago, Ill.

Filed Mar. 7, 1974, Ser. No. 449,170

Int. Cl.² H01R 13/50

U.S. Cl. 339-176 M

5 Claims



1. An improved electrical connector assembly comprising:

- a. a body formed of nonconducting material and having first and second generally parallel opposed surfaces and a third surface generally perpendicular and adjacent to said first surface, said body being formed of one integral member;

b. said body defining a first plurality of openings each extending angularly therethrough in a substantially straight line from said first surface to said third surface;

c. said body defining a second plurality of openings each extending therethrough in a substantially straight line from said first surface to said second surface;

d. a first plurality of elongated contact elements positioned one each in each of said first plurality of openings with each end of each element being bent to extend outwardly from said first and third surfaces generally perpendicularly; and

e. a second plurality of elongated contact elements positioned one each in each of said second plurality of openings, each of said elements in the second plurality having a projection adjacent one end to prevent the passage thereof through the associated opening and the opposite end of each element in the second plurality having means adjacent thereto for preventing substantial movement thereof in the associated opening.

3,897,995

METHOD AND APPARATUS FOR PERFORMING HOLOGRAPHIC INTERFEROMETRY

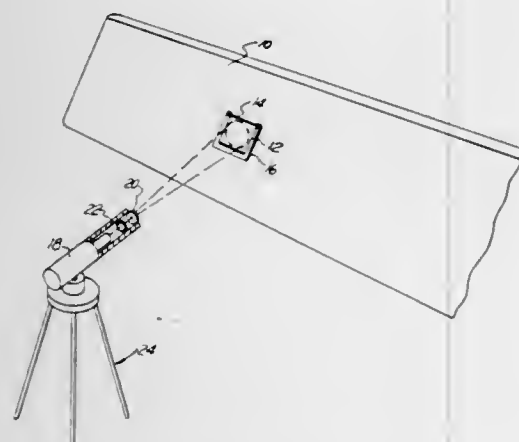
Robert C. Penn, Ann Arbor, Mich., assignor to GCO, Inc., Ann Arbor, Mich.

Filed Nov. 1, 1973, Ser. No. 411,656

Int. Cl. G02b 27/00

U.S. Cl. 350—3.5

12 Claims



1. The method of forming a hologram of a section of the surface of a member comprising: supporting a radiation sensitive recording media on said member by means of a support fixed to said member externally of the section so that a portion of said media extends in close spaced relation to said section; illuminating said section with coherent radiation passed through said media so that said media is exposed to and records the interference pattern created by direct coherent radiation and coherent radiation reflected from said surface section.

3,897,996

ELECTRO-OPTIC DISPLAY DEVICE

Ichiro Tsunoda; Satoshi Takeuchi, both of Kawasaki; Yoichiro Hirao, Tokyo; Takeo Suzuki, Tokyo; Yoshihiro Nishiue, Tokyo; Katsumasa Tadokoro, Tokyo; Toshimasa Fukagawa, Tokyo; Isamu Harada, Warabi; Akira Misawa, Tokyo; Kazuo Watanabe, Tokyo, and Kazuo Saito, Tokyo, all of Japan, assignors to Dainippon Printing Co., Ltd., Tokyo, Japan

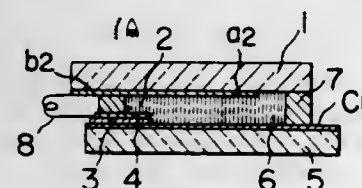
Filed Sept. 21, 1973, Ser. No. 399,484

Claims priority, application Japan, Sept. 30, 1972, 47-98288; Sept. 30, 1972, 47-98289; Nov. 25, 1972, 47-118267; Jan. 22, 1973, 48-009282; Feb. 3, 1973, 48-014103; Feb. 10, 1973, 48-16940; June 11, 1973, 48-065568

Int. Cl. G02f 1/26

U.S. Cl. 350—150

13 Claims



1. An electro-optical display device comprising: a pair of juxtaposed spaced substrates having inner surfaces facing each other; electro-optical material between said substrates; planar electrode means secured to the inner surface of one of the substrates; second planar electrode means secured to the inner surface of the substrate juxtaposed thereto; lead means extending along the inner surface of one of said substrates from the electrode means secured to it; planar insulating means interposed at least between said lead means and the substrate juxtaposed to said lead means;

third electrode means interposed between the insulating means and the last mentioned substrate; and means maintaining the electrical potential differences between the third electrode means and the second electrode means within the voltage range wherein the electro-optical material produces no electro-optical phenomenon; at least part of said electro-optical material being interposed between the insulating means and the last mentioned substrate.

3,897,997

ELECTROSTATIC DISPLAY DEVICE WITH VARIABLE REFLECTIVITY

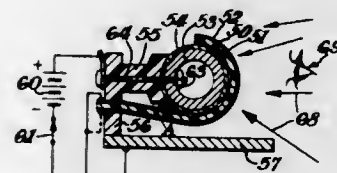
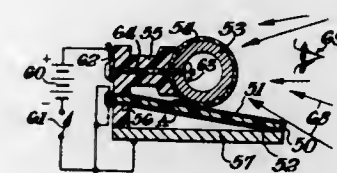
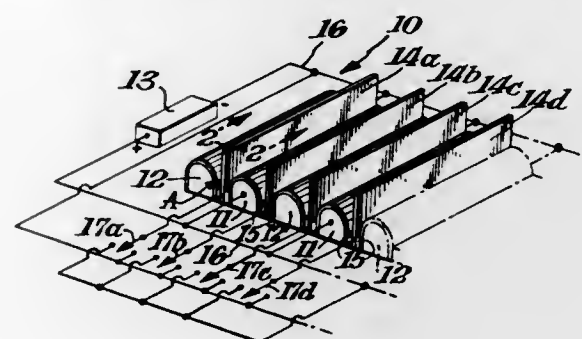
Charles G. Kalt, Hawthorne Rd., Williamstown, Mass. 01267

Continuation-in-part of Ser. No. 438,574, Feb. 1, 1974, abandoned, which is a continuation-in-part of Ser. No. 294,590, Oct. 3, 1972, abandoned. This application Aug. 6, 1974, Ser. No. 495,189

Int. Cl. G02f 1/28

U.S. Cl. 350—161

15 Claims



1. An electrostatic display device having variable light reflectivity comprising:

- a one fixed electrode at least a portion of which has a curved surface of constant radius;
- a film of insulative material being deposited over said curved surface of said fixed electrode, said insulated fixed electrode being opaque to the transmission of light;
- a base to which said fixed electrode is mounted;
- one variable electrode being a sheet of resilient material and having at least one electrically conductive surface, said variable electrode being mounted to said base and standing adjacent to said fixed electrode with the plane of said variable electrode being parallel to the axis of said curved surface, said at least one conductive surface of said variable electrode facing said fixed electrode; and
- a connective means for connecting a voltage between said fixed electrode and said at least one conductive surface of said variable electrode, said insulated curved surface of said fixed electrode and the opposite surface from said at least one surface of said variable electrode having distinctly different light reflective characteristics, such that

when a voltage is applied between said variable and said fixed electrode said variable electrode is electrostatically pulled and held coadunately over said curved surface and in the presence of ambient light a distinctive change occurs in the appearance of said device.

3,897,998

DEFINITION CORRECTING DEVICE INCORPORATED IN A MECHANISM FOR THE AXIAL ADJUSTMENT OF COMPONENTS OF AN OPTICAL SYSTEM

Atsushi Someya; Michiharu Suwa, and Mamoru Shimazaki, all of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

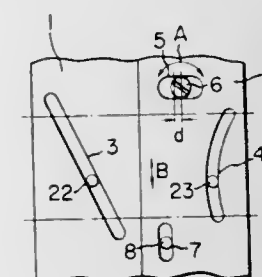
Filed June 4, 1973, Ser. No. 366,527

Claims priority, application Japan, June 23, 1972, 47-63038

Int. Cl. G02b 7/10

U.S. Cl. 350—187

15 Claims



1. An optical instrument having at least first and second optical components positioned in aligned, longitudinally spaced relation along an optical axis, which comprises, in combination, said first and second optical components being lenses, a first lens holding member securing said first optical component for movement along the optical axis, a second lens holding member securing said second optical component for movement along the optical axis, a first cylinder having a first guiding portion engageable with said first lens holding member, a second cylinder having a second guiding portion engageable with said second lens holding member, means releasably coupling said first and second cylinders for operation in a predetermined synchronous manner to simultaneously move said first and second lens holding members in predetermined relation to vary the optical response of the instrument, and means for independently positioning said first and second cylinders when said coupling means are released, said positioning means including a third guiding portion defining a predetermined range of adjustment of the axial spacing between the first and second lens holding members, and an adjusting member cooperable with the third guiding portion to selectively set the axial spacing between the first and second lens holding members at any desired position within such predetermined range of adjustment, said adjusting member having means for continuously changing the distance between the first and second guiding portions along the optical axis in order to eliminate, when adjusted, optical effects resulting from manufacturing errors of said guiding portions.

3,897,999

FILM PROJECTOR EQUIPMENTS

Richard Phillips Alabone, and Andrew Bretherton Frow, both of Essex, England, assignors to The Marconi Company Limited, Essex, England

Filed Feb. 15, 1974, Ser. No. 442,885

Claims priority, application United Kingdom, Feb. 27, 1973, 9665/73

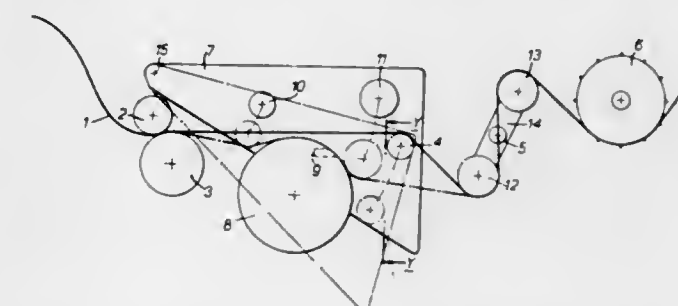
Int. Cl. G03B 31/02

U.S. Cl. 352—27

4 Claims

1. In a film projection system having a sound drum, means for rotating the sound drum, means for translating a film strip past said sound drum, and means for maintaining the film strip taut between predetermined points on each side of the sound

drum, an arrangement for urging the section of film between the said predetermined points into and out of contact with the sound drum, the arrangement comprising a carrier means movable between two end positions and abutment means on the carrier means for urging the said section of film towards

**SHUTTER ARRANGEMENT FOR A MOTION PICTURE CAMERA**

Katsumi Kobayashi, and Nobuaki Enomoto, both of Tokyo, Japan, assignors to Kabushiki Kaisha Yashica, Tokyo, Japan

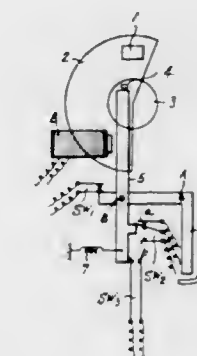
Filed Dec. 20, 1973, Ser. No. 426,585

Claims priority, application Japan, Dec. 25, 1972, 47-129423; Mar. 31, 1973, 48-39385

Int. Cl. G03b 21/38

U.S. Cl. 352—169

7 Claims



- a blade serving as a shutter for the film aperture, the blade being rotatable so as to define open shutter and closed shutter positions;
- a controllable drive mechanism for the blade;
- a controllable stop mechanism for the blade;
- circuit means for generating an oscillating signal the frequency of which defines the camera frame rate, the circuit means being operable in either a first mode of operation in which the frame rate is substantially constant or a second mode of operation in which the frame rate varies to provide shutter speed control of exposure, the oscillating signal defining first and second sub-intervals during each period of oscillation;
- a diaphragm;
- a servomechanism for adjusting the aperture size of the diaphragm when the circuit means operates in its first mode of operation so as to provide aperture size control of exposure when the frame rate is substantially constant; mechanism controlling means responsive to the oscillating signal for controlling the drive mechanism and the stop mechanism so that during the first sub-interval the stop mechanism releases the blade and thereafter the drive mechanism provides torque to rotate the blade, and during the second sub-interval the blade coasts until its

rotation is arrested by the stop mechanism, the stop mechanism so arresting the rotation of the blade at an open shutter position;

the circuit means including a controllable switch, first and second timing networks selected by the controllable switch for timing the duration of the second sub-interval in the first and second modes respectively, the second timing network including a photoconductor for adjusting the timing of the second timing network in accordance with object light so as to provide an adjustable exposure time;

detecting circuit means connected to the servomechanism for providing an indication of whether the servomechanism has adjusted the diaphragm to maximum aperture size; and

means responsive to the provided indication for automatically controlling the controllable switch.

3,898,001

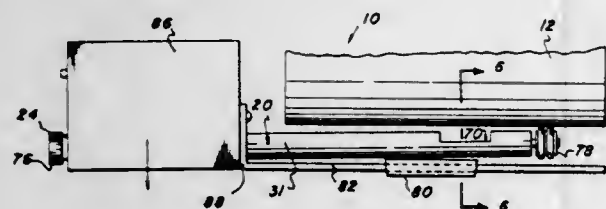
ELECTROMETER SYSTEM FOR NON-CONTACT DETECTION OF ELECTROSTATIC CHARGE ON A MOVING ELECTROSTATOGRAPHIC IMAGING SURFACE

James M. Hardenbrook, Columbus, and Paul G. Andrus, Powell, both of Ohio, assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 388,505, Aug. 14, 1973, Pat. No. 3,852,668. This application Mar. 28, 1974, Ser. No. 455,771
Int. Cl. G03g 15/00

U.S. Cl. 355-3 R

7 Claims



1. In an electrometer system for non-contact detection of the electrostatic charge on a moving electrostatographic imaging surface in an electrostatographic apparatus, including an electrometer probe adapted to be held adjacent said surface and containing a probe electrode, and an electrometer circuit providing an output signal corresponding to a charge induced on said probe electrode, the improvement wherein:

said electrometer probe comprises a thin elongated extended conductive tube containing said probe electrode therein and having a probe window for exposing said probe electrode in a side of said tube adjacent said imaging surface,

said electrometer system further including protective mounting means connected thereto and extending along both sides of said probe, said mounting means having mounting-edges slidably mounting said electrometer system into said electrostatographic apparatus.

3,898,002

METHOD AND APPARATUS FOR EDITING A FILM STRIP

Claude E. Kinder, Charlotte, N.C.; Robert L. Jones, Jr., and Walter W. Marsh, both of Richmond, Va., assignors to Kindefoto International, Inc., Charlotte, N.C.

Filed Aug. 1, 1973, Ser. No. 384,617
Int. Cl. G03b 27/52

U.S. Cl. 355-40

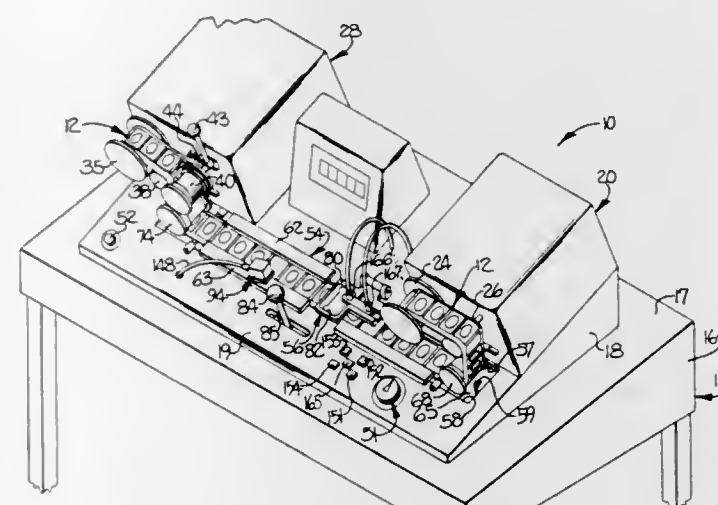
12 Claims

1. An apparatus for editing an elongated film strip composed of a series of closely spaced photographic negatives such that the film strip is adapted to automatically control various operations in a printing machine as the film strip is passed therethrough, said apparatus comprising

a frame, delivery spool means carried on said frame for mounting a roll of the film strip,

take-up spool means carried on said frame and spaced from said delivery spool means for winding the film strip into a roll such that the film strip may be withdrawn from said delivery spool means and received on said take-up spool means,

guide means positioned on said frame between said delivery spool means and said take-up spool means for guiding the film strip therebetween and defining a viewing station to permit the negatives of the film strip to be sequentially viewed by the operator of the apparatus, said guide means including a channel extending horizontally along said frame and defining a first end adjacent said delivery spool means and a second end adjacent said take-up spool means, a first laterally translatable roller mounted adjacent said first end of said channel such that the film strip delivered from said delivery spool means passes at least partially about said first roller and into said channel, and a second laterally translatable roller mounted adjacent said second end of said channel such that the film strip received from said channel passes at least partially about said second roller and onto said take-up spool means, and



means carried by said frame for placing an indicium on the film strip at a predetermined location with respect to each of only those negatives selected by the operator to be printed as they are sequentially viewed at said viewing station such that the indicia are adapted to selectively operate the printing machine to print only those negatives selected to be printed and to control the location at which each negative selected to be printed is positioned in the printing machine during the printing operation, said indicium placing means comprising a framing plate carried by said frame and overlying said guide means at said viewing station, said plate including an opening corresponding to the configuration of the negative to be printed in the printing machine, and means for manually translating the film strip for a limited distance in either direction along said guide means to permit the operator of the apparatus to accurately align each negative with said opening in said framing plate, said means for manually translating the film strip including a manually operable control lever mounted to said frame for limited lateral movement, and means for operatively interconnecting said first and second rollers with said control lever such that they move concurrently, whereby the operator may laterally translate the film strip along said guide means by moving said control lever.

3,898,003

VIEWER PRINTER MACHINE

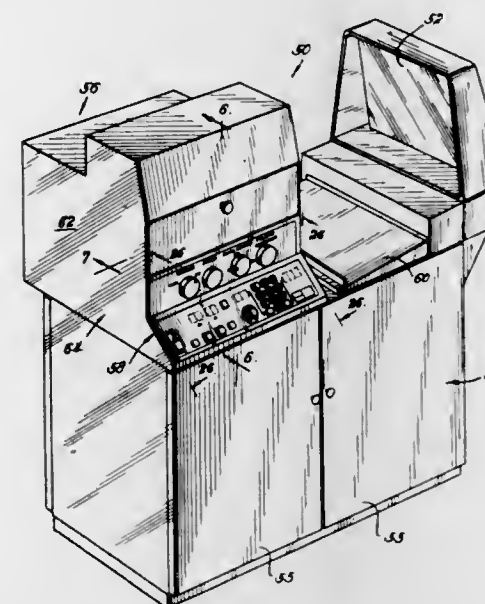
Aaron B. Aronson, Glenview; Thomas V. DeRyke, Libertyville, both of Ill., and Joseph Goebel, Hague, Netherlands, assignors to Addressograph-Multigraph Corporation, Cleveland, Ohio

Filed Aug. 16, 1973, Ser. No. 388,838

Int. Cl. G03b 27/46, 27/62, 27/70

U.S. Cl. 355-43

58 Claims



1. A device for reproducing copies of at least a portion of a plurality of reproducible originals comprising a feed path for copy material, said feed path having an input station and an exit station and means for automatically reproducing and delivering to said exit station a first, variable, preselectable number of collated sets of copies of a second, variable, preselectable number of said plurality of reproducible originals.

3,898,004

MICROFICHE READER-PRINTER

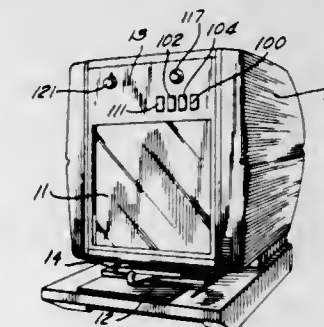
Emil Tiger, Highland Park, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed Nov. 8, 1973, Ser. No. 414,608

Int. Cl. G03b 13/28

U.S. Cl. 355-45

4 Claims



1. A viewer-printer comprising
a. A housing to enclose the apparatus
b. A control panel on the front of said housing
c. A microfilm carrier operably disposed on the front of said housing to receive a microfilm therein
d. A viewing screen disposed across the front of said housing
e. An image projector disposed to project a light beam through said microfilm and magnify said light beam, including a microfilm image
f. A pair of reflecting mirrors movable to one position whereat the projected image beam is reflected to the backside of said screen to permit viewing thereof

g. A positioning mechanism mechanically operative to shift the positions of said mirrors to a second reading position
h. A motorized timing cam mechanically linked to effect the selective operation of the mirror positioning mechanism wherein the mirror positioning mechanism operative by said timing cam functions to move one of said mirrors rearwardly to a stationary position for a reading cycle
i. Pins protruding inwardly from the sidewalls of said housing to provide stops for said mirror
j. A tension relief means to ease the movement of said mirror against said stops
k. A linking adjustment means to permit the mirror to be pre-adjusted whereby full engagement with said stops is insured during the reading cycle
l. A continuous paper supply source within the housing
m. A drive mechanism to feed said paper from said source
n. A paper measuring means
o. A paper severing means operative to sever a piece of paper from the paper source
p. A paper sensitizer to place an electrostatic charge on the surface of said paper
q. A conveyor to receive and move said severed piece of paper to an exposure position whereat the paper is exposed to the light beam from one of said mirrors.
r. A toner-developing means disposed to receive said paper after exposure
s. A squeegee and dryer operative to dry the paper
t. A discharge chute to convey the sheet of paper to an outlet on the front of said housing, and
u. A control circuitry selectively operative to initiate a reading cycle and a succeeding printing cycle whereby any selected microfiche image may be readily read and a printed copy thereof obtained.

3,898,005

HIGH DENSITY OPTICAL MEMORY STORAGE MEANS EMPLOYING A MULTIPLE LENS ARRAY

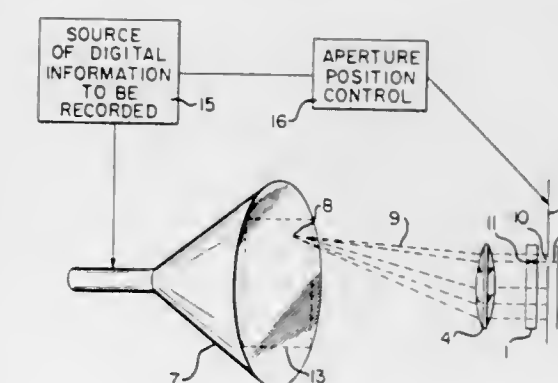
Donald L. Roberts, San Diego, Calif., assignor to NCR Corporation, Dayton, Ohio

Filed Jan. 4, 1974, Ser. No. 430,933

Int. Cl. G03b 29/00

U.S. Cl. 355-54

5 Claims



1. An information storage system comprising:
A. display means for displaying the information;
B. a multiple lens array disposed in the field of view of said display means, said multiple lens array comprising first and second substrates each having parallel corrugations on a face thereof, said faces brought together with the parallel corrugations of said first substrate perpendicular to the parallel corrugations of said second substrate, said corrugations forming at each intersection thereof one of a plurality of lenslets;
C. a photosensitive film disposed in the image plane of said multiple lens array; and
D. an aperture plate disposed parallel to and proximate said multiple lens array, said aperture plate having an aperture dimensioned to pass a light beam with a cross-sectional area equal to the cross-sectional area of one of said lenslets.

3,898,006

EXPOSURE LAMP CONTROL DEVICE

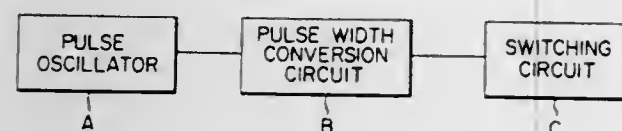
Yoshimasa Kimura, Kawasaki; Hisashi Sakamaki, Yokohama, and Toshio Honma, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 27, 1974, Ser. No. 501,090

Claims priority, application Japan, Sept. 3, 1973, 48-99502
Int. Cl.² G03B 27/76; H05B 37/00, 39/00, 41/14

U.S. Cl. 355—69

4 Claims



1. A device for controlling an exposure lamp for exposing or projecting an original image comprising:

- a. a pulse oscillator means whose pulse repetition rate is variable,
- b. a pulse width conversion or changing means for changing the pulse width of the output pulses of said pulse oscillator means, and
- c. a switching means adapted to be turned on and off in response to the output pulses from said pulse width conversion or changing means.

3,898,007

DEVICE FOR ELECTRO-OPTICAL DISTANCE MEASUREMENT

Klas Rudolf Wiklund, Taby, Sweden, assignor to Aga Aktiebolag, Sweden

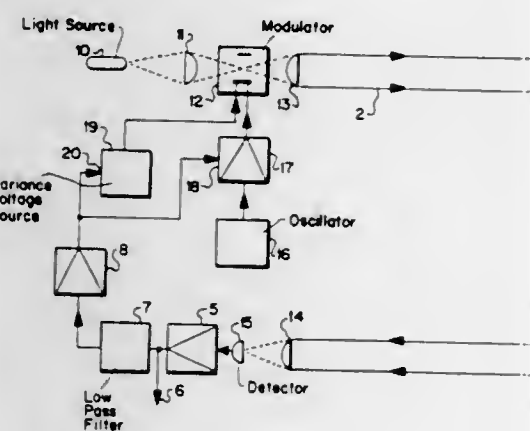
Filed Nov. 27, 1972, Ser. No. 309,887

Claims priority, application Sweden, Nov. 25, 1971, 15074/71

Int. Cl. G01c 3/08

U.S. Cl. 356—4

3 Claims



1. A device for electro-optical distance measurement comprising a signal transmitter for modulated electro-magnetic waves in the transmission range of the eye, a receiver with a detector which is sensitive to said waves, an analyzer connected to the transmitter and the receiver for the evaluation of the distance measured, said detector and signal transmitter being linked together by means of a control circuit by which the mean level of the signal received in said detector is adapted to control the mean intensity of the signal transmitted by said signal transmitter so that the mean level of the signal received is always maintained within a certain range of values sufficient for said detector independently of the length of the measuring distance, wherein said control circuit is operative such that the mean level of the information-carrying frequency of the signal received controls the mean intensity of the signal transmitted by said signal transmitter.

3,898,008

WRITING INSTRUMENT

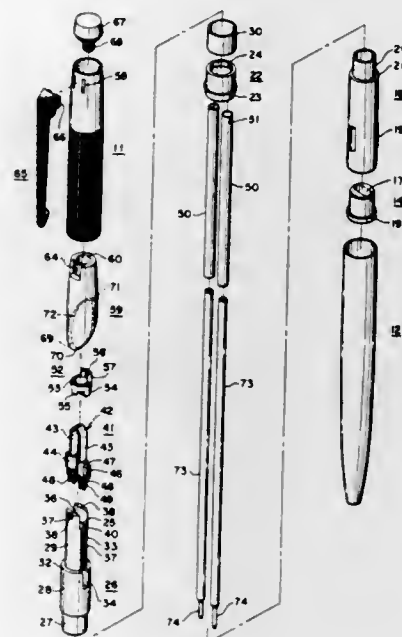
Walter C. Ganz, New York, N.Y., assignor to The Chromatic Corporation, Brooklyn, N.Y.

Filed Jan. 28, 1974, Ser. No. 437,523

Int. Cl.² B43K 27/12

U.S. Cl. 401—30

8 Claims



1. A multiple unit writing instrument comprising an elongated tubular barrel having a rear end and an opening at the forward writing end thereof and including relatively rotatable forward and rear coaxial barrel sections, a transversely extending spindle element located proximate the rear end of said barrel, a pair of elongated writing elements longitudinally reciprocable in said barrel between advanced positions projecting through said opening and retracted positions, an elongated flexible member located in said barrel rearwardly of said opening and traversing a U-shaped path extending around a bearing face of said spindle element facing said rear end and extending forwardly thereof and having opposite ends coupled to respective writing elements to be movable therewith, whereby movement of one of said writing elements in one direction effects the movement of the other writing element in an opposite direction, and manually actuatable operating means for selectively longitudinally moving said writing elements and comprising a first guide member rotatable with said front barrel section and having a pair of longitudinally extending guide slots and supporting said spindle element, a cam follower member connected to each end of said flexible member and slidably engaging respective guide slots, means coupling each of said follower members to a respective writing element and a cylindrical cam rotatable with said rear barrel section and engaging said follower members thereby to longitudinally move said writing elements in opposite direction with relative rotation of said barrel sections.

3,898,009

CARTRIDGE PENCIL

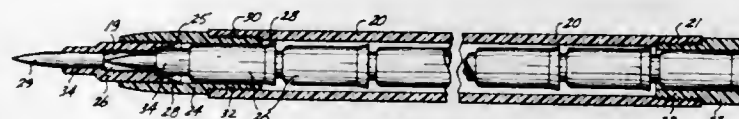
Orland M. Christensen, Edmonds, Wash., assignor to Western International Industries, Ltd., Seattle, Wash.

Filed Feb. 16, 1971, Ser. No. 115,562

Int. Cl. B43k 21/14

U.S. Cl. 401—57

4 Claims



1. A writing implement comprising:

a tubular member having a front end and a rear end and having an interior discontinuity positioned adjacent the front end thereof; and

a plurality of writing cartridges slidably positioned axially within said tubular member, each cartridge having a protruding writing point at the forward end thereof and a discontinuity-engaging resiliently flexible skirt positioned to engage said interior discontinuity and to frictionally engage the interior of the tubular member whenever said cartridge is in the forward end of said tubular member with the writing point thereof positioned for use, said skirt preventing rearward movement of said cartridge back into said barrel under writing pressure but permitting forward motion of said cartridges so that the front-most cartridge may be removed and inserted into said rear end of said tubular member causing said plurality of writing cartridges to slide axially forward toward said front end exposing the writing tip of the next of said plurality of writing cartridges for use with said skirt thereof engaging said discontinuity preventing rearward movement of said next cartridge, said discontinuity comprising an annular slot positioned in the interior wall of said tubular member, said slot having one face thereof positioned on a plane substantially perpendicular to the axis of said tubular member acting as the forcebearing surface receiving axial thrust forces from said skirt.

3,898,011

WIRE GRIP

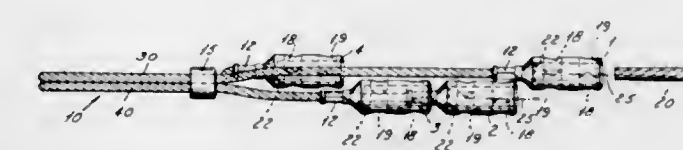
Wayne A. Linquist, and Earnest Y. Seborg, both of Rockford, Ill., assignors to Greenlee Tool Company, Rockford, Ill.

Filed May 30, 1974, Ser. No. 474,497

Int. Cl.² F16G 11/00

U.S. Cl. 403—212

3 Claims



1. A wire grip for drawing multiple strand wire through a conduit comprising:

- a. a pair of wire ropes reversely bent and secured together to form a double loop portion at one end;
- b. wire grip means secured to each end of each of said pair of wire ropes, and
- c. said grip means axially staggered to provide a smaller diameter thereby allowing said wire grip through said conduit.

3,898,012

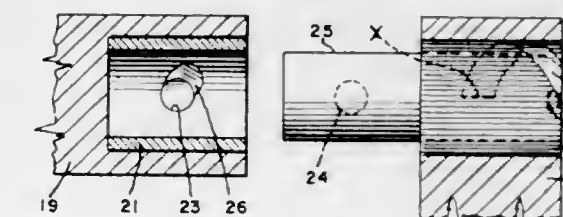
SEPARABLE FASTENER FOR PARTS OF FURNITURE
William Joseph Gillin, 666 Kelton Ave., Westwood, Calif. 90024

Filed June 29, 1973, Ser. No. 375,162

Int. Cl. F16b 12/10

U.S. Cl. 403—287

5 Claims



1. A separable fastener adapted to separably interconnect a pair of elements, comprising a pair of cylindrical sockets, secured in bores in said elements, at least one of said sockets being extended through the element in which it is secured and having a helical thread in its inside surface, the other socket having a recess in its inside surface, and a pin insertable into and removable from said sockets when the sockets are aligned, one end of the pin having a helical thread adapted to mate with the helical thread in said one socket, and the other end of the pin having a yielding detent engageable and disengageable with the recess in said other socket.

3,898,013

SHAFT-TURNING DEVICE FOR STEAM TURBINES
Wilhelm Engelke, and Gerhard Purr, both of Mulheim (Ruhr), Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mulheim (Ruhr), Germany

Filed Aug. 23, 1973, Ser. No. 390,940

Claims priority, application Germany, Aug. 25, 1972, 2241788

Int. Cl. F01b 25/02

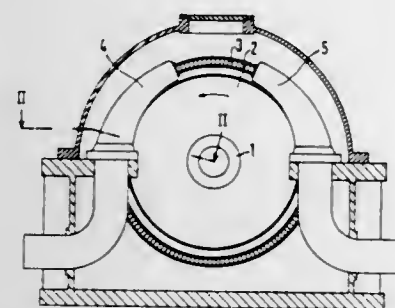
U.S. Cl. 415—20

4 Claims

1. An assembly having inner and outer members connected together by a tapered and keyless connection and comprising, an inner member having an axially tapered portion, said inner member having a plurality of axially aligned threaded holes which are alignable with corresponding holes in a keeper portion of said outer member, one of said threaded holes having a fluid passage connection with said tapered connection between said members, fluid in said one threaded hole and said fluid passage connection, threaded members extending through said holes in said keeper portion and threadably engaged in said threaded holes, Teflon tape around a threaded portion of said one of said threaded members for engagement in said one threaded hole whereby forcible threaded engagement of said threaded member into said threaded hole permits fluid pressure built-up in said threaded hole and in between said tapered connection for separation of said members.

1. Shaft-turning device for a steam turbine for continuing to turn the steam turbine slowly after the steam turbine is shut off, comprising an oil turbine including a rotor mountable on the shaft of a steam turbine, and stationary nozzle means for supplying driving medium to said rotor for revolving the same, said rotor having at the outer periphery thereof at least two rows of rotor blades disposed relative to said stationary nozzle

means so as to be engageable successively by said driving medium, and guide vane means located between said rows of



rotor blades, and nozzle means to supply pressurized oil to said rotor blades.

3,898,014

SELF-PRIMING CENTRIFUGAL PUMP

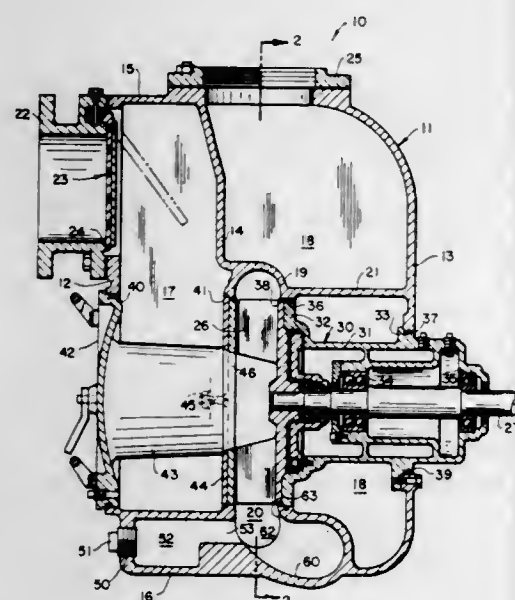
David L. Meister; Edward L. Ohler, and Frank D. Makowski, Jr., all of Mansfield, Ohio, assignors to Gorman-Rupp Company, Mansfield, Ohio

Filed Oct. 31, 1973, Ser. No. 411,262

Int. Cl. F04d 5/00

U.S. Cl. 415-53

18 Claims



1. A self-priming centrifugal pump capable of handling fluid containing solids, comprising:

- a casing;
- a volute in said casing and having a peripheral discharge opening in its upper portion, a priming opening in its lower portion, and a suction opening;
- a rotatable impeller positioned in said volute and being operable when rotated to draw fluid through said suction opening and discharge it through said discharge opening;
- a priming passage communicating with said priming opening and defining a conduit which requires fluid passing therethrough to change its direction of flow before entering said volute; and,
- an upstanding ramp-like shoulder formed in the lower region of said volute below said impeller adjacent to and downstream from said priming opening for directing fluid entering said volute from said priming passage upwardly into said impeller during pump priming.

3,898,015

SUBMERGIBLE LIQUID PUMP

Olav Rasmusson Navelsaker, Nordengveien, Norway, assignor to Thune-Eureka A/S, Oslo, Norway

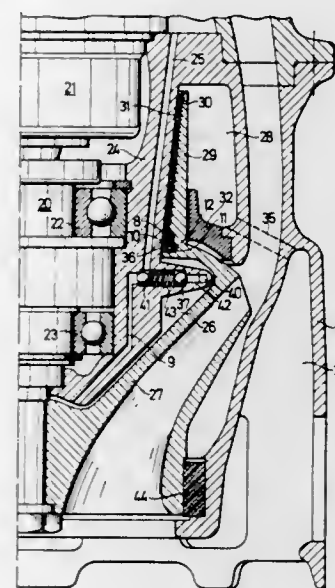
Filed Feb. 5, 1974, Ser. No. 439,765

Claims priority, application Norway, July 5, 1973, 2766/73

Int. Cl. F01d 25/32

U.S. Cl. 415-111

4 Claims



1. A submersible liquid pump having a leakage-collecting chamber arranged around a drive shaft of the pump, said leakage-collecting chamber being defined by a stationary wall and by a wall rotating with the said drive shaft, means in the said leakage-collecting chamber for removing collected leakage hurled outwards in the leakage-chamber during operation of the pump by said rotating wall, a bearing housing for the said drive shaft, the said bearing housing defining the said stationary wall, a pressure chamber in the said bearing housing extending around the said drive shaft above the said leakage-collecting chamber, which pressure chamber is downwardly exposed, an extension in the form of a collar projecting upwardly from the said wall rotating with the drive shaft and into the said pressure chamber, the said collar being adjacent a wall of the said pressure chamber thereby forming a rotation slot between the said leakage-collecting chamber and the said pressure chamber, and a pre-compression chamber in the form of a downwardly open casing into which said pressure chamber opens.

3,898,016

GATE STEM STABILIZING SYSTEM

Feodor Kanger, Montreal, Canada, assignor to Dominion Engineering Works Limited, Lachine, Canada

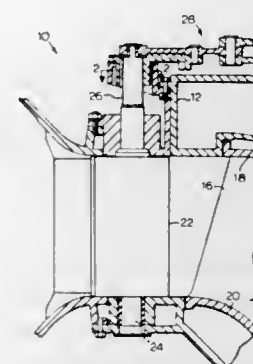
Filed May 31, 1974, Ser. No. 474,971

Claims priority, application Canada, June 25, 1973, 174829

Int. Cl. F01D 17/12

U.S. Cl. 415-163

7 Claims



1. The method of stabilizing a pivotal guide member having a spindle extending longitudinally within a bushing for pivotal rotation relative thereto comprising the steps of forming a

fluid confining chamber in said bushing about a portion of the pivotal surface of said spindle and embracing a surface portion of the spindle and applying fluid pressure to said fluid confining chamber and to that portion of the spindle surface embraced by said fluid confining chamber to press the remaining surface portion of said spindle pivotal surface against the adjacent surface of the bushing to generate a major reactive force therebetween whereby any tendency to relative vibration motion between the spindle and bushing is resisted by a potentially large magnitude friction force.

3,898,017

PUMP

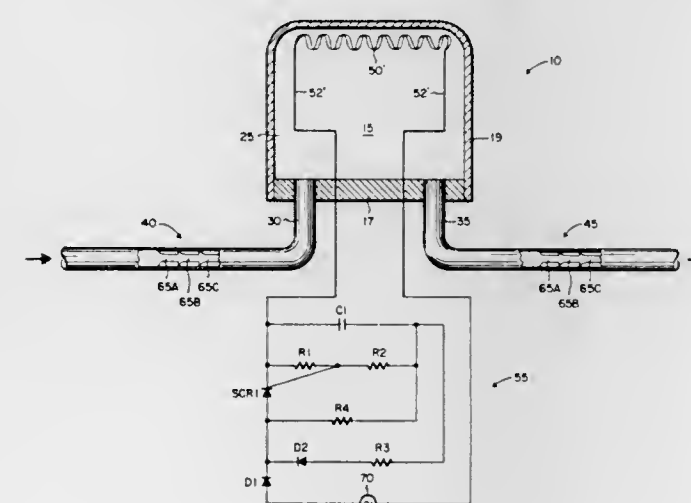
Harold Mandroian, 2137 Los Amigos, La Canada, Calif. 91011

Filed Apr. 16, 1973, Ser. No. 351,277

Int. Cl. F04b 19/24; F04f 1/18; F04b 47/14

U.S. Cl. 417-65

5 Claims



1. A pump, comprising: a substantially enclosed chamber containing a gaseous substance, said chamber having ingress and egress means for the fluid to be pumped thereby; means to restrict ingress through said egress means; means to restrict egress through said ingress means; means within said chamber including a metallic ribbon which upon the passage of electrical current there through will become activated to heat the gaseous substance contained in said chamber, said heating means adapted, upon activation thereof, to heat substantially only that portion of the gaseous substance which is sufficiently displaced from that fluid to be pumped so that the temperature of the fluid will remain substantially unaffected by said activation; and means to intermittently provide electrical current flow through said ribbon to activate said heating means.

3,898,018

PNEUMATIC EJECTOR

Frank G. Weis, Kansas City, Mo., assignor to Ecodyne Corporation, Lincolnshire, Ill.

Filed Apr. 30, 1973, Ser. No. 355,622

Int. Cl. F04c 1/18

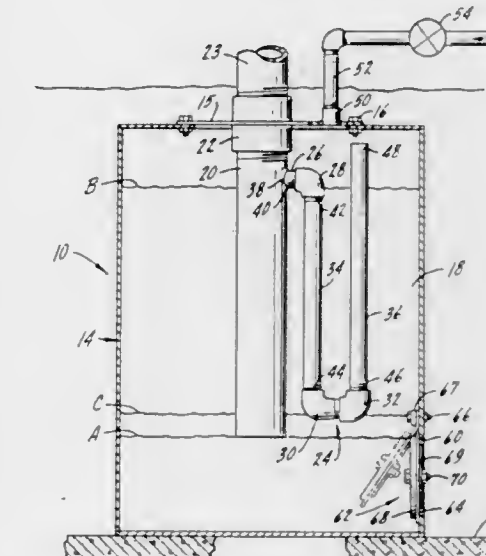
U.S. Cl. 417-118

8 Claims

1. A hydraulically controlled pneumatic ejector for handling liquids containing solid material; comprising:

- a vessel constructed in a substantially air tight manner for receiving liquid therein;
- a gas inlet pipe extending into said vessel through an upper portion thereof for supplying gas therein to pressurize said vessel, said inlet pipe being in communication with a continuous source of pressurized gas;
- a discharge pipe extending into said vessel through the upper portion thereof;
- a U-tube positioned within said vessel having a first vertical pipe section in fluid communication with said dis-

charge pipe at its upper end and a second vertical pipe section in fluid communication with the upper portion of said vessel at its upper end, said first and second pipe sections being connected at their lower ends so as to define a substantially horizontal passageway therebetween, said U-tube serving to vent gas therethrough into said discharge pipe when not sealed by liquid confined therein and preventing the passage of gas therethrough when sealed by liquid confined therein; and



e. an inlet opening through a lower portion of said vessel, the top of said inlet opening being positioned below at least a portion of said substantially horizontal passageway; and at or below the lowermost portion of said discharge pipe so as to permit the passage of liquid thereinto, said inlet opening having a control valve means associated therewith operable to permit and prevent the passage of liquid therethrough into said vessel dependent upon the pressure differential across said inlet opening.

3,898,019

AIR FAN APPARATUS

David E. Reznick, 183 S. June St., Los Angeles, Calif. 90004, and Ernoe A. Fekete, 9835 La Docena Ln., Pico-Rivera, Calif. 90660

Continuation-in-part of Ser. No. 408,164, Oct. 19, 1973, abandoned. This application Nov. 23, 1973, Ser. No. 418,749

Int. Cl. F04B 17/00, 35/00

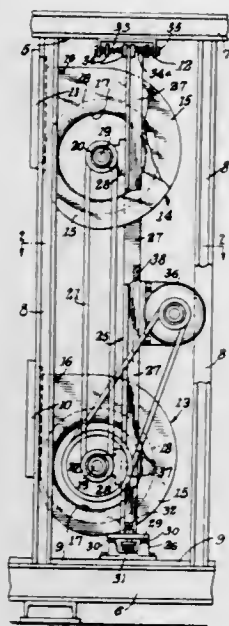
U.S. Cl. 417-362

2 Claims

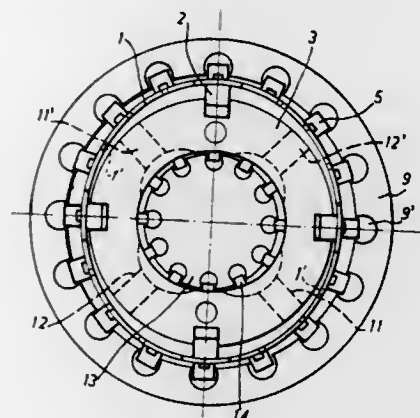
1. Air fan apparatus comprising a rigid frame mounted on a support base, said frame being provided with a top portion; fan means comprising two vertically spaced pairs of centrifugal air fans, the housing of said fans being each fixedly mounted on said frame, the fans of each pair being horizontally aligned, the rotors of each pair being disposed on a common axis, and a single drive shaft connecting the two rotors of each pair of fans,

- a single drive belt connecting said two drive shafts,
- a drive motor,
- a drive belt connecting said motor with one of the mentioned drive shafts to thereby drive the rotors mounted on the latter drive shaft and to simultaneously drive the other drive shaft and the rotors thereon through the single drive belt, and
- two vibration-damping components, one on each side of the fan means and extending between the support base and the top portion of the frame, said vibration-damping

components mounting the two mentioned drive shafts and the drive motor, whereby the vibrations generated by

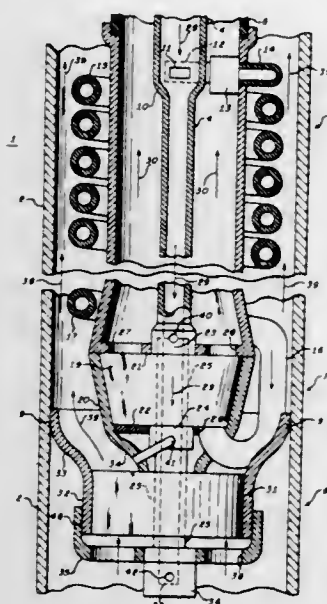


3,898,021
ROTARY EXPANSIBLE CHAMBER DEVICE WITH VARIABLE ECCENTRICITY
 Edouard Robert Barneoud-Arnoulet, 25 Avenue des Terrasses, 92430 Marnes La Coquette, France
 Filed Mar. 5, 1974, Ser. No. 448,230
 Claims priority, application France, Mar. 5, 1973, 73.07666
 Int. Cl.² F01C 21/10, 21/16
 U.S. Cl. 418—31 5 Claims



the fan rotor and the drive motor are dampened during operation of both pairs of air fans.

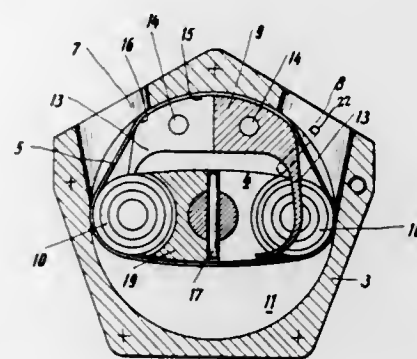
3,898,020
GEOHERMAL ENERGY SYSTEM AND METHOD
 Hugh B. Matthews, Acton, Mass., assignor to Sperry Rand Corporation, New York, N.Y.
 Division of Ser. No. 300,058, Oct. 24, 1972, Pat. No. 3,824,793. This application May 8, 1974, Ser. No. 468,130
 Int. Cl. F04b 17/00; F01k 25/00; F03g 7/00
 U.S. Cl. 417—379 8 Claims



1. Apparatus for transferring thermal energy from an interior hot stratum of an earth for utilization adjacent the surface of said earth comprising:

first, second and third conduit means,
 rotary pump means operatively coupled for pumping hot liquid within said first conduit means,
 rotary motive means for driving said pump means operatively coupled within said second conduit means, and
 heat exchanger means within said first conduit means having liquid input means operatively coupled to said third conduit means and output means for supplying hot driving vapor to said rotary motive means.

3,898,022
VALVELESS ROTARY DISPLACEMENT PUMP
 Otto Lutz, Bienroder Weg 53, 33 Braunschweig, Germany
 Filed July 17, 1973, Ser. No. 379,929
 Claims priority, application Germany, July 20, 1972, 2235625
 Int. Cl.² F04C 5/00
 U.S. Cl. 418—45 6 Claims

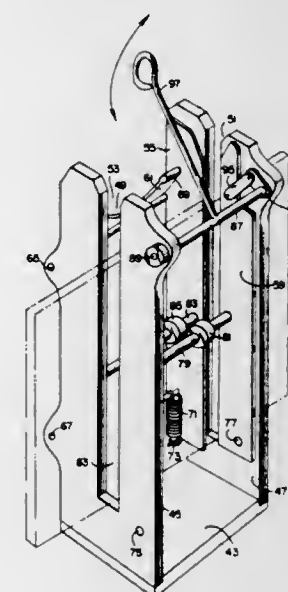


1. A valveless rotary displacement pump, comprising a housing formed with an interior chamber defined by an inner cylindrical wall and relatively flat end walls, inlet and outlet openings formed therein in said cylindrical wall in angular spaced apart relation, a movable membrane located in said housing having a tubular configuration and having a constant wall thickness, the longitudinal axis of said membrane being parallel to the longitudinal axis of said chamber, wherein the

edges at both ends of the membrane sealingly engage the end walls of said chamber, the outer surfaces of said membrane sealingly engaging the cylindrical inner wall of the chamber between the inlet and outlet openings thereof, a rotor rotatably mounted in said housing and located within the interior of the membrane, transversely spaced roller means mounted on said rotor for continuously engaging the interior surfaces of said membrane for urging the membrane against the cylindrical wall of the chamber along at least two rotating lines that are located in parallel relation to the axis of said cylindrical chamber, said sealing elements being secured to said end walls and engaging the inner surface of said membrane with a smooth surface for urging the membrane against the inner wall of the chamber between the inlet and outlet openings thereof to effect a seal between said openings, and allowing free circumferential movement of said membrane between the inner wall of said chamber and surfaces of said sealing elements.

3,898,023
EXPANDABLE HOLDER APPARATUS FOR FLATTENING AND FREEZING FLUID-CONTAINING FLEXIBLE POUCHES

Clifford C. Faust, Riverside, Ill., assignor to Union Carbide Corporation, New York, N.Y.
 Continuation of Ser. No. 473,701, May 28, 1974, abandoned, which is a continuation of Ser. No. 337,332, March 2, 1973, abandoned. This application Sept. 23, 1974, Ser. No. 508,720
 Int. Cl. B29d 31/00
 U.S. Cl. 425—110 18 Claims

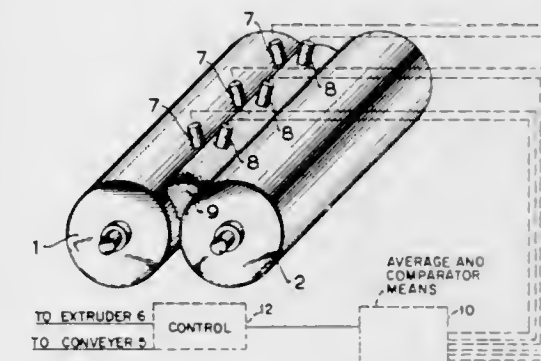


11. A jig fixture for holding a flexible pouch holder having a pair of substantially flat parallel planar plates arranged to hold a flexible pouch flat between the plates during freezing of a fluid contained in the pouch comprising, in combination, first plate bearing means mounted moveably on the jig fixture and arranged to bear yieldably on the outer surface of one of the plates of a flexible pouch holder disposed in the jig fixture, resilient means operably connected between the first plate bearing means and the jig fixture to effect yieldable bearing of said first plate bearing means on said outer surface of said one of said plates of said flexible pouch holder disposed in the jig fixture,

second plate bearing means mounted moveably on the jig fixture, arranged to bear on the outer surface of the other of the plates of said flexible pouch holder disposed in the jig fixture when moved into a second position from a first position wherein said second plate bearing means is substantially out of bearing contact with said outer surface of said other of said plates of said flexible pouch holder, and means to move the second plate bearing means into said second position.

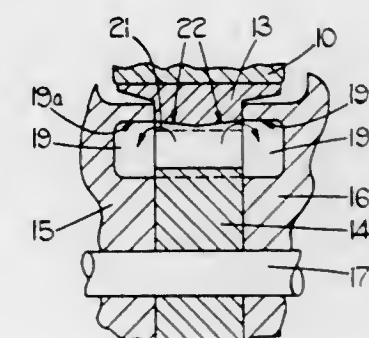
3,898,024
APPARATUS FOR REGULATING THE BEAD HEIGHT IN THE ROLL GAP OF A CALENDER TO WHICH MATERIAL TO BE CALENDERED IS FED FROM A PRE-LASTIFYING MACHINE

Willi Wockener, Hannover-Kleefeld, Germany, assignor to Hermann Berstorff Maschinenbau GmbH, Hannover-Kleefeld, Germany
 Filed Aug. 30, 1973, Ser. No. 393,020
 Claims priority, application Germany, Sept. 6, 1972, 2243751
 Int. Cl.² B29C 3/06
 U.S. Cl. 425—145 1 Claim



1. Apparatus for regulating the bead height in the roll gap of a calender to which material to be calendered is fed by a conveyor from a pre-plastifying machine, comprising several ultrasonic transmitters spaced apart above and across the width of the bead to direct ultrasonic waves onto the bead; several associated ultrasonic receivers spaced above said bead and across from said transmitters to receive sound waves emanating from said transmitters and reflected from the bead, and means controlled by the receivers to increase or reduce the output speed of said pre-plastifying machine and the speed of said conveyor in accordance with the height of the bead, said control means including means operatively connected to said transmitters and receivers for averaging the individual measured values derived from each associated pair of transmitters and receivers and producing an averaged signal, and means for comparing said averaged signal with a known reference signal thereby to increase or reduce the output speed of said pre-plastifying machine and the speed of said conveyor.

3,898,025
RING GEAR ELEMENTS FOR GEAR PUMPS
 Harry Simister Bottoms, Solihull, England, assignor to Joseph Lucas (Industries) Limited, London, England
 Filed Mar. 18, 1974, Ser. No. 452,462
 Claims priority, application United Kingdom, May 10, 1973, 22304/73
 Int. Cl.² F04C 1/12
 U.S. Cl. 418—170 4 Claims



1. A gear pump or motor having a housing, and internally-toothed ring gear mounted for rotation within the housing, a pinion meshing with the ring gear and mounted for rotation about an axial parallel to and spaced from the ring gear axis, and inlet and outlet passages in the housing on opposite sides

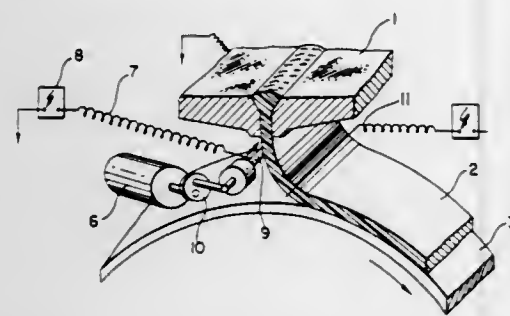
of the zone where said ring gear and said pinion are in mesh, the ring gear being provided with grooves at the radially outer ends of the recesses which define the gear teeth, a part of the surface of each said groove lying in a plane which passes through the axis of the ring gear, said surface part being radially outwardly inclined to the axis of the ring gear whereby, in use, fluid within said grooves is urged by centrifugal action in directions generally axially of the ring gear.

3,898,026

APPARATUS FOR RANDOMIZING THICKER AND THINNER AREAS IN THE PRODUCTION OF FILM WEBS
Christian Sauer, Uulich; Peter Schwäglar, Mainz; Norbert Roth, Ingelheim; Manfred Unger, Georgenborn, and Günter Haas, Wiesbaden-Biebrich, all of Germany, assignors to Hoechst Aktiengesellschaft, Germany
Division of Ser. No. 286,919, Sept. 7, 1972. This application July 25, 1973, Ser. No. 382,539
Int. Cl. B29d 7/22

U.S. Cl. 425—174.8 E

5 Claims



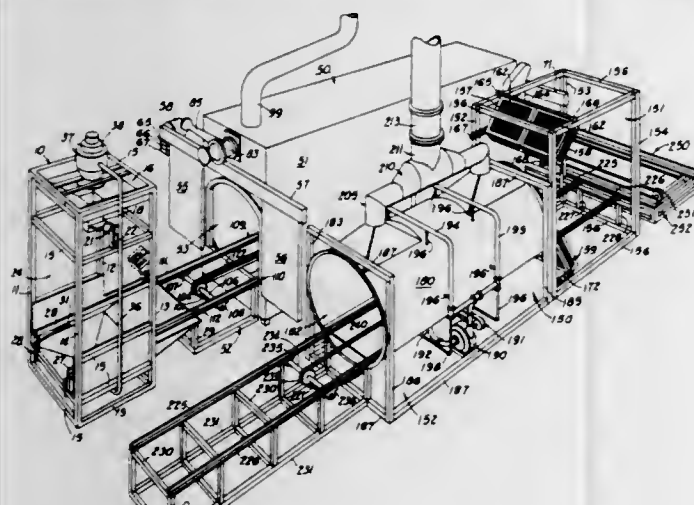
1. Apparatus for randomizing thicker and thinner areas in the production of a web of film material comprising extruder die means, a cooling surface arranged beneath said die means, randomizing electrode means positioned between said die means and said cooling surface, said electrode means being positioned behind a molten film issued from said die means and being adapted to apply a variable electrostatic charge to said molten film so that the electrostatic charge distribution across the width of the film is varied, and means for moving said randomizing electrode means.

3,898,027

HEAT EXCHANGE MOLDING SYSTEM
Sanford N. Milner, Rt. No. 1, River View, Ala. 36872
Continuation of Ser. No. 113,275, Feb. 8, 1971, abandoned, which is a continuation-in-part of Ser. No. 825,740, May 19, 1969, abandoned. This application May 21, 1973, Ser. No. 362,181
Int. Cl. B29c 5/00

U.S. Cl. 425—256

2 Claims



1. A system for converting particles of flowable material into objects having a predetermined shape comprising, in combination, a plurality of mold means each defining a cavity

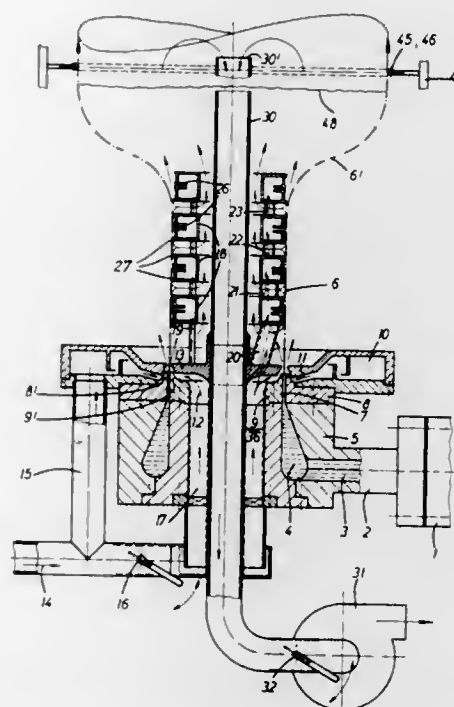
area representative of the shape of a predetermined object, individual dollies for respectively carrying said mold means, said dollies each having a horizontal supporting surface for carrying said mold means and wheels on the underside of said surface, means for successively filling the cavity areas of said mold means on said dollies with a predetermined amount of flowable material in the form of particles, an oven having a heating material in the form of particles, an oven having a heating chamber including means for heating said mold means on said dollies to a temperature sufficient to melt said particles, means for transferring said mold means containing said particles and their dollies to said oven heating chamber and for moving them successively and individually therethrough for a time sufficient to melt said particles along a substantially straight line path to a point on a second straight line path extending laterally of said first path, means for moving said mold means and said dollies successively and individually along said second path to a point on a third path extending parallel to said first path, cooling chamber means surrounding said third path, and means for moving said mold means and said dollies successively and individually along said third path and through said cooling chamber means in a direction opposite to their direction of movement along said first path and for a time sufficient to cool said flowable material to a point at which it will solidify, said heating chamber and said cooling chamber being adjacent to and in side-by-side relationship to each other, the means for moving said mold means and said dollies along said first and third paths comprising endless chain members having outward projections and said dollies mold members have portions engageable by said projections and wherein said means for moving said mold means and said dollies along the second path comprises a movable platform for receiving a dolly and a chain member.

3,898,028

APPARATUS FOR COOLING PLASTICS MATERIAL TUBING MADE BY A BLOW HEAD
Hartmut Upmeyer, Tecklenburg, Germany, assignor to Windmoller & Holscher, Lengerich, Germany
Filed Dec. 13, 1973, Ser. No. 424,228
Claims priority, application Germany, Dec. 19, 1972, 2262190
Int. Cl. B29f 3/00

U.S. Cl. 425—326

6 Claims



1. In an apparatus for cooling plastics material tubing, made by a blow head of the type having a central air passageway defined therein, a central tube axially aligned within said central passageway and projecting into the tubing being made, an annular die orifice, and at least two axially spaced guide

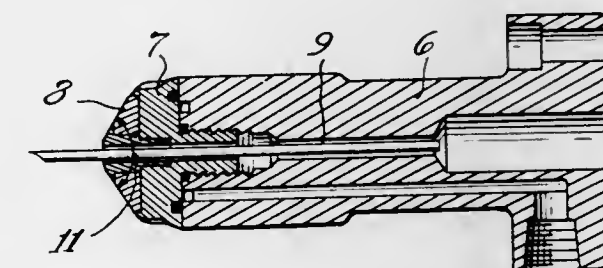
rings positioned inside the tubing being made axially spaced from said annular die orifice and radially surrounding said central tube to define an axially extending annular passage-way, the improvement comprising the guide rings being hollow and having axially extending guiding faces on the outer peripheries thereof, an aperture defined in each said guiding face and air feed means to feed air into the hollow interior of said guide rings, which air is directed by said apertures outwardly against the inner surface of the tubing being made and then is guided axially by said axial guide surfaces.

3,898,029

METHOD AND APPARATUS FOR FORMING AND KEEPING MOLTEN THE RECESSED AREA OF A FABRICATED PLASTIC PRODUCT
David F. Krueger, Minneapolis, and Edmond S. Kaliszewski, St. Paul, both of Minn., assignors to Standard Oil Company (Ind.), Chicago, Ill.
Division of Ser. No. 225,996, Feb. 14, 1972. This application Sept. 17, 1973, Ser. No. 397,827
Int. Cl. B29c 5/06

U.S. Cl. 425—387 B

12 Claims



1. A ram apparatus with a tip suitable for maintaining the temperature of a portion of a molten plastic material with which said tip is in contact while capable of cooling another part of said plastic material, wherein said ram apparatus comprises:

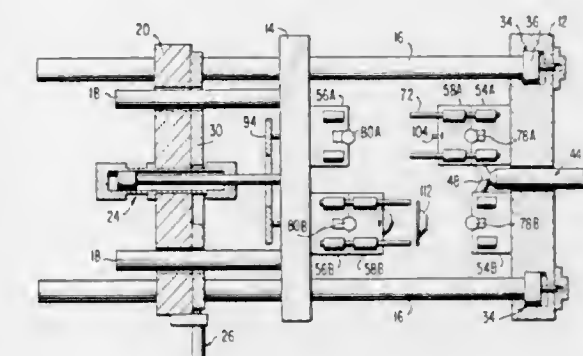
- an arm containing a channel so constructed as to permit the passage of inflation means;
 - a tip connected to an end of said arm wherein said tip comprises:
 - a hollow channel aligned with the channel in the arm and so constructed to permit said inflation means to pass through both channels in a freely reciprocating manner with respect to said channel;
 - a surface area capable of being cooled adjacent said arm; and
 - a second surface area on the forward end of said ram, distinct from said area capable of being cooled but adjacent thereto, constructed from or coated with a material having a thermal conductivity lower than 0.10 cal.-cm./sec.-cm.²°C.; and
 - inflation means capable of reciprocating within said channel.
4. An apparatus useful in blow-molding a fabricated product from a parison of molten plastic material, said fabricated product having an outer portion with an integral recessed portion, wherein some portion of said recessed portion is maintained in a molten state while the remainder of the fabricated products is formed and cooled, said apparatus comprising:
- a mold in which said parison is formed in the shape of the fabricated product, and
 - means for forming a recessed portion in the fabricated product and for differentially cooling said molded fabricated product so that a portion of said recessed area is maintained in a molten state while the remaining portions of the product are cooled to a final form, said means comprising a ram including an arm and a tip at one end of said arm constructed from or coated with any material having a thermal conductivity lower than 0.10 cal.-cm./sec.-cm.²°C.

3,898,030

INJECTION-MOLD CLAMPING UNIT HAVING ALTERNATELY EJECTING DIE ASSEMBLIES
Thomas G. Bishop, Mt. Gilead, Ohio, assignor to Koehring Company, Milwaukee, Wis.
Filed June 25, 1973, Ser. No. 372,955
Int. Cl. B29c 1/16

U.S. Cl. 425—450.1

12 Claims



1. A molding apparatus comprising: stationary frame means; movable frame means; at least two die assemblies, each die assembly including a pair of die sections; each pair of said die sections being arranged to define a cavity when in abutting relation; said die cavities being operable to receive a charge of plasticated material; power means, common to said die assemblies, for exerting force to simultaneously clamp together the die sections of said die assemblies during insertion of a charge of plasticated material, and releasing such clamping force simultaneously from the die sections of said die assemblies; said movable frame means being common to said die assemblies and being arranged to transmit clamping forces from said power means simultaneously to said die assemblies; said stationary frame means carrying one of the die sections of each of said die assemblies so that such carried die sections constitute stationary die sections; the other die section of each die assembly being displaceable relative to said stationary die sections so as to constitute floating die sections; means for coupling a floating die section of one of said die assemblies to said movable frame means when the die sections of said last-named die assembly are rendered relatively displaceable; maintaining means, including means for coupling the floating die section of one of said die assemblies to its respective stationary die section, for maintaining the die sections of said one of said die assemblies in abutting relationship while the die sections of another die assembly are rendered relatively displaceable, when said power means is in a force-releasing mode; and maintaining means, including means for coupling the floating die section of said other die assembly to its respective stationary die section, for maintaining the die sections of said other die assembly in abutting relationship while the sections of said one die assembly are rendered relatively displaceable, when said power means is in a subsequent force-releasing mode.

3,898,031

GAS FUELED SAFETY LIGHTER

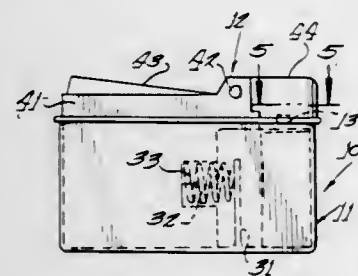
Richard Rusakowicz, 15 Burr St., Portland, Conn. 06480

Filed May 17, 1974, Ser. No. 470,954

Int. Cl. F23q 2/08

U.S. Cl. 431-130

4 Claims



1. A gas fueled safety lighter intended for use in the lighting of cigarettes, cigars, pipes, and the like, the lighter comprising: a casing having a top surface, a bottom surface, and depending side walls including a front end and a back end; a fuel tank chamber disposed interiorly of said casing;

a gas valve mounted to said top surface of said casing and in communication with said fuel tank chamber for selectively sealing and unsealing gas flow from said chamber; a head assembly mounted on said casing top surface and reciprocally moveable thereon in a direction toward and away from said front end thereof between an operative and an inoperative position relative to said gas valve, said head assembly operative to actuate said gas valve to an open position when in the operative position and said head assembly being spaced from and out of contact with said gas valve when in the inoperative position; actuating means mounted on said head assembly adapted for contacting and coacting with said valve assembly when said head assembly is in the operative position; and resilient spring means interposed between said casing and said head assembly to resiliently bias said head assembly into said inoperative normal position spaced from said gas valve, said spring being compressed upon movement of said head assembly relative to said casing into said operative position for engagement with said valve with said spring returning said head assembly to said inoperative normal position upon release of those forces effecting said movement of said head assembly into said operative position.

CHEMICAL

3,898,032

OXIDATIVE HAIR-COLORING MIXTURES CONTAINING A CONDITIONING AGENT

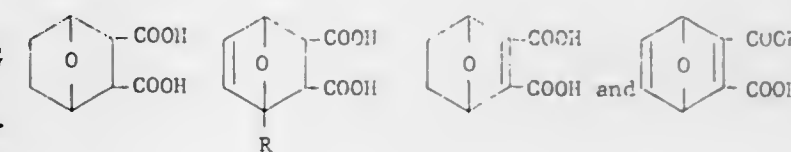
Walter W. Edman, Westport, and Ralph L. Evans, Jr., Stamford, both of Conn., assignors to Zotos International, Inc., Darien, Conn.

Continuation-in-part of Ser. No. 152,404, June 11, 1971, abandoned. This application Apr. 9, 1973, Ser. No. 349,483 Int. Cl.² A61K 7/13

U.S. Cl. 8-10.2

11 Claims

1. A hair-coloring mixture comprising:
A. between about 25 and 75 percent by weight of an aqueous oxidative hair-dye composition;
B. between about 0.1 and 50 percent by weight of an oxidizing agent comprising a hydrogen peroxide-yielding compound selected from the group consisting of hydrogen peroxide and urea peroxide and an aqueous carrier; and
C. between about 25 and 75 percent by weight of a conditioning agent selected from the group consisting of milk and beer.



wherein R is selected from the group consisting of —H, —CH₃, —CH₂OH, —CH₂OCOCH₃, —CH(OCOCH₃)₂ and —CH(OCH₂CH₃)₂; and anhydrides and water-soluble alkali metal salts thereof; said detergent and said builder being present in a weight ratio of 10:1 to 1:10, and said filler present in a proportion of from about 10 to 45% based on the weight of total detergent composition solids, and the composition providing in aqueous solution a pH of from about 8 to 13.

3,898,033

NOVEL DISAZO DYES AND AQUEOUS CONCENTRATED SOLUTIONS THEREOF

John H. McLeod, Tonawanda, N.Y., assignor to Allied Chemical Corporation, New York, N.Y.

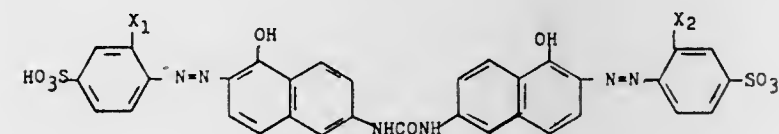
Division of Ser. No. 120,061, March 1, 1971, abandoned. This application June 13, 1973, Ser. No. 369,682

Int. Cl.² D06P 1/06

U.S. Cl. 8-26

4 Claims

1. A mixture of dyestuffs comprising at least two different compounds having the general formula



wherein X₁ and X₂ are hydrogen, methyl or methoxy, or the alkali metal salts thereof.

3,898,034

BUILDERS FOR DETERGENT COMPOSITIONS BASED ON CARBOXYLATED BICYCLIC COMPOUNDS

Chester D. Szymanski, Martinsville, and Ronald N. DeMartino, Wayne, both of N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Continuation-in-part of Ser. No. 343,837, March 22, 1973, abandoned, which is a continuation-in-part of Ser. No. 120,719, March 3, 1971, abandoned. This application Oct. 9, 1973, Ser. No. 404,159

Int. Cl.² C11D 3/20; D06L 1/12

U.S. Cl. 8-137

9 Claims

1. A detergent composition in substantially dry form consisting essentially of an organic detergent selected from the group consisting of anionic, cationic, nonionic and amphoteric surface active compounds, a filler selected from the group consisting of sodium sulfate and sodium carbonate and, in combination therewith as a builder, a compound selected from the group consisting of

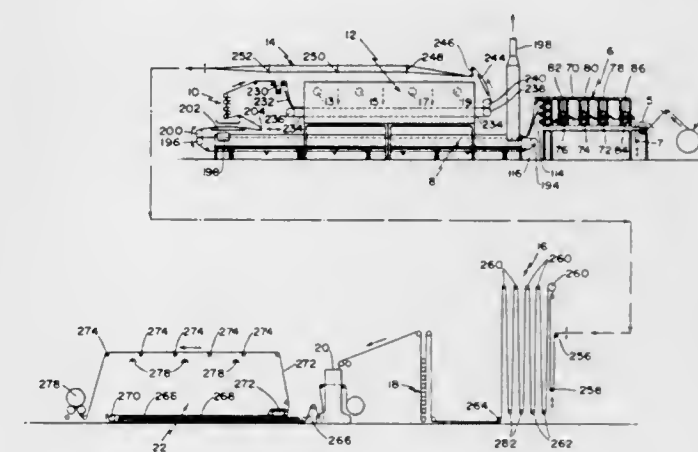
3,898,035
METHOD FOR TREATING YARNS
John G. Tillotson, Dalton, Ga., assignor to Tillotson Corporation, Needham, Mass.

Filed Jan. 11, 1974, Ser. No. 432,449

Int. Cl. B05c 1/08, 9/14; D06c 1/00

U.S. Cl. 8-149

12 Claims



1. The method of treatment of yarns for textile fabrics prior to the actual formation of the fabrics or storage of the yarns therefor, comprising the sequential steps of:

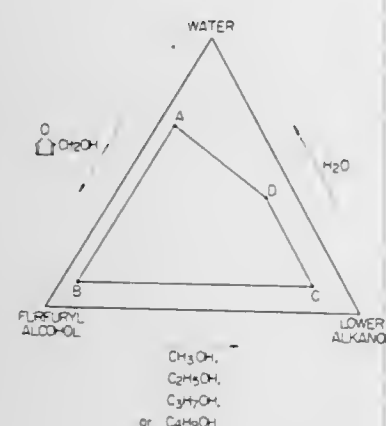
- A. Providing from a source thereof yarn suitable for further processing;
B. Causing the yarn to move through a printing apparatus comprising first and second rollers, the first roller being above the second roller and the axes of the rollers lying in a common plane, the yarn passing between the rollers at an angle in the range of 60° to 85° to said plane;
C. Printing dye-stuff on the yarn as it passes between said rollers, for predetermined lengths of the yarn;
D. Causing said yarn to leave the printing apparatus and fall under restraint, in plaits onto a first conveyor belt;
E. Causing the first conveyor belt and yarn thereon to move through a steam chamber wherein the dye-stuff is fixed onto the yarn;
F. Pulling the yarn from the first conveyor belt and through a washing apparatus to wash the yarn;
G. Causing the yarn to leave the washing apparatus and fall under restraint, in plaits onto a second conveyor belt;
H. Causing the second conveyor belt and yarn thereon to move through a drying chamber; and
I. Pulling the yarn from the second conveyor belt as it emerges from the drying chamber.

3,898,036

PROCESS OF DYEING SYNTHETIC POLYAMIDE FIBERS
Masahiro Arashi, Komatsu, Japan, assignor to Komatsu Seiren Co., Ltd., Japan

Continuation-in-part of Ser. No. 266,545, June 27, 1972, abandoned. This application Dec. 3, 1973, Ser. No. 421,216
Int. Cl. D06p 1/86

U.S. Cl. 8—173



1. A process of dyeing synthetic polyamide fibers comprising treating synthetic polyamide fibers, at room temperature, with a dyebath containing at least one acid dye dissolved in a medium consisting of water, lower alkanol having 1 to 4 carbon atoms, and furfuryl alcohol in a composition by volume on or within a quadrilateral, in a triangular composition diagram, defined by the following co-ordinates:

- (water 68, lower alkanol 5, furfuryl alcohol 27),
- (water 10, lower alkanol 5, furfuryl alcohol 85),
- (water 10, lower alkanol 80, furfuryl alcohol 10), and
- (water 43, lower alkanol 47, furfuryl alcohol 10).

3,898,037

ACRYLAMIDO-SULFONIC ACID POLYMERS AND THEIR USE

K. Robert Lange, Huntingdon Valley; Robert H. Schiesser, Warrington, both of Pa.; Richard G. Tonkyn, Frenchtown, N.J.; Russell T. Dean, deceased, late of Newtown Square, Pa., and by S. Martha Dean, executrix, Newtown Square, Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

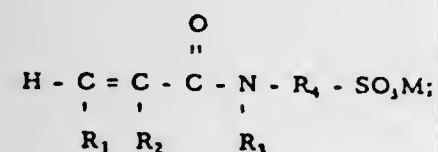
Division of Ser. No. 258,778, June 1, 1972, Pat. No. 3,806,367.
This application Oct. 24, 1973, Ser. No. 409,125

Int. Cl. C23F 11/16, 11/14

U.S. Cl. 21—2.7 R

3 Claims

1. A method of inhibiting the corrosion of a metal surface in contact with an aqueous solution which comprises adding to said solution from about 0.1 to about 100 parts per million parts of said solution of a water-soluble polymer of a sulfonic acid compound having the formula:



wherein R_1 , R_2 and R_3 are selected from the group consisting of hydrogen, lower alkyl, R_4 is an alkylene or an alkyl substituted lower alkylene and M is hydrogen, alkali metal cation and ammonium.

3,898,038

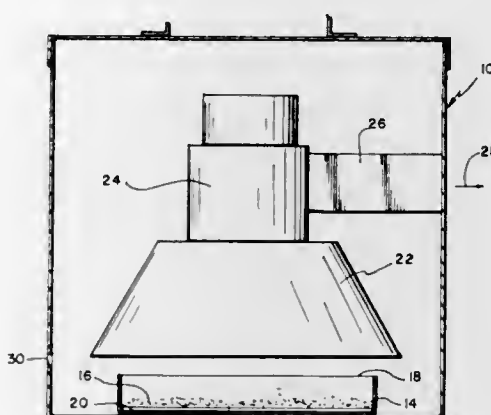
METHOD AND APPARATUS FOR STERILIZING A BIOLOGICALLY CONTAMINATED ENCLOSURE
Eugene L. Anderson, San Antonio, Tex., assignor to Southwest Research Institute, San Antonio, Tex.

Filed Dec. 13, 1973, Ser. No. 424,558

Int. Cl. A61L 13/02, 3/00; B01J 8/02; B01D 53/06

U.S. Cl. 21—58

12 Claims



1. A method of sterilizing a biologically contaminated enclosure including the steps of,

- releasing gaseous formaldehyde into the enclosure for contact with contaminants, and
- neutralizing the formaldehyde by chemical reaction and physical adsorption by circulation of the gaseous formaldehyde through a bed containing an unstable ammonium compound and activated charcoal.

3,898,039

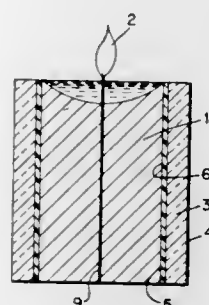
ARTICLE HAVING FUMIGANT CONTAINING SUBSTRATE FOR DIFFUSION PROMOTING CANDLE
Tong Joe Lin, 3239 Deronda Dr., Los Angeles, Calif. 90068

Continuation-in-part of Ser. No. 263,060, June 15, 1972, abandoned. This application Jan. 2, 1974, Ser. No. 430,281

Int. Cl. A61L 9/02; C11c 5/00

U.S. Cl. 21—108

37 Claims



1. An article of manufacture comprising a substrate, a coating on at least part of at least one surface of said substrate, said coating consisting essentially of a mixture of at least one fumigant and at least one carrier in particulate form, said mixture being dispersed in a binder having a melting point of about 100° to about 300° C, said coating being at least partially permeable to permit the escape of the fumigant to the surrounding atmosphere when said coating is exposed to the thermal energy of a lighted candle.

3,898,040

RECUPERATIVE FORM OF THERMAL-CATALYTIC INCINERATOR

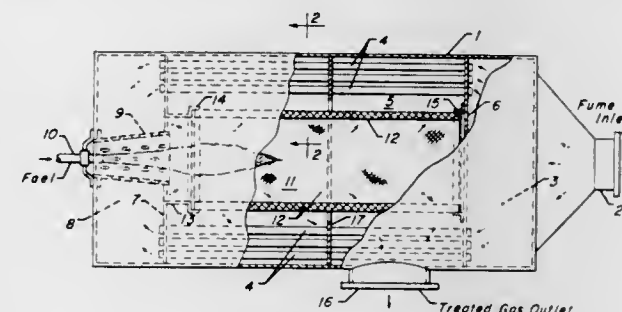
Fernando Tabak, Norwalk, Conn., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 267,328, June 29, 1972, Pat. No. 3,806,322. This application Dec. 26, 1973, Ser. No. 428,640. The portion of the term of this patent subsequent to Apr. 23, 1991, has been disclaimed.

Int. Cl. F23g 7/06; B01j 9/04

U.S. Cl. 23—277 C

5 Claims



1. A thermal-catalytic fume incineration unit, which comprises in combination, an elongated outer housing, internal cylindrical-form partitioning spaced inwardly from the wall of said housing and extending for at least a portion of the internal length thereof to define an annular gas flow space therebetween and an internal combustion section, burner means positioned at the end of said housing and means to discharge hot burner gases axially into said combustion section, fume inlet means into said housing and to said combustion section with passageway means to the latter entirely surrounding said means discharging the hot burner gases, gas pervious catalyst means in at least a peripheral portion of the down-stream section of said cylindrical-form partitioning, and passageway means in interconnection with one face of the catalyst means from the combustion section whereby the fume stream being treated may be passed in a radial type flow through said catalyst means, and treated gas outlet means from the opposing face of the latter and from said housing.

3,898,041

FLUID SAMPLER APPARATUS AND METHOD

Thomas M. Stephens, Menlo Park, and Robert J. Joyce, Cupertino, both of Calif., assignors to Envirotech Corporation, Menlo Park, Calif.

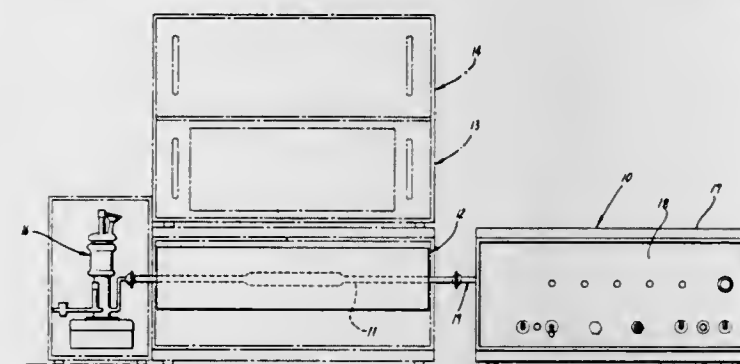
Continuation of Ser. No. 119,672, March 1, 1971, abandoned.

This application Mar. 29, 1973, Ser. No. 346,041

Int. Cl. G01n 31/12

U.S. Cl. 23—230 PC

13 Claims



1. In a method for handling a fluid sample to analyze the same utilizing a boat having a cavity for receiving sample, the steps of forming a chamber about said boat sealed against ambient gas and having a feed-through passage for the boat, supplying fluid sample from a source exterior of said chamber to the boat located at a sample loading station within said chamber while maintaining the chamber seal, moving said boat from said sample loading station in a pathway at least a portion of which extends along said feed-through passage to

3,898,042

METHOD AND APPARATUS FOR CONTINUOUSLY DETERMINING TOTAL COPPER IN AN AQUEOUS STREAM

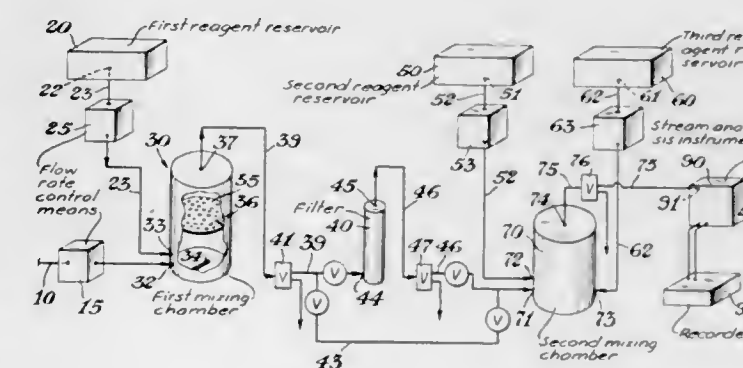
Benton P. Webb, Richwood, and Gordon R. Bullard, Lake Jackson, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 2, 1974, Ser. No. 430,307

Int. Cl. G01n 21/02, 29/00

U.S. Cl. 23—230 R

30 Claims



1. A method for continuously determining the total copper content of an aqueous analysis stream containing copper in at least one of ionic, particulate, and complexed forms which comprises:

- providing a stream analysis instrument having a flow-through type cell and adapted for continuous measurement of light absorbance at about 435 nm;
- contacting and intimately admixing the analysis stream with a continuous flow of hydrofluoric acid;
- continuously filtering the acid-treated analysis stream prior to introduction of said stream into the cell of the stream analysis instrument;
- continuously adding to and mixing with the analysis stream an aqueous solution of a chelant-buffer reagent selected from the group consisting of ammonium and alkali metal citrates and one of the ammonium and alkali metal salts of nitrogen-containing chelates having 1 to 5 carboxyl groups, or a mixture thereof, the quantity of the reagent being sufficient to adjust the pH of the analysis stream to from about 6 to about 7;
- continuously adding to and mixing with the analysis stream an aqueous solution of a water-soluble dithiocarbamate reagent whereby a complex thereof is formed with the copper present in the buffered stream;
- quantitatively detecting said complex by measuring, by means of the stream analysis instrument the light absorbance of the treated stream at a wave length of about 435 nm; and
- comparing the absorbance of the treated stream to that of similarly treated standard solutions of known total copper content to determine the total copper content of the untreated analysis stream.

3,898,043

APPARATUS FOR DECOMPOSING CONCENTRATED AQUEOUS ALUMINUM NITRATE SOLUTIONS

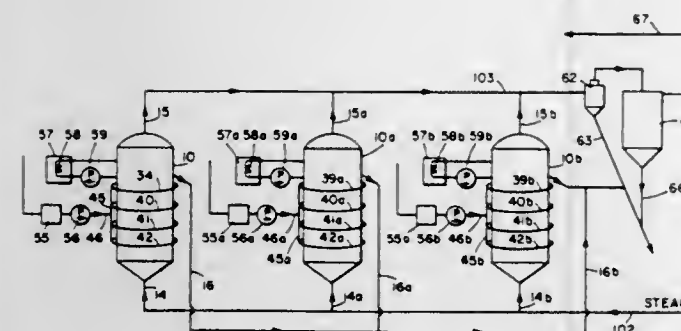
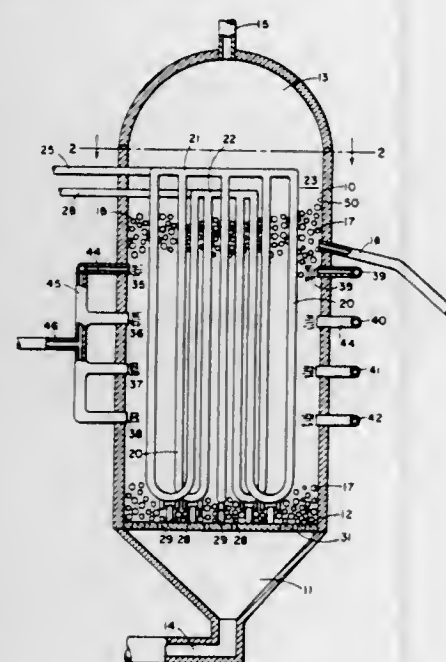
August H. Schutte, Lexington, and James I. Stevens, Bedford, both of Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.

Division of Ser. No. 125,758, March 18, 1971. This application Mar. 14, 1974, Ser. No. 451,100

Int. Cl. B01j 9/18

U.S. Cl. 23—284

9 Claims



1. A fluidized bed adapted for decomposition of an aqueous solution of aluminum nitrate to form an alumina product and nitric acid, comprising in combination

- a. housing means defining therein a fluidized bed comprising a central reaction section, a fluidizing gas chamber below said reaction section and separated from said reaction section by a grid plate, and an effluent gas chamber above said reaction section;
- b. fluidizable bed particles in said reaction section of a depth to define a freeboard space within said reaction section;
- c. liquid feed means adapted to introduce a solution of aluminum nitrate beneath the surface of said fluidized bed, said liquid feed means comprising a plurality of nozzle means adapted to introduce said solution of aluminum nitrate in the form of atomized liquid droplets into said bed particles and being located at at least two different bed levels and spaced around said bed in each of said levels; and manifold means adapted to supply said solution of aluminum nitrate to said nozzle means;
- d. heat transfer fluid inlet header means and heat transfer fluid outlet header means positioned within said freeboard space;
- e. a plurality of elongated, spaced apart U-shaped tubing members, each of which provides a fluid connection between said inlet and outlet header means and extends

through said bed to within a distance from said grid plate sufficient to prevent direct impingement of fluidizing gas, delivered under pressure from said fluidizing gas chamber through said grid plate to said bed, onto the surface of said tubing members, said tubing members being so positioned within the bed to prevent direct impingement of said liquid aluminum nitrate feed solution onto the walls of said tubing members;

- f. pin means mounted on said grid plate and adapted to make a loose fit with collar means attached to the bottom ends of said tubing members thereby supporting said tubing members while permitting thermal expansion and contraction of the walls defining said tubing members;
- g. means to withdraw solid product from said fluidized bed;
- h. means to withdraw effluent off-gases from said effluent gas chamber;
- i. means to separate the nitric acid vapor from the water vapor in said effluent gases;
- j. means to supply a fluidizing gas to said fluidizing gas chamber;
- k. means to heat and circulate a heat transfer fluid through said inlet header means, said tubing members and said outlet header means;
- l. means to heat said solid product to remove any residual nitrate values therefrom to produce alumina product; and
- m. means to recover the noncondensable nitrogen oxide gases from said water vapor.

3,898,044

ELUTING DEVICE FOR NUCLIDE GENERATORS

Helmut Strecker, Seeheim, and Karl-Heinz Tetzlaff, Kelkheim, Taunus, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

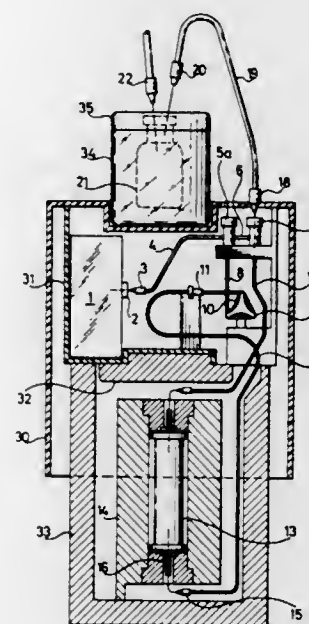
Filed July 24, 1973, Ser. No. 382,134

Claims priority, application Germany, July 26, 1972, 2236565

Int. Cl. B01d 11/02; G21f 5/00; G21h 5/02

U.S. Cl. 23—252 R

4 Claims



1. A device for eluting nuclide generators comprising a radiation shield container having an open top, a nuclide generator positioned in said container; a housing removably mounted on said container adjacent said open top and including a container for an eluting agent, a container for receiving eluate from said generator, a plurality of conduits connecting said eluting agent container through said open top to said generator and said generator to said eluate container, and pump means mounted in said housing and operatively connected to said conduits for pumping liquid therethrough; said pump means including selectively operable control means for limiting operation of said pump to pump only a predetermined

amount of eluate into the eluate container said pump means being installed in said housing between the container for the eluting agent and the container for said nuclide generator and being operatively associated with the conduit therebetween; and said conduit connecting the nuclide generator with the eluate container including a branching conduit connected to the conduit connecting the nuclide generator with the container for eluting agent, thereby to provide a recirculating path between said housing and said generator.

3,898,045

BLOOD OXYGENATOR

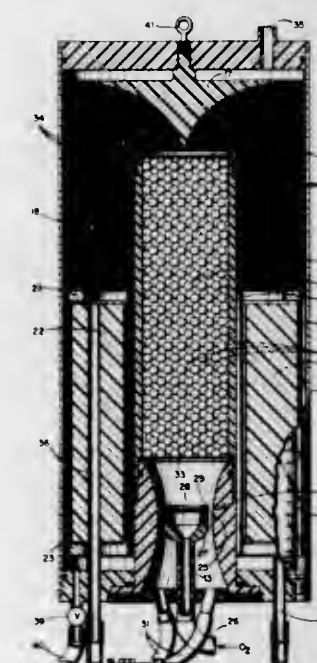
Wallace W. Bowley, Stafford Springs, Conn., assignor to Intech, Inc., Manchester, Conn.

Filed Oct. 6, 1972, Ser. No. 295,724

Int. Cl. A61m 1/03

U.S. Cl. 23—258.5

23 Claims



1. A blood oxygenator comprising:

- a housing;
- means within said housing for mixing blood and oxygen together to form a foam and for pumping the foam through said oxygenator, said mixing and pumping means having at least one blood inlet port at one end and a blood foam outlet at the opposite end;
- oxygen diffusing means within said mixing and pumping means, said oxygen diffusing means having an oxygen inlet port and having an oxygen outlet spaced from either end of said mixing and pumping means, said oxygen diffusing means further comprising:
- means at said oxygen outlet for discharging oxygen into the blood in said mixing and pumping means in the form of bubbles;
- an elongated chamber within said housing, the walls of said chamber being laterally spaced from the interior surfaces of said housing;
- a lattice bed comprising a multiplicity of hard beads of substantially uniform size being tightly packed within and substantially filling said chamber to thereby provide a relatively large collision surface area within said chamber and a plurality of tortuous paths therethrough, each of which is substantially longer than said chamber, said chamber having an outlet and having an inlet coupled to said blood foam outlet of said mixing and pumping means;
- means for maintaining said lattice bed in tightly packed configuration within said chamber;
- defoaming means within said housing adjacent said outlet of said chamber, said blood foam being separated into gases and fluid blood within said defoaming means;

fluid blood storage means below and in communication with said defoaming means; and
fluid blood outlet means mounted in the bottom of said storage means.

3,898,046

STOPPER FOR SEALING CONTAINERS

Tatuhiko Ikeda, Funabashi, Japan, assignor to Jintan Terumo Co., Ltd., Tokyo, Japan

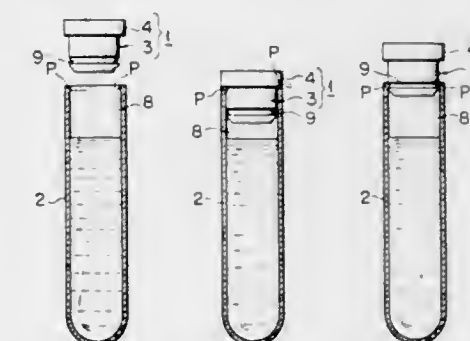
Filed Apr. 19, 1974, Ser. No. 462,510

Claims priority, application Japan, Apr. 23, 1973, 48-47564

Int. Cl. B65D 39/00

U.S. Cl. 23—259

6 Claims



1. An elastomeric stopper for sealing a container having an annular lug inwardly projecting at the edge of the container opening portion, comprising a cylindrical stopper body and an annular groove formed in said body spatially from the upper end of the stopper body, whereby said stopper inserted with its groove below the lug of the container may be pushed up with the pressure built up in the container during the insertion of the stopper until the groove engages the lug and becomes fixed tight in the container.

3,898,047

OXYGEN GENERATION SYSTEM

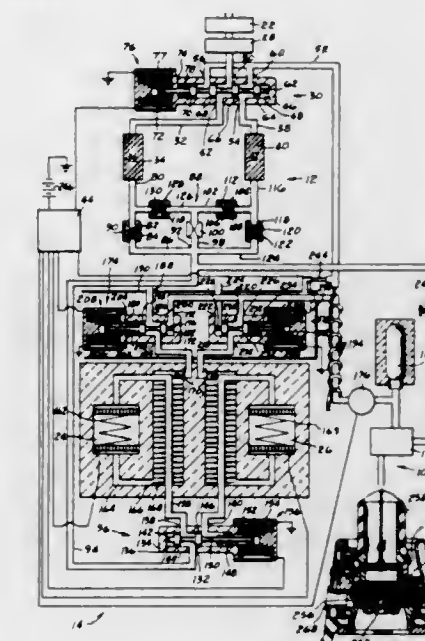
Robert L. Cramer, Davenport, Iowa, assignor to The Bendix Corporation, South Bend, Ind.

Filed July 17, 1973, Ser. No. 380,036

Int. Cl. B01J 7/00

U.S. Cl. 23—281

6 Claims



1. A system for producing an oxygen effluent, said system comprising:
pressurizing means for delivering air under pressure to a supply conduit;
filter means located in a supply conduit through which pressurized air from the environment is passed for removing airborne contaminants;
valve means connected to the supply conduit for sequentially directing the pressurized air into a first flow path and into a second flow path for a predetermined time interval;

separator means having a housing with a first chamber and a second chamber therein, said first chamber and said second chamber being connected in series to said valve means, said first and second chambers each containing a quantity of molecular sieve material to which nitrogen has an affinity to produce an oxygen enriched fluid composed of substantially equal percentages of oxygen and nitrogen upon the valve means sequentially directing the pressurized air thereto;

parallel conduit means connecting the first chamber to the second chamber, said parallel conduit means being interconnected by a restricted passage, said parallel conduit means having directional flow controlling means to establish the first and second flow paths between the series positioned first and second chambers;

cycling means connected to said parallel conduit means for communicating a portion of said oxygen enriched fluid from the parallel conduit means to a distribution conduit means while the remainder of said oxygen enriched fluid passes through said restricted passage into a branch of the parallel conduit means to the first and second chambers in an alternate sequence with the pressurized air flow from the valve means, said oxygen enriched fluid combining with any nitrogen retained in the molecular sieve material in the first and second chambers to produce a first nitrogen enriched fluid which is communicated to a first outlet conduit;

oxygen extracting means having a housing with a third chamber and a fourth chamber located therein, said third and fourth chambers each containing a quantity of barium oxide elements, said cycling means alternately presenting said oxygen enriched effluent to the third and fourth chambers through said distribution conduit means where the barium oxide elements upon being heated are converted to barium dioxide, said third chamber having a first exit port and said fourth chamber having a second exit port;

heat exchanger means associated with said distribution conduit means for raising the temperature of the oxygen enriched fluid to enhance said conversion of barium oxide to barium dioxide;

diverter valve means connected to said first exit port and said exit port for alternately communicating the third chamber and the fourth chamber to an exhaust conduit, to allow a second nitrogen enriched fluid to escape to the atmosphere, and to a second outlet conduit;

pump means connected to said second outlet conduit for alternately lowering the pressure in the third and fourth chamber to allow the barium dioxide elements to revert to barium oxide elements, by releasing an oxygen effluent, said oxygen effluent being communicated to a storage chamber, said first outlet conduit being connected to said second outlet conduit for cooling the oxygen effluent; and

timing means connected to said valve means, to said cycling means, to said oxygen extracting means, to said diverter valve means, and to said pump means for controlling the optimum operational time interval during which said oxygen enriched fluid and said oxygen effluent will be produced.

3,898,048

LIGHT-WEIGHT ROCKET DEPLOYABLE GAS GENERATOR

William H. Barber, Brandywine, Md.; Werner F. Beckert, Las Vegas, Nev., and Ottmar H. Dengel, Front Royal, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 21, 1974, Ser. No. 453,662

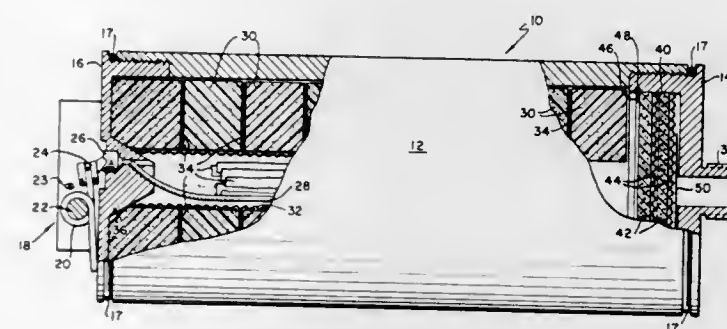
Int. Cl. B01j 7/00; B60r 21/00

U.S. Cl. 23—281

9 Claims

1. A compact, light weight gas generator comprising: a container;

a composition within said container capable of producing a gas in the presence of heat; means adjacent one end of said container for filtering and cooling the gas produced; exit means adjacent said filtering and cooling means for exhausting the gas from said container; and means for producing and maintaining the heat for said gas-producing composition, including:



an explosive primer for producing a flash of heat inside said container; means to initiate said primer; a fuze adjacent said primer for transferring the heat; and a quantity of heat producing material within a bore in said composition and adjacent to said fuze for further transfer of the heat and for producing substantially simultaneous initiation of said composition.

3,898,049

HYDROGENATION REACTORS WITH IMPROVED FLOW DISTRIBUTION

James W. Burroughs, Beaumont; Robert L. Herbst, Groves; William C. Moyer, Port Arthur, and Jesse M. Gray, Jr., Houston, all of Tex., assignors to Texaco Inc., New York, N.Y.

Division of Ser. No. 186,638, Oct. 5, 1971, abandoned. This application Nov. 14, 1973, Ser. No. 415,911

Int. Cl. B01j 9/04; C10g 23/00

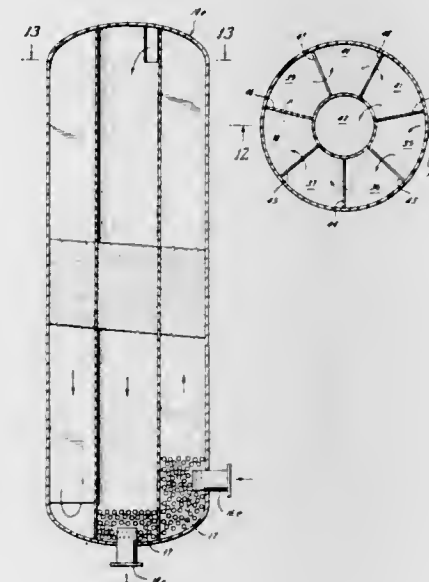
U.S. Cl. 23—288 R

3 Claims

1. A hydrogenation reactor having a liquid passing through a catalyst comprising:

- a. a vertical elongated closed cylindrical container having upper and lower ends for containing a catalyst therein,
- b. a smaller imperforate cylindrical container mounted coaxially internally of said elongated cylindrical container forming a closed annulus around said smaller cylinder, said smaller cylinder forming a centrally located cylindrical chamber,
- c. an odd number of and at least seven imperforate vertical walls extending radially between and interconnecting said two coaxial cylinders for dividing the elongated cylindrical container into a plurality and an odd number of at least seven peripheral elongated vertical chambers circumscribing the center cylindrical chamber to form an annulus of chambers around the center cylindrical chamber, each chamber having upper and lower ends,
- d. each of said chambers having a retaining means in the bottom thereof and being at least partially filled with a catalyst, said retaining means preventing the movement of the catalyst out of the bottom of each chamber,

- e. an inlet in one side of the container adjacent said container lower end in the first of said elongated vertical chambers for providing a flowing stream of the liquid into the bottom of said first chamber,
- f. an outlet in said lower end of the center cylindrical elongated vertical chamber for providing an exit of the liquid after passing through the catalyst, and
- g. passage means comprising openings in the tops of the first, third, and fifth and subsequent odd-numbered, excluding the last such odd-numbered, vertical walls, open-



ings in the bottoms of the second, fourth, and sixth and subsequent even-numbered vertical walls, and an opening in the top of the small cylinder between the vertical walls forming the last peripheral chamber for serially interconnecting all of said chambers for providing an improved reactor having better contact between the liquid and catalyst by providing a multiple pass reactor with greater hydrogenation efficiency for a given volume of catalyst, with less channeling, and with less carryover and lost catalyst during both normal operation and reverse flow.

3,898,050

REGENERATION APPARATUS WITH INTERNAL REGENERATED-CATALYST RECYCLE MEANS

Charles W. Strother, Arlington Heights, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Dec. 28, 1973, Ser. No. 429,457

Int. Cl. B01j 9/16, 9/20, 11/68

U.S. Cl. 23—288 B

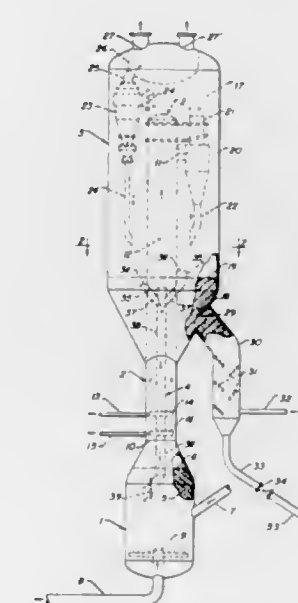
5 Claims

1. An apparatus of oxidizing coke on spent catalyst which comprises in combination:

- a. a spent-catalyst receiving chamber for containing a dense-phase fluidized bed of catalyst, and chamber having upper and lower sections, a fresh-regeneration-gas inlet means connected to said chamber at said lower section to allow passage of fresh regeneration gas into said chamber through said lower section, a spent-catalyst inlet means connected to said chamber to allow passage of spent catalyst into said chamber, and a regenerated-catalyst/regeneration-gas outlet means at the upper section of said chamber to allow passage of regenerated catalyst and regeneration gas in admixture from said chamber;
- b. a transfer conduit having an inlet at its lower end connected to said regenerated-catalyst/regeneration-gas outlet means, extending vertically upward through the lower portion of a hereinafter described regenerated-catalyst receiving chamber into said chamber, and having an outlet means near its upper portion located within said

chamber and connected to a separation means whereby regenerated catalyst and regeneration gas are carried in admixture from said spent-catalyst receiving chamber to said separation means;

- c. a regenerated-catalyst receiving chamber for containing a dense-phase bed of catalyst and said separation means said chamber positioned entirely above said spent-catalyst receiving chamber and having upper and lower sections, a spent regeneration gas outlet means connected to said chamber at its upper section to allow passage of spent regeneration gas from said chamber, and having a regenerated catalyst stripper connected to said chamber at its lower section and stripper having connected to its



outlet a regenerated-catalyst outlet means to allow passage of regenerated catalyst from said stripper; and,

- d. an internal regenerated-catalyst recycle means comprising: collecting hoppers having inlet means at different elevations at least one of which is in communication with the dense-bed of regenerated catalyst in the regenerated-catalyst receiving chamber; a dipleg having an outlet means in communication with the dense bed of catalyst in the spent-catalyst receiving chamber; and, conduits connecting said hoppers to said dipleg said recycle means to allow passage of regenerated catalyst directly from the regenerated-catalyst receiving chamber to the spent-catalyst receiving chamber.

3,898,051

CRYSTAL GROWING

Frederick Schmid, Marblehead, Mass., assignor to Crystal Systems, Inc., Salem, Mass.

Filed Dec. 28, 1973, Ser. No. 429,142

Int. Cl. B01j 17/00; B01D 9/00

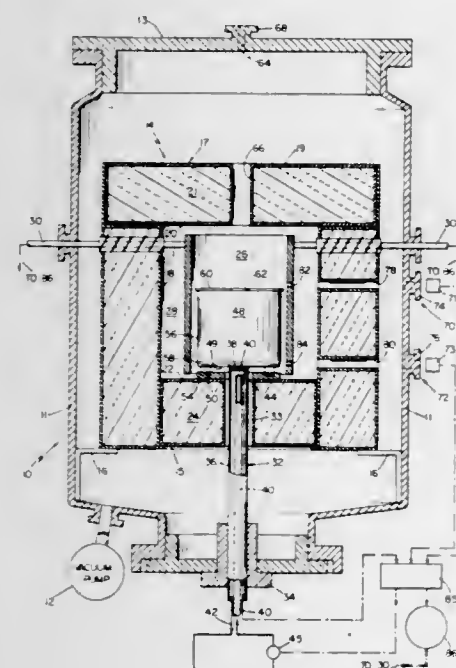
U.S. Cl. 23—301 SP

21 Claims

1. In the process for growing single crystals including the steps of placing material in a crucible, heating the crucible to above the melting point of the material to melt the material therein, and thereafter solidifying the melted material by extracting heat from a bottom portion of the crucible, that improvement comprising:

controlling the heating of said crucible and the extracting of heat from said bottom portion of said crucible so that the temperature of at least those portions of the crucible side walls that are in contact with the material within said crucible is maintained above the melting point of the material within said

crucible until substantially all the material within said crucible has been solidified while simultaneously reducing the temper-



ature of said bottom portion below said melting point of the material.

3,898,052

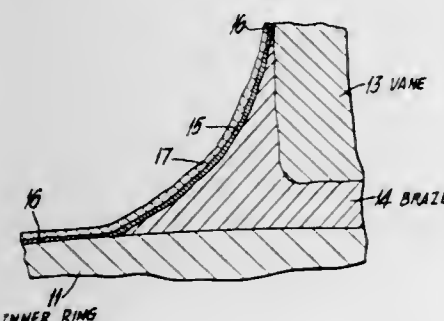
CORROSION RESISTANT COATING SYSTEM FOR FERROUS METAL ARTICLES HAVING BRAZED JOINTS
Michael F. Dean; Hossein Borougerdi, and John A. Puchot, all of San Antonio, Tex., assignors to Chromalloy American Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 353,677, April 23, 1973. This application Oct. 18, 1974, Ser. No. 516,114

Int. Cl. B32b 15/18

U.S. Cl. 29—195

10 Claims



1. A stainless steel article having at least one brazed joint, the braze of said joint being formed of a non-ferrous brazing alloy of melting point ranging from about 1,125° to 1,925°F, said braze being characterized by the presence of an aluminate-forming metal selected from the group consisting of nickel, cobalt, iron, titanium, chromium, manganese, molybdenum and vanadium at the surface thereof,

the stainless steel article having a thermally diffused aluminum coating on substantially the entire surface of said article,

the coating on the stainless steel surface outside the braze being characterized by the presence of iron aluminide, the aluminum coating on the braze being characterized by the presence of an aluminide of said metal group,

the thermally diffused aluminum coating also having bonded thereto a cured non-metallic barrier layer formed from a silicate selected from the group consisting of sodium silicate, potassium silicate, lithium silicate and ethyl silicate.

3,898,053

BRAZING MATERIALS

Ogle Ridout Singleton, Jr., Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.

Division of Ser. No. 363,910, May 25, 1973, Pat. No. 3,853,547. This application Aug. 5, 1974, Ser. No. 494,603

Int. Cl. B32b 15/00

U.S. Cl. 29—197.5

9 Claims

1. A clad composite brazing sheet having a core and an outer cladding layer bonded to the core, wherein said cladding layer is composed of a brazing composition consisting essentially of aluminum, about 7 to 14% silicon, about 0.2 to 2% magnesium and about 0.02 to 0.20% bismuth, by weight, with minor elements and impurities in amounts up to about 1% iron, 0.2% copper, 0.25% manganese, 0.6% each in the case of zinc and titanium, others not exceeding 0.05% each and 0.15% total; and said core is composed of an alloy consisting essentially of aluminum, one or both of magnesium and manganese in amounts up to about 3% magnesium and up to about 1.5% manganese, by weight, with minor elements and incidental impurities in amounts up to 0.8% iron, 0.8% silicon, 0.4% zinc, 0.35% chromium, 0.4% copper, 0.1% titanium, others .05% each and 0.15% total.

3,898,054

BRAZED ASSEMBLIES

David L. Purdy, and John F. Williams, both of Indiana, Pa., assignors to ARCO Nuclear Company, Leechburg, Pa.

Division of Ser. No. 127,807, March 24, 1971, abandoned.

This application June 27, 1973, Ser. No. 374,011

Int. Cl. B23p 3/00

U.S. Cl. 29—198

2 Claims



1. A brazed assembly including a first member of copper and a second member predominately or wholly of tungsten and a brazing member of a eutectic of titanium and copper between said first and said second members and brazed to said members.

3,898,055

GASOLINE ENGINE FUEL

Ulric B. Bray, Pasadena, Calif., assignor to Bray Oil Co., Los Angeles, Calif.

Filed June 7, 1971, Ser. No. 150,788

Int. Cl. C01L 1/24

U.S. Cl. 44—51

2 Claims

1. The method of preventing erosion of cast iron exhaust valve seats in an internal combustion engine operating on lead-free gasoline fuel which comprises incorporating in said fuel from 0.5 to 5.0 grams per gallon of an overbased oil soluble sulfonate of a Group II metal having an alkali value of at least 50 mg. KOH per gram equivalent from transparent colloidal dispersed Group II metal carbonate sufficient to inhibit the erosion and recession of said exhaust valves and burning said fuel in said engine.

3,898,056

HYDROCARBYLAMINE ADDITIVES FOR DISTILLATE FUELS

Lewis R. Honnen, Petaluma, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. Nos. 318,064, Dec. 26, 1972, abandoned, and Ser. No. 318,063, Dec. 26, 1972, abandoned.

This application Oct. 11, 1973, Ser. No. 405,707

Int. Cl. C10I 1/22

U.S. Cl. 44—58

19 Claims

1. A fuel composition of a distillate fuel containing from 150 to 300 parts per million of a mixture of a high molecular weight hydrocarbyl amine and a low molecular weight hydrocarbyl amine wherein a weight ratio of low to high molecular weight amine present within said mixture is between about 0.5 and 5:1; said high molecular weight hydrocarbyl amine being prepared by reacting a first hydrocarbyl halide having a number average molecular weight in the hydrocarbyl portion of 1,900 to 5,000 with a mono- or polyamine having from 1 to 10 amine nitrogens and from 2 to 40 carbons with a carbon to nitrogen atomic ratio between about 1 and 10:1; and said low molecular weight hydrocarbyl amine being prepared by reacting a second hydrocarbyl halide having a number average molecular weight in said second hydrocarbyl portion of 300 to 600 with a mono- or polyamine having from 1 to 10 amine nitrogens and from 2 to 40 carbons with a carbon to nitrogen atomic ratio between about 1 and 10:1.

3,898,057

PROCESS FOR CONVERTING METHANOL TO A HIGH-ETHANE GAS

Friedrich Wilhelm Möller, Friedrichsdorf; Heinz Jockel, Kleingerau; Karl Bratzler, Bad Homburg, and Hans-Joachim Renner, Frankfurt am Main, all of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

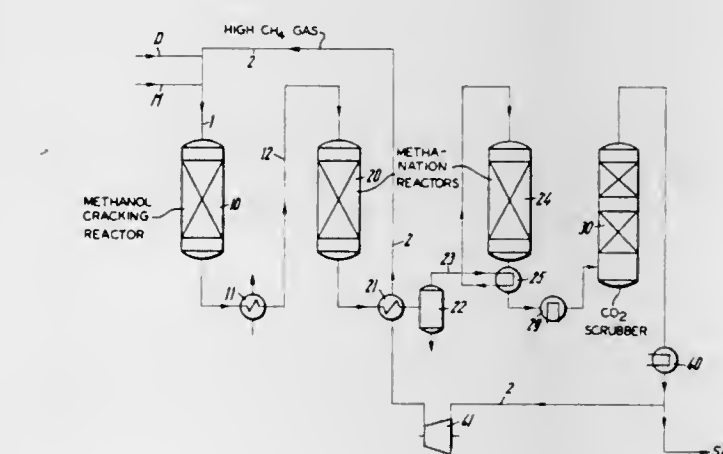
Filed Aug. 1, 1974, Ser. No. 493,997

Claims priority, application Germany, Aug. 16, 1973, 2341288

Int. Cl. C01b 2/14; C07c 1/20

U.S. Cl. 48—197 R

12 Claims



1. In a process for converting methanol into a high-methane gas by cracking methanol vapor in one or more stages under superatmospheric pressure at elevated temperatures in contact with a catalyst, preferably in the presence of water vapor, the improvement which comprises adding a methane-containing gas having a higher methane concentration than the gas produced by the cracking of methanol alone to the feedstock to be converted.

3,898,058

VACUUM STRIPPING OF HYDROCARBON CONTAMINATED WATER STREAMS

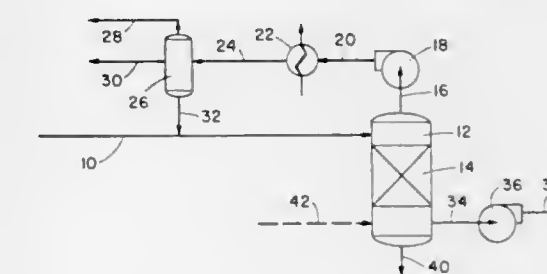
James C. McGill, Tulsa, Okla., assignor to H-T Management Company, Tulsa, Okla.

Filed Apr. 12, 1973, Ser. No. 350,311

Int. Cl. B01d 19/00

U.S. Cl. 55—50

12 Claims



1. A process of removing hydrocarbon contaminants from a water stream comprising:
maintaining said stream at a temperature of at least 40°F.;
introducing said contaminated stream into a contacting vessel;
maintaining a vacuum in said contacting vessel by a vacuum pump wherethrough essentially said hydrocarbons plus some water are withdrawn as vapors, and disposed;
introducing a high vapor pressure stripping gas into said vessel in countercurrent contact with said contaminated stream; and
removing substantially contaminate free water from said contacting vessel.

3,898,059

METHOD AND APPARATUS FOR TREATING POLLUTED AIR ALONG AUTO TRAFFIC ARTERIES

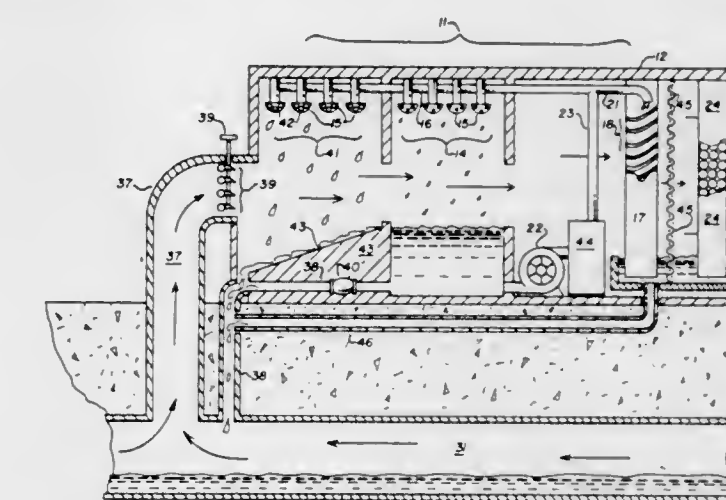
Chester L. Foster, 404 Nelray, Austin, Tex. 51787

Filed May 9, 1973, Ser. No. 358,688

Int. Cl. B01d 53/14

U.S. Cl. 55—94

5 Claims



1. Air pollution treatment apparatus designed for use with conventional storm sewer lines as part of a system for cleaning and recirculating air along auto traffic thoroughfares, said apparatus comprising:

- a system of storm sewer lines employed as air passageways paralleling streets from which polluted air is to be treated and recirculated;
- self operating water-relief, air-seal valve means for isolating and limiting air flow through said storm sewer passageways to the area selected for treatment by a particular air treatment recirculating unit;
- air inlet means from the street and sidewalk area into said storm sewer passageways;

- D. air duct means from said storm sewer passageways into an area air treating and recirculating unit;
- E. an adjustable input air flow regulator vent to assist in reducing flying debris in the air stream and to permit a temperature dropping reduction in air pressure between said adjustable input air flow regulator vent and the air wash apparatus;
- F. a preliminary "air beating" shower bath chamber with associated pre-wash and ramp drain structure to wash out flying debris and solid particles of dust and pollen in the air stream;
- G. an area air treating and recirculating plant with automatic washing and purifying contaminated air;
- H. means for chilling or refrigerating the water used for the air-wash spray systems;
- I. output duct means for communicating said treated washed air back into street and sidewalk areas.

3,898,060

ELECTROSTATIC PRECIPITATOR

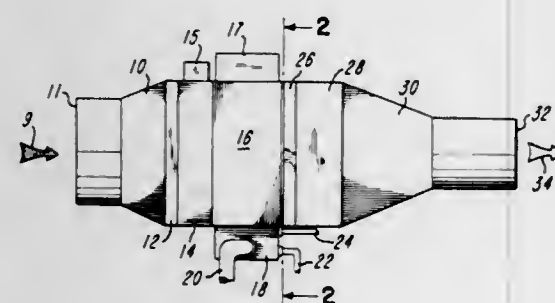
Herman S. Starbuck, 8105 Remington Rd., Cincinnati, Ohio 45242

Filed Jan. 28, 1974, Ser. No. 437,338

Int. Cl.² B03C 3/09

U.S. Cl. 55-110

15 Claims



1. An electrostatic precipitator comprising a housing including a precipitator chamber and a cleaning chamber outwardly therefrom; a drum rotatably mounted in the housing and means physically isolating the precipitator chamber from the cleaning chamber the drum subdivided into a plurality of duplicate precipitating cells certain of which are in selective communication with the precipitator chamber and certain others of which are in selective communication with the cleaning chamber; means imparting an electrostatic field across those cells in communication with said precipitator chamber; an inlet port and an outlet port in said precipitation chamber for directing a fluid medium through said precipitator chamber and axially of said drum; means in the cleaning chamber for introducing a cleaning media into said cleaning chamber and radially of said drum; and means for rotating said drum relative to said housing in step-by-step manner to selectively index and advance the precipitating cells into and out of communication with one or the other of said chambers.

3,898,061

DEGASIFIER FOR DRILLING MUD

Siro Brunato, Via Sangregorio Gall 23, 20077 Melegnano, Italy

Filed Oct. 9, 1973, Ser. No. 404,155

Claims priority, application Italy, Mar. 9, 1973, 21369/73

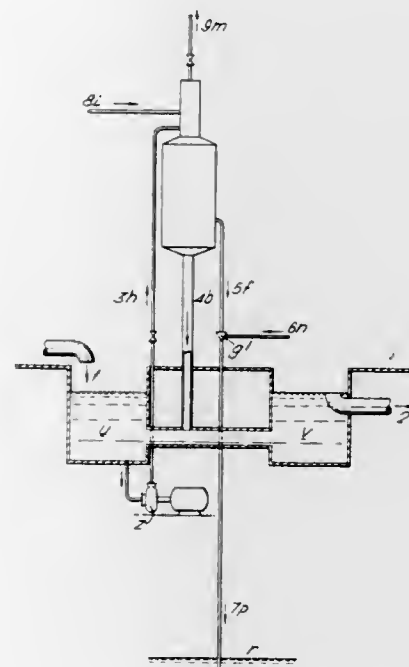
Int. Cl.² B01D 19/00

U.S. Cl. 55-193

2 Claims

1. A degasifier for drilling mud for use on an offshore drilling rig drilling a well above the sea and including a sea water line and pump means for pumping sea water to and from the drilling rig comprising,
- a mud collecting tank connected to the gasified mud returning from the well,

- a container for receiving the mud to be degasified and positioned above the mud collecting tank,
- a mud inlet adjacent the top of the container,
- a pump connected between the mud inlet and the mud collecting tank for pumping gasified mud into the container,
- a plurality of inclined plates in the container below the mud inlet,
- a mud outlet adjacent the bottom of the container for discharging degasified mud by gravity,
- a clean mud tank positioned below and connected to the mud outlet for receiving clean mud from the container,



- means connected to the container for applying a vacuum to the container for removing gas including a venturi in the drilling rig sea water line and connected to the container for removing gas from the container and disposing of the gas in the sea,
- a second mud inlet adjacent the top of the container and connected directly to the well for receiving highly gasified mud, and
- a gas exhaust connected to the container and leading to adjacent the top of the drilling rig for removing gas.

3,898,062

BAG HOUSE AND MANIFOLD SYSTEM

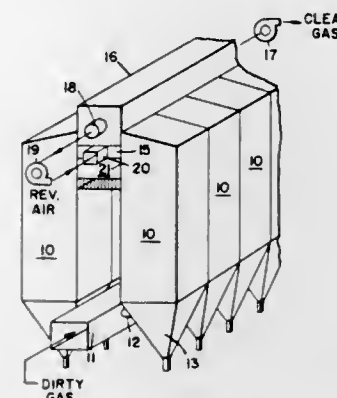
Philip B. Slakey, Orinda, Calif., assignor to Industrial Clean Air, Inc., Berkeley, Calif.

Filed Jan. 10, 1974, Ser. No. 432,589

Int. Cl.² B01D 46/02

U.S. Cl. 55-269

4 Claims



1. An air flow system for bag houses comprising:
- a. two spaced-apart rows of vertically oriented bag houses, each having an inlet port at the lower end thereof, an

- outlet port at the upper end thereof and bag filter means therein whereby dirty gas may enter the inlet port, pass through the bag filter means and exit through the outlet port,
- b. a main gas manifold extending along the length of and between said rows of bag houses,
- c. a reverse-air manifold and valved passage assembly extending along the length of and between said rows of bag houses and adjacent to said main gas manifold, said reverse-air manifold and valved passage assembly being separate from said bag houses and main gas manifold and comprising a plurality of individual enclosed modules disposed in end-to-end relationship each module having spaced-apart horizontal plates one of which is adjacent said main gas manifold, spaced-apart vertical side plates each of which is in proximate relationship to a bag house, and spaced-apart vertical end plates, each module having a pair of spaced-apart vertical partitions extending the length of said module to form a portion of the reverse-air manifold centrally of said module and bounded by said plates and partitions, said module having a valve chamber on each side of said reverse-air manifold portion, each valve chamber being bounded by one of said partitions, one of said side plates and one of said end plates, means joining said modules together in end-to-end relationship and providing communication between the reverse-air manifold portions throughout the length of said assembly, there being a module for each pair of opposed bag houses,
- d. means forming a gas flow passage within each module from the reverse-air manifold portion thereof into each valve chamber on either side thereof, each such gas flow passage terminating in an annular valve seat opening into said valve chamber and facing the other of said horizontal plates of said module,
- e. means joining said modules to said main gas manifold and forming a gas flow passage from said main gas manifold into each valve chamber of each module, each such gas flow passage terminating in an annular valve seat opening into the valve chamber and facing said other of said horizontal plates of said module,
- f. means joining said modules to said bag houses and forming a gas flow passage from each bag house through the side wall of the module proximate thereto to communicate a port of said bag house with the interior of a valve chamber,
- g. each module having a plurality of valve plates there-within, one for each annular valve seat, and a plurality of valve operators, one for each valve plate, said valve operators being mounted on said other of said horizontal plates exteriorly of said module, each said valve operator including an actuating rod connected to a valve plate and extending through said other of said horizontal plates.

3,898,063

COMBINATION MUFFLER AND FILTER DEVICE

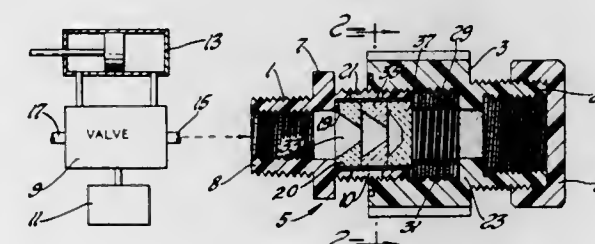
George A. Gazan, 29545 Minglewood Ct., Farmington, Mich. 48024

Filed Feb. 23, 1973, Ser. No. 335,077

Int. Cl. B01d 27/08

U.S. Cl. 55-276

15 Claims



14. A combined filter and muffler device comprising a first tubular member having an inlet and threaded portion, and a

plurality of exit openings extending radially from said member, a second tubular member having a threaded portion engaging said threaded portion of said first tubular member to form a telescopic connection therewith in such manner so as to vary the size of said exit openings upon manual adjustment of the telescopic connection of the members, an internal seat portion on said first member, a cartridge in said first tubular member, a spring member biasing said cartridge against said seat portion and reacting against said second tubular member.

3,898,064

APPARATUS FOR FILTERING ENGINE EXHAUST

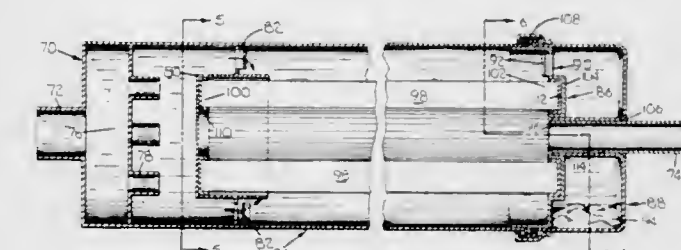
Ting C. Tao, and Robert W. Heiser, both of Brooklyn Heights, Ohio, assignors to Rockwell International Corporation, Pittsburgh, Pa.

Filed May 9, 1974, Ser. No. 468,319

Int. Cl.² B01D 50/00

U.S. Cl. 55-276

3 Claims



2. A filter container capable of removing impurities from exhaust gases of an internal combustion engine flowing there-through, said container comprising:
- a generally cylindrical filter section having a closed forward end including a coaxially aligned inlet fitting extending therethrough and an opened rearward end, said filter section having a forward portion and a rearward portion separated by a centrally located baffle plate and encircling array of vanes for baffling gases entering said inlet fitting to cause them to swirl around the inner surface of the cylindrical wall of said rearward portion of said filter section,
- a generally cylindrical trap section having an outer edge of an opened forward end alignable with the edge of said wall of said filter section at said opened rearward end, said trap section having a coaxially aligned, integral tubular portion extending forwardly from a rear wall to define an opening therethrough,
- a dividing plate having an outer periphery disposable between said filter section and said trap section,
- means for removably securing said trap section to said filter section at their respective said edges with said outer periphery of said dividing plate disposed therebetween, said means for securing at said edges producing a gastight sealing for said container,
- a filter tube of pleated fiberglass material coaxially disposed within said rearward portion of said filter section to extend between the said baffle plate of said filter section and said dividing plate and to separate an axially-aligned central region of said filter section and a circumferential region of said filter section,
- said dividing plate having at least one opening therein aligned with the upper portion of said circumferential region to provide the only communication between said filter section and the interior of said trap section, and an outlet fitting integrally formed in said dividing plate to communicate with said central region and to extend from said dividing plate snugly through said tubular portion of said trap section to allow said exhaust gases to flow from said container, whereby
- said exhaust gases will generally flow rearwardly through said container, said impurities will be removed from said exhaust gases by collection in said trap section and on said filter tube, and said means for removably securing said trap section to

said filter section facilitates replacement of said filter tube and removal of said impurities from said trap section for continued use of said container.

3,898,065

LINT COLLECTOR

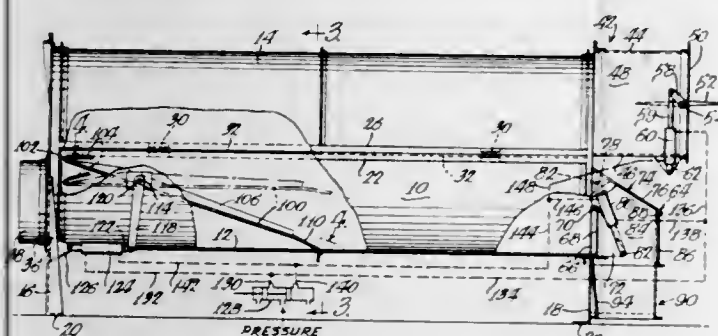
Robert B. Coffman, Cary, Ill., assignor to Norman Dryer Co., Inc., Crystal Lake, Ill.

Filed Oct. 9, 1973, Ser. No. 404,430

Int. Cl. B01d 41/04

U.S. Cl. 55—301

8 Claims



1. A collector for separating entrained particulate matter from a stream of air discharging from a fabric dryer and the like; comprising means defining a chamber, a substantially horizontally disposed filter screen within said chamber dividing said chamber into an upper part and a lower part, means defining an air inlet into one end of said chamber below said screen adapted to receive said stream, said means being the only inlet to said chamber, means defining an air outlet from said chamber above said screen, means defining an outlet below said screen and generally opposite said inlet for accumulated particulate matter, and means for selectively opening and closing said outlets, said stream serving to blow accumulated particulate matter from said chamber below said screen when said outlet above said screen is closed and said particulate matter outlet is open.

3,898,066

AIR FILTER ASSEMBLY

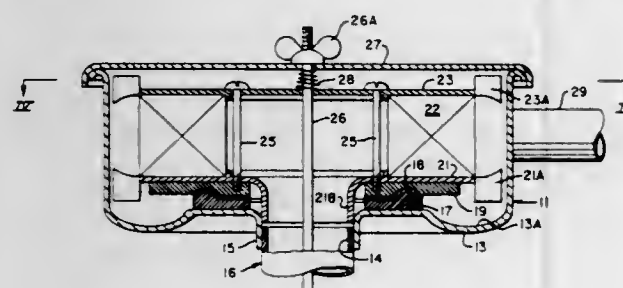
Leonard A. Miskiewicz, 219 Sprucewood St., Pittsburgh, Pa. 15210

Filed Jan. 7, 1974, Ser. No. 431,298

Int. Cl. B01d 50/00

U.S. Cl. 55—317

8 Claims



1. An air filter assembly comprising:
housing means including an annularly shaped side wall upstanding from a bottom wall, said annularly shaped side wall having an air inlet opening for the entrance of air into said housing, said bottom wall having an air discharge port for the passage of filtered air from said housing;
an annularly shaped filter element with filtering surfaces facing toward said annular side wall;
a cover plate for enclosing the top surface of said filter element;
a plurality of turbine blades extending outwardly beyond the outer annular edge of the cover plate and located between said filter element and said side wall of the hous-

ing means, said turbine blades being drivingly coupled via the cover plate to said filter element for rotating it within the housing, the facing surfaces of said blades lying in planes intersecting said bottom wall;
said housing including a cover joined to the side wall for enclosing said filter element;
means for rotatably supporting said annular filter element within said housing means;
an annular plate enclosing the bottom surface of said filter element, said annular plate including means surrounding a centrally located annular port therein and extending into a rotatable and enclosing relation with said air discharge port for delivering filtered air into the air discharge port; and
means for directing a stream of air through the inlet opening in said side wall into said housing means in a generally tangential direction toward said annularly shaped filter element for impinging contact with said turbine blades to rotate said filter element to change filtering surfaces thereof directed toward the stream of air.

3,898,067

CONCENTRIC CLOTH-TUBE AIR FILTER AND DUST COLLECTOR

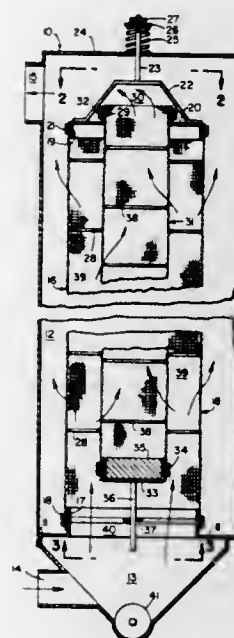
Richard G. Genton, West Covina, Calif., assignor to Industrial Clean Air, Inc., Berkeley, Calif.

Filed Oct. 4, 1973, Ser. No. 403,632

Int. Cl. B01d 46/02

U.S. Cl. 55—341

5 Claims



1. An air filter and dust collector comprising:
a. an enclosed bag house having a horizontal partition therein dividing the interior of said bag house into upper and lower chambers, said bag house having an inlet for dirty air into said lower chamber and an outlet for clean air from said upper chamber, said partition having an opening therethrough;
b. a first cloth tube vertically disposed in said upper chamber, said tube having its lower end fixedly secured to said partition with the interior of said tube being in free communication with said lower chamber through said partition opening;
c. an end cap fixedly secured to and closing the upper end of said first tube, said cap having a central opening therethrough;
d. means for suspending said cap from said bag house and for adjusting the elevation of said cap above said partition to impart a desired tension to said first tube;
e. a second cloth tube disposed in and spaced annularly from said first tube, said second tube having its upper end

fixedly secured to said end cap, said second tube being suspended from said end cap with the interior of said second tube being in free communication with said upper chamber through said cap opening.
f. means closing off the bottom end of said second tube,
g. means for imparting a predetermined downward force of constant value on the bottom end of said second tube to impart a desired amount of tension to said second tube,
h. means for centering the bottom end of said tube relative to said second tube, and for enabling said bottom end of said second tube to move freely up and down whereby a change in elevation of said end cap above said partition will produce a corresponding change in elevation of said bottom end of said second tube without producing a change in the amount of tension imparted to said second tube.

3,898,068

CYCLONIC SEPARATOR

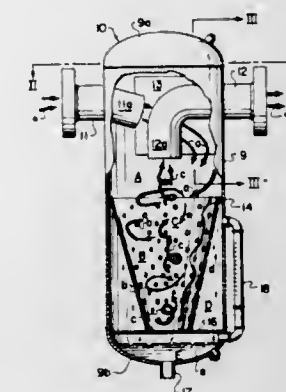
John A. McNeil, 251 Butler St., Brookville, Pa. 15825

Filed May 31, 1974, Ser. No. 474,939

Int. Cl. B01d 45/16

U.S. Cl. 55—426

10 Claims



1. In a liquid entrainment separating apparatus having an improved separating efficiency when subjected to increased inlet velocities in recovering the substantially dry gaseous content of a pressure effluent being supplied, an elongated container having a substantially cylindrical side wall and upper and lower closing-off end walls defining an elongated compartment therein, said compartment terminating in upper and lower end portions, a tubular inlet member extending into said container and having an end portion open to the upper end portion of the compartment and constructed to introduce entrained effluent therein in a cyclonic path therewithin, a tubular discharge member for receiving dry gaseous effluent extending into the container along the upper end portion and having an open end portion extending centrally downwardly to a substantially intermediate position between the upper and lower end portions of the compartment and open below the open end portion of said tubular inlet member, a cone-shaped separating member of perforated wall construction having an upper wide-mouth open end portion substantially corresponding in diameter to an inner diameter of said side wall of said container and in a downwardly spaced relation with respect to the open end portion of said tubular discharge member, spacing within the compartment between the open end portion of said tubular discharge member and the upper wide-mouth open end portion of said separating member that is fully open and unobstructed therebetween to define a first-stage processing chamber above said separating member, said separating member being positioned within the compartment to extend in a downwardly converging relation and having a fully open spacing between its diverging and its converging ends to define a cone-shaped second-stage processing chamber there-within adjacent its inner surface and to define a third-stage processing chamber axially centrally thereof that extends upwardly along and is fully open to said first and second-stage processing chambers to discharge substantially dry gaseous effluent into the open end portion of said tubular outlet mem-

3,898,069

POSITIVE CONTAINMENT THRESHOLD FOR USE IN GLASS MANUFACTURING APPARATUS

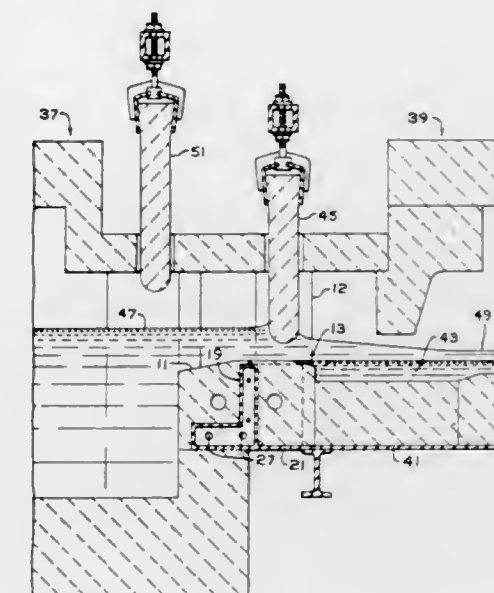
Richard L. Cerutti, Seminole, and Joseph A. Gulotta, New Kensington, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 27, 1974, Ser. No. 455,441

Int. Cl. C03b 19/02

U.S. Cl. 65—182 R

6 Claims



1. In an apparatus for making flat glass comprising a glass-making furnace for supplying molten glass and, connected to the furnace through a molten glass delivery means, a glass forming chamber for forming a continuous sheet of flat glass, wherein the forming chamber includes a pool of molten metal for supporting the glass during forming, the pool of molten metal being maintained on a bottom between sidewalls and at the end of the forming chamber connected to the furnace by a threshold, and wherein the threshold comprises an elongated member extending across the delivery means and providing an upwardly facing molten glass supporting surface having a long dimension extending across the delivery means and a short dimension extending in a direction from the furnace to the forming chamber; the improvement wherein the threshold comprises:

- an elongated, impervious metal base member extending across the delivery means and connected to the bottom of the forming chamber;
- an impervious metal dividing member connected to and extending along the length of said base member, said dividing member extending substantially perpendicularly upwardly from said base member;
- a pair of impervious metal end members, each connected to said base member and to said dividing member and extending substantially perpendicularly from both said base member and said dividing member, one of said end members being in the vicinity of one end of said base member and the other of said end members being in the vicinity of the other end of said base member; and

d. two refractory blocks positioned one on each side of said dividing member and held in fixed relation thereto to form a glass contacting surface comprising the surfaces of said blocks facing away from said base member.

3,898,070

CHELATES FOR THE CONTROL OF METAL-DEFICIENCY-PHENOMENA IN BIOLOGICAL SYSTEMS

Joachim Dazzi, Riehen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

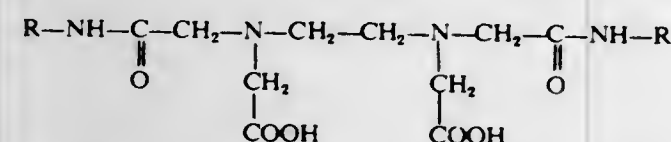
Division of Ser. No. 274,377, July 24, 1972, Pat. No. 3,833,590. This application June 20, 1974, Ser. No. 481,275 Claims priority, application Switzerland, July 29, 1971, 11172/71

Int. Cl. C05c 11/00

U.S. Cl. 71-1

15 Claims

1. A composition for the control of metal-deficiency phenomena in plants susceptible to such deficiency which comprises an effective amount of a heavy metal chelate of an ethylenediaminetetraacetic acid derivative of the formula



wherein R represents naphthyl; phenyl or naphthyl substituted by halogen, hydroxy, mercapto, nitro, cyano, thiocyanato, C₁-C₆ alkyl, C₁-C₆ alkoxy, C₁-C₄ halogenoalkyl, C₂-C₃ acyl, C₂-C₃ acylamino, C₂-C₃ acyloxy, carboxyl, alkoxy-carbonyl having C₁-C₆ alkyl groups, carbamoyl, pyridoylamino, N-carboxyalkylcarbamoyl having C₁-C₆ alkyl groups, sulfo, sulphonyl, mono- or di-C₁-C₆ alkylated or phenylated sulphonyl, mono- or di-C₁-C₆ alkylated or phenylated sulphonyl substituted by -CH₂-CH₂-SO₃H or -CH₂-COOH, C₁-C₆ alkylsulphonyl, C₁-C₆ alkoxy-sulphonyl, phenylsulphonyl, phenoxysulphonyl, hydroxy-containing phenylsulphonyl or hydroxy-containing phenoxysulphonyl; or pyridyl, quinolyl or pyridyl and quinolyl substituted by halogen, hydroxy, C₁-C₆ alkyl, or carbamoyl; together with a suitable carrier therefor.

3,898,071

METHOD OF LIMITING GROWTH OF LAWN GRASS AND INCREASING SUGAR CONTENT IN CANE

Rene Bosshard, Birsfelden, Switzerland, and Jean-Claude Muller, St. Louis, France, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 155,603, June 22, 1971, Pat. No. 3,803,160. This application Jan. 17, 1974, Ser. No. 434,327 Claims priority, application Switzerland, June 23, 1970, 9479/70

Int. Cl. A01n 5/00

U.S. Cl. 71-76

3 Claims

1. A method for treating sugar cane plants to increase the sugar content thereof which comprises applying to said plants a growth regulating amount of 2-(β-dimethylamino-ethoxy)-4-(3', 4'-dichlorophenyl)-thiazole hydrochloride.

3,898,072
HERBICIDE

Adolf Fischer, Mutterstadt, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Apr. 4, 1973, Ser. No. 348,085 Claims priority, application Germany, Apr. 13, 1972, 2217698

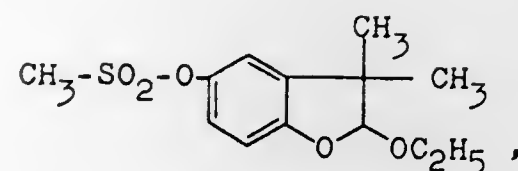
Int. Cl. A01n 9/22

U.S. Cl. 71-88

13 Claims

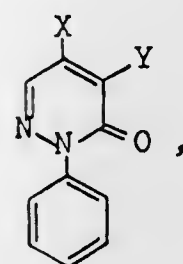
1. A herbicide composition comprising a herbicidally effective amount of a mixture of

a a compound of the formula



and

b a compound of the formula



where Y denotes chloro or bromo, X denotes amino, in a weight of a to b in the range of 10:1 to 1:10.

3,898,073

METHOD FOR ALTERING PLANT FLOWERING AND SEXUAL REPRODUCTION

David Joseph Fitzgerald, Wilmington, Del., and James Delbert Long, Elkton, Md., assignors to E. I. du Pont de Nemours & Co., Wilmington, Del.

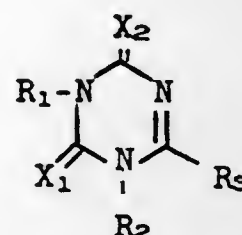
Filed Oct. 30, 1972, Ser. No. 301,852

Int. Cl. A01n 9/22

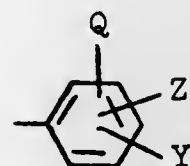
U.S. Cl. 71-93

31 Claims

1. A method for preventing pollen shed in crop plants which comprises applying an s-triazinedione to the plant in an amount which is effective to prevent pollen shed without causing substantial foliar burn, chlorosis, or necrosis, the s-triazinedione being a compound of the formula:



wherein
R₁ is



wherein

Y is hydrogen, halogen, alkyl of 1 through 4 carbon atoms, nitro, alkoxy of 1 through 4 carbon atoms, alkylthio of 1 through 4 carbon atoms, cyano, or trifluoromethyl;

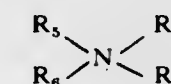
Z is hydrogen, halogen, methyl, ethyl, nitro, methoxy, or methylthio; and

Q is hydrogen, halogen, or methyl;

R₂ is hydrogen, or a group



where A is alkyl of 1 through 3 carbon atoms or alkoxy or alkylthio of 1 through 4 carbon atoms, or a cation selected from lithium, sodium, potassium, calcium, magnesium, barium, or



where

R₅, R₆, and R₇ can be the same or different and each can be hydrogen, alkyl of 1 through 4 carbon atoms, or hydroxy alkyl of 2 through 4 carbon atoms; and R₈ is hydrogen, alkyl of 1 through 12 carbon atoms, or benzyl; R₅ and R₆ can be taken together to form a ring that is -(CH₂)₂-O-(CH₂)₂- or -(CH₂)_n- where n is 4-6 and R₇ and R₈ are H;

R₉ is SR₄ or OR₄ where R₄ is methyl or ethyl, and X₁ and X₂ are oxygen or sulfur.

3,898,074

THIADIAZOLE SUBSTITUTED TRIAZINES

John Krenzer, Oak Park, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

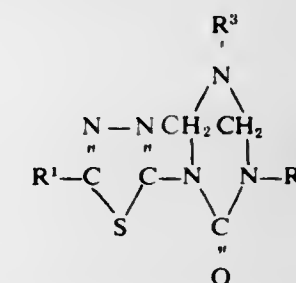
Division of Ser. No. 250,092, May 5, 1972, Pat. No. 3,849,412, which is a continuation-in-part of Ser. No. 225,616, Feb. 11, 1972, abandoned. This application Feb. 27, 1974, Ser. No. 446,566

Int. Cl. A01n 9/22

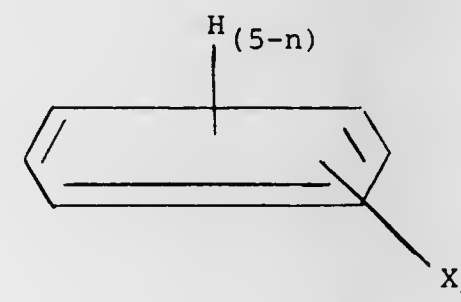
U.S. Cl. 71-93

5 Claims

1. A herbicidal composition comprising an inert carrier and as an essential active ingredient in a quantity toxic to weeds a compound of the formula



wherein R¹ and R² are each lower alkyl; R³ is selected from the group consisting of lower alkyl, lower alkenyl, cycloalkyl of from 3 to 7 carbon atoms, lower haloalkyl, and



wherein X is selected from the group consisting of lower alkyl, halogen, trifluoromethyl, nitro, lower alkoxy, lower alkylthio and di(lower alkyl) amino; and n is an integer from 0 to 3.

3,898,075

STABILIZED LIQUID COMPOSITIONS

Heinz-Eberhard Freund, Brahmstrasse 44, Berlin 45, and Alfred Czyzewski, Anton-Ulrichstrasse 3, Wolfenbuttel, both of Germany

Continuation of Ser. No. 4,420, Jan. 20, 1970, abandoned.

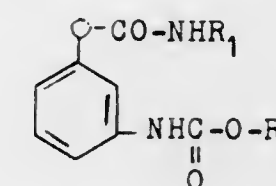
This application July 3, 1972, Ser. No. 268,882

Int. Cl. A01n 9/20

U.S. Cl. 71-111

5 Claims

1. In a herbicidal liquid composition consisting essentially of (a) a herbicidal compound having the formula:



wherein R₁ can be alkyl cycloalkyl, or aryl which can be substituted by halogen, alkyl, or trifluoromethyl; R₂ can be alkyl, alkenyl, or alkynyl which may carry a terminal halogen; (b) an organic solvent; and (c) at least one surfactant: the improvement which comprises stabilizing the composition against decomposition of the herbicidal compound by incorporating therein from about 0.05% to about 5% by weight of at least one organic acid selected from the group consisting of aliphatic dicarboxylic acids, aliphatic hydrocarboxylic acids, nitrosubstituted aromatic monocarboxylic acids, aromatic dicarboxylic acids, aromatic sulfonic acids, and aliphatic sulfonic acids.

3,898,076

SEALING AND BRIQUETTING FINELY DIVIDED MATERIAL WITH VINYL COPOLYMER AND WAX

Robert L. Ranke, 12000 Edgewater Dr., Cleveland, Ohio 44102

Continuation of Ser. No. 300,584, Oct. 19, 1972, which is a continuation of Ser. No. 685,269, Nov. 24, 1967. This application Dec. 14, 1973, Ser. No. 428,341

Int. Cl. C21b 1/26; C22b 1/24

U.S. Cl. 75-3

16 Claims

1. The method of briquetting finely divided solid material for addition to a molten metal bath comprising hot mixing a copolymer of an alkylene compound having two to four carbon atoms and a vinyl ester chosen from the group consisting of vinyl acetate, vinyl formate and vinyl propionate containing from 17 to 42 per cent vinyl ester and said copolymer having a melt index from 1.6 to 500.0, having inherent viscosity at 30° C from 0.45 to 1.05, having a density in gm. per cc. at 23° C from 0.937 to 0.965, having a tensile strength from 250 p.s.i. to 3,100 p.s.i., having a hardness measured by Shore A-2 Durometer, 10 sec., from 35 to 88, having a softening point measured by Ring and Ball from 180°F to 390°F, and insoluble in aqueous mixtures; with approximately 125°F to 160°F melting point paraffin wax in the proportions of approximately 80 to 50 per cent wax to 20 to 50 per cent resin until said resin is dissolved, thoroughly mixing a minor amount of said resin-wax mixture with and binding said finely divided solid material, and compressing the same to form a briquette of said finely divided solid material.

3,898,077

PROCESS FOR REFINING METAL MELTS

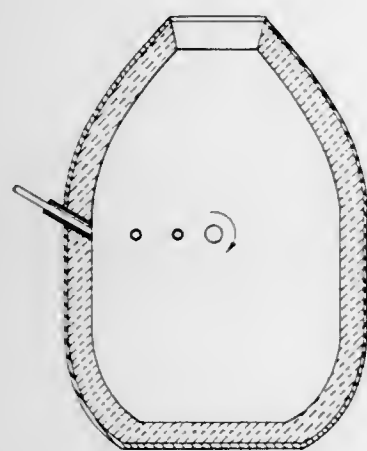
Helmut Knuppel, Karl Brotzmann, and Hans Georg Fassbinder, all of Sulzbach-Rosenberg, Germany, assignors to Eisenwerk-Gesellschaft Maximilianshütte mbH, Sulzbach-Rosenberg, Germany

Filed Jan. 4, 1973, Ser. No. 321,107

Claims priority, application Germany, Jan. 5, 1972, 2200413

Int. Cl. C21c 5/32

U.S. Cl. 75-60



1. A process for refining metal melts in a refractory vessel which comprises:

blowing at least one stream of oxygen and a fluid stream of a protective fluid medium surrounding said oxygen, downwardly towards the surface of a metal melt to be refined, said streams being blown through dual tube tuyeres mounted in the masonry of said vessel above the surface of the metal melt to be refined and discharging a downwardly inclined stream of oxygen surrounded by a protective fluid medium onto the top surface of the metal melt in said vessel to refine said metal melt.

3,898,078

METHOD AND APPARATUS FOR INJECTING REFINING OXYGEN IN STEELMAKING PROCESSES

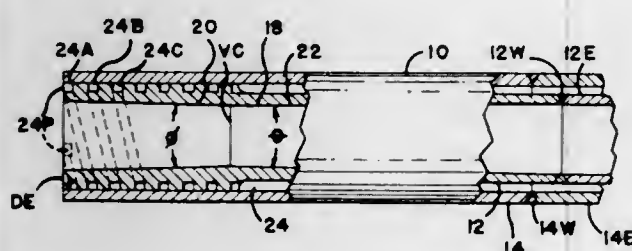
Richard A. Huber, Village of Washingtonville, Ohio, assignor to Youngstown Sheet and Tube Company, Youngstown, Ohio

Filed Mar. 29, 1973, Ser. No. 346,053

Int. Cl.² C21C 5/34; C21B 7/16; C21C 5/48

U.S. Cl. 75-60

6 Claims



1. In a method of refining a molten bath of a steelmaking composition, wherein:

a stream of concentrated oxygen is introduced through an injector nozzle having its discharge terminus beneath the surface of the bath, and said stream of oxygen is shrouded by hydrocarbon fluid, the improvement which comprises: adiabatically expanding said stream of oxygen just prior to discharge into said bath.

3,898,079

REFINING OF STAINLESS STEELS

Lars Anders Eriksson, Hagfors, Sweden, assignor to Uddeholms Aktiebolag, Hagfors, Sweden

Filed Oct. 5, 1973, Ser. No. 403,860

Claims priority, application Sweden, Oct. 6, 1972, 12908/70

Int. Cl. C21c 5/32

U.S. Cl. 75-60

4 Claims

1. A process for refining a steel containing chromium which comprises simultaneously introducing molecular oxygen and ammonia into the steel in a molten condition, the oxygen and ammonia being introduced separately from one another through different sections of a tuyere comprising at least two coaxial pipes and presenting an innermost section and an outermost section, the ammonia being introduced through a section of tuyere other than the outermost section and the oxygen being introduced through the outermost section.

3,898,080

GERMANIUM-SILICON THERMOELECTRIC ELEMENTS

Alan William Penn, Reading, England, assignor to United Kingdom Atomic Energy Authority, London, England

Continuation of Ser. No. 822,353, May 7, 1969, abandoned.

This application Apr. 3, 1972, Ser. No. 240,861

Claims priority, application United Kingdom, May 14, 1968, 22948/68

Int. Cl. C22c 31/00

U.S. Cl. 75-134 S

4 Claims

1. A thermoelectric element comprising an alloy of germanium-silicon formed into a unitary structure substantially continuously constituted by the alloy and having a fine structure of lattice boundaries for which the characteristic scattering length lies in the range 0.01 microns to 10 microns.

3,898,081

NICKEL BASE ALLOY FOR PRECISION RESISTORS

Vasily Valentinovich Kukhar, 2 Murinsky prospekt, 15 kv. 34, Leningrad, U.S.S.R.

Filed Dec. 13, 1973, Ser. No. 424,610

Int. Cl. C22c 19/00

U.S. Cl. 75-171

8 Claims

1. A nickel base alloy particularly useful as material for high precision resistors, consisting essentially of between about 6% and about 12% gallium, between about 7 and about 12% vanadium, between about 6 and about 15% chromium, the combined content of vanadium and chromium being from about 18 to about 24%, the total content of vanadium, chromium and gallium being from about 28% to about 34%, and the balance nickel.

3,898,082

METHOD OF MAKING A TRANSPARENCY OF A COLORED IMAGE IN A MAGNETO-ELECTRIC PRINTING SYSTEM

Edward Charles Gialmo, Jr., Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 17, 1972, Ser. No. 254,301

Int. Cl.² G03G 13/22

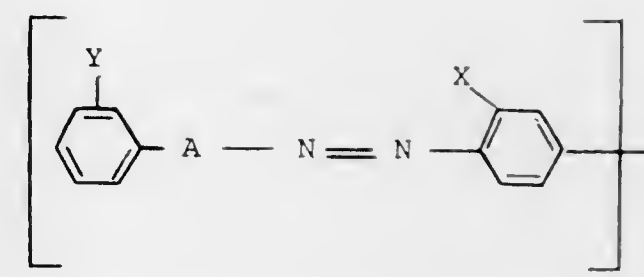
U.S. Cl. 96-1.2

1 Claim

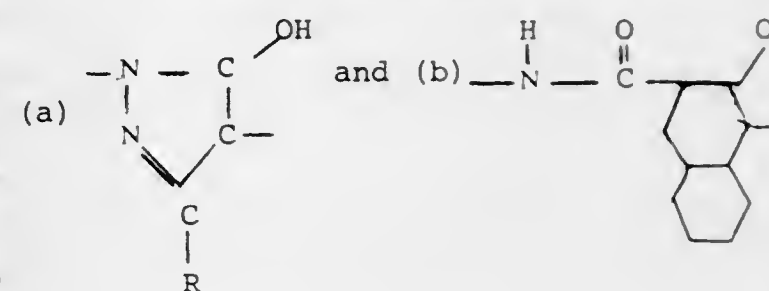
1. A method of making a transparency of a colored image on a light-transmitting recording element comprising a color-sensitive photoconductive layer and a tricolor mosaic filter layer, said filter layer comprising a multiplicity of systematically, or randomly, arranged minute colored areas of a substantially equal number of each of three primary colors, and a separate minute area of a primary color being for each elemental area of said colored image, said method comprising the steps of:

charging said photoconductive layer uniformly with an electrostatic charge,

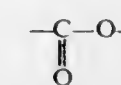
covering said charged photoconductive layer uniformly with magnetic particles, applying an adjustable magnetic field adjacent to said uniformly covered photoconductive layer, said magnetic field being adjusted to a strength just insufficient to remove said particles from said photoconductive layer, exposing said uniformly covered photoconductive layer, while in said magnetic field, with a colored light image of the image desired on the transparency, to reduce the electrostatic attraction between the exposed portions of said photoconductive layer and certain magnetic particles thereat, and to remove said certain magnetic particles from said photoconductive layer by said magnetic field, whereby said colored image may be viewed by light transmitted through said recording element, said adjustable magnetic field being applied adjacent said uniformly covered photoconductive layer with an electromagnet in the form of a toroid having an unobstructed opening therein, and observing said photoconductive layer through said unobstructed opening in said toroid during the step of exposing said photoconductive layer, and removing said certain magnetic particles whereby to monitor the development of the image on said transparency.



wherein A is selected from the group consisting of:



wherein R is selected from the group consisting of lower alkyl and



lower alkyl, and X and Y each selected from the group consisting of:

H, CH₃, OCH₃, OC₂H₅, OH, Cl and Br, with the pigment particles being present in an amount of from 5 percent to 10 percent by weight of the total weight of the pigment particles plus the binder material.

3,898,083

HIGH SENSITIVITY VISIBLE INFRARED PHOTOCONDUCTOR

William J. Hillegas, Fairport, and James H. Neyhart, Penfield, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 5, 1973, Ser. No. 321,164

Int. Cl. G03g 5/00

U.S. Cl. 96-1.5

10 Claims



1. A photosensitive element which includes a photoconductive insulating layer, said layer comprising the vitreous alloy of selenium, bismuth and iodine comprising about 1 to 5 atomic percent bismuth, 2 to 5 atomic percent iodine, with the balance substantially selenium.

3,898,084

ELECTROPHOTOGRAPHIC PROCESSES USING DISAZO PIGMENTS

Robert Bruce Champ, and Meredith David Shattuck, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

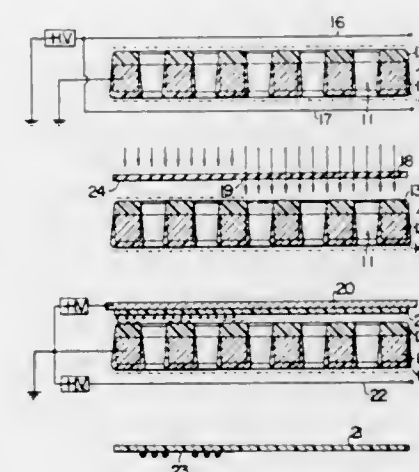
Continuation-in-part of Ser. No. 129,635, March 30, 1971, abandoned. This application Oct. 1, 1973, Ser. No. 402,498

Int. Cl.² G03G 5/06, 13/22

U.S. Cl. 96-1.5

11 Claims

1. In an electrophotographic reproduction process which comprises the steps of uniformly corona charging a photoconductor on a conductive substrate and imagewise exposing the photoconductor to light, the improvement according to which the photoconductor comprises pigment particles and binder material, with the pigment particles being present as polymolecular aggregates less than five microns in size and having a formula



1. A photosensitive screen drum for use in noncontact electrostatic printing comprising:

a. two main frame members;
b. spacing means rigidly connecting said main frame members in spaced face-to-face relationship to form a drum framework;

- c. a screen member having a photoconductive material layer on one side thereof;
- d. attaching strips secured to each of two opposite marginal portions of said screen member and having a plurality of engaging means thereon;
- e. at least one circular adjusting frame member;
- f. means spaced on the outer peripheries of said adjusting frame member and one of said two main frame members and cooperating with said engaging means for fastening said attaching strips respectively to said adjusting frame member and to one of said two main frame members whereby said screen may be tensioned circumferentially; and
- g. means for adjustably connecting said adjusting frame member to the other of said two main frame members for axial movement with respect to the drum framework whereby said screen member may be adjustably tensioned across the width of the screen drum.

3,898,086

SHEET MATERIAL USEFUL IN IMAGE TRANSFER TECHNIQUES

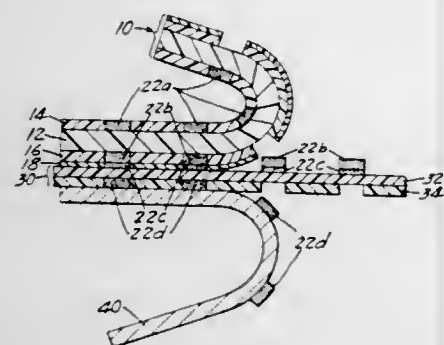
Victor R. Franer, Roseville, and Darrell C. Burman, Bethel, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed July 12, 1974, Ser. No. 488,221

Int. Cl. G03c 11/12; B41m 3/12; G03c 5/16

U.S. Cl. 96—28

9 Claims



1. Sheet material useful in image transfer techniques comprising:

- a. a thin, flexible backing which is transparent to infrared radiation;
- b. an imageable layer coated over one major surface of said backing, said imageable layer being capable of providing infrared-absorptive image areas in one of the following manners:
- i. upon imagewise exposure thereof to a heat pattern; or
- ii. upon imagewise exposure thereof to a light pattern followed by development;
- c. a continuous heat-fusible infrared-transparent first layer coated over the other major surface of said backing, said heat-fusible layer comprising a mixture of resin and wax and being tacky at temperatures in the range of about 60° to 310°C; and
- d. a continuous, non-tacky, infrared-transparent top layer over said first layer, said top layer comprising a mixture of resin and wax and having a softening point at least as high as said first layer, said top layer being at a coating weight in the range of about 0.1 to 0.9 grams per square foot, and said top layer having a matte surface.

3,898,087
PHOTOPOLYMERIZABLE COMPOSITIONS
CONTAINING AMINIMIDES

George W. Brutchon, Carlos, and Gene O. Fanger, Muncie, both of Ind., assignors to Ball Corporation, Muncie, Ind.

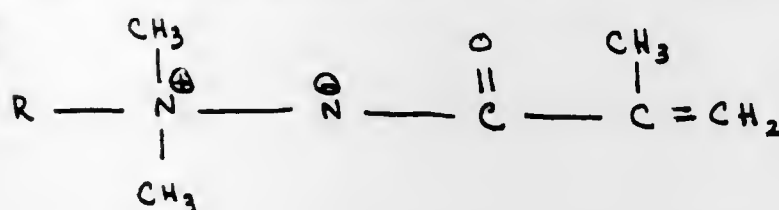
Filed June 14, 1974, Ser. No. 479,240

Int. Cl. G03c 1/70

U.S. Cl. 96—33

14 Claims

1. A photopolymerizable composition comprising an aqueous mixture of a water-insoluble resin, a water soluble binder, a photopolymerization initiator consisting of at least one uranyl salt, and an aminimide represented by the general formula:



wherein R is a radical selected from the group consisting of $-\text{CH}_3$, $-\text{CH}_2\text{CH}(\text{OH})\text{CH}_3$, $-\text{CH}_2\text{CH}(\text{OH})\text{CH}_2\text{OH}$, $-\text{CH}_2\text{C}(\text{H})(\text{OH})(\text{CH}_2)_3\text{CH}_3$, and $-\text{CH}_2\text{CH}(\text{OH})(\text{CH}_2)_7\text{CH}_3$.

3,898,088

PHOTOGRAPHIC ELEMENTS CONTAINING POLYMERIC MORDANTS

Hyman L. Cohen; Frederick Koeng, and I. Ponticello, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

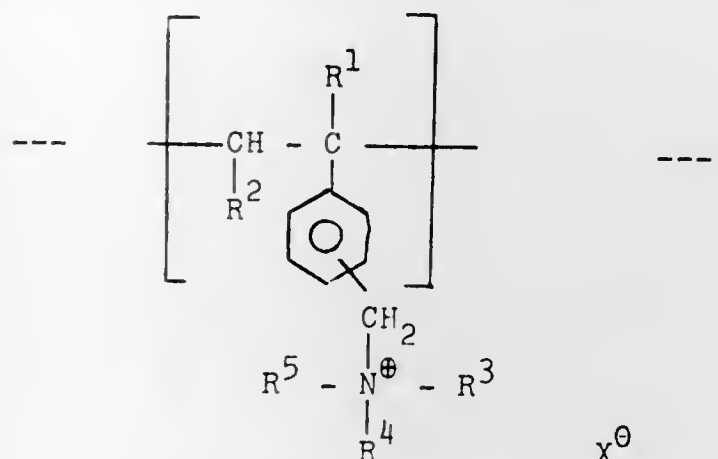
Filed Sept. 26, 1973, Ser. No. 400,778

Int. Cl. G03C 1/84, 3/00

U.S. Cl. 96—84 A

4 Claims

1. A photographic element comprising a support, a silver halide layer and a layer comprising a water-insoluble polymer comprising repeating units represented by the following formula:



wherein R^1 and R^2 are hydrogen or alkyl and R^3 , R^4 and R^5 are alkyl groups wherein the total number of carbon atoms in R^3 , R^4 and R^5 is at least 12 and X^- is an anion.

3,898,089

SILVER HALIDE PHOTOGRAPHIC MATERIAL CONTAINING A POLYHYDRIC ALCOHOL, A GLYOXAL AND A TRIAZINE

Nobuo Yamamoto; Ichiro Nakanishi, and Yoshihide Hayakawa, all of Minami Ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 27, 1973, Ser. No. 419,317

Claims priority, application Japan, Nov. 28, 1972, 47-119106

Int. Cl. G03c 1/30, 1/34

U.S. Cl. 96—111

13 Claims

1. A silver halide photographic material comprising a support and at least one silver halide photographic emulsion

layer, said emulsion layer and/or an auxiliary layer of said photographic material containing 0.01 to 50 g per 100 g of dried gelatin of glyoxal, 0.05 to 10 mol per 1 mol of glyoxal of a water-soluble salt of 2,4-dichloro-6-hydroxy-s-triazine and 0.1 to 10 mol per 1 mol of glyoxal of a water-soluble, aliphatic, saturated polyhydric alcohol containing 2 to 20 carbon atoms and having 2 to 20 hydroxyl groups, said emulsion layer and/or auxiliary layer being a gelatin-containing layer.

3,898,090

FOUNDRY MOLD AND CORE COMPOSITIONS

Harold A. Clark, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed June 24, 1974, Ser. No. 482,299

Int. Cl. B28b 7/36; C04b 35/14

U.S. Cl. 106—38.2

12 Claims

1. A refractory mold and core composition for the fabrication of foundry shapes which comprises a major amount of foundry aggregate coherently bonded by an effective bonding amount of up to about 20 weight percent of a binder composition consisting essentially of 10 to 75 weight percent colloidal silica uniformly dispersed in a matrix of 25 to 90 weight percent $\text{RSiO}_{3/2}$ in which R is selected from the group consisting of alkyl radicals of 1 to 3 carbon atoms, the vinyl radical, the 3,3,3-trifluoropropyl radical, the gamma-glycidioxypropyl radical and the gamma-methacryloxypropyl radical, at least 70 weight percent of the matrix being $\text{CH}_3\text{SiO}_{3/2}$.

3,898,091

NOVEL GLAZING COMPOSITION AND METHOD

Joseph V. Stout, Point Pleasant, N.J., assignor to M & T Chemicals Inc., Greenwich, Conn.

Filed June 4, 1973, Ser. No. 366,540

Int. Cl. C03C 5/02

U.S. Cl. 106—48

2 Claims

1. In a glazing composition for ceramic substrates, said glazing composition consisting essentially of an aqueous dispersion wherein the solid phase contains silica, kaolin and at least one member of the group consisting of water-insoluble silicates, aluminosilicates and oxides of boron, potassium, sodium, calcium, aluminum, barium, strontium, magnesium, lead, zinc and zirconium and heat-reactive precursors of said silicates, aluminosilicates and oxides, the improvement of adding between 0.01 and 10%, based on the weight of said glazing composition, of a water-soluble material selected from the group consisting of ionic and non-ionic surfactants in order to improve resistance to crawling.

3,898,092

METHOD FOR REDUCING ACID LEAD SOLUBILITY OF A LEAD-CONTAINING GLAZE OR FRIT

Robert F. Rea, 5400 Lanlake Rd., Bloomfield Hills, Mich.

Filed Oct. 29, 1971, Ser. No. 194,028

Int. Cl. C03C 5/02, 15/00

U.S. Cl. 106—49

6 Claims

1. A method for reducing the acid lead solubility of a lead-containing glaze, enamel or the like slip which method comprises leaching in a dilute aqueous acid finely divided particles of a glass consisting essentially of not more than 70 percent of lead oxide calculated as PbO and at least 30 percent of silica which glass has previously been ground to substantially the degree of fineness desired in the slip, controlling the temperature and the duration of the leaching steps to reduce the soluble lead content at the surfaces of the glass particles to not more than about 0.8 percent, based on the weight of lead, calculated as PbO , removed from a 0.5 gram sample of the finely divided particles upon exposure to 500 ml. 0.25 percent hydrochloric acid at 20°C for two hours, washing the leached glass particles, and forming a slip by suspending the leached glass particles in water.

3,898,093

HIGHLY REFRACTING OPTICAL GLASS FOR CORRECTION OF HIGH DIOPTRIC VALUES WITH LOW DENSITY

Marga Faulstich; Volkmar Geiler; Georg Gliemeroth, all of Mainz, and Lothar Meckel, Ostrich, all of Germany, assignors to Jenaer Glaswerk Schott & Gen., Mainz, Germany

Filed Nov. 30, 1973, Ser. No. 420,369

Claims priority, application Germany, Dec. 2, 1972, 2259183

Int. Cl. C03c 3/08

U.S. Cl. 106—54

6 Claims

1. An optical quality glass suitable for use in eyeglass lenses, characterized by having a refractive index n_d of at least 1.70; a specific gravity of not more than 3.0 and a thermal coefficient of expansion $\alpha \times 10^7$ per °C of not more than 100, which contains at least 90 mol % of metal oxide components having a molecular weight of not more than 100, and which consists essentially of at least 90 mol % of SiO_2 , B_2O_3 , Li_2O , Na_2O , K_2O , TiO_2 , MgO , CaO , ZnO and a crystallization stabilizing amount of up to about 10 mol % of at least one member selected from the group consisting of SrO , BaO , ZrO_2 , Ta_2O_5 and Nb_2O_5 , said glass being further characterized by consisting essentially of, in parts by weight per 100 parts of glass:

- 40–45 wt % SiO_2 and 2–6 wt % B_2O_3 , the total SiO_2 and B_2O_3 being 42–49 wt %;
- 12–17 wt % total Li_2O , Na_2O and K_2O , including 6–16 wt % Na_2O ;
- 24–26 wt % TiO_2 ; and
- 2–7 wt % ZrO_2 .

3,898,094

HIGH TEMPERATURE ADHESIVE-SEALANT COMPOSITION

John G. Holloway, Oakmont; Herbert W. Barch, Natrona Heights, and Dennis M. Fahey, Aspinwall, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Aug. 20, 1973, Ser. No. 389,752

Int. Cl. C04b 7/32

U.S. Cl. 106—104

7 Claims

1. A heat hardenable adhesive sealant composition comprising:

- 75 to 95 percent by weight of a mixture of metal oxides having therein 78 to 99 percent as Al_2O_3 and
 - 3 to 25 percent by weight of an organic compound selected from the group consisting of:
 - the reaction product of an aromatic tetracarboxylic dianhydride and an aromatic diamine,
 - the reaction product of an aromatic tetracarboxylic dianhydride and a hydrazine,
 - the reaction product of an aromatic tetracarboxylic acid and a dihydrazide,
 - the reaction product of an aromatic tricarboxylic monoanhydride and an aromatic diamine,
 - the reaction product of an aromatic tricarboxylic monoanhydride and a hydrazine, and
 - the reaction product of a tricarboxylic acid and a hydrazide,
- and said reaction products being reacted on a one to one molar basis.

3,898,095

METHOD OF ETCHING ALUMINUM

Betty L. Berdan, Willowick, and William M. King, Mentor, both of Ohio, assignors to Gould Inc., Chicago, Ill.

Filed Jan. 7, 1974, Ser. No. 431,059

Int. Cl. C23f 3/02; C23g 1/12, 1/22

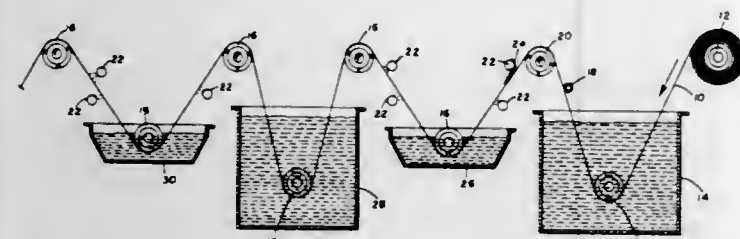
U.S. Cl. 134—3

8 Claims

1. A continuous method of uniformly etching a given surface of aluminum foil comprising the steps of

- immersing said foil in a bath of alkaline etchant for a time sufficient to etch said given surface,

- b. withdrawing said foil from said bath with a film of etchant adhering to said given surface,
- c. leveling said film of etchant so that the rate of etching reaction proceeds essentially uniformly across the surface of the foil,
- d. cooling said foil at a rate sufficient to retard the etching reaction,



- e. uniformly flooding said given surface by flowing a continuous sheet of water extending substantially from edge to edge of said foil onto said given surface to remove said leveled etchant film, whereby the etching reaction is terminated essentially simultaneously across the width of the foil, and
- f. water rinsing said foil to remove residual etchant.

3,898,096

LITHIUM-MOLTEN SALT CELL WITH TRANSITION METAL CHALCOGENIDE POSITIVE ELECTRODE

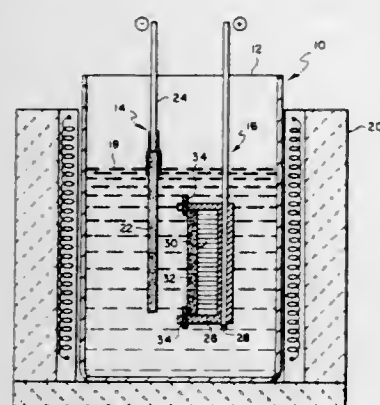
Laszlo Heredy, Canoga Park, and Lowell R. McCoy, Woodland Hills, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed June 11, 1973, Ser. No. 369,033

Int. Cl. H01m 35/02

U.S. Cl. 136-6 F

9 Claims



1. A high-temperature power-producing secondary cell including a negative electrode whose active material is lithium, a fused salt electrolyte selected from the class consisting essentially of alkali metal halides, alkaline earth metal halides, and mixtures thereof and which contains lithium ions, and a positive electrode whose active material is a selected transition metal chalcogenide.

3,898,097

SECONDARY POWER CELL

Anthony V. Frajoli, 25 Coach Rd., East Setauket, N.Y.

Filed Nov. 11, 1974, Ser. No. 522,581

Int. Cl. H01m 35/02

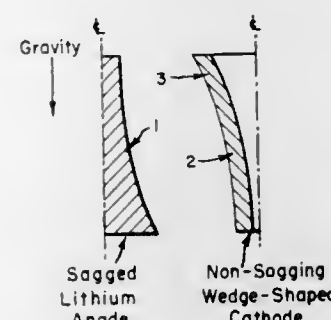
U.S. Cl. 136-6 R

7 Claims

1. A secondary electrochemical power-producing cell comprising, in combination:

- a. a solid alkali metal or alkaline earth metal anode disposed on a copper screen coated with a metal alloyable to both mercury and anode metal, said anode having an energetically homogeneous amalgamated surface film saturated with anode metal atoms selected from the group consisting of alkali metal atoms and alkaline earth metal atoms;

- b. a non-aqueous electrolyte comprising a cathode depolarizer miscible in said electrolyte;
- c. a salt of the anode metal which provides ionic transfer and cell conductivity in the electrolyte, said salt constituting the reduction products of the cell discharge reaction; and



- d. a porous cathode grid adapted to collect the reduction products of the cell discharge reaction.

3,898,098

PROCESS FOR PRODUCING IRON ELECTRODE

Robert D. Giles, Sutton Coldfield, England, assignor to The International Nickel Company, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 262,666, June 14, 1972, abandoned. This application May 31, 1974, Ser. No. 475,289

Claims priority, application United Kingdom, June 21, 1971, 28977/71; Mar. 10, 1972, 11360/72

Int. Cl. H01m 35/00

U.S. Cl. 136-25

7 Claims

1. A method for producing iron active mass which comprises electrodepositing said mass on a cathode from an aqueous electrolyte containing ferrous ion and ammonium ion said electrolyte being characterized by having a pH of about 2.5 to 5.5 and the electrodeposition being characterized by controlled interrelation of cathode current density, pH and composition of the electrolyte to provide an electrodeposit of iron active mass comprising essentially oxidic iron with no more than about 60% by weight of the active mass being in the metallic unoxidized state.

3,898,099

HYDROPHILIC ELECTRODE AND METHOD FOR MAKING THE SAME

Bernard S. Baker, and Martin G. Klein, both of Brookfield, Conn., assignors to Energy Research Corporation, Bethel, Conn.

Filed Mar. 18, 1974, Ser. No. 451,881

Int. Cl. H01m 35/18

U.S. Cl. 136-75

2 Claims

1. A method for the manufacture of hydrophilic electrode structure containing electrochemically convertible active material comprising the steps of:

- a. blending a quantity of powdered active material with dry powdered polytetrafluoroethylene in an excess of non-aqueous lubricant to form a homogeneous mixture, said polytetrafluoroethylene constituting from 0.1 percent to no more than 3 percent of the combined weight of said active material and said polytetrafluoroethylene;
- b. removing a preselected portion of said lubricant from said mixture to form a filtered mixture;
- c. subjecting said filtered mixture to shearing forces effecting thickness reduction thereof while maintaining said filtered mixture at temperatures below the sintering temperature of said polytetrafluoroethylene, thereby forming a sheet of fibrillated polytetrafluoroethylene containing active material and lubricant; and
- d. removing the remainder of said lubricant from said sheet while maintaining said sheet at temperatures less than said polytetrafluoroethylene sintering temperature, thereby providing said electrode structure.

3,898,100

CATHODE MIX FOR SOLID ELECTROLYTE DEVICES

Demetrios V. Louzos, Rocky River, Ohio, assignor to Union Carbide Corporation, N.Y.

Continuation of Ser. No. 384,302, July 31, 1973, abandoned, which is a continuation of Ser. No. 92,830, Nov. 25, 1970, abandoned. This application May 1, 1974, Ser. No. 466,054

Int. Cl. H01m 13/00

U.S. Cl. 136-83 R

5 Claims

1. A cathode mix for a solid electrolyte cell which mix contains finely divided electronically conductive material, comminuted ionically conductive electrolyte having a specific conductance of at least $1 \times 10^{-3} \text{ ohm}^{-1} \text{ cm}^{-1}$ at cell operating conditions, and, as active cathode material, a compound represented by the formula $X_a Y_b O_c$ wherein: X is selected from the group consisting of the ammonium ion and the elements of Groups 1a and 2a of the periodic classification of the elements, Y is selected from the group consisting of iodine, chlorine, bromine, manganese, chromium, lead, iron, sulfur, and selenium, O is oxygen; and a, b, and c represent the number of atoms of X, Y and O respectively present in said compound, a being 1 to 2, b being 1 to 2 and c being 2 to 7 but at least equal to b+1; said compound being characterized in that Y is reducible and upon reduction to a lower valence state in cell environment yields at least two electrons and being further characterized in having a half cell potential of at least (+)1.15 volts as measured in aqueous acid solution.

3,898,101

THERMAL BATTERY

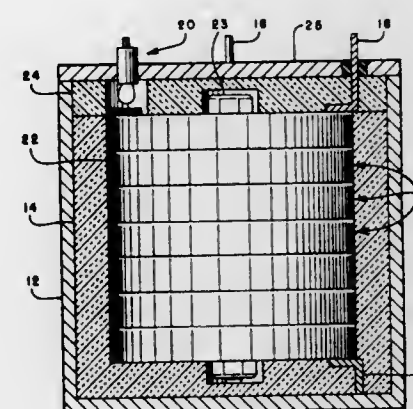
Donald M. Bush, Tijeras, and Donald A. Nissen, Albuquerque, both of N. Mex., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed May 30, 1974, Ser. No. 474,555

Int. Cl. H01m 21/14

U.S. Cl. 136-83 T

6 Claims



1. A long-life thermal battery comprising a casing; a plurality of electrochemical cells in said casing, each cell including an anode disc having a calcium portion, an electrically conductive heat generating disc, and a normally solid fusible electrolyte disc sandwiched between the calcium portion of said anode and said heat generating discs, said electrolyte disc including a mixture of a calcium chromate depolarizer, a silicon dioxide binder, a eutectic composition of potassium chloride and lithium chloride, and said anode including a calcium hydroxide coating disposed over surfaces of the calcium portion of said anode; and means for igniting said heat generating discs.

3,898,102

BIPOLAR LOW-PRESSURE ELECTRODE FOR GAS FUEL CELLS

Gerhard Louis, Hofheim, and Harald Bohm, Glashutten, both of Germany, assignors to Licentia-Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

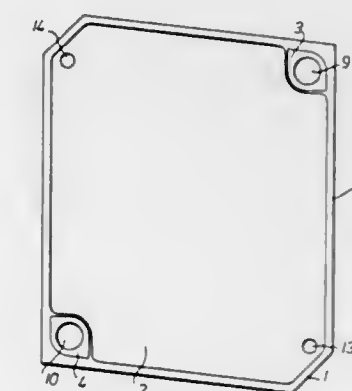
Filed Mar. 21, 1973, Ser. No. 343,477

Claims priority, application Germany, Mar. 24, 1972, 2214412

Int. Cl. H01m 27/00, 27/04

U.S. Cl. 136-86 D

8 Claims



1. A bipolar low-pressure electrode for gas fuel cells, comprising in combination:

- a. a flexible flat graphite foam foil having two opposite faces and being provided with holes for the passage of air and for the passage of fuel gas;
- b. an active electrode layer secured in a face-to-face, electronically contacting relationship directly to each face of said foil, each active electrode layer having a gas-side face oriented towards said foil; one active electrode layer being an anode and the other active electrode layer being a cathode; said holes for the passage of air being situated within the outline of the cathode layer and externally of the outline of the anode layer; said holes for the passage of fuel gas being situated within the outline of the anode layer and externally of the outline of the cathode layer;
- c. a continuous, elevated perimetric edge forming part of each active electrode layer and being in direct contact with and being bonded to said foil for forming an enclosed space between said gas-side face of the active electrode layer and the adjoining face of said foil, said enclosed space constituting a closed gas chamber;
- d. raised portions provided on said gas-side face of each said active electrode layer, said raised portions projecting in the same direction and being of the same height as said elevated perimetric edge, said raised portions forming, with the adjoining face of said foil, a channel system within said closed gas chamber;
- e. means defining throughgoing openings in said active electrode layers for providing access from the outside of said bipolar low-pressure electrode to each gas chamber for delivering air and fuel gas thereto;
- f. first sealing means in engagement with said foil adjacent said anode layer, said first sealing means surrounding said holes for the passage of air; and
- g. second sealing means in engagement with said foil adjacent said cathode layer, said second sealing means surrounding said holes for the passage of fuel gas.

3,898,103

SEMI-CONDUCTOR ELECTRODE DEPOLARIZER

Allen Charkey, Flushing, and Frederick P. Kober, Bayside, both of N.Y., assignors to Electrochem, Inc., New York, N.Y.

Filed May 13, 1971, Ser. No. 143,244

Int. Cl. H01M 13/04

U.S. Cl. 136-120 FC

1 Claim

1. A method for producing an oxygen electrode for contact with air or oxygen which comprises the steps of:

- a. combining silver and intrinsic semiconducting copper (II) oxide in selected proportions to form a homogeneous mixture;
- b. blending the mixture with an emulsion of a hydrophobic polymeric material to form a homogeneous paste;
- c. drying the paste;
- d. mixing said paste with a softener and blending the mix to obtain a pliable dough;
- e. rolling said dough into a thin foil form;
- f. curing the polymer in the dough by heat to form a foil; and
- g. bonding the cured foil into a porous support to form an oxygen electrode.

3,898,104

CYLINDRICAL ELECTRICAL BATTERIES

João Baptista Pimenta da Costa, Rua Pinto 148 - 1°, Paco de Arcos, Portugal

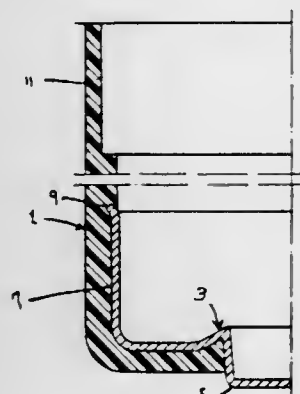
Continuation of Ser. No. 110,466, Jan. 28, 1971, abandoned.

This application Jan. 15, 1973, Ser. No. 323,896

Int. Cl. H01m 1/00

U.S. Cl. 136-166

3 Claims



1. A cylindrical electrical battery comprising a cylindrical electrical cell having a cylindrical container selected from the group consisting of tin plate and zinc, an elongated carbon electrode positioned substantially along the longitudinal axis of said container and an electrolyte in said container, an envelope for said cell, said envelope being comprised of an upper half shell of plastic insulating material and a separate lower half shell of plastic insulating material, said lower half shell being adapted to receive the lower part of said upper half shell and being provided at its base with a cup of conductive material, said upper and lower half shells each including cooperating sleeve portions of reduced radial cross-section relative to the remainder of the side walls of said half shells, said cooperating sleeve portions being slidably engagable with each other to provide a water-proof fit between said upper and lower half shells, the total radial cross-section of said sleeve portions when engaged being substantially equal to the radial cross-section of the remainder of the side walls of said shells, the top of said upper half shell including an internal annular groove at the periphery thereof for the receipt of the upper edges of the container and a cap of conductive metal arranged to fit tightly over the top of said carbon electrode and said cup of conductive material being comprised of a base portion and peripheral extensions conforming to the shape of the walls of said shells, said peripheral extension each containing an edge embedded in the adjacent wall of the lower half shell.

3,898,105

METHOD FOR MAKING FET CIRCUITS

Chao C. Mai, and Robert B. Palmer, both of Dallas, Tex., assignors to Mostek Corporation, Carrollton, Tex.

Filed Oct. 25, 1973, Ser. No. 409,374

Int. Cl. H01l 7/54

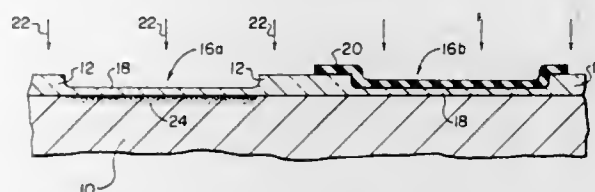
U.S. Cl. 148-1.5

6 Claims

1. The method for producing an integrated circuit which comprises:

forming an ion implantation mask on the surface of a semiconductor substrate including an oxide layer having first areas penetrable by ions of a predetermined energy and second areas not penetrable by ions of said predetermined energy, said first areas being positioned over the channel regions of transistors the channel conductance of which is to be modified from that provided by the substrate,

exposing the masked substrate to a source of ions having said predetermined energy for a predetermined period to



modify the substrate in the channel region in a predetermined manner,

forming a diffusion mask including a layer of semiconductor material and the oxide layer, the diffusion mask defining the source and drain regions of transistors with the layer of semiconductor material being patterned to define the edges of channel regions of transistors, diffusing ions through the diffusion mask to form the source and drain regions for the transistors, and interconnecting the source and drain regions and the layers of semiconductor material to form an integrated circuit.

3,898,106

HIGH VELOCITY THERMOMIGRATION METHOD OF MAKING DEEP DIODES

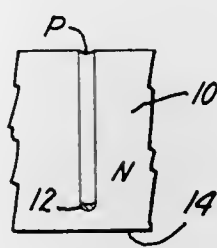
Harvey E. Cline, and Thomas R. Anthony, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 30, 1973, Ser. No. 411,015

Int. Cl. H01l 7/34

U.S. Cl. 148-1.5

10 Claims



1. The high-velocity thermal migration method for making a semiconductor device comprising a matrix body of semiconductor material of selected conductivity and selected resistivity and a plurality of separate spaced recrystallized regions of different selected conductivity and resistivity extending into the interior of the matrix body, which comprises the steps of providing in contact with a first planar surface portion of the matrix body a plurality of separate deposits of a solid metallic material with which the matrix material will form a solution of melting point temperature below that of the matrix material, heating the matrix body and raising the temperature of a second planar surface portion of the body parallel to the first said portion and spaced therefrom to a temperature higher than that of the first said portion and between 1300°C and 1400°C and at the same time heating the metallic material and forming a liquid solution body at the site of each separate deposit, and maintaining the temperature of the second planar surface portion of the matrix body at the stated level while maintaining a thermal gradient between the said first and second planar surface portions of the matrix body, and migrating the resulting liquid bodies from the first planar surface portion toward the second planar surface portion.

3,898,107

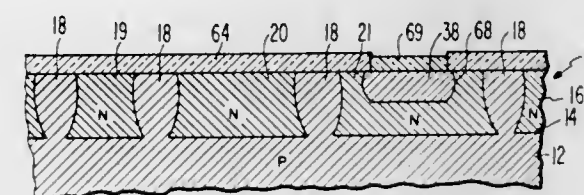
METHOD OF MAKING A JUNCTION-ISOLATED SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE
Murray Arthur Polinsky, Somerville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 3, 1973, Ser. No. 420,858

Int. Cl. H01L 29/72, 27/02, 21/00

U.S. Cl. 148-1.5

2 Claims



1. A method of making a junction-isolated integrated circuit device which includes a body of semiconductive material comprising a substrate of one type conductivity, a layer of semiconductor material of opposite type conductivity and of predetermined thickness on said substrate, isolation regions of said one type conductivity extending through the thickness of said layer to divide it into a plurality of separate regions, and an insulated gate field effect transistor comprising a well region of said one type conductivity formed in one of said separate regions and spaced source and drain regions of said opposite type conductivity in said well region, said well region being formed in part by diffusion from a source of conductivity modifiers of predetermined initial concentration at a predetermined temperature and for a predetermined time such that it extends to a predetermined depth within said layer less than the thickness of said layer, said method comprising:

forming adjacent to a surface of said layer a source of conductivity modifiers of said one type, in the pattern of said isolation regions,

heating said body to redistribute said conductivity modifiers into said body to form a PN junction at a depth less than the desired depth for said isolation regions by an amount substantially equal to the distance through which the isolation regions will further diffuse at said predetermined temperature and predetermined time used for the formation of said well region, thereafter

forming adjacent to said surface of said body a source of conductivity modifiers of said one type in said predetermined concentration for said well regions, and

reheating said body to said predetermined temperature for said predetermined time to simultaneously redistribute the conductivity modifiers in both said isolation regions and said well region to the desired depth for each.

3,898,108

BOX ANNEALING OF STEEL STRIP COILS

Masaru Iwasaki, Kitakyushu; Isoshi Tokisada, Nakama; Shinichi Miyamoto, Kitakyushu; Toshimi Kawabata, Kitakyushu, and Hiroshi Sato, Kitakyushu, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed June 21, 1973, Ser. No. 371,984

Claims priority, application Japan, June 23, 1972, 47-62360

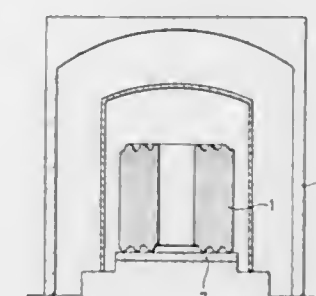
Int. Cl. C21d 1/26, 9/68

U.S. Cl. 148-112

1 Claim

1. A method for box annealing a steel strip coil and for decreasing the strains resulting in the sheet from non-uniform annealing which comprises forming a coil of a steel strip such that at least one edge of the coil has a projection thereon which is parallel to the winding axis of the coil and is disposed about the circumference of the coil to provide a stable support

for the coil when placed on the edge having the projection by swinging the steel strip left and right during coiling; placing



the coil on a base plate of a box annealing furnace such that each coil rests on the projection, and annealing the coil.

3,898,109

HEAT TREATMENT OF NICKEL-CHROMIUM-COBALT BASE ALLOYS

Stuart Walter Ker Shaw, Wylde Green, England, assignor to The International Nickel Company, Inc., New York, N.Y.

Filed Jan. 2, 1974, Ser. No. 430,111

Claims priority, application United Kingdom, Sept. 6, 1973, 41888/73

Int. Cl. C22c 19/00; C22f 1/10

U.S. Cl. 148-162

8 Claims

1. A heat treating process for improving properties of nickel-chromium alloys at elevated temperatures on the order of 815°C which comprises subjecting an alloy consisting essentially of about 0.02 to about 0.25 carbon, about 20 to about 25 percent chromium, about 5 percent to about 25 percent cobalt, at least one metal from the group of molybdenum up to 3.5 percent and tungsten up to 5 percent in amounts such that 0.5 percent Mo plus percent W is from 0.5 to 5 percent, about 1.5 to about 5 percent titanium, about 1 to about 5 percent aluminum, the sum of the Ti and Al being from about 4 to about 7 percent and not more than about 6 percent in tungsten free alloys, and the ratio of titanium to aluminum being about 0.75:1:4:1, about 0.5 to 3 percent tantalum, up to 3 percent niobium, about 0.005 to 1 percent zirconium, up to 2 percent hafnium, the sum of the Zr + 0.5 % Hf being from 0.01 to 1 percent about 0.001 to 0.05% boron, the balance being essentially nickel, the nickel being at least about 30 percent, to the following sequence of heat treating operations:

- a. heating at about 1,120° to about 1,180°C for about 2 to about 16 hours;
- b. heating at about 970° to about 1,030°C for about 2 to about 10 hours;
- c. heating at about 870° to 930° for about 8 to about 48 hours; and
- d. heating at about 600 to about 800°C for about 8 to about 48 hours.

3,898,110

METHOD OF GAS CUTTING A BEVELLED EDGE

Berwyn E. Etter, Treasure Island, Fla.

Division of Ser. No. 263,268, June 15, 1972, Pat. No.

3,838,819. This application May 6, 1974, Ser. No. 466,994

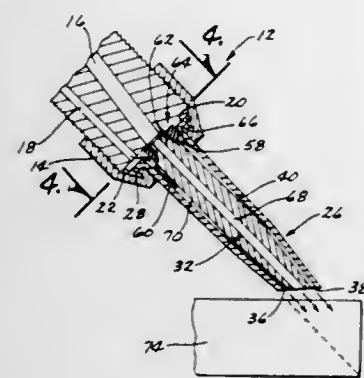
Int. Cl. B23k 7/00

U.S. Cl. 148-9 R

1 Claim

1. The method of cutting a beveled edge on a sheet of flat material with a cutting torch means including a cutting tip having a longitudinal axis, comprising, holding the cutting tip so that its longitudinal axis is posi-

tioned with respect to said plate in the direction of said bevel cut,



and maintaining the exterior end of said cutting tip in a plane parallel to the flat surface of the material to be cut.

3,898,111

QUINONE INHIBITORS IN ORGANOMETALLIC POLYURETHANE PROPELLANT COMPOSITIONS

Adolf E. Oberth, Fair Oaks; Arthur Katzakian, Jr., Sacramento, and Edwin L. Lista, Roseville, all of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 26, 1968, Ser. No. 785,002

Int. Cl. C06D 5/06

U.S. Cl. 149—19.2

3 Claims

1. In an improved composite type solid propellant composition comprising a finely ground inorganic oxidizer, a polyurethane binder fuel, aluminum powder and a ferric acetylacetonate curing catalyst, the improvement which comprises the addition of about 0.05 to 0.1 weight percent of a binder soluble, soft-center cure inhibiting additive selected from the group consisting of p-benzoquinone and chloroquinone.

3,898,112

SOLID 5-AMINOTETRAZOLE NITRATE GAS GENERATING PROPELLANT WITH BLOCK COPOLYMER BINDER

Ruediger A. H. Strecker, Oxon Hill, and Hermann S. Haiss, Indian Head, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 23, 1970, Ser. No. 74,894

Int. Cl. C06D 5/06

U.S. Cl. 149—19.9

5 Claims

1. A gas generating solid propellant composition comprising 5-aminotetrazole nitrate as the oxidant and a binder matrix selected from the group consisting of a styrene-butadiene-styrene block copolymer and a styrene-isoprene-styrene block copolymer.

3,898,113

METHOD OF MAKING A CONTINUOUS STRAND SHEET MOLDING COMPOUND

Raymond W. Meyer, Tallmadge; Francis R. McGranaghan, Stow, and Dale K. Evans, Akron, all of Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 287,186, Sept. 7, 1972, abandoned.

This application Aug. 8, 1974, Ser. No. 495,595

Int. Cl. B32B 17/04

U.S. Cl. 156—62.4

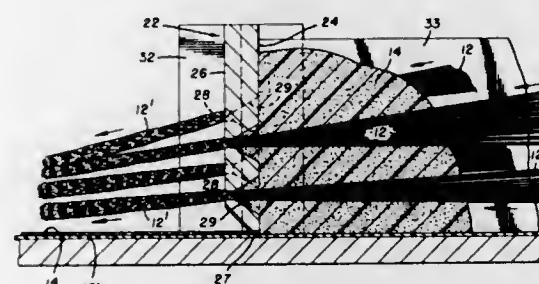
6 Claims

1. The method of continuously making a fiber reinforced sheet molding compound having superior molding qualities when press-formed in a matched-metal mold comprising the steps of:

- spreading a top layer of resinous material under a conventional doctor blade on one side of a moving flexible top carrier sheet,

- spreading a bottom layer of resinous material under an improved doctor blade on one side of a moving flexible bottom carrier sheet,
- passing a plurality of fibrous rovings through a mass of resinous material,

- the axes of said fibrous rovings being selectively spaced transversely apart through selected horizontally spaced openings defined by a guide bar across said carrier sheets,
- each of said fibrous rovings comprising a loose bundle of individual fibers, and
- each of said fibers being individually coated with said resinous material within said mass of resinous material,
- respectively compressing together each said bundle



of said fibrous rovings passing from said bath through selected horizontally spaced and sized orifices defined through said improved doctor blade to remove excess resinous material and to uniformly impregnate each of said compressed rovings with said resinous material,

- passing said fibrous rovings from said orifices as horizontally spaced onto said bottom layer of resinous material as spread on said bottom carrier sheet,
- compressing said top carrier sheet toward said bottom carrier sheet to force said top layer of resinous material and said bottom layer of resinous material together to consolidate said top layer of resinous material, said fibrous rovings and said bottom layer of resinous material into a composite sheet molding compound.

3,898,114

RELEASE PAPER FOR USE IN FORMING PLASTIC LAMINATES

Franklin J. Ward, South Portland, Maine, assignor to Scott Paper Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 187,818, Oct. 8, 1971, abandoned. This application Mar. 11, 1974, Ser. No. 449,918

Int. Cl. B32B 31/06

U.S. Cl. 156—90

3 Claims

1. In a method of laminating sheets of acrylic or polyester resins which includes the step of pressing a sheet of resin against a piece of paper having an easy-release surface, the improvement which comprises pressing the sheet against a piece of paper having a release coating comprising poly(vinyl alcohol) and from an effective amount greater than 0.01 up to 20% of methyl cellulose based on the weight of the poly(vinyl alcohol).

3,898,115

MODULAR BUILDING UNIT AND METHODS OF FORMING SAME

Berne A. Watkins, One Normanskill Blvd., Delmar, N.Y. 12054, and James W. Sedore, 1617 N.E. 17 Ave., Fort Lauderdale, Fla. 33304

Division of Ser. No. 209,767, Dec. 20, 1971, abandoned. This application Jan. 21, 1974, Ser. No. 435,064

Int. Cl. B32b 7/08

U.S. Cl. 156—93

1 Claim



1. A method of constructing a modular unit capable of forming a complete building when joined with a plurality of other units comprising the steps of:

- forming an inner shell for said modular unit on a male mold,
- forming an outer shell for said modular unit within a female mold cavity,
- forming a flexible mat of woven fiberglass and foam blocks by
 - assembling a plurality of elongated triangular blocks together along their longitudinal edges, said blocks being assembled above a first mat of woven fiberglass,
 - overlaying said blocks with a second mat of woven fiberglass and stitching the first and second layers together between said blocks,
 - assembling a second layer of triangular blocks above said first layer with each block of said second layer being disposed between a pair of adjacent blocks of said first layer so as to form a flat uniform upper surface,
 - overlaying said second layer of blocks with a third mat of woven fiberglass and securing said third mat to said second layer of blocks,
- applying a resin coating to the outer surfaces of said flexible mat and to said shells while laying up said mat upon one of said shells,
- clamping said shells together while still in the mold cavity to form a modular unit with inner and outer shells and foam core.

3,898,116

METHOD AND APPARATUS FOR MANUFACTURING A STRUCTURE FOR A GREEN TIRE

Yoshiaki Katagiri; Yoshiaki Hirata; Toshihiro Takahashi, and Shunichi Nomura, all of Tokyo, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Nov. 5, 1973, Ser. No. 412,724

Claims priority, application Japan, Nov. 9, 1972, 47-112286

Int. Cl. B29H 17/20; B32B 31/18

U.S. Cl. 156—134

5 Claims

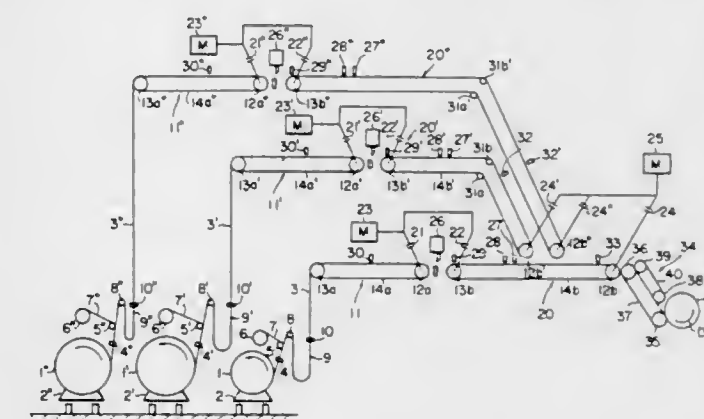
1. A method of manufacturing a carcass structure for a green tire using a building drum, which is characterized by the steps of:

- preparing at least two carcass sheet of bias type having a number of junctions;
- cutting each one of said carcass sheets into a piece of the one-turn length, said cutting includes a step of cutting off a forward end portion of a predetermined length of said piece when there is at least one junction in said forward end portion and a backward end portion of said predetermined length, the backward edge of said backward end portion and the forward edge of said forward end portion being spaced from each other by the one-turn length;
- laminating one of the pieces on the other piece in such a manner that the forward ends of the pieces circumferentially equidistantly spaced from each other when the

laminated pieces are wrapped on the working surface of the building drum; and wrapping the laminated pieces on the working surface of the building drum.

2. An apparatus for manufacturing uncured carcass structure to be included with a building drum comprising:

- a basic supplying conveyer for withdrawing a first carcass sheet;
- a basic laminating conveyer positioned in alignment with said basic supplying conveyer for feeding said first carcass sheet led from said basic supplying conveyer, said basic laminating conveyer including a pair of drums spaced from each other, a flat loop belt with apertures stretched over said pair of drums, a vacuum chamber interposed between the lower and upper parts of said loop belt and



having a perforated upper wall coextensively facing the lower surface of the upper part of said loop belt, a first high pressure air chamber placed at one side of said low pressure air chamber and having a perforated upper wall coextensive and flush with said perforated upper wall of said low pressure air chamber, a second high pressure air chamber placed at the other side of said low pressure air chamber and having a perforated upper wall coextensive and flush with said perforated upper wall of said low pressure air chamber, and actuation means for forwardly rotating said pair of drums;

a first cutting device interposed between the forward end of said basic supplying conveyer and the backward end of said basic laminating conveyer, for allowing said first carcass sheet to pass therethrough and for cutting transversely said first carcass sheet when it is energized;

a first detector placed over said basic laminating conveyer for producing a first cutting signal when the forward end of said first carcass sheet reaches a first point forwardly spaced from said first cutting device by the one-turn length;

a first actuation circuit responsive to said first cutting signal for energizing said first cutting device;

a second detector placed over said basic laminating conveyer for producing a first gate signal when the forward end of said first carcass sheet reaches a second point forwardly spaced from the first cutting device by a predetermined length shorter than one-half of the one-turn length;

a third detector placed over said basic supplying conveyer for producing a first actuation signal when it detects at least one junction appearing in backward and forward end portions each having a length equal to said predetermined length, the backward edge of said backward end portion and the forward edge of said forward end portion being spaced from each other by the one-turn length;

a second actuation circuit responsive to said first gate and actuation signals for energizing said first cutting device; at least one additional supplying conveyer overlying said basic supplying conveyer for withdrawing a second carcass sheet of bias type;

at least one additional laminating conveyer positioned in alignment with said additional supplying conveyer for

feeding said second carcass sheet led from said additional supplying conveyer, said additional laminating conveyer having its forward end placed in close proximity to the upper end of said basic laminating conveyer and including a pair of drums spaced from each other, a flat loop belt with apertures stretched over said pair of drums, a vacuum chamber interposed between the lower and upper parts of said loop belt and having a perforated upper wall coextensively facing the lower surface of the upper part of said loop belt, a first high pressure air chamber placed at one side of said low pressure air chamber and having a perforated upper wall coextensive and flush with said perforated upper wall of said low pressure air chamber, a second high pressure air chamber placed at the other side of said low pressure air chamber and having a perforated upper wall coextensive and flush with said perforated upper wall of said low pressure air chamber, and actuation means for forwardly rotating said pair of drums;

a second cutting device interposed between the forward end of said additional supplying conveyer and the backward end of said additional laminating conveyer for allowing said second carcass sheet to pass therethrough and transversely cutting said second carcass sheet when it is energized;

a fourth detector placed over said additional laminating conveyer for producing a second cutting signal when the forward end of said second carcass sheet reaches a third point forwardly spaced from said second cutting device by the one-turn length;

a third actuation circuit responsive to said second cutting signal for energizing said second cutting device;

a fifth detector placed over said additional laminating conveyer for producing a second gate signal when the forward end of said second carcass sheet reaches fourth point forwardly spaced from said second cutting device by said predetermined length;

a sixth detector placed over said additional supplying conveyer for producing a second actuation signal when it detects at least one junction appearing in backward and forward end portions each having a length equal to said predetermined length, the backward edge of said backward end portion and the forward edge of said forward end portion being spaced from each other by the one-turn length;

a fourth actuation circuit responsive to said second gate and actuation signals for energizing said second cutting device;

control means for actuating said basic and additional laminating conveyers so as to laminate said first and second carcass sheet on each other in such a manner that the forward ends of said first and second carcass sheets are spaced from each other by a predetermined distance; and an applying and pressing conveyer having its backward end positioned near the forward end of said basic laminating conveyer and its forward end positioned in close proximity to the working surface of the building drum for applying and pressing the laminated carcass sheets onto the working surface of the building drum thereby to permit the building drum to form a carcass structure thereon.

3,898,117

METHOD OF MAKING PATTERNED COMPOSITE MATERIAL

Louis N. Taylor, 1035 N.E. 176 St. North, Miami Beach, Fla. 33162

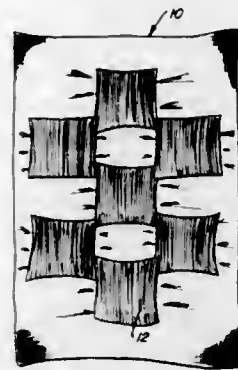
Division of Ser. No. 148,111, May 28, 1971, Pat. No. 3,728,203. This application Jan. 23, 1973, Ser. No. 325,993 Int. Cl. B32b 31/00

U.S. Cl. 156—163

6 Claims

6. A method of manufacturing a decorative composite material comprising the steps of carrying a flexible material to

a processing area and positioning the flexible material so that work can be performed upon it, carrying an elastic web into the processing area, cutting the elastic web into a plurality of separate elastic members, stretching the elastic members a designated distance, adhesively securing said plurality of stretched elastic members by adhesive means to the back of the flexible material to form a plurality of enclosed spaces



having substantially parallel alignment, allowing said stretched elastic members to return to their relaxed configuration, placing the gathered composite material comprising the flexible material and secured elastic members under pressure to achieve a permanency in the adhesion of the bond between the elastic members and the flexible material while simultaneously crinkling the gathered composite material into a permanent pattern.

3,898,118

METHOD AND APPARATUS FOR COVERING ELONGATE MEMBERS

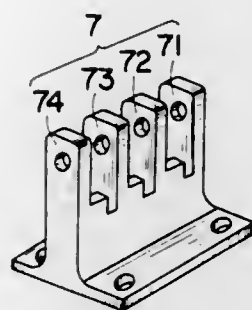
Takao Yamaoka; Osamu Sasaki, and Takashi Yamana, all of Osaka, Japan, assignors to Sekisui Jushi Kabushiki Kaisha, Osaki, Japan

Division of Ser. No. 211,470, Dec. 23, 1971, which is a continuation-in-part of Ser. No. 821,274, May 2, 1969, abandoned. This application Feb. 6, 1974, Ser. No. 439,853 Claims priority, application Japan, Sept. 17, 1968, 43-67492

Int. Cl.² B31F 1/00

U.S. Cl. 156—201

1 Claim



1. A process for preparing a decorative product having an attractive appearance of metallic gloss, comprising: continuously applying to an elongated metal tube a tape having a metallic gloss on its outer surface and having a thickness of the order of 0.01 mm to 0.2 mm and a width substantially equal to the outer peripheral dimension of said tube, the longitudinal axis of said tape being substantially parallel to that of said tube, advancing said tube together with said tape onto a plurality of curved surface rolls arranged in a straight line, and then into a guide provided with a plurality of parts each of which having a hole, said holes being successively smaller in the direction of advancement; while advancing, said tape being applied to said tube by an adhesive at least along one side thereof, further advancing said tube into throttle means having an aperture the interior surface of which being covered with elastic material and tapered gradually to narrow in the direction of advance of said tube, thus closely contacting said

tape with the outer surface of said tube, applying pressure to said tape to butt and adhere adjacent side edges thereof on said tube by means of a roll, passing said tube with the tape thereon through a passage in a mandrel contained in a die, passing a transparent synthetic resin in a molten condition through a passage formed between the outer wall of said mandrel and the inner wall of said die, said passages being independently formed in the die without any contact with each other, a chamber provided with a plurality of exhaust holes being attached to said inner wall of said mandrel on the inlet side of said tube so that the compressed air may flow through said holes to the atmosphere in the direction opposite to the advancement direction of the tube, thus withdrawing air contained in a gap formed between the extruded resin and the tube outside the die, and causing a tight contact between the extruded resin and the member with the tape thereon outside the die.

3,898,119

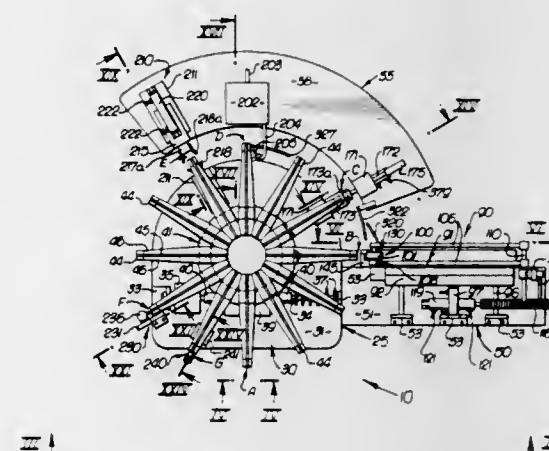
METHOD FOR AUTOMATIC ASSEMBLY OF A BELT AND ANCHOR PLATE

Richard S. Barr, and Richard L. Groendyke, both of Upland, Calif., assignors to American Safety Equipment Corporation, Encino, Calif.

Division of Ser. No. 130,923, April 5, 1971, Pat. No. 3,785,907. This application July 12, 1973, Ser. No. 378,801 Int. Cl.² D05B 3/12

U.S. Cl. 156—202

9 Claims



1. In a method of assembling a pliant safety belt with an anchor plate having an opening to receive said belt, the opening having a maximum dimension less than the width of the belt, including the steps of:

- positioning the anchor plate in a plane;
- supplying a belt to a path lying normal to the plane of the anchor plate;
- advancing the belt along said path toward said opening;
- longitudinally folding a leading end portion of the belt to reduce the width of the belt end portion to provide upper and lower belt layers;
- passing the folded belt end portion into and through said opening for a selected distance and keeping a folded section of said belt layers in said opening;
- unfolding the leading end portion which has passed through said opening;
- transversely folding the belt end portion and adjacent remaining belt portion about said anchor plate to position surfaces of the end portion and adjacent remaining belt portion in opposed relation proximate to said anchor plate;
- and securing said unfolded leading belt end portion against the adjacent remaining belt portion whereby a longitudinally folded belt end portion is transversely folded about said anchor plate at said opening.

937 O.G.—7

3,898,120

METHOD OF PRODUCING SOLID COMPOSITE BOARD SUCH AS A DOOR PLATE

Jens Christian Snitker, 4, Finlandsgade, Haslev, Denmark Division of Ser. No. 623,613, March 16, 1967, Pat. No. 3,635,784. This application Dec. 21, 1970, Ser. No. 100,528 Int. Cl. B32b 31/00

U.S. Cl. 156—284

2 Claims

1. A method of producing a solid board, such as a door plate, having a solid core made of porous, non-absorbent particles compacted by adhesive means and having a first and a second core face, a frame surrounding said core adhesively connected thereto and having a first and second frame face flush with said first and second core face respectively, a first and a second cover plate and reinforcement means being imbedded in said core, and having a uniform thickness substantially corresponding to the thickness of said core, the steps comprising:

- mixing said non-absorbent particles with granules of an adhesive capable of reacting with water to provide a non-conglomerated mixture;
- providing said first cover plate with a coating of an aqueous adhesive solution on its one face;
- placing said frame on said coated face and arranging said reinforcement means on said coated face within said frame;
- filling the spaces of said reinforcement means with said non-conglomerated mixture;
- providing said second cover plate with a coating of an aqueous adhesive solution on its one face;
- arranging said second cover plate on top of said frame with its coated face facing said frame; and
- pressing said two cover plates towards each other during heating, thereby pressing them against said frame and said reinforcement means and activating said granules of adhesive by steam emanating from said aqueous adhesive coatings.

3,898,121

APPARATUS FOR MOLDING HOLLOW RUBBER ARTICLES

Eric Holroyd, High Legh Park, nr. Knutsford; Anthony G. Goodfellow, Maghull, nr. Liverpool, and James N. McGlashen, Winstanley, nr. Wigan, all of England, assignors to Dunlop Limited, Birmingham, England

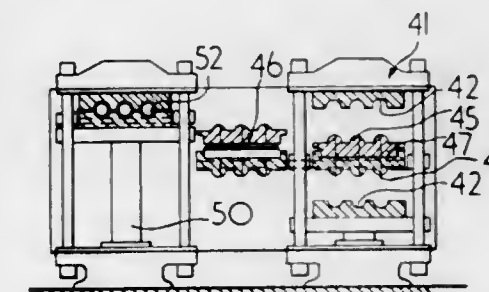
Division of Ser. No. 198,812, Nov. 15, 1971. This application Sept. 19, 1973, Ser. No. 398,699

Claims priority, application United Kingdom, Nov. 23, 1970, 55586/70

Int. Cl. B29c 3/04

U.S. Cl. 156—500

11 Claims



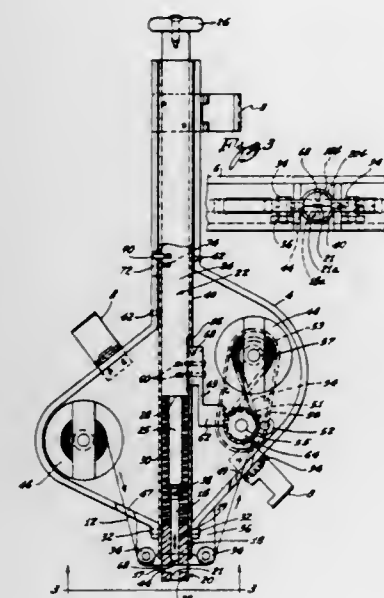
1. A moulding apparatus comprising at least one pair of female mould cavities, means to form moulded halves from rubber in said cavities, said cavities being provided with locking sprue grooves to prevent displacement of said moulded halves, means to mechanically work said rubber without any substantial curing prior to its being formed into said halves, means to pressurise said mould with gas and means to bring each pair of female mould cavities together containing said moulded halves whereby said halves can be joined together under heat and pressure.

3,898,122

APPARATUS FOR FORMING AND SECURING A TAB
Willard M. Hawkins, 1015 N. Ardmore Apt. No. 101, Los Angeles, Calif. 90038Continuation-in-part of Ser. No. 232,168, March 6, 1972, abandoned. This application Sept. 24, 1973, Ser. No. 400,065
Int. Cl. B32b 31/00; B65h 35/02

U.S. Cl. 156—510

10 Claims



1. An apparatus for cutting a tab from a tape, said apparatus comprising:

- a reciprocable punch;
- a reciprocable actuator for said punch;
- guide means having an opening which slidably receives said punch;
- a die positioned a spaced distance below said guide means and having an opening in alignment with the opening in said guide means;
- means for positioning a tape at approximately right angles to the movement of said punch and within an opening defined by the spaced distance between said guide means and said die;
- means for moving said tape in a line of travel at approximately a right angle to the direction of movement of said punch;
- adjustable drive means for transmitting the movement of said punch to a take-up reel for said tape with the distance of movement of said tape being adjustable with respect to the distance of movement of said punch;
- friction means controlling the speed of movement of said tape and the moving force applied to said tape, and
- pivotal connecting means joining said punch and said actuator,
- whereby said actuator is permitted to pivot with respect to said punch while maintaining the alignment of said punch within said guide means.

3,898,123

METHOD FOR WET PRINT-BONDING LIGHT-WEIGHT WET-FORMED FIBROUS WEBS

Charles H. Phillips; Jay S. Shultz, and John A. Toms, all of Little Rock, Ark., assignors to Johnson & Johnson, New Brunswick, N.J.

Filed Sept. 6, 1973, Ser. No. 394,896

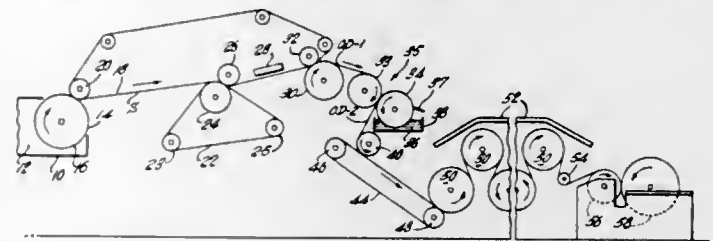
Int. Cl. D21f 1/00; D21h 1/28

U.S. Cl. 162—134

3 Claims

1. A method of making a light-weight, wet-formed, print-bonded nonwoven fabric which comprises: (1) forming an aqueous slurry of fibrous materials; (2) transferring said aqueous slurry of fibrous materials to a fluid-permeable, moving, forming surface in the form of a wet, flat fibrous sheet; (3)

removing water from said wet, flat fibrous sheet to bring the fiber weight into the range of from about 20% to about 35% by weight of the total weight of said wet, flat fibrous sheet; (4) transferring said wet, flat fibrous sheet to nonwoven fabric print-bonding means by passage through an open draw wherein said wet, flat fibrous sheet is conveyed unsupported through an open air gap; (5) applying an aqueous resin binder to said wet, flat fibrous sheet by print-bonding means employing an etched or engraved printing surface, said aqueous resin binder being applied in an amount equal to from about 30% to about 160% of the weight of the fibers in said wet, flat



fibrous sheet and having a resin solids content of from about 15% to about 60% by weight; (6) transferring said wet flat fibrous sheet with said aqueous resin binder applied thereto to carrying means by passage through an open draw wherein said wet, flat fibrous sheet with said resin binder applied thereto is conveyed unsupported through an open air gap; (7) and carrying said wet, flat fibrous sheet with said resin binder applied thereto through a heated zone having an elevated temperature whereby said resin binder is dried to bond the fibrous web into a self-sustaining bonded nonwoven fabric wherein the resin binder content is in the range of from about 5% to about 45% of the weight of the bonded nonwoven fabric.

3,898,124

AUTOMATIC CONTROL OF A CONTINUOUS DIGESTER, INCLUDING LEVEL, CONCENTRATION, AND FLOW METERS

Torbjorn Olson, Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Continuation of Ser. No. 301,743, Oct. 30, 1972, abandoned.

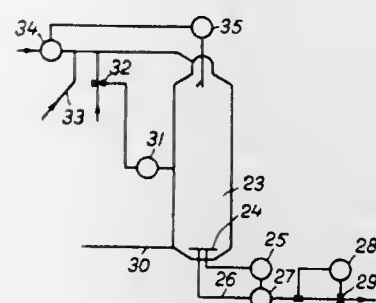
This application May 7, 1974, Ser. No. 468,061

Claims priority, application Sweden, Nov. 18, 1971, 14737/71

Int. Cl. D21c 7/12

U.S. Cl. 162—238

4 Claims



1. A continuous digester comprising a boiler with a rotatable bottom scraper with a drive motor, chips and lye inflow at the top of the boiler, wash liquor inflow means to the bottom of the boiler, and the pulp outflow means from the bottom of the boiler, said digester comprising:

- a. a level meter for measuring the liquid level in the top of the digester, chip feeding means connected to the chip inflow means, and means responsive to the output signal of said level meter to control the chip feeding means;
- b. a concentration meter in the pulp outflow means, means for controlling the drive motor, said motor controlling means including means responsive to a signal from the concentration meter to regulate the speed of the scraper to maintain a predetermined concentration of the outgoing pulp; and

c. a flow meter and a throttle valve in the pulp outflow means, and means responsive to the flow meter for controlling the throttle valve to obtain a predetermined outflow for the outgoing pulp.

3,898,125

NUCLEAR FUEL ELEMENT CONTAINING STRIPS OF AN ALLOYED Zr, Ti AND Ni GETTER MATERIAL

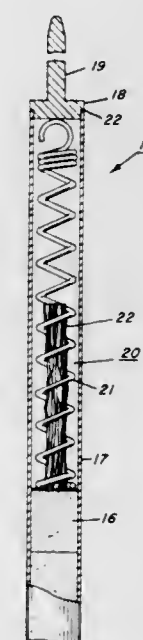
Leonard N. Grossman, Livermore, and Douglas R. Packard, Sunol, both of Calif., assignors to General Electric Company, San Jose, Calif.

Filed Dec. 8, 1971, Ser. No. 205,790

Int. Cl. G21c 3/18; H01j 7/18

U.S. Cl. 176—68

18 Claims



1. A nuclear fuel element which comprises an elongated container, a body of nuclear fuel material disposed in and partially filling said container and forming an internal cavity, an end closure integrally secured and sealed at each end of said container, a fuel material restraining member positioned in said cavity and a multiplicity of strips comprised of a ternary alloy positioned in said cavity, the fuel material restraining member is a helical member and the multiplicity of strips are disposed within the helical member in said cavity, the alloy being comprised of from about 3 to about 12 weight percent nickel, of greater than 3 to about 30 weight percent titanium and the balance is zirconium, and the alloy being a gettering material for water, water vapor and reactive gases.

3,898,126

REACTOR PRESSURE TANK

Heinrich Dorner; Manfred Scholz, and Axel Jungmann, all of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Dec. 18, 1972, Ser. No. 315,932

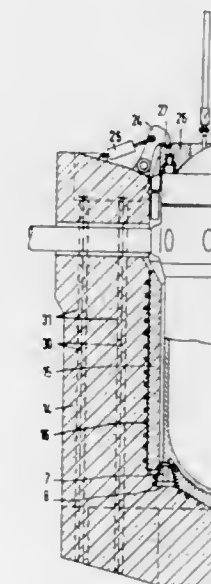
Claims priority, application Germany, Dec. 23, 1971, 2164128; Aug. 7, 1972, 2238886

Int. Cl. G21c 13/02

U.S. Cl. 176—87

9 Claims

1. A nuclear reactor pressure-resistant vessel comprising a vertical metal tank having an open top provided with a removable metal cover, said metal tank being positioned in and surrounded by a vertical reinforced concrete tank having an open top and containing means below its top for supporting said metal tank therein against downward movement, and an intercept structure for restraining said metal tank and its cover from displacement upwardly through said concrete tank's open top; wherein the improvement comprises said structure being in the form of a metal ring removably positioned on said cover and resting on the cover's peripheral portion, the upper surface of said ring being adjacent to said concrete tank's



open top and the latter having hooks pivotally connected thereto to swing radially with respect to said ring, said hooks having declining end surfaces which overlap said ring when the hooks are swung thereover, the periphery of said ring having a radially inwardly inclining surface positioned for engagement by said hooks' said end surfaces upon upward movement of said ring and providing a self-locking action holding the hooks against outward swinging during said engagement; said metal tank supporting means interconnecting said metal tank and said concrete tank at a position spaced below the tops of the metal tank and concrete tank a distance causing said end surfaces of said hooks and said declining

3,898,127

PROCESS FOR PREPARING UROCANIC ACID

Ichiro Chibata, Osaka; Tetsuya Tosa, Kyoto; Tadashi Sato, and Kozo Yamamoto, both of Osaka, all of Japan, assignors to Tanabe Seiyaku Co. Ltd., Osaka, Japan

Filed Oct. 9, 1973, Ser. No. 404,289

Claims priority, application Japan, Oct. 16, 1972, 47-103377

Int. Cl. C12d 13/06

U.S. Cl. 195—29

21 Claims

1. A process for preparing urocanic acid or a mixture of urocanic acid and D-histidine which comprises the steps of polymerizing at least one acrylic monomer in an aqueous suspension of an L-histidine ammonialyase-producing microorganism to produce an immobilized L-histidine ammonialyase-producing microorganism, heating the L-histidine ammonialyase-producing microorganism to a temperature of 60° to 80°C either before or after immobilizing it, and subjecting the immobilized L-histidine ammonialyase-producing microorganism to enzymatic reaction with L-histidine, DL-histidine or an acid addition salt thereof in the presence of 10⁻⁴ to 10⁻¹ M of at least one metal ion selected from the group consisting of calcium, magnesium, zinc and ferric ions.

3,898,128

PROCESS FOR PREPARING L-ALANINE

Ichiro Chibata, Suita; Tetsuya Tosa, Kyoto; Tadashi Sato, and Kozo Yamamoto, both of Takatsuki, all of Japan, assignors to Tanabe Seiyaku Co. Ltd., Osaka, Japan
Filed Nov. 15, 1973, Ser. No. 416,185

Claims priority, application Japan, Nov. 20, 1972, 47-116878

Int. Cl.² C12D 13/06

U.S. Cl. 195—29

22 Claims

1. A process for preparing L-alanine or a mixture of L-alanine and D-aspartic acid which comprises polymerizing at least one monomer selected from the group consisting of acrylamide, N,N'-lower alkylene-bis (acrylamide) and bis (acrylamidomethyl) ether in an aqueous suspension of an L-aspartic acid β -decarboxylase-producing microorganism to produce an immobilized L-aspartic acid β -decarboxylase-producing microorganism, and subjecting the immobilized L-aspartic acid β -decarboxylase-producing microorganism to enzymatic reaction with L-aspartic acid, DL-aspartic acid or a salt thereof in the presence of 0.1 to 10 milimoles/liter of Co^{++} or Ni^{++} -ion.

3,898,129

ENZYMATICALLY HYDROLYZED COMPOSITION OF SKIN RAG AND DERIVATIVES THEREOF

Yasu Fujimoto, Yokohama; Masayuki Teranishi, and Ikuro Matsukuma, both of Tokyo, all of Japan, assignors to Kyowa Hakko Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 13, 1972, Ser. No. 297,461

Claims priority, application Japan, Oct. 28, 1971, 46-10985

Int. Cl.² C12B 1/00

U.S. Cl. 195—29

2 Claims

1. A process for preparing a skin rag hydrolysate containing mainly peptides having a polymerization degree of from about 4 to about 7, comprising treating skin rag with an alkaline protease, other than collagenase, which protease is capable of decomposing collagen, at a pH of from about 7 to 12 and at a temperature of from about 47° to 70°C for a period of from about 4 to 24 hours, the amount of said protease being from about 0.1 to 0.5% based on the weight of said skin rag.

3,898,130

RAPID ENZYMIC HYDROLYSIS OF TRIGLYCERIDES

Stanley K. Komatsu, Laguna Hill, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Mar. 18, 1974, Ser. No. 451,735

Int. Cl. C12d 13/02

U.S. Cl. 195—30

30 Claims

1. An enzymatic process for rapidly liberating glycerol from its esterified form as a fatty acid ester in an aqueous fluid, comprising the step of mixing said fluid with a combination of *Candida lipase*, pancreatic lipase, and a bile salt selected from the group consisting of the alkali metal salts of taurodeoxycholic, taurocholic, taurochenodeoxycholic, and taurodehydrocholic acids.

3,898,131

ENZYME FOR TREATMENT AND PREVENTION OF BLOAT

Peter A. Hahn, Grosse Point Park, Mich.; Frank J. Hartdegen, Columbia, and Marlin A. Espenshade, Ellicott City, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Division of Ser. No. 422,709, Dec. 7, 1973, Pat. No. 3,868,448.

This application Oct. 31, 1974, Ser. No. 519,449

Int. Cl.² C12D 13/10; A61K 19/00

U.S. Cl. 195—62

3 Claims

1. The method of preparing an enzyme product effective for the control of bloat that comprises culturing *Streptomyces griseus* NRRL 5747 in a fermentation medium until said enzyme has the following characteristics:

- 1 g. of enzyme represents about 500 units, 1 unit being that amount of enzyme which when dissolved in 1 ml. of water reduces the viscosity of 1 ml. of prepared gastric mucin by 50% in 2 hours at 39° C.;
- said enzyme is insoluble in acidic acetone;
- centrifuged broth from the fermentation medium contains 0.3 – 1.0 units of enzyme/mg. broth;
- storage of the dry enzyme at 190° F. for 28 weeks or at 122° F. for 8 weeks results in less than 10% activity decrease;

and recovering from the fermentation liquor an enzyme product effective for the control of bloat.

3,898,132

METHOD OF PREPARING STOWABLE, DORMANT BACTERIA

La Verne A. Hettrick, Salinas, Calif., assignor to International Feed Improvement Association, Inc., Carson City, Nev.

Filed Aug. 24, 1972, Ser. No. 283,566

Int. Cl.² C12K 1/08

U.S. Cl. 195—65

3 Claims

1. A method of establishing reversible dormancy in a population of active microorganisms, said method comprising preparing a mixture containing said population along with a liquid carrier and diatomaceous earth particles, said population comprising up to about 15 percent by weight of said mixture, and said particles having a weight in the mixture in the range of about 25-400 percent of the weight of the liquid carrier.

3,898,133

PROCESS OF PREPARING AN ENZYME WITH LIPOLYTIC ACTIVITY

Renato Craveri, Milan; Pier Luigi Manachini, Monzese, and Fabrizio Aragozzini, Milan, all of Italy, assignors to Societa' Italiana Resine S.I.R. S.p.A., Milan, Italy

Filed May 3, 1973, Ser. No. 357,054

Claims priority, application Italy, May 3, 1972, 023850/72

Int. Cl.² C12D 13/10

U.S. Cl. 195—66 R

6 Claims

1. Process for preparing an enzyme product with lipolytic activity having optimum activity at 50°–60°C under pH conditions of 7 to 8.5, comprising culturing a microorganism of the genus *Myriococcus*, ATCC No. 20374, under aerobic conditions in an aqueous culturing medium comprising a carbon source, a nitrogen source and a mineral salt, for 48–90 hours at a pH value of 7 to 8.5 at a temperature of 38°C to 45°C, under agitation and with an aeration rate of 0.2 to 1 litre/litre/minute.

3,898,134

PROCESS AND APPARATUS FOR RECOVERING CLEAN WATER AND SOLIDS FROM DILUTE, AQUEOUS, SOLIDS CONTAINING SOLUTIONS OR DISPERSIONS

Charles Greenfield, Murray Hill; Robert E. Casparian, Boonton, and Anthony J. Bonanno, Parsippany, all of N.J., assignors to Hanover Research Corporation, East Hanover, N.J.

Continuation-in-part of Ser. No. 165,070, July 22, 1971. This application Oct. 15, 1973, Ser. No. 406,632

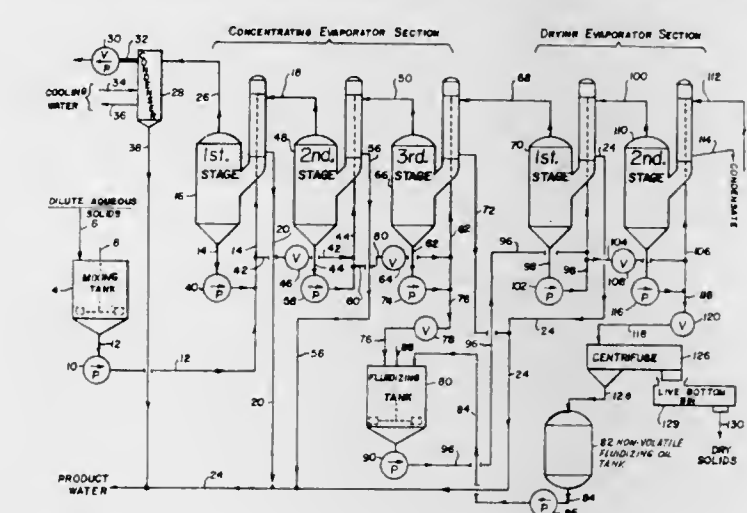
Int. Cl.² B01D 3/34, 3/02, 1/22, 1/26

U.S. Cl. 203—6

8 Claims

1. A process for recovering clean water from dilute aqueous solids by evaporation while avoiding corrosion and scaling and fouling in the evaporating apparatus, said process comprising the steps of (1) adding a light, relatively volatile oil to said dilute aqueous solids; (2) concentrating said oil and aqueous solids mixture by heat in an evaporator wherein said mixture comes in contact with the evaporating surface thereof to yield (i) water vapor and any distillable components of said oil and (ii) concentrated aqueous solids containing the remainder of said oil; (3) condensing said water vapor and distilled oil components; (4) separating liquid water resulting from said condensing step from the distilled and recondensed oil com-

ponents in the liquid mixture thereof; (5) admixing said concentrated aqueous solids containing said residual relatively volatile oil with relatively non-volatile fluidizing oil to obtain a mixture which will remain fluid and pumpable after the



removal of the water content therefrom; (6) subjecting the resultant oil-containing mixture to dehydration by heat evaporation to yield steam and a substantially anhydrous solids in oil slurry, and (7) using said steam from dehydration step (6) as a source of heat in concentration step (2).

3,898,135

EXTRACTIVE DISTILLATION OF C₄ HYDROCARBONS USING A THREE COMPONENT SOLVENT SYSTEM

Calvin M. Tidwell, Bellaire, and Val G. Henneberg, Houston, both of Tex., assignors to Petro-Tex Chemical Corporation, Houston, Tex.

Continuation-in-part of Ser. No. 165,587, July 23, 1971, abandoned. This application Sept. 28, 1973, Ser. No. 401,738

Int. Cl. B01d 3/40; C07c 7/00

U.S. Cl. 203—9

10 Claims

1. In a process for the separation of mixtures of C₄ paraffin, mono-olefin and diolefin hydrocarbons by a process of extractive distillation comprising contacting said mixtures with a solvent comprising an alkoxynitrile of the formula R₁—O—R₂—CN where R₁ and R₂ are alkyl radicals having from 1 to 3 carbon atoms which has preferable solubility for one or more of said hydrocarbons, provided at least, one of said hydrocarbons is dissolved in the solvent and said dissolved hydrocarbon is removed from the extractive distillation zone therein, and at least one other hydrocarbon from said mixture passes from the extractive distillation zone as overhead wherein the improvement comprises reducing fouling by polybutadiene by utilizing as a solvent a mixture consisting essentially of from 70 to 98 weight percent of said alkoxynitrile, from 0.5 to 25 weight percent of furfural and from 1 to 20 weight percent water.

3,898,136

PROCESS FOR COATING SHAPED RESIN ARTICLES

Eiichi Yonemitsu, Kashiwa; Akitoshi Sugio, Tokyo; Yukiya Masuda, Urawa; Toshihiko Kobayashi, Showa, and Masaki Fujihara, Tokyo, all of Japan, assignors to Mitsubishi Gas Chemical Company, Ltd., Tokyo, Japan

Filed Mar. 15, 1974, Ser. No. 451,600

Claims priority, application Japan, Mar. 19, 1973, 48-30870

Int. Cl.² C25D 5/56

U.S. Cl. 204—30

9 Claims

1. A process for coating the surface of a shaped article of epoxy resin or polyphenylene oxide resin with a metal, which comprises treating said surface with a compound of the formula

$\text{RO (AO)}_n\text{R}'$ wherein one of R and R' represents an alkyl or acyl group with not more than 4 carbon atoms and the remaining one of said

R and R' is hydrogen or an alkyl or acyl group with not more than 4 carbon atoms, A is a straight or branched chain C₂ to C₄-alkylene group, and n is an integer of 1 to 4; further treating the above treated surface with a chemical etchant; and then applying thereto a metal coating.

4. A process as claimed in claim 1, wherein the application of said metal coating is effected by vacuum evaporation or electroless plating, followed by electroplating.

3,898,137

METHOD OF ELECTROPLATING GOLD AND GOLD PLATING BATHS CONTAINING AN AMIDO-POLYPHOSPHATE

John M. Deuber, Nutley, N.J., and George R. Lurie, Huntington Beach, Calif., assignors to Oxy Metal Industries Corporation, Warren, Mich.

Filed Apr. 19, 1974, Ser. No. 462,268

Int. Cl. C23b 5/28, 5/42

U.S. Cl. 204—43 G

16 Claims

1. In an aqueous gold electroplating bath containing gold in an electrodepositable form adjusted to a pH suitable for plating, the improvement comprising including an amido-polyphosphate compound differing from a normal polyphosphate compound in that one or more of the oxygen linkages between phosphorous atoms is replaced by an -NH-linkage in a sufficient quantity to effect a brighter deposit.

7. The bath of claim 1 wherein said gold is present in the form of a gold cyanide complex, the pH of the bath is maintained at a value of at least 3.5, and the bath contains at least 0.01 g/l of a metal selected from the group consisting of cobalt and nickel in co-depositable form.

3,898,138

METHOD AND BATH FOR THE ELECTRODEPOSITION OF NICKEL

Richard J. Clauss, Allen Park, and Roy W. Klein, St. Clair Shores, both of Mich., assignors to Oxy Metal Industries Corporation, Warren, Mich.

Filed Oct. 16, 1974, Ser. No. 515,130

Int. Cl. C23b 5/08, 5/46

U.S. Cl. 204—49

4 Claims

2. In a bath for the electrodeposition of ductile low-stress nickel plate from an aqueous acidic nickel plating bath, said bath containing at least one nickel salt selected from the group consisting of nickel sulfate, nickel sulfamate, nickel fluoborate, nickel bromide and nickel chloride and containing dissolved therein from about 0.1 to about 10 grams per liter of metasulfobenzoic acid, the improvement of incorporating into said bath a combination of from about 0.05 to about 0.5 grams per liter of an alkylene diol and from about 0.05 to about 0.5 grams per liter of a butene alcohol.

3,898,139

PROCESS FOR SURFACE TREATMENT OF ZINC-PLATED STEEL PLATES

Takashi Watanabe, Sagami-hara-shi; Eiichi Tarumi, Machida-shi, and Akira Teramae, Yokohama-shi, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed May 6, 1974, Ser. No. 467,577

Claims priority, application Japan, May 11, 1973, 48-52379; Aug. 8, 1973, 48-88963

Int. Cl. C23b 11/00

U.S. Cl. 204—56 R

5 Claims

1. A process for the surface treatment of zinc-plated steel material comprising electrochemically treating said material as an electrode in a basic electrolysis bath which is composed of an aqueous solution containing more than 0.01% of at least one substance selected from the group consisting of aluminum biphosphate and magnesium biphosphate.

3,898,146

PROCESS FOR FABRICATING A CATHODE RAY TUBE SCREEN STRUCTURE

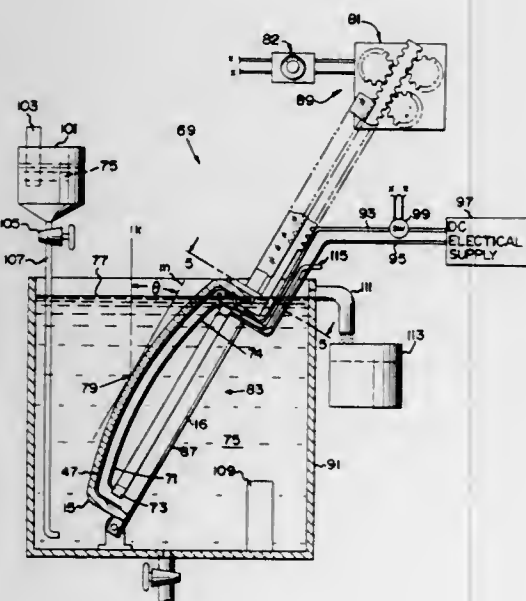
Charles H. Rehkopf, and Kenneth Spiegel, both of Seneca Falls, N.Y., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Division of Ser. No. 357,942, May 7, 1973, Pat. No. 3,858,083. This application May 15, 1974, Ser. No. 470,212

Int. Cl. B01k 5/02

U.S. Cl. 204—181

7 Claims



1. In a color cathode ray tube viewing panel having a first apertured substantially opaque electrically conductive webbing formed on the inner surface of the viewing area of the panel, a process for disposing of a second apertured webbing of a second opaque material in a contiguous superposed manner on the first webbing, said process comprising the steps of: positioning an electrode member relative to said panel in spatial relationship to the inner surface thereof and said first apertured conductive webbing thereon; placing said panel in supportive means in a tilted manner to orient the panel opening and the panel inner surface in a slanted downward direction; immersing said panel and electrode into an electrophoretic bath in a manner that said bath makes contact with said conductive webbing and said electrode member, said bath including a suspension of particulate solids; initiating movement of said electrophoretic bath to maintain a uniformity of suspension and effect movement of said suspension relative to said conductive webbing and said electrode; applying an electrical potential between said conductive webbing and said electrode member for a time period to effect electrophoretic deposition of said particulate solids on said first apertured conductive webbing to provide a duo-webbing comprising a second apertured webbing contiguously superposed on said first webbing, the inner defining edge of each window encompassment of said second webbing being substantially contiguous with the glass surface of said viewing panel effects a reducing of the size of said first webbing apertures; removing said panel from said electrophoretic suspension; rinsing said panel; and drying said coated webbing preparatory to the subsequent screening of phosphor elements thereon.

3,898,147

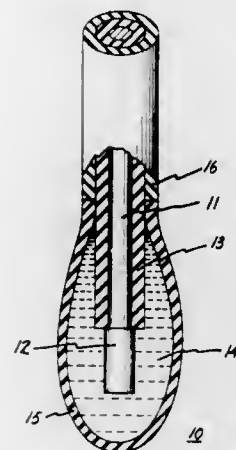
BICARBONATE ION ELECTRODE AND SENSOR
Leonard W. Niedrach, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 2, 1974, Ser. No. 493,864

Int. Cl. G01n 27/30, 27/46

U.S. Cl. 204—195 M

5 Claims



1. A bicarbonate ion electrode comprises a flexible, elongated electrode lead, an electrochemically active region showing electrochemical response to bicarbonate ion changes adhering tightly to and in electrical contact with one end portion of the electrode lead, electrical insulation surround the electrode lead, an electrolyte containing at least the bicarbonate ion to be detected and an ion which enters into electrochemical equilibrium with the active region of the lead contacting the electrochemically active region, and an outer sheath of a hydrogen ion permeable membrane encapsulating the electrochemically active region and the electrolyte, the hydrogen ion permeable membrane being a hydrophobic elastomer with a dielectric constant of from 4 to 13 and containing a hydrophobic and lipophilic H^+ ion carrier.

3,898,148

APPARATUS FOR MAKING ABRASIVE ARTICLES

Ahmad Sam, 462 Paramus Rd., Paramus, N.J. 07652

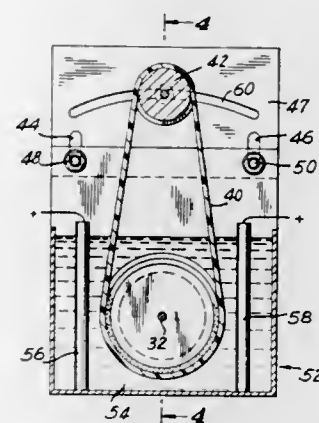
Division of Ser. No. 87,177, Nov. 5, 1970, Pat. No. 3,785,938.

This application Jan. 11, 1974, Ser. No. 432,602

Int. Cl. C23b 5/68

U.S. Cl. 204—217

14 Claims



1. An apparatus for the manufacture of an abrasive element, on base means, having a continuous area of metal bonded abrasive material plated or bonded to at least one surface thereof in an electrolytic solution of metallic ions comprising: a pair of non-conductive elements disposed on opposite sides of said base means so as to define a space or gap about said surface to be plated; an endless, inert belt means, encircling at least a portion of said pair of non-conductive elements and maintaining a zone or gap between said pair of non-conductive elements and said base means, for retaining therebetween in close proximity to said surface a concentration of abrasive particles; means rotating said base means at least

periodically so as to expose the surface of said base means to which abrasive material is to be bonded; and means for maintaining a current in said solution to effect the electro-deposition of said abrasive particles on to said surface at a predetermined rate.

3,898,149

ELECTROLYTIC DIAPHRAGM CELL

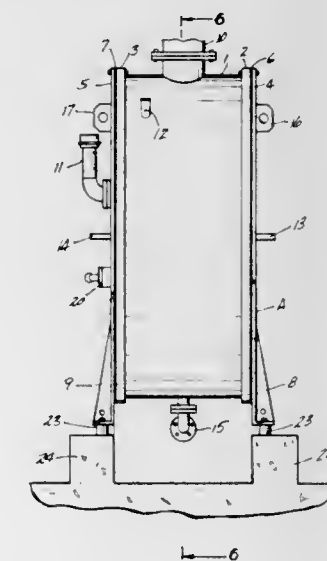
Morton S. Kircher, Oakville, Canada, and Elmer N. Macken, Stamford, Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Oct. 31, 1973, Ser. No. 411,327

Int. Cl. B01k 3/10

U.S. Cl. 204—252

16 Claims



1. An electrolytic diaphragm cell comprised of
a. a horizontal cell body having opposite and substantially parallel ends, having a first opening at one end of said cell body and a second opening at the opposite end of said cell body;
b. an electroconductive cathode plate sealingly attached to said cell body and covering said first opening, said cathode plate having at least one cathode attached to the inner surface of said cathode plate;
c. an electroconductive anode plate sealingly attached to said cell body and covering said second opening, said anode plate having at least one anode attached to the inner surface of said anode plate; and
d. said cathode plate and said anode plate providing the sole means of support for said cell body.

3,898,150

ELECTROFLOTATION APPARATUS

Charles E. Russell, Wayne, and Fred E. Russell, Elgin, both of Ill., assignors to Waste Water Systems, Inc., Hoffman Estates, Ill.

Filed Aug. 15, 1974, Ser. No. 497,739

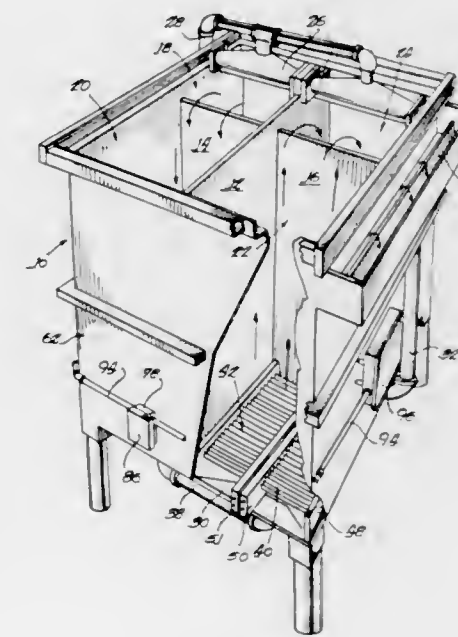
Int. Cl. C02b 1/82; B01k 3/04

U.S. Cl. 204—275

18 Claims

1. Electroflotation apparatus for purification of liquids, such as industrial waste water, comprising
a. a tank, or container, having a top end, a bottom end and side walls extending between said top and bottom ends, the top end of said tank being open,
b. influent means adjacent one end of said tank,
c. effluent means adjacent the other end of said tank,
d. control means for controlling the maximum liquid level in the tank,
e. two sets of elongate, substantially horizontal and parallel electrodes in said tank arranged to cover the entire cross-sectional area of the tank, with free passages for the liquid between the electrodes,
f. an electrically highly conductive bus bar interconnecting the electrodes in each of said sets of electrodes separately at one end of said electrodes,

g. an electrically highly conductive terminal member secured to each of said bus bars at adjacent ends thereof,
h. an electrically insulating elongate support member encapsulating said bus bars, adjacent end portions of the electrodes and the terminal members except the free end surfaces of the latter, and together with said electrodes forming a grid structure, said support member extending through a nozzle in the side wall of said tank to the outside thereof,



i. a junction box on the outside of said tank enclosing said nozzle and means connecting said terminal members to opposite poles of a source of electricity, and
j. foam removing means at the top end of said tank, whereby the liquid passing through said tank from said influent means to said effluent means is subjected to the action of electric current passing between said two sets of electrodes to cause a stream or cloud of gas bubbles to form and pass upwardly through the liquid to the free surface thereof while entraining suspended ingredients to form a mass of foam on the surface of the liquid to be removed therefrom by said foam removing means.

3,898,151

APPARATUS FOR ELECTROCOATING CONDUCTIVE ARTICLES INCLUDING MAGNET MEANS TO CONVEY THE ARTICLES

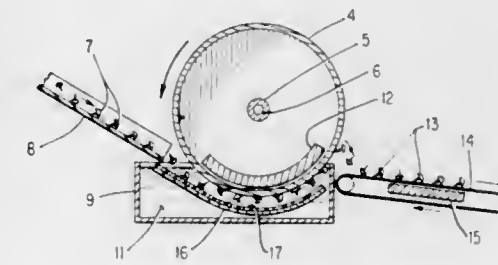
Joseph D. Nessar, Painesville, Ohio, assignor to Diamond Shamrock Corporation, Cleveland, Ohio

Filed June 18, 1973, Ser. No. 371,149

Int. Cl. B01k 5/02; C23b 13/00

U.S. Cl. 204—300

17 Claims



8. Apparatus constructed to provide electrically-induced, contemporaneous deposition of a coating from a liquid electrocoating bath upon a plurality of discrete, electrically-conductive and magnetically-attractable metallic articles, and being adapted for the electrocoating of said articles of non-smooth configuration, which apparatus comprises:

- A. a tank adapted to retain a bath of liquid electrocoating material;
- B. delivery means constructed for feeding a plurality of said metallic articles into the tank and thereby into submergence in a coating zone of liquid material;
- C. electrical means adapted to provide a flow of electrical energy through the coating zone of the bath and through electrically conductive articles located therein, resulting in coated metallic articles therein;
- D. magnet means spaced away from said electrical means, but being arranged in close proximity to the metallic articles, said magnet means having sufficient field strength to influence the locus of said articles in said portion of the zone; said magnet means cooperating with, E. rotatable means proximate to said magnet means; and having
- F. a non-magnetic, rotatable and continuous face element spaced apart from said magnet means and adapted to be in continuous exposure to said electrocoating composition, which face element cooperates with said magnet means and in rotation provides movement of wetted articles attracted into contact with said face element while said articles are under the influence of the magnetic field.

3,898,152

ELECTROSTATIC WET OIL TREATER

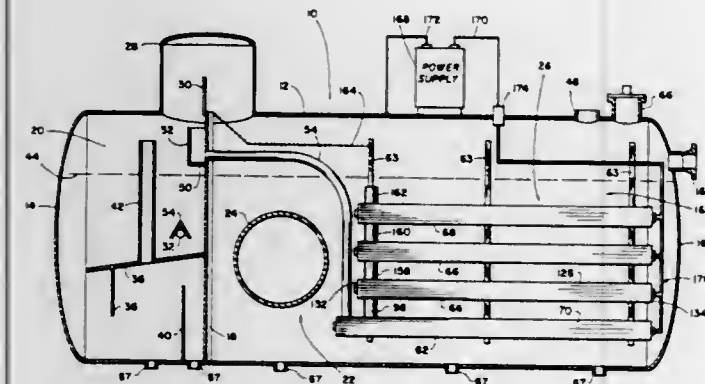
Robert A. Hodgson, Tulsa, Okla., assignor to Maloney-Crawford Tank Corporation, Tulsa, Okla.

Filed Nov. 5, 1973, Ser. No. 406,859

Int. Cl. B03c 5/02, 5/00

U.S. Cl. 204—308

16 Claims



1. An electrostatic wet oil treater apparatus for use in separating water from an oil-water emulsion, said apparatus comprising a container, oil wash tray means disposed within the container, said tray means comprising an upper plate and downwardly depending side walls to create a flow channel for said emulsion, oil-water emulsion inlet means disposed within the container means and operably connected to the tray means for flowing said oil-water emulsion into the tray means, electrode means carried by the tray means and insulated therefrom, said electrode means being disposed in said flow channel in contact with the oil-water emulsion flowing the said tray means, power means connected to the electrode means and the tray means for providing an electrostatic field through the oil water emulsion for separating the ionized water particles from the oil, oil level control means carried by the tray means for maintaining the oil and water interface in said flow channel below the electrode means, oil outlet means in communication with the tray means for removing the oil therefrom and water outlet means in communication with the tray means for removing the water therefrom.

3,898,153

CATALYTIC REFORMING PROCESS WITH SULFUR REMOVAL

Kenneth E. Louder, Wilmington, Del.; William A. Ackerman, and Irene F. Kress, both of Media, Pa., assignors to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Filed Nov. 23, 1973, Ser. No. 418,504

Int. Cl. C10g 25/00, 23/00, 31/14

U.S. Cl. 208—89

6 Claims

1. A process for catalytically reforming a naphtha feed stream containing sulfur and chloride compounds in the presence of hydrogen which comprises
- passing the feed and a hydrogen recycle through a chloride removal zone,
 - passing the chloride free feed and hydrogen recycle through a hydrodesulfurization zone wherein the sulfur is converted to H_2S and a packed bed of granular zinc oxide absorbent wherein the H_2S is adsorbed,
 - passing said desulfurized feed through a catalytic reforming zone under reforming conditions wherein reforming of naphthas and conversion of sulfur compounds to H_2S takes place,
 - withdrawing from step (c) a gaseous stream to be recycled to step (a), and
 - withdrawing a reformed naphtha product from step (c).

3,898,154

HYDROCARBON CONVERSION WITH A MULTIMETALLIC CATALYTIC COMPOSITE

Richard E. Rausch, Mundelino, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 376,841, July 5, 1973, Pat.

No. 3,846,283, which is a continuation-in-part of Ser. No.

201,576, Nov. 23, 1971, Pat. No. 3,745,112, which is a

continuation-in-part of Ser. No. 807,910, March 17, 1969, Pat.

No. 3,740,328. This application June 19, 1974, Ser. No.

480,793

Int. Cl. B01j 11/08; C10g 35/08

U.S. Cl. 208—139

16 Claims

1. A process for converting a hydrocarbon which comprises contacting the hydrocarbon at hydrocarbon conversion conditions with a catalytic composite comprising a porous carrier material containing, on an elemental basis, about 0.01 to about 2 wt. % platinum or palladium, about 0.01 to about 2 wt. % rhodium, about 0.01 to about 5 wt. % tin and about 0.1 to about 3.5 wt. % halogen, wherein the platinum or palladium, rhodium and tin are uniformly dispersed throughout the porous carrier material, wherein substantially all of the platinum or palladium and rhodium are present in the corresponding elemental metallic states and wherein substantially all of the tin is present in an oxidation state above that of the elemental metal and in a particle size which is less than 100 Angstroms in maximum dimension.

3,898,155

HEAVY OIL DEMETALLIZATION AND DESULFURIZATION PROCESS

Geoffrey R. Wilson, Pittsburgh, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Dec. 19, 1973, Ser. No. 426,363

Int. Cl. C10g 23/02

U.S. Cl. 208—216

6 Claims

1. A process which comprises contacting a heavy oil having at least 1.0 weight percent sulfur which also contains at least 50 ppm metals with hydrogen and with a catalyst composite at a hydrogen partial pressure in the range of 500 to 3,000 psig and at a temperature in the range of 600° to 900°F., said catalyst consisting essentially of a Group VI-B metal and at least one Group VIII metal composited with alumina, said catalyst having from 10 to 40 percent of the total pore volume in macropores having a pore diameter greater than 600 Å units, from 60 to 90 percent of the total pore volume being in micropores, at least 80 percent of the micropore volume being

in pores having a diameter of at least 100 Å units, the total pore volume of said catalyst being at least 0.5 milliliter per gram, the average pore diameter of said catalyst being greater than 100 Å units, and the surface area of said catalyst being at least 100 square meters per gram, the concentration of the Group VI metal being in the range from 5 to 40 weight percent of said catalyst composite and the concentration of each Group VIII metal being in the range of 0.1 to 15 weight percent of said catalyst composite, and recovering therefrom a demetallized and desulfurized heavy oil product.

3,898,156

HYPERBOLIC MAGNET POLES FOR SINK-FLOAT SEPARATORS

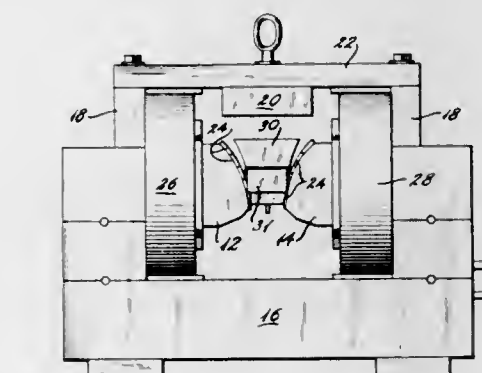
Robert Kaiser, Cambridge, and Leon Mir, Brookline, both of Mass., assignors to Avco Corporation, Cincinnati, Ohio

Filed Mar. 25, 1974, Ser. No. 454,373

Int. Cl. B03B 5/00

U.S. Cl. 209—1

8 Claims



1. In a ferrofluid separator having a magnet including a pair of spaced pole pieces defining an air gap containing a magnetic field and a pool of ferrofluid disposed in said air gap and magnetic field, the improvement comprising:
- pole pieces that are a mirror image of each other with respect to an axis, and each of said pole pieces is a segment of a hypobolic surface; and
- a mirror plate means disposed above and spaced from said pole pieces and air gap for creating a virtual image of said pole pieces.

3,898,157

TWO STAGE PRESSURE PULP SCREEN DEVICE WITH STATIONARY CYLINDRICAL SCREEN

Sydney William Henry Hooper, Sherbrooke, Canada, assignor to S. W. Hooper & Co., Ltd., Sherbrooke, Canada

Filed Mar. 19, 1974, Ser. No. 452,694

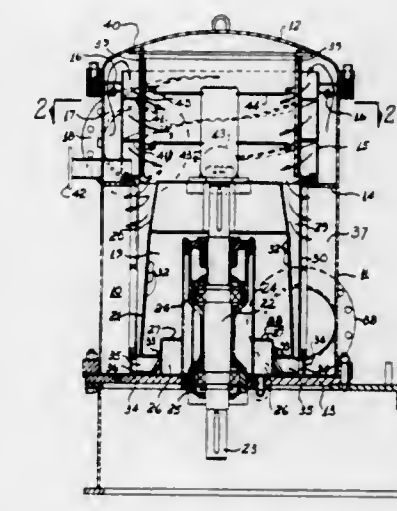
Claims priority, application United Kingdom, Mar. 23, 1973, 14196/73

Int. Cl. B07B 1/20

U.S. Cl. 209—306

10 Claims

1. A two stage pulp screening device including an upper pulp screening chamber and a lower pulp screening chamber, the upper pulp screening chamber having a first stationary cylindrical screen with at least one foil cleaning bar internally mounted for rotation about a vertical axis, the lower pulp screening chamber having a second stationary cylindrical screen below and in line with the first screen, a rotor internally mounted for rotation about said vertical axis, the improvement comprising a cylindrical inlet baffle surrounding the first screen and forming a first annular space between the inlet baffle and the first screen, at least one helical baffle mounted on the inlet baffle in the first annular space and extending about the first screen to feed pulp slurry in a helical path through the first annular space downwards to a lower portion of the first annular space, a further annular space surrounding the inlet baffle and in communication with a pulp slurry such that pulp slurry is fed into said further annular space, means for blocking off the first annular space and further annular



inlet baffle, whereby pulp slurry fed into the upper chamber is first received in the further annular space, where it rises up the outer side of the inlet baffle and spills over into the first annular space, and a reject discharge means positioned in the lower portion of the first annular space.

3,898,158

REVERSE OSMOSIS SEPARATOR UNIT

Edward F. Miller, 215 Lipan Way, Boulder, Colo. 80303

Continuation-in-part of Ser. No. 315,929, Dec. 18, 1972, Pat.

No. 3,839,201. This application Aug. 8, 1974, Ser. No.

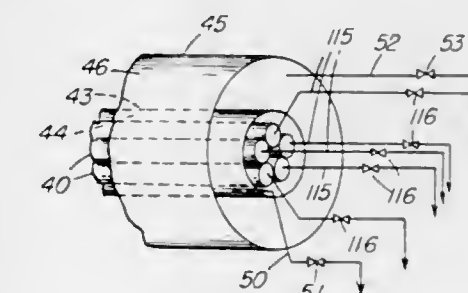
495,637. The portion of the term of this patent subsequent to

Oct. 1, 1991, has been disclaimed.

Int. Cl. B01d 13/00

U.S. Cl. 210—22

29 Claims



1. Process for removing inorganic salts from an aqueous solution (1) containing the same, comprising
- forcing the solution (1), under pressure, through a first of a plurality of reverse osmosis stages, each stage including at least one tubular-shaped semi-permeable membrane, and at least one stage including a generally annularly arranged membrane, a charge inlet being connected to said first stage and an outlet being connected to each stage thereof, each outlet including a "back" pressure controlling outlet valve and obtaining in a second stage adjacent said first stage an aqueous solution (2) of lesser salt content than of said solution (1) and
 - forcing said solution (2) under "back" pressure from said second stage through at least one semi-permeable membrane and obtaining in a subsequent annular stage adjacent said second stage an aqueous solution (3) of less salt content than solution (2), said "back" pressure being determined by the throttling effect provided by the settings of said "back" pressure controlling outlet valves,
 - and maintaining the "back" pressure in said first and subsequent stages substantially above the respective osmotic pressures in their respective following stages to permit passage of said solution (1) through said at least

one membrane of said first reverse osmosis stage, passage of said solution (2) through said second reverse osmosis stage, and passage of respective solutions through subsequent reverse osmosis stages without interstage repressurization with a pump.

3,898,159

METHOD FOR REMOVING ANIONIC SURFACE ACTIVE COMPONENT FROM DRAINAGE

Akio Okabe, Tokyo, and Tokio Ishii, Sakura, both of Japan, assignors to Lion Fat and Oil Co., Ltd., Tokyo, Japan
Continuation-in-part of Ser. No. 486,808, July 9, 1974, abandoned, which is a continuation-in-part of Ser. No. 412,615, Nov. 5, 1973, abandoned, which is a continuation of Ser. No. 193,978, Oct. 29, 1971, abandoned. This application Sept. 4, 1974, Ser. No. 502,912

Claims priority, application Japan, Oct. 30, 1971, 46-95671; Germany, Oct. 29, 1971, 2154105

Int. Cl. B01d 21/01

U.S. Cl. 210-44

5 Claims

1. A method for removing an anionic surface active component from a waste stream, which comprises:

admixing a polyvalent metal ion selected from the group consisting of Ca^{++} , Mg^{++} , Ba^{++} , Zn^{++} , Fe^{++} , Al^{+++} , and Fe^{+++} with a waste stream substantially free of phosphate ion in amounts of 0.5 - 10 mole equivalent of said polyvalent metal ion per mole of anionic surface active component in said waste stream and adjusting the pH of said waste stream between 4.0 to 5.5 so as to form water insoluble or difficultly soluble polyvalent salts of said anionic surface active components, injecting air into the mixture to cause foaming thereof, whereby said salts are absorbed into the foam and thereafter separating said foam.

3,898,160

RECOVERING PROTEINS FROM WASTE WATER

John W. Finley, Martinez, Calif., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Continuation-in-part of Ser. No. 275,008, July 25, 1972, abandoned. This application Nov. 20, 1973, Ser. No. 417,696

Int. Cl. C02b 1/20

U.S. Cl. 210-45

6 Claims

1. A method for removing proteins, starch, and other materials from proteinaceous waste water, thereby producing both an effluent capable of disposal into municipal waste treatment systems or waterways and a solid ferric-protein-phosphate complex, said complex being susceptible to facile recovery of the valuable proteins contained therein, which comprises:

- adding to the proteinaceous waste water an alkali metal salt of a molecularly-dehydrated phosphate until the concentration thereof is 0.0001 M to 0.1 M and a source of ferric ions until the concentration thereof is 0.001 M to 0.1 M,
- precipitating a ferric-protein-phosphate complex and avoiding precipitation of a protein-phosphate complex by raising the pH of the so-treated waste to a pH of 7.0, and
- separating the effluent from the said ferric-protein-phosphate complex precipitate.

3,898,161

WASTE DISPOSAL SYSTEM

James S. Reid, Summit, Ohio, assignor to The Standard Products Company, Cleveland, Ohio

Filed Sept. 13, 1973, Ser. No. 396,839

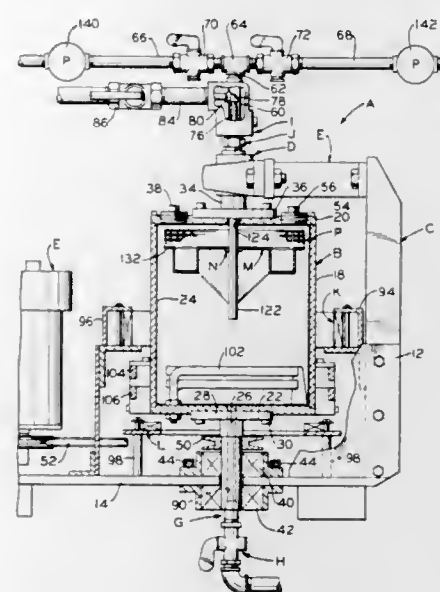
Int. Cl. B01D 43/00, 15/00

U.S. Cl. 210-152

3 Claims

1. An apparatus for disposing of liquid and organic waste material comprising: a substantially cylindrical vaporizing chamber having its longitudinal axis extending vertically; substantially circular top and bottom covers attached to said

vaporizing chamber; tubular flush outlet means attached to said bottom cover and extending therethrough along the longitudinal axis of said vaporizing chamber; tubular inlet means attached to said top cover and extending therethrough along the longitudinal axis of said vaporizing chamber; tubular vapor outlet means within said tubular inlet means said tubular vapor outlet means having an outside diameter substantially smaller than the inside diameter of said tubular inlet means, said tubular vapor outlet means extending into said vaporizing chamber further than said tubular inlet means extends into said vaporizing chamber; a circular plate member within said vaporizing chamber attached to the outside surface of said tubular vapor outlet means, said vapor outlet means passing through the center of said circular plate, said circular plate



3,898,162

SEPTIC TANKS

Andrew L. Carlson, and John R. Pinezich, both of Northport, N.Y., assignors to Andrew Carlson & Sons, Inc., Kings Park, N.Y.

Continuation of Ser. No. 389,871, Aug. 20, 1973, abandoned.

This application Aug. 9, 1974, Ser. No. 496,117

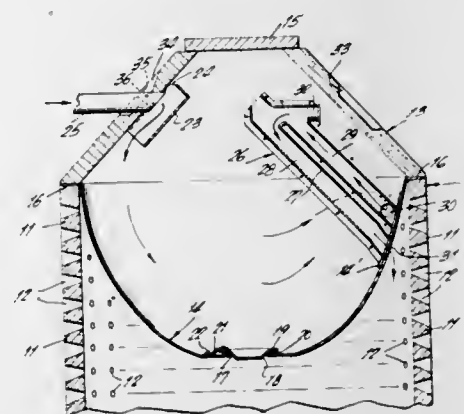
Int. Cl. C02c 1/14

U.S. Cl. 210-170

9 Claims

3. A sewage disposal system comprising a leaching pool having a wall with effluent slots, a frusto-conical dome atop said wall and forming the top and sides of a concavo-convex bowl-shaped septic tank disposed below the level of the top of the leaching pool wall and having a peripheral flange disposed between and held by the leaching pool wall top and the dome for supporting said septic tank in the upper part of the leaching pool with its side wall curved inwardly from the pool space said septic tank extending only part way down into the leaching pool and being provided with an inspection opening in its

bottom for giving access to the interior of the leaching pool and a dished covered displaceably fitting into said opening and having a flange larger than the opening resting on a gasket secured around the opening, said inspection opening being



held closed and sealed by the weight of sewage in the tank and a baffled inlet in one side of said dome and a tubular outlet partly within the dome and partly within the septic tank for discharge of treated sewage into the outlet pool between the tank and pool wall near the upper end of the pool wall.

3,898,163

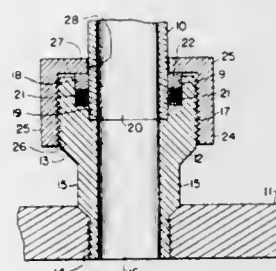
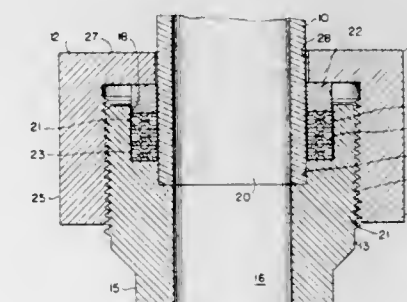
TUBE SEAL JOINT AND METHOD THEREFOR
Lambert H. Mott, c/o Mott Metallurgical Corporation, P.O. Drawer "L", Farmington Industrial Park, Farmington, Conn. 06032

Filed Feb. 11, 1974, Ser. No. 441,127

Int. Cl. B01D 23/00, 35/00; B21D 39/00; B23P 11/00

U.S. Cl. 210-246

2 Claims



1. A porous metal tube having a porous metal wall of a given thickness and a fitting sealed thereto comprising, in combination, a fitting body containing a through passage having at least an upper portion to receive said porous tube therein, containing a cylindrical cavity counterbored in said upper portion of said through passage, and having a threaded portion, at least two pairs of annular seals disposed about said tube, said annular seals each having an annular corrugation, alternate seals being inverted with pairs of seals contacting each other corrugation to corrugation, said seals being disposed in said cavity fitting with slight clearance about said tube and within said cavity, an annular spacer disposed about said tube within said cavity above said seals, and a nut having threads engaging said threaded portion of said fitting body, said nut extending over said cavity and containing an opening through which said tube passes, said seals having thicknesses

the sum of which is greater than the thickness of said wall of said porous tube, said nut turning to force said spacer against said seals flattening said seals and radially expanding said seals inward and outward against said tube and said cavity.

2. The method of sealing a tube having a porous metal wall in a fitting comprising the steps of:

- inserting the tube in a counterbore in the fitting leaving a clearance about the tube within the counterbore;
- providing at least two pairs of annular seals with annular corrugations;
- placing the annular seals about the tube within the clearance with alternate seals inverted so that pairs of seals are disposed corrugation to corrugation and so that the sum of the thicknesses of the seals is greater than the wall thickness of the tube; and
- turning a nut downward about the fitting compressing the seals within the clearance to flatten the annular corrugations of the seals and expand the seals radially inward and outward jamming the seals between the tube and the fitting sealing the tube within the fitting.

3,898,164

PERFORATED TUBE MODULE FOR LIQUID TREATMENT

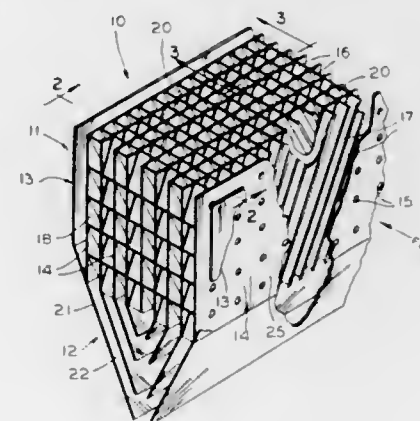
Andrew K. Hsiung, Corvallis, Oreg., assignor to Neptune Microfloc, Incorporated, Corvallis, Oreg.

Filed June 24, 1974, Ser. No. 482,107

Int. Cl. B01D 21/00

U.S. Cl. 210-521

7 Claims



1. Apparatus for effecting separation of settleable particles from a liquid, comprising container means having an upper part with inlet and outlet means therein;

a bottom part in said container means, said bottom part having sludge withdrawal means therein;

flow distributing and clarifying means comprising a first set of spaced apart generally parallel, vertical sheets mounted in said upper part of said container means, said sheets being of a material selected from the class consisting of rigid and semi-rigid materials, said sheets having a plurality of perforations therein, said sheets forming a first set of vertical channels therebetween,

said inlet means in said container means being adapted to distribute an influent flow of liquid so that it impinges on a first one of said sheets of said first set of sheets and thereafter

flows in a direction perpendicular to said first sheet through said perforations therein and passes into the first one of said first set of vertical channels and thence through the perforations in the others of said sheets sequentially to the last one of said first set of vertical channels,

said outlet means in said container means being positioned downstream of said last one of said first set of vertical channels, whereby settleable particles of material in said influent flow of liquid can settle out of said liquid as said liquid passes through said first set of sheets and out said outlet means;

sludge thickening and flow baffling means comprising a second set of spaced apart imperforate sheets mounted in said container means beneath said first set of sheets, said imperforate sheets being of a material selected from the class consisting of rigid and semi-rigid materials, the upper ends of said imperforate sheets abutting the lower ends of said first perforated sheets to form substantial continuations thereof, said second set of sheets being inclined to the vertical, whereby said sheets form a second set of inclined channels therebetween, each channel in said second set of channels forming a substantial continuation of a respective channel in said first set of channels, said second set of channels terminating in a chamber in said bottom part of said container means, said sludge withdrawal means being positioned in said chamber, whereby said settleable particles of material in said influent flow of liquid which settle out of said liquid passing through said first set slide down said imperforate sheets in said second set and collect in said chamber for withdrawal by said withdrawal means.

3,898,165

COMPOSITIONS FOR FRACTURING HIGH TEMPERATURE WELL FORMATIONS

John W. Ely; Jiten Chatterji; Marlin D. Holtmyer, and John M. Tinsley, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Division of Ser. No. 245,278, April 18, 1972, Pat. No. 3,768,566, which is a continuation-in-part of Ser. No. 90,301, Nov. 17, 1970, abandoned. This application June 11, 1973, Ser. No. 368,777

Int. Cl.² E21B 43/26; C08L 1/26, 5/00

U.S. Cl. 252—8.55 R 15 Claims

1. An aqueous fluid having a pH of less than about 7 and having improved resistance to viscosity degradation at temperatures of up to about 400°F, said fluid consisting essentially of:

water,
a retarded gelling agent present in said fluid in the range of from about 10 to about 300 pounds per 1,000 gallons of said water, and

a base present in said fluid in the range of from about 5 to about 50 pounds per 1,000 gallons of said water; wherein said retarded gelling agent is the product of the reaction of between about 0.05 to about 100 parts by weight of a hereinafter described compound and about 100 parts by weight of a hydratable polysaccharide having a molecular weight of at least about 100,000 selected from the group consisting of gums, cellulose ethers and mixtures thereof, said compound being selected from the group consisting of 2-hydroxyadipaldehyde, dimethylol urea, water soluble urea formaldehyde resins, water soluble melamine formaldehyde resins, dialdehydes having the general formula:



wherein x is an integer having a value in the range of 0 to about 3, and mixtures thereof; and

said base is any water soluble chemical having a pH greater than 7 which is encapsulated in a material selected from the group consisting of waxes, hydratable methylcellulose, and mixtures thereof which is insoluble in said aqueous fluid and which has a melting point in the range of about 150° to about 300°F.

3,898,166

ORGANIC ANTISTATIC COMPOSITION

William J. Cooney, Hixson, Hamilton, Tenn., assignor to GAF Corporation, New York, N.Y.

Filed Jan. 16, 1973, Ser. No. 324,141

Int. Cl. D06m 13/38

U.S. Cl. 252—8.75 16 Claims

1. An antistatic coating composition comprising an aqueous liquid fluid medium having a pH in the range of from about 7

to 13 containing as essential active material a member selected from the group consisting of

a. one part by weight of an alkoxylated tertiary amine having the formula

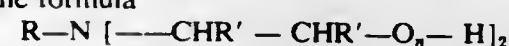


wherein R represents an aliphatic hydrocarbon radical of from about eight to 22 carbon atoms, R' represents a member of the group consisting of hydrogen and methyl and n represents an average integer of from 1 to 51; a quaternary ammonium compound; a phosphate ester; alkali metal salts of C₆₋₂₄ sulfated alcohols and sulfonated C₁₋₆ esters of carboxylic acids; and

b. from 1 to 5 parts by weight of a humectant selected from the group consisting of anionic and nonionic humectants, and when said humectant is a nonionic humectant, a strong electrolyte, said electrolyte being neutral salt of a strong base and a strong acid.

15. A process for the preparation of an antistatic coating composition comprising an aqueous liquid fluid medium having a pH in the range of from about 7 to 13 and containing as essential active material a member selected from the group consisting of

a. one part by weight of an alkoxylated tertiary amine having the formula



wherein R represents an aliphatic hydrocarbon radical of from about eight to 22 carbon atoms, R' represents a member of the group consisting of hydrogen and methyl and n represents an average integer of from 1 to 51; a quaternary ammonium compound; a phosphate ester; alkali metal salts of C₆₋₂₄ sulfated alcohols and sulfonated C₁₋₆ esters of carboxylic acids; and

b. from 1 to 5 parts by weight of a humectant selected from the group consisting of anionic and nonionic humectants, and when said humectant is a nonionic humectant, a strong electrolyte, said electrolyte being a neutral salt of a strong base and a strong acid, comprising adding substantially equimolar amounts of an alkali metal base and an aliphatic carboxylic acid having from one to four carbon atoms to water to thereby produce the humectant in situ, adding thereto the active material and thoroughly mixing the same to obtain a uniform composition, and adding to the mixture a neutralizing base in such amount as to adjust the pH of such mixture within the range of 7-13.

3,898,167

FLUID LOSS ADDITIVE FOR ACIDIZING LIQUID

Curtis W. Crowe, Tulsa, Okla., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 249,085, May 1, 1972, Pat. No. 3,827,498, which is a continuation-in-part of Ser. No. 177,680, Sept. 3, 1971, abandoned. This application Sept. 20, 1973, Ser. No. 399,215

Int. Cl. E21b 43/27

U.S. Cl. 252—8.55 C 1 Claim

1. An improved acidizing liquid which comprises:

a. an aqueous acidizing liquid; and
b. mixed in said acidizing liquid a heterogeneous mixture of distinct particles consisting essentially of friable particles consisting essentially of an oil soluble, acid insoluble, resin and pliable particles consisting essentially of oil soluble, acid insoluble, resin, said friable particles ranging in size from about 0.5 to about 300 microns, said pliable particles ranging in size from about 0.05 to about 30 microns said friable and pliable particles present in a weight proportion to each other ranging from about 1:20 to about 20:1 and said particles being present in said composition in an amount of at least one half pound per 1000 gallons of said composition and said composition being substantially free of hydrocarbon liquids in which said friable and pliable particles are soluble.

3,898,168

PREVENTION OF MAGNESIUM CARBONATE PRECIPITATION BY WATER FROM CRANKCASE OIL CONTAINING HIGH BASE MAGNESIUM SULFONATE

Allen Erwin Brehm, Griffith, Ind., assignor to Standard Oil Company, Chicago, Ill.

Filed July 21, 1972, Ser. No. 273,686

Int. Cl. C10m 1/48

U.S. Cl. 252—32.7 E

5 Claims

1. A lubricant oil composition which prevents precipitation of magnesium carbonate from lubricant oil formulations contaminated with at least 1 to 2 weight percent water, which composition comprises (A) the essential addition agents (1) from 0.5 to 5 weight percent ashless-type dispersant, (2) from 0.07 to 3.2 weight percent zinc dialkyldithiophosphate, wherein the alkyl groups contain three to 10 carbon atoms, (3) from 0.75 to 7.5 weight percent of high base magnesium sulfonate of total base number above 300, and (4) 0.05 to 0.5 weight percent of an alkylphenoxy polyethoxy ethanol wherein said alkyl group has 6-50 carbon atoms and the polyethoxy group has 3-12 ethoxy groups; and (B) lubricant base oil in an amount with said additions to make 100 weight percent of the lubricant oil composition.

3,898,169

METHOD FOR IMPROVING LUBRICATING OILS AND THE IMPROVED LUBRICATING OIL

Norbert Kretzinger; Horst Kutzer, and Ludwig Schmidhammer, all of Burghausen, Germany, assignors to Wacker-Chemie GmbH, Munich, Germany

Filed May 25, 1973, Ser. No. 363,993

Claims priority, application Germany, May 31, 1972, 2226667

Int. Cl.² C10M 3/02

U.S. Cl. 252—49.6

5 Claims

1. A method for improving lubricating oils consisting of the steps of treating a lubricating oil with a monomer selected from the group consisting of vinyl chloride and mixtures of vinyl chloride with up to 30 percent by weight of another vinyl monomer selected from the group consisting of vinyl acetate and vinylidene chloride at a pressure of from 1 to 16 atmospheres gauge pressure and a temperature of from 10°C to 150°C in the presence of an oilsoluble free-radical-former for a time sufficient to obtain a polymer content produced in situ of from 0.5 to 3 percent by weight based on the amount of the lubricating oil, and removing unreacted material.

3,898,170

ELECTROGRAPHIC CARRIER VEHICLE AND DEVELOPER COMPOSITION

George P. Kasper, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 236,584, March 21, 1972, abandoned.

This application Aug. 20, 1973, Ser. No. 389,840

Int. Cl. C03g 9/00

U.S. Cl. 252—62.1 L

10 Claims

1. In an electrographic developing composition for use in developing electrostatic charge patterns and comprising a physical mixture of magnetically attractable carrier particles and electroscopic toner particles, the improvement wherein said carrier particles comprise cores of magnetically-attractable material having thereon a resinous coating comprising

a. a polymer comprising a metal ion-linked carboxylic acid α -olefin copolymer, said α -olefin having the formula $\text{RCH}=\text{CH}_2$, where R is a radical selected from the group consisting of hydrogen and alkyl radicals having from 1-8 carbon atoms, said carboxylic acid is selected from the group consisting of α,β -ethylenically unsaturated carboxylic acids having from 3 to about 8 carbon atoms said copolymers having from 10 to about 90 percent of the carboxylic acid groups ionized with metal ions and

b. finely-divided electrically conductive particles having a specific resistance less than 10 ohm-cm incorporated in said coating.

3,898,171

ELECTROSCOPIC POWDER WITH SHARP MELTING POINT CONTAINING SUCROSE BENZOATE AND A THERMOPLASTIC RESIN

Virgil W. Westdale, Chagrin Falls, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio

Filed Dec. 3, 1973, Ser. No. 421,456

Int. Cl.² G03g 9/00

U.S. Cl. 252—62.1 P

5 Claims

1. An electroscopic powder for developing electrostatic images having a sharp melting point range comprising a blend of sucrose benzoate in the range of from 40 to 80% and a thermoplastic resin selected from the group consisting of polyamides, polyacrylates and polyurethanes in the range of from 10 to 40% by weight.

3,898,172

IRREVERSIBLE HUMIDITY INDICATOR

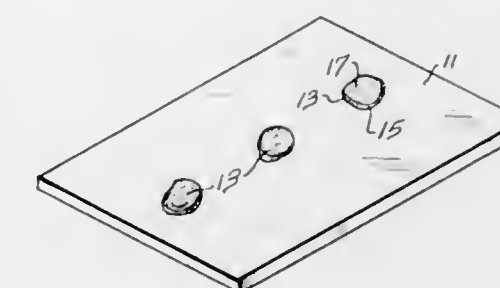
Robert B. Reif, Grove City, and Philip F. Kurz, Columbus, both of Ohio, assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed May 3, 1973, Ser. No. 356,863

Int. Cl.² G01W 1/00; C09K 3/00; G01N 31/00, 33/00

U.S. Cl. 252—408

9 Claims



1. In a humidity indicator consisting essentially of a combination of a water-soluble dye and a deliquescent salt disposed on a moisture-imperious, fused substrate the improvement wherein said deliquescent salt, being in dried state, is adherently disposed directly on said fused substrate, and said water-soluble dye, characterized by exhibiting a recognizable color development on dissolution, is distributed as fine dry dye particles directly on outwardly facing surfaces of said dried salt to provide an irreversible color change on exposure to relative humidity levels of between about 6 and 20% at ambient temperatures at which said salt deliquesces.

3,898,173

FOUR-STEP PROCEDURE FOR REGENERATING A CARBON-CONTAINING DEACTIVATED BIMETALLIC ACIDIC CATALYST

John C. Hayes, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 175,342, Aug. 26, 1971, Pat.

No. 3,785,996, and a continuation-in-part of Ser. No. 179,156,

Sept. 9, 1971, Pat. No. 3,773,686, which is a

continuation-in-part of Ser. No. 797,272, Feb. 6, 1969, Pat.

No. 3,634,292. This application Oct. 2, 1973, Ser. No.

402,872The portion of the term of this patent subsequent to

Jan. 15, 1991, has been disclaimed.

Int. Cl. B01j 11/18; C10g 35/06

U.S. Cl. 252—415

19 Claims

1. A method for regenerating a deactivated hydrocarbon conversion catalyst combination of about 0.01 to about 2 wt. % of a platinum group component, about 0.01 to about 5 wt. % of a Group IVA metallic component and about 0.1 to about

10 wt. % of a halogen component with a porous refractory inorganic oxide carrier material, the catalyst having been deactivated by deposition of carbonaceous materials thereon during a previous contacting with a hydrocarbon charge stock at an elevated temperature, said method comprising the steps of:

- contacting the deactivated catalyst with a substantially sulfur compound-free gaseous mixture consisting essentially of about 0.2 to about 3 mole % O_2 , about 0.02 to about 25 mole % H_2O and an inert gas at combustion conditions, including a pressure sufficient to maintain flow of said mixture through the catalyst and a temperature of about 350° to about 500°C., for a first period sufficient to substantially remove said carbonaceous materials;
 - subjecting the catalyst resulting from step (a) to contact with a substantially sulfur compound-free gaseous mixture consisting essentially of about 4 to about 25 mole % O_2 , about 1 to about 30 mole % H_2O , about 0.05 to about 5 mole % of halogen-containing compound and an inert gas at halogen treating conditions, including a temperature in the range of from about 500°C. to about 550°C. and at least about 25°C. higher than that utilized in step (a) and a pressure sufficient to maintain flow of said mixture through the catalyst, for a second period of at least about 0.5 to about 10 hours, the mole ratio of H_2O to halogen in the last-named gaseous mixture being in the range of about 2:1 to 100:1;
 - purging oxygen and water from contact with the catalyst resulting from step (b) with a gas stream; and
 - subjecting the catalyst resulting from step (c) to contact with a substantially water-free and sulfur compound-free hydrogen stream at reduction conditions, including a temperature of about 400° to about 600°C. and a pressure sufficient to maintain flow of the hydrogen stream through the catalyst, for a final period of at least about 0.5 to about 5 hours, thereby producing a regenerated hydrocarbon conversion catalyst.
16. A method as defined in claim 1 having the additional step of sulfiding the catalyst resulting from step (d) by contacting same at a temperature of about 20° to 550° C. with a sulfide-producing compound in an amount sufficient to result in a regenerated catalyst containing about 0.01 to about 0.5 wt. % sulfur.

3,898,174

CERIUM-ACTIVATED CALCIUM SULFIDE PHOSPHOR WHICH IS SENSITIZED TO RESPOND BOTH TO SHORT WAVELENGTH AND LONG WAVELENGTH ULTRAVIOLET EXCITATION

Willi Lehmann, Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 27, 1973, Ser. No. 391,918

Int. Cl.² C09K 11/12, 11/14, 11/18, 11/24, 11/34, 11/46

U.S. Cl. 252—301.4 S

2 Claims

1. A phosphor composition which is responsive both to short wavelength and long wavelength ultraviolet excitation to produce visible radiations, said phosphor composition having a calcium sulfide matrix and activated by trivalent cerium in amount of from about 10^{-5} to 10^{-2} gram-atom per gram-mole of said phosphor matrix, and said phosphor is both sensitized and coactivated by one of the combination of:

- cuprous copper sensitizer in amount of from about 10^{-5} gram-atom to 5×10^{-3} gram-atom per gram-mole of said sulfide matrix plus fluorine as coactivator,
- stannous tin sensitizer in amount of from about 10^{-5} to 10^{-1} gram-atom per gram-mole of said sulfide matrix plus at least one of fluorine and chlorine as coactivator, and
- plumbous lead sensitizer in amount of from about 10^{-6} to 10^{-2} gram-atom per gram-mole of said sulfide matrix plus at least one of chlorine and bromine as coactivator, said coactivator is present in gram-atom amount at least equal to the total gram-atoms of said cerium activator

plus said sensitizer in said phosphor, and said coactivator having been included in the raw mix used to prepare said phosphor as a salt free from any alkali metal.

3,898,175

CATALYTIC SYSTEMS USEFUL FOR THE BULK OR SOLUTION POLYMERIZATION OF ETHYLENICALLY UNSATURATED MONOMERS

Luigi Patron; Alberto Moretti, both of Venezia; Raffaele Tedesco, and Gilberto Brocca, both of Mestre, all of Italy, assignors to Montedison Fibre S.p.A., Milan, Italy

Filed May 22, 1973, Ser. No. 362,665

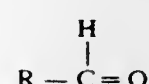
Claims priority, application Italy, May 23, 1972, 24700/72

Int. Cl. C08f 3/76

U.S. Cl. 252—428

3 Claims

1. Catalytic systems useful in the bulk or solution polymerization of ethylenically unsaturated monomers at any temperature from +70°C to -20°C, and consisting of hydrogen peroxide, sulphur dioxide, and an aldehyde having the general formula



in which R is hydrogen or an alkyl radical containing from 1 to 5 carbon atoms, the sulphur dioxide/hydrogen peroxide molar ratio being from 1:15 to 15:1 and the aldehyde/hydrogen peroxide molar ratio being from 0.5 to 15.

3,898,176

PROCESS FOR PREPARING MECHANICALLY RESISTANT CATALYSTS

Ludwig Schmidhammer, and Siegfried Nitzsche, both of Burg-hausen, Germany, assignors to Wacker-Chemie GmbH, Munich, Germany

Filed Aug. 7, 1973, Ser. No. 386,466

Claims priority, application Germany, Aug. 8, 1972, 2239051

Int. Cl.² B01J 31/26

U.S. Cl. 252—428

4 Claims

1. A process for making a mechanically resistant catalyst supported upon a high surface area inert carrier which consists in mixing the catalytically effective component, particles of said carrier, and a heat hardenable hydroxyhydrocarbyl-polysiloxane which does not impair the catalytic effectiveness of said catalytically active component, in an amount of 0.1 to 10% by weight, calculated on the catalyst component plus carrier, shaping the mixture into a catalyst body, and subsequently hardening the same by heating to 70° to 300°C.

3,898,177

CATALYSTS FOR THE PRODUCTION OF PYRIDINE AND 3-METHYLPYRIDINE

Helmut Beschke; Hans Schaefer; Gerd Schreyer, all of Grossauheim; Wilhelm Alfons Schuler, near Homburg, and Wolfgang Weigert, Offenbach, all of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Germany

Filed Oct. 10, 1972, Ser. No. 296,135

Claims priority, application Germany, Oct. 15, 1971, 2151417

Int. Cl. B01j 21/02, 27/12

U.S. Cl. 252—432

12 Claims

1. A catalyst suitable for the reaction of acrolein with ammonia to form pyridine and 3-methyl pyridine, said catalyst consisting essentially of oxygen containing compounds of Al, F, at least one of the elements B and Si and at least one element from the second and fourth groups of the periodic system selected from the group consisting of Mg, Ba, Zn, Sn and Zr, said catalyst having been prepared by heating in the presence of oxygen at a temperature of 600° to 800°C.;

3,898,180

CATALYST PELLET

Donald Anderson Crooks, and David George King, both of Stockton-on-Tees, England, assignors to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 58,579, July 27, 1970, abandoned.

This application June 25, 1973, Ser. No. 373,280

Claims priority, application United Kingdom, July 23, 1970, 38720/70

Int. Cl. B01j 11/06

U.S. Cl. 252—449

6 Claims

1. A shaped catalyst pellet in the form of a cylinder having at least one indentation or protrusion formed on at least one of its end surfaces, said catalyst pellet being made from materials selected from the group consisting of oxides of Group II to Group VIII metals, metals from Group IB and Group VIII of the Periodic Table, hydraulic cements, silica and alumina, said pellet being one in which the ratio

$$\left(\frac{L_F - L_I}{D} \right)$$

is greater than 0.25 and L_I is between 0.05 D and 0.6 D, where L_F is the overall height of the pellet measured from its extremities, L_I is the length of solid-filled volume over which the cross-sectional area perpendicular to the axis is $\frac{1}{4}\pi D^2$ and the diameter is D, the ratio L_F/D being between 2.0 and 0.5 to 1 and D having a value of 1.5 to 10 mm.

3,898,178

CATALYST FOR HYDROCARBON CONVERSION

Pierre Duhaut, Vesinet, and Jean Miquel, Paris, both of France, assignors to Societe Francaise des Produits pour Catalyse, Rueil-Malmaison, France

Filed Dec. 13, 1972, Ser. No. 314,586

Claims priority, application France, Dec. 15, 1971, 71.45196

Int. Cl. B01j 11/78

U.S. Cl. 252—441

13 Claims

1. A catalyst consisting essentially of (a) an alumina carrier (b) from 0.005 to 1 % of platinum, (c) from 0.005 to 1 % of iridium and (d) from 0.005 to 5 % of at least one metal selected from the group consisting of uranium and vanadium, the percentages being by weight with respect to the carrier.

3. A catalyst according to claim 1, further containing from 0.1 to 10% by weight, with respect to the carrier, of a halogen in the form of a metal halide of component (a), (b), (c) or (d) or mixtures thereof.

3,898,179

COBALT-AND SULFUR-CONTAINING OLEFIN ISOMERIZATION PROCESS CATALYST

Dalia Germanas, Des Plaines, and Ernest L. Pollitzer, Skokie, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Oct. 17, 1973, Ser. No. 407,125

Int. Cl. B01j 11/74

U.S. Cl. 252—439

5 Claims

1. A catalyst composite of a sulfur component and from about 5 to about 80 weight percent of a cobalt component with a porous carrier material, said catalyst containing less than about 1 mole and more than about 0.55 mole of said sulfur component per mole of said cobalt component, calculated as the elemental metal, said catalyst having been prepared by the steps of:

- forming an initial composite of said cobalt component and said carrier material, said cobalt component being present in the initial composite as the elemental metal or the oxide;
- sulfiding said initial composite by contacting same with a sulfide-yielding compound at sulfiding conditions to provide a sulfided composite containing at least about 1 mole of sulfur per mole of said cobalt component in the sulfided composite; and
- stripping sulfur from the resulting sulfided composite with a hydrogen-containing gas at stripping conditions, sufficient sulfur being stripped from said sulfided composite to provide a sulfur content in said catalyst of less than about 1 mole and more than about 0.55 mole of sulfur per mole of said cobalt component in the catalyst.

3,898,182

CATALYST TREATMENT

Alistair Chalmers Ramsay Brown; Norman Andrew Dykes; John Kenneth January, and Ivan James Samuel Lake, all of Stockton-on-Tees, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Apr. 2, 1973, Ser. No. 346,859

Int. Cl. B01j 11/40

U.S. Cl. 252—455 R

10 Claims

1. A process for treating a catalyst comprising silica which is susceptible to damage during exposure to an aqueous liquid which comprises exposing the catalyst to steam at less than its saturated vapour pressure and then contacting the catalyst with the aqueous liquid and drying the catalyst after exposure to the aqueous liquid.

3,898,183

CATALYTIC OXIDATION COMPOUNDS OF COMBUSTIBLE GASEOUS RESIDUES

Andre Sugier; Michel Prigent, both of Rueil-Malmaison, and Georges Berrebi, Christol-Lez-Ales, all of France, assignors to Societe Pro-Catalyst, Rueil-Malmaison, France
Filed Oct. 30, 1973, Ser. No. 411,036

Claims priority, application France, Oct. 30, 1972, 72.38392

Int. Cl.² B01J 23/10

U.S. Cl. 252-462

6 Claims

1. Catalytic oxidation compounds for gaseous residues comprising physical mixtures of at least two particulate catalysts, at least one of which is formed of an alumina or aluminous support having a specific surface of at least 40 m²/gram and of a catalytically active portion formed of one or more of the metals of the platinum group and at least another of which is formed of an alumina or aluminous support having a specific surface no greater than 20 m²/gram and a catalytically active portion of one or more oxides of a metal selected from the group consisting of zinc, chromium, iron, manganese, copper, cobalt, nickel and rare earth metals.

3,898,184

METHOD FOR THE PRODUCTION OF EXHAUST OR WASTE GASES PURIFYING CATALYSTS

Haruichi Hara; Shokichi Ichihara; Koichi Saito; Tomohisa Ohata; Koshi Horie, and Takashi Ohara, all of Osaka, Japan, assignors to Nippon Shokubai Kagaku Kogyo Co., Ltd., Osaka, Japan

Filed Aug. 17, 1973, Ser. No. 389,175

Claims priority, application Japan, Aug. 19, 1972, 47-82457; Aug. 23, 1972, 47-83658; Aug. 26, 1972, 47-84988
Int. Cl. B01J 11/06

U.S. Cl. 252-465

16 Claims

1. A method for the production of exhaust or waste gases purifying catalysts comprising soaking a granular activated alumina support in an aqueous solution containing trivalent chromium ions of a compound selected from the group consisting of chromium nitrate, chromium sulfate, chromium chloride and chromium bromide and hexavalent chromium ions of a compound selected from the group consisting of chromic anhydride, ammonium chromate and ammonium bichromate in a chromic atomic ratio of from 1:1 to 1:20 and having an adjusted pH of 0.5 to 4.5 to deposit thereon a chromium compound in a concentration corresponding to 5 to 30 percent by weight of chromia based on the weight of the catalysts, drying and calcining the chromium compound deposited support to form a chromia-supporting composition, treating the composition with an aqueous solution of a compound of at least one metal selected from the group consisting of palladium and platinum to deposit thereon the compound in a concentration corresponding to 0.05 to 2 g/litre-catalyst of the metal, drying the wet catalyst composition and activating the dried catalyst composition to form a final catalyst.

3,898,185

SHELF-STABLE ELECTROCONDUCTIVE LATEX COMPOSITION

Dennis H. Philp, Midland, and Wendell N. Delano, Freeland, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 10, 1973, Ser. No. 387,412

Int. Cl. H01b 1/06, 1/04

U.S. Cl. 252-511

10 Claims

1. A shelf-stable latex composition suitable as a backing material for textiles wherein the composition comprises an anionically stabilized latex of a thermoplastic, organic polymer, a filler, a thickener for the latex, and a quaternized epialohydrin polymer having a molecular weight in the range from about 120 to about 200,000 and a degree of quaternization in the range from about 50 to 100 mole percent in an

amount sufficient to measurably reduce the volume resistivity of said composition.

3,898,186

DISHWASHING COMPOSITIONS CONTAINING GEL FORMING GELATIN

Robert Mermelstein, and Richard W. Benson, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Apr. 9, 1973, Ser. No. 349,356

Int. Cl. C11d 3/02, 3/16

U.S. Cl. 252-528

11 Claims

1. A liquid dishwashing detergent composition especially adapted for washing and imparting shine to kitchen utensil surfaces, said composition consisting essentially of:

- A. from about 3 to 45% by weight of an organic synthetic surfactant system, said system consisting of
 - i. from about 5 to 75% by weight of said surfactant system of water-soluble alkyl sulfates containing from about 12 to 16 carbon atoms;
 - ii. from about 5 to 60% by weight of said surfactant system of water-soluble alkyl ether sulfates containing from about 12 to 16 carbon atoms in the alkyl group and from about 1 to 30 moles of ethylene oxide in the alkyl ether sulfate molecule; and
 - iii. from about 5 to 50% by weight of said surfactant system of amine oxide surfactants of the formula $R_1R_2R_3N$ wherein R_1 is an alkyl group containing from about 10 to 28 carbon atoms, from zero to about two hydroxy groups and from zero to about five ether linkages, there being at least one moiety of R_1 which is an alkyl group containing from about 10 to about 18 carbon atoms and zero ether linkages, and wherein each R_1 and R_2 is selected from the group consisting of alkyl and hydroxyalkyl groups containing from one to about 3 carbon atoms;
- B. from about 0.1 to 5% by weight of a gel-forming Type B gelatin having a Bloom strength within the range of from about 50 to 300; and
- C. from about 5 to 95% by weight of water.

3,898,187

LIQUID DETERGENT COMPOSITIONS

James H. Miller, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 26, 1972, Ser. No. 318,072

Int. Cl.² C11D 1/38, 1/12, 3/26

U.S. Cl. 252-553

14 Claims

1. A homogeneous liquid detergent composition particularly suitable for the removal of food soils consisting essentially of:

- a. from about 3% to about 40% by weight of a water-soluble organic detergent selected from the group consisting of sodium C₁₈₋₂₀ alkyl glyceryl sulfonate; ammonium 2-acetoxy-tridecane-1-sulfonate; ammonium β -methoxyoctadecyl-sulfonate; the ammonium salt of sulfated condensation product of C₁₀₋₂₀ fatty alcohol with from 1 to 10 moles of ethylene oxide; the condensation product of nonyl phenol with about 9.5 moles of ethylene oxide; the condensation product of coconut fatty alcohol with about 6 moles of ethylene oxide; the condensation product of a secondary fatty alcohol containing about 15 carbon atoms with about 9 moles of ethylene oxide; 3(N,N-dimethyl-N-alkylammonio)-propane-1-sulfonate and 3(N,N-dimethyl-N-alkylammonio)-2-hydroxypropane-1-sulfonate wherein in both compounds the alkyl group averages 14.8 carbon atoms in length; 3(N,N-dimethyl-N-hexadecylammonio)-propane-1-sulfonate; 3(N,N-dimethyl-N-hexadecylammonio)-2-hydroxypropane-1-sulfonate; 3-(N-dodecylbenzyl-N,N-dimethylammonio)-propane-1-sulfonate; (N-

3,898,189

PREPARATION IN AQUEOUS MEDIUM OF PULVERULENT COMPOSITIONS OF VINYL CHLORIDE BASED POLYMERS AND COPOLYMERS FOR IMMEDIATE USE

Bernard Bonnaud, Sisteron, and Yves Fagnoni, St. Auban, both of France, assignors to Rhone-Progil, Courbevoie, France

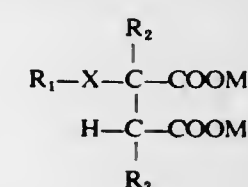
Filed Feb. 1, 1974, Ser. No. 438,748

Claims priority, application France, Feb. 2, 1973, 73.03661
Int. Cl.² C08L 1/26

U.S. Cl. 260-17 R

29 Claims

1. A method of preparing pulverulent polymer or copolymer compositions based on vinyl chloride and suitable for immediate use, comprising mixing the polymers and/or copolymers of vinyl chloride and one or more additives necessary for their use, including stabilizers, plasticizers, lubricants, pigments, colorants and fillers in an aqueous medium, separating said compositions from the aqueous medium, and drying the separated composition, wherein the liquid additives and at least a part of the fusible solid additives are introduced into the mixing zone in the form of one or more finely divided aqueous dispersions of a homogeneous phase, and maintaining said material under agitation.



wherein

- R_1 represents an alkyl group having from 3 to 20 carbon atoms;
 R_2 represents hydrogen or a C₁₋₄ alkyl group, R_3 stands for hydrogen,
 C₁₋₄ alkyl or -OH, whereby the total number of carbon atoms of R_2 and R_3 is at most 4; X represents -O-; -S-; -SO-; -SO₂-; or -SCH₂-; M is a water-soluble cation; and
 iii. mixtures thereof;
 whereby the ratio of component (b) to component c. is from about 3:1 to about 1:3;
 and
 d. the balance to 100% being water.

3,898,188

NOVEL POLYELECTROLYTES

Alan Rembaum, and Shiao-Ping S. Yen, both of Altadena, Calif., assignors to California Institute of Technology, Pasadena, Calif.

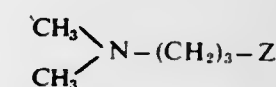
Filed Aug. 14, 1972, Ser. No. 280,649

Int. Cl. C08g 33/06

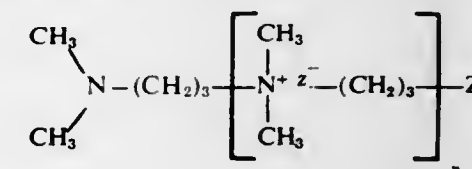
U.S. Cl. 260-2 R

10 Claims

1. A method of forming a polyelectrolyte comprising the steps of polymerizing under oxygen excluding conditions at a temperature of from 80° to 110°C, an aqueous solution at a concentration of at least 4 molar of an AB monomer of the formula:



where Z is I, Cl or Br to form a linear, water-soluble homopolymer of the formula:



where n is an integer such that the intrinsic viscosity, η , as determined by light scattering in 0.4M KBr is at least 0.2 dl/g as determined by the formula:

$$\eta = (2.94 \times 10^{-4}) M^{0.61}$$

where M is molecular weight.

3,898,191

PLASTICIZED SULFUR MORTAR AND METHOD FOR MAKING SAME

Anthony J. Stumpo, 829 Medway Rd., Philadelphia, Pa. 19115, and David Warren Neff, 802 Irene Dr., West Chester, Pa. 19380

Continuation of Ser. No. 271,862, July 14, 1972, abandoned.

This application May 24, 1974, Ser. No. 473,117

Int. Cl. C08g 51/04

U.S. Cl. 260-37 R

5 Claims

1. A sulfur mortar consisting essentially of about 55 to 70 parts by weight of sulfur in dry granular form, about 45 to 35 parts by weight of an inert filler in dry granular form, and about 1 to 5 parts polysulfide rubber plasticizer in dry finely divided particulate form produced by freezing a nery mass of said polysulfide rubber plasticizer into an embrittled mass and

grinding said embrittled mass into discrete granules in the presence of a dusting flour, all blended into a homogeneous granular free-flowing dry mixture.

3,898,192

INHIBITION OF DIALLYLIC PHTHALATE POLYMER COMPOSITIONS

Carl Leonard Wright, Pennington, N.J., assignor to FMC Corporation, New York, N.Y.

Division of Ser. No. 366,176, June 1, 1973. This application Oct. 31, 1974, Ser. No. 519,436

Int. Cl. C08f 45/04, 45/10

U.S. Cl. 260—42.18

6 Claims

1. A thermosetting diallylic phthalate prepolymer composition comprising (a) a diallylic phthalate prepolymer selected from the group consisting of diallyl isophthalate and diallyl orthophthalate prepolymers, (b) from about 0.001 to 0.1% by weight phenothiazine based on the weight of prepolymer, and (c) a peroxide catalyst in sufficient amount to convert the diallylic phthalate prepolymer to the thermoset state at elevated temperatures and (d) an inert inorganic filler in an amount of 15 to about 300 parts by weight per 100 parts by weight of the prepolymer.

3,898,193

PRODUCING MALEINIZED POLYISOPRENE OF HIGH GREEN STRENGTH

Shobu Minatono; Takayuki Okamura; Junnosuke Yamauchi, and Kazuhisa Yamauchi, all of Ibaragi, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

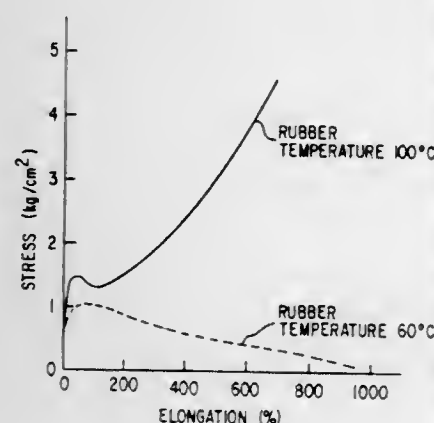
Filed Nov. 26, 1973, Ser. No. 418,989

Claims priority, application Japan, Dec. 2, 1972, 47-120962

Int. Cl. C08c 11/06; C08f 3/48

U.S. Cl. 260—42.47

9 Claims



1. A process for producing an unvulcanized rubber composition of high green strength useful in the preparation of vulcanized articles from a maleinized synthetic cis-1,4-polyisoprene rubber, which comprises mixing the maleinized synthetic cis-1,4-polyisoprene having a bound maleic anhydride content of 0.03 to 2.5 moles per 100 recurring units of isoprene monomer in the polymer with rubber compounding ingredients containing sulfur as a vulcanizing agent and a metal compound selected from the group consisting of oxide, hydroxide, carbonate, stearate, oleate, acetate and oxalate of a metal belonging to Groups II or IV of the Periodic Table in an amount of 0.1 to 1.5 parts by weight per 100 parts by weight of the rubber, the mixing operation of said rubber and said metal compound being carried out at a temperature of above 80°C., whereby maximum green strength of the resulting unvulcanized composition is attained.

3,898,194
FLAME-RETARDANT POLYAMIDES
Ulises Canellas Sanroma, Chesterfield, Va., assignor to The Firestone Tire & Rubber Company, Akron, Ohio
Filed Jan. 22, 1973, Ser. No. 325,293
Int. Cl. C08g 51/58

U.S. Cl. 260—45.75 B

5 Claims

1. A polyamide selected from the class consisting of poly(-

caprolactam) and poly(hexamethylene sebacamide) which polyamide contains, as a flame retardant, 1 to 16 per cent of hexabromobenzene and 0.5 to 8 per cent of antimony trioxide, particles of the latter measuring 1 to 10 microns in size.

3,898,195
STABILIZED METHYLENE CHLORIDE COMPOSITION
Norman L. Becker, Humble, Tex., assignor to Diamond Shamrock Corporation, Cleveland, Ohio
Continuation-in-part of Ser. No. 335,002, Feb. 23, 1973, abandoned, and a continuation-in-part of Ser. No. 335,003, Feb. 23, 1973, abandoned. This application May 13, 1974, Ser. No. 469,333

Int. Cl. C07c 17/40

U.S. Cl. 260—652.5 R

2 Claims

1. A stabilized composition consisting essentially of methylene chloride and from about 0.001 to about 2.0 percent by weight of each of diisopropylamine, N-methyl pyrrole, butylene oxide, propylene oxide, methyl acetate, acetone, tertiary amines, and methyl alcohol.

3,898,196
COPOLYESTERS OF FLUORINE CONTAINING ALIPHATIC DICARBOXYLIC ACIDS
Max H. Keck, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Feb. 14, 1974, Ser. No. 442,542
Int. Cl. C08g 17/08

U.S. Cl. 260—75 H

6 Claims

1. A fiber-forming copolyester of units of a glycol of the formula $\text{HO}(\text{CH}_2)_n\text{OH}$ in which n is an integer of from 2 to 6, units of terephthalic acid and from 1 to 20 mol percent of the total mols of acid units in the copolyester of units of a fluorine-containing aliphatic dicarboxylic acid selected from the group consisting of perfluorosuccinic acid, hexafluoroglutaric acid, octafluoroadipic acid, dodecafluorosebacic acid, octadecafluoroundecanedioic acid, tetracosafuorotetradecanedioic acid, 3,5-dichloro-2,2,3,4,4,5,6,6-octafluoroheptanedioic acid and 3,5,7-trichloro-2,2,3,4,4,5, 6,6,7,8,8-undecafluorononanedioic acid.

3,898,197
BLOCKED POLYISOCYANATE COMPOSITION FOR THE TREATMENT OF KERATINOUS MATERIALS
Geoffrey Bruce Guise, Highton, and Mervyn Benjamin Jackson, West Brunswick, both of Australia, assignors to Commonwealth Scientific and Industrial Research Organization, Campbell, Australia

Filed Feb. 7, 1973, Ser. No. 330,404

Claims priority, application Australia, Feb. 18, 1972, 08010/72

Int. Cl. C08g 22/32, 51/24

U.S. Cl. 260—77.5 TB

13 Claims

1. A bisulphite addition product of a polyisocyanate and/or polyisothiocyanate prepolymer, said addition product having on an average at least two isocyanate-bisulphite or isothiocyanate-bisulphite adduct groups per molecule, having no free isocyanate or isothiocyanate groups, and being freely water-soluble; said prepolymer being the water-insoluble reaction product of a polyisocyanate and/or polyisothiocyanate and a polyhydroxy compound.

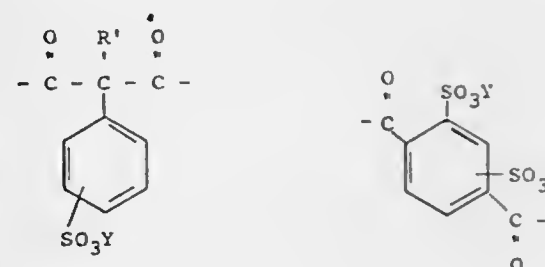
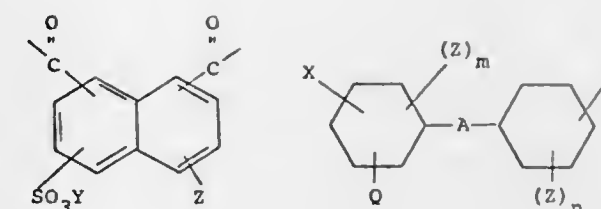
3,898,198
POLYAMIDE CATALYST SYSTEM
Harry McGrath, Pontypool, England, assignor to Imperial Chemical Industries Limited, London, England
Filed Nov. 8, 1973, Ser. No. 414,095
Claims priority, application United Kingdom, Dec. 18, 1972, 58291/72

Int. Cl. C08G 69/16

U.S. Cl. 260—78 L

9 Claims

1. A process for the preparation of moldable or melt-spinnable poly(ω -dodecanolactam) comprising the polymerisation of ω -dodecanolactam in the presence as catalysts jointly of a catalytically active inorganic acid selected from the group consisting of hydrochloric acid, boric acid, phosphoric acid, phosphorous acid, phosphonic acid, magnesium hydrogen phosphate, cyclohexyl phosphonic acid and sulphonic acids, and oxalic acid or an ester of oxalic acid.



3,898,199
PROCESS FOR OBTAINING POLYAMIDES FROM LACTAMS

Michel Biensan, and Philippe Potin, both of Billiere, France, assignors to Societe Aquitaine-Total-Organico, Tour Aquitaine, Paris, France

Continuation-in-part of Ser. No. 281,225, Aug. 16, 1972, Pat.

No. 3,855,182. This application Sept. 25, 1974, Ser. No. 509,068

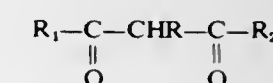
Claims priority, application France, Aug. 25, 1971, 71.30754

Int. Cl. C08g 20/18

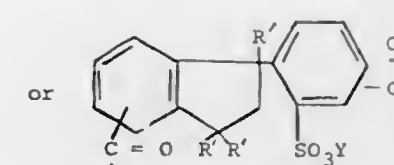
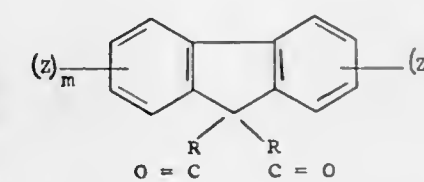
U.S. Cl. 260—78 L

9 Claims

1. A process for obtaining high molecular weight polyamides which comprises anionically polymerizing a lactam having at least four carbon atoms in the ring in the presence of an alkali catalyst and mixing the resulting polymer with at least one compound of the formula



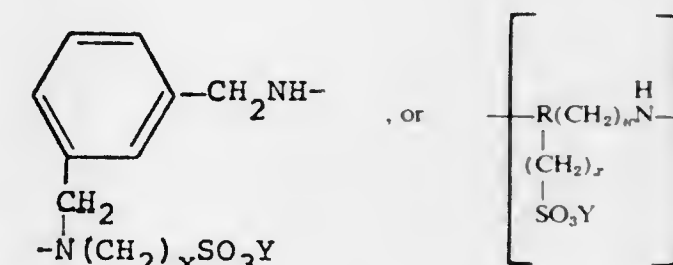
in which R is hydrogen or lower alkyl, R₁ is lower alkyl and R₂ is lower alkyl or lower alkoxy.



where X is a carboxyl, either P or Q is



and the other is H, and X and Q are not meta to each other, where Y is NH_4^+ or a metal of first or second group of the Periodic Table, $m+n=1$ or 2, where Z is not ortho to a carboxyl; R is a straight chain radical of less than 10 carbon atoms, R' is H or R; A is a direct bond, SO_2 , O, CH_2 , $\text{OCH}_2\text{C}-\text{H}_2\text{O}$, or $\text{C}(\text{CH}_3)_2$, Z is H or SO_3Y ; provided that the two carboxylic substituents are not spaced closely enough to form imides; and from about 0.10 to about 0.65 mole percent of a cycloaliphatic diamine or a compound having units of the structures:



3,898,200
CATIONIC DYEABLE POLYAMIDE OF IMPROVED PHYSICAL PROPERTIES

Robert Alden Lofquist, Richmond, Va., assignor to Allied Chemical Corporation, Petersburg, Va.

Continuation-in-part of Ser. No. 286,629, Sept. 6, 1972, Pat. No. 3,828,009. This application June 12, 1974, Ser. No. 478,474

Claims priority, application Canada, Mar. 28, 1973, 167391

Int. Cl. C08g 20/18

U.S. Cl. 260—78 L

10 Claims

1. A cationic-dyeable synthetic linear polycarbonamide having recurring amide groups polymerized from ω -aminocarboxylic acids or their lactams and containing as an integral part of the polymer chain from about 0.30 to about 0.85 mole percent based on the weight of polycarbonamide of units selected from the group consisting of the structures:

wherein x is 2, 4, 5 or 6; w is 2 to 12 and Y is NH_4^+ or a metal of the first or second group of the Periodic Table.

3,898,201

NOVEL RESINS AND MANUFACTURING THE SAME
Shuhei Ishibe, Nara; Toshiharu Okumichi, Amagasaki, and
Keizo Matsumoto, Osaka, all of Japan, assignors to Arakawa
Rinsan Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan
Filed Feb. 25, 1974, Ser. No. 445,099

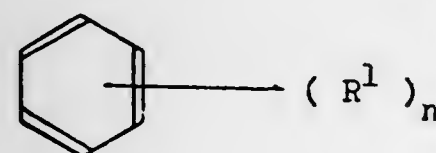
Claims priority, application Japan, Feb. 28, 1973, 48-
24549; Mar. 1, 1973, 48-25414

Int. Cl.² C08F 22/02, 22/12, 22/30, 22/04

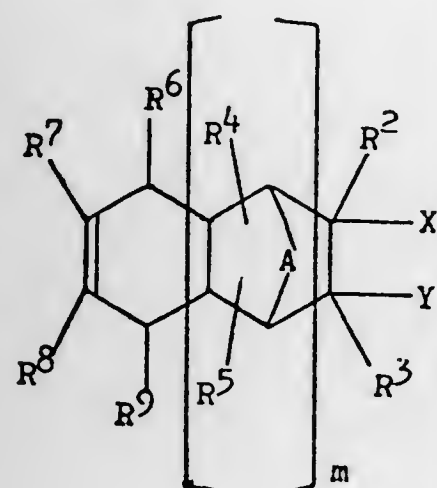
U.S. Cl. 260—78.4 R

14 Claims

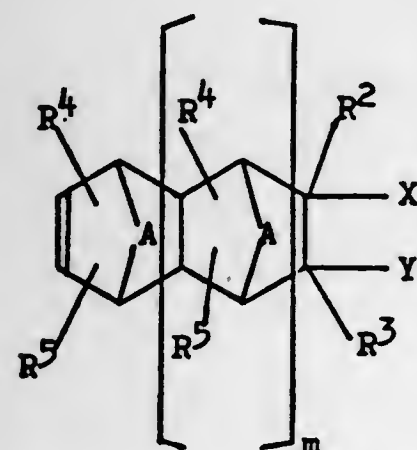
1. A process for manufacturing a resin which comprises
reacting in the presence of a Friedel-Crafts catalyst a Diels-
Alder addition product with a benzene derivative having a
formula of



wherein R¹ is an alkyl group having one to 18 carbon atoms
and n is zero or an integer of 1 to 5; said Diels-Alder addition
product is at least one of (a) compounds having a formula of



wherein each of R², R³, R⁴ and R⁵ is a hydrogen atom or
methyl group, each of R⁶, R⁷, R⁸ and R⁹ is a hydrogen atom or
alkyl group having one to four carbon atoms, each of X and
Y is —COOH, —COOR^a or —CN or X and Y represent an
acid anhydride ring formed by being bonded together, R^a
being an alkyl group having one to four carbon atoms, A is
—CH₂— or —CH₂CH₂—, and m is zero or an integer of 1 or
2, and (b) compounds having the formula of



wherein R², R³, R⁴, R⁵, X, Y, A and m are the same as defined
above.

3,898,202

EPIHALOHYDRIN CURE REGULATORS

Michael A. Fath, Cuyahoga Falls, Ohio, assignor to The Good-
year Tire & Rubber Company, Akron, Ohio

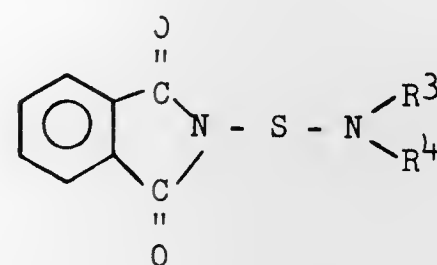
Filed Nov. 5, 1973, Ser. No. 413,127

Int. Cl.² C08G 65/32; C08J 3/24

U.S. Cl. 260—79

6 Claims

1. A process for the curing of an epihalohydrin polymer
selected from the group consisting of (A) epihalohydrin ho-
mopolymers and (B) epihalohydrin ethylene oxide comprising
mixing a combination of the epihalohydrin homopolymer or
copolymer and curing agents which reacts difunctionally with
the halo methyl side chains while in the presence of from
about 0.5 to about 7.0 parts by weight per 100 parts by weight
based on the polymer of an organic material and heating the
mixture at a temperature of from about 130° C. to about 200°
C. for a time sufficient for curing to take place wherein the
organic material is a phthalimide having the general structural
formula



wherein R³ and R⁴ are the same or different radicals selected
from the group consisting of hydrogen, alkyl radicals having
from 1 to 8 carbon atoms, cycloalkyl radicals having from 5
to 8 carbon atoms, piperidinethio and morpholinethio.

3,898,203

EPIHALOHYDRIN CURE REGULATORS

Michael A. Fath, Burton, Ohio, assignor to The Goodyear Tire
& Rubber Company, Akron, Ohio

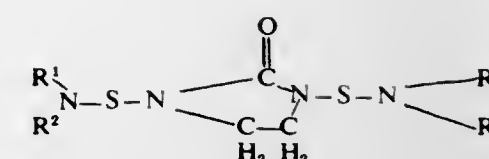
Continuation-in-part of Ser. No. 413,127, Nov. 5, 1973. This
application Feb. 13, 1974, Ser. No. 442,035

Int. Cl.² C08G 65/32; C08J 3/24

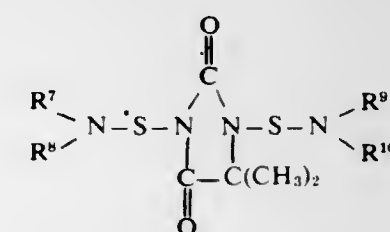
U.S. Cl. 260—79

7 Claims

1. A process for the curing of an epihalohydrin polymer
selected from the group consisting of (A) epihalohydrin ho-
mopolymers, and (B) epihalohydrin-ethylene oxide copoly-
mers, comprising mixing epihalohydrin homopolymer or co-
polymer with difunctional curing agents which react with the
halomethyl side chains of the polymer while in the presence
of from about 0.5 to about 7.0 parts by weight based on the
polymer of an organic material selected from the group con-
sisting of (I) imidazolidones having the general structural
formula



wherein R¹, R², R³ and R⁴ are the same or different radicals
selected from the group consisting of alkyl radicals having
from 1 to 8 carbon atoms, cycloalkyl radicals having from 5
to 8 carbon atoms, and wherein R¹ and R², and R³ and R⁴ can
be joined through a member of the group consisting of —
CH₂—, —O—, and —S— to constitute with the attached
nitrogen a heterocyclic ring and (II) hydantoins having the
general structural formula



wherein R⁷, R⁸, R⁹ and R¹⁰ are the same or different radicals
selected from the group consisting of alkyl radicals having
from 1 to 8 carbon atoms, cycloalkyl radicals having from 5
to 8 carbon atoms and wherein R⁷ and R⁸, and R⁹ and R¹⁰ can
be joined through a member of the group consisting of —
CH₂—, —O— and —S— to constitute with the attached nitro-
gen a heterocyclic ring and heating the mixture formed at a
temperature of from about 130° C. to about 200° C. for a time
sufficient for curing to take place.

3,898,204

PRODUCTION OF FIBERS FROM PHENYLENE SULFIDE
POLYMERS

James N. Short, Bartlesville, Okla.; Lee O. Edmonds, deceased,
late of Bartlesville, Okla. (by Emmilou Edmonds, executrix),
and James T. Edmonds, Jr., Bartlesville, Okla., assignors to
Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 354,981, April 27, 1973,
abandoned, which is a division of Ser. No. 237,881, March 24,
1972, abandoned. This application Apr. 8, 1974, Ser. No.
458,702

Int. Cl. C08g 23/00

U.S. Cl. 260—79

8 Claims

1. Melt-spun, high modulus, high-melting, non-burning
phenylene sulfide polymer fibers formed from at least partially
cured phenylene sulfide polymers having a melt flow within
the range of 75 to 800 grams per 10 minutes as measured by
ASTM method D—1238—70 modified to operate at 650°F
with a piston load of 5 kilograms.

3,898,205

SULFONAMIDE ADDITIVES FOR SULFUR
VULCANIZABLE POLYMERS

Roger J. Hopper, Akron, and John P. Lawrence, Stow, both of
Ohio, assignors to The Goodyear Tire & Rubber Company,
Akron, Ohio

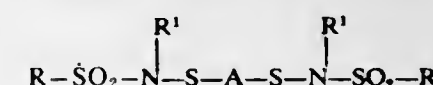
Division of Ser. No. 266,009, June 26, 1972, Pat. No.
3,856,762. This application May 23, 1974, Ser. No. 472,755

Int. Cl.² C08F 28/00

U.S. Cl. 260—79.5 B

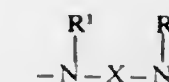
7 Claims

1. A sulfur vulcanizable diene polymer having incorporated
therein a sulfonamide having the following structural formula

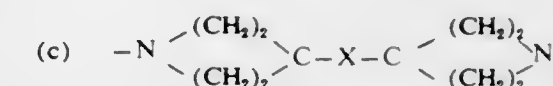


wherein A is an N,N' disubstituted radical selected from the
group consisting of

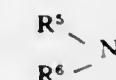
- an N,N' disubstituted radical which is a derivative of a
heterocyclic diamine
-



and



wherein R and R¹ are selected from the group consisting of
alkyl radicals having 1 to 20 carbon atoms, cycloalkyl radicals
having 5 to 20 carbon atoms, aralkyl radicals having 7 to 20
carbon atoms, aryl radicals having 6 to 20 carbon atoms and
wherein R can also be the radical



and wherein R and R¹ can be joined through a —CH₂— group
to constitute with the —SO₂—N— group a heterocyclic ring
radical, wherein R³ and R⁴ are selected from the group con-
sisting of alkyl radicals having 1 to 20 carbon atoms, cycloal-
kyl radicals having 5 to 20 carbon atoms, aralkyl radicals
having 7 to 20 carbon atoms, and aryl radicals having 6 to 20
carbon atoms and wherein R³ and R⁴ can be joined through a
member of the group consisting of —CH₂—, —O—, and —S—
to constitute with the attached nitrogen atom a heterocyclic
ring, and wherein X is selected from the group consisting of
alkylene radicals having 2 to 10 carbon atoms and cycloalkyl-
ene radicals having 5 to 10 carbon atoms.

3,898,206

SULFONAMIDE ADDITIVES FOR SULFUR
VULCANIZABLE POLYMERS

Roger J. Hopper, Akron, and John P. Lawrence, Stow, both of
Ohio, assignors to The Goodyear Tire & Rubber Company,
Akron, Ohio

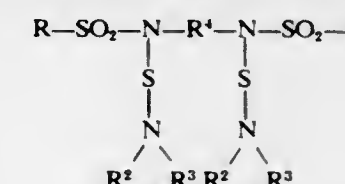
Division of Ser. No. 266,009, June 26, 1972, Pat. No.
3,856,762. This application May 23, 1974, Ser. No. 472,765

Int. Cl.² C08F 28/00

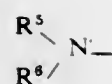
U.S. Cl. 260—79.5 B

7 Claims

1. A sulfur vulcanizable diene polymer having incorporated
therein a sulfonamide having the following structural formula



wherein R is selected from the group consisting of alkyl radi-
cals having 1 to 20 carbon atoms, cycloalkyl radicals having
5 to 20 carbon atoms, aralkyl radicals having 7 to 20 carbon
atoms, aryl radicals having 6 to 20 carbon atoms and wherein
R can also be the radical



wherein R^5 and R^6 are selected from the group consisting of alkyl radicals having 1 to 20 carbon atoms, cycloalkyl radicals having 5 to 20 carbon atoms, aralkyl radicals having 7 to 20 carbon atoms, and aryl radicals having 6 to 20 carbon atoms and wherein R^5 and R^6 can be joined through a member of the group consisting of $-CH_2-$, $-O-$, and $-S-$ to constitute with the attached nitrogen atom a heterocyclic ring, and wherein R^2 and R^3 are selected from the group consisting of hydrogen, cyanoalkyl radicals having 3 to 21 carbon atoms and radicals, other than aryl, described for R^5 and R^6 and can join to form the heterocyclic ring described for R^5 and R^6 , and wherein R^4 is selected from the group consisting of alkylene radicals having 1 to 10 carbon atoms, cycloalkylene radicals having 6 to 20 carbon atoms and arylene radicals having 6 to 20 carbon atoms.

3,898,207

PROCESS FOR POLYMERIZING CONJUGATED DIENES
Adel Farhan Halasa, Bath, and Richard Gutierrez, Akron, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Mar. 25, 1974, Ser. No. 454,051
Int. Cl.² C08F 4/48, 4/54, 210/06

U.S. Cl. 260—85.3 R

11 Claims

1. A process for the hydrocarbon solution polymerization of a monomer composition consisting essentially of 10–90 percent by weight of a conjugated diene and 10–90 percent by weight of an alpha-olefin having 2–8 carbon atoms to produce a copolymer having 5–90 percent of the alpha-olefin in the resultant copolymer comprising the steps of maintaining said monomer composition at a temperature of 5°–50°C. in intimate contact with a catalyst composition consisting essentially of:

- The reaction product of an n-alkyllithium having 2–6 carbon atoms in said alkyl group and a dialkyl aluminum chloride having 1–8 carbon atoms in each said alkyl group; and
- A metal halide compound having the formula $TiBr_nCl_{3-m}$ wherein n has a value of 0—and m has a value of 0–5,

the concentration of said catalyst composition being 0.1–4 millimoles of catalyst per 100 grams of said monomer composition, said n-alkyllithium being reacted in a proportion of 1–4 moles per mole of said dialkylaluminum chloride, and the dialkylaluminum chloride product being used in a proportion of 1–4 moles per mole of said metal halide compound, said polymerization being conducted for a period of at least one hour.

3,898,208

HYDROGENATION OF OIL-INSOLUBLE DIENE POLYMERS

Reuben L. Krause, Angleton, Tex., assignor to The Dow Chemical Company, Midland, Mich.

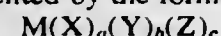
Continuation-in-part of Ser. No. 155,344, June 21, 1971. This application June 29, 1973, Ser. No. 374,853

Int. Cl. C08d 5/02

U.S. Cl. 260—85.1

11 Claims

1. A process for hydrogenating oil-insoluble polymers of conjugated dienes containing residual unsaturation which comprises reacting the oil-insoluble polymer dispersed in a swelling agent thereof with hydrogen in the presence of a catalytic amount of a homogeneous hydrogenation coordination complex represented by the formula:



wherein M is rhodium, X is an anion, Y is a ligand capable of donating an unshared pair of electrons to the coordination sphere of M, Z is a ligand capable of complexing with halide

ion, a is a positive integer which is at least equivalent to the valence number of M and not greater than the coordination number of M, b is a positive integer not greater than the coordination number of M, and c is 0 or a positive member not greater than the total number of halide ions in the complex, with the further proviso that the sum of a and b is not greater than the sum of the valence number of M and the coordination number of M, said swelling agent being a solvent for the coordination complex, thereby effectively hydrogenating the residual unsaturation of the polymer.

3,898,209

PROCESS FOR CONTROLLING RHEOLOGY OF C₃+ POLYOLEFINS

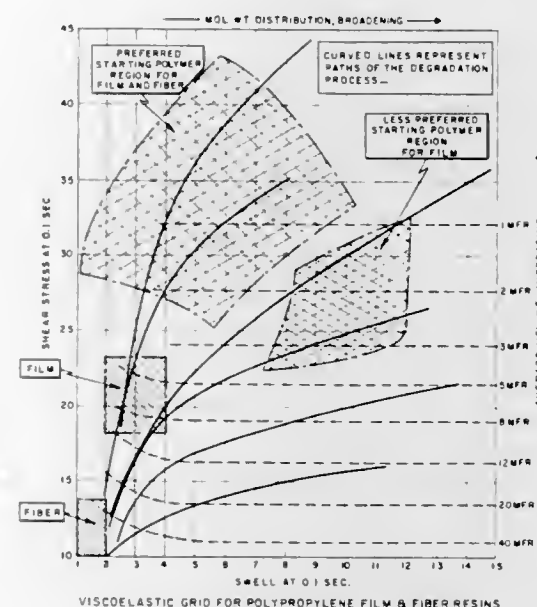
Albert T. Watson; Hulen L. Wilder; Kenneth W. Bartz, and Robert A. Steinkamp, all of Baytown, Tex., assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed Nov. 21, 1973, Ser. No. 417,796

Int. Cl. C08f 27/22, 27/26

U.S. Cl. 260—93.7

9 Claims



1. In the process for the controlled scission of polypropylene having a shear stress above 22 and a die swell of from 1 to 12 in conformance with the starting polymers designated on the viscoelastic grid in an extruder-reactor in which molten polypropylene is conveyed under shear through a mixing zone, a reactor zone, and a metering zone, in said extruder-reactor, the improvement in effecting rheology changes in said polypropylene which comprises:

the high pressure injection of a gas containing from 15 to 25 wt. percent oxygen under pressure into said metering zone at a rate of 500 to 5000 cc of said gas per pound of said molten polypropylene, wherein said metering zone is maintained at a temperature of about 50° to 400° F. lower than the temperature of said reactor zone

whereby critical end-use specifications of die swell, MFR and shear stress can be met with not more than two passes of said polypropylene through said extruder-reactor.

3,898,210

4-AZATRICYCLO [4.3.1.1^{3,6}] UNDECANE AND RELATED COMPOUNDS

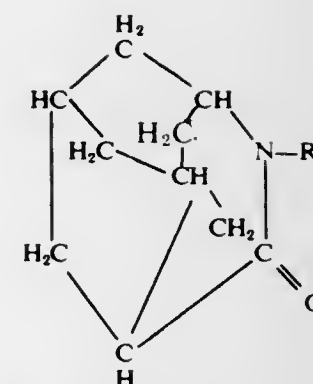
Venkatachala Lakshmi Narayanan, Hightstown, and Linda Louise Setescak, Cranbury, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 754,460, Aug. 21, 1968, Pat. No. 3,763,165. This application Sept. 28, 1972, Ser. No. 293,254
Int. Cl.² C07D 223/14

U.S. Cl. 260—239.3 T

7 Claims

1. A compound of the formula



wherein R is phenyl-lower alkyl.

3,898,211

TRIAZINO(4,3-D)

(1,4)BENZODIAZEPINE-3,4,7-TRIONES

B. Richard Vogt, Yardley, Pa., and Peter C. Wade, Pennington, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

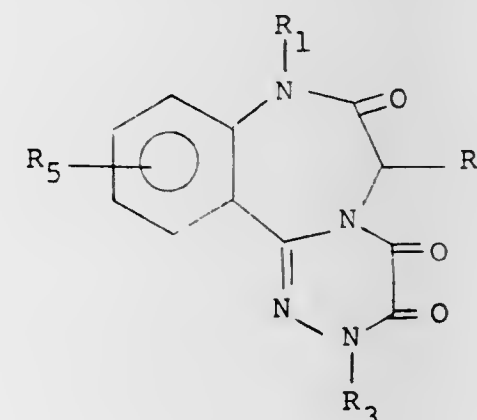
Continuation-in-part of Ser. No. 404,072, Oct. 5, 1973, abandoned. This application June 26, 1974, Ser. No. 483,169

Int. Cl.² C07D 487/04

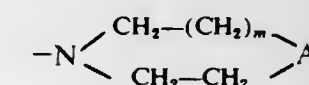
U.S. Cl. 260—239.3 T

14 Claims

1. A compound having the formula



wherein R_1 is hydrogen, alkyl, phenyl or benzyl; R_2 is hydrogen or alkyl; R_3 is hydrogen or $R_4-(CH_2)_p-$; R_4 is amino, alkylamino, dialkylamino or



wherein A is $CH-Q$, oxygen or $N-Q$, Q is hydrogen or alkyl and m is 0 or 1; p is 2, 3 or 4; and R_5 is hydrogen, halogen, nitro, cyano, trifluoromethyl, alkyl, alkoxy or alkylthio; wherein alkyl refers to alkyl groups having 1 to 4 carbon atoms and alkoxy refers to alkoxy groups having 1 to 4 carbon atoms; or when R_3 is other than hydrogen, a pharmaceutically acceptable acid addition salt thereof.

3,898,212

TRIAZINO(4,3-D) (1,4)

BENZODIAZEPINE-3,4,7-TRIONES

Peter C. Wade, Pennington, N.J., and B. Richard Vogt, Yardley, Pa., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

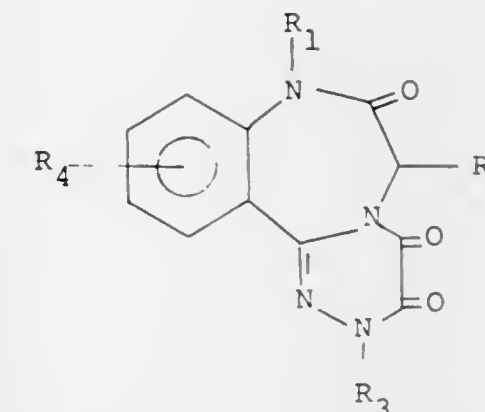
Filed Aug. 9, 1974, Ser. No. 495,970

Int. Cl.² C07d 471/04

U.S. Cl. 260—239.3 T

6 Claims

1. A compound having the formula



wherein R_1 is hydrogen, alkyl, phenyl or phenylmethyl; R_2 is hydrogen or alkyl; R_3 is alkyl or arylalkyl; and R_4 is hydrogen, halogen, nitro, cyano, trifluoromethyl, alkyl, alkoxy or alkylthio; wherein alkyl refers to alkyl groups having one to four carbon atoms, alkoxy refers to alkoxy groups having one to four carbon atoms, and arylalkyl refers to an alkyl group substituted with phenyl or phenyl having one or two alkyl, alkoxy or halogen substituents.

3,898,213

SEPARATION OF α -AMINO- ω -LACTAMS

Fred W. Koff, Long Valley, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

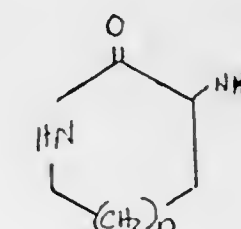
Filed June 6, 1974, Ser. No. 477,132

Int. Cl. C07d 53/06

U.S. Cl. 260—239.3 R

16 Claims

1. A process of separating an α -amino- ω -lactam having the formula



wherein n is an integer from 0 to 12, from mixtures containing the same, comprising the steps of

introducing carbon dioxide into a solution of said α -amino- ω -lactam in a solvent selected from the group consisting of aliphatic ketones containing 3 to 9 carbon atoms, C_1 to C_4 alkyl esters of C_1 to C_6 aliphatic carboxylic acids, linear and cyclic ethers and polyethers, chlorobenzene, toluene, chloroform and mixtures thereof, to form a solid adduct; and

separating said solid adduct from said solvent.

5. The process of claim 1 wherein said α -amino- ω -lactam is α -amino- ϵ -caprolactam.

3,898,214

BENZAZEPINE DIONES

Berthold Richard Vogt, Yardley, Pa., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

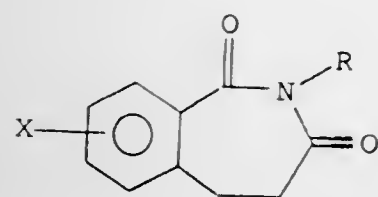
Filed July 22, 1974, Ser. No. 490,453

Int. Cl. C07d 41/00, 41/08

U.S. Cl. 260—239.3 B

5 Claims

1. A compound of the formula



wherein R is alkyl of from 1 to 4 carbon atoms, alkylamine wherein the alkyl group is from 1 to 4 carbon atoms, dialkyl-aminoalkyl wherein each alkyl group is from 1 to 4 carbon atoms, or N-heterocyclic alkyl wherein the alkyl group is from 1 to 4 carbon atoms and the heterocyclic group is pyrrolidino, piperidino, morpholino, piperazino or N-alkylpiperazino wherein the N-alkyl group is from 1 to 4 carbon atoms, and wherein X is H, alkyl of from 1 to 4 carbon atoms, alkoxy of from 1 to 4 carbon atoms, CF₃, F, Cl or Br, and pharmaceutically acceptable acid-addition salts thereof.

3,898,215

RESCINNAMINE-LIKE COMPOUNDS AND A PROCESS FOR PRODUCING THE SAME

Tetsuji Kametani, Sendai, Japan, assignor to Nippon Chemphar Co., Ltd., Tokyo, Japan

Filed Apr. 19, 1972, Ser. No. 245,652

Claims priority, application Japan, Oct. 8, 1971, 46-78781; Oct. 8, 1971, 46-78782; Dec. 28, 1971, 46-105685

Int. Cl. C07d 33/00

U.S. Cl. 260—240 AL

4 Claims

1. Methylreserpate 3',4'-dimethoxycinnamate.

3,898,216

STYRYL AND CYANINE DESENSITIZING DYES CONTAINING A SUBSTITUTED IMIDAZO [4,5-b]-PYRIDO[2,3-b]PYRAZINE NUCLEUS

Thomas Dean Weaver, Rochester, N.Y., assignor to E. I. du Pont de Nemours & Company, Wilmington, Del.

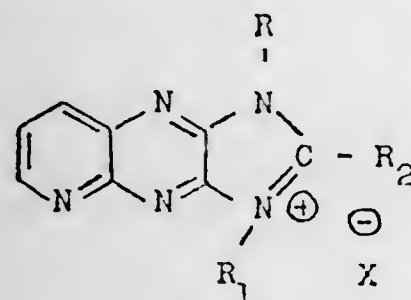
Filed June 4, 1974, Ser. No. 476,316

Int. Cl. C09b 23/10, 23/06, 23/04, 23/14; C07d 31/42

U.S. Cl. 260—240.4

10 Claims

9. Dye intermediates having the formula



wherein R and R₁ each represents a substituent independently selected from the group consisting of an acyclic hydrocarbon substituent, an alkaryl substituent and an aryl substituent, and R₂ represents an alkyl or alkaryl group.

3,898,217

7-(1-AMINOMETHYLCYCLOALKYLCARBOXAMIDO)-CEPHALOSPORANIC

John H. Sellstedt, King of Prussia; Daniel M. Teller, Devon, and Charles J. Guinasso, King of Prussia, all of Pa., assignors to American Home Products Corporation, New York, N.Y.

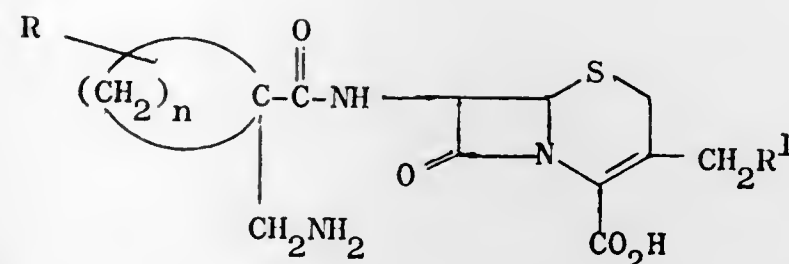
Filed Mar. 30, 1973, Ser. No. 346,496

Int. Cl. C07D 501/20

U.S. Cl. 260—243 C

3 Claims II

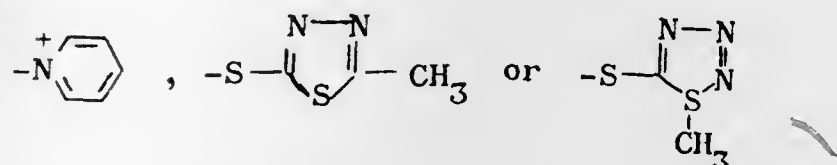
1. A compound of the formula



wherein

R is —H or lower alkyl;

R¹ is —H, (lower)alkanoyloxy,



n is an integer from 4—7, inclusive; and the pharmaceutically acceptable addition salts thereof.

3,898,218

PROCESS FOR THE PREPARATION OF SUBSTITUTED PYRANO (3,2-C) (1,2)BENZOTHAZINE 6,6-DIOXIDES

Daniel Kaminsky, Parsippany, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.

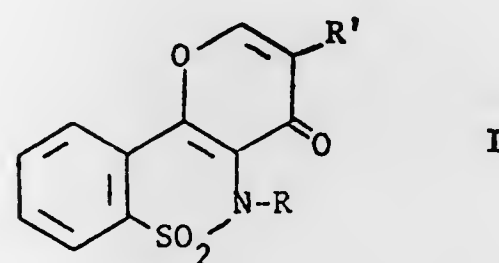
Filed May 29, 1973, Ser. No. 365,398

Int. Cl. C07d 93/02

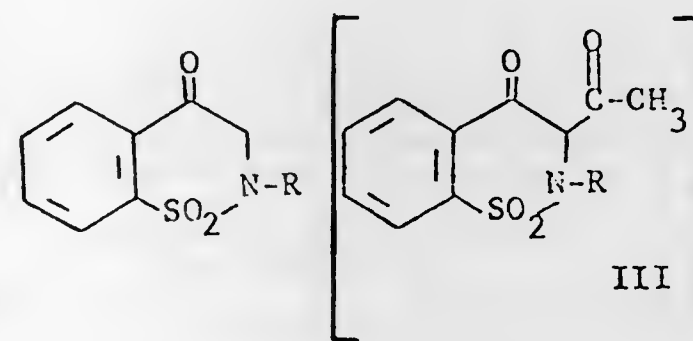
U.S. Cl. 260—243 R

4 Claims

1. A process for preparing a compound of the formula I:



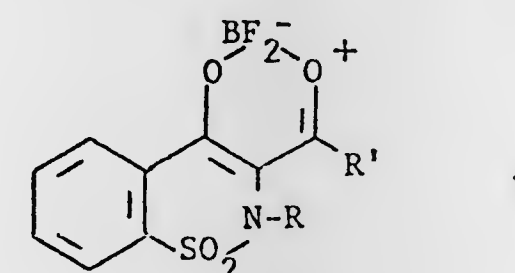
wherein R represents hydrogen and lower alkyl; R¹ represents lower alkyl and formyl which comprises reacting a starting material of the formula II:



wherein R represents hydrogen and lower alkyl, with a boron trifluoride compound selected from the group consisting of boron trifluoride and boron trifluoride etherate, and with an acid anhydride of the formula IV:



wherein R' represents hydrogen or lower alkyl to obtain a boron complex intermediate having the formula V:



wherein R represents hydrogen, lower alkyl and lower alkanoyl and R' represents lower alkyl, and reacting intermediate V with phosphorus oxychloride together with dimethylformamide, followed by hydrolysis.

aralkyl; X is hydrogen, hydroxy, lower alkanoyloxy, aroyloxy, lower alkylamine, dibenzylamine, pyridinium, 1-quinolinium, 1-picolinium, or together X and R represent a bond linking carbon and oxygen in a lactone ring; said aryl, aralkyl, aroyloxy and aralkanoyloxy being respectively, phenyl, phenyl-lower alkyl, phenoxy and phenyl-lower alkanoyloxy and said groups bearing on the phenyl, halo, lower alkyl, hydroxy, lower alkoxy, lower alkanoyl or lower alkanoyloxy; and n is 0, 1, 2, 3 or 4.

3,898,220

TRIFLUOROMETHYLMERCAPTOACETAMIDOCEPHALOSPORINS

Robert M. De Marinis, King of Prussia, and John R. E. Hoover, Glenside, both of Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Division of Ser. No. 273,571, July 20, 1972, Pat. No.

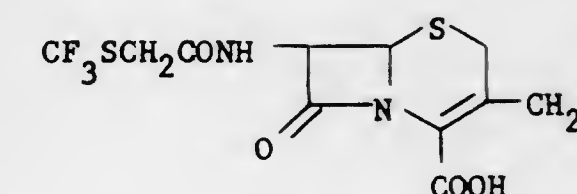
3,828,037. This application Apr. 22, 1974, Ser. No. 463,014

Int. Cl. C07d 99/24; A61k 21/00

U.S. Cl. 260—243 C

4 Claims

1. A compound of the formula



in which:

A is hydrogen, acetoxy, or pyridinium, or a pharmaceutically acceptable salt thereof.

3,898,219

(α-CYANAMINO) ACETAMIDOCEPHALOSPORINS

Hermann Breuer, Regensburg, Germany; Joseph Edward Doffini, Princeton, N.J.; Raymond C. Erickson, Cincinnati, Ohio, and William L. Parker, Pennington, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 200,605, Nov. 19, 1973, Pat. No.

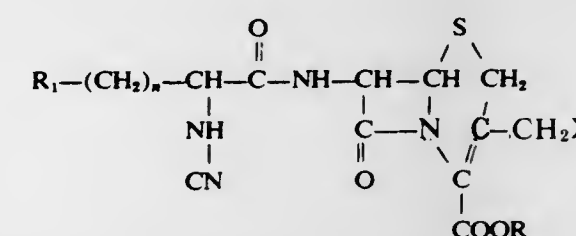
3,796,709. This application Dec. 10, 1973, Ser. No. 423,384

Int. Cl. C07D 501/20

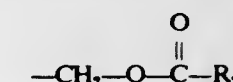
U.S. Cl. 260—243 C

10 Claims

1. A compound of the formula



wherein R is hydrogen, lower alkyl, aralkyl, tri(lower alkyl)-silyl,



or a salt forming ion of the group consisting of aluminum, alkali metal, dibenzylamine, N,N-dibenzylethylenediamine, methylamine, triethylamine, procaine and N-ethylpiperidine; R₁ is morpholino, thienyl or furyl; R₂ is lower alkyl, aryl or

in which:

A is methoxy or methylthio, or a pharmaceutically acceptable salt thereof.

3,898,221

TRIFLUOROMETHYLMERCAPTOACETAMIDOCEPHALOSPORINS

Robert M. De Marinis, King of Prussia, and John R. E. Hoover, Glenside, both of Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Division of Ser. No. 273,571, July 20, 1972, Pat. No.

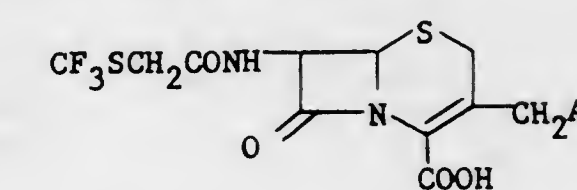
3,828,037. This application Apr. 22, 1974, Ser. No. 463,086

Int. Cl. C07d 99/24; A61k 21/00

U.S. Cl. 260—243 C

3 Claims

1. A compound of the formula



3,898,222

PROCESS FOR PREPARING TRICHLOROISOCYANURIC ACID

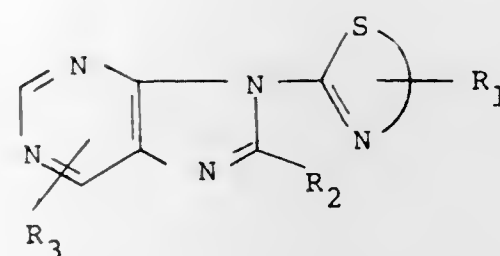
Howard W. Hill, Concord, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Filed July 5, 1974, Ser. No. 485,872
Int. Cl. C07d 55/40

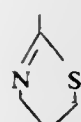
U.S. Cl. 260—248 C

3 Claims

1. A process for preparing trichloroisocyanuric acid by reacting an aqueous solution of a trialkali metal cyanurate with an excess of chlorine in the presence of an essentially water immiscible solvent for the resulting acid.



or a pharmaceutically acceptable salt thereof, wherein R₁ is hydrogen, alkyl or aryl and the group



R₂ is hydrogen, alkylthio, benzylthio, or mercapto; and R₃ is hydrogen, halogen or alkyl; and wherein alkyl is alkyl having 1 to 8 carbon atoms and aryl is phenyl or phenyl mono- or di-substituted with halogen or alkyl.

3,898,226

TETRAHYDROPYRIMIDINYL PHENYL CARBONYL ACID ADDITION SALTS AND RELATED COMPOUNDS

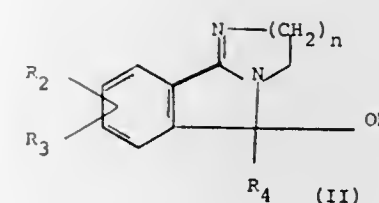
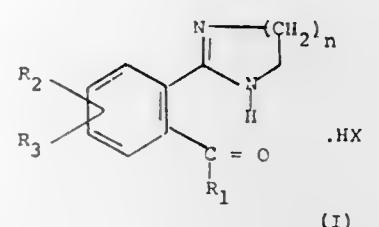
Theodore S. Sulkowski, Wayne, Pa., assignor to American Home Products Corporation, New York, N.Y.
Division of Ser. No. 757,792, Sept. 5, 1968, Pat. No. 3,763,178, which is a continuation-in-part of Ser. Nos. 622,918, March 14, 1967, abandoned, and Ser. No. 622,931, March 14, 1967, abandoned, and Ser. No. 576,833, Sept. 2, 1966, abandoned, and Ser. No. 487,587, Sept. 15, 1965, abandoned. This application Sept. 5, 1973, Ser. No. 394,616

Int. Cl.² C07D 239/06, 487/14

U.S. Cl. 260—256.4 F

14 Claims

1. A compound selected from the group consisting of those having the formulae:



3,898,225

N-SUBSTITUTED PURINES

Rudiger D. Haugwitz, Titusville, and Venkatachala L. Narayanan, Hightstown, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed June 7, 1974, Ser. No. 477,527
Int. Cl.² C07D 279/06, 473/00, 473/40

U.S. Cl. 260—252

12 Claims

1. A compound having the structure

and

3,898,228

N-ALKENYL AND N-ALKYNYL 2-PYRIDINE THIOACETAMIDES

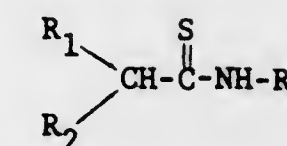
Bernard Loev, Broomall, Pa., assignor to SmithKline Corporation, Philadelphia, Pa.

Division of Ser. No. 255,828, May 22, 1972, Pat. No. 3,825,547. This application Apr. 12, 1974, Ser. No. 460,314
Int. Cl. C07d 87/46, 29/36, 31/50

U.S. Cl. 260—247.1 M

6 Claims

1. A compound of the formula:



wherein R₄ is selected from the group consisting of hydrogen, lower alkyl, phen (lower) alkyl, phenyl, monohalophenyl, dihalophenyl, mono(lower)alkylphenyl, di(lower) alkylphenyl, trifluoromethylphenyl, mono(lower)alkoxyphenyl, di(lower)alkoxyphenyl, thienyl, pyridyl, furyl and tetrahydro-2-naphthyl, and R₁ is hydrogen, lower alkyl, and phen(lower)alkyl R₂ is selected from the group consisting of hydrogen, halogen, amino, lower alkylamino, lower alkyl and lower alkoxy; R₃ is hydrogen when R₂ and R₃ are dissimilar and when R₂ and R₃ are the same they are both selected from the group consisting of hydrogen, halogen, lower alkyl and lower alkoxy; R₅ is selected from the group consisting of phenyl, monohalophenyl, dihalophenyl, mono(lower)alkylphenyl, di(lower)alkylphenyl, trifluoromethylphenyl, mono(lower)alkoxyphenyl; di(lower)alkoxyphenyl, thienyl, pyridyl, furyl and tetrahydro-2-naphthyl; n is 2; lower alkyl and lower alkoxy have from one to six carbon atoms; and HX is a pharmacologically acceptable acid addition salt.

in which:

R₁ is 2-pyridyl;R₂ is —(CH₂)_n—NR₅;

R₃ is an allyl or propargyl group optionally substituted by methyl or ethyl groups, said R₃ having 3–6 carbon atoms;

R₄ and R₅ are lower alkyl or taken together with the nitrogen atom to which they are attached form a piperidino, pyrrolidino, morpholino or N-lower alkylpiperazino ring and

n is 0 or 1

or a pharmaceutically acceptable acid addition salt thereof.

3,898,229

PHOSPHORYL-1,2,4 TRIAZOLES

Haukur Kristinnsson, Bottmingen, and Kurt Rufenacht, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed June 20, 1973, Ser. No. 371,810

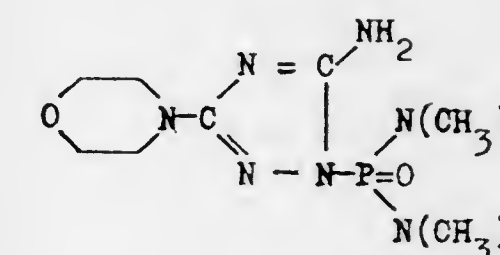
Claims priority, application Switzerland, June 30, 1972, 9855/72; May 4, 1973, 6349/73

Int. Cl. C07d 87/40, 55/06

U.S. Cl. 260—247.5 E

1 Claim

1. A compound of the formula



3,898,230

SYDNONE IMINE COMPOUNDS

Gilbert Regnier, Chateaux-Malabry; Roger Canevari, Villebon sur Yvette, and Michel Laubie, Vaucresson, all of France, assignors to Science Union et Cie., Societe Francaise de Recherche Medicale, Suresnes, France

Filed Aug. 2, 1972, Ser. No. 277,213

Claims priority, application United Kingdom, Aug. 26, 1971, 40037/71

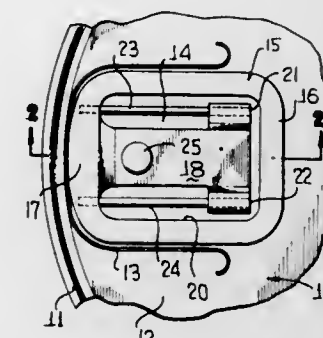
Int. Cl. C07d 51/42

U.S. Cl. 260—256.4 N

7 Claims

1. A compound selected from the group consisting of:

a. 3-[4 - (2-pyrimidinyl)-1-piperazinyl] - sydnone imine, 3-[4-(2-pyrimidinyl)-1-piperazinyl] - ethyl - sydnone imine, 3-[4 - (2-pyrimidinyl)-1-piperazinyl]-N- propionyl sydnone imine, 3-[4- (2-pyrimidinyl)-1-piperazinyl] -N-



partially away from the tear panel the biasing means returns the pull tab toward said tear panel.

butyryl sydnone imine, 3-[4 - (2-pyrimidinyl) - 1 - piperazinyl]-N - pivaloyl sydnone imine, 3 - [4 - (2-pyrimidinyl)-1-piperazinyl] - N -(3,4,5 - trimethoxybenzoyl) sydnone imine, and
b. physiologically tolerable acid addition salts thereof.

3,898,231

PROCESS FOR THE PREPARATION OF TETRAHYDROPYRIMIDISOINDOLOLS

Theodore S. Sulkowski, Wayne, Pa., assignor to American Home Products Corporation, New York, N.Y.

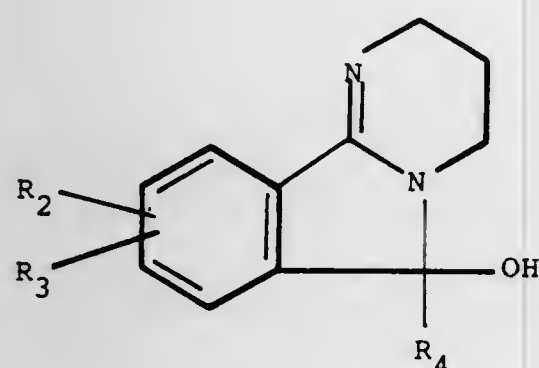
Division of Ser. No. 757,792, Sept. 5, 1968, Pat. No. 3,763,178, which is a continuation-in-part of Ser. Nos. 622,918, March 14, 1967, abandoned, and Ser. No. 576,833, Sept. 2, 1966, abandoned, and Ser. No. 487,587, Sept. 15, 1965, abandoned. This application Sept. 5, 1973, Ser. No. 394,615

Int. Cl.² C07D 239/06, 487/14

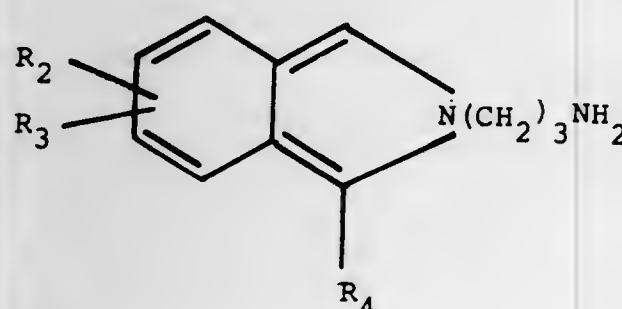
U.S. Cl. 260—256.4 F

2 Claims

1. A process for the preparation of a compound having the formula:



wherein R₁ is selected from the group consisting of hydrogen, lower alkyl, phen(lower)alkyl, phenyl, monohalophenyl, dihalophenyl, mono(lower)alkylphenyl, di(lower)alkylphenyl, trifluoromethylphenyl, mono(lower)alkoxyphenyl, di(lower)alkoxyphenyl, thienyl, pyridyl, furyl and tetrahydro-2-naphthyl; R₂ is selected from the group consisting of hydrogen, halogen, amino, lower alkylamino, lower alkyl and lower alkoxy; wherein said lower alkyl and said lower alkoxy have from one to six carbon atoms and R₃ is hydrogen when R₂ and R₃ are dissimilar; and when R₂ and R₃ are the same they are both selected from the group consisting of hydrogen, halogen, lower alkyl and lower alkoxy wherein said lower alkyl and said lower alkoxy have from one to six carbon atoms which comprises the step of contacting a compound selected from the group consisting of those having the formula:



wherein R₁, R₂ and R₃ are defined as above, in a reaction inert solvent, with an oxidizing agent selected from the group consisting of gaseous oxygen, potassium dichromate, potassium chlorate and hydrogen peroxide.

3,898,232

ISOINDOLIN-1-ONE DERIVATIVES

Claude Cotrel, Choisy-le-Roi; Claude Jeanmart, Brunoy, and Mayer Naoum Messer, Bievres, all of France, assignors to Rhone-Poulenc, S.A., Paris, France

Filed Mar. 14, 1973, Ser. No. 341,307

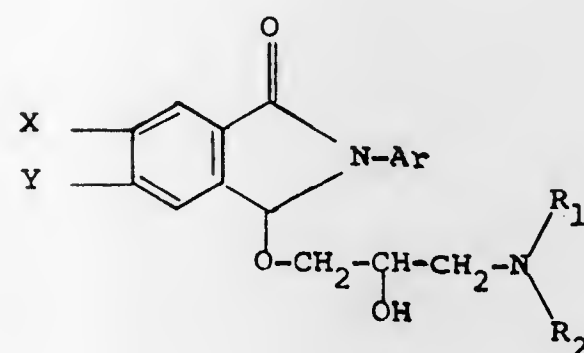
Claims priority, application France, Mar. 16, 1972, 72.009207; Feb. 2, 1973, 73.003728

Int. Cl. C07d 27/50

U.S. Cl. 260—268 BC

12 Claims

1. An isoindoline derivative of the formula:



wherein Ar is phenyl or phenyl carrying one or two substituents selected from halogen, alkyl of 1 through 4 carbon atoms, alkoxy of 1 through 4 carbon atoms, cyano, nitro and trifluoromethyl, X and Y when taken singly represent hydrogen or alkoxy of 1 through 4 carbon atoms, or X and Y when taken together represent methylenedioxy, and R₁ and R₂ when taken singly represent hydrogen or alkyl of 1 through 4 carbon atoms, or R₁ and R₂ when taken together with the nitrogen atom to which they are attached represent piperidino, morpholino, piperazin-1-yl, or piperazin-1-yl carrying in the 4-position an alkyl radical of 1 through 4 carbon atoms, and non-toxic pharmaceutically acceptable acid addition salts thereof.

3,898,233

FLAVANTHRONE PIGMENT

William E. Bachmann, North Haledon, and Thomas R. Flatt, Ridgewood, both of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed June 15, 1973, Ser. No. 370,241

Int. Cl.² C09B 5/20

U.S. Cl. 260—273

1 Claim

1. A polymorphic crystalline reddish yellow flavanthrone pigment exhibiting an X-ray diffraction pattern wherein the only prominent peak between 7.00 and 8.00 dA occurs between 7.14 and 7.20 dA, and wherein the only prominent peaks between 3.30 and 3.75 dA occur between 3.39 and 3.42 dA and between 3.63 and 3.67 dA.

3,898,234

4,4'-DINAPHTHYL-1,1',8,8'-TETRACARBOXYLIC ACID DIIMIDES

Kurt Burdeska, Basel; Guglielmo Kabas, Binningen; Andre Pugin, Riehen; Geza Kormany, Allschwil, and Reinhard Zweidler, Basel, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Feb. 6, 1973, Ser. No. 330,161

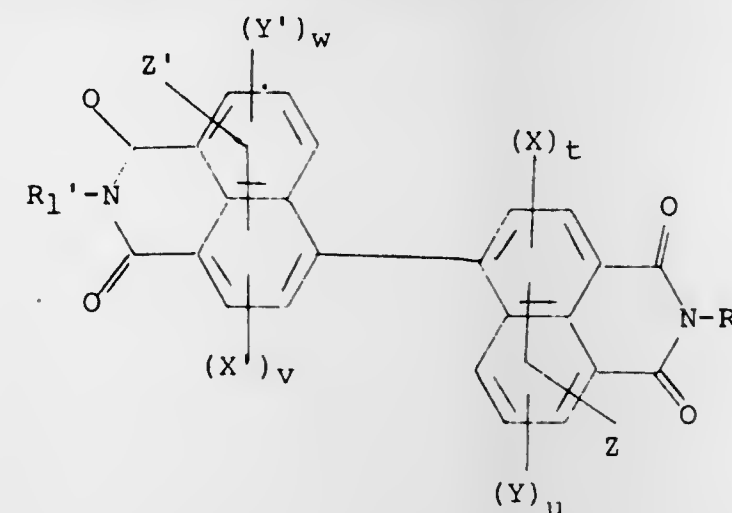
Claims priority, application Switzerland, Feb. 18, 1972, 2399/72

Int. Cl. C07d 39/00

U.S. Cl. 260—281

7 Claims

1. A symmetrical 4,4'-dinaphthyl-1,1',8,8'-tetracarboxylic acid diimide, corresponding to the formula 2



(2)

wherein R₁ and R_{1'} each represent (a) alkyl with 2 to 18 carbon atoms, (b) cyclohexyl or 3,3,5 trimethyl-substituted cyclohexyl, (c) phenylalkyl with 1 to 4 carbon atoms in the alkyl part, unsubstituted or mono-substituted by halogen, methyl or methoxy in the phenyl part, (d) alkyl with 2 to 4 carbon atoms, mono-substituted by hydroxyl, alkoxy with 1 to 12 carbon atoms or the sulpho group, (e) alkyl with 1 to 12 carbon atoms, mono-substituted by a group -COZ₁, wherein Z₁ represents hydroxyl or alkoxy with 1 to 12 carbon atoms, or (f) phenyl or halogen-, methyl- or methoxy-mono-substituted phenyl, X and X' each denote alkoxy with 1 to 4 carbon atoms, or halogen, located in the 3- or 3'-position, Y₁ and Y_{1'} each denote alkoxy with 1 to 4 carbon atoms, acetoxy, benzyloxy or halogen, located in the 6- or 6'-position, t, u, v and w each denote the number 1 or 0 and Z and Z' each denote hydrogen or the sulpho group or its alkali-group or alkaline-earth-metal salts.

3,898,235

OCTAHYDROBENZO [G] QUINOLINES AND HEXAHYDROINDENO [1,2,B] PYRIDINES

Noel F. Albertson, Town of Schodack, and William F. Michne, Town of Colonie, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of Ser. No. 94,619, Dec. 2, 1970, Pat. No. 3,839,338, which is a continuation-in-part of Ser. No. 728,044, May 9, 1968, Pat. No. 3,639,411. This application Aug. 8, 1973, Ser. No. 386,593

Int. Cl. C07d 33/62

U.S. Cl. 260—283 R

43 Claims

1. A compound of the group consisting of: 1,2,3,4,4a,5,10,10a-octahydro-1-(Y¹)-7-(Y²)-5-(Y³)-5-(Y⁴)-benzo[g]quinoline and 1,2,3,4,4a,9b-hexahydro-1-(Y¹)-7-(Y²)-5-(Y³)-5-(Y⁴)-5H-indeno[1,2,b]pyridine, wherein Y¹ is alkyl having 1-6 carbon atoms, 2,2-di(alkoxy)ethyl having 4-6 carbon atoms, alkenyl having 3-6 carbon atoms, alkynyl having 3-6 carbon atoms, halo-alkenyl having 3-6 carbon atoms and one or two chlorine or bromine atoms attached to ethylenic carbon, cyano-alkenyl having 3-6 carbon atoms, cycloalkyl hav-

ing 3-7 carbon atoms, cycloalkenyl having 5-6 carbon atoms, carbalkoxy having 2-7 carbon atoms, dialkylcarbonyl having 3-5 carbon atoms, or (Z)-alkyl wherein alkyl has 1-3 carbon atoms and Z is phenyl, cycloalkyl having 3-7 carbon atoms, or cycloalkenyl having 5-6 carbon atoms; Y² is hydrogen, hydroxy, alkoxy having 1-4 carbon atoms, alkanoyloxy having 1-12 carbon atoms, and cycloalkanecarbonyloxy having 4-8 carbon atoms; Y³ and Y⁴ are the same or different and are hydrogen, alkyl having 1-4 carbon atoms, or phenyl; and acid-addition salts thereof.

3,898,236

2,3,3A,4,6,7,8,9,9A,9B-DECAHYDRO-4-(PHENYL OR SUBSTITUTED PHENYL)-1H-PYRROLO(3,4-H) ISOQUINOLINES

Frederic Peter Hauck, Somerville, N.J., and Joseph E. Sundeen, Yardley, Pa., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

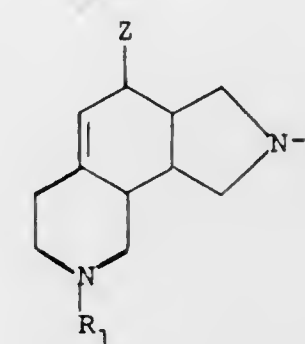
Continuation-in-part of Ser. No. 295,386, Oct. 5, 1972, abandoned, Continuation-in-part of Ser. No. 295,386, Oct. 5, 1972, abandoned. This application Sept. 30, 1974, Ser. No. 510,205

Int. Cl.² C07D 215/46, 217/12

U.S. Cl. 260—288 CF

3 Claims

1. A compound of the formula:



wherein Z is selected from the group consisting of phenyl and methoxyphenyl; and R₁ and R are methyl; and the pharmaceutically acceptable acid addition salts thereof.

3,898,237

PROCESS FOR PREPARING

1,1-DICHLORO-3-(4-PIPERIDINYL)PROPAN-2-OLS
Gunter Grethe, North Caldwell, and Milan Radoje Uskokovic, Upper Montclair, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

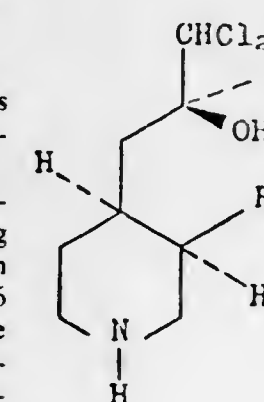
Division of Ser. No. 166,583, July 27, 1971, Pat. No. 3,823,146, which is a continuation-in-part of Ser. No. 117,131, Feb. 19, 1971, abandoned, which is a continuation-in-part of Ser. No. 20,034, March 16, 1970, abandoned. This application May 3, 1974, Ser. No. 466,589

Int. Cl.² C07D 211/22

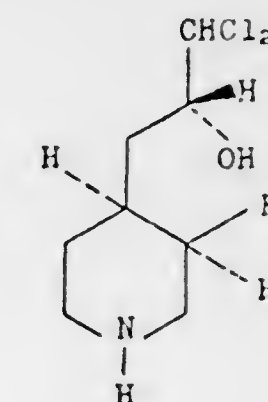
U.S. Cl. 260—293.9

3 Claims

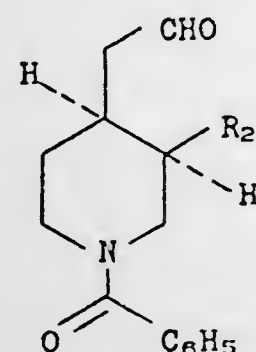
1. A process for preparing compounds of the formulas



and



wherein R_2 is ethyl or vinyl, enantiomers and racemates thereof, which comprises treating a compound of the formula



wherein R_2 is ethyl or vinyl enantiomer and racemate thereof, with a Grignard reagent.

3,898,238

PROCESS FOR THE PREPARATION OF QUINOCLIDINE-2-CARBOXALDEHYDES

Gunter Grethe, North Caldwell, and Milan Radoje Uskokovic, Upper Montclair, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

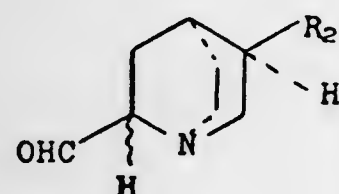
Division of Ser. No. 166,583, July 27, 1971, Pat. No. 3,823,146, which is a continuation-in-part of Ser. No. 117,131, Feb. 19, 1971, abandoned, which is a continuation-in-part of Ser. No. 20,034, March 16, 1970, abandoned. This application May 3, 1974, Ser. No. 466,563

Int. Cl.² C07D 227/08

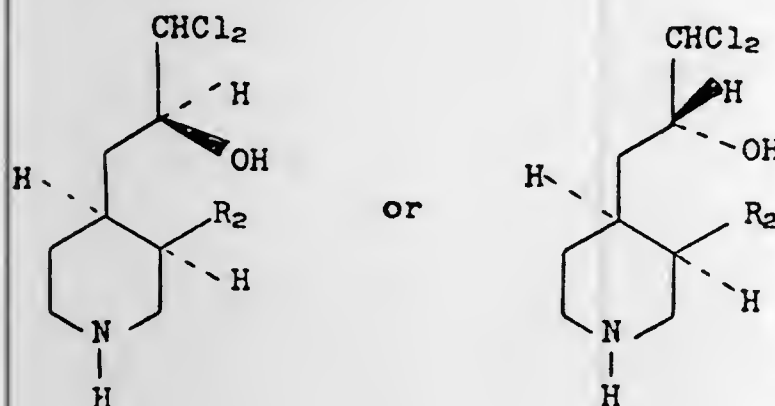
U.S. Cl. 260—293.53

4 Claims

1. A process for preparing epimeric compounds of the formula



wherein R_2 is ethyl or vinyl, enantiomers and racemates thereof, which comprises treating the corresponding compounds of formulas



wherein R_2 is ethyl or vinyl enantiomers and racemates thereof, with a cyclizing and dehydrochlorinating agent.

3,898,239

TRICYCLIC COMPOUNDS

Emilio Kyburz, Reinach, and Hans Spiegelberg, Basel, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

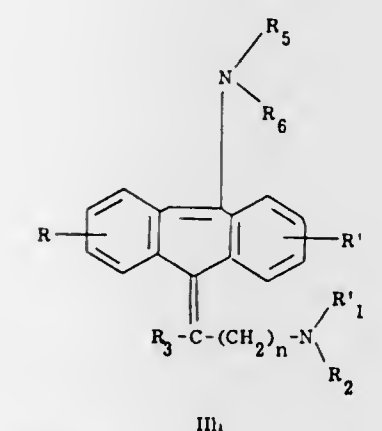
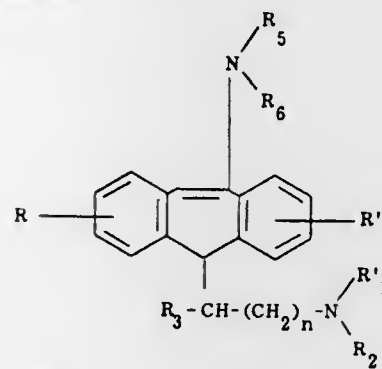
Division of Ser. No. 169,561, Aug. 4, 1971, Pat. No. 3,786,095, which is a continuation of Ser. No. 744,674, July 15, 1968, abandoned. This application Oct. 3, 1973, Ser. No. 403,143

Int. Cl.² C07D 295/12

U.S. Cl. 260—293.62

8 Claims

1. A compound selected from the group consisting of members of the formulas



wherein n is an integer from 0 to 3; R and R' are selected from the group consisting of hydrogen, halogen, lower alkyl, lower alkoxy and lower alkanoyl; R_1 is selected from the group consisting of hydrogen, lower alkyl, lower alkoxy, lower alkanoyl and cyano; R_2 is lower alkyl; R_3 is hydrogen; R_4 and R_5 are selected from the group consisting of lower alkyl, lower alkenyl and phenyl-lower alkyl; R_1 and R_2 , taken together with the nitrogen atom, are a 5- or 6-membered saturated heterocyclic residue selected from the group consisting of piperidino, lower alkyl-substituted piperidino, piperazino, lower alkyl-substituted piperazino, pyrrolidino, lower alkyl-substituted pyrrolidino, morpholino and lower alkyl-substituted morpholino; R_3 and R_4 , taken together with the nitrogen atom, are a 5- or 6-membered saturated, unsubstituted or substituted by lower alkyl heterocyclic residue selected from the group consisting of piperidino, lower alkyl-substituted piperidino, piperazino, lower alkyl-substituted piperazino, pyrrolidino, lower alkyl-substituted pyrrolidino, morpholino and lower alkyl-substituted morpholino; and R_2 and R_3 , taken together, are lower alkylene, and acid addition salts thereof.

3,898,240

ALPHA-AMINO-OMEGA-ARALKYLIMINO PENICILLANIC ACIDS

Kenneth Butler, Old Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

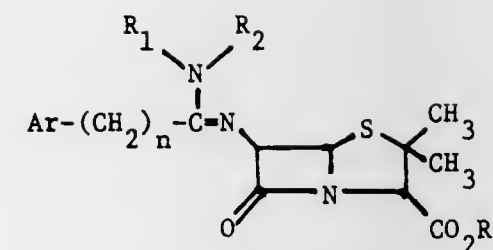
Filed May 25, 1971, Ser. No. 146,786

Int. Cl. C07D 99/10

U.S. Cl. 260—306.7 C

11 Claims

1. A compound selected from the group consisting of penicillins having the formula:



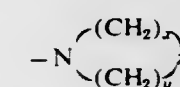
wherein:

Ar is selected from the group consisting of phenyl, furyl and thienyl;

n is an integer of from 0 to 2;

R_1 and R_2 when considered separately are each alkyl containing from 1 to 5 carbon atoms;

R_1 and R_2 when taken together with the nitrogen atom to which they are attached form a heterocyclic ring of the formula:



wherein x and y are integers of from 1 to 3; and Z is selected from the group consisting of CH_2 , O , S and $N-R_4$ wherein R_4 is selected from the group consisting of hydrogen, phenyl, benzoyl, carboalkoxy containing from 2 to 5 carbon atoms and alkyl, alkanoyl and alkylsulfonyl each containing from 1 to 4 carbon atoms;

R_3 is selected from the group consisting of hydrogen, alkyl containing from 1 to 4 carbon atoms, phenacyl and 1-alkanoyloxyalkyl wherein said alkanoyl group contains from 2 to 5 carbon atoms and said alkyl contains from 1 to 4 carbon atoms;

pharmaceutically acceptable acid addition salts thereof; and pharmaceutically acceptable basic salts thereof wherein R_3 is hydrogen.

3,898,241

DERIVATIVES OF

3-AMINOCARBONYL-2-OXAZOLIDINONE AND THEIR PROCESS OF PREPARATION

Claude P. Fauran; Colette A. Douzon, both of Paris; Gerard J. Huguet, Malesherbes; Guy M. Raynaud, Paris, and Claude J. Gouret, Meudon, all of France, assignors to Delalande S.A., Courbevoie, France

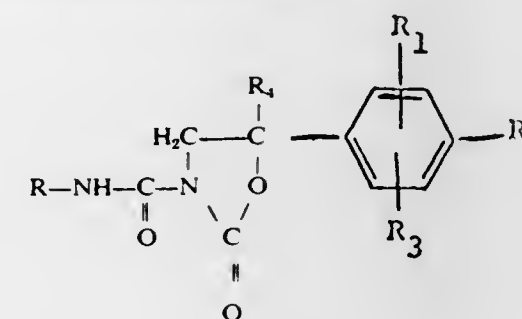
Filed Mar. 23, 1973, Ser. No. 344,359

Claims priority, application France, Mar. 24, 1970, 70.10453; Feb. 17, 1971, 71.05295

Int. Cl. C07D 85/28

U.S. Cl. 260—307 C

1. A compound of the formula



wherein

R_4 is H or phenyl;

R is alkyl or alkenyl of 1 to 4 carbon atoms; and

R_1 , R_2 and R_3 are hydrogen, methyl or halogen.

3,898,242

O,O-DIALKYL-O-NAPHTHISOXAZOLE-THIONOPHOSPHORIC ACID ESTERS

Walter Lorenz, Wuppertal; Ingeborg Hammann; Wolfgang Behrenz, both of Cologne, and Wilhelm Stendel, Wuppertal, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Apr. 6, 1973, Ser. No. 348,794

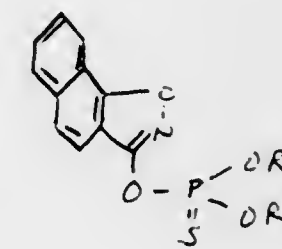
Claims priority, application Germany, Apr. 14, 1972, 2218102

Int. Cl. C07d 85/48

U.S. Cl. 260—307 D

4 Claims

1. A naphthisoazole-thionophosphoric acid ester of the formula



in which

R and R' each independently is alkyl of 1 to 6 carbon atoms.

3,898,243

ALLANTOIN ASCORBIC ACID COMPLEX

Sebastian B. Mecca, Abington, Pa., assignor to Schuylkill Chemical Company, Philadelphia, Pa.

Filed Apr. 22, 1974, Ser. No. 462,779

Int. Cl. C07d 49/32

U.S. Cl. 260—309.5

1 Claim

1. An allantoin ascorbic acid complex.

3,898,244

BETAINE DERIVATIVES OF BIS-IMIDAZOLINE COMPOUNDS

Robert B. McConnell, Janesville, Wis., assignor to Ashland Oil, Inc., Ashland, Ky.

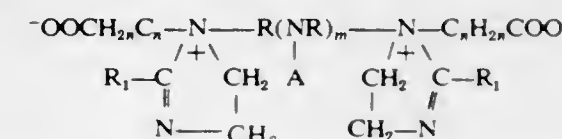
Filed Dec. 17, 1973, Ser. No. 425,159

Int. Cl.² C07D 49/34

U.S. Cl. 260—309.6

14 Claims

1. An amphoteric fabric softening agent having the formula:



6 Claims

wherein R_1 is a C_5 - C_{23} hydrocarbyl group; n is an integer of from 1-3; m is an integer of from 0-4; R is a C_2 - C_4 alkylene group; A represents hydrogen or an acyl group of the formula $R_1C(=O)-$ in which R_1 has the meaning as aforesaid.

3,898,245

TRICYCLICAZAINDOLE DERIVATIVES

James M. McManus, Old Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 228,743, Feb. 23, 1972, Pat. No.

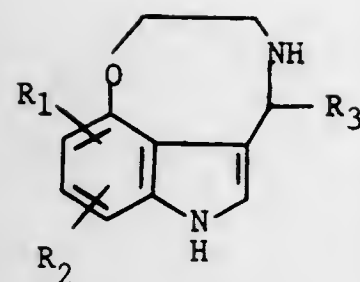
3,833,591. This application Mar. 1, 1974, Ser. No. 447,075

Int. Cl.² C07D 498/06

U.S. Cl. 260—326.5 B

3 Claims

1. A compound selected from the group consisting of tricyclazaindole bases of the formula:



and the pharmaceutically acceptable acid addition salts thereof, wherein R_1 and R_2 are each a member selected from the group consisting of hydrogen, 8-methoxy and 10-methoxy and R_3 is a member selected from the group consisting of alkyl having from 1 to 6 carbon atoms, cycloalkyl having from 3 to 6 carbon atoms, phenylalkyl having up to 3 carbon atoms in the alkyl moiety, phenyl, chlorophenyl, tolyl, anisyl and thienyl.

3,898,246 INDOLES

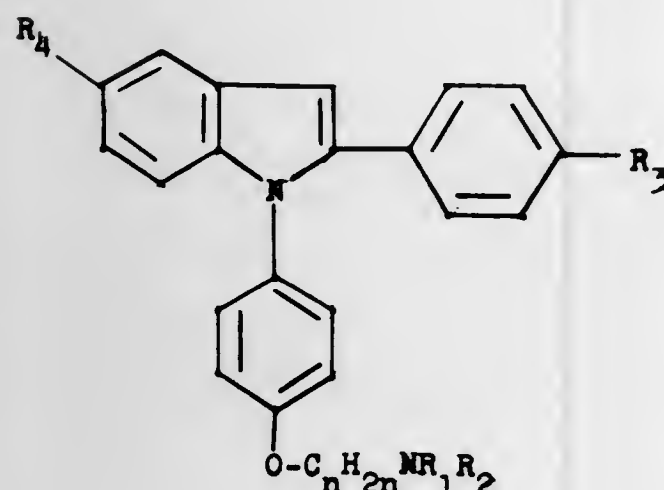
Malcolm R. Bell, East Greenbush, and Andrew W. Zalay, Albany, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 156,068, June 23, 1971, Pat. No. 3,799,943. This application Apr. 4, 1973, Ser. No. 347,620
Int. Cl.² C07D 209/14

U.S. Cl. 260—326.15

1. A compound of the formula

11 Claims



where

R_1 and R_2 are lower-alkyl, or R_1 and R_2 together with the nitrogen form a heterocyclic ring selected from 1-pyrrolidyl, 1-piperidyl, 1-piperazinyl, 4-lower-alkyl-1-piperazinyl, 4-phenyl-1-piperazinyl, 4-morpholinyl, 4-thiomorpholinyl and such rings substituted on carbon by one to

three lower-alkyl substituents, and n is an integer from 2 to 4 inclusive;

R_3 is hydrogen, lower-alkyl, lower-alkoxy or halo; and R_4 is hydrogen, lower-alkyl, lower-alkoxy, benzoyloxy and hydroxy.

3,898,247

POLY(ARYL CYCLIC SULFONIUM) SALTS

Donald L. Schmidt; Hugh B. Smith, both of Midland, Mich.; Melvin J. Hatch, Socorro, N. Mex., and William E. Broxterman, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

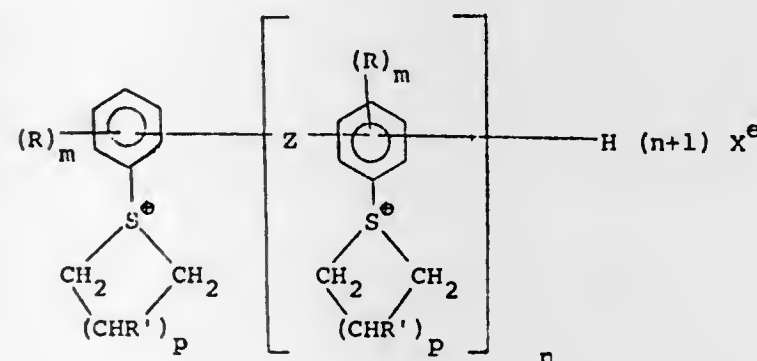
Filed July 26, 1973, Ser. No. 382,976

Int. Cl. C07d 63/04

U.S. Cl. 260—332.2 R

1. A compound of the formula

10 Claims



wherein each is H, Cl, lower alkyl, phenyl or lower alkoxy; each R' is H, Cl, Br, OH or lower alkyl; m is 0-2; n is 1-5; p is 2-3; Z is a chemical bond or O, S or alkylene or alkylene-dioxy of up to 4 carbon atoms and X^- is an anion.

3,898,248

DIOXATRICYCLODECENES

Robert Burns Woodward, Cambridge, Mass., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 2, 1973, Ser. No. 329,253

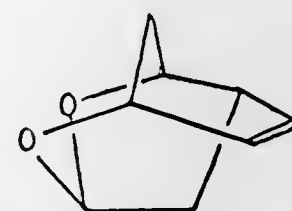
Claims priority, application Switzerland, Feb. 10, 1972, 001947/72

Int. Cl. C07d 15/04

U.S. Cl. 260—340.7

1. The compound of the formula V

2 Claims



(V)

which compound is 9,10-dioxatricyclo[4,3,1,0^{3,8}]dec-4-ene in the form of its racemate.

3,898,249

PROCESS FOR MAKING PHTHALIC ANHYDRIDE

Klaus Felice, Donaustauf; Josef Sedlmeier, Munich; Otto Wiedemann, Munich-Geiselgasteig, and Walter Gierer, Regensburg, all of Germany, assignors to Wacker-Chemie GmbH, Munich, Germany

Filed Aug. 1, 1973, Ser. No. 384,678

Claims priority, application Germany, Aug. 2, 1972, 2238067

Int. Cl.² C07D 307/89

U.S. Cl. 260—346.4

4 Claims

1. In a process for preparing phthalic anhydride by the oxidation of naphthalene or o-xylene or a mixture thereof with air employing a fixed bed catalyst consisting of a carrier coated with vanadium pentoxide and titanium dioxide, at an elevated temperature, the improvement which comprises passing the vapors of naphthalene or o-xylene or a mixture of both, with air, over a first catalyst layer consisting of a carrier coated with vanadium pentoxide and titanium dioxide, said layer containing in said coating from about 0.25 to about 1.5 per cent by weight of potassium ions calculated on the coating, said layer forming 40 to 70 per cent by volume of the total catalyst mass, and then passing said vapors over a second catalyst layer consisting of a carrier coated with vanadium pentoxide and titanium dioxide and being substantially free from potassium ions.

3,898,250

ARTHROPOD MATURATION INHIBITORS

Meyer Schwartz, Kensington; Philip E. Sonnet, Bowie, and Nobel Wakabayashi, New Carrollton, all of Md., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

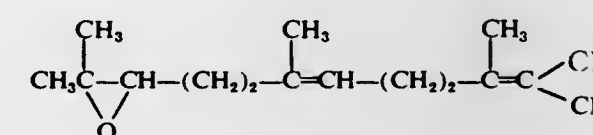
Division of Ser. No. 348,553, April 6, 1973, Pat. No. 3,846,451, which is a division of Ser. No. 104,781, Jan. 7, 1971, Pat. No. 3,824,319. This application May 20, 1974, Ser. No. 471,628

Int. Cl.² C07D 303/46

U.S. Cl. 260—348 R

1. A compound of the formula

1 Claim



3,898,251

EPOXY RESIN CURING AGENT

Michael Arthur Kessick, Houston, Tex., and Ian Hugh McEwan, Mississauga, Canada, assignors to Canadian Industries Limited, Montreal, Canada

Filed Mar. 5, 1973, Ser. No. 337,751

Claims priority, application United Kingdom, Mar. 3, 1972, 9977/72

Int. Cl.² C08K 5/16

U.S. Cl. 260—404.5

3 Claims

1. The reaction product of 4,4'-diaminodiphenylmethane and the glycidyl ester of a mixture of saturated, highly branched, mainly tertiary monocarboxylic acids having C_6 , C_{10} , C_{11} chain lengths, obtained by heating said reactants to a temperature under 150°C , said reaction product being in the form of a liquid.

3,898,252

PREPARATION OF ENOL ESTERS

Samuel Serota, Philadelphia, and Edward S. Rothman, North Hills, both of Pa., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Feb. 26, 1973, Ser. No. 335,859

Int. Cl.² C07C 67/04

U.S. Cl. 260—410.9 N

7 Claims

1. A process for the preparation of enol esters of aliphatic monocarboxylic acids having from 8 to 22 carbon atoms and of a mixture of positional isomers of phenylstearic acid comprising the step of reacting for about 2 hours a monocarboxylic acid and propyne in the presence of zinc stearate catalyst and water, the acid and catalyst being first heated until they form a homogeneous melt, said reaction proceeding at a temperature of about 150°C and a pressure of about 350 pounds per square inch.

3,898,253

REMOLDABLE HALOBUTYL RUBBERS

Ernest Jack Buckler, and John Robert Dunn, both of Sarnia, Canada, assignors to Polysar Limited, Sarnia, Canada

Filed Sept. 6, 1974, Ser. No. 503,764

Claims priority, application Canada, Nov. 8, 1973, 185358

Int. Cl. C08d 13/38; C08c 11/44, 11/10

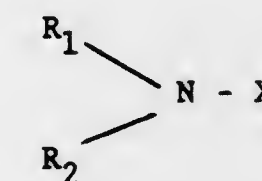
U.S. Cl. 260—42.47

12 Claims

1. A remoldable halobutyl rubber composition comprising the reaction product of

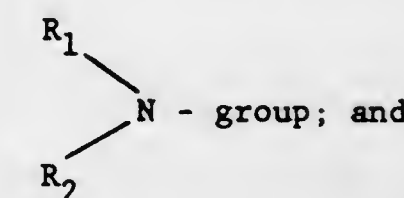
I. a copolymer of isobutylene with about 0.1-15 wt. % isoprene and containing 0.5-15 wt. % bromine or chlorine, and

II. at least one tertiary amine compound selected from A. compounds of structure

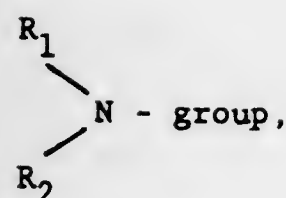


where R_1 and R_2 are methyl or ethyl groups and where X is one of

- an alkyl group having five to 30 carbon atoms;
- a C_1 or C_2 alkyl group substituted with benzene or a substituted benzene;
- an alkyl group having four to 30 carbon atoms and having attached thereto at least one other



d. a nitrogen-carbon containing group having alkyl groups connected by single nitrogen atoms and containing at least one other



having from four to 10 carbon atoms in said alkyl groups and from one to four nitrogen atoms connecting said alkyl groups; B. piperidine or piperazine substituted with a methyl or ethyl group at the heterocyclic nitrogen atoms; and

C. Tri-ethylene diamine, wherein the amount of tertiary amine contains reactable amine groups equivalent to from 1/5 to 5 times the amount of bromine or chlorine groups in the copolymer.

3,898,254

FERROCENE POLYESTERS

Charles S. Combs, Jr., Huntsville, and Charles I. Ashmore, Owens Cross Roads, both of Ala., assignors to Thiokol Corporation, Bristol, Pa.

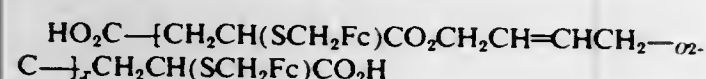
Filed May 20, 1968, Ser. No. 730,633

Int. Cl. C07f 15/02

U.S. Cl. 260—439 CY

4 Claims

1. A composition with the formula



wherein X is equal to a number resulting in a molecular weight of 1,859.

3,898,255

ORGANOSILICON COMPOUNDS

Francois Meiller, Palaiseau, France, assignor to Rhone-Progil, Courbevoie, France

Filed Apr. 15, 1974, Ser. No. 460,826

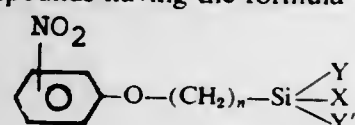
Claims priority, application France, Apr. 17, 1973, 73.13881

Int. Cl. C07f 7/10, 7/18

U.S. Cl. 260—448.2 N

4 Claims

1. Silicon compounds having the formula



wherein n is a whole number from 2 to 4, X represents a chlorine atom or a straight or branched alkoxy group with 1 to 8 carbon atoms, and Y and Y' , which may be similar or different from one another, are each selected from the group consisting of a chlorine atom, a methyl group, an ethyl group, a phenyl group and a straight or branched alkoxy group with 1 to 8 carbon atoms.

3,898,256

METHOD FOR THE PREPARATION OF 1,1,3,3-TETRAMETHYLDISILOXANE

Minoru Takamizawa; Toshio Shinohara, and Yoshiaki Nishimura, all of Annaka, Japan, assignors to Shinetsu Chemical Company, Tokyo, Japan

Filed Mar. 28, 1974, Ser. No. 455,951

Claims priority, application Japan, Mar. 31, 1973, 48-37160

Int. Cl. C07f 7/08

U.S. Cl. 260—448.2 E

9 Claims

1. A method for the preparation of 1,1,3,3-tetramethyldisiloxane which comprises reacting an organohydrogen polysiloxane substantially free of Si-Cl linkages and having at least one methylhydrogen siloxy unit in a molecule with a methyl

Grignard reagent in a dialkyl ether solvent or in a mixed solvent of a dialkyl ether with organic solvents inert to said Grignard reagent, said organohydrogen polysiloxane being soluble in said solvent, and subjecting the reaction mixture to hydrolysis.

3,898,257

CHEMICAL COMPOUNDS

Maurice James Gregory, Welwyn Garden City, England, assignor to The Natural Rubber Producers' Research Association, England

Filed May 2, 1972, Ser. No. 249,553

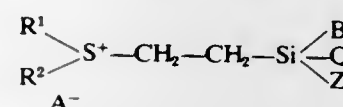
Claims priority, application United Kingdom, May 3, 1971, 12798/71

Int. Cl. C07f 7/18, 7/08, 7/10

U.S. Cl. 260—448.8 R

3 Claims

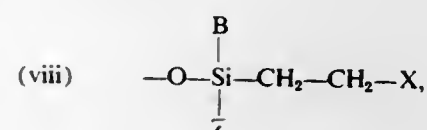
1. A compound which is hydrolyzable in the presence of water to produce ethylene and having the formula:



wherein each of R^1 and R^2 are an aliphatic or aromatic hydrocarbon containing from 1 to 8 carbon atoms;

A^- is a non-phytotoxic anion, and B , Q and Z may be all the same or different and each is selected from the group:

- i. halogen,
- ii. alkyl having from 1 to 18 carbon atoms,
- iii. alkoxy having from 1 to 18 carbon atoms,
- iv. aryl,
- v. hydroxy,
- vi. thio or alkythio,
- vii. dialkylamino,



ix. $-CH_2-CH_2-X$

x. substituted alkyl or alkoxy.

3,898,258

PREPARATION OF ALKENYL ISOCYANATES

Robert Van Helden, and Albertus J. Mulder, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Nov. 19, 1973, Ser. No. 417,030

Claims priority, application Netherlands, Dec. 15, 1972, 7217060

Int. Cl. C07C 118/00

U.S. Cl. 260—453 P

7 Claims

1. The process for preparing 1-and/or 2-isocyano-1-alkenes having 6 or less carbon atoms which comprises,

- a. contacting isocyanic acid with a 1-alkyne having five or less carbon atoms in the presence of zinc and/or cadmium isocyanate at a temperature between about 100°C and about 350°C where the molar ratio of alkyne to isocyanic acid is from about 2:1 to about 15:1, and
- b. condensing the gaseous reaction products containing said cyano-1-alkenes in a vessel maintained at less than about -25°C and separating the said isocyano-1-alkenes from the other condensates by fractional distillation at sub-atmospheric pressures.

3,898,259

PROCESS FOR PREPARING MONO- AND POLYISOCYANATES

Colin John Harsey, 28 Surbiton Hill Park, Surbiton, Surrey, England

Filed May 31, 1972, Ser. No. 258,308

Claims priority, application United Kingdom, June 1, 1971, 18314/71

Int. Cl. C07c 119/04

U.S. Cl. 260—453 P

7 Claims

1. A method for making an organic isocyanate having the formula



wherein R is an aliphatic, cycloaliphatic, aromatic or heterocyclic radical and n is an integer of 1 or 2 which comprises passing an excess of gaseous hydrogen chloride through a solution containing a trisubstituted urea having the formula



wherein R and n have the same meanings as above, R' is an aliphatic or aromatic radical and R'' is a monovalent aliphatic radical or wherein R' and R'' together represent a divalent radical in which at least one of the two carbon atoms adjoining the nitrogen atom of the urea group is aliphatic, in an organic solvent therefor at a temperature within the range of 100°C. to 200°C. until conversion of the said urea to isocyanate, and thereafter separating the isocyanate from the solvent.

3,898,260

THIOPHOSPHORIC ACID AMIDE ESTERS

Willy Meyer, Basel; Beat Bohner, Binningen, and Dag Dawes, Pratteln, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sept. 6, 1973, Ser. No. 394,704

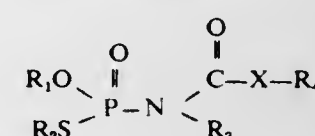
Claims priority, application Switzerland, Sept. 13, 1972, 13458/72; July 9, 1973, 9960/73

Int. Cl. C07c 155/08; C07f 9/24; A01n 9/36

U.S. Cl. 260—455 P

10 Claims

1. A compound of the formula



wherein

R_1 represents C_1-C_4 alkyl,

R_2 represents C_1-C_7 alkyl, C_3-C_5 alkenyl, C_3-C_5 alkenyl or benzyl,

R_3 represents C_1-C_6 alkyl, allyl or C_3-C_6 cycloalkyl,

R_4 represents C_3-C_5 alkenyl, C_3-C_5 alkynyl, benzyl, phenethyl, phenyl, naphthyl, or phenyl mono- or poly-substituted by methyl, methoxy, methylthio, methylsulphinyl, methylsulphonyl, trifluoromethyl, fluorine, chlorine, bromine, ethyl, propyl, isopropyl, sec.butyl, C_3-C_5 alkenyl, nitro, propargyloxy, C_1-C_4 alkoxy-carbonyl, cyano, sulphonamido or acetyl, and

X represents oxygen or sulphur.

3,898,261

PROCESS FOR PRODUCTION OF ALKYL SULPHONIC ACID ESTERS

Rolf Lange, Krefeld-Urdingen, and Harry Welz, Krefeld, both of Germany, assignors to Bayer Aktiengesellschaft, Germany Continuation-in-part of Ser. No. 461,377, April 16, 1974, abandoned. This application May 20, 1974, Ser. No. 471,493

Claims priority, application Germany, Apr. 21, 1973, 2320417

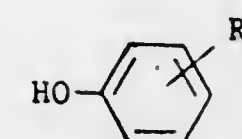
Int. Cl. C07c 143/00

U.S. Cl. 260—456 P

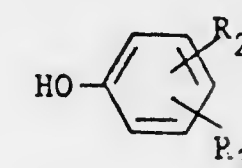
7 Claims

1. A process for producing an alkylsulphonic acid phenylester which is long chain alkylated or polyalkylated on the phenyl nucleus wherein an alkylsulphonic acid phenylester having

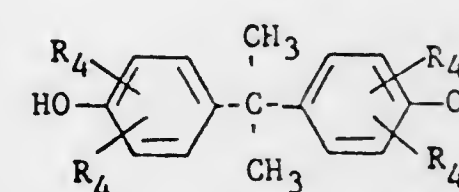
from 10 to 18 carbon atoms in the alkyl moiety and having up to two C_1 to C_3 alkyl substituents on the phenyl nucleus is reacted with a phenol of the formula



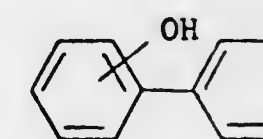
(1)



(2)

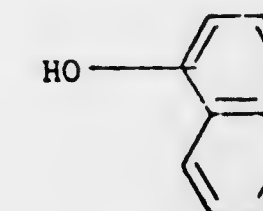


(3)



(4)

or



(5)

wherein R_1 is alkyl having eight to 13 carbon atoms, R_2 and R_3 are alkyl having a total of eight to 18 carbon atoms and each R_4 considered separately is hydrogen, chlorine or bromine, at a temperature of from 100° to 250°C. in the presence of from 0.5 to 10% by weight of an alkali metal hydroxide while continuously distilling off by-product phenol having up to two C_1 to C_3 alkyl substituents, the molar ratio of said phenol to said alkylsulphonic acid phenylester being from 1.0:1.0 to 2.0:1.0.

3,898,262

SUBSTITUTED O-(AMINOSULFONYL)-GLYCOLIC ANILIDES

Adolf Fischer, Mutterstadt; Gerhard Hamprecht, Mannheim; Dietrich Mangold, Neckargemuend, and Wolfgang Rohr, Mannheim, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

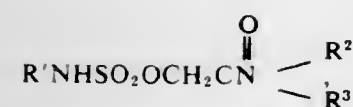
Division of Ser. No. 321,548, Jan. 5, 1973. This application Sept. 3, 1974, Ser. No. 502,745

Int. Cl. C07c 143/02

U.S. Cl. 260—456 A

3 Claims

1. A substituted O-(aminosulfonyl)-glycolic anilide of the formula



where R' denotes lower haloalkyl, R² denotes phenyl, and R³ denotes lower alkyl.

3,898,263 CARBONATES

John Brewster Rose, Letchworth, and Ian Charles Taylor, Bengoe, both of England, assignors to Imperial Chemical Industries Limited, London, England

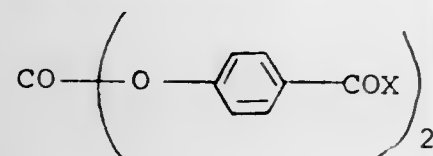
Filed June 4, 1973, Ser. No. 367,003

Claims priority, application United Kingdom, June 16, 1972, 28297/72; June 27, 1972, 30049/72

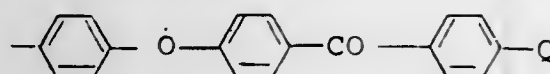
Int. Cl.² C07C 69/06, 49/84

U.S. Cl. 260—463

1. A carbonate of the formula:



in which X is a group having the formula:



where Q is a chlorine, bromine or fluorine atom.

3,898,264

STERIOD TOTAL SYNTHESIS PROCESS UTILIZING A CYANOALKYL A-RING PRECURSOR

Noal Cohen, Montclair; Michael Rosenberger, Caldwell, and Gabriel Saucy, Essex Fells, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

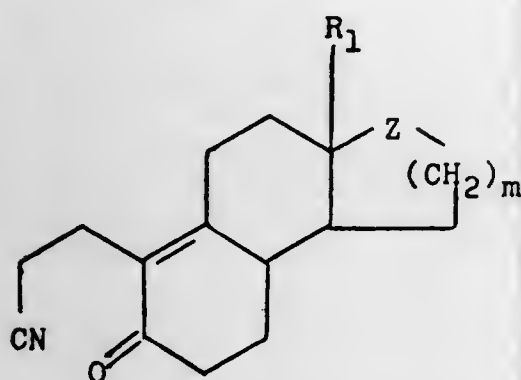
Division of Ser. No. 67,296, Aug. 26, 1970, Pat. No. 3,813,417.

This application Mar. 13, 1974, Ser. No. 450,642

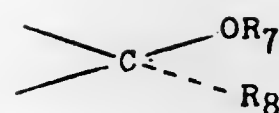
Int. Cl.² C07C 121/00, 121/48; C07D 309/22

U.S. Cl. 260—464

1. The compound of the formula



where R₁ is a primary alkyl group of from 1 to 5 carbon atoms; Z is a carbonyl or a group of the formula



where R₇ is hydrogen, lower alkanoyl, lower alkyl, or tetrahydropyran-2-yl; R₈ is hydrogen or lower aliphatic hydrocarbyl; and m is 1 or 2.

3,898,265

STERIOD TOTAL SYNTHESIS PROCESS UTILIZING A CYANOALKYL A-RING PRECURSOR

Noal Cohen, Montclair; Michael Rosenberger, Caldwell, and Gabriel Saucy, Essex Fells, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

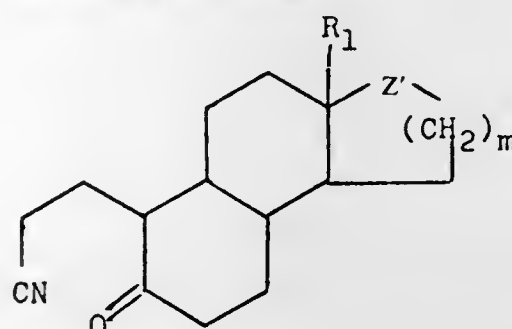
Division of Ser. No. 67,296, Aug. 26, 1970, Pat. No. 3,813,417.

This application Mar. 13, 1974, Ser. No. 450,695

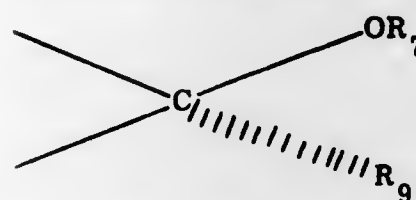
Int. Cl.² C07C 120/00, 121/46; C07D 309/22

U.S. Cl. 260—464

1. The compound of the formula



where R₁ is a primary alkyl group of from 1 to 5 carbon atoms; Z' is carbonyl or a group of the formula



where R₇ is hydrogen, lower alkanoyl, lower alkyl, or tetrahydropyran-2-yl; R₉ is lower alkyl; and m is 1 or 2.

3,898,266

METHYLSULFONYL-BENZOIC ACID DERIVATIVES

Peter Werner Feit, Gentofte; Ole Bent Tvaeremose Nielsen, Vanlose, and Herta Bruun, Graested, all of Denmark, assignors to Leo Pharmaceutical Products Ltd., Ballerup, Denmark

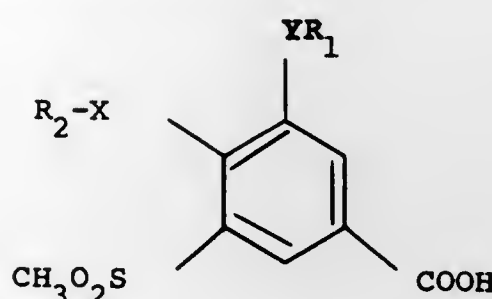
Filed June 12, 1974, Ser. No. 478,833

Claims priority, application United Kingdom, June 20, 1973, 29858/73

Int. Cl. C07c 147/06

U.S. Cl. 260—465 D

1. A compound selected from the group consisting of a compound having the formula:



in which R₁ represents a straight or branched C₁-C₆ alkyl radical, or benzyl; R₂ stands for a phenyl radical, optionally being substituted with lower alkyl or lower alkoxy; X stands for oxygen, sulphur or

>C=O; Y stands

Y stands for oxygen or sulphur; a pharmaceutically acceptable, non-toxic salt thereof; and an ester thereof with cyano methanol, benzyl alcohol and C₁-C₆ alkanol.

3,898,267

PROCESS FOR PREPARING METHACRYLONITRILE FROM ISOBUTENE, AMMONIA AND OXYGEN, IN THE PRESENCE OF CATALYSTS

Giorgio Caporali; Nicola Giordano; Luciano Moreschini; Franco Faletti, and Francesco Pignataro, all of Milan, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

Filed Apr. 27, 1973, Ser. No. 354,987

Claims priority, application Italy, Apr. 28, 1972, 23699/72

Int. Cl. C07c 121/02

U.S. Cl. 260—465.3

3 Claims

1. A process for converting isobutene to high yields of methacrylonitrile which comprises reacting isobutene with ammonia and oxygen, or with gaseous mixtures containing oxygen, in the gas phase, at a temperature of from 350°C to 500°C, and in the presence of a catalyst having the formula

Me₇Te₂Ce₂Mo₁₂O₄₂ or

Me₇Te₂Ce₂Mo_{12-n}(V,W)_nO₄₂

wherein Me represents at least one element from the group consisting of Na, K, Li, Rb, Cs and mixtures thereof, and the various elements are present in atomic ratios such that

v = 0.3 - 18; X = 0.3 - 24; y = 0.3 - 21, z is the amount of oxygen bound to the other elements and corresponding to their oxidation state in the catalyst, and n is a finite number up to 8 when molybdenum is partially substituted by at least one of the elements vanadium and tungsten, said catalyst being obtained by mixing, in an aqueous medium, compounds of Mo, Ce, Te and a compound of at least one element selected from the group consisting of Na, K, Li, Rb, Cs, and mixtures thereof, and when n is a finite number up to 8, a compound selected from the group consisting of a vanadium compound, a tungsten compound and mixtures thereof. And then drying the mixture and heating it in the presence of air at a temperature of from 350°C to 650°C.

3,898,268

PREPARATION OF UNSATURATED NITRILES USING A BORON OXIDE PROMOTER

Charles A. Drake, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed July 26, 1973, Ser. No. 382,901

Int. Cl. C07c 121/02, 121/30, 121/48

U.S. Cl. 260—465.9

25 Claims

1. A process which comprises reacting under reaction conditions a hydrocarbon monoolefinic compound of at least 3 carbon atoms per molecule wherein the sole aliphatic unsaturation is olefinic with an ethylenically unsaturated hydrocarbon nitrile reactant of at least 3 carbon atoms per molecule wherein the sole aliphatic unsaturation is ethylenic in the presence of an effective amount of a catalyst consisting essentially of boric oxide B₂O₃, metaboric acid HBO₂, orthoboric acid H₃BO₃, pyroboric acid H₂B₄O₇, or mixture, wherein said reaction conditions including time, pressure, and temperature in the range of about 100° to 400°C. are effective for said reacting, thereby preparing an unsaturated mononitrile product of higher number of carbon atoms than said unsaturated nitrile reactant.

3,898,269

TETRAHYDRONAPHTHYLGLYOXYLIC ACIDS AND ESTERS

Julius Diamond, Lafayette Hill, Pa., assignor to William H. Rorer, Inc., Fort Washington, Pa.

Division of Ser. No. 268,718, July 3, 1972, Pat. No. 3,821,289.

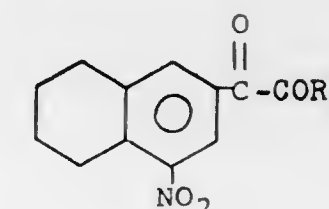
This application Dec. 6, 1973, Ser. No. 422,480

Int. Cl.² C07C 65/20, 69/95

U.S. Cl. 260—471 R

3 Claims

1. A compound of the formula:



where:

R'' is -OH.

loweralkoxy,

phenyl lower alkoxy,

-OM where M is an alkali, alkaline earth or aluminum metal or an ammonium salt.

3,898,270

N-METHYL-N-ALKOXYCARBONYLMETHYL-N'-(2-METHYL-4-CHLOROPHENYL)-FORMAMIDINES

Junichi Saito; Akio Kudamatsu; Tatsuo Tamura; Shozo Sumi, and Norihisa Morishima, all of Tokyo, Japan, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 22, 1972, Ser. No. 308,927

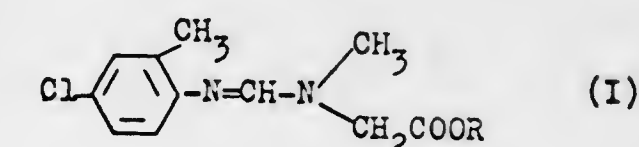
Claims priority, application Japan, Nov. 29, 1971, 46-95221

Int. Cl. C07c 101/44

U.S. Cl. 260—471 A

5 Claims

1. An N-methyl-N-alkoxycarbonylmethyl-N'-(2-methyl-4-chlorophenyl)-formamide of the formula



in which

R is an alkyl radical of 1 to 6 carbon atoms.

3,898,271

CYCLOPROPYLMETHYLPHENYLACETIC ACIDS AND DERIVATIVES

John T. Sheehan, Middlesex; Patrick A. Diassi, Westfield; Seymour D. Levine, North Brunswick, and George C. Rovnyak, Hopewell, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

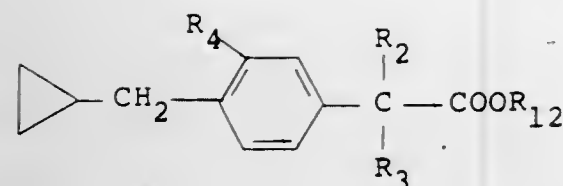
Division of Ser. No. 150,928, June 8, 1971, Pat. No. 3,839,431, which is a continuation-in-part of Ser. No. 54,598, July 13, 1970, abandoned. This application Feb. 28, 1974, Ser. No. 446,864

Int. Cl. C07c 69/76

U.S. Cl. 260—473 R

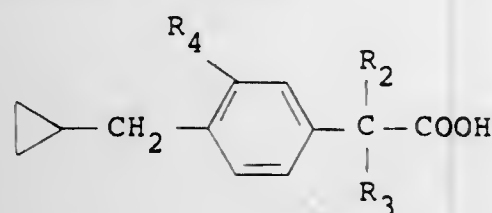
5 Claims

1. A compound of the structure



wherein R_2 and R_3 are each selected from the group consisting of hydrogen and lower alkyl; R_4 is selected from the group consisting of hydrogen, hydroxy, lower alkyl, lower alkoxy, lower alkanoyloxy, halogen and trifluoromethyl; and R_{12} is selected from the group consisting of lower alkyl, monocyclic aryl and monocyclic aryl lower alkyl.

2. A compound of the structure



or a pharmaceutically acceptable salt thereof, wherein R_2 and R_3 are each selected from the group consisting of hydrogen and lower alkyl and R_4 is selected from the group consisting of hydrogen, hydroxy, lower alkyl, lower alkoxy, lower alkanoyloxy, halogen, and trifluoromethyl.

3,898,272

THIONOSALICYLIC ACID ANILIDES

Jurgen Kurz, Wuppertal-Elberfeld; Heinrich Kolling, Haan, Rhineland, and Manfred Federmann, Wuppertal-Elberfeld, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

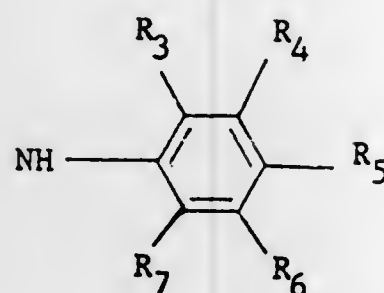
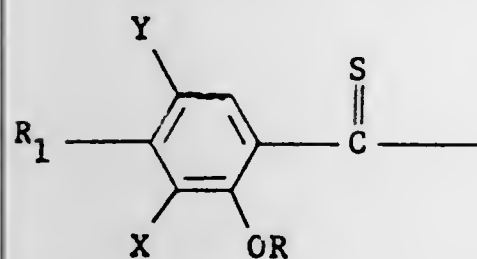
Continuation-in-part of Ser. No. 634,835, May 1, 1967, abandoned. This application Sept. 25, 1969, Ser. No. 861,158
Claims priority, application Germany, May 6, 1966, 49138; Aug. 17, 1966, 49965; Sept. 3, 1966, 50110

Int. Cl. C07c 153/03

U.S. Cl. 260-477

26 Claims

1. A thionosalicylic acid anilide of the formula:



wherein

R is hydrogen, lower alkanoyl or phenyl lower alkanoyl, R_1 is hydrogen or lower alkyl, R_3 , R_4 , R_5 , R_6 and R_7 are the same or different and are each hydrogen, lower alkyl, lower alkoxy, halogen, nitro, trifluoromethyl or lower alkylmercapto and

X and Y are the same or different, wherein X is halogen or nitro, and Y is hydrogen or halogen, or a salt thereof with a non-toxic inorganic or organic base.

3,898,273

ESTERIFIED BROMOACETANILIDES

Don R. Baker, Orinda, and Eugene G. Teach, El Cerrito, both of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

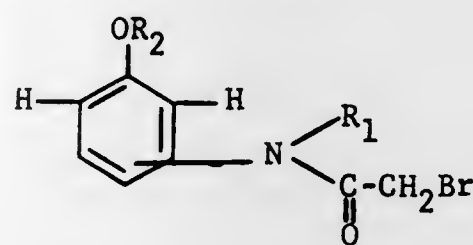
Continuation-in-part of Ser. No. 127,760, March 24, 1971, abandoned, which is a division of Ser. No. 806,717, March 12, 1969, abandoned. This application Nov. 30, 1972, Ser. No. 311,034

Int. Cl. C07C 69/04, 69/14, 69/24, 69/62

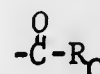
U.S. Cl. 260-479 R

4 Claims

1. A compound having the formula



wherein R_1 is hydrogen or lower alkyl having from 1 to 4 carbon atoms, inclusive, R_2 represents



in which R_3 is hydrogen, alkyl having from 1 to 6 carbon atoms, inclusive, haloalkyl having from 1 to 4 carbon atoms, inclusive.

3,898,274

MONOMERIC EMULSION STABILIZERS DERIVED FROM ALKYL/ALKENYL SUCCINIC ANHYDRIDE

Carlos M. Samour, Wellesley, and Mildred C. Richards, Wakefield, both of Mass., assignors to The Kendall Co., Boston, Mass.

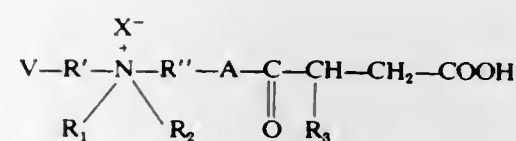
Division of Ser. No. 40,718, May 26, 1970, Pat. No. 3,751,451, which is a continuation-in-part of Ser. No. 867,900, Oct. 20, 1969, abandoned. This application Nov. 22, 1972, Ser. No. 308,908

Int. Cl. C07C 101/00

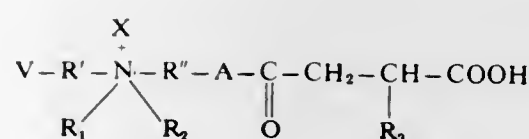
U.S. Cl. 260-501.13

3 Claims

1. A compound having the formula



OR



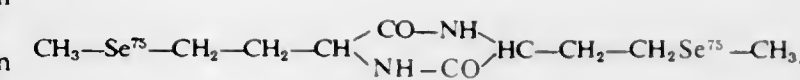
wherein

V is an ethylenically unsaturated radical selected from the group consisting of allyl and methallyl; R' is a direct linkage and R'' is an independently selected from the group consisting of ethylene, propylene and isopropylene; A is $-NH-$;

R_1 and R_2 are independently alkyl having 1 to 7 carbon atoms;

R_3 is a lipophilic aliphatic hydrocarbon group having from about 7 to about 28 carbon atoms; and

X^- is halide, alkyl sulfate wherein the alkyl moiety has 1 to 4 carbon atoms, or toluene sulfonate.



and then treating said latter product with a dilute mineral acid to produce selenomethionine- Se^{75} .

3,898,277

N-SUBSTITUTED ARYL FORMIMIDOYL COMPOUNDS
Dieter Duerr, Bottmingen, Switzerland, and Georg Pissiotas, Loerrach, Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jan. 17, 1972, Ser. No. 218,536

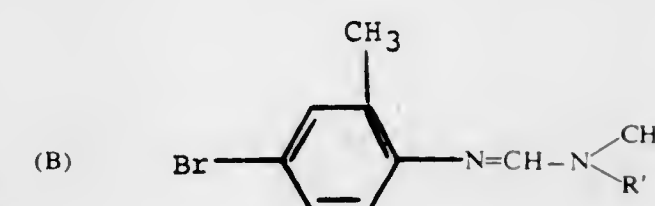
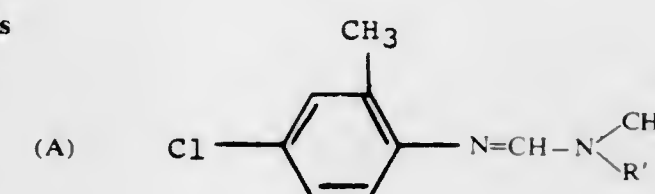
Claims priority, application Switzerland, Jan. 22, 1971, 982/71

Int. Cl. C07c 157/00

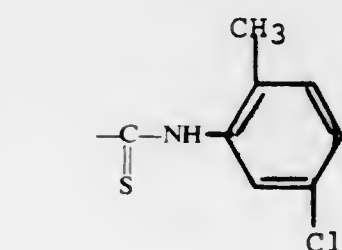
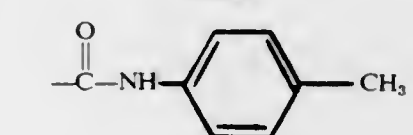
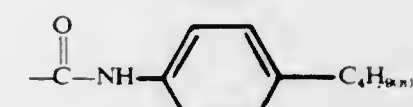
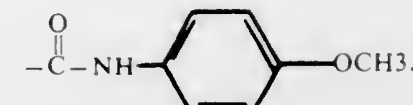
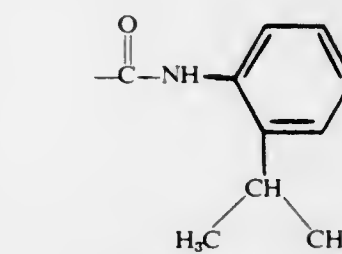
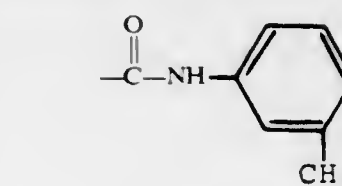
U.S. Cl. 260-552 R

9 Claims

1. A compound of the formula



wherein R' represents in compound (A)



3,898,275

M-SUBSTITUTED BENZOPHENONES

William J. Houlihan, Mountain Lakes, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.

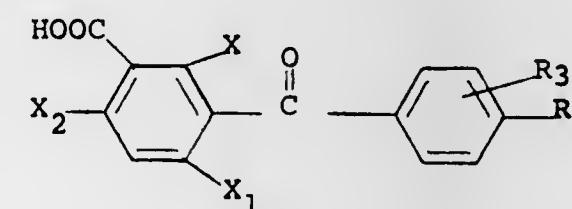
Continuation of Ser. No. 91,546, Nov. 20, 1970, abandoned. This application Dec. 14, 1973, Ser. No. 424,544

Int. Cl. C07c 65/20

U.S. Cl. 260-517

6 Claims

1. A compound of the formula:



where

X is halo having an atomic weight of 19 to 36

X_1 and X_2 each independently represents hydrogen or halo having an atomic weight of 19 to 36, and

R_2 and R_3 each independently represent hydrogen, halo having an atomic weight of 19 to 36 or lower alkoxy provided that only one of X_1 or X_2 is hydrogen.

3,898,276

PROCESS FOR THE PREPARATION OF SELENOMETHIONINE- Se^{75}

Petrus P. H. L. Otto, Delft, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

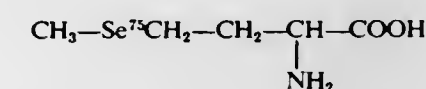
Continuation-in-part of Ser. No. 41,444, May 28, 1970, abandoned. This application Oct. 15, 1973, Ser. No. 406,583
Claims priority, application Netherlands, June 6, 1969, 6908609

Int. Cl. C07c 163/00

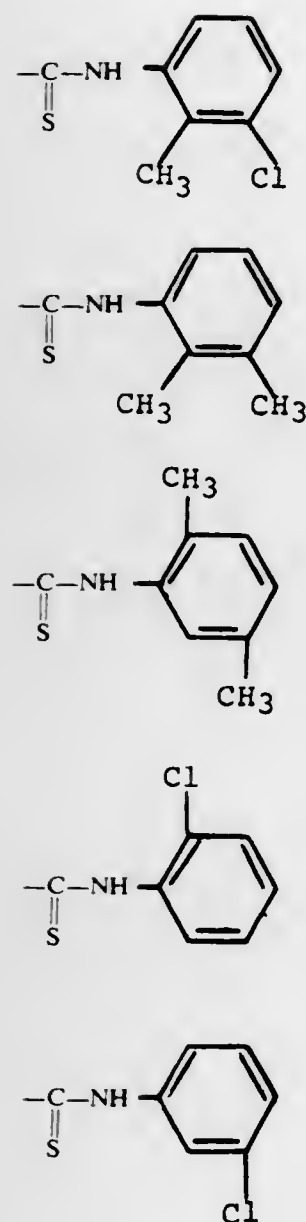
U.S. Cl. 260-534 R

2 Claims

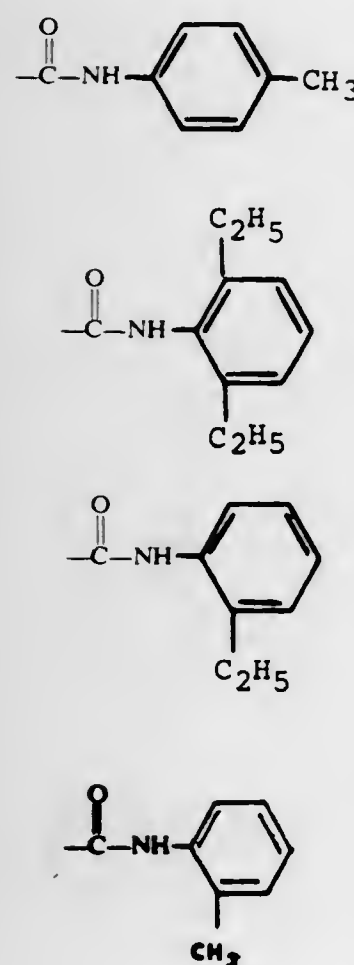
1. A process for the preparation of selenomethionine Se^{75} of the formula



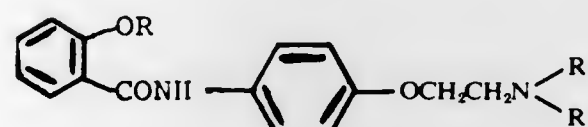
comprising treating seleniom labelled with radio-isotope Se^{75} in the absence of moisture and oxygen and at a reaction temperature of $-15^{\circ}C$ to $+10^{\circ}C$ with a solution of iodide free methyl lithium in tetrahydrofuran to form lithium methylselenide, subsequently reacting said lithium methylselenide with a solution of an agent selected from the group consisting of 2,5-bis (α -chloroethyl)-3,6-diketopiperazine and 2,5-bis (α -bromoethyl)-3,6-diketopiperazine at a temperature of about $45^{\circ}C$ to $50^{\circ}C$ and a pH of about 9-11 to yield a product of the formula



while R' represents in compound (B)

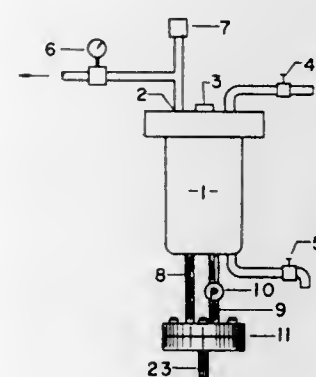


3,898,278
SUBSTITUTED N-PHENYLBENZAMIDES
 Mario Ghelardoni; Vittorio Pestellini; Nicola Pisanti, all of Florence, and Giovanna Volterra, Sesto Fiorentino, all of Italy, assignors to A. Menarini S.A.S., Italy
 Filed Apr. 2, 1973, Ser. No. 347,336
 Int. Cl. C07c 103/38
 U.S. Cl. 260—559 S
 1. A compound having the formula:

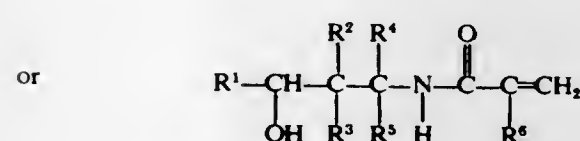


wherein R is a hydrogen atom, an alkyl group of from 1 to 8 carbon atoms, phenylalkylene of from 7 to 10 carbon atoms, R₁ is methyl or ethyl, and the quaternary methyl ammonium mineral acid salt thereof.

3,898,279
N-HYDROXYALKYL ACRYLAMIDES
 or Donald Irvin Hoke, Chagrin Falls, Ohio, assignor to The Lubrizol Corporation, Cleveland, Ohio
 Division of Ser. No. 51,712, July 1, 1970, Pat. No. 3,729,456, which is a continuation-in-part of Ser. No. 788,820, July 3, 1969, Pat. No. 3,585,125, which is a continuation-in-part of Ser. No. 713,787, March 18, 1968, abandoned. This application Oct. 20, 1972, Ser. No. 299,539
 Int. Cl. C07c 103/30
 U.S. Cl. 260—561 N
 14 Claims

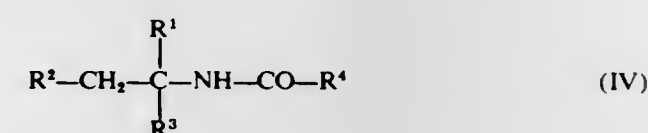


1. A compound of the formula



wherein R¹ is a hydrocarbon radical; each of R², R³, R⁴, and R⁵ is individually hydrogen or a hydrocarbon radical; and R⁶ is hydrogen or a lower alkyl radical.

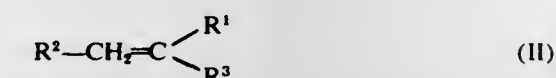
3,898,280
MANUFACTURE OF CARBOXYLIC ACID AMIDES
 Hans Joachim Pander, Roederesheim-Gronau, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany
 Filed July 20, 1973, Ser. No. 381,169
 Claims priority, application Germany, July 22, 1972, 2236040
 Int. Cl. C07c 103/08
 U.S. Cl. 260—561 R
 10 Claims
 1. An improved process for the manufacture of a carboxylic acid amide of the formula



in which R¹ and R³ are identical or different and each is an aliphatic radical of 1 to 20 carbon atoms, R² is hydrogen or an aliphatic radical of 1 to 19 carbon atoms, the aliphatic radicals R¹, R² and R³ optionally bearing as substituents 1-2 halogen atoms, 1-2 nitro groups or 1-2 alkoxy groups of 1-4 carbon atoms, or R¹ and R² together with the carbon atoms to which they are attached form a saturated mono-, bi- or poly-carbocyclic ring with 5 to 12 carbon atoms, and R⁴ is hydrogen or a saturated or unsaturated aliphatic, saturated cycloaliphatic or araliphatic radical or an aromatic radical respectively of up to 12 carbon atoms, and optionally bearing as substituents 1-2 halogen atoms, 1-2 nitro groups or 1-2 alkoxy groups of 1-4 carbon atoms, by reaction of a tertiary alcohol of the formula



in which R¹, R² and R³ have the abovementioned meanings, or of an olefinically unsaturated compound of the formula

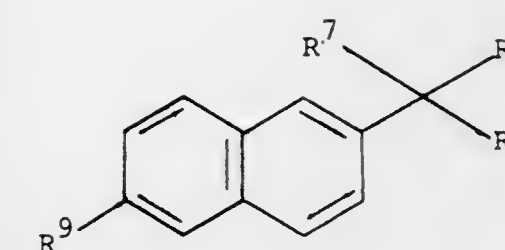


in which R¹, R² and R³ have the abovementioned meanings, with a cyano compound of the formula



in which R⁴ has the abovementioned meaning, at a mol ratio in the reaction mixture of 1 to 30 moles of said cyano compound per mole of said tertiary alcohol or said olefinically unsaturated compound in the presence of an acid condensation agent at a temperature of 0° to 130°C, the improvement being that 1 to 30 moles of formic acid of at least 90 percent strength by weight are used as the condensation agent per mole of said tertiary alcohol or said olefinically unsaturated compound.

3,898,281
NAPHTHYL ACETALDEHYDE IMINES
 John H. Fried, and Ian T. Harrison, both of Palo Alto, Calif., assignors to Syntex Corporation, Panama, Panama
 Division of Ser. No. 222,278, Jan. 31, 1972, Pat. No. 3,821,253, which is a division of Ser. No. 814,855, April 9, 1969, Pat. No. 3,663,713, which is a continuation of Ser. No. 741,900, July 2, 1968, Pat. No. 3,626,012. This application Apr. 25, 1974, Ser. No. 464,017
 Int. Cl. C07C 119/00
 U.S. Cl. 260—566 R
 6 Claims
 1. A compound selected from the group of compounds represented by the formula:



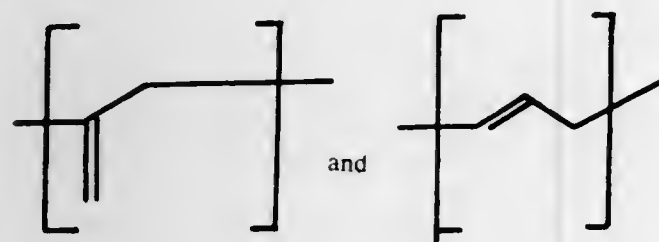
wherein,
 R is —CH=NR³ where R³ is alkyl having up to 6 carbon atoms, cycloalkyl having 3 to 7 carbon atoms, cycloalkylmethyl having 4 to 8 carbon atoms, 2-cycloalkylethyl having 5 to 9 carbon atoms, monocyclic arylmethyl, phenethyl, or phenyl
 one of R⁶ and R⁷ is hydrogen, the other is hydrogen, methyl, ethyl or difluoromethyl; or R⁶ and R⁷ taken together are methylene, halomethylene or ethylene; and
 R⁹ is alkyl having up to 6 carbon atoms, cycloalkyl having 3 to 7 carbon atoms, hydroxymethyl, alkoxyethyl having 2 to 7 carbon atoms, trifluoromethyl, vinyl, ethynyl, fluoro, chloro, hydroxy, a conventional hydrolyzable hydrocarbon carboxylic acid ester having 1 to 12 carbon atoms, alkoxyethoxy having 2 to 7 carbon atoms, difluoromethoxy, alkoxy having 1 to 6 carbons, alkylthio having up to 6 carbon atoms, alkylthio substituted with one or two hydroxy, alkoxy, alkylthio or halo groups and having up to 12 carbon atoms, difluoromethylthio, alkoxyethylthio having 2 to 7 carbon atoms, formyl, acetyl or phenyl, or phenyl substituted with up to two methyl, ethyl, isopropyl, methoxy, hydroxy, or chloro groups, or up to three fluoro groups.

3,898,282
METHOD FOR PRODUCING
α-AMINOCYCLOHEXANONE OXIME
 Yoshiharu Imai, Chita; Yoshihisa Matsukuma, and Shinzo Imamura, both of Nagoya, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan
 Filed May 21, 1974, Ser. No. 472,064
 Claims priority, application Japan, May 24, 1973, 48-57187
 Int. Cl. C07c 31/04
 U.S. Cl. 260—566 A
 5 Claims
 1. A method for producing an α-aminocyclohexanone oxime, which comprises reacting a bis(2-chloro-1-nitrosocyclohexane) with ammonia in the presence of a mineral acid salt of hydroxylamine, wherein the molar proportion of ammonia to bis(2-chloro-1-nitrosocyclohexane) is at least about 20 to 1 and said reaction is carried out at about 40°–100°C. under pressure.

3,898,283
NOVEL CHEMICAL INTERMEDIATES USED IN PRODUCING 4- AND 5-PHENYL-PENTENALS
 William Lewis Schreiber, Jackson, N.J.; Gerard Joseph Mosciano, Newtown, Pa.; Alan O. Pittet, Atlantic Highlands; Manfred Vock, Locust, both of N.J., and Edward Joseph Shuster, New York, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.
 Division of Ser. No. 283,632, Aug. 25, 1972, Pat. No. 3,862,340. This application Sept. 19, 1974, Ser. No. 507,415
 Int. Cl. C07C 119/00
 U.S. Cl. 260—566 R
 3 Claims
 1. A Schiff base having the structure:



wherein X is a moiety selected from the group consisting of:



3,898,284

ETHER-LINKED QUATERNARY AMMONIUM COMPOUNDS

Robert Andrew Bauman, New Brunswick, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. No. 400,097, Sept. 24, 1973, which is a continuation of Ser. No. 39,536, May 21, 1970, abandoned. This application Feb. 25, 1974, Ser. No. 445,714 Int. Cl. C07c 87/00

U.S. Cl. 260—567.6 M

4 Claims

1. A chemical compound having the structural formula: $\text{RO}(\text{CH}_2)_n\text{N}(\text{CH}_3)_4^+ \text{X}^-$ wherein R is 1-adamantyl, R_1 is a long chain alkyl group of 10-18 carbon atoms, n is an integer from 1 to 3, and X is an anion selected from the group consisting of chloride, bromide, iodide, methyl sulfate, nitrate and aryl sulfonates.

3,898,285

NOVEL ENAMINOSULFOXIDES AND A PROCESS FOR THEIR PREPARATION

Genichi Tsuchihashi, Tokyo, and Katsuyuki Ogura, Sagami, both of Japan, assignors to Sagami Chemical Research Center, Tokyo, Japan

Filed Sept. 12, 1973, Ser. No. 396,366

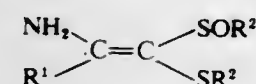
Claims priority, application Japan, Sept. 12, 1972, 47-90948; Sept. 12, 1972, 47-90949; Sept. 12, 1972, 47-90952; Oct. 18, 1972, 47-103606

Int. Cl.² C07C 149/14

U.S. Cl. 260—583 EE

4 Claims

1. An enaminosulfoxide of the formula,



in which R^1 is a member of the group consisting of alkyl and dialkoxymethyl, said alkyl and alkoxy each containing 1 to 4 carbon atoms, and the two R^2 groups are each alkyl of 1 to 4 carbon atoms.

3,898,286

CATALYTIC HYDROGENATION OF UNSATURATED DINITRILES EMPLOYING PALLADIUM AND RUTHENIUM AS CATALYST

Charles A. Drake, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

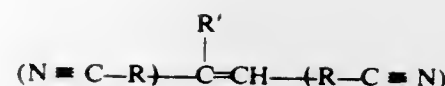
Filed Nov. 19, 1973, Ser. No. 416,786

Int. Cl. C07c 87/14

U.S. Cl. 260—583 P

13 Claims

1. A process for the catalytic hydrogenation of an unsaturated dinitrile feedstock comprising at least one unsaturated dinitrile compound of the formula:



wherein each R is independently selected from the group consisting of an alkylene radical and an alkylidene radical, R' is an alkyl radical, and the number of carbon atoms in said compound is in the range of 7 to 30; which comprises contacting said feedstock under suitable hydrogenation conditions with ammonia; hydrogen; a diluent comprising at least 25 volume percent methanol; and a catalyst consisting essentially of a first catalyst component selected from the group consisting of elemental palladium and palladium compounds which are reducible by hydrogen to elemental palladium at said hydrogenation conditions, and mixtures thereof, and a second catalyst component selected from the group consisting of elemental ruthenium, ruthenium compounds which are reducible by hydrogen to elemental ruthenium at said hydrogenation conditions, and mixtures thereof; to thereby effect the at least substantially complete hydrogenation of said at least one unsaturated dinitrile compound to the corresponding branched-chain saturated aliphatic diamine.

3,898,287

DECOLORIZATION OF CARBONYL COMPOUNDS

Stewart E. Gloyer, Arlington Heights, Ill., assignor to Kraftco Corporation, Glenview, Ill.

Filed Feb. 12, 1973, Ser. No. 331,476

Int. Cl. C07c 49/04

U.S. Cl. 260—593 P

10 Claims

1. A method for decolorization of carbonyl compounds manufactured from ethylenically unsaturated liquid olefin hydrocarbons having a carbon chain length of C_5 to C_{20} by contacting the hydrocarbon with an oxygen containing gas in the presence of a compound of a metal of the platinum group and an oxidizing agent having an oxidation potential higher than that of the platinum group metal comprising adding a diamine selected from the group consisting of a diamine having a carbon chain length of from C_2 to C_6 and ortho-phenylene diamine and a trialkyl phosphite wherein the alkyl groups have carbon chain lengths of from C_1 and C_8 to said carbonyl compounds, said diamine having said amine groups on adjacent carbon atoms, said diamine and said trialkyl phosphite compound being soluble in said carbonyl compound, heating said mixture of said carbonyl compound in the presence of said diamine and said trialkyl phosphite and distilling a decolorized carbonyl compound from said mixture, said carbonyl compound being liquid at the temperature to which said mixture is heated.

3,898,288

OXIDATION OF ALKYL AROMATICS

(1) Pierre M. J. G. de-Raditzky d'Ostrowick, and Jacques D. V. Hanotier, both of Bruxelles, Belgium, assignors to Labofina, Soc. An., Belgium

Division of Ser. No. 884,336, Dec. 11, 1969, Pat. No. 3,665,030. This application Nov. 17, 1971, Ser. No. 199,721

The portion of the term of this patent subsequent to May 23, 1989, has been disclaimed.

Int. Cl. C07c 49/76

U.S. Cl. 260—592

6 Claims

1. The process of oxidizing an alkylaromatic hydrocarbon compound having at least one alkyl radical with at least two carbon atoms and at least one hydrogen atom in the alpha position relative to the aromatic nucleus, to selectively produce a ketone, comprising reacting said alkylaromatic compound in the liquid phase with a cobaltic salt of a fatty acid having from 2-10 carbon atoms in the presence of an activator selected from the group consisting of acids having a dissociation constant higher than 10^{-3} selected from the group consisting of sulfuric, perchloric, p-toluenesulphonic, trifluoroacetic, trichloroacetic, tribromoacetic, dichloroacetic, phos-

phoric and monochloroacetic acids, boron trifluoride, and mixtures thereof, at a temperature between -30°C and 100°C and under a partial pressure of oxygen between 0.1 and 50 atmospheres.

3,898,289

HYDROXY-SUBSTITUTED AROMATIC HYDROCARBON PROCESS

Ronald Alan Schneider, Richmond, Calif., assignor to Chevron Research Company, San Francisco, Calif.

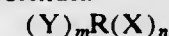
Continuation-in-part of Ser. No. 87,310, Nov. 5, 1970, abandoned. This application May 16, 1974, Ser. No. 470,412

Int. Cl. C07c 37/00

U.S. Cl. 260—621 H

9 Claims

1. The process for the production of a hydroxysubstituted aromatic hydrocarbon by dehydrogenating an epoxide feed, which comprises contacting the feed with a dehydrogenation catalyst selected from the group consisting of Group VIII metals of the Periodic System of Elements, and mixtures thereof, said contacting being at a temperature in the range from about 200° – 400°C ., and said feed containing one or more epoxides of the formula



wherein R is a monocyclic or polycyclic, polyvalent nonaromatic hydrocarbon radical containing a 6-membered nonaromatic carbocyclic ring and having a carbon atom content in the range from six to 14 inclusive;

wherein m and n are integers in the range 1–2, inclusive; and m plus 2n equals the valence of R;

wherein the groups Y are the same or different nongeminal substituents selected from the group consisting of hydroxyl and monovalent hydrocarbon radicals having a carbon atom content of less than seven; and

wherein X is an oxirane oxygen atom bonded to adjacent carbon atoms which are included in a 6-membered nonaromatic carbocyclic ring, said feed having a carbon atom content in the range from six to about 24.

9. The process for the production of pyrocatechol and resorcinol which comprises contacting cis-7-oxabicyclo [4.1.0]heptan-2-ol with platinum dispersed upon carbon, said contacting being at a temperature of about 350°C .

3,898,290

METHOD FOR THE CATALYTIC HYDRATION OF OLEFINS

Wilhelm Ester, Herne, Germany, assignor to Veba-Chemie Aktiengesellschaft, Gelsenkirchen-Buer, Germany

Continuation of Ser. No. 734,840, May 31, 1968, abandoned.

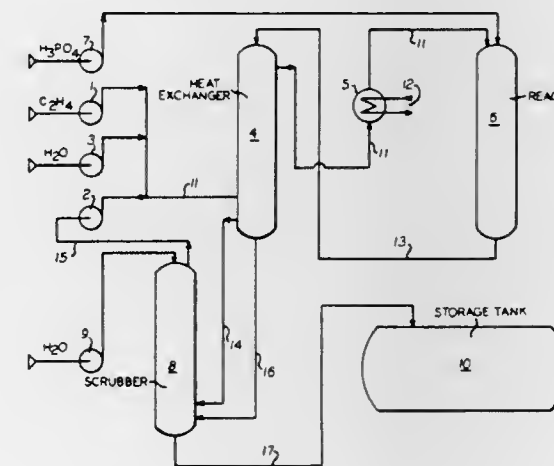
This application Nov. 23, 1971, Ser. No. 201,586

Claims priority, application Germany, May 30, 1967, 40803

Int. Cl. C07c 29/08

U.S. Cl. 260—641

5 Claims



1. In the hydration of an olefin having 2–4 carbon atoms to produce the corresponding alcohol, which comprises:

a. in a reaction zone contacting a gas phase mixture of olefin and water vapor at elevated pressure and at olefin hydration temperatures whereby an alcohol is produced with liquid phosphoric acid as catalyst which liquid phosphoric acid is impregnated within a catalyst support, under conditions wherein liquid phosphoric acid drips from the catalyst,

b. removing a gas phase mixture of alcohol and water vapor entraining liquid phosphoric acid from the reaction zone, the improvement which comprises:

c. in a separating zone free of catalyst support, separating the liquid phosphoric acid from the gas phase mixture removed from the reaction zone and recycling the phosphoric acid to the catalyst support in the reaction zone, d. the reaction zone and separating zone being within a common vessel with the reaction zone disposed over the separating zone,

e. conveying the phosphoric acid separated in the separating zone through a carbon conduit disposed within the vessel to the catalyst support in the reaction zone.

3,898,291

SEPARATION OF ETHANOL AND ISOPROPANOL BY SOLVENT EXTRACTION

Chandrasekhara Rao Darsi, Gerald Anthony Specken, both of Edmonton, and Gerald Alexander Martin, Two Hills, all of Canada, assignors to Celanese Canada Limited, Montreal, Canada

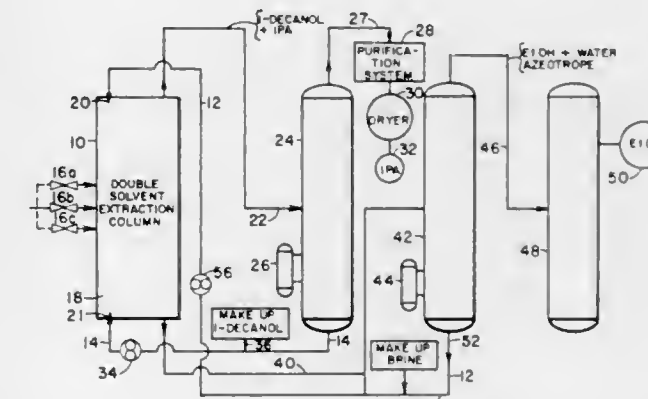
Continuation of Ser. No. 876,925, Nov. 14, 1969, abandoned.

This application Oct. 2, 1972, Ser. No. 294,149

Int. Cl. C07c 29/24

U.S. Cl. 260—643 D

8 Claims



1. A process for separating a liquid mixture of ethanol and isopropanol, which process comprises: continuously introducing said mixture into a solvent-extraction zone;

continuously passing upwardly through said extraction zone an organic solvent which is a liquid, branched-chain, water-immiscible alcohol having at least about 7 carbon atoms;

continuously passing downwardly through said extraction zone an aqueous solvent which is a 5% to less than 15% by weight solution of sodium sulfate in water; and

drawing off near the top and bottom of said extraction zone respectively (a) an organic phase enriched with isopropanol and (b) an aqueous phase denoted L' , the flow rate of the organic solvent denoted V' being adjusted such that the ratio L'/V' is less than Y_E/X_E , Y_E being the concentration of isopropanol in said organic phase at equilibrium and X_E being the concentration of isopropanol in the aqueous phase at equilibrium.

3,898,292

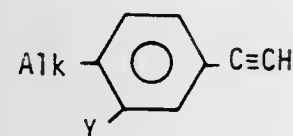
ETHYNYLBENZENE COMPOUNDS AND DERIVATIVES THEREOF

Julius Diamond, Lafayette Hill, Pa., assignor to William H. Rorer, Inc., Fort Washington, Pa.
Division of Ser. No. 268,419, July 3, 1972. This application
Aug. 1, 1974, Ser. No. 493,590
Int. Cl.² C07C 25/06, 25/13

U.S. Cl. 260—650 R

12 Claims

I. A compound of the formula



where Alk is alkyl having 3-7 carbon atoms and Y is halo.

3,898,293

PRODUCTION OF TETRAFLUOROETHYLENE OLIGOMERS

William Roy Deem, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England
Continuation-in-part of Ser. No. 15,275, Feb. 27, 1970, Pat. No. 3,758,618. This application May 24, 1973, Ser. No. 363,314

Claims priority, application United Kingdom, Mar. 3, 1969, 1137/69; Aug. 1, 1969, 38721/69

Int. Cl. C07c 17/26; C08f 3/22

U.S. Cl. 260—653.1 R

7 Claims

1. A process for the preparation of oligomers of tetrafluoroethylene by interacting tetrafluoroethylene under anhydrous conditions at 50° to 120°C in the presence of a fluoride ion catalyst in a polar aprotic solvent, the improvement comprising the preparation of the fluoride ion catalyst by

- preparing a mixture potassium fluoride or potassium acid fluoride and a quaternary ammonium chloride, bromide or iodide wherein the quaternary ammonium ion is selected from the group consisting of the tetraalkylammonium, alkenyltrialkylammonium and benzyltrialkylammonium ions in methanol;
- removing from the mixture both the methanol by distillation and the precipitate of potassium chloride, bromide or iodide formed;
- adding the said polar aprotic solvent to redissolve the quaternary ammonium fluoride.

3,898,294

CHLOROPRENE PROCESS IMPROVEMENT

Stone D. Cooley, Houston, Tex., assignor to Petro-Tex Chemical Corporation, Houston, Tex.

Filed Nov. 6, 1972, Ser. No. 304,139

Int. Cl. C07c 21/20

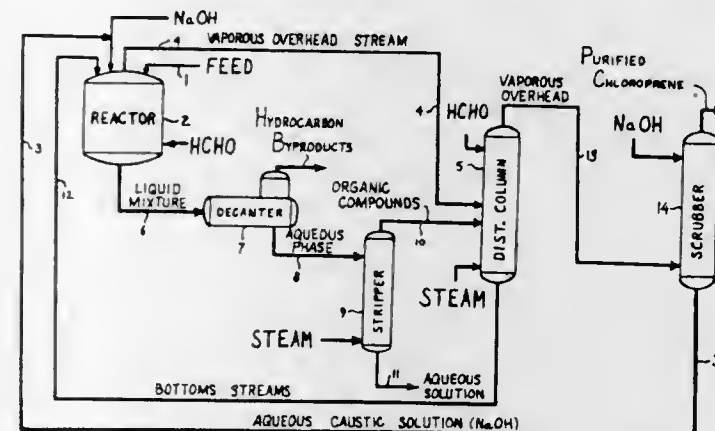
U.S. Cl. 260—655

6 Claims

1. In a continuous process for dehydrohalogenating an organic halogenated compound by reacting said organic halogenated compound selected from the group consisting of 3,4-dichlorobutene-1,2,3,4-trichlorobutene-1 and 1,2,3,4-tetrachlorobutene with an aqueous solution of a hydroxide selected from the group consisting of alkali metal hydroxides and alkaline earth metal hydroxides, to produce the corresponding dehydrohalogenated organic compound in an aqueous salt solution, said process comprising the steps of

- continuously feeding said organic halogenated compound and said aqueous solution of hydroxide to a reactor to form a reaction mixture,
- heating said reaction mixture to a temperature between 70° and 130° C thereby evolving a vaporous composition from said reaction mixture, said vaporous composition comprising predominantly the dehydrohalogenated organic compound and unreacted organic halogenated compound,

- withdrawing said vaporous composition from said reactor and recovering said dehydrohalogenated organic compound therefrom,
- continuously withdrawing a portion of said reaction mixture from said reactor to maintain a constant amount of reaction mixture in said reactor,



- separating said withdrawn portion of said reaction mixture into an organic phase and an aqueous phase, and stripping residual organic components from said aqueous phase, wherein the improvement comprises adding formaldehyde to the reaction mixture, said formaldehyde being present in an amount of at least 0.5 parts by weight per 1000 parts by weight of dehydrohalogenated compounds being produced.

3,898,295

REACTION APPARATUS FOR CARRYING OUT CATALYTIC REACTIONS IN SEVERAL STAGES

Oskar Wanka, Deggendorf, Danube; Friedrich Gutthuber, Metten, and Cedmil Persic, Deggendorf, Danube, all of Germany, assignors to Deggendorfer Werft und Eisenbau GmbH, Germany

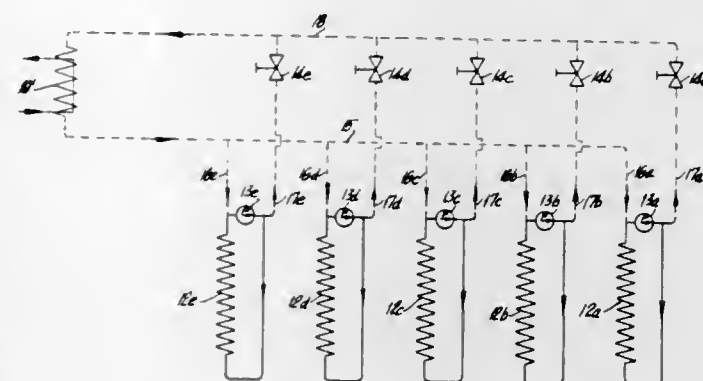
Filed Apr. 25, 1973, Ser. No. 354,464

Claims priority, application Germany, Apr. 29, 1972, 2221288

Int. Cl. B01j 9/04; F28d 15/00; G05d 23/00

U.S. Cl. 423—659

7 Claims



- A method of operating a reaction vessel having alternately arranged containers of catalysts and auxiliary heat exchangers and a separate main heat exchanger connected to the auxiliary heat exchangers each having its own closed circulation system, comprising directing reaction gases through said vessel to cause the gases to successively pass through a plurality of catalyst containers and an auxiliary heat exchanger immediately after each catalyst container, circulating a cooling medium through said main heat exchanger and through a line common to each of said auxiliary heat exchangers, circulating the cooling medium through each closed auxiliary heat exchanger, periodically circulating a portion of the cooling medium from the line common to each heat exchanger separately into each heat exchanger, and periodically returning a portion of the medium from each auxiliary heat

exchanger to a common line to said main heat exchanger, and controlling the rate of flow of the cooling medium in each heat exchanger and said main heat exchanger in order to provide desired cooling in each auxiliary heat exchanger.

3,898,296

SELECTIVE CYCLODIMERIZATION OF 1,3-BUTADIENE CONTAINED IN A COMMERCIAL C-4 HYDROCARBON STREAM

Lawson G. Wideman, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

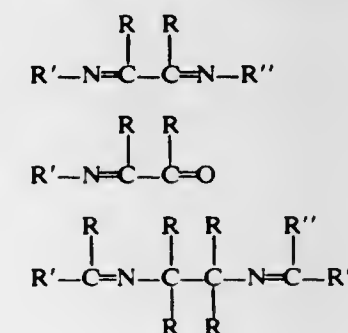
Filed Nov. 1, 1973, Ser. No. 411,971

Int. Cl. C07c 13/00

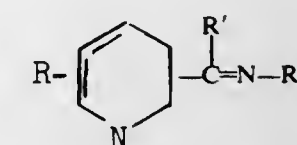
U.S. Cl. 260—666 B

3 Claims

1. The method of recovering the 1,3-butadiene values from a commercial C-4 hydrocarbon stream which comprises subjecting a commercial C-4 stream containing from about 20 to about 40 percent by weight of butadiene and containing other C-4 hydrocarbons from the group of isobutylene, cis and trans-2-butene, 1-butene, n-butane and isobutane resulting from the steam cracking of naphtha or gas oil to a catalyst comprising (1) at least one material selected from the group consisting of iron salts and iron complexes, (2) at least one reducing agent selected from the group consisting of organometallic compounds and metallic hydrides, the metal portions of which are selected from Groups Ia, IIa, IIb and IIIa of the Periodic System of Elements and (3) at least one ligand selected from the group represented by the formulae:



and



wherein R may be hydrogen, an alkyl group of 1 to 6 carbon atoms or an aryl radical, and R' and R'' are hydrocarbons of 4 to 10 carbon atoms and containing double bond unsaturation in conjugation with the C=N unsaturation, and wherein N is nitrogen and O is oxygen, in which the ligand/Fe⁺⁺⁺ mole ratio ranges between about 1/1 and about 4/1 and the mole ratio of the reducing agent/iron ranges between about 1/1 and about 60/1, then subjecting the mixture to a simple flash distillation to separate the C-4 hydrocarbons from the 1,5-cyclooctadiene.

3,898,297

ALKYL BENZENE ISOMERISATION PROCESS

Roy John Sampson; Alan Lewis Crowther, and John Kenneth January, all of Stockton-on-Tees, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Oct. 24, 1973, Ser. No. 409,318

Claims priority, application United Kingdom, Oct. 24, 1972, 48926/72

Int. Cl. C07c 5/24

U.S. Cl. 260—668 A

12 Claims

1. A process for isomerizing an alkyl benzene which consists essentially of contacting a feedstock comprising at least one

alkyl benzene with a catalyst selected from the group consisting of fluorided silica/alumina, fluorided alumina, fluorided silica/alumina containing an alkali or alkaline earth metal and fluorided alumina containing an alkali or alkaline earth metal in the presence of steam and/or of a hydrocarbon which is either an alkane having 2 to 10 carbon atoms or a cyclic hydrocarbon in which at least four carbon-carbon links in a ring are single bonds, any other being aromatic links.

3,898,298

SELECTIVE HYDROGENATION OF VINYL ACETYLENE

Richard J. Desiderio, Lansdowne; Alan R. Hirsig, Willingford, both of Pa., and Donald G. Miller, Houston, Tex., assignors to Atlantic Richfield Company, Philadelphia, Pa.

Filed Apr. 13, 1973, Ser. No. 351,074

Int. Cl. C07c 7/00

U.S. Cl. 260—681.5

1 Claim

1. In the method in which a composition containing a principal amount of butadiene, a contaminant amount of vinyl acetylene, such amount being formed as a by-product of manufacture of crude butadiene and lesser amounts of other acetylenes is treated with hydrogen in the presence of a catalyst to produce a product containing significantly less vinyl acetylene, the improvement which consists of:

using a feedstock containing about 0.7 to about 1.0 per cent vinyl acetylene, and conducting the hydrogenation at mixed phase conditions comprising both liquid phase and vapor phase conditions, such mixed phase featuring a pressure of about seven atmospheres and within the range from about six to about eleven atmospheres and such mixed phase featuring an average temperature in each of two catalyst beds within the range from about 40°C. to about 60°C., whereby the unit ratio of selectivity of vinyl acetylene conversion to butadiene conversion is greater than 80 at a vinyl acetylene conversion greater than 70 per cent, such selectivity ratio being more than 50 per cent better than at comparable conditions other than liquid phase operation at a pressure of about 20 atmospheres, said hydrogenation being conducted in contact with a catalyst consisting essentially of sorptive alumina and from 0.05 to 0.2 per cent palladium, the catalyst being distributed in two beds with interstage cooling and interstage hydrogen injection, the hydrogen to vinyl acetylene ratio being about 1 in the first reactor and being not more than about five in the second reactor, whereby the loss of butadiene is only about 1.28 kilogram of butadiene per kilogram of conversion of vinyl acetylene.

3,898,299

PRODUCTION OF GASEOUS OLEFINS FROM PETROLEUM RESIDUE FEEDSTOCKS

John Robert Jones, Walton-on-Thames, England, assignor to BP Chemicals International Limited, Great Britain

Filed Nov. 2, 1973, Ser. No. 412,099

Claims priority, application United Kingdom, Nov. 8, 1972, 51435/72

Int. Cl. C10g 37/00

U.S. Cl. 260—683 R

10 Claims

1. A process for the production of normally gaseous olefins from an atmospheric petroleum residue feedstock which process comprises the steps of:

- contacting the petroleum residue feedstock in a hydrogenation zone with a hydrogenation catalyst selected from nickel/molybdenum/alumina, cobalt/tungsten/alumina, nickel/tungsten/alumina, cobalt/molybdenum/alumina, nickel/cobalt/molybdenum/alumina, cobalt/molybdenum/silica/alumina, nickel/molybdenum/silica/alumina, nickel/tungsten/silica/alumina and hydrogen at a temperature in the range 50° to 500°C, a pressure in the range 50 to 5,000 psig, a Liquid Hourly Space Velocity in the range 0.1 to 5.0, and a hydrogen feed rate of 5 to 10 times the molar feed rate of the atmospheric

petroleum residue feedstock, to effect hydrogenation of aromatic hydrocarbons,

- b. separating from the resulting hydrogenated atmospheric petroleum residue feedstock a gaseous phase containing hydrogen and a liquid phase containing hydrocarbons,
- c. recycling at least a portion of said gaseous phase containing hydrogen to said hydrogenation zone,
- d. separating said liquid phase containing hydrocarbons into a distillate fraction having a boiling range below 650°C and a residue fraction having a boiling range above that of the distillate fraction,
- e. subjecting said distillate fraction in the presence of steam to thermal cracking in a pyrolysis zone under conditions effecting conversion of at least a portion of said liquid phase to normally gaseous olefins and
- f. recovering the normally gaseous olefins from the pyrolysis zone effluent.

3,898,300

EMULSION POLYMERIZATION METHOD TO PRODUCE A POLYMERIC STYRENE-ACRYLONITRILE-POLYORGANOSILOXANE COMPOSITION AND PRODUCT

John R. Hillard, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Jan. 31, 1974, Ser. No. 438,480

Int. Cl. C08f 33/02, 33/08, 35/02

U.S. Cl. 260—827

26 Claims

1. A method for the emulsion polymerization of styrenic copolymers comprising adding a monomeric composition to an aqueous emulsifier system at a suitable temperature for polymerization of the monomeric composition, said emulsifier system consisting essentially of a redox polymerization catalyst for the monomeric composition and an emulsified polyorganosiloxane, continuing the polymerization until substantially all the monomeric composition is polymerized to a styrenic copolymer composition, coagulating the styrenic copolymer composition, separating the styrenic copolymer composition from the aqueous medium and recovering the styrenic copolymer composition,

said monomeric composition consisting essentially of 10 to 95 weight percent of a styrene selected from styrene, alpha-methylstyrene and ring substituted chlorinated styrene, 0 to 60 weight percent of a nitrile selected from the group consisting of acrylonitrile and methacrylonitrile and 0 to 70 weight percent methylmethacrylate, there being at least one styrene monomer and at least one monomer from the nitrile group or methylmethacrylate or at least one styrene monomer, methylmethacrylate and at least one monomer from the nitrile group,

said emulsified polyorganosiloxane having units of the formulae R_2SiO , $RSiO_{1.5}$, $R_3SiO_{0.5}$ and SiO_2 wherein there is for each 100 moles of R_2SiO units, from 0 to 12 moles of $RSiO_{1.5}$ units, from 0 to 1.5 moles of $R_3SiO_{0.5}$ units and from 0 to 5 moles of SiO_2 units, where R is a monovalent radical selected from the group consisting of methyl, phenyl vinyl and allyl where at least 60 percent of the R groups of the polyorganosiloxane are methyl and from 0.5 to 8 percent of the R groups are vinyl or allyl, said polyorganosiloxane having a weight average molecular weight of at least 10,000 and the polyorganosiloxane molecule being endblocked with groups selected from $R_3SiO_{0.5}$ units, hydroxyl groups or both, the emulsified polyorganosiloxane having an average particle size of from 1000 to 10,000 Angstroms where at least 50 percent of the particles fall within said range of particle size, and

the amount of polyorganosiloxane being from 5 to 70 weight percent based on the combined weight of the monomeric composition and the polyorganosiloxane where the monomeric composition and the polyorganosiloxane are 100 weight percent.

3,898,301 BLENDS OF THERMOPLASTIC POLYMERS WITH GRAFT COPOLYMERS OF MALEIC ACID DERIVATIVES

Kunio Konishi; Tsuneo Tsubakimoto, and Masao Nikki, all of Osaka, Japan, assignors to Nippon Shokubai Kagaku Kogyo Co. Ltd., Osaka, Japan

Filed Apr. 10, 1973, Ser. No. 349,772

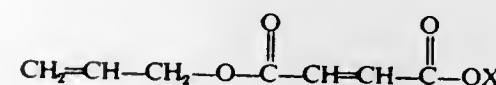
Claims priority, application Japan, Apr. 11, 1972, 47-35726

Int. Cl. C08f 15/00, 19/00

U.S. Cl. 260—876 R

6 Claims

1. A thermoplastic resin composition comprising
2. 2 to 60% by weight of a graft copolymer (GP) prepared by graft copolymerizing a monomer mixture (C) comprising styrene and acrylonitrile with a substratum polymer (AB) having pendant double bonds prepared from 0.1 to 20.0% by weight of at least one comonomer (A) expressed by the general formula



wherein

X is a hydrogen atom, an alkyl group having 1 to 18 carbon atoms, a hydroxyethyl group, a hydroxypropyl group or an aminoethyl group,

50 to 99.9% by weight of at least one ethylenically unsaturated monomer (B-1) selected from the group consisting of alkyl acrylates having 1 to 12 carbon atoms in the alkyl portion, and 0.0 to 49.9% by weight of at least one other unsaturated monomer (B-2), and

2. 40 to 98% by weight of a thermoplastic copolymer (T.P.) prepared by copolymerizing a mixture comprising styrene and acrylonitrile.

3,898,302

PROCESS FOR PRODUCING BLOCK COPOLYMER

Takatoshi Shimomura, Toyonaka; Hideo Nagata, and Yoshiaki Murakami, both of Ibaragi, all of Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

Filed May 18, 1972, Ser. No. 254,437

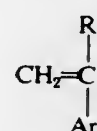
Claims priority, application Japan, May 21, 1971, 46-34895

Int. Cl. C08f 19/08

U.S. Cl. 260—880 B

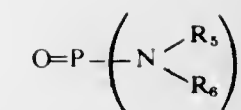
11 Claims

1. A process for producing a block copolymer having a middle copolymer block composed predominantly of units of conjugated diene and remaining units of a vinyl-substituted aromatic hydrocarbon of the general formula

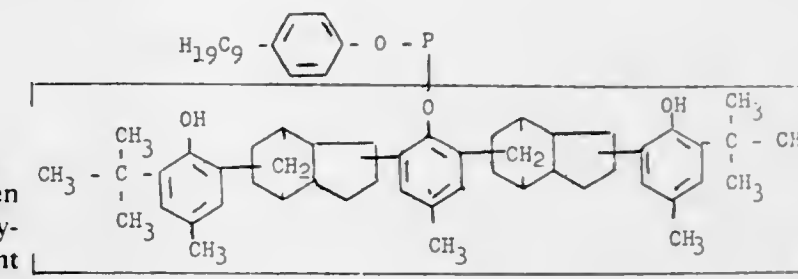


wherein Ar is an aryl group and R is hydrogen or an alkyl group of 1 to 10 carbon atoms and

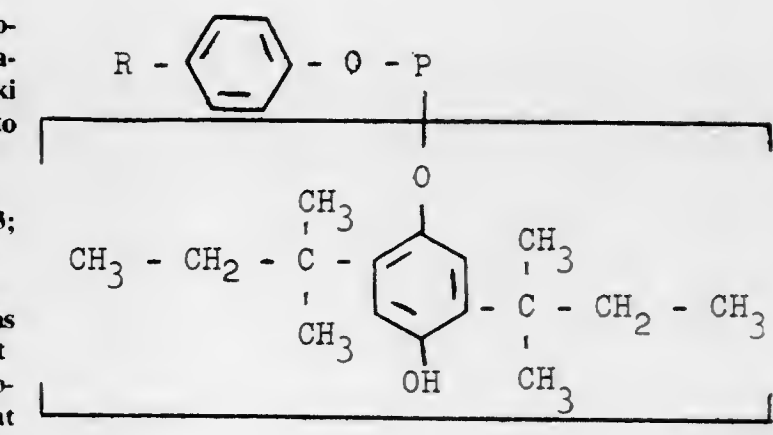
homopolymer end blocks composed of said vinyl-substituted aromatic hydrocarbon units, by the action of a dilithium compound on coexistent conjugated diene and vinyl-substituted aromatic hydrocarbon, comprising polymerizing said conjugated diene and said vinyl-substituted aromatic hydrocarbon at a temperature of -20° to 100°C in a solvent which is inert to the polymer formed by the action of said dilithium compound on coexistent conjugated diene and vinyl-substituted aromatic hydrocarbon, and after substantial completion of polymerization of said conjugated diene, adding to the polymerization system a chelating tri-functional Lewis base of the general formula



wherein R_5 and R_6 are alkyl groups of 1 to 4 carbon atoms in a ratio of at least 1:1 against the active end groups, and then polymerizing the remaining vinyl-substituted aromatic hydrocarbon at a temperature of -78°C up to the boiling point of the solvent used.



2. A product corresponding to the formula



3,898,303 PIPERIDINE-SPIRO-HYDANTOIN DERIVATIVES AND THEIR USE AS STABILIZERS

Keisuke Murayama; Syoji Morimura; Takao Yoshioka; Toshimasa Toda; Eiko Mori; Hideo Horiuchi; Susumu Higashida; Katsuaki Matsui; Tomoyuki Kurumada; Noriyuki Ohta, and Hisayasu Osawa, all of Tokyo, Japan, assignors to Sankyo Co., Ltd., Tokyo, Japan

Filed May 10, 1973, Ser. No. 358,966

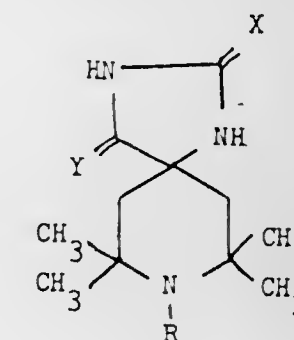
Claims priority, application Japan, June 3, 1972, 47-55263; May 31, 1972, 47-54061

Int. Cl. C08f 45/60; C08g 51/60

U.S. Cl. 260—880 R

9 Claims

1. A synthetic polymer composition stabilized against photo- and thermal-deterioration wherein there is incorporated, in a sufficient amount to prevent said deterioration, at least one compound having the formula

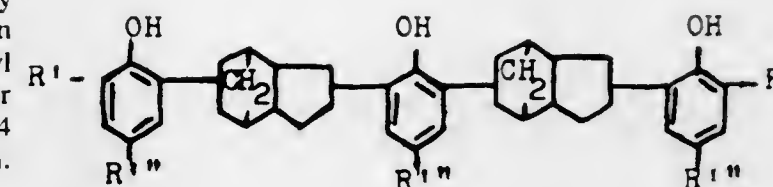


in which R is a hydrocarbon radical containing four to 10 carbon atoms selected from the group consisting of butyl, pentyl, hexyl, heptyl, octyl, nonyl, decyl, benzyl and phenethyl radicals.

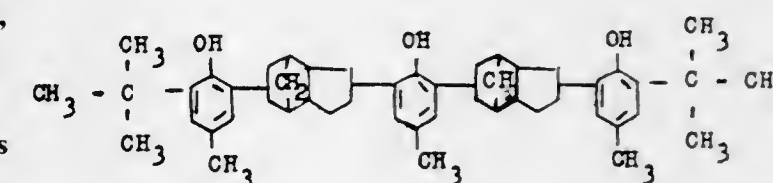
3. The product prepared by reacting 1 mol of a phosphorus compound having the formula



in which x is 1 and y is 2 and 2 mols of a phenol of the formula



4. The product prepared by reacting 1 mol of PCl_3 with 3 mols of a phenol of the formula



3,898,304

HINDERED PHENOLIC PHOSPHITE ESTERS

Ronald B. Spacht, Hudson, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 758,583, Sept. 8, 1968, Pat. No. 3,567,683, which is a continuation-in-part of Ser. No. 381,525, July 9, 1964, abandoned. This application Nov. 27, 1970, Ser. No. 93,513

Int. Cl. C07F 9/12, 9/14

U.S. Cl. 260—953

4 Claims

1. A product corresponding to the formula

3,898,305

**O-METHYL/ETHYL-S-PROPYL/BUTYL-O-CHLOROAL-
LYLPHENYL THIOPHOSPHATES AND
DITHIOPHOSPHATES**

Ernst Beriger, Allschwil, Switzerland; Manfred Boger, Haltingen, Germany; Jozef Drabek, Allschwil, and Odd Kristiansen, Reinach, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 23, 1973, Ser. No. 408,874

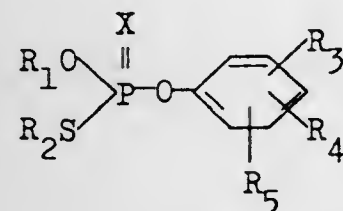
Claims priority, application Switzerland, Nov. 3, 1972, 16043/72; Sept. 21, 1973, 13638/73

Int. Cl. A01n 9/36; C07f 9/18

U.S. Cl. 260—956

10 Claims

1. A compound of the formula



wherein

R₁ represents methyl or ethyl,

R₂ represents n-propyl, isobutyl or sec. butyl,

R₃ and R₄ each represents hydrogen, chlorine, bromine, methyl or ethyl,

R₅ represents —CH₂—CCl=CH₂ or —CH₂CH=CHCl,

and X represents oxygen or sulphur.

3,898,306

O-(2-VINYL PHENYL) THIOLPHOSPHATES

Manfred Boger, Haltingen, Germany, and Jozef Drabek, Allschwil, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Mar. 8, 1974, Ser. No. 449,416

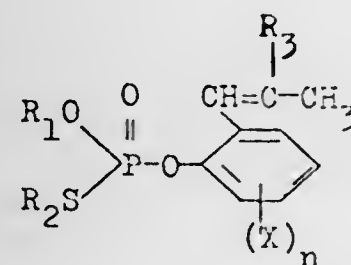
Claims priority, application Switzerland, Mar. 15, 1973, 3776/73; Jan. 30, 1974, 1261/74

Int. Cl. C07f 9/16; A01n 9/36

U.S. Cl. 260—956

9 Claims

1. A compound of the formula



wherein R₁ represents methyl or ethyl, R₂ represents n-propyl, isopropyl, isobutyl, sec. butyl or n-amyl, R₃ represents hydro-

gen or methyl, X represents hydrogen, halogen or methyl, and n is 1 to 3.

3,898,307

HALOGEN-CONTAINING PHOSPHORIC ACID ESTERS

Horst Mayerhöfer, Oberwil, Basel Land; Wolfgang Müller, Neuallschwil, Basel Land; Urs Sollberger, Fullinsdorf, Basel Land, and Rainer Wolf, Allschwil, Basel Land, all of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Filed Feb. 1, 1974, Ser. No. 438,700

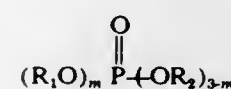
Claims priority, application Switzerland, Feb. 7, 1973, 1773/73

Int. Cl. C07f 9/18

U.S. Cl. 260—964

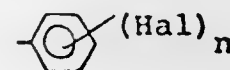
8 Claims

1. A compound of the formula:



wherein

R₁ is a radical



wherein

Hal is chlorine or bromine and

n is an integer 3, 4 or 5,

R₂ is a radical



wherein Hal is as defined above and

m is an integer 1 or 2.

3,898,308

VENTURI SCRUBBER

Jorg P. Baum, Essen, Germany, assignor to Verfahrenstechnik Dr.-Ing. Kurt Baum, Essen, Germany

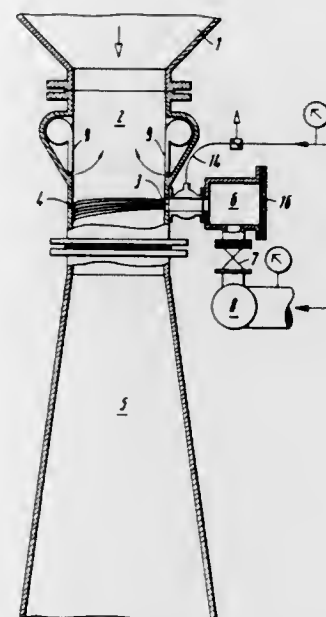
Filed Aug. 17, 1973, Ser. No. 389,346

Claims priority, application Germany, Aug. 29, 1972, 2242483

Int. Cl. B01D 47/10; F16L 55/14

U.S. Cl. 261—69 R

7 Claims



1. A venturi type scrubber, having an axis and having a venturi throat of rectangular cross section and in one plane perpendicular to the axis in each of two opposite walls rows of staggered nozzles fed from water boxes one for each side, the nozzles having means for adjusting their cross section including in combination: a nozzle housing with a round cross section, a tubular diaphragm of elastically stretchable material connected inwardly of the nozzle housing, an annular sealed

chamber between the diaphragm and the nozzle housing all of which are concentric about a common axis, means for introducing a fluid under pressure to the sealed chamber, this adjustable nozzle being situated in the immediate vicinity of the side wall, and having further a water feed line from a source of water to each of the two water boxes connected to the water boxes through an adjustable valve.

3,898,309

**METHOD OF FORMING HIGH DENSITY OXIDE
PELLETS BY HOT PRESSING AT 50°-100°C ABOVE THE
CUBIC TO MONOCLINIC PHASE TRANSFORMATION
TEMPERATURE**

Arvid E. Pasto, Oak Ridge, Tenn., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed May 11, 1973, Ser. No. 359,397

Int. Cl. G21C 21/00

U.S. Cl. 264—5

10 Claims

1. In a method of hot pressing a rare earth or actinide oxide having a cubic to monoclinic phase transformation wherein powders of said oxide are placed in a die and heated to a sintering temperature and sintered under pressure; the improvement comprising the steps of;

heating said oxide in the cubic form to a temperature within the range of 50° to 100°C above said transformation temperature, and,

maintaining the temperature within said range while said oxide is under pressure until said oxide has sintered to substantially theoretical density.

10. A sintered compact of monoclinic Eu₂O₃ having a density of about 100% theoretical density, a purity of 99.9 wt. %, and a grain size of less than 100 microns.

3,898,310

**METHOD FOR MANUFACTURING LARGE PLASTIC
JERRY CANS**

Dr. Wolfram Schiemann, Eugen-Nagele-Strasse 17, 714 Ludwigsburg, Germany

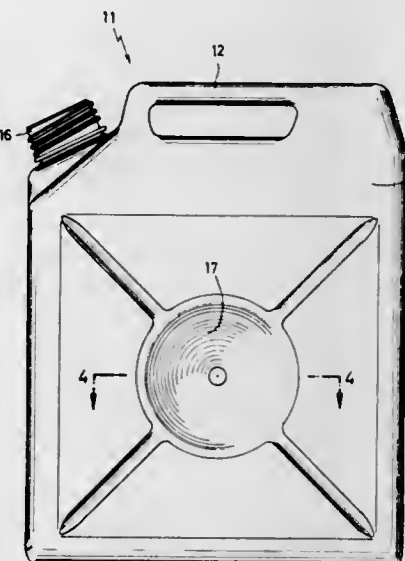
Filed Apr. 3, 1973, Ser. No. 347,572

Claims priority, application Germany, Apr. 6, 1972, 2216524

Int. Cl. B29C 17/07; B29D 3/02

U.S. Cl. 264—94

10 Claims



1. Method for manufacturing large plastic jerry cans for easily combustible liquids comprising

A. injection molding two slender truncated cones conforming to the shape of the jerry can from a surface-stabilized, low-warpage plastic material of surface resistance considerably below 10⁹ ohms, forming holes in the truncated end-portions thereof, and smooth, outwardly-turned

edge-portions thereon, and roughening the inner surface thereof,

B. preheating the truncated cones,

C. placing each truncated cone entirely enclosed in a blow form half section to project inward at the large face of the large jerry can to be molded,

D. positioning highly diffusion-tight thermoplastic hose material, at least 1 mm in thickness, between said truncated cones in said blow form half sections.

E. closing the blow form half sections with the truncated cones spaced apart in the closed position of said blow form half sections and said hose material filling the space between said truncated end-portions in the closed position,

F. blowing and heat sealing a large contiguous wall of said hose material from the inside onto and around the interior surfaces of the truncated cones with the blow form halves closed, smoothly transitioning the edge-portions of the truncated cones into the hose material, and

G. fastening the truncated cones to each other with the blow molded hose material filling the space between the truncated end-portions of the cones by forming rivet-like means through the holes formed in the truncated end-portions of each cone.

3,898,311

**METHOD OF MAKING LOW-DENSITY NONWOVEN
FABRICS**

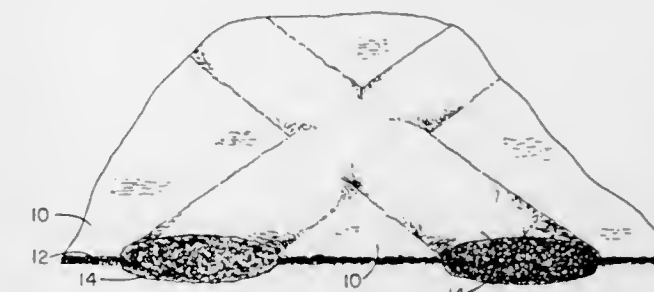
Philip A. Mitchell, East Walpole, and John J. Such, Wrentham, both of Mass., assignors to The Kendall Co., Walpole, Mass.

Continuation-in-part of Ser. No. 844,549, July 24, 1969, abandoned. This application Nov. 8, 1971, Ser. No. 196,336

Int. Cl. B29c 25/00

U.S. Cl. 264—103

2 Claims



1. The method of producing a lofty, low-density nonwoven fabric characterized by criss-crossing diagonally intersecting ribs which comprises

assembling a substantially homogeneous and intimately blended mixture of thermoplastic heat-retractable fibers and nonthermally sensitive fibers, said thermoplastic heat-retractable fibers constituting between 10% and 50% of the total weight of said homogeneous mixture;

forming said fibers into a fibrous fleece; subjecting said fleece to heat and pressure at a set of discrete and spaced apart quadrilaterally-shaped areas, said heat and pressure being sufficient to fuse the two types of fibers together in said quadrilaterally-shaped areas, while leaving the segments of fibers lying between said quadrilaterally-shaped areas substantially unaffected; and

subjecting said fleece to a second heating process, said second heating process being conducted in the absence of pressure and area restraint, and being of sufficient intensity as to cause all of said previously unaffected segments of the thermally-sensitive fibers to retract but not to melt.

3,898,312

METHOD OF FORMING IMPROVED BRIQUETTING OF CALCIUM CHLORIDE

Roscoe L. Pearce, Midland; Gerald C. Stalker, Bay City, and John L. Arnold, Midland, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 223,519, Feb. 4, 1972, Pat. No. 3,779,936, which is a continuation-in-part of Ser. No. 142,994, May 13, 1971, abandoned. This application June 29, 1973, Ser. No.

374,855

Int. Cl. B01j 2/28

U.S. Cl. 264-122

4 Claims

1. A method for briquetting calcium chloride, comprising:
a. mixing thoroughly particulate calcium chloride with solid particulate polyethylene glycol, said polyethylene glycol having a molecular weight in the range of from 1,000 to 200,000 and being employed in an amount in the range of 0.1 to 10 weight per cent based on the weight of the calcium chloride-polyethylene glycol mixture;

b. placing said thoroughly mixed mixture in a briquetting machine;

c. and forming briquettes of said mixture.

3,898,313

PRODUCTION OF IMPROVED CERAMIC SHELL MOULDS

Percy Ronald Taylor, La Hulpe, Belgium, assignor to Monsanto Ltd., London, England

Filed Oct. 12, 1973, Ser. No. 405,949

Claims priority, application United Kingdom, Oct. 18, 1972, 48006/72

Int. Cl. B32B 7/04, 19/02; C04B 35/00

U.S. Cl. 264-225

5 Claims

1. In a process for the production of a ceramic shell mould by applying an alternating series of acidic and alkaline refractory slurry coating to a disposable pattern, drying the mould, removing the pattern and firing the mould, the improvement which comprises applying to said pattern a coat of a first slurry of a refractory filler in a liquid binding agent, and applying to said coat, without an intermediate stucco, a coat of a second slurry of a refractory filler in a liquid binding agent, one of the two slurries being acidic and the other alkaline, the binding agent for said acidic slurry being a solution of an acid-catalyzed, hydrolyzed alkyl silicate and the binding agent for said alkaline slurry being an alkali-stabilized aqueous silica sol, and then applying to the thus-formed primary coating a dry stucco of a refractory material in which 50 percent or more by weight of the particles have a particle size equal to or greater than the average thickness of said primary coating.

3,898,314

METHOD OF MOLDING RUBBER ARTICLES

Herman S. Church, Cuyahoga Falls, Ohio, assignor to Tele-dyne Mid-America Corporation, Hartville, Ohio

Continuation-in-part of Ser. No. 225,065, Feb. 10, 1972, Pat.

No. 3,776,998. This application Oct. 17, 1973, Ser. No.

407,093. The portion of the term of this patent subsequent to

Dec. 4, 1990, has been disclaimed.

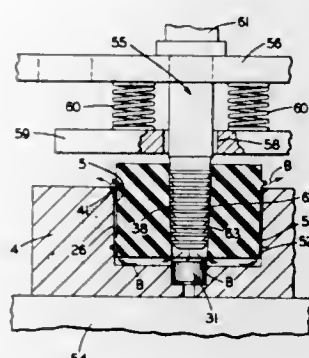
Int. Cl. B29h 3/12; B29c 7/00

U.S. Cl. 264-294

7 Claims

1. In a rubber molding method of the type wherein a supply of uncured rubber is maintained in a pot chamber at a heated temperature below curing temperature to retain the uncured rubber in a soft, workable condition, then a charge of the heated uncured rubber is transferred to a mold cavity formed partially by a lower mold element, then the transferred charge of uncured rubber is separated from the supply of uncured rubber in the pot chamber, then a mold lid is placed on the lower mold element to enclose, press, and displace the uncured rubber in the cavity, and then the enclosed charge of uncured rubber is cured while held under pressure in the cavity at curing temperature to form a molded rubber article; the improvements including the steps of inserting pin means

into the charge of uncured rubber during mold closure of said charge of uncured rubber for carrying out the displacement of rubber in the mold cavity and to hold the rubber under compression in the cavity, thereby forming at least a single void in the rubber article being molded by the pin means when the mold lid is placed on the lower mold element prior to curing; forming a circumferential rib on the rubber article upon insertion of the pin means by displacing rubber outwardly from the cavity and surrounding the mold cavity at the parting line between the mold lid and lower mold element; removing the mold lid and pin means from the lower mold element and rubber article, respectively, after curing; inserting air nozzle means downwardly into the void formed in the rubber article and gripping the molded rubber article within the void; injecting air from the nozzle means through the void against the bottom of the mold cavity to assist in stripping the article from the lower mold element; removing the molded rubber article from the lower mold element by moving the air nozzle means relative to the lower mold element; retaining the article on the air nozzle means while moving the air nozzle means; and removing automatically the gripped article from the air nozzle means after removal of the article from the lower mold element.



5. In a rubber molding method of the type wherein a supply of heated uncured rubber is enclosed and pressed in a mold cavity formed by a mold element and a mold lid to displace the rubber in the cavity, and then the enclosed charge of rubber is cured while held under pressure to form a molded rubber article; the improvement including the steps of inserting pin means into the charge of uncured rubber during mold closure of said charge of uncured rubber for carrying out the displacement of rubber in the mold cavity and to hold the rubber under compression in the cavity, and for forming a void extending through the rubber article being molded by the pin means when the mold lid is placed on the mold element prior to curing; removing the mold lid and pin means from the mold element and rubber article, respectively, after curing to expose a portion of the rubber article and an end of the void formed therein; inserting air nozzle means into the void through the exposed end of the void and gripping the molded rubber article within the void; injecting air from the nozzle means through the void against the bottom of the mold cavity to assist in stripping the article from the mold element; moving the air nozzle means relative to the mold element; and retaining the article on the air nozzle means while moving the air nozzle means to remove the article from the mold element.

3,898,315

METHOD FOR REMOVING MOLDS FROM ARTICLES WITH UNDERCUTS

John Henry Haag, Evansville, Ind., assignor to Kent Plastics, Evansville, Ind.

Filed Feb. 25, 1971, Ser. No. 118,800

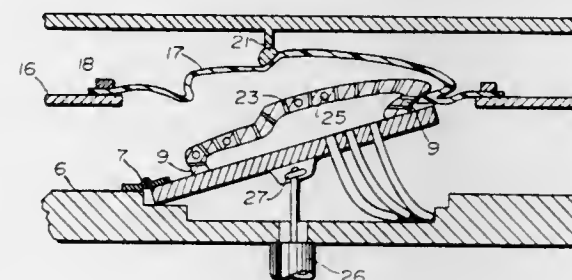
Int. Cl. B28b 7/20, 13/06

U.S. Cl. 264-312

2 Claims

1. A method for removing an inflexible single-piece male mold mandrel pivotally mounted at one end on a platen from an undercut article formed on the mandrel, said method comprising the steps of:

linearly moving at least one of said platen and said article in a direction away from each other, simultaneously rotating said mandrel with respect to said platen along a predetermined rotational axis at said one end in response to forces transmitted to the mandrel by the article being moved away therefrom,



said linearly moving and said simultaneously rotating steps including the removal of said one end portion of the mandrel from said undercut article by localized distortion of said one end of said article and the removal thereafter of the remainder of the mandrel from said undercut article by locally and progressively distorting the article towards the other end thereof, whereby distortion at any given time is localized and easily accommodated.

3,898,316

CALCINATION OF GYPSUM

Frank Geoffrey Flood, Welwyn; Norman McLoughlin, Nottingham; Kenneth Wood Jones, Loughborough, and Clive Offley Court, Nottingham, all of England, assignors to BPB Industries Limited, England

Filed Aug. 28, 1973, Ser. No. 392,389

Claims priority, application United Kingdom, Sept. 1, 1972, 40748/72

Int. Cl. C01f 1/00

U.S. Cl. 423-171

7 Claims

1. A process for the calcination of gypsum comprising the steps of:

introducing finely divided gypsum continuously into a calcination vessel;

introducing an hygroscopic salt aridizing agent continuously into said vessel;

heating the material in said vessel at a temperature about above 120° and below 150°C to dehydrate said gypsum while maintaining said gypsum undergoing dehydration in a fluidized condition; and

discharging continuously from said vessel a calcined product consisting substantially of calcium sulphate hemihydrate.

3,898,317

METHOD FOR INCINERATING FLUE GASES

Klaus H. Hemsath, Sylvania, and Arvind C. Thekdi, Toledo, both of Ohio, assignors to Midland-Ross Corporation, Cleveland, Ohio

Division of Ser. No. 274,406, July 24, 1972, Pat. No.

3,838,974. This application Feb. 25, 1974, Ser. No. 445,480

Int. Cl. F23c 5/00, 9/04; F23m 3/04; F23q 7/06

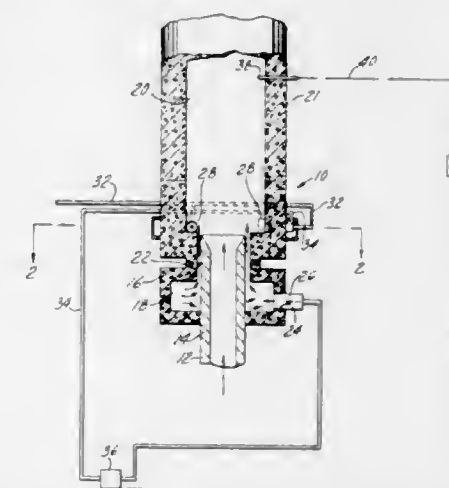
U.S. Cl. 423-210

3 Claims

1. A method of incinerating rich fume combustible gases emitted from a generally cylindrical stack into a larger, generally cylindrical combustion chamber having an open upper end and a reduced diameter lower end surrounding said stack in spaced relation to define an axially extending annular passageway circumscribing said stack, said method comprising the steps of:

introducing combustion air through said annular passageway at a velocity sufficient to enhance the egress of said fumes from said stack into the annulus of air exhausted from said passageway to define a mixture which expands

radially in said combustion chamber until striking the walls thereof at some distance dependent on said velocity whereat stoichiometric mixing is assured; heating said mixture to assure combustion by directing combusting gases from a burner in said combustion chamber to penetrate said mixture prior to said mixture striking the walls of said combustion chamber;



sensing the temperature of said combustion chamber at a point therein removed from said stack; and controlling the air supplied to said passageway and said burner in a dependent manner to maintain a predetermined temperature in said combustion chamber whereby thorough combustion of said rich fumes is achieved independent of the composition of said fumes.

3,898,318

SILICATE DISSOLVING

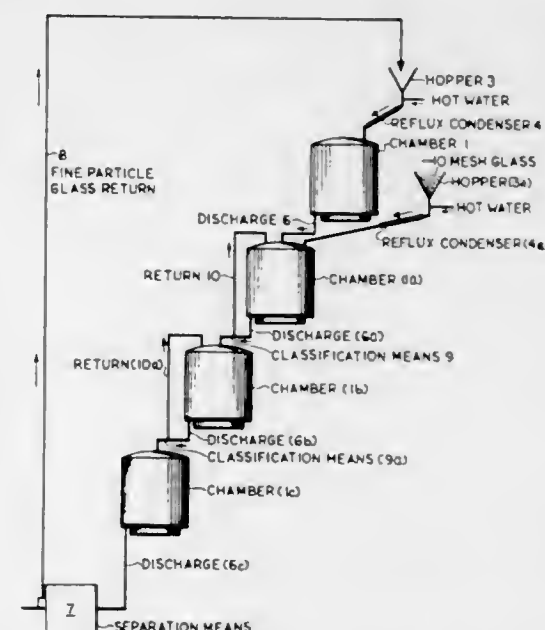
Richard H. Pierce, Broomall, Pa., assignor to Philadelphia Quartz Company, Valley Forge, Pa.

Filed Nov. 14, 1973, Ser. No. 415,899

Int. Cl. B01d 11/02; C01b 33/32

U.S. Cl. 423-332

7 Claims



1. In the known process of dissolving alkali metal silicate glass in water at elevated temperatures to form alkali metal silicate solutions, the improvement allowing the formation of homogeneous and sparkling clear alkali metal silicate solutions and comprising:

a. contacting particles of said alkali metal silicate glass with water at temperatures between 80°C and the boiling point of the solutions formed and at atmospheric pressure thereby forming a solid phase; a semi-solid phase adhering to the surface of the glass particles and consisting of silanol groups, silicate ions and water; and an aqueous phase in a series of annular chambers of vibrating mills,

said annular chambers being charged with energy transfer media which consists of insoluble, inert particulate matter;

b. operating said vibrating mills so that said energy transfer media impact among themselves, with the walls of said chamber, and with said glass particles; thereby supplying gentle abrasive action which promotes the constant removal of said semi-solid phase from the solid phase and diffusion into said aqueous phase to expose nascent glass surfaces which on contact with water form additional semi-solid phase adhering to the surfaces of said glass particles, and

c. intensifying the operation of said vibrating mills so that the impacts of said energy transfer media increase as the particle-size of the alkali metal silicate glass becomes reduced

d. contacting said alkali metal silicate glass with hot water and dilute silicate solution from mill 1 as described hereafter in the chamber of the second vibrating mill of said train;

e. operating said mill so that the impacts of said energy transfer media are 950 to 1250 per minute;

f. discharging the solution and aqueous phase formed in said second mill and the undissolved glass particles through a means for classification whereby the glass particles and aqueous phase that pass through said classification means enter the chamber of the third mill of said train while the particles that do not pass through said classification means are returned to the chamber of the second mill;

g. operating said third mill so that the impacts of said energy transfer media are 1500 to 1900 per minute;

h. discharging the solution and aqueous phase formed in said third mill and the undissolved glass particles through a means for classification whereby the glass particles and aqueous phase that pass through said classification means enter the chamber of the fourth mill of said train while the particles that do not pass through said classification means are returned to the chamber of the third mill;

i. operating said fourth mill so that the impacts of said energy transfer media are 3200 to 3600 per minute;

j. discharging the solution and aqueous phase formed in said fourth mill through a means for separating the remaining undissolved glass particles from the aqueous phase which is the product solution;

k. charging the glass particles from step j to the first mill of said train;

l. contacting said glass particles with hot water and operating said first mill so that the impacts of said energy transfer media are 3200 to 3600 per minute whereby said particles are dissolved completely; and,

m. discharging the dilute solution formed in said first mill into the second mill and continuing the process as described in step d.

3,898,319

PROCESS FOR PREPARING ZEOLITE Y

Wills Wilmer Weber, South Salem, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Apr. 1, 1974, Ser. No. 456,804

Int. Cl. C01b 33/28

U.S. Cl. 423—329

3 Claims

1. Process for preparing zeolite Y which comprises providing spent liquors from a reaction mixture used to prepare zeolite Y, adjusting the SiO_2 concentration thereof to 200 to 425 grams per liter, contacting said aggregate mixture with carbon dioxide at temperature of from 75°C to 175°C and at pressure of from about 15 to 165 psia, the quantity of carbon dioxide being from 0.5 to 2, preferably 0.5 to 1.4 moles per mole of Na_2O present in the said aggregate mixture, whereby amorphous solid silica is precipitated, and thereafter forming a reaction mixture having a composition expressed in terms of mole-ratios of oxides which falls within one of the ranges set forth in Table I, said precipitated silica constituting a major

proportion of the SiO_2 content of the reaction mixture thus formed, maintaining the mixture at temperature in the range of about 20° to 150°C until crystals of zeolite Y are formed, and separating the zeolite Y crystals thus formed from the mother liquor.

3,898,320

DRY ABSORBENT COMPOSITION AND PROCESS FOR MAKING THE SAME

Masumi Atsukawa; Yoshihiko Nishimoto, and Kazuhiro Matsumoto, all of Hiroshima, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Japan

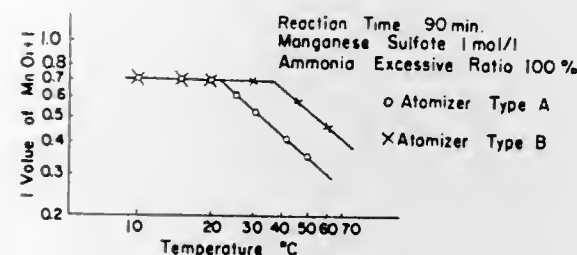
Continuation-in-part of Ser. No. 96,162, Dec. 8, 1970, Pat. No. 3,798,310, which is a continuation of Ser. No. 864,961, Oct. 6, 1969, abandoned, which is a continuation of Ser. No. 548,340, March 4, 1966, abandoned. This application Feb. 16, 1973, Ser. No. 333,171

Claims priority, application Japan, Mar. 24, 1965, 40-17091

Int. Cl. C01g 45/02

U.S. Cl. 423—605

11 Claims



1. A manganese oxide composition consisting essentially of at least one activated manganese oxide of the formula $\text{MnO}_{1+i} \cdot \text{XH}_2\text{O}$ wherein i is a number from about 0.5 to about 0.8 and X is a number from about 0.1 to about 1.0, said manganese oxide being in the form of microscopic particles of said activated manganese oxide wherein said particles have the form of at least one of (a) string shape, (b) plate shape, and (c) foil shape, and further wherein said particles have from 4.6 Angstrom units to 7.18 Angstrom units distance between atomic planes at maximum diffraction strength of line.

3,898,321

PREPARATION OF MACROPOROUS, HEAT-STABLE TITANIA HAVING HIGH PORE VOLUME

Christopher Herbert Marsh, Wilton, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Feb. 28, 1973, Ser. No. 336,654

Int. Cl. C01g 23/08

U.S. Cl. 423—615

6 Claims

1. A process for preparing heat-stable, macroporous titania which consists in the steps of: feeding two separate streams of aqueous titanic sulfate and ammonium hydroxide, respectively, into a vigorously stirred aqueous heel consisting of water, adjusting the proportions of the streams so as to maintain a pH ranging from about 4.0 to 8, effecting continuous precipitation of a hydrous, titania precipitate, water washing the resultant precipitate until free from sulfate ion, drying the so-washed precipitate, calcining the same at a temperature ranging from 300°C. to 900°C., and recovering a macroporous, heat-stable titania having both (a) high pore volumes ranging from 1.10 ml./g. to 0.40 ml./g. and (b) the majority of the pore volume in pores greater than 100 Å radius when calcined at temperatures ranging between 600°C. and 900°C.

3,898,322

ALUMINA HAVING A BINODAL PORE VOLUME DISTRIBUTION

Bruce E. Leach, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed Dec. 15, 1972, Ser. No. 315,696

Int. Cl. C01f 7/02

U.S. Cl. 423—628

5 Claims

1. A method for producing alpha alumina monohydrate having a cumulative pore volume 0–10,000 Å from about 1.0 to about 3.0 cc/g wherein from about 20 to about 40 percent of said cumulative pore volume consists of pores having a pore diameter from about 40 to about 100 Å and wherein from about 20 to about 40 percent of said cumulative pore volume consists of pores having a pore diameter from about 250 to about 800 Å, said method consisting essentially of sequentially:

a. hydrolyzing solid aluminum alkoxides with water having a pH from about 4 to about 10 to produce an aqueous alumina slurry and alcohol,

b. mixing said aqueous alumina slurry with an organic solvent selected from the group consisting of acetone, methanol, ethanol, propanol, isopropanol, butanol, isobutanol and tertiary butanol in an amount sufficient to form an azeotropic mixture with the water present in said aqueous alumina slurry to form a solvent-aqueous alumina mixture and

c. drying said mixture to produce said alpha alumina monohydrate.

3,898,323

TASTE MODIFYING COMPOSITION

J. Richard Fennell, and Robert J. Harvey, both of Sudbury, Mass., assignors to Mirlin Corporation, Wayland, Mass.

Continuation-in-part of Ser. No. 28,961, April 15, 1970, abandoned. This application Apr. 1, 1971, Ser. No.

130,456 The portion of the term of this patent subsequent to May 30, 1989, has been disclaimed.

Int. Cl. A61K 9/00, 27/00

U.S. Cl. 424—44

14 Claims

1. A composition consisting essentially of:

solid particulate material consisting essentially of the taste-modifying principle for suppressing sour taste and enhancing sweet and salt taste found in and obtained from the ripe fruit of *Synsepalum dulcificum* Daniell, which material retains its taste-modifying characteristics at normal room temperatures for long periods and is substantially free of the components of the ripe fruit that degrade the taste-modifying principle; and,

an effervescent material consisting essentially of a non-toxic alkaline and a non-toxic organic acid, said particulate material and said effervescent material being admixed together, said effervescent material being between 5 and 50 weight percent of said composition, and said alkaline and said acid being capable of reacting to form carbon dioxide when in aqueous solution.

3,898,324

DEODORIZER COMPOSITION FOR USE IN POULTRY FARMING

Chukei Komakine, 6-1, 3-chome, Taira Aza, Iwaki, Japan

Division of Ser. No. 158,077, June 29, 1971, Pat. No.

3,776,188. This application June 18, 1973, Ser. No. 370,943

Int. Cl. A61L 13/00

U.S. Cl. 424—76

4 Claims

1. A deodorizer composition for use in poultry farming, which is to be scattered over the dropping floor of a building housing poultry, consisting essentially of a mixture of coarse powder of crystalline ferrous sulfate heptahydrate of a particle size in the range of 10 to 50 Tyler mesh, and an adsorbent selected from the group consisting of fly ash and fine zeolite powder, said mixture having been dried at a temperature of

from 60° to 80°C; the weight ratio of said ferrous sulfate heptahydrate to said adsorbent being about 2:1.

3,898,325

METHOD AND PREPARATIONS FOR RELIEVING PAIN AND PRODUCING ANALGESIA

Emanuel Revici, New York, N.Y., assignor to American Lipids Corporation, New York, N.Y.

Filed Sept. 19, 1973, Ser. No. 398,601

Int. Cl. A61K 19/00

U.S. Cl. 424—94

9 Claims

1. A method of relieving pain or producing analgesia in a host which comprises injecting a solution of histamine, or its non-toxic salts, and a hyaluronidase at the painful area or at the acupuncture sites for the area in which it is desired to relieve pain or produce analgesia in a host in a sufficient amount to relieve the pain or produce analgesia.

3,898,326

POLYVINYLPIRROLIDONE-IODIDE COMPOSITIONS AND POLYVINYLPIRROLIDONE-IODIDE-IODINE COMPLEXES PREPARED THEREFROM

Abraham Cantor, Elkins Park, Pa., and Murray W. Winick, Flushing, N.Y., assignors to West Laboratories, Inc., Long Island City, N.Y.

Filed May 14, 1973, Ser. No. 360,338

Int. Cl. A61k 15/00, 17/00, 19/00, 21/00; A01n 11/00

U.S. Cl. 424—80

6 Claims

1. The solid PVP-iodide product obtained by first preparing an aqueous solution of poly(N-vinyl-2-pyrrolidone) and a water soluble iodide selected from the group consisting of sodium, potassium, lithium, magnesium, hydrogen, calcium, ammonium, amine and quaternary ammonium iodides in proportions to provide a PVP:I⁻ ratio in the range of about 1:1 to 20:1, and drying said aqueous solution to form a PVP-iodide solid solution.

3,898,327

ANTIBIOTIC AZDIMYCIN

Maxwell William Nimeck, North Brunswick; Edward Meyers, East Brunswick, and Wen-Chih Liu, Princeton Junction, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Apr. 22, 1974, Ser. No. 462,822

Int. Cl. H61k 21/00

U.S. Cl. 424—120

4 Claims

1. The antibiotic azdimycin having the infrared spectrum in FIG. 1, the approximate analysis: C, 59.95, H, 7.25; N, 3.05, melting point about 180°–182°C., molecular weight approximately 850, soluble in methanol and ethanol and insoluble in water, benzene and ether.

3,898,328

DRY STABLE COMPOSITION FOR THE TREATMENT OF SCOURS AND DEHYDRATION

Myron A. Beigler, Palo Alto; Sidney Saperstein, Menlo Park, and Subramanian S. Shastri, Cupertino, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Dec. 3, 1973, Ser. No. 421,360

Int. Cl. A61k 27/00

U.S. Cl. 424—128

3 Claims

1. A dry stable powder composition for the treatment and prevention of scours and dehydration in domestic animals which consists essentially of from about 20 to 23% glycine; 54 to 57% anhydrous glucose; 10.5 to 12.5% sodium chloride; 8 to 10% monopotassium phosphate; .5 to .7% magnesium sulfate; 2 to 2.4% calcium gluconate, and wherein said composition contains less than 3% by weight, water.

comprising administration by injection into the subarachnoid space of the intact mammal from about 1 to 6 milliliters of a pharmaceutical composition comprising a compatible vehicle and as the active ingredient a compound selected from the group consisting of tetrodotoxin in concentration of 1 to 12 micrograms per milliliter and desoxytetrodotoxin in concentration from 10 to 120 micrograms per milliliter of the vehicle.

3,898,340

ARYLIMINOTHIAZOLIDINE COMPOSITIONS AND METHODS

Otto Behner, and Wilhelm Stendel, both of Wuppertal-Elberfeld, Germany, assignors to Bayer Aktiengesellschaft, Germany

Division of Ser. No. 205,348, Dec. 6, 1971, Pat. No. 3,804,848, which is a continuation-in-part of Ser. No. 129,265, March 29, 1971, abandoned. This application Nov. 21, 1973, Ser. No. 418,056

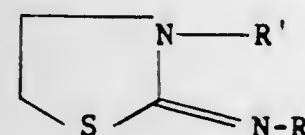
Claims priority, application Germany, Apr. 15, 1970, 2017969

Int. Cl. C07d 9/18

U.S. Cl. 424—270

108 Claims

1. An acaricidal composition comprising an effective amount of a compound selected from the group consisting of a 2-arylminothiazolidine of the formula:

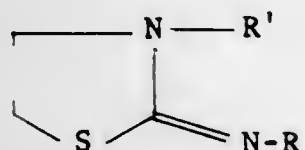


wherein

R is phenyl substituted by one to three members selected from the group consisting of lower alkyl, lower alkoxy, halogeno or trifluoromethyl, one of said substituents being in the 2-position; 1-naphthyl or 5,6,7,8-tetrahydro-1-naphthyl, and

R' is lower alkyl, lower alkenyl or lower chloroalkenyl, and the physiologically acceptable acid addition salts thereof, in admixture with a liquid or solid diluent or carrier.

40. The method of combatting acarids which comprises applying an acaricidally effective amount of a compound selected from the group consisting of a 2-arylminothiazolidine of the formula:



wherein

R is phenyl substituted by one to three members selected from the group consisting of lower alkyl, lower alkoxy, halogeno or trifluoromethyl, one of said substituents being in the 2-position; 1-naphthyl or 5,6,7,8-tetrahydro-1-naphthyl, and

R' is lower alkyl, lower alkenyl or lower chloroalkenyl, and the physiologically acceptable acid addition salts thereof, to an acarid habitat so as to permit contact with the acarid.

3,898,341

COMBATING FUNGI WITH DERIVATIVES OF 1-IMIDAZOLYL-ETHANONES-(2)

Werner Meiser; Karl Heinz Buchel; Wolfgang Kramer, all of Wuppertal; Ferdinand Grewe, Buscheid, and Paul-Ernst Frohberger, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed May 14, 1974, Ser. No. 469,938

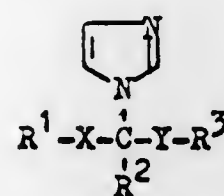
Claims priority, application Germany, May 18, 1973, 2325156

Int. Cl. A01n 9/22

U.S. Cl. 424—273

8 Claims

1. A method for combatting fungi which comprises applying thereto or to a habitat thereof a fungicidally effective amount of an imidazole derivative of the formula



in which

R¹ is benzyl, phenyl, or phenyl substituted with at least one member selected from the group consisting of halo, alkyl with up to 4 carbon atoms, phenyl and nitro,

R² is hydrogen, alkyl with up to 4 carbon atoms, benzyl, phenyl or halophenyl,

R³ is alkyl with up to 4 carbon atoms, cyclohexyl, phenyl or halophenyl,

X is oxygen or sulfur, and

Y is a carbonyl group — CO — or a hydrated carbonyl group — C(OH)₂—, or an acid addition salt thereof.

3,898,342

PHENYLIMIDAZOLINES FOR PRODUCING A NEURONAL BLOCKING AND ANTIHYPERTENSIVE EFFECT

William Lesley Matier, and William Timmey Comer, both of Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

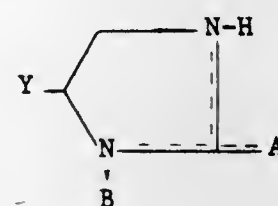
Division of Ser. No. 268,380, July 3, 1972, Pat. No. 3,821,244, which is a continuation-in-part of Ser. No. 172,321, Aug. 16, 1971, abandoned. This application June 10, 1974, Ser. No. 477,718

Int. Cl. A61K 27/00

U.S. Cl. 424—273

23 Claims

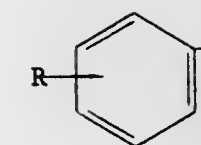
1. A method of producing a neuronal blocking and antihypertensive effect which comprises systemic administration to a mammal in need thereof a non-toxic effective dose of from about 0.1 to 50 mg./kg. body weight of said mammal to provide a neuronal blocking and antihypertensive effect of a compound selected from the group consisting of an imidazoline having the formula



and a non-toxic pharmaceutically acceptable acid addition salt thereof wherein

B is hydrogen, lower alkyl or benzyl;

Y is selected from the group consisting of phenyl and an R-phenyl radical of the formula



wherein when Y is said phenyl,

A is selected from the group consisting of benzylamino, halobenzylamino and 3-dimethylaminopropylamino; wherein when Y is said R-phenyl radical,

R is halogen, lower alkyl, benzyloxy, lower alkoxy, lower dialkoxy, 3-hydroxy, 3,4-dihydroxy, trifluoromethyl, phenyl, 4-halophenyl, or 4-(lower alkyl)phenyl with the proviso that when R is selected from the group consisting of halogen and lower alkyl the phenyl ring can have up to two additional substituents independently selected from the group consisting of halogen and lower alkyl; and is amino, hydroxyamino, lower alkylamino, benzylamino, halobenzylamino, dihalobenzylamino, allylamino, cycloalkylamino, hydrazino, halobenzylidenehydrazino, dihalobenzylidenehydrazino, or alkylidenehydrazino from 2 to 6 carbon atoms inclusive.

3,898,343

DEPOSIT CONTROL AGENT

Paul Swered, Philadelphia; Bernard F. Shema, Glenside, and Robert H. Brink, Jr., Doylestown, all of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed Jan. 16, 1974, Ser. No. 433,646

Int. Cl. A01N 9/18, 9/20

U.S. Cl. 424—302

8 Claims

1. A composition which is effective in preventing the growth of the microorganism *Aerobacter aerogenes* in an aqueous system in which said microorganism is found, comprising a growth inhibiting amount of beta-bromo-beta-nitrostyrene and methylene bithiocyanate, wherein the weight ratio of the styrene to the cyanate ranges from about 95:5 to about 5:95 respectively.

3,898,344

PACKAGED DRY IMITATION VINEGAR PRODUCT

Yoshito Masuoka, Cochituate; Karl R. Johnson, Holliston, and Abdul R. Rahman, Natick, all of Mass., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 24, 1973, Ser. No. 363,767

Int. Cl. B65D 81/26; A23L 1/226

U.S. Cl. 426—124

2 Claims

1. A package containing a dry imitation vinegar having long term storage stability at high temperatures, said dry imitation vinegar comprising a mixture of sodium diacetate, sodium acetate, and dl malic acid in amounts sufficient to produce a liquid vinegar upon reconstitution, said mixture being inclosed in a hermetically sealed moisture impermeable container having laminated walls comprising an outer lamina of polyethylene terephthalate film, an inner lamina of polyethylene film, and an interlayer of aluminum foil sandwiched between said outer lamina and said inner lamina, said package also containing a moisture vapor permeable envelope containing calcium oxide in an amount sufficient to reduce the moisture content of said mixture to less than 0.1 %, said calcium oxide being in moisture vapor exchange relation to said mixture,

3,898,345

METHOD FOR PREPARING MEAT-LIKE PROTEIN FOOD

Derek Horrocks; Keith Buckley, and Peter Booth, all of Melton Mowbray, England, assignors to Mars Limited, London, England

Filed Jan. 7, 1972, Ser. No. 216,248

Claims priority, application United Kingdom, Jan. 12, 1971, 1514/71

Int. Cl. A23j 3/00

U.S. Cl. 426—274

7 Claims

1. The method of making a protein food simulating muscle meat comprising:
forming bundles of edible protein fibres impregnated with a binding agent coagulable at least by heat;
immersing said bundles in a liquid coagulating medium and thereby forming a coagulated layer at least at the surface of said bundles;
compacting together by pressure a plurality of such treated bundles in oriented arrangement;
releasing said compacting pressure;
and subsequently heating said arrangement of bundles to complete the coagulation of said heat-coagulable binding agent and to cohere the fibres of the bundles and bond said bundles together into a coherent product simulating muscle meat.

3,898,346

PRESERVATION PROCESS FOR BONE MARROW

Yves Marie Frank Souron, 6, Place du Palais, 35000 Rennes, France

Filed Oct. 9, 1973, Ser. No. 404,404

Claims priority, application France, Aug. 14, 1973, 73.30232

Int. Cl. A23b 1/00

U.S. Cl. 426—325

9 Claims

1. A preservation process for bone marrow, comprising the steps of boiling marrow-bones in boiling water for a relatively long time, extracting marrow from marrow-bones, enclosing suitable amounts of marrow in airtight containers, freezing and thereafter storing said containers containing marrow at a temperature of about -18° C or lower, thawing and heating marrow containers in double saucepans at a temperature of at least 90° C, whereby said heated containers may be opened and said marrow may be eaten wherein the thawing and heating steps are carried out in the said double saucepan within one hour and a half total elapsed time.

3,898,347

FIXED VOLATILE FLAVORS AND METHOD

William A. Mitchell, Lincoln Park, N.J., assignor to General Foods Corporation, White Plains, N.Y.

Continuation-in-part of Ser. No. 376,088, July 2, 1973, abandoned. This application Oct. 9, 1973, Ser. No. 404,528

Int. Cl. H23l 1/26

U.S. Cl. 426—534

15 Claims

1. A method for producing a solid flavoring composition containing low levels of volatile flavoring compounds comprising the steps of:

- forming a supersaturated, glassy, aqueous sucrose solution comprising from 88 to 93% sucrose and a volatile flavoring compound;
- crystallizing sucrose from the solution to fix an amount of the volatile flavoring compound within the individual sucrose crystals at a level of from about 0.05% to less than about 0.5% by weight of the crystal, and thereby form a stiff, crumbly mass; and
- directly thereafter, drying the mass.

3,898,348

FOOD CASING AND METHOD OF PREPARING SAME
Herman Shin-Gee Chiu, Chicago; David Voo, Park Forest, and John Joseph Standard, Chicago, all of Ill., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 151,924, June 10, 1971, abandoned. This application Nov. 12, 1973, Ser. No. 415,104
Int. Cl. A22c 13/00

U.S. Cl. 426-413

16 Claims

1. A tubular cellulosic casing having a coating over the internal surface thereof, said coating comprising a homogeneous admixture of at least two components, one of said components being a water-soluble cellulose ether and a second component being a member selected from the group consisting of animal and vegetable oils, mineral oil, silicone oils and water soluble alkylene oxide adducts of fatty acid partial esters, said cellulose ether component of said coating being present in an amount of at least about 0.001 mg/in² of internal casing surface and said second component being present in said coating in an amount of at least 0.1 times the weight of said first component and not more than about 0.5 mg/in² of casing surface, said casing being suitable for stuffing with food products and being readily peelable from food products processed therein.

3,898,349

POLYENE/POLYTHIOL PAINT VEHICLE

Clifton L. Kehr, Silver Spring, and Walter R. Wszolek, Sykesville, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

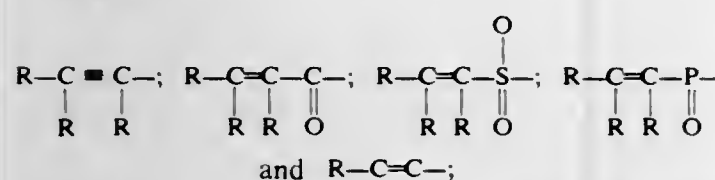
Continuation of Ser. No. 65,725, Aug. 20, 1970, abandoned, which is a continuation-in-part of Ser. Nos. 44,607, June 8, 1970, Pat. No. 3,661,744, and Ser. No. 49,207, June 23, 1970, Pat. No. 3,662,023, and Ser. No. 49,191, June 23, 1970, Pat. No. 3,708,413, which is a continuation-in-part of Ser. No. 617,801, Feb. 23, 1967, abandoned, which is a continuation-in-part of Ser. No. 567,841, July 26, 1966, abandoned. This application July 1, 1974, Ser. No. 484,535
Int. Cl. B44D 1/50

U.S. Cl. 427-36

11 Claims

1. The process of coating a substrate which comprises applying to a substrate a curable composition consisting essentially of:

1. about 98 to 2 percent by weight of a liquid polyene containing at least 2 terminal reactive unsaturated carbon to carbon bonds per molecule of the general formula: $[A-CH=CH]_m$ wherein X is a member of the group consisting of



m is at least 2; R is independently selected from the group consisting of hydrogen, halogen, aryl, substituted aryl, cycloalkyl, aralkyl, substituted aralkyl and alkyl and substituted alkyl group containing 1-16 carbon atoms and A is a polyvalent organic moiety free of reactive carbon to carbon unsaturation, and

2. about 2 to 98 percent by weight of a polythiol containing at least 2 thiol groups per molecule, the total combined functionality of (a) the reactive terminal unsaturated carbon to carbon bonds per molecule in the polyene and (b) the thiol groups per molecule in the polythiol being greater than 4, and exposing said curable composition under ambient conditions to a free radical generator to form a solidified, cured polythioether coating having a thickness ranging from 1 micron to 20 mils adhering to said substrate.

3,898,350

TERPOLYMERS FOR ELECTRON BEAM POSITIVE RESISTS

Edward Gipstein, and William Ainslie Hewett, both of Saratoga, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 27, 1974, Ser. No. 483,589

Int. Cl. B05D 3/06

U.S. Cl. 427-43

7 Claims

1. A process for forming an electron beam positive resist comprising the steps of forming on a substrate a terpolymer film of (a) from 1 to 48 mole % of an alpha olefin, (b) from 1 to 50 mole % of sulfur dioxide, and (c) from 25 to 98 mole % of a compound selected from the group consisting of cyclopentene, bicycloheptene and methyl methacrylate, and exposing said film in a predetermined pattern to low energy electron beam radiation.

3,898,351

SUBSTRATE CLEANING PROCESS

Robert E. Kennison, Essex Center, and Wendell J. Stetson, Hinesburg, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 26, 1972, Ser. No. 257,091

Int. Cl. C03C 17/08

U.S. Cl. 427-57

5 Claims

1. A process for providing pinhole-free vacuum deposited chromium films on a first surface of glass substrates consisting of the steps of:

- mechanically scrubbing all of the surfaces of a glass substrate while maintaining said substrate submerged in a bath substantially comprising colloidal free deionized water;
- washing said substrate in an ultrasonically pulsed bath substantially comprising colloidal free deionized water;
- rinsing said substrate in a flowing colloidal free deionized water bath until the resistivity of said rinse water is at least 8 megohms;
- spin drying said substrate after dispensing a quantity of colloidal free deionized water on said first surface of said substrate; and
- vacuum depositing a thin chromium film on said first surface of said substrate.

3,898,352

PLASTIC PLATING PROCESS AND SOLUTION THEREFOR

Dervin L. Flowers, Scottsdale, Ariz., assignor to Motorola, Inc., Chicago, Ill.

Filed Dec. 26, 1973, Ser. No. 428,473

Int. Cl. C23C 3/00; B44D 1/18

U.S. Cl. 427-82

3 Claims

1. A process of plating non-metallic material which consists of the step of coating the material with a complex solution consisting essentially of 1 to 30 grams per liter phosphorous pentoxide, 1 to 60 grams per liter boric anhydride, 0.01 to 10.0 grams per liter of a material selected from the group consisting of gold, platinum, palladium and rhodium salts and oxide, and the balance a solvent selected from the group consisting of methyl, ethyl, propyl, isopropyl, butyl, and isobutyl alcohol, ethylene glycol, and tetrahydrofurfuryl alcohol.

3,898,353

SELF ALIGNED DRAIN AND GATE FIELD EFFECT TRANSISTOR

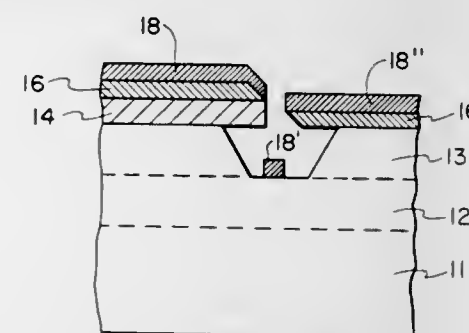
Louis Sebastian Napoli, Hamilton Square, and Walter Francis Reichert, East Brunswick, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 3, 1974, Ser. No. 511,858

Int. Cl. B44D 1/18; C23B 5/50, 5/64

U.S. Cl. 427-89

1 Claim



- The method of making a field effect transistor by
 - providing a conductive metal mesa with at least one straight edge on one flat surface of a semiconductor wafer;
 - supporting the wafer adjacent to an evaporation source with its flat surface tilted relative to the source and with one straight edge on the far side of the mesa relative to the evaporation source so that the semiconductor region immediately adjacent to the one straight edge is shadowed by the straight edge relative to the evaporation source;
 - evaporating a film of conductive metal on the wafer whereby there is a film free gap alongside the straight edge;
 - stopping the evaporation and etching the semiconductor surface in the gap so that the semiconductor in the gap is then recessed;
 - positioning the wafer so that its surface is approximately normal to the source of evaporation and evaporating a metal film onto the wafer, and terminating the evaporation before there is a short circuit across the gap.

3,898,354

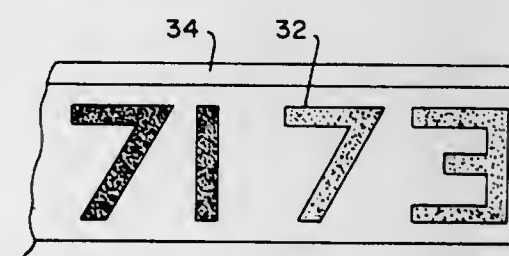
METHOD OF MAKING DIGITAL THERMOMETER
Robert Parker, Danville, Calif., assignor to RPR, Inc., Dublin, Calif.

Division of Ser. No. 351,220, April 16, 1973, Pat. No. 3,861,213, which is a continuation-in-part of Ser. No. 263,064, June 15, 1972, abandoned. This application May 6, 1974, Ser. No. 467,358

Int. Cl. B05D 1/32

U.S. Cl. 427-256

15 Claims



1. A method for preparing a dimensionally stable film coated with a plurality of different liquid crystal compositions which comprises: onto a flexible film continuously moving in a first direction, flowing at substantially equal rates a plurality of solvent containing liquid crystal composition slurries having different temperature responsive ranges as spaced apart discrete bands, whereby the bands flow laterally toward each

other; first removing solvent at a temperature below 190° F. and at a rate sufficient to allow commingling of adjacent bands to form a narrow boundary of commingled liquid crystal compositions separating said discrete bands; and removing the remaining solvent to provide a film of substantially uniform thickness.

3,898,355

METHOD FOR FORMING POLYMER COATINGS ON ARTICLES

Robert E. Okeley, II, Yorktown, and Richard H. Cole, Jr., Muncie, both of Ind., assignors to Ball Corporation, Muncie, Ind.

Filed Mar. 26, 1973, Ser. No. 344,675

Int. Cl. C03C 17/00; B05D 3/00, 1/18

U.S. Cl. 427-314

2 Claims

1. A method for forming controlled and even polymer coatings on articles, comprising: forming a bath of the polymer comprising polyvinyl chloride and a solvent comprising tetrahydrofuran for the polymer, heating the bath to the boiling temperature of the bath, heating the article to a temperature of at least 30° F., above the bath temperature, at least partially immersing the article in the bath to cause more intense boiling of the bath adjacent the article, depositing the polymer during said intense boiling from the bath to the article to form an even, smooth coating on the article, and removing the article from the bath before the article comes to the temperature of the bath.

3,898,356

METHOD OF DEACIDIFYING PAPER

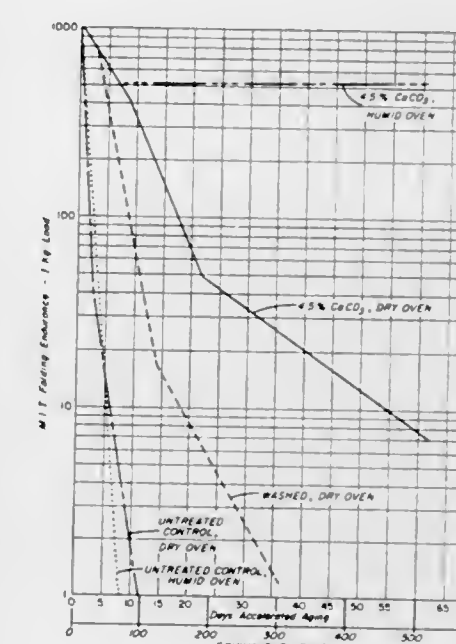
John C. Williams, Alexandria, Va.; George B. Kelly, Jr., Gaithersburg, Md., and Richard L. Best, Arlington, Va., assignors to The United States of America as represented by Librarian of Congress, Washington, D.C.

Filed Feb. 28, 1974, Ser. No. 447,120

Int. Cl. A61L 13/00

U.S. Cl. 427-343

10 Claims



1. A method of neutralizing the acidity of paper and buffering it on the alkaline side wherein the paper to be treated in serial order is contacted with an aqueous solution of a group II metal salt and an aqueous solution of a reactant material capable of interacting with the Group II metal to form a relatively water-insoluble buffering material, permitting interaction of said solutions to form said buffering material, washing the treated paper with a controlled wash to remove excess treating agents and soluble reaction products and drying said treated paper.

3,898,357

METHODS AND DECAL APPARATUS FOR DECORATING THE NAILS OF FINGERS AND TOES

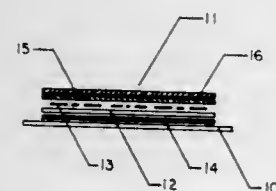
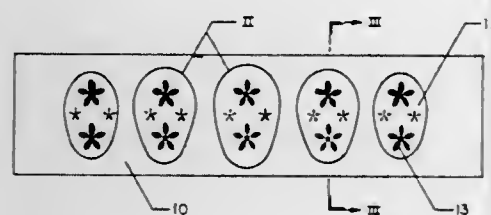
Albert C. Miller, 1276 Justine St., Pittsburgh, Pa. 15204, and Robert Cawood, 216 Harwick Dr., Pittsburgh, Pa. 15235

Filed Mar. 18, 1974, Ser. No. 451,786

Int. Cl.² A45D 31/00; B41M 3/12; B44C 1/16

U.S. Cl. 428-42

4 Claims



1. A decal assembly comprising a carrier strip, a series of five spread apart graduated sized generally ovoid decals consisting essentially of a thin non-self supporting flexible clear film a central design formed integrally on said clear film each decal adapted to cover substantially the surface of a finger and toe nail, said decals being on said carrier strip, a water activated adhesive means on the back of each of the said decals temporarily holding the decals on the carrier and adapted to be released therefrom and transferred adherently to a nail by said water activated adhesive and a nail polish solvent resistant water base cellulose adhesive clear layer on the top of each decal.

3,898,358

HOLOGRAPHIC RECORDING MEDIA

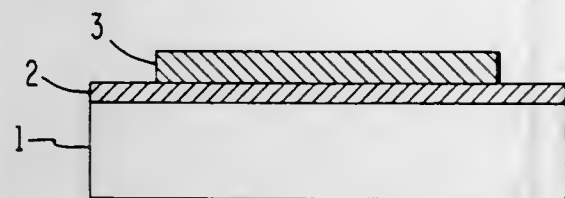
Robert James Ryan, Trenton, and Howard George Scheible, Livingston, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 18, 1972, Ser. No. 282,075

Int. Cl.² G25D 1/10; G03H 1/00; B32B 3/02

U.S. Cl. 428-156

9 Claims



1. A holographic recording medium of a laminate which comprises a planar, dimensionally stable substrate of a biaxially oriented polyethylene terephthalate film, a coextensive adhesive layer which will not degrade during a subsequent electroforming step bonded thereto and an embossable, cuttable vinyl polymer film bonded to the adhesive layer having holographic information in the form of a three dimensional relief pattern and cut audio information on the outside surface of the film wherein the substrate and adhesive layers extend beyond the edges of the embossable film whereby improved

adhesion of the film to an electroplated metal layer is provided.

3,898,359

THIN FILM MAGNETO-RESISTORS AND METHODS OF MAKING SAME

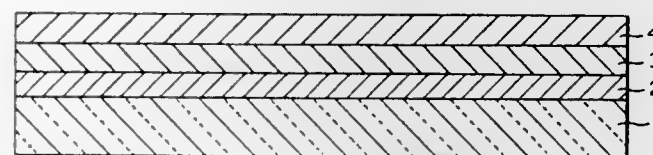
Gajanan Shivarao Nadkarni, Toronto, Canada, assignor to Precision Electronic Components (1971) Ltd., Toronto, Canada

Filed Jan. 15, 1974, Ser. No. 433,568

Int. Cl.² B44D 1/18; H01C 7/16

U.S. Cl. 428-209

22 Claims



1. The method of making a thin film magneto-resistor, comprising depositing an electrically conductive coating on a substrate providing insulation beneath the coating, depositing a layer of elemental antimony or arsenic and a layer of elemental indium one upon the other on the conductive coating, the ratio of the mass of the antimony or arsenic layer to the mass of the indium layer being equal to the ratio of their atomic weights, and heating the layers to cause them to combine thermochemically to form a stoichiometric polycrystalline indium antimonide or indium arsenide semi-conductor layer, the thicknesses of the antimony or arsenic and indium layers and of the conductive coating being selected so that the resistance of the latter is much higher than that of the semi-conductor layer, and the substrate being capable of withstanding the heating required to combine the elemental layers.

18. A thin film magneto-resistor, comprising a heat resistant substrate, a current path defined by a semi-conductor layer of polycrystalline indium antimonide or indium arsenide, and an electrically conductive coating bonding the semi-conductor layer to an insulating layer formed by the substrate, the electrical resistance of the coating being much higher than that of the semi-conductor layer.

3,898,360

DIRECT INKING PLATEN

Edward W. Neumann, and William C. Thomas, both of Raleigh, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

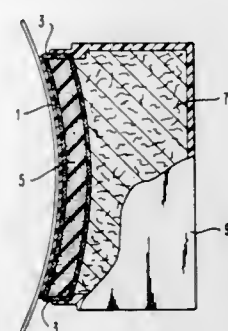
Continuation of Ser. No. 220,956, Jan. 26, 1972, abandoned.

This application Jan. 30, 1974, Ser. No. 438,113

Int. Cl.² B30B 15/06

U.S. Cl. 428-265

4 Claims



1. A direct inking platen comprising: a unitary nylon body having microporous interstices and an integral flexible-tough microporous outer skin portion, said body and skin being formed from a compression molded particulate nylon blend, said blend containing a minority of high mesh nylon particles with the remainder of low mesh nylon particles; said blend being compressed at a temperature from approximately 350° to 420°F and at a pressure from approxi-

mately 10,000 psia to 15,000 psia for a duration of at least ten minutes and less than 20 minutes; and said friction material in mechanically held nonbonded relation to provide a friction surface of said article of manufacture including the said matrix and said ceramic particles.

3,898,362

CERAMIC DECALCOMANIAS INCLUDING DESIGN LAYER FREE OF GLASS

Louis A. Blanco, Tuckahoe, N.Y., assignor to Commercial Decal, Inc., Mt. Vernon, N.Y.

Continuation of Ser. No. 193,153, Oct. 27, 1971, Pat. No.

3,769,055. This application July 19, 1973, Ser. No.

380,683 The portion of the term of this patent subsequent to Oct. 30, 1990, has been disclaimed.

Int. Cl.² B41M 3/12

3,898,361

FLUOROELASTOMER-BASED COMPOSITE MATERIAL

Roger O. Bjerk, Edelstein; William D. Brandon; Frederick S. Engelking, both of Peoria, and John P. Jero, Washington, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed June 4, 1973, Ser. No. 366,967

Int. Cl.² B32B 19/02

U.S. Cl. 428-325

3 Claims

1. As a article of manufacture a friction material formed of a matrix comprising from about 30 to about 50 percent by weight of a copolymer of hexafluoropropylene and vinylidene fluoride, and from about 12 to about 30 percent by weight of carbon black; and said friction material further containing from about 20 to about 50 percent by weight of ceramic particles of from about 0.0001 inch to about 0.005 inch in effective diameter intermixed with and dispersed throughout

U.S. Cl. 428-432

9 Claims

1. A ceramic decalcomania adapted to be applied to a vitreous surface comprising a decalcomania backing sheet, a design layer comprised of one or more ceramic oxide pigments free of glass disposed on said backing sheet, and a layer of protective coating consisting essentially of prefused glass flux, disposed on said design layer, which prefused glass flux is adapted to fuse and tightly bind the design layer to a ware and does not mask the color of the design layer.

3,898,363

FIBER-ELASTOMER BONDING USING BISIMIDE ADHESIVES

Robert A. Ward, Scotia, and John T. Hoback, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 138,271, April 28, 1971, abandoned.

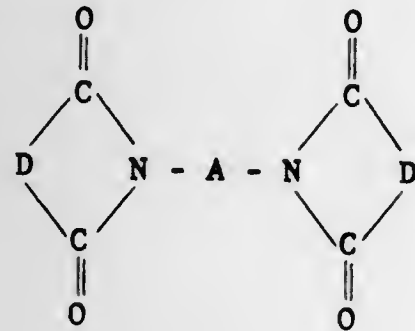
This application Apr. 18, 1973, Ser. No. 352,111

Int. Cl.² B32B 25/02, 17/04, 15/02

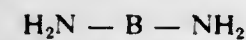
U.S. Cl. 428-474

9 Claims

1. A process for bonding at least one fibrous layer to at least one elastomer layer which comprises treating such fibrous layer with material selected from (a) aliphatically unsaturated bisimide having the formula



in which D is a divalent radical containing a double carbon-carbon bond and A is a divalent radical containing at least 2 carbon atoms and (b) reaction products of (a) and diamine having the formula



in which B is a divalent radical having not more than 30 carbon atoms and bonding said treated fibrous layer to said elastomer layer under heat and pressure.

9. The structure produced by the process of claim 1.

3,898,364

COMBINED SUSPENSION DEVICE FOR HOLDING, CONTACTING, SLIPPING AND TORQUING ELECTRIC FURNACE ELECTRODES

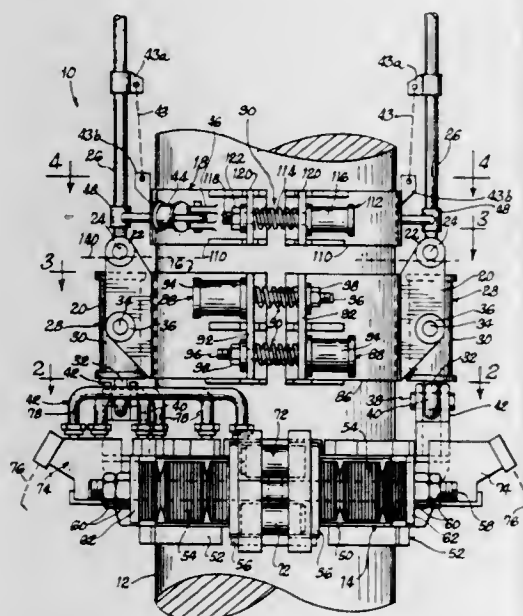
Stanford A. Hardin, 1020 Linwood Ave., Florence, Ala. 35630

Filed Sept. 5, 1974, Ser. No. 503,245

Int. Cl.² H05B 7/10, 7/14

U.S. Cl. 13-14

15 Claims



1. A combined suspension device for holding, contacting, slipping and torquing cylindrical electric furnace electrodes, comprising a generally circular slipping clamp for receiving a cylindrical electric furnace electrode,

said slipping clamp having a plurality of suspension elements thereon for suspending said slipping clamp and the electrode,

said slipping clamp having slipping clamp operating means for clamping and releasing said slipping clamp around the electrode,

a generally circular electrode contact clamp for receiving the electrode,

said electrode contact clamp being disposed below said slipping clamp,

said electrode contact clamp having electrode contact clamp operating means for clamping and releasing said electrode contact clamp around said electrode,

power operated force exerting means connected between said slipping clamp and said electrode contact clamp for supporting said electrode contact clamp and for exerting force between said slipping clamp and said electrode contact clamp,

a generally circular torquing clamp disposed and supported above said slipping clamp for receiving the electrode, said torquing clamp having torquing clamp operating means for clamping and releasing said torquing clamp around the electrode,

and power operated torquing means connected between said torquing clamp and said slipping clamp for exerting torque between said torquing clamp and said slipping clamp so as to produce relative turning movement therebetween about the cylindrical axis of the electrode.

3,898,365

ELECTRIC ARC FURNACE FOR MELTING AND REFINING SOLID METAL PRODUCTS

Jacques Antoine, 66, rue des Chesnay, 57 - Longeville-Metz; Pierre Vayssiere, 87 bis, rue Georges Ducrocq, 57 - Metz, and Hugues Zanetta, 81, rue G. Hermann, 57 - St-Julien-les-Metz, all of France

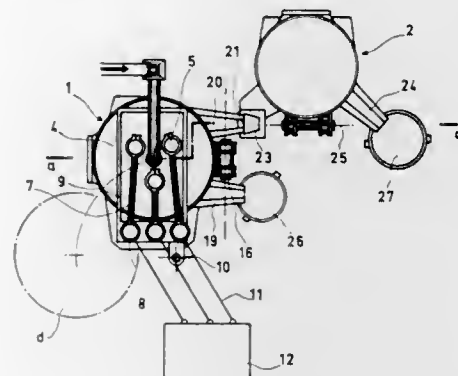
Filed Jan. 25, 1974, Ser. No. 436,457

Claims priority, application France, Feb. 21, 1973, 73.06071

Int. Cl. F27d 3/14, 3/15

U.S. Cl. 13-10

1 Claim



1. A metallurgical apparatus for melting and refining solid products rich in iron to transform them into liquid steel, comprising

1. a first furnace for melting and refining the solid products and having two spouts each having a discharge end for evacuating the resultant liquid metal from the furnace, and

2. a second furnace adjoining the first furnace and having an inlet port,

a. the first furnace being arranged for pivoting between a horizontal and a tilted position about a horizontal axis disposed laterally in respect of the first furnace to permit transfer of the liquid metal from the first to the second furnace, the pivoting axis being disposed in the immediate proximity of the ends of respective ones of the evacuating spouts, and

b. one of the evacuating spouts having a weir at the discharge end to produce a siphon effect on the horizontal position and being arranged to cooperate in the horizontal position with the inlet port of the second furnace to permit continuous transfer of the liquid metal from the first to the second furnace, and the other evacuating spout pouring the liquid metal out of the first furnace in the tilted position thereof.

3,898,366

METALLURGICAL HEATING SYSTEM WITH REFRACTORY WEAR INDICIA

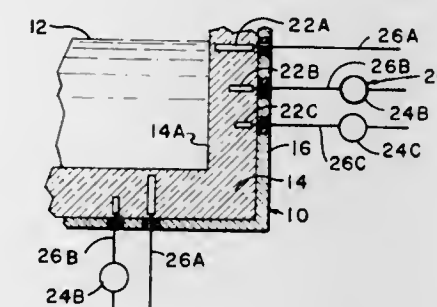
Terrence D. Aurini, Village of Poland, Ohio, assignor to Youngstown Sheet and Tube Company, Youngstown, Ohio

Filed May 8, 1974, Ser. No. 467,916

Int. Cl.² H05B 7/18

U.S. Cl. 13-35

7 Claims



1. In combination, with a metallurgical heating system including:

a vessel, having a refractory lining, for containing material being processed;

said refractory lining having a face forming a portion of the interior surface of said vessel;

indicia apparatus circuitry for indicating when a preselected extent of wear of said lining is reached without interrupting the operation of said system, which apparatus circuitry is normally electrically open and comprises:

a. external indicia means for producing an electrically generated signal;

b. a pair of conductor members disposed in said lining and electrically connected to said indicia means;

c. at least one of said members extending toward, but short of said face, to a preselected point for which a signal is desired, when the refractory lining covering said one member wears and said one member is exposed to the interior of said vessel;

d. said conductor members being spaced apart and positioned in said refractory lining and of a type such that when electrically conductive material bridges said members an electrical junction is formed and said indicia means is energized.

3,898,367

PARTICLE TRAP FOR COMPRESSED-GAS INSULATED HIGH VOLTAGE BUS

Roy Nakata, Pittsfield, Mass., assignor to General Electric Company, Philadelphia, Pa.

Filed Nov. 26, 1974, Ser. No. 527,381

Int. Cl. H01b 9/04

U.S. Cl. 174-14 R

6 Claims

1. A compressed-gas insulated high voltage bus comprising: a. a cylindrical sheath of conductive material normally at ground potential,

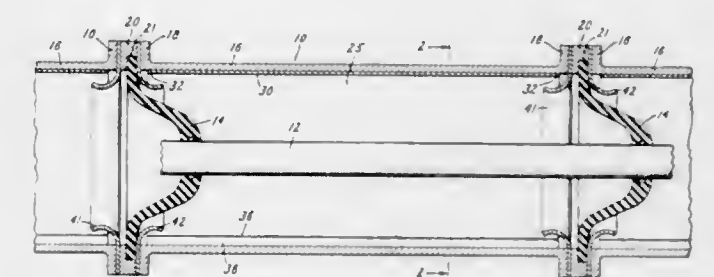
b. a conductor within said sheath normally at a relatively high potential with respect to said sheath,

c. insulating structures within said sheath at a pair of spaced-apart locations along the length of said conductor for mounting said conductor in radially spaced relationship to said sheath,

d. a sheet metal liner for said sheath having a generally tubular configuration, longitudinally spaced-apart ends, and a gap extending longitudinally of said liner between said ends,

e. said liner bordering the internal surface of said sheath and located between said spaced-apart insulating structures with said ends adjacent to but spaced from said insulating structures,

f. said liner comprising circumferentially extending wall portions immediately adjacent said gap and a pair of



spaced-apart flanges bordering said gap along the gap length and extending transversely of said circumferentially extending wall portions between said circumferentially extending wall portions and said internal surface of the sheath, said flanges and the sheath portion spanning said gap defining a particle-trapping channel extending longitudinally of said sheath and in a region of low density electric field,

g. said liner having a tendency to expand in diameter thereby gripping the internal wall of said sheath.

3,898,368

CONTROL ELECTRODE IN A SUPPORT INSULATOR OF AN ENCAPSULATED GAS-INSULATED TUBULAR LINE

Rolf Durschner, Mohrendorf, and Werner Lehmann, Erlangen, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

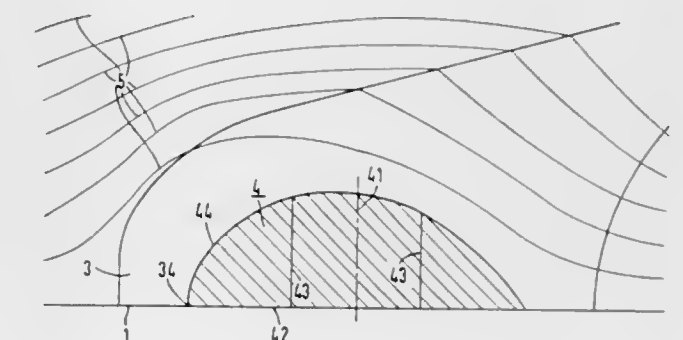
Filed Sept. 19, 1974, Ser. No. 507,630

Claims priority, application Germany, Sept. 24, 1973, 2347927

Int. Cl. H01b 9/04

U.S. Cl. 174-28

6 Claims



1. A control electrode which is attached between the inner conductor and an essentially conical non-perpendicular insulator which supports the inner conductor with the outer enclosure of an encapsulated gas-insulated tubular line characterized by the feature that its cross section is asymmetrical with respect to its mid-vertical perpendicular to the inner conductor wherein all parallel sections equidistant from said mid-vertical are shorter on that half which is nearest the attachment point of the insulator to the outer enclosure than on the other half.

3,898,369

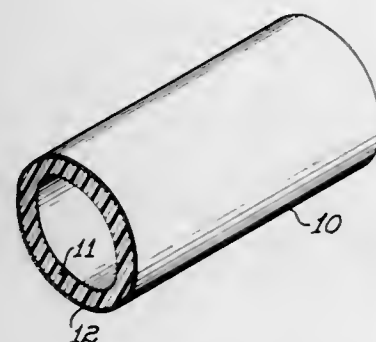
METAL COATED HEAT-RECOVERABLE ARTICLES
Robin J. T. Claburn, No. 1 Stonefield Dr., Highworth, Wiltshire, England

Continuation of Ser. No. 803,059, Feb. 27, 1969, abandoned.

This application Dec. 21, 1973, Ser. No. 427,140

Claims priority, application United Kingdom, Feb. 27, 1968, 9345/68

Int. Cl. H05k 9/00; C23c 3/00; C23b 5/62
U.S. Cl. 174—36 12 Claims



11. A heat recoverable polymeric article having a thin, continuous, electrically conductive metal film on its surface, said metal film adhering to the article so that upon recovery of the article and resultant decrease of the surface area thereof, the film adheres to the surface to maintain electrical conductivity of the article, the decrease resulting from heat recovery of at least a portion of said surface area being at least 50 percent of the surface area of said portion.

3,898,370

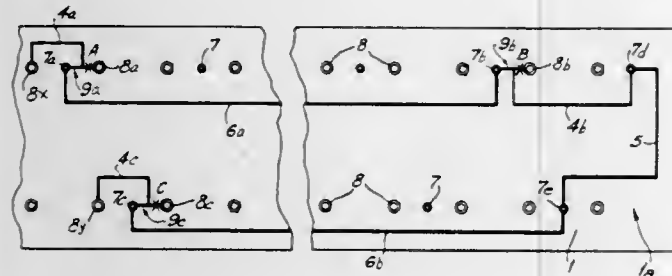
ARRANGEMENT FOR CONNECTING ELECTRICAL CIRCUITS

Gerald Davy, Noisy-Le Roi; Jean-Claude Petiot, Paris, and Bernard Le Govic, Sarcelles, all of France, assignors to Compagnie Honeywell Bull, Paris, France

Filed Aug. 21, 1974, Ser. No. 499,383

Claims priority, application France, Aug. 24, 1973, 73.30787

Int. Cl. H05k 1/04
U.S. Cl. 174—68.5 3 Claims



1. A device interconnecting electrical circuits, said device comprising a plurality of superimposed insulating sheets joined together at least on faces, each of said sheets carrying networks of conductive strips comprising:

- a plurality of linking members electrically connected to the conductive strips situated on different one of said sheets forming continuous conductors composed of sections of said conducting strips situated on different ones of said sheets;
- a plurality of connecting members electrically coupling said continuous conductors to electrical circuits;
- a plurality of bridges, each of said bridges electrically coupling one of said connecting members to an adjacent one of said linking members; and
- each of the sections of said conductive strips carried on an external face of the device coupling one of said connecting members to an intermediate part of one of said bridges.

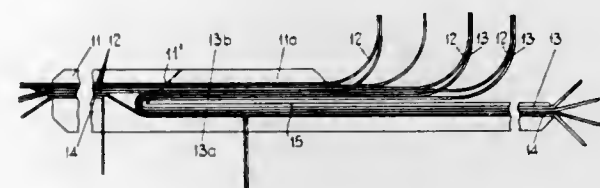
3,898,371

WIRING HARNESS AND METHOD OF MAKING SAME
John Leslie Bridgett, Stoke-on-Trent, England, assignor to Rist's Wires & Cables Limited, Birmingham, England

Filed Feb. 19, 1974, Ser. No. 443,794

Claims priority, application United Kingdom, Feb. 23, 1973, 8885/73

Int. Cl. H02G 3/02
U.S. Cl. 174—72 A 4 Claims



1. A wiring harness including a flexible, thermoplastic backing strip, a first lead comprising a conductive core in a thermoplastic sheath, the first lead extending longitudinally of the backing strip and the sheath of the lead being fused to the backing strip to secure the lead to the backing strip, a second lead comprising a conductive core in a thermoplastic sheath, the second lead extending longitudinally of the backing strip and being returned back on itself so as to define first and second generally parallel runs, the sheath of the second lead being fused to the backing strip to secure the second lead to the backing strip and the backing strip being slit to define a flexible flap integral with the remainder of the strip and having secured thereto a portion of the first lead and one of said first and second runs of the second lead, the remainder of the first lead, and the other of said first and second runs of said second lead being on the remainder of the backing strip, said other run extending towards one end of the backing strip, and said remainder of said first lead extending towards the opposite end of the backing strip.

4. A method of manufacturing a wiring harness including the steps of positioning a first lead having a conductive core in a thermoplastic sheath on a platform, positioning a second lead also including a conductive core in a thermoplastic sheath on the platform so that the second lead is turned back on itself and includes first and second runs generally parallel to said first lead, and, fusing to the sheaths of the leads an elongate flexible thermoplastic backing strip, said backing strip being slit to define a flexible flap integral with the remainder of the backing strip prior to engagement of the backing strip with the leads, the backing strip being engaged with the leads such that the flap engages a portion of the first lead and one of said first and second runs of the second lead, the remainder of the first lead, and the other of said first and second runs of said second lead engaging the remainder of the backing strip, said other run extending towards one end of the backing strip, and said remainder of said first lead extending towards the opposite end of the backing strip.

3,898,372

INSULATOR WITH RESIN-BONDED FIBER ROD AND ELASTOMERIC WEATHERSHEDS, AND METHOD OF MAKING SAME

John W. Kalb, Medina, Ohio, assignor to The Ohio Brass Company, Mansfield, Ohio

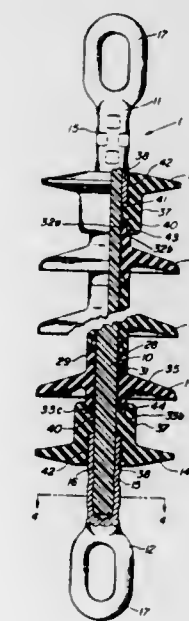
Filed Feb. 11, 1974, Ser. No. 441,330

Int. Cl. H01B 17/12, 17/14, 19/00
U.S. Cl. 174—179 16 Claims

1. An insulator comprising a generally cylindrical elongated member composed of dielectric material and having substantial mechanical strength, end fittings secured to said elongated member, and a series of weathersheds enclosing said elongated member and covering the entire surface of said elongated member between said fittings, the weathersheds being composed of an elastomeric insulating material, each weathershed having a through opening of a cross section in the un-

stressed state that is smaller than the cross section of said elongated member, whereby the weathersheds are under hoop tension at the surface of said elongated member, and the weathersheds being longitudinally compressed between said fittings, whereby the inner surfaces of the openings of the weathersheds exert pressure on said elongated member and adjacent weathersheds exert pressure on each other.

15. A method of manufacturing an insulator comprising a column of a plurality of weathersheds made of elastomeric material each having an axial opening therethrough surrounding an elongated member of dielectric material of substantial mechanical strength, which process comprises arranging the weathersheds in a column in which adjacent weathersheds abut and said axial openings are aligned to form an aperture through said column, compressing said column by an amount



greater than the amount of longitudinal compression of said weathersheds in the assembled insulator, inserting through said aperture formed by the aligned axial openings of said weathersheds an elongated member of dielectric material of essentially similar cross sectional shape as said openings but of a larger cross section and of a length greater than the column of weathersheds to stretch said weathersheds, arranging said elongated member in said column so that its ends project therefrom, and rigidly securing to each of said ends a fitting member the ends of which are so located that when the compressive force on said column of weathersheds is released, said end fittings hold said weathersheds between the ends thereof under compression on said elongated member and so that there is hoop tension in said weathersheds that causes them firmly to grip said elongated member.

3,898,373

DATA COMMUNICATION SYSTEM

Leo F. Walsh, 4130 Split Rock Rd., Camillus, N.Y. 13031

Continuation of Ser. No. 179,111, Sept. 9, 1971, abandoned.

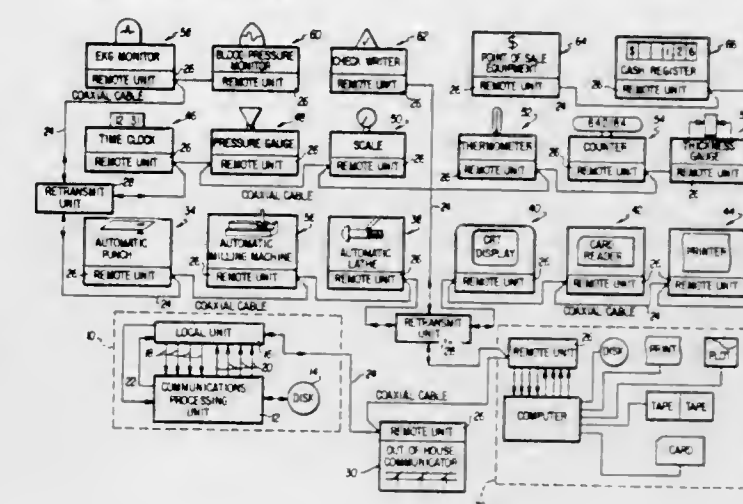
This application Nov. 12, 1973, Ser. No. 414,785

Int. Cl. H04q 5/00
U.S. Cl. 178—2 C 43 Claims

1. In a data communication system comprising a central communication processing unit and a plurality of remote stations separated from said central communication processing unit, the improvement comprising:

- only a single, bidirectional, wide bandwidth communication line coupling said central communication processing unit with at least a number of said plurality of remote stations for handling all data communications originating at said central communication processing unit and directed to said remote stations, and for handling all data communications originating at said remote stations and directed to said central communications processing unit;

said remote stations being coupled to said single, bidirectional wide bandwidth communication line in daisy chain configuration, and;



said central processing unit and at least one of said remote stations including means for transmitting combined data and clock information over said single, bidirectional wide bandwidth communication line.

3,898,374

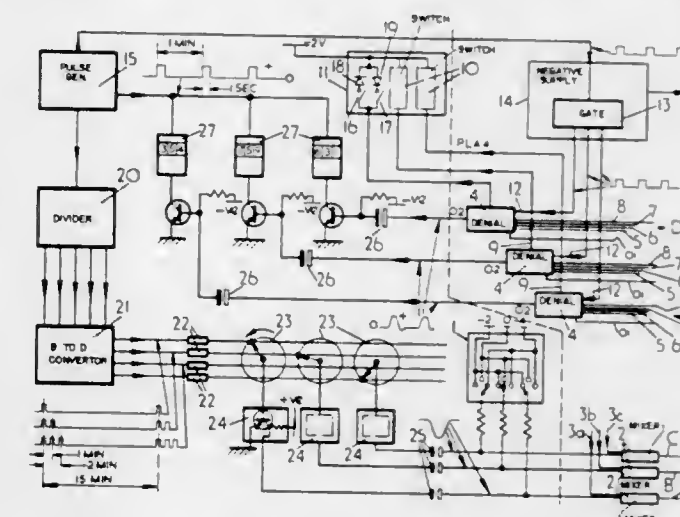
WIRED BROADCASTING SYSTEMS

Eric John Gargini, West Drayton, England, assignor to Communications Patents Limited, London, England

Filed Oct. 9, 1973, Ser. No. 404,655

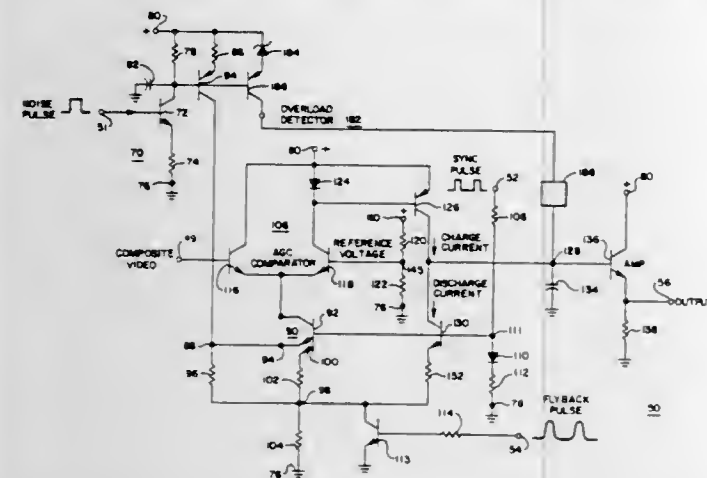
Claims priority, application United Kingdom, Oct. 11, 1972, 46966/72

Int. Cl. H04n 1/44
U.S. Cl. 178—5.1 39 Claims



1. A wired broadcasting system in which subscribers are connected through individual cables to a programme exchange incorporating means actuable by a subscriber for selecting a particular one of a plurality of programmes to be transmitted to the subscriber through his own individual channel, comprising means for allocating the programmes into three or more groups, and means for selectively denying two of the groups of programmes to subscribers, means for marking each of the plurality of programmes with any one of a plurality of voltage signals to indicate the group to which each programme belongs, means provided for each subscriber channel for indicating which of the marking voltage signals identify groups of programmes which are to be denied to particular subscribers, and means for sensing the marking voltage signal associated with a programme selected by the subscriber and denying the selected programme when the sensed voltage indicates a group of programmes which is to be denied, wherein the sensing and denying means comprises a denial unit at the exchange for each subscriber connected to receive a first input indicative of the marking voltage signal of a selected programme, and a second input indicative of which of the marking voltage signals identify programmes which are

second signal supply means for providing a recurring synchronizing signal at an output terminal thereof;
noise responsive circuit means for providing a first control signal at an output terminal thereof, said first control signal having a magnitude which is a function of the average level of the noise included in the recurring input signal,
electron control means having a first control terminal coupled to said output terminal of said first signal supply means, a second control terminal coupled to said output terminal of said second signal supply means, a third control terminal coupled to said output terminal of said noise



responsive circuit means, said electron control means being adapted to be rendered operative in response to the simultaneous existence of said gating signal and said synchronizing signal, said electron control means when operative being further responsive to said first control signal to provide a second control signal at an output terminal thereof having a magnitude which is a function of said magnitude of said first control signal; and
overload detector means coupled to said noise responsive circuit means, said overload detector means providing the overload control signal at an output terminal thereof in response to said noise responsive circuit being overloaded.

3,898,381

TELEVISION DISPLAY APPARATUS INCLUDING A BEAM CURRENT CLAMPING CONTROL CIRCUIT
Willem Hendrik Amsen, and Paulus Joseph Maria Hovens, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

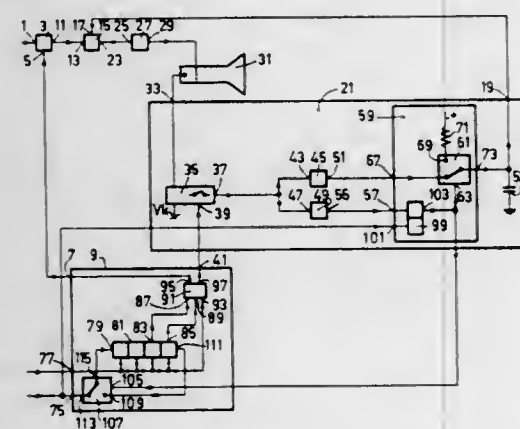
Filed Jan. 10, 1974, Ser. No. 432,325

Claims priority, application Netherlands, Feb. 13, 1973, 7301980

Int. Cl. H04n 3/16

U.S. Cl. 178-7.5 R

5 Claims



5. A beam current clamping control circuit for a television display tube comprising a beam current measuring circuit means for measuring during at least part of a line scan time of a field blanking time a beam current reference level to be

corrected, a pulse generator coupled to said measuring circuit, a level insertion circuit means coupled to said pulse generator for inserting the reference level during the measuring time into a video signal to be applied to the television display tube, a level correction circuit coupled to an output of the measuring circuit, the measuring circuit including a threshold circuit means for coupling to said tube for applying a signal to an output thereof when a beam current above a selected value occurs, a storage circuit, and a circuit means for extending the charge correction time of the storage circuit per field period having an input coupled to said threshold circuit output and an output coupled to said storage circuit.

3,898,382

AUDIOMETRIC SIGNAL AND APPARATUS FOR PRODUCING SUCH SIGNAL

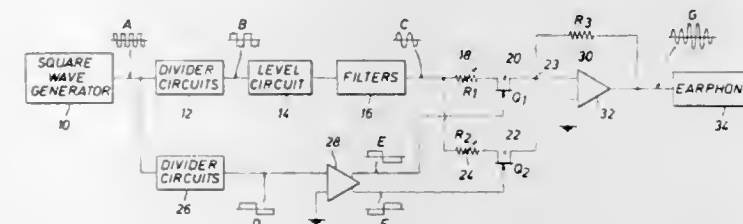
Leslie W. Dalton, Jr., P.O. Box 1162, Mesilla Park, N. Mex. 88047, and James A. Boehm, III, P.O. Box 4927, Las Cruces, N. Mex. 88003

Filed Apr. 9, 1973, Ser. No. 349,104

Int. Cl. G10k 10/00

U.S. Cl. 179-1 N

11 Claims



1. An audiometric signal for testing an ear for hearing comprising alternate first and second portions having a known frequency, said first portion having a known first constant amplitude and said second portion having a known different second constant amplitude, said change of amplitude between said alternate signal portions coinciding with a zero crossing point of said audiometric signal.

3,898,383

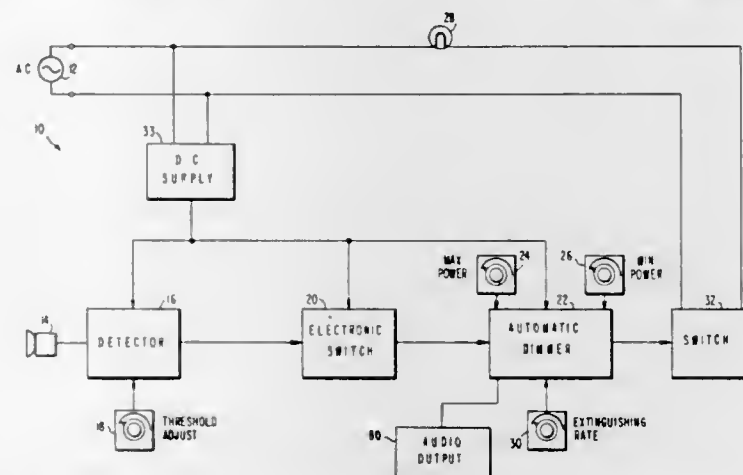
AUTOMATIC DIMMING AND RECYCLEABLE LAMP
Charles G. Herbits, 2400 Virginia Ave., N.W., Washington, D.C. 20037

Filed July 24, 1973, Ser. No. 382,279

Int. Cl. H03k 17/56; H04r 3/00

U.S. Cl. 179-1 VC

14 Claims



6. A sound responsive apparatus for automatically reducing the power to a load from an initial condition of maximum power to a terminal condition of minimum power, said apparatus comprising:

detector means for detecting the presence of sound having at least a predetermined amplitude; and
means responsive to said detector means for providing an initial condition of maximum power to the load and for reducing over a predetermined time period the power available to the load from said initial condition of maxi-

imum power to a terminal condition of minimum power when said detector means detects sound having the predetermined amplitude.

3,898,384

LOUDSPEAKER CABINET

Helmut Goeckel, Liebenau, Weser, Germany, assignor to Neckermann Versand KGaA, Frankfurt am Main, Germany

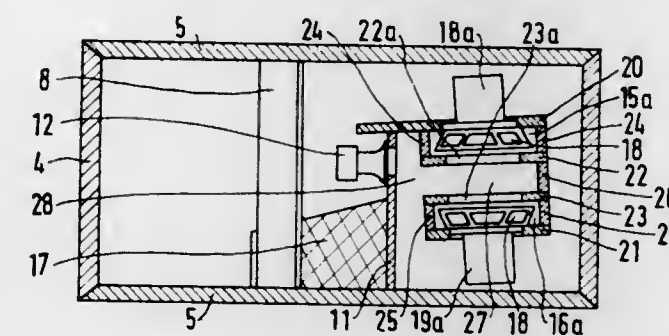
Filed July 26, 1974, Ser. No. 492,971

Claims priority, application Germany, July 27, 1973, 2338298

Int. Cl. H04R 1/30

U.S. Cl. 179-1 E

21 Claims



1. A loudspeaker cabinet comprising:
a front wall defining a first sound exit hole and at least one further sound exit hole;
a back wall;
an intermediate wall intermediate said front wall and said back wall;
a plurality of subsidiary walls between said front wall and said intermediate wall and arranged so as to provide a pressure chamber and a spirally extending first portion of a substantially exponential horn, said horn first portion extending from said pressure chamber to a sound passage defined between said intermediate wall and said back wall; one of said plurality of subsidiary walls being an inclined wall extending, at an angle, from said intermediate wall to said front wall and said substantially exponential horn having a second portion extending to said first sound exit hole and comprising said sound passage and a region partially defined by said inclined wall;
at least two loudspeakers each of which comprises a diaphragm and an operating means for the diaphragm and is arranged to radiate sound into said pressure chamber from one side of its said diaphragm and through the or one said further sound exit hole from the outer side of its said diaphragm, each of said loudspeakers being arranged so that its said operating means occupies a volume of said loudspeaker cabinet which is substantially outside the substantially exponentially growing free space of said substantially exponential horn; and
a tweeter arranged to occupy another volume of said loudspeaker cabinet which is also substantially outside said substantially exponentially growing free space of said substantially exponential horn.

3,898,385

AUTOMATIC TELEPHONE ANSWERING APPARATUS
Makoto Shimomiti; Tadahisa Iwasaki, and Tateki Ueda, all of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed July 9, 1973, Ser. No. 377,353

Claims priority, application Japan, July 7, 1972, 47-68045

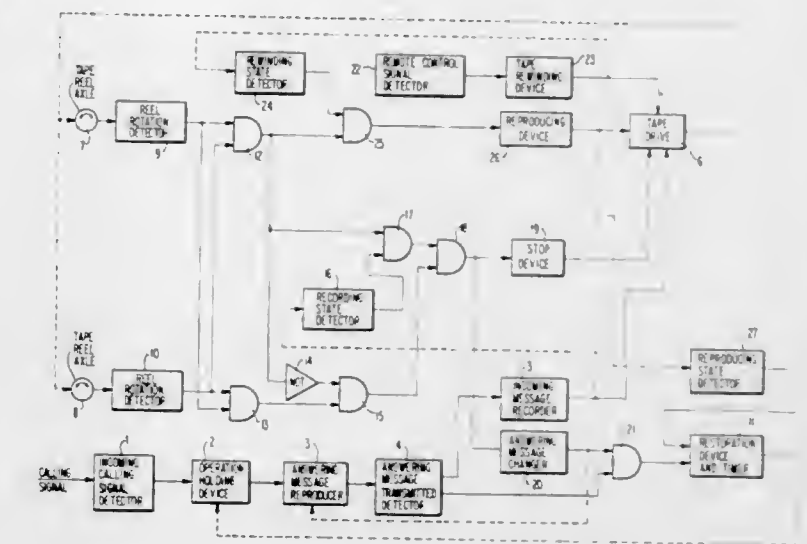
Int. Cl. H04m 1/64

U.S. Cl. 179-6 R

3 Claims

1. An automatic telephone answering apparatus comprising:
a. tape drive means for driving a magnetic recording tape for recording a message incoming from a caller,

b. a pair of rotation detecting means for respectively generating output signals when the rotational speeds of a supply reel means and a take-up reel means, both of which are driven by said tape drive means, become zero or lower than a predetermined speed value,
c. first AND circuit means for generating an output signal only when both said rotation detecting means generate output signals,
d. first OR circuit means for generating an output signal when at least one of said rotation detecting means generates an output signal,



e. second AND circuit means for generating an output signal only when said first OR circuit generates an output signal in the absence of an output signal from said first AND circuit,
f. third AND circuit means for generating an output signal only when said first AND circuit generates an output signal and said magnetic recording tape is in a recording state,
g. second OR circuit means for generating an output signal when at least one of said second and third AND circuit means generates an output signal, and
h. stop means responsive to an output signal from said second OR circuit means for disabling said tape drive means, thereby stopping the driving of said take-up reel.

3,898,386

ERROR DETECTION AND PROTECTION CIRCUITS FOR DUPLICATED PERIPHERAL UNITS

David E. Gaon, Villa Park, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Jan. 18, 1974, Ser. No. 434,750

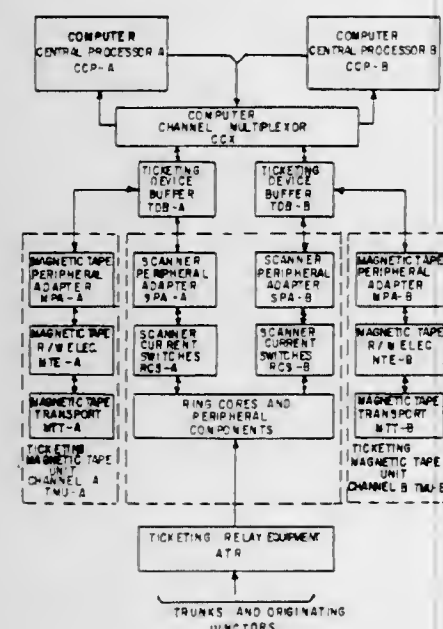
Int. Cl. H04M 3/22

U.S. Cl. 179-8 R

9 Claims

2. In a communication switching system including a switching network and common control means for establishing paths through the switching network, said network including status means for indicating a busy condition for a given path through the network, means responsive to calls for service from calling lines to obtain the addresses of said lines, and memory means for storing addresses of links requesting service, a ticketing arrangement comprising: a matrix having a plurality of monitoring devices arranged in a matrix array between rows and columns of the matrix, a scanner unit including matrix access means having a first group of driver means connected to rows of the matrix and a second group of driver means connected to columns of the matrix, switch means operable when enabled to energize said driver means of said first and second groups, and control means operable to generate control signals including a first control signal for enabling said switch means and a plurality of further control signals for enabling said driver means of said first and second groups, predeter-

mined ones of said driver means being operable when enabled to be responsive to address data supplied by said common



control means to effect interrogation of at least one of said monitoring devices.

3,898,387

DIGITAL DATA SWITCHING SYSTEM UTILIZING VOICE ENCODING AND DECODING CIRCUITRY

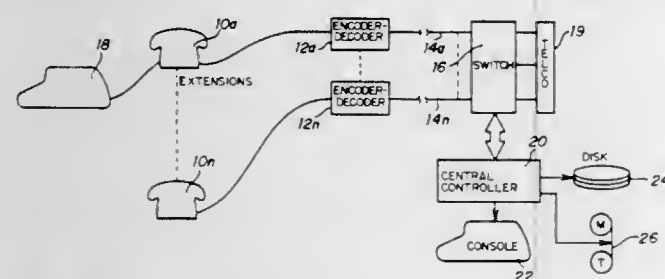
Charles P. Fort, P.O. Box 38547, Dallas, Tex. 75238

Filed Aug. 21, 1973, Ser. No. 390,327

Int. Cl. H04j 3/12

U.S. Cl. 179-15 BM

31 Claims



1. A digital data switching system comprising: means for receiving a plurality of data lines; means common to each of said data lines and responsive to binary digital signals on any of said data lines for establishing a virtual data line connection; and means common to each of said data lines and responsive only to a pulse transition on a data line for transmitting a representation of said pulse transition to the virtually connected data line.

3,898,388

PHASE INVERSION SYNCHRONIZATION

R. Wendell Goodwin, Westport, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed June 21, 1974, Ser. No. 481,939

Int. Cl. H04J 3/06

U.S. Cl. 179-15 BS

6 Claims



1. In the method of synchronizing a time division multiplexing system of the type in which data manifestations from a plurality of sources are interleaved with one another in streams of binary non-return to zero manifestations of two different, related kinds respectively representing binary ONES

and ZEROS, in cyclically repetitive sequential frames, each frame comprising a sequence of bit times, the step of:

providing a transition from a data manifestation of one kind to a data manifestation of the opposite kind at substantially the center of a bit time having the same position in the sequence of bit times within each frame, on the condition however that the data manifestation next preceding said bit time in said sequence is of a kind opposite to that of the data manifestation next succeeding said bit time in said sequence.

3,898,389

VOLTAGE AND/OR CURRENT-SENSITIVE LOOP EXTENDER

Thomas W. Hanneman, Fountain Valley, and Frederic R. Sparrevohn, Long Beach, both of Calif., assignors to Communication Mfg. Co., Long Beach, Calif.

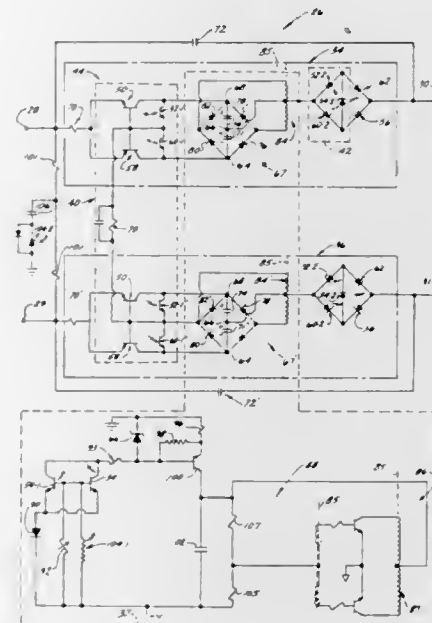
Continuation of Ser. No. 298,558, Oct. 18, 1972, abandoned.

This application May 3, 1974, Ser. No. 466,804

Int. Cl. H04q 1/30

U.S. Cl. 179-16 F

16 Claims



1. A telephone loop extending circuit for aiding central office battery comprising:
 - a. first and second pairs of input/output terminals for connection in opposite sides of a telephone loop;
 - b. first and second voltage insertion circuits corresponding to said first and second pairs of terminals, each insertion circuit having a path for current flow coupled between the corresponding pair of terminals and comprises:
 1. voltage source means,
 2. controllable switch means operative when enabled for switching the voltage source means between terminals of the corresponding terminal pair in first and second directions of polarity, and
 3. means for sensing an applied current flow through the corresponding path in first and second directions and responsive to such sensing for enabling the controllable switch means to switch the voltage means, respectively, in the first direction or in the second direction of polarity; and
 - c. means for sensing an applied voltage between a terminal of the first pair of terminals and a terminal of the second pair of terminals and operative in response to a rapid reversal in polarity of an applied voltage while voltage source means is coupled in one direction of polarity for enabling the controllable switch means in each of the insertion circuits to reverse the polarity in which the corresponding voltage source means is coupled in between terminals of the corresponding terminal pair.

3,898,390

MULTIPLE ZONE COMMUNICATIONS SYSTEM AND METHOD

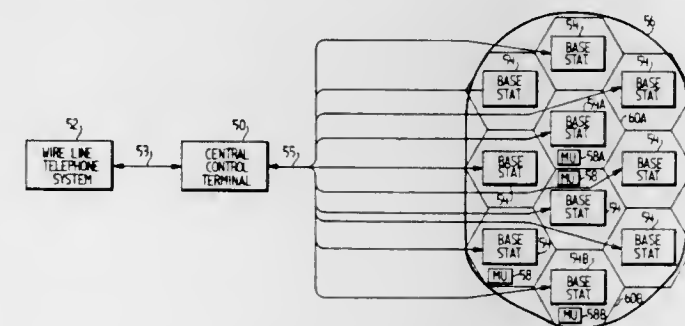
Joel D. Wells, Orlando; George F. McClure, Winter Park; Lionel D. Freeman, Orlando; John R. Endicott, Maitland, and Marion L. Cunningham, Orlando, all of Fla., assignors to Martin Marietta Corporation, Rockville, Md.

Filed May 15, 1973, Ser. No. 360,560

Int. Cl. H04q 7/00

U.S. Cl. 179-41 A

41 Claims



9. A method for assigning a plurality of dual frequency communication channels to users in a mobile radio telephone system comprising the steps of:

- a. transmitting a call request between a fixed station and a mobile unit over a predetermined one of the plurality of channels;
- b. assigning over the predetermined one of the plurality of channels an available one of the remaining plurality of channels for two-way radio communications thereover between the fixed station and the mobile unit; and,
- c. assigning the predetermined one of the plurality of channels for two-way radio communication between the fixed station and the mobile unit when none of the remaining plurality of channels is available.

3,898,391

TWO-STAGE TIME-DIVISION MULTIPLEX TELEPHONE SYSTEM

Michael Schwarzer, and Johannes-Georg Schosnig, both of Frankfurt am Main, Germany, assignors to Telefonbau und Normalzeit G.m.b.H., Frankfurt am Main, Germany

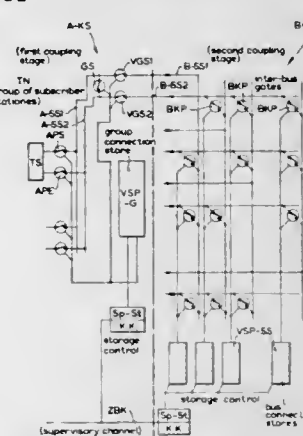
Filed March 7, 1973, Ser. No. 338,779

Claims priority, application Germany, March 9, 1972 22114007

Int. Cl. H04J 3/00

U.S. Cl. 179-15 AT

5 Claims



1. A two stage time-division multiplex telephone system including

- a. external lines connecting amplitude sample transmitters (APS) and amplitude sample receivers (APE) with first stage outgoing and incoming buses (A-SS1, A-SS2), said external lines being arranged in equal function groups (TNG, SLG, SNG), and external lines pertaining to the same of said equal function groups being connected to a pair of said first stage outgoing and incoming buses;
- b. first coupling points (GS) each for interconnecting pairs of said first stage outgoing and incoming buses

(A-SS1, A-SS2) that are connected to one of said equal function groups (TNG, SLG, SNG) and group connection stores (VSP-G) each controlling one of said first coupling points (GS) to establish two wire systems between said external lines pertaining to the same of said equal function groups;

- c. pairs of second stage outgoing and incoming buses (B-SS1, B-SS2);
- d. pairs of group switching devices (VGS1, VGS2), each pair of said pairs of group switching devices being interposed between a pair of said first stage outgoing and incoming buses (A-SS1, A-SS2), and a pair of said second stage outgoing and incoming buses (B-SS1, B-SS2), and said pairs of group switching devices (VGS1, VGS2) being under the control of said group connection stores (VSP-G);
- e. a plurality of pairs of second coupling points (BKP1, BKP2, BKP3, . . .), each of said plurality of pairs of second coupling points being arranged to interconnect a pair of said second stage outgoing and incoming buses (B-SS1, B-SS2) and being under the control of one of a plurality of bus connection stores (VSP-SS) to establish four wire connections between pairs of said external lines of different of said equal function groups (TNG, SLG, SNG); and
- f. a channel system transmitting control data connecting said group connection stores (VSP-G) and said bus connection stores (VSP-SS) to a central programmed control computer (SR).

3,898,392

ANSWER-BACK ASSEMBLY FOR A KEY TELEPHONE SYSTEM

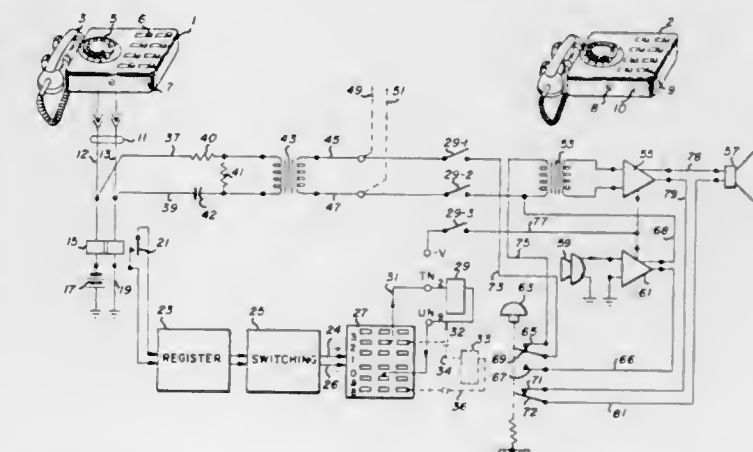
Joseph Monroe Jackson, Menlo Park, Calif., assignor to Litton Systems, Inc., Sunnyvale, Calif.

Filed Feb. 25, 1974, Ser. No. 445,083

Int. Cl. H04M 1/60

U.S. Cl. 179-99

1 Claim



1. In a key telephone system having a central station, a plurality of remote stations, and means for establishing telephone communications between such stations, the combination therewith including:

- a first isolation transformer associated with said central station having first and second windings;
- means coupling said first winding in circuit with said central station;
- relay means associated with a remote station, said relay means having first, second and third normally open sets of contacts, each of said contact sets operable to the closed position in response to energization of said relay means for completing an electrical path through said contact set;
- a source of DC power;
- first and second electrical leads coupled, respectively, between one end and the other end of said second winding of said first transformer and, respectively, to one contact in each of said first and second contact sets to establish two electrically conductive paths therebetween;

a third electrical lead connected between said DC source and one contact of said third contact set to establish an electrically conductive path therebetween;

a second isolation transformer having a primary winding and a secondary winding, said primary winding having first and second winding ends;

a first amplifier having an input and an output and wherein said input is coupled to said secondary winding for receiving AC electrical voltages therefrom;

a loudspeaker for converting AC to audio energy having an input;

a microphone having an output;

a second amplifier having an input and first and second outputs and wherein said input is coupled to said microphone for receiving electrical voltages therefrom;

each of said first and second amplifiers having a DC input for receiving DC power;

manually depressible spring return type switch means, said switch means having a normal position and an operated position and having a first set of break contacts and a set of transfer contacts, including a break contact, a make contact, and a transfer contact, and further having a spring for restoring said switch means to said normal position;

first circuit means connecting said output of said first amplifier, said first set of break contacts and said loudspeaker in electrical series circuit for permitting coupling of electrical voltages between said amplifier and loudspeaker only when said switch means is in the normal position;

second circuit means connecting an output of said second amplifier in circuit with said make contact in said set of transfer contacts whereby said output is connected electrically in circuit with said transfer contact only when said switch means is in the operated position;

third electrical circuit means connecting the second output terminal of said second amplifier in common with said first end of said primary winding of said second transformer;

fourth circuit means connecting the second end of said primary winding to said break contact of said set of transfer contacts whereby an electrical circuit between said transfer contact and said primary is established only when said switch means is in its normal position;

fourth electrical lead means connected between the other contact of said first relay contact set and said transfer contact of said switch transfer contact set;

fifth electrical lead means connected between the other contact of said second relay contact set and said first end of said primary winding of said second transformer;

sixth electrical lead means connected in circuit between the other contact of said third relay contact set and said DC input of each of said first and second amplifiers;

and means controlled by said central station for selectively energizing said relay means.

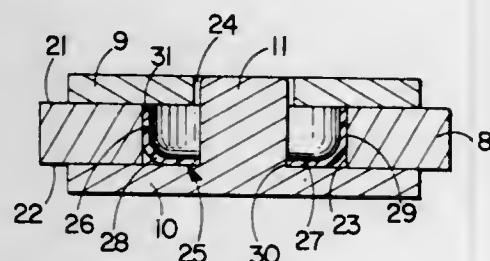
3,898,393

MAGNET CENTERING DEVICE AND SHIELD
Clifford B. Digre, 4745 Vincent Ave. South, Minneapolis, Minn. 55410

Filed Feb. 4, 1974, Ser. No. 439,026
Int. Cl.² H04R 1/00

U.S. Cl. 179-119 R

2 Claims



1. A shield and magnet centering device for a transducer of the type including an annular permanent magnet having axi-

ally opposite flat surfaces and an axial bore therethrough, and front and rear plates of paramagnetic material joined to said axially opposite surfaces of the magnet, said rear plate having a pole piece projecting axially through said bore, said front plate having an axial opening therethrough for reception of said pole piece; said shield and centering device comprising a generally cup-shaped body of nonmagnetic resilient material having a peripheral wall portion defining a circular outer surface portion for snug engagement with the axial bore through the magnet and a bottom wall portion having an axially outer surface for abutting engagement with said rear plate, said bottom wall portion having an axial opening therethrough for snug reception of said pole piece, whereby to center the pole piece within said bore during the joining of said rear plate to said magnet, said body having an axial dimension substantially equal to that of said annular magnet and a marginal edge opposite said bottom wall portion so that, when said magnet and plates are disposed in face-to-face engagement, the marginal edge and said axially outer surface of said shield will have axially abutting engagement with said front and rear plates respectively.

3,898,394

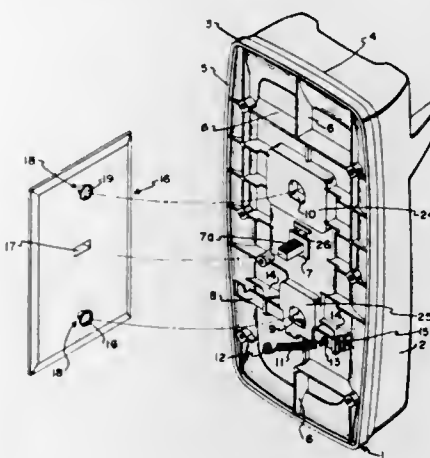
WALL TELEPHONE ADAPTER ASSEMBLY
Ronald C. Ward, Ronald M. Kenny, and Richard B. Kosten, all of Huntsville, Ala., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Sept. 27, 1974, Ser. No. 509,764

Int. Cl.² H04M 1/11

U.S. Cl. 179-146 R

5 Claims



1. An adapter assembly for receiving a telephone set in rigid attachment thereto, said adapter assembly being adapted to be releasably secured to a wall-mounted receptacle plate having a pair of mounting studs extending outwardly therefrom and an electrical jack for making connections to said telephone set, said adapter assembly comprising:

a unitary base plate having a front surface for receiving said telephone set and a recessed wall area joined with said front surface, said recessed wall area including first and second apertures adapted to receive said mounting studs and a third aperture for receiving an electrical plug;

an electrical plug slidably supported in said third aperture; and

a locking bar slidably supported by said base plate adjacent to one of said stud receiving apertures for selectively locking said base plate to said mounting studs.

3,898,395

METHOD AND APPARATUS FOR TESTING COMMUNICATION SWITCHING SYSTEM JUNCTORS
Thomas W. Crosley, Northlake, Ill.; Howard R. Miller, College Station, Tex.; Leo J. Putschinski, Jr., Wheeling, and Kenneth W. Vanderlei, Wheaton, both of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Feb. 27, 1974, Ser. No. 446,574

Int. Cl.² H04M 3/26

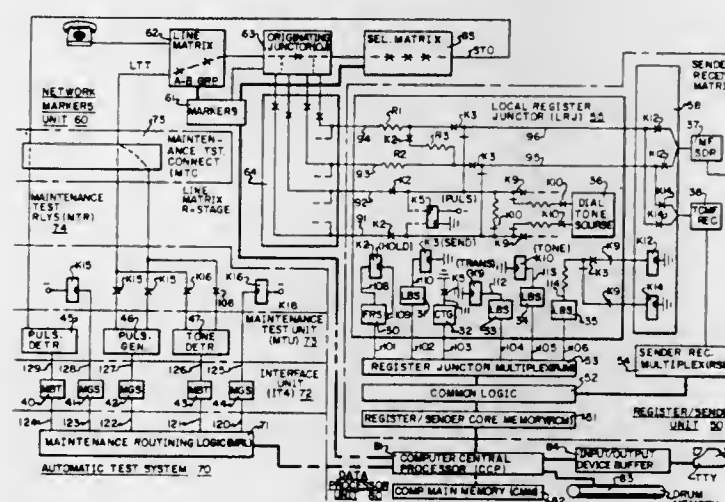
U.S. Cl. 179-175.2 R

10 Claims

1. In a communication switching system having a switching

network for establishing connections selectively between calling and called lines under the control of common equipment including a plurality of registers for storing temporarily call processing information received from the calling lines via a plurality of register junctors, said register junctors being enabled to access sending units and receiving units, the common equipment including memory means, a junctor testing arrangement comprising:

common testing circuits for communicating with said register junctors to be tested to send and to receive test information therebetween;



switching means for coupling selectively individual ones of said test circuits to the register junctors via the switching network;

means storing equipment information in said memory means concerning each one of the register junctors as to whether they are enabled to access sending units or receiving units; and

means responsive to said equipment information for controlling said switching means to couple said testing circuits in accordance with said equipment information.

3,898,396

AUTOMATIC VERIFICATION ANNOUNCER

Edward J. Gushue, Bedford Hills; Gerard Insolia, Katonah; both of N.Y., and Furrokh S. Irani, Bombay, India, assignors to Cognitronics Corporation, Stamford, Conn.

Filed Sept. 16, 1974, Ser. No. 506,264

Int. Cl. H04b 3/46; G101 1/10

U.S. Cl. 179-175.3 A

12 Claims

1. For use in providing verification of telephone trunk lines terminating at a central office having one or more separate exchanges, wherein the telephone maintenance craftsman will call in on a trunk line under test by dialing the exchange number followed by a designated code number assigned to a verification line for the corresponding exchange; verification announcer apparatus comprising, in combination:

input circuit means providing a plurality of separate channels each adapted to be coupled to a respective verification line and over which a ringing signal is received when that line is activated in response to a call through a trunk line;

detection means for each of said input circuit means channels, said detection means being responsive to said ringing signal and operable to produce a control signal to initiate the functioning of the verification announcer apparatus;

a plurality of signal-conditionable means coupled to said detection means respectively to receive the corresponding control signal;

multiplexing means arranged to rapidly scan said signal-conditionable means in fixed sequence and to provide an indication whenever one of said control signals has been detected during such scanning;

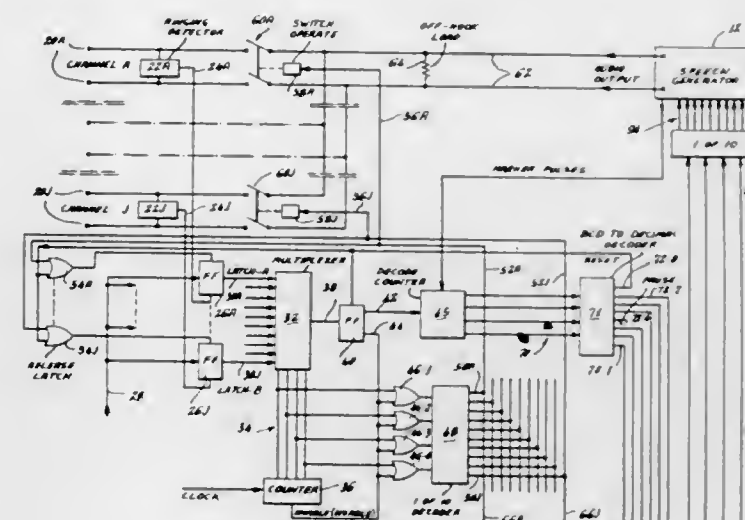
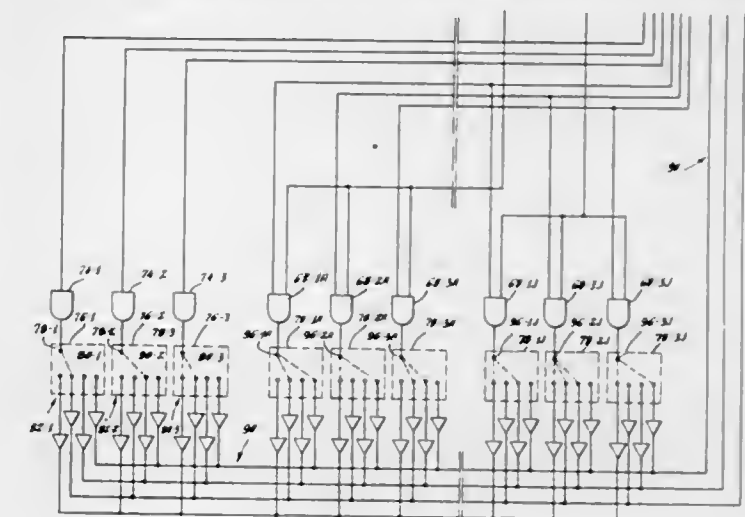
said multiplexing means including channel-identifying means operable upon detection of a control signal to

identify the channel of said input circuit means on which the ringing signal was received;

speech-generating means arranged upon activation to produce audio signals representing any of a set of spoken numbers;

selection means coupled to said speech-generating means to provide for selecting particular spoken numbers from the available set of spoken numbers;

exchange-identifying means under the control of said channel-identifying means and including means for producing



output signals indicating for each identified channel a corresponding set of exchange numbers;

means coupling said exchange-identifying output signals to said selection means to cause said speech-generating means to produce a series of spoken numbers corresponding to the identified exchange; and

means under the control of said channel-identifying means to direct each series of spoken numbers to the input circuit means channel on which the corresponding ringing signal was received.

10. Manually settable apparatus for selectively producing a series of audio signals representing spoken words and comprising:

speech-generating means of the type having a set of stored speech signals and including selection means responsive to selection signals for controlling the audio output so as to produce a sequential set of desired spoken words;

a group of coding means each individually activatable for producing a corresponding code signal to be directed to said selection means to cause said speech-generating means to produce a corresponding spoken word;

each of said coding means comprising a switch circuit having an input terminal and a plurality of output terminals on which a multi-element code signal will appear when said input terminal is activated;

each switch circuit further comprising a key receptacle and an encoding key inserted in said receptacle, said key being readily removable and replaceable by a different key to change the coding characteristics of the corresponding switch circuit;

said key including conductive means in a geometric pattern unique to the digit to be developed by insertion of said key and arranged to cooperate with said receptacle to effect a predetermined set of connections between said input and output terminals to produce a corresponding code signal unique to the particular digit.

3,898,397

MULTI-DIRECTIONAL SWITCH WITH ELASTOMERIC PIVOT AND SEALING MEMBER

William Harold Devore, Mechanicsburg, and David Van Dike Benfer, Marysville, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed June 27, 1974, Ser. No. 483,867

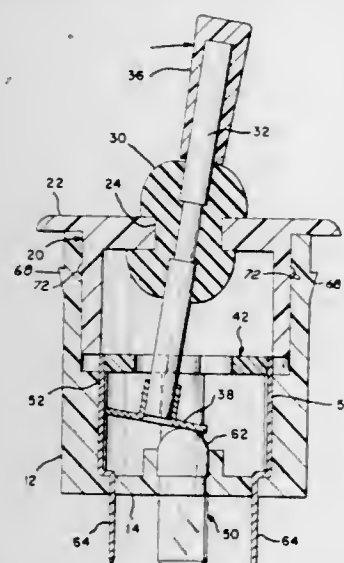
Int. Cl.² H01H 25/04, 19/06

U.S. Cl. 200—6 A

20 Claims

1. A multi-directional switch comprising:
a housing member having one open end,
a face plate member fitted to the open end of said housing and having a central aperture therein,
at least two contacts fixed in said housing with one of said contacts being a common contact and the remaining contacts disposed about the inner surface of said housing, and

an actuating assembly comprising a shaft, an elastomeric member and a contact plate, said shaft being mounted passing through said elastomeric member which in turn is mounted in said aperture of said face plate member form-



ing a fluid tight seal therewith, said elastomeric member resiliently biasing said shaft to a normal position with respect to said face plate member, said contact plate fixed on the inner free end of said shaft, whereby movement of said shaft from said normal position causes said contact plate to engage said common contact and at least one other contact.

3,898,398

IGNITION SWITCH CONTROL

Gaylord M. Borst, Waukegan, and Donald C. Nielsen, Zion, both of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed June 27, 1974, Ser. No. 483,700

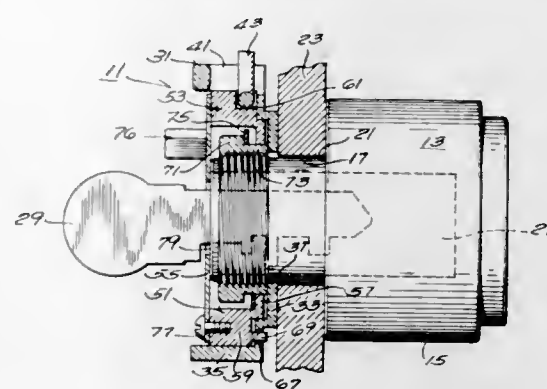
Int. Cl. B60k 27/08

U.S. Cl. 200—44

8 Claims

1. A control for an ignition switch including a projecting part adapted to extend through an opening in a support and having a rotary member adapted to receive a key for common rotation therewith between on and off positions, said control comprising a housing mounted on the projecting part, a rotor structure located in said housing for rotary movement between cocked and uncocked positions and including a wall extending transversely of the rotary axis of the member and having therein an aperture including angularly spaced edge means located to permit unhindered movement of the key between the off and on positions when said rotor structure is in the cocked position and to provide movement of the key

from the on to the off position in response to movement of said rotor structure from the cocked to the uncocked position, and a lanyard extending into said housing and connected to said rotor structure for common movement therewith,



whereby to rotate said rotor structure from the cocked position to the uncocked position in response to withdrawal of said lanyard from said housing and thereby to consequently rotate the key from the on position to the off position.

3,898,399

APPARATUS FOR DETECTING THE POSITION OF A PISTON ROD

Koichi Yasui; Yuzo Nakahara, and Kenji Yamano, all of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Kawasaki, Japan

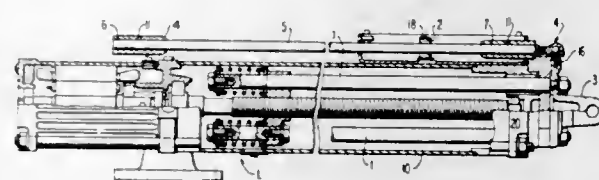
Filed Aug. 22, 1974, Ser. No. 499,677

Claims priority, application Japan, Aug. 22, 1973, 48-98504

Int. Cl.² H01H 3/16

U.S. Cl. 200—47

3 Claims



1. In a piston rod position detection apparatus for a linear motor wherein a piston rod is extended axially from and retracted axially into one end of a linear motor cylinder, and a limit switch dog bar is fixedly coupled to said piston rod, overlies the cylinder and moves axially with the piston rod, dog means are fixed to said bar for movement therewith, and at least one limit switch is positioned adjacent the bar and in the path of movement of said dog means for contact actuation to indicate the position of said piston rod, the improvement wherein:

said bar is fixedly coupled at one end only to said piston rod by a ball joint,
an annular bearing concentrically receives said bar and is fixed to said cylinder at the end of said cylinder proximate to the ball joint coupling, and
said annular bearing includes means permitting a slight inclination of the bar with respect to the axis of the cylinder without impairing its movement longitudinally in synchronism with said piston rod.

3,898,400

PENDULUM TYPE INERTIA SWITCH

Takezo Takada, deceased, late of Tokyo, Japan (by Juichiro Takada, legal representative), assignor to Takata Kojyo Co., Ltd., Tokyo, Japan

Filed Nov. 23, 1973, Ser. No. 418,502

Claims priority, application Japan, Nov. 29, 1972, 47-136575

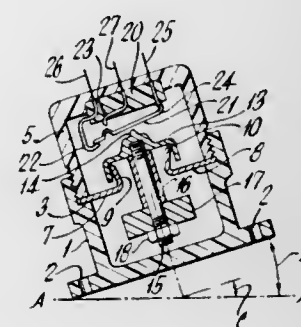
Int. Cl. H01h 35/14

U.S. Cl. 200—61.48

6 Claims

1. In the electrical control of the locking of a safety belt take-up reel against belt withdrawal, an inertia switch device

comprising a support structure, an upwardly directed circular fulcrum wall mounted to said support structure and delineating a circular opening, the upper edge of said circular wall being beveled, a pendulum member including a circular section resting on said upper edge of said circular wall and a depending section extending coaxially from said circular sec-



tion through said opening, and a switch mounted on said support structure and including an actuating member movable from a deactivated to an actuated position in response to the pivotal movement of said pendulum member including said circular section about said top edge of said circular wall, the locking of said reel responding to the actuation of said switch.

3,898,401

TRANSMISSION CONTROLLED, SPEED CHANGE POSITION DETECTING SWITCH DEVICE

Motoi Noba, Toyota, and Hatsuyoshi Yoshida, Toyoake, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota and Tokai Rika Denki Seisakusho K.K., Nishi, both of Japan

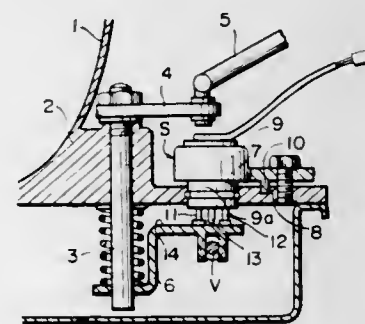
Filed Sept. 19, 1973, Ser. No. 398,813

Claims priority, application Japan, Sept. 18, 1972, 47-108183; Oct. 7, 1972, 47-100925

Int. Cl. H01h 3/16

U.S. Cl. 200—61.91

5 Claims



1. A speed change position detecting device for an automatic transmission comprising:

a valve movable to change the operating range of an automatic transmission among park, reverse, neutral and forward positions;
a rotatable shaft;
a manual shift lever connected to said shaft to turn the same;
a valve lever interconnecting said shaft to said valve so that the valve is moved in response to turning of said shaft by said shift lever;
a switch means mounting said switch on the housing of the transmission and in a position to present movable contacts in the vicinity of the path of movement of said valve lever; and
a cam plate integral with said valve lever, said plate having a plurality of cams arranged concentrically but in different radii so as to coact with said movable contacts as said cam plate moves with said valve lever.

3,898,402

SNAP SWITCH WITH ACTUATING TONGUE

Anthony R. Ford, West Covina, Calif., assignor to Airpax Electronics Incorporated, Cambridge, Md.

Filed Aug. 27, 1973, Ser. No. 391,639

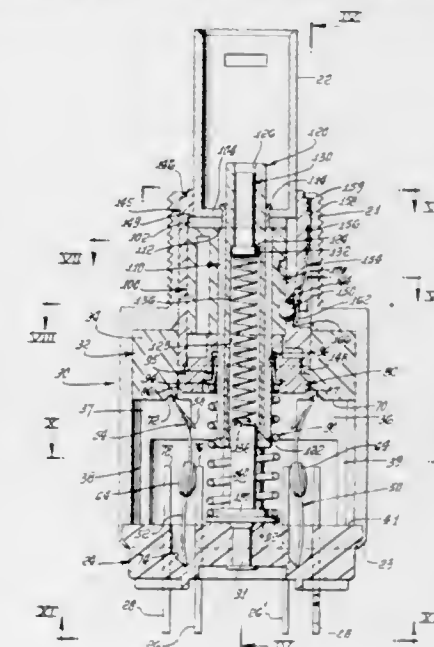
Int. Cl. H01h 13/36

U.S. Cl. 200—67 DB

10 Claims

1. An electrical switch having a switch body with an internal cavity and provided with upper and lower seats in the cavity, a switch blade of resilient conductive sheet material having upper and lower end edges received respectively in the upper and lower seats, the seats being spaced closer together than the instressed distance between the blade end edges, and a set of first and second fixed abutment means disposed on opposite sides of the blade substantially midway between the seats, the first abutment means being normally in abutting contact with one face of the blade whereby to impose thereon a generally sinuous contour longitudinally of the blade, the second abutment means being spaced slightly from the opposite face of the blade, characterized in that:

said blade includes upper convex and lower concave legs terminating respectively in said upper and lower end edges, the upper leg having formed therein a central opening dividing said leg into a pair of laterally spaced leg segments joined upwardly by a transverse yoke portion, and an actuating tongue formed integrally with the yoke and projecting downwardly from the central portion thereof in lateral alignment with said opening and extending tangentially to the convex face of the upper leg.



and including actuator means movable toward actuated position along a path of movement substantially parallel to the plane joining said seats and during said movement slidably flexing said tongue toward the center of curvature of the upper convex leg whereby to create stress in the yoke and upper leg tending to decrease the curvature of the upper leg and simultaneously increase the curvature of the lower leg, until the blade snaps out of contact with the first abutment means and into contact with the second abutment means.

3,898,403

PRESSURE SENSITIVE CONTROL APPARATUS WITH MAGNET ACTUATED SWITCH AND VALVE

Richard Davis Grayson, Arcadia; Reed Albert Palmer, Glendale, both of Calif., and Raymond John Fox, Irwin, Pa., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Continuation of Ser. No. 796,051, Feb. 3, 1969. This application Jan. 22, 1971, Ser. No. 108,873

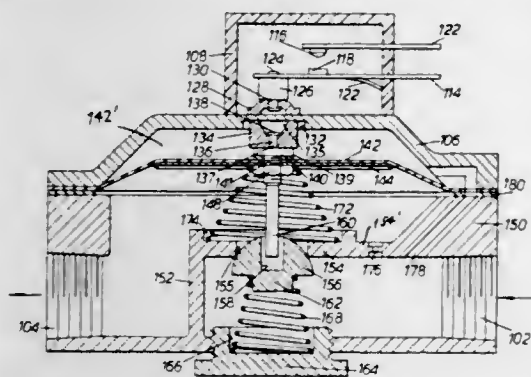
Int. Cl.² H01H 35/34

U.S. Cl. 200—83 Q

16 Claims

1. In fluid pressure responsive apparatus, the combination comprising: a non-magnetic housing; a diaphragm mounted

across the interior of, and fixed to, said housing, said diaphragm defining an auxiliary inlet chamber and a main outlet chamber with said housing, said housing including an outlet port in free and open communication with said outlet chamber, said housing having a main inlet chamber, said housing having an inlet port in free and open communication with said main inlet chamber, said housing having a passageway providing for free and open communication between said main and auxiliary inlet chambers, said housing including a web partially defining said main inlet chamber, said web having a hole therethrough and a valve seat therearound on the main inlet chamber side thereof; a valve in said main inlet chamber to rest on said valve seat; a first spring in said main inlet chamber in compression between said valve and said housing when said



valve is closed to hold said valve tightly against said seat, said web having a constricted opening therethrough spaced from said hole and providing for communication between said main inlet and outlet chambers; an assembly fixed approximately to the center of said diaphragm having one projection extending toward said housing in said auxiliary inlet chamber and another projection extending toward said valve, said other projection having a lost motion connection with said valve, said one projection being a first magnetic body; a second magnetic body outside said housing; a switch; means connected to said body for operating said switch when said one projection moves inside said housing, at least one of said bodies being a permanent magnet; and a second spring in said main outlet chamber in compression between said housing and said diaphragm when said first body contacts said housing.

3,898,404

SUDDEN PRESSURE RELAY HAVING A PLURALITY OF FLOW RESTRICTING BAFFLES

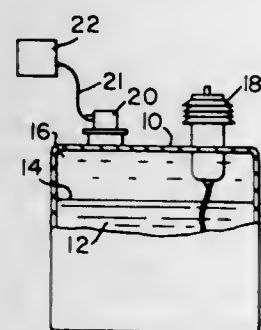
Paul W. Martincic, Sharpsville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 25, 1974, Ser. No. 445,506

Int. Cl. H01h 35/32

U.S. Cl. 200—83 C

7 Claims



1. A sudden pressure relay for electrical apparatus, comprising:

- a housing which defines a gas chamber, said housing being mounted on an electrical apparatus enclosure which contains a gas cushion;
- a plurality of baffles each having an opening therein, said baffles being aligned with the opening in adjacent baffles offset from each other thereby forming a tortuous path for gas passing through the openings in the baffles, said

baffles being located between the housing and the electrical apparatus enclosure;

expanding means which is located substantially within the gas chamber and which is in relatively unrestricted communication with the gas cushion, said expanding means increasing at least one of its dimensions when the gas pressure in the gas cushion is larger than the gas pressure in the gas chamber; and,

sensing means for detecting when a predetermined amount of expansion of the expansion means has occurred.

3,898,405

DIAPHRAGM PRESSURE SWITCH WITH BALANCE PLATE AND ADJUSTABLE SPRINGS

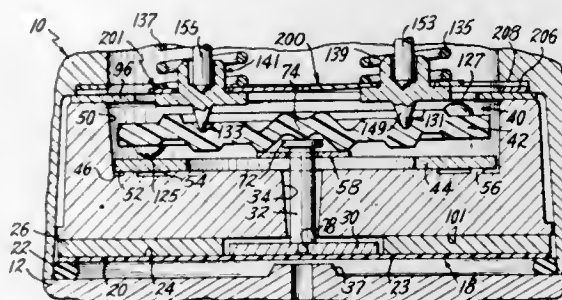
Ernesto Juan Weber, Lluvia No. 470, State of the Federal District, Mexico City, Mexico

Continuation-in-part of Ser. No. 432,460, Jan. 11, 1974, which is a division of Ser. No. 236,732, March 21, 1972, Pat. No. 3,786,212, which is a continuation-in-part of Ser. No. 154,536, June 18, 1971, abandoned. This application July 12, 1974, Ser. No. 488,207

Int. Cl. H01h 35/34

U.S. Cl. 200—83 J

20 Claims



1. A condition responsive device comprising:

- a. a housing;
- b. a chamber in said housing;
- c. a sensing means partially defining said chamber, said sensing means being displaceable through a stroke;
- d. a balance plate having first and second sides, said sensing means being operatively coupled to said balance plate;
- e. stop means associated with both said first and second sides of said balance plate defining first and second axes about which said balance plate pivots, said stop means associated with said first side of said balance plate including a first pivotal protrusion disposed on said first side of said balance plate immediately adjacent to a depression in said first side, said stop means associated with said second side of said balance plate including a second pivotal protrusion disposed on said second side of said balance plate immediately adjacent to a depression in said second side, said first pivotal protrusion being disposed directly opposite said depression in said second side, and said second pivotal protrusion being disposed directly opposite said depression in said first side;
- f. a pair of biasing means, at least one of which being adjustable and each having a line of force acting on said balance plate;
- g. signal producing means operatively coupled to said balance plate;
- h. whereby displacement of said sensing means through one part of its stroke effects pivoting of said balance plate about said first axis and displacement of said sensing means through another part of its stroke effects pivoting of said balance plate about said second axis.

3,898,406

INTERRUPTER-BUSHING

Oscar L. Larkin, Jackson, Miss., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

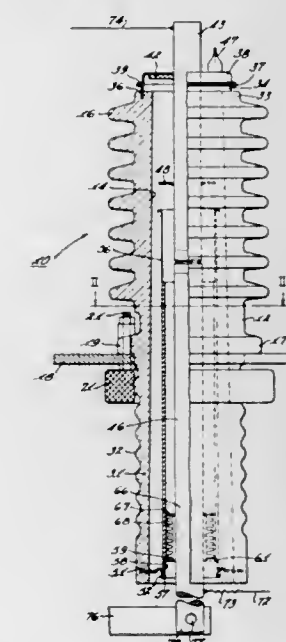
Filed Dec. 3, 1973, Ser. No. 421,394

Int. Cl. H01H 33/66

U.S. Cl. 200—144 B

2 Claims

1. In an interrupter-bushing;
 - a housing of a glass-ceramic insulating material constructed and arranged in the form of an elongated cylindrical envelope having an axial bore;
 - an external annular flange having four identical lobes spaced equidistantly apart integrally formed with said elongated cylindrical envelope, said flange being located substantially midway between the axial ends of said envelope thereby dividing said envelope into an upper portion and a lower portion;
 - a plurality of external annular sheds integrally formed with said elongated cylindrical envelope on the portion thereof above said flange;
 - a plurality of external annular sheds integrally formed with said elongated cylindrical envelope on the portion thereof below said flange, said sheds operating to increase the creep distance with a ratio greater than one;
 - a metallic circular member hermetically fused in one axial end of said envelope, said metallic circular member having a radially extending annular flange;
 - a metallic disc hermetically fused in the wall of the bore of said envelope at the opposite axial end thereof, said metallic disc having an axial opening which coincides with



- the axis of said envelope, said metallic disc also having an axially extending collar;
- a metallic sealing plate secured to said flange of said circular envelope in hermetically sealed relationship, said sealing plate having an axial bore;
- a stationary electrode extending into the bore of said envelope through the opening in said sealing plate in hermetically sealed relationship within the opening in said sealing plate;
- a tubular shield extending into the bore of said envelope through the axial opening in said disc, said tubular shield being hermetically sealed to said collar of said disc, said shield being of a length to extend upwards a distance sufficient to encompass the depending end of said stationary electrode;
- a movable electrode extending into the bore of said envelope through said tubular shield, said movable electrode being of a length to engage with the adjacent axial end of said stationary electrode when in closed position;
- a bellows encompassing said movable electrode within the bore of said envelope adjacent the end of the bore through which said movable electrode enters said envelope, one end of said bellows being hermetically sealed to

said tubular shield and having its opposite end connected in hermetically sealed relationship to said movable electrode,

a disc shield secured to said stationary electrode and disposed in spaced relationship to the adjacent axial end of said tubular shield;

a first disc secured in hermetically sealed relationship to the lower end of said movable electrode, said first disc having the inner end of said bellows secured in hermetically sealed relationship thereto; and,

a second disc having an axial opening of a diameter larger than the diameter of said movable electrode, said second disc encompassing the lower end of said movable contact and being secured in hermetically sealed relationship to said tubular shield.

3,898,407

MOVABLE CONTACT-STEM OPERATOR FOR A VACUUM-TYPE CIRCUIT-INTERRUPTER

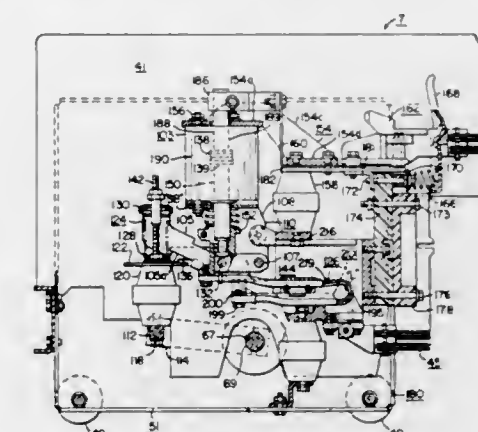
Alfred W. Hodgson, Orchard Park, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 20, 1974, Ser. No. 481,423

Int. Cl. H01h 33/66

U.S. Cl. 200—144 B

17 Claims



1. A circuit-interrupting structure including a vacuum-type interrupting unit having a relatively-stationary contact and a cooperable movable contact, metallic bellows means for hermetically sealing the movable contact to the envelope of said unit, a movable-contact stem for supporting and for moving the movable contact, a movable-contact operator having a relatively loose fit upon the exterior end of the movable-contact stem, said movable-contact operator having at least one supporting pivot aperture provided therein, a rotatable contact-operating lever having a fixed pivot adjacent one end thereof and a contact-actuating pin extending therethrough which, additionally, extends through said one pivot aperture provided in the movable-contact operator, a bolt for captively securing said movable-contact operator to the external end of the movable-contact stem, and clamping means for clamping the movable-contact operator to the external end of the movable-contact stem after insertion of the contact-actuating pin through the contact-operating lever and also through the movable-contact operator.

3,898,408

CIRCUIT INTERRUPTER WITH IMPROVED TRAP FOR REMOVING PARTICLES FROM FLUID INSULATING MATERIAL

Alan H. Cookson, Pittsburgh; Owen Farish, Monroeville; John M. Gauntz, Trafford; Thomas W. Dakin, Murrysville; George M. L. Sommerman, Pittsburgh; Richard E. Kane, Monroeville, and Zeno Neri, Turtle Creek, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 122,453, March 9, 1971, Pat. No. 3,814,879. This application Aug. 1, 1973, Ser. No. 384,653

Int. Cl. H01H 33/82, 9/30

U.S. Cl. 200—148 R

5 Claims

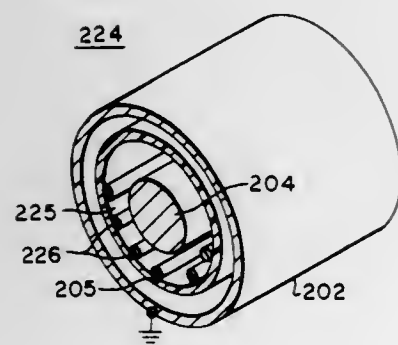
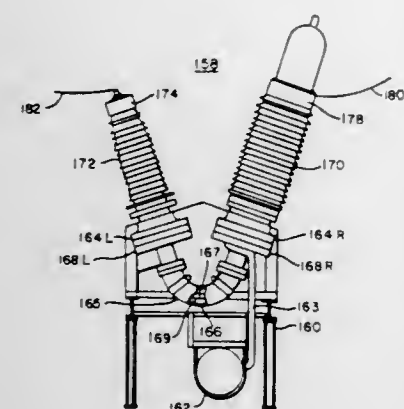
1. An electrically conducting system, comprising: first and second spaced electrodes, said electrodes being

adapted to be energized at different electrical potentials, said first electrode comprising a hollow tubular conductor disposed about a longitudinal axis, said second electrode comprising an electrical conductor, said second electrode being disposed generally within said first hollow tubular conductor electrode;

insulating fluid disposed around said second electrode conductor and contained within said first hollow tubular conductor electrode, an electrical field at least periodically existing between said first electrode and said second electrode when at least one of said electrodes is energized at one said electrical potential;

a hollow tubular electrically insulating flashover barrier disposed radially between said first electrode and said second electrode, said barrier being spaced from both said first and said second electrodes and at least partially enclosing said second electrode, said barrier deterring electrical discharge between said first and said second electrodes;

support means for supporting said electrically insulating barrier member within said first electrode; and an electrically conducting particle trap structure disposed proximate said barrier and away from said first and sec-



ond electrodes, said particle trap structure not being electrically connected to said first or said second electrode, said electrically conducting particle trap structure distorting said electric field in such a manner as to form a relatively electric field free region between a portion of said flashover barrier and a portion of said particle trap structure, electrically charged particles entering said electric field free region being generally immobilized because of reduced electric field strength in said electric field free region.

5. The combination as claimed in claim 1 wherein said electrically conducting system comprises apparatus connected in circuit relationship with said first electrode and said second electrode for establishing and extinguishing an electric arc and actuating means therefor.

3,898,409 SPRING CHARGING ACTUATING MECHANISM FOR AN ELECTRIC SWITCHING DEVICE

Reinhard Liebig; Siegfried Jahrig, and Werner Kogler, all of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed July 6, 1973, Ser. No. 376,941

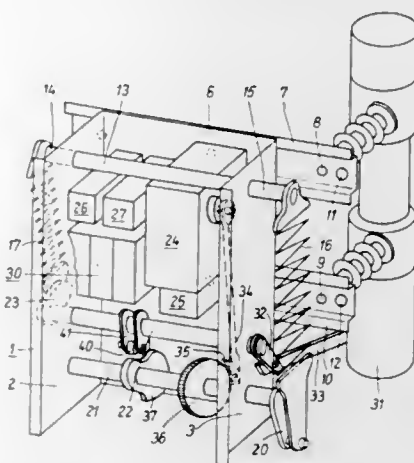
Claims priority, application Germany, July 24, 1972, 2236788

Int. Cl. H01h 3/30; F03g 1/08

U.S. Cl. 200—153 SC

4 Claims

1. In an actuating mechanism for an electric circuit breaker equipped with at least one switching pole, said mechanism including first and second springs for respectively storing the energy needed for closing and the energy needed for opening the apparatus, a tensioning device for tensioning the springs and including first and second shafts having respective end portions, and a housing for receiving the tensioning device therein, the housing including mutually adjacent narrow side walls for accommodating the first and second shafts of the tensioning device thereon, wherein the improvement comprises the first and second shafts mounted in said housing so as to cause the end-portion of the first and second shafts respectively to project from said housing, said first and second shafts being disposed outside of said housing and having respective one ends, and anchor means for anchoring said one ends of said shafts to the housing at respective anchor locations, the other end of the first shaft being connected to said



end-portion of said first shaft so as to coact therewith and the other end of the second spring being connected to the end-portion of said second shaft so as to coact therewith, said first shaft and said anchor means conjointly supporting said first spring adjacent the outer side of one of said side walls, and said second shaft and said anchor means conjointly supporting said second spring adjacent the outer side of the other one of said side walls whereby said springs are arranged outside of the housing thereby rendering said springs accessible for inspection and maintenance work, the housing further including a center wall connecting the mutually adjacent narrow side walls and, two mutually parallel carrier rails to which the breaker and the switching pole can be securely mounted, said carrier rails being mounted on said center wall.

3,898,410 AC TO RF CONVERTER CIRCUIT FOR INDUCTION COOKING UNIT

Philip H. Peters, Jr., Greenwich, N.Y., assignor to Environment/One Corporation, Schenectady, N.Y.

Filed June 16, 1972, Ser. No. 263,639

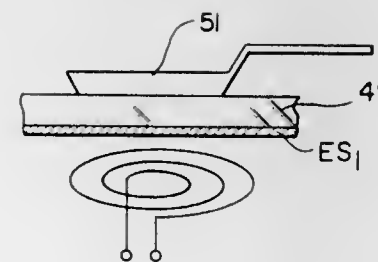
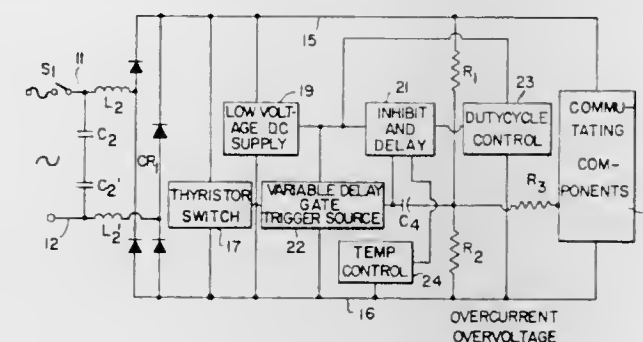
Int. Cl. H05b 5/04

U.S. Cl. 219—10.49

51 Claims

1. An induction heating unit power supply including in combination high voltage power supply terminal means for supplying a low frequency, high voltage undulating excitation potential, high frequency chopper-inverter circuit means connected to and supplied by said high voltage power supply terminal means and including serially connected capacitor

and inductor commutating reactive components with said commutating inductor reactive components comprising an induction heating coil, said chopper-inverter circuit means further including power rated thyristor means connected to and supplied by said high voltage power supply terminal means in parallel circuit relationship with said serially connected capacitor and inductor commutating reactive components, low voltage direct current power supply means supplied in common with said high voltage power supply terminal means, gating circuit means supplied from said low voltage direct current power supply means and coupled to and controlling gating-on of said power rated thyristor means, said chopper-inverter circuit means upon repetitive turn-on of the thyristor means by the gating circuit means thereafter operating in the manner of a serially commutated chopper-inverter to supply high frequency current through the induction heating coil, said gating circuit means comprising means connected across one of the reactive commutating components for deriving a first high frequency alternating current gate controlling signal voltage at substantially the operating frequency of the chopper-inverter, means connected to said high voltage power supply terminal means for deriving a second alternating current gate controlling signal voltage at the frequency of the high voltage potential appearing across the high voltage power supply terminal means and including the low frequency undulating excitation potential component, gating signal generator means for deriving high frequency output gating signal pulses upon being enabled which are of sufficient magnitude to assure safe turn-on of the power rated thyristor means, said gating signal generator means being energized from said low voltage direct current power supply means and having the output thereof coupled to and controlling turn-on



of the power rated thyristor means, control switch means coupled to and enabling operation of the gating signal generator means, direct current bias circuit means supplied from said low voltage direct current power supply means and connected to and supplying direct current bias potential to said control switch means, and common alternating current coupling means coupling said first high frequency alternating current gate controlling signal voltage and said second alternating current gate controlling signal voltage in common to said control switch means to control the operation thereof in conjunction with the direct current bias potential whereby zero point switching on and initial turn-on of the thyristor means is achieved only at or near the zero points of the high voltage undulating excitation potential to thereby provide unity power factor operation of the induction heating unit power supply with unity form factor whereby nearly sinusoidal line current supply is drawn for all values of loading from no-load to full-

load without requiring substantial supply line filtering components.

3,898,411 METHOD AND APPARATUS FOR PREHEATING AN UNCURED RUBBER TIRE

Joseph Gerard Alphons Smeets, Maastricht, Netherlands, assignor to International B. F. Goodrich-Europe B.V., The Hague, Netherlands

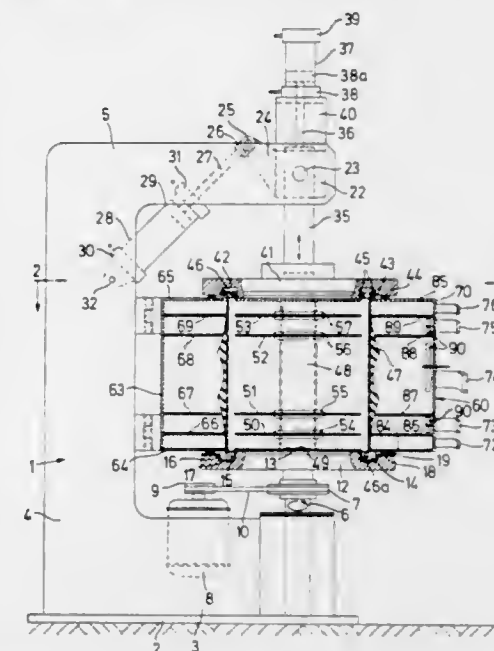
Filed July 5, 1972, Ser. No. 269,212

Claims priority, application Germany, July 10, 1971, 2134526

Int. Cl. H05B 9/06

U.S. Cl. 219—10.55 R

11 Claims



1. An apparatus for prevulcanization heating of an uncured elastomer-containing tire comprising a chamber with a longitudinal axis adapted to enclose the tire, means within the chamber dividing it into separate zones with each zone in communication with a different annular portion of the tire, means for supplying ultra-high frequency energy individually to said zones, means to rotate the tire within said chamber, said chamber having portions so disposed relative to the tire enclosed thereby to exclude the beads of the tire from the said zones.

3,898,412 POSITIVE POSITION INTERLOCK CONCEALMENT SHUTTER

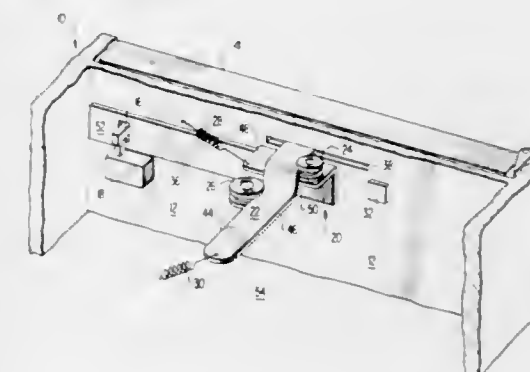
Earl W. Robinson, Rockville, Md.; Albert Van De Griek, Jr., Arlington, Va., and Richard W. Kisielski, Beltsville, Md., assignors to The United States of America as represented by the Secretary of the Department of Health, Education, and Welfare, Washington, D.C.

Filed May 21, 1974, Ser. No. 471,999

Int. Cl. H05b 9/06

U.S. Cl. 219—10.55 C

5 Claims



1. A positive position interlock concealment shutter for preventing the accidental or intentional actuation of a concealed interlock switch located in the interior of a high frequency energy utilization device having a latch pawl mounted

on a door of the device and engaging the interlock switch through a first aperture in a front wall of the device comprising:

- a shutter assembly mounted substantially adjacent to and in sliding relationship with the interior side of the front wall of the device, said shutter assembly including a first roller connected thereto, a second aperture aligned with said first aperture in the front wall of the device when the door thereof is closed and a solid body portion adjacent to said second aperture;
- second roller fixedly mounted within the interior of the device;
- door guide arm attached to the door of the device and extending into the interior of the device through a third aperture in the front wall of the device, said guide arm including cam means movable over said first and second rollers for controlling the position of said shutter assembly and said second aperture therein in such a manner as to permit sufficient door movement for the latch pawl to clear said second aperture in said shutter assembly during the opening of the door and such that said second aperture in said shutter assembly is misaligned with said first aperture and said solid portion of said shutter assembly is aligned with said first aperture in the front wall of the device as the door thereof is opened, whereby access to the interlock switch is prevented by said solid portion of said shutter assembly.

3,898,413

INDUCTION HEAT COIL ARRANGEMENT

Wolfgang Keller, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

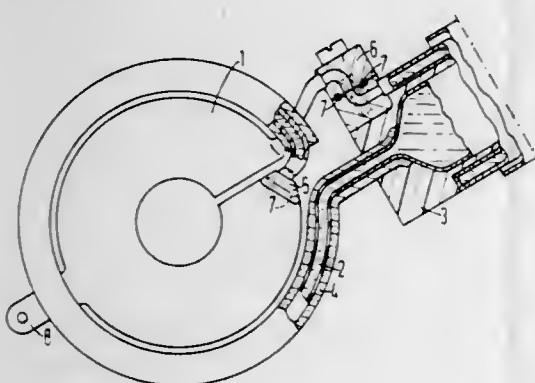
Filed Apr. 12, 1974, Ser. No. 460,538

Claims priority, application Germany, June 18, 1973, 2331004

Int. Cl. H05b 5/08

U.S. Cl. 219-10.79

5 Claims



1. An induction heating coil for use in a crucible-free zone melt process with an inert gas atmosphere and having at least two turns comprising:

- an outermost turn consisting of a bent metal tube having a peripheral coating of a heat-resistant electrically insulating material and forming a portion of a high frequency current path; and
- an innermost turn comprised of a flat coil.

3,898,414

FILTER UNIT WITH CLEANING ATTACHMENT

Clyde W. Hawley, Fairport, N.Y., assignor to Dollinger Corporation, Rochester, N.Y.

Filed May 6, 1974, Ser. No. 467,105

Int. Cl. B23K 9/16; B01D 27/06, 27/12

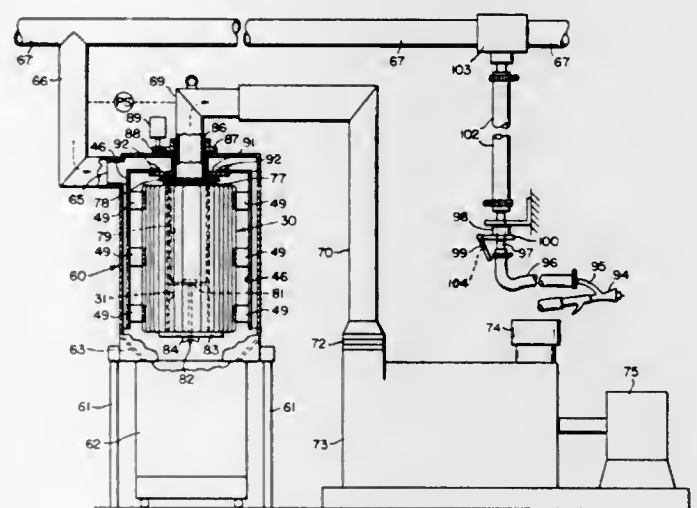
U.S. Cl. 219-72

8 Claims

4. In a filter system including a plurality of welding guns of the type in which a vacuum chamber in each gun opens on the welding tip thereof to draw smoke and particles from the vicinity of a weld during use of the gun,

a manifold, means connecting the vacuum chamber of each gun to said manifold, comprising

- a first duct connected at one end to an opening in said manifold,
- a valve connected to the opposite end of said duct,
- a second duct connected at one end to the vacuum chamber on one of said guns,
- means for releasably connecting the opposite end of said second duct to said valve from communication thereby with said manifold, and
- means operative automatically to close said valve when said opposite end of said second duct is disconnected therefrom, and



a filter unit comprising

- a housing having an inlet and an outlet,
- means connecting the inlet of said housing to said manifold,
- means for applying a vacuum to the outlet of said housing to draw smoke and particles from the vacuum chamber of each gun through its associated ducts and valve, when open, into said housing,
- a porous, pleated filter cartridge removably mounted in said housing to cover said inlet to filter out particles drawn into the housing by the vacuum means, and
- means for cleaning accumulated particles from the pleated surfaces of said cartridge without removing the cartridge from said housing.

3,898,415

WELD FLUX APPARATUS

Bernard D'Acremont, Saint-Nazaire, France, assignor to The Babcock & Wilcox Company, New York, N.Y.

Filed May 15, 1974, Ser. No. 469,995

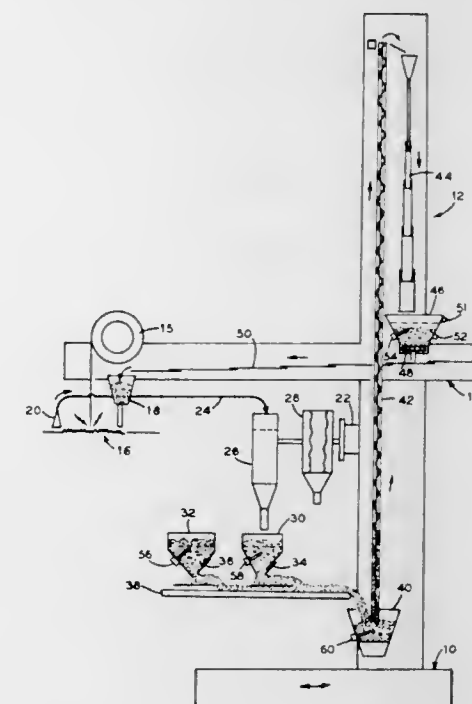
Int. Cl. B23K 25/00

U.S. Cl. 219-73

5 Claims

1. A welding apparatus for use on a workpiece, electrode means for producing a welding zone on the workpiece, means for depositing flux on the welding zone, and suction means for removing spent flux from the workpiece, the improvement comprising separator means for recovering a reusable fraction of the spent flux, a first and second gravity feed means, the first feed means delivering reusable flux recovered by the separator means, and the second feed means delivering fresh flux, electric heater means disposed in each of said feed means for drying the flux passing therethrough, adjustable gate means for regulating each of said feed means, and vibrator means for receiving said regulated feed of fresh and reusable

fluxes, said vibrator means combining the fresh and reusable fluxes to form a reconstituted flux, and machine transport



means for conveying the reconstituted flux to said depositing means, said transport means including a screw conveyor.

3,898,416

METHOD AND APPARATUS FOR THE BANDING OF OBJECTS

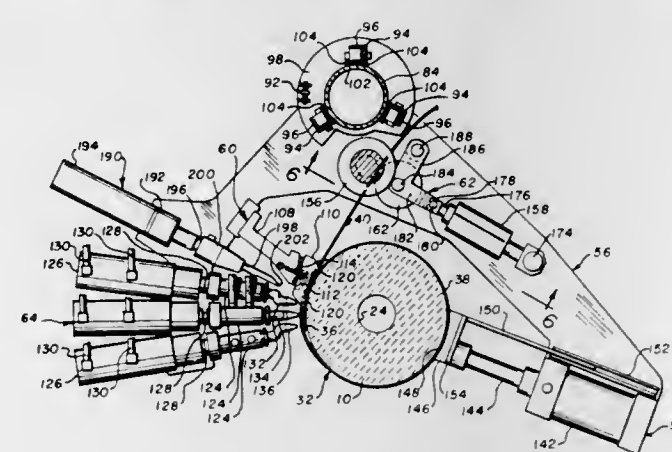
Kenneth Frederic Shottling, Coraopolis, Pa.; Sidney Clark Porter, Jr., East Liverpool, Ohio, and William Earl Moon, Chester, W. Va., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Sept. 7, 1973, Ser. No. 395,206

Int. Cl. B23k 9/12; B65b 13/04, 13/32

U.S. Cl. 219-80

13 Claims



1. A method of securing a band to at least one object comprising the steps of:

- affixing a tab to one end of said band;
- holding said object in place;
- wrapping said band with said tab affixed thereto around said object to provide a wrapped section including said one end of said band which has said tab affixed thereto and an unwrapped section of said band, a first portion of said wrapped section of said band overlapping both said one end of said band and said tab;
- restraining said tab against movement in a first direction around said object;
- pulling said unwrapped section of said band to pull said wrapped section in said first direction to tighten said band around said object; and
- welding together said first portion of said wrapped section of said band, said one end of said band and said tab.

3,898,417

CONTINUOUS STRIP ENCODING

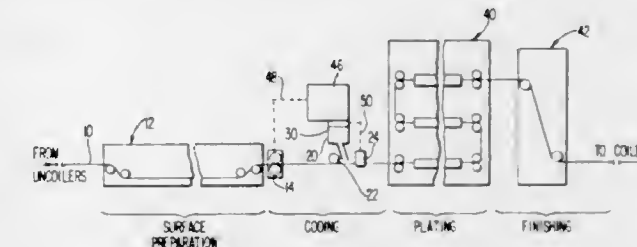
Edward Sherman Atkinson, Michigan City, Ind., assignor to National Steel Corporation, Pittsburgh, Pa.

Division of Ser. No. 886,997, Dec. 22, 1969, abandoned. This application June 21, 1972, Ser. No. 264,923

Int. Cl. B73k 27/00

U.S. Cl. 219-121 LM

4 Claims



1. Method for encoding continuous strip metal for subsequent identification of container end product cut from the strip comprising the steps of

- passing a continuous strip longitudinally through a continuous-strip processing line at a predetermined line speed, directing laser beam energy onto a surface of such strip along its longitudinal direction as the strip passes through the continuous processing line,

controlling the laser beam energy level in coordination with the line speed of the continuous processing line to produce predetermined etching of the surface of the strip to provide perforation-free encoding of such strip, such surface encoding being free of damage which would limit container end product usage and extending longitudinally along the surface of the strip,

selecting such surface encoding and the lateral location of such longitudinally extending encoding of the surface of the strip to be less than the smallest dimension container end product to be cut from the strip so as to encode each such end product,

measuring lateral movement of the continuous strip at a location contiguous to such impingement of laser beam energy during passage of such strip through the continuous strip processing line, and

coordinating control of such lateral movement and the direction of such laser beam to provide encoding across the full width of the strip, and rigidly supporting such continuous strip to prevent strip flutter during encoding.

3,898,418

METHOD OF WELDING METALS UNDER WATER

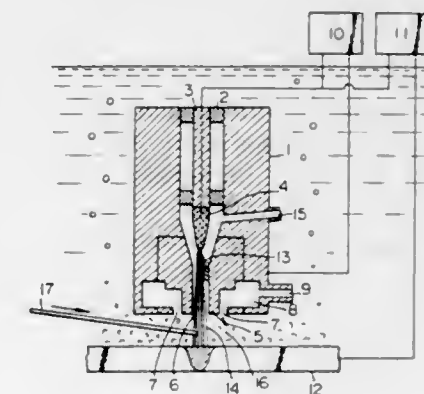
Atsushi Hasui, Tokyo, Japan, assignor to National Research Institute for Metals, Tokyo, Japan

Continuation-in-part of Ser. No. 233,635, March 10, 1972, abandoned. This application Dec. 7, 1973, Ser. No. 422,964

Int. Cl. B23k 5/00

U.S. Cl. 219-121 P

7 Claims



1. A method of welding metal surfaces under water with a

plasma torch located opposite to the weld zone of said metal surfaces to be welded comprising generating a plasma arc between the weld zone of said metal surfaces under water and a cathode of said plasma torch, jetting a layer of compressed plasma gas from the forward end of said plasma torch around said weld zone and said plasma arc to thereby enclose said weld zone and said plasma arc, enclosing said layer of compressed plasma gas with a layer of water glass and, welding said metal surfaces by the plasma arc developed across said electrode and said metal surfaces.

3,898,419

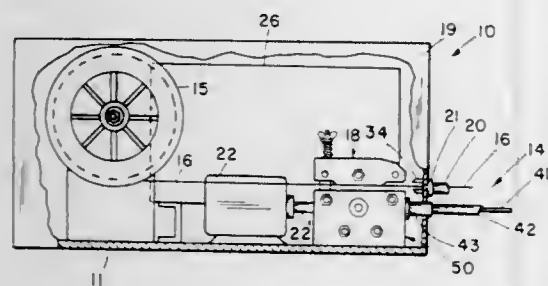
WELDING APPARATUS

Ralph E. Smith, Spring Lake, Mich., assignor to Whiteman Manufacturing Company, Muskegon, Mich.

Filed Mar. 26, 1973, Ser. No. 345,238

Int. Cl. B23k 9/12

U.S. Cl. 219-130



1. Welding apparatus for feeding a consumable wire electrode from a welding unit to a remotely positioned welding gun comprising:

- a welding unit including a supply of consumable wire electrode thereon;
- a welding gun positioned remotely from said welding unit for feeding consumable welding electrode to a work piece on command;
- guide means interconnecting said welding unit to said welding gun for providing a path along which said electrode can travel between said unit and said gun;
- a housing including pushing drive means, said housing positioned on said welding unit for pushing said electrode along said guide means to said welding gun wherein said pushing drive means includes a drive shaft extending from said housing;
- pulling drive means on said welding gun for pulling said welding wire through said guide means;
- a power take-off unit positioned on said welding unit and coupled to said drive means thereon wherein said power take-off unit comprises a drive shaft extender coupled to said drive shaft and including a floating bevel gear thereon adapted to engage an additional bevel gear mounted on a power output shaft extending orthogonally to said shaft extender such that said power take-off unit can be positioned adjacent said housing on said welding unit and said floating bevel gear accommodates for interface surface variations between said power take-off unit and said housing of said push drive means; and
- drive cable means coupled to said power take-off unit and to said pulling drive means on said gun for actuating said pulling drive means to pull said wire electrode at said gun.

3,898,420

HIGH VOLTAGE SWITCH OPERATING MECHANISM

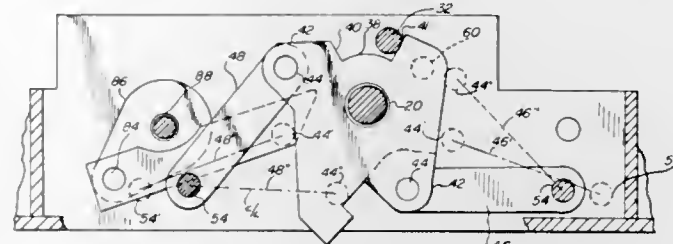
David Evans, Palatine, Ill., assignor to S&C Electric Company, Chicago, Ill.

Filed Jan. 16, 1974, Ser. No. 433,728

Int. Cl. H01H 3/30, 3/46

U.S. Cl. 200-153 SC

7 Claims



1. A high voltage switch operating mechanism for opening and closing the contacts of a high voltage switch comprising: a spring having two ends for storing energy upon extension and rapidly releasing stored energy upon contraction;
- a spring extending means for extending both ends of said spring simultaneously in opposite directions to cause said spring to store energy and for permitting said spring to contract rapidly to release the stored energy when said spring is expanded to a predetermined amount of extension;
- input means for causing said spring extending means to extend said spring;
- output means coupled to said spring extending means for receiving the released stored energy of said spring and causing said switch contacts to open and close rapidly in response to receipt of the stored energy.

3,898,421

PUSH BUTTON SWITCH WITH ELASTIC CONDUCTIVE SHEET

Masaki Suzumura, Moriguchi, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

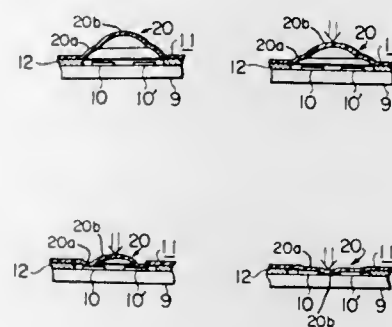
Filed Aug. 16, 1973, Ser. No. 388,827

Claims priority, application Japan, Sept. 11, 1972, 47-91545; Aug. 18, 1972, 47-96925; Sept. 11, 1972, 47-106403; Sept. 11, 1972, 47-106404; Oct. 20, 1972, 47-121594

Int. Cl. H01h 13/52

U.S. Cl. 200-159 B

5 Claims



1. A push button switch comprising support means; a pair of fixed spaced electrodes located on said support means; and an elastic conductive sheet having a dimple positioned adjacent said electrodes and spaced therefrom by a predetermined distance, said dimple including a central portion and an annular shoulder separated from said central portion by a flexural node, said dimple being deformable with a double snap action when depressed by a force exerted on the central portion thereof, the first snap action of said dimple forcing said annular shoulder into contact with said pair of fixed electrodes thereby making electrical contact therebetween, and the following snap action forcing the central portion of said dimple between said electrodes.

3,898,422

PTC HEATER ASSEMBLY BONDING

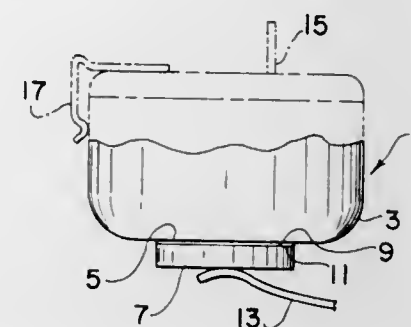
Peter G. Fuller, Lakeville, Mass., and Hans A. Stoeckler, Woonsocket, R.I., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 26, 1973, Ser. No. 428,180

Int. Cl. H05b 1/00

U.S. Cl. 219-201

2 Claims



1. An assembly comprising: a heater formed from a ceramic titanate PTC electrical resistance material which will generate heat in response to the flow of electric current therethrough, said heater having a surface portion through which heat is to be transferred and through which electrical current will flow;
- a metal body which is to be heated and which has a thermally and electrically conductive surface portion substantially matching in shape with that of the heater surface portion and to which heat is to be transferred from said heater, said body having a thermal coefficient of expansion differing from that of the heater resistance material; and
- a layer of electrically and thermally conductive material interposed between said surface portions for securing said heater and body to each other and for the transfer of heat and conduction of electric current therethrough between said heater and body, said layer comprising a mixture of small electrically and thermally conductive particles selected from the group of silver, silver-copper alloys and graphite materials dispersed throughout a material selected from the group consisting of silicone resin, polyimide resin, benzophenone resin, polyamide-imide resins, polybenzimidazole resins, polybenzothiazole resins, polyethyleneimine resins, phosphonitrilic resins and polyester resins so that said layer is flexible, elastic and creep-resistant and stable at temperatures on the order of at least 150°C. and free of components which tend to degrade the PTC heater material.

3,898,423

HEATED WINDOWS IN ROAD VEHICLES AND CONTROL CIRCUITS THEREFORE

John Crawshaw Taylor, Burbage; John Richard Bann, Buxton, and Hamish Bayne Wedderspoon, Baslow, near Bakewell, all of England, assignors to Tarka Controls Ltd., Buxton, England

Filed May 15, 1973, Ser. No. 360,433

Claims priority, application United Kingdom, Oct. 27, 1972, 49726/72

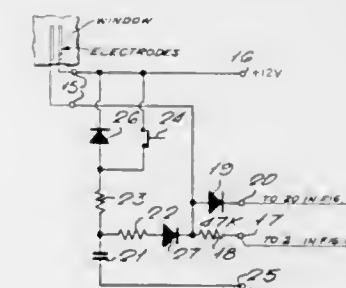
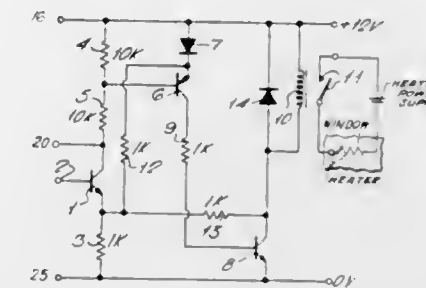
Int. Cl. H05b 1/02; E06b 7/12

U.S. Cl. 219-203

6 Claims

1. In a road vehicle, an arrangement for reducing condensation upon the interior surface of a window of the vehicle, the said arrangement including spaced electrodes arranged so as to be bridged resistively by condensation upon said surface; an electronic switching circuit responsive to the resistance between said electrodes; a heating element responsive to the condition of said electronic switching circuit for heating said surface; the heating element and switching circuit being arranged so that in operation the switching circuit is in a condition

tion for energizing the heating element for so long as the resistance between said electrodes is lower than that characterizing a predetermined degree of condensation upon said surface; and a manually-operable timer adapted, when operated, to cause energization of the heating element for a prede-



terminated period, said manually-operable timer including means operable to place said switching circuit in a condition for energizing said heating element irrespective of the resistance between the sensing electrodes and to maintain such condition for said predetermined period.

3,898,424

RADIANT FUSER FOR XEROGRAPHIC REPRODUCING APPARATUS

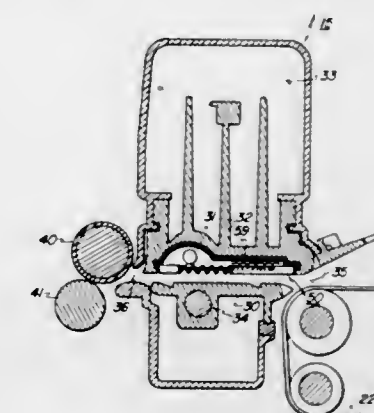
Raghulunga R. Thettu, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 25, 1974, Ser. No. 446,192

Int. Cl. H05b 1/00; G03g 15/20

U.S. Cl. 219-216

4 Claims



1. Apparatus for heat fusing toner images to a substrate on which they are supported, said apparatus comprising: a first source of radiant energy capable of emitting energy having wave lengths on the order of 0.5-2.0 microns; a second source of radiant energy capable of emitting energy having wave lengths over 2.0 microns; means for transporting said substrate past said sources of radiant energy such that said toner images are directly exposed to said radiant sources; means interposed between said radiant sources and said substrate, said interposed means being substantially transparent to the energy emitted from both of said energy sources;

said first source comprising a quartz lamp and said second source comprising a resistance heating element having an operating temperature substantially less than said first source; and
expansible means for mounting said means interposed between said radiant sources and said substrate in a substantially planar orientation regardless of the temperature thereof.

3,898,425

FUSING APPARATUS

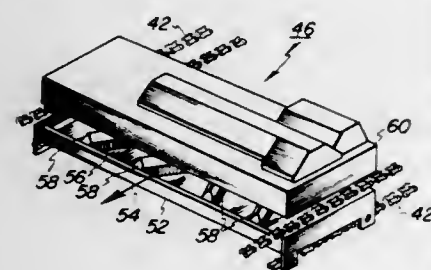
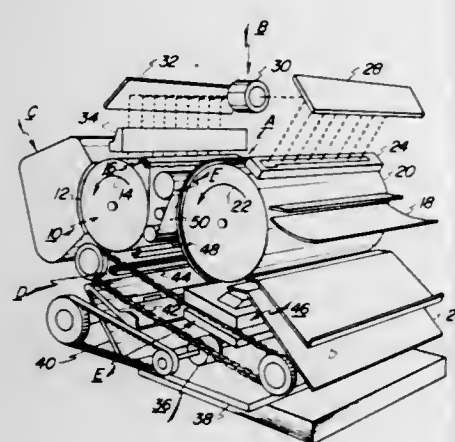
Melvin G. Crandell, Walworth, and Thomas J. Scudder, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed June 27, 1974, Ser. No. 483,749

Int. Cl. H05b 1/00; G03g 15/20

U.S. Cl. 219-216

12 Claims



1. An apparatus having a sheet passageway therethrough for affixing permanently a powder pattern to a sheet including:
means for transporting the sheet with the powder pattern deposited on one surface thereof along a path of movement through the passageway from a sheet receiving station to a sheet delivery station;
means for heating the powder pattern deposited on the sheet, said heating means being closely adjacent to and spaced from the surface of the sheet having the powder pattern deposited thereon; and
insulating means operatively associated with said transporting means, said insulating means having a plurality of spaced fins extending transversely to the path of movement of the sheet and arranged to contact the other surface of the sheet as said transporting means advances the sheet from the receiving station to the delivery station, said heating means being substantially opposed from said insulating means with the sheet passageway interposed therebetween.

3,898,426 HEATING ASSEMBLY FOR DOMESTIC FORCED AIR ELECTRIC FURNACE

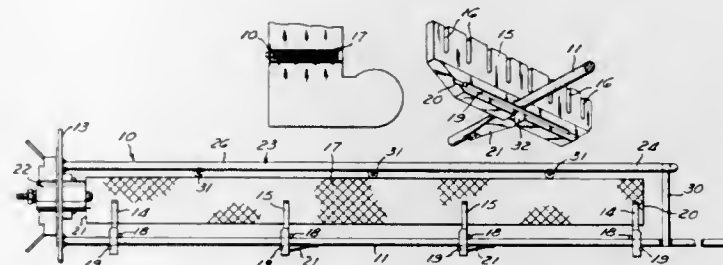
Douglas Herman Maake, Cookeville, Tenn., assignor to Gould Inc., Chicago, Ill.

Filed Dec. 21, 1973, Ser. No. 427,079

Int. Cl. H05b 3/02; F24h 3/04; H01c 3/00

U.S. Cl. 219-370

12 Claims



1. A heating element support assembly comprising:
a. a mounting base;
b. support rod means fixed to and projecting from said mounting base;
c. a plurality of insulators, including endmost insulators carried by said support rod means at spaced locations along its length and having end portions projecting laterally from said support rod means so that said support rod means is substantially centrally located with respect to said insulators;
d. connecting means between said support rod means and each insulator preventing axial and rotational movement of each insulator relative to said support rod means;
e. a plurality of substantially parallel slots in said laterally projecting portions of each insulator; and
f. a thin, flat strip of apertured, foil-like, electrical resistance material trained through said slots in a serpentine pattern between the endmost insulators and forming a plurality of flat reaches substantially parallel to each other and to said support rod means.

3,898,427

FLEXIBLE WARMING STRUCTURE

Berton P. Levin, Santa Monica, and Darrell D. Stoddard, Malibu, both of Calif., assignors to The Sierracin Corporation, Sylmar, Calif.

Continuation-in-part of Ser. No. 375,673, June 29, 1973, abandoned, which is a continuation-in-part of Ser. No. 188,312, Oct. 12, 1971, and a continuation-in-part of Ser. No. 363,385, May 24, 1973, abandoned, which is a division of Ser. No. 188,312, Oct. 12, 1971, abandoned. This application July 1, 1974, Ser. No. 484,406

Int. Cl. H05b 3/34

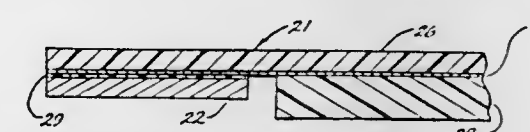
U.S. Cl. 219-522

21 Claims

12. A transparent flexible warming structure comprising:
a first flexible transparent plastic sheet having a pair of side edges;
an electrically conductive transparent heater layer over substantially all of one side of the sheet;
a second flexible transparent plastic sheet bonded to the heater layer over substantially all of its area; and

a high conductivity flexible strip electrically and mechanically bonded to the heater layer along each of a pair of its side edges;

said plastic sheets being selected from synthetic resins that are substantially transparent in the visible spectrum and substantially opaque in bulk in the infrared spectrum, have a heat deformation of less than about 1 percent in any direction at about 150°F, have an elastic modulus in



the range of about 1.8×10^8 to 4.5×10^8 psi, and are selected from the group consisting of polycarbonate resin, polyimide resin, fluorinated ethylene-propylene resin, polyamide resin, polyester resin, polyacrylic resin and cellulose triacetate resin, at least one of said sheets having a sufficiently low vapor pressure to be vacuum metallizable, the total thickness of the flexible warming structure being up to about 100 mils so as to be readily bent by hand.

3,898,428

ELECTRIC IN LINE WATER HEATING APPARATUS

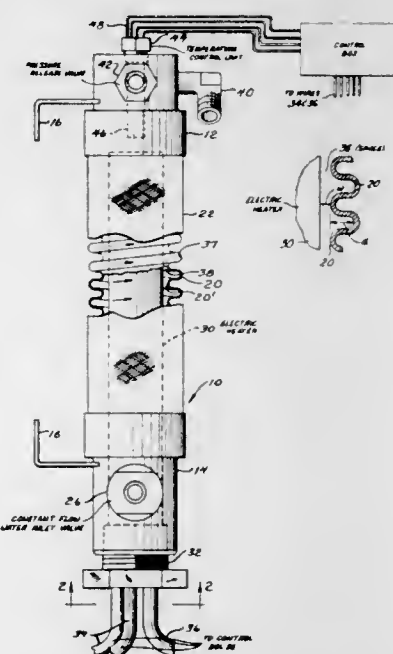
William G. Dye, Jacksonville, Fla., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Mar. 7, 1974, Ser. No. 449,137

Int. Cl. H05b 1/02, 3/82; F24h 1/10

U.S. Cl. 219-305

3 Claims



1. In line heater apparatus for providing an instantaneous supply of hot water comprises a length of helically corrugated tubing positioned in surrounding, spaced relation to an axially positioned cylindrical heater element mounted on one of first and second end members positioned at each end of said tubing and integrally attached thereto, means on said first end member for attaching the apparatus to a water supply line, means on said second end member for attaching the apparatus to a valve controlled dispensing line, temperature control means mounted in said second end member for controlling the operation of said heater element, said cylindrical element extending for substantially the entire length of said corrugated tubing and the outer surface of the cylindrical heater element being uniformly spaced from the innermost portions of the corrugations along its entire length by a slight distance therefrom which is less than the depth of the corrugations, the spacing being sufficient that water flowing from one end of said tubing to the other will flow in a generally helical path through the

corrugations and in a generally axial direction in said space and in turbulent contact with said cylindrical heating element.

3,898,429

PORTABLE ELECTRIC WATER HEATING DEVICE FOR MELTING SNOW

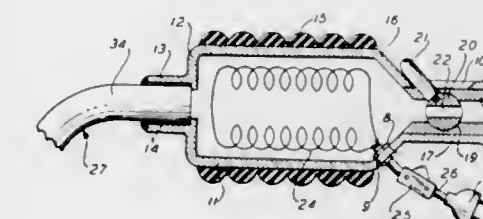
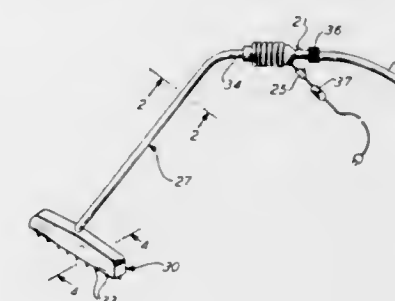
John Chodak, 185 Tichenor Ave., South Orange, N.J. 07079

Filed Jan. 14, 1974, Ser. No. 433,263

Int. Cl. H05b 3/82; F24h 1/10; B05b 1/24

U.S. Cl. 219-307

4 Claims



1. A portable snow melter for manual operating comprising:
a. a dielectric housing for an electrical resistance wire,
b. a helix of electrical resistance wire disposed in the housing,
c. the housing having a low co-efficient of thermal conduction, and an elongated generally hollow tubular form, defining a water flow passage around the electrical resistance wire,
d. an integral generally tubular end portion on one end of the housing having a water outlet passage therethrough and defining a socket for a wand,
e. a gasket in the socket for defining a water seal between the housing and a wand, inserted in the socket,
f. an integral generally tubular enlargement on the other end of the housing,
g. a generally tubular insert in the enlargement, and having a first bore therethrough forming a water inlet passage to the housing,
h. a cylindrical bore in the insert transverse to said first bore,
i. a rotatable cylindrical valve rotatably seated in the transverse bore,
j. a water flow passage through the valve,
k. a handle attached to the valve, and extending through a slot in the enlargement, for adjusting the valve from an aligned open position to a transverse blocking closed position relative to the first bore in the insert,
l. a means for engaging a water supply hose to the enlargement,
m. means connecting the wire helix in the housing to an electric power supply outside the housing,
n. an elongated generally tubular wand having one end engaged with the water seal gasket in the socket and defining a water flow passage communicating with the water outlet from the housing,
o. an elongated discharge chamber disposed transversely at the other end of the wand and communicating with the water flow passage in the tubular wand,

p. a plurality of nozzles on the bottom of the discharge chamber for ejecting heated water in close proximity to a snowy surface.

3,898,430

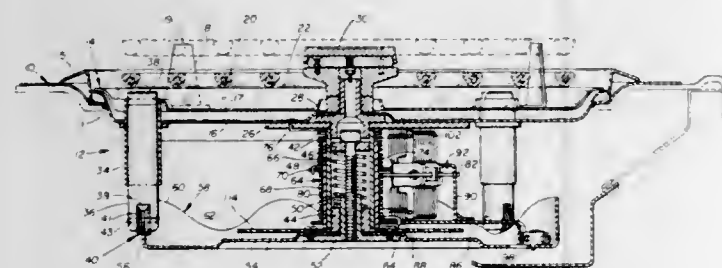
RETRACTABLE ELECTRIC RANGE APPARATUS

James T. Sego, Jr., Tahlequah, and Arless B. Noble, Norman, both of Okla., assignors to Instant Off Incorporated, Tahlequah, Okla.

Filed Nov. 25, 1974, Ser. No. 526,699
Int. Cl. H05b 3/68

U.S. Cl. 219-444

8 Claims



1. A retractable electric range apparatus for an electric stove of the type having a range opening in the upper surface thereof, comprising a frame means mounted within said opening in fixed position relative to said stove, at least three vessel support means extending upwardly from said frame means and terminating at their upper ends in a common horizontal plane for supporting a vessel thereon, at least three substantially vertical and circumferentially spaced sleeves protruding through said frame means, a plunger slidably received within each of said sleeves, each plunger having an upper end extending above said frame means and having a lower end with a cam follower thereon, a substantially horizontal and rotatable disc resiliently supported from beneath said frame means, said disc having a peripheral rim extending substantially perpendicular above said disc, a cam formed on said rim of said disc by periodic projections and depressions of said rim, said followers by said plungers engaging said cam, an electric heating element substantially parallel to said frame means and located thereabove, a plurality of radial support arms beneath said heating element and supporting the same, said radial support arms engaging the upper ends of said plungers, and rotational means responsive to the activation of said heating element for causing rotation of said cam to raise said heating element into engagement with said vessel when said heating element is activated and for causing rotation of said cam to lower said heating element away from said vessel when said heating element is deactivated.

3,898,431

TUBULAR ELECTRIC HEATER WITH A THERMOCOUPLE ASSEMBLY

R. Kingsley House, Idaho Falls, and David E. Williams, Hamer, both of Idaho, assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

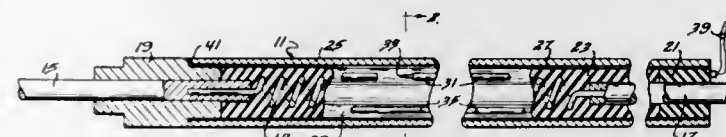
Filed Jan. 29, 1974, Ser. No. 438,149
Int. Cl. H05b 3/40

U.S. Cl. 219-534

6 Claims

1. In an electrical heater for use as a simulated nuclear fuel element having a tubular metallic sheath, an electrical resis-

tance element in generally axial alignment within said sheath, with electrical terminals extending outwardly endwise in sealing relationship from said sheath and an electrically insulative material disposed between said electrical resistance element and said sheath, the improvement wherein said sheath comprises a first tube having a longitudinal crease with a concave and a convex face; a second tube disposed towards said concave face in interfering concentric engagement with said first



tube to form an integral sheath having within the wall thereof a longitudinal interstice; a thermocouple assembly including a pair of elongated electrical conductors and a thermocouple junction at one end thereof fixedly disposed within said interstice, said assembly and interstice having cross sections of near matching dimensions to provide contact of both said first and said second tubes with said assembly and to restrict movement of said thermocouple junction within said assembly.

3,898,432

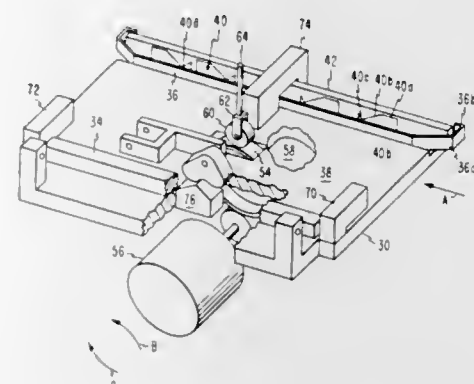
READ/WRITE MACHINE FOR MAGNETIC STRIPPED DOCUMENT CARD

Mark Charles Agnew, John Edward Savage, Jr., and Thomas Oren Turner, all of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 20, 1973, Ser. No. 371,789
Int. Cl. G06k 7/08; G11b 15/29

U.S. Cl. 235-61.11 D

3 Claims



1. A machine for transferring information with respect to a document card of the type having a stripe of magnetic material thereon, comprising

a transport for the card including a pair of rolls in constant nipped relationship between which the card may move; a reversible electric motor in constant driving relationship with one of said rolls for rotating the roll and for moving a document card in forward and reverse directions along said transport due to the card driving action of said rolls; a head in the path of movement of the card in the transport and positioned approximately in alignment with said rolls transversely of said transport and in alignment longitudinally of said transport with the magnetic stripe on the

card for transferring information with respect to the magnetic stripe as the card passes over the head in moving in said transport;

first and second photosensors disposed at opposite ends of said transport for sensing the opposite ends of said card as it moves along said transport;

means providing an electromotive force to and for so controlling said motor so that it drives said rolls at substantially constant speed;

means connecting each of said sensors with said motor for reversing the direction of drive of said motor and direction of rotation of said rolls for thereby reversing the direction of movement of said card in said transport as the card moves into registry with each sensor whereby the card moves through the transport first in a first pass in a forward direction, then in the reverse direction, and finally in a second pass in the forward direction, all the while being gripped between and being propelled by said rolls; and

means for rendering said head effective for transferring information on said passes of the card in the forward direction and for rendering the head ineffective for transferring information on movement of the card in the reverse direction;

said machine including a third photosensor in approximate alignment with said head and said rolls transversely of said transport and electrically connected with said head so as to cause said head to transfer information with respect to said magnetic stripe as the card moves in its said passes in the forward direction in said transport with its magnetic stripe passing over said head.

3,898,433

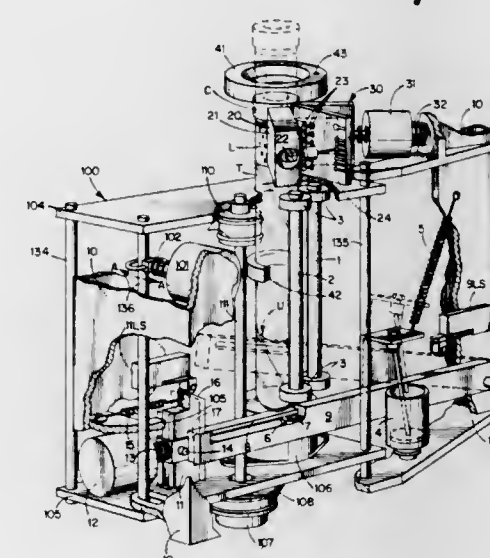
LABEL READING AND WRITING ON CYLINDRICAL CONTAINER

Herbert W. Sallet, Nabnasset, Mass., assignor to American Science & Engineering, Inc., Cambridge, Mass.

Filed Dec. 27, 1973, Ser. No. 428,848
Int. Cl. G06k 7/14; G01n 11/00; C10g 37/04; G01n 31/00

U.S. Cl. 235-61.11 R

11 Claims



1. Apparatus for scanning an essentially cylindrical labeled specimen container comprising,

rough guiding means for guiding said specimen container into a scanning position through insertion movement along a direction generally coincident with the nominal cylindrical axis of said specimen container, means for positioning said specimen container axially so that a predetermined label portion thereof is at a predetermined axial scanning position, means for rollably driving and supporting said specimen container for rotating said container about its nominal cylindrical axis to effect circumferential scanning of said label portion,

means located at said axial scanning position for performing at least one of reading and writing functions on the label portion during said scanning,

wherein said rough guiding and positioning means form a container rest which elastically yields from an initial axial position to said axial scanning position upon axially pressing said container against said rest until said axial scanning position is reached by the said label portion of the container,

means for locking said rest in said axial scanning position and for unlocking said rest and returning it from said axial scanning position to said initial position for container ejection,

said driving and supporting means comprise at least one bearing means having an axis parallel to the cylindrical axis of a container positioned for scanning located adjacent the container scanning position for exerting a reaction force against an inserted and locked container.

3,898,434

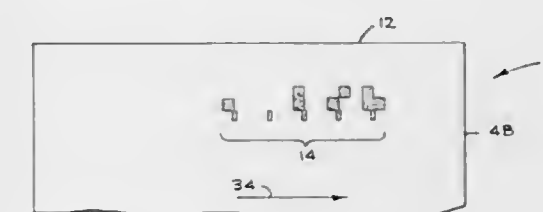
MACHINE READABLE CODED MEMBER

Arthur G. Bigelow, Dublin; Wilbur W. Bigelow, Pleasanton, and Gale E. Stone, Sunnyvale, all of Calif., assignors to Control Point, Inc., Dublin, Calif.

Filed Feb. 11, 1974, Ser. No. 441,643
Int. Cl. G06K 19/06

U.S. Cl. 235-61.12 N

4 Claims



1. A coded member comprising:

- a pattern area representing a designated character,
- said pattern area being formed of a plurality of pattern portions,
- each of said pattern portions being formed with the presence or absence of indicia adopted to be sensed by a scanner, the presence or absence of indicia in predetermined areas of said pattern portions of said pattern areas represents the designated character for said pattern area,
- each of said pattern portions having a rectangular configuration and being bounded on two sides thereof by adjacent pattern portions of said plurality of pattern portions; and
- an index portion adjacent to said pattern area, said index portion being formed with indicia to be sensed by the scanner.

3,898,435

MEMORY DEVICE FOR AN EGG GRADING MACHINE

John N. Pritchard, and Louis S. McTamane, both of San Jose, Calif., assignors to FMC Corporation, San Jose, Calif.

Filed Mar. 11, 1974, Ser. No. 449,871
Int. Cl. G06m 7/00

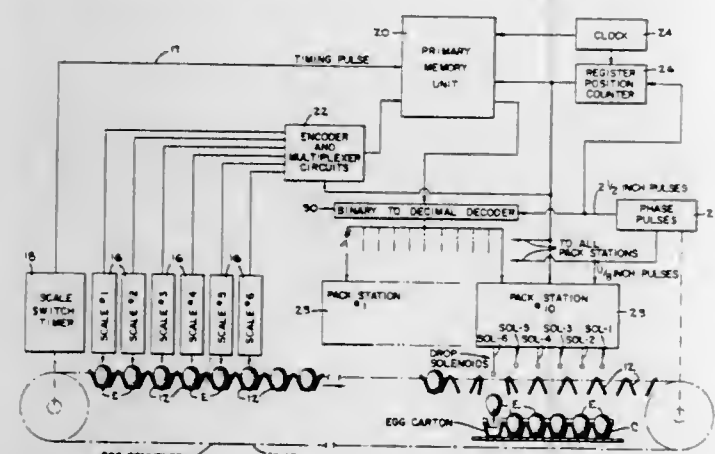
U.S. Cl. 235-92 WT

25 Claims

1. A memory device particularly adapted for use in an egg grading machine which includes an egg conveyor for receiving eggs from a plurality of spaced egg grading stations and for carrying said eggs to a plurality of spaced discharge stations where said eggs are selectively discharged in accordance with the grades assigned thereto at said grading stations, said egg conveyor comprising a plurality of linearly arranged and uniformly spaced egg carriers adapted to be moved from said grading stations to said discharge stations, said memory device comprising:

a storage register comprised of a plurality of information carrying sectors arranged in serial fashion with the num-

ber of sectors in said register being at least as great as the number of egg carriers from the furthest upstream grading station to the furthest downstream discharge station; means providing a continuous series of shift pulses at a first rate for serially shifting information through said register from each sector thereof to an adjacent sector and from the last sector thereof to the first sector thereof; means for providing phasing pulses at a second rate corresponding to the movement of the conveyor through a linear distance equal to the center-to-center spacing between a pair of adjacent egg carriers, said first rate being faster than said second rate by a factor whereby information in any sector in said register is transferred sequentially through all of the sectors in said register a considerable number of times between each pair of consecutive phasing pulses;



means for transferring information from each of said grading stations into one of the sectors in said register in accordance with the grades of the eggs received by said conveyor; means for transferring information from one of the sectors of said register to said discharge stations to cause the selective discharge of said eggs in accordance with said information; counting means connected to said means for shifting said register for correlating the information in said register at any given time with the position of the eggs on the conveyor; and means connecting said phasing pulse providing means with said counting means so that the count in said counting means is increased by one each time that a phasing pulse is produced whereby the movement of the eggs on the conveyor is tracked.

3,898,436

COIL DIAMETER CONTROL SYSTEM

Raymond J. Pottebaum, Middletown; David L. Williamson, Franklin, and Wayne L. Sink, Middletown, all of Ohio, assignors to Armco Steel Corporation, Middletown, Ohio
Filed Mar. 22, 1974, Ser. No. 453,676

Int. Cl. H03k 21/36; G06f 15/46

U.S. Cl. 235-92 DN

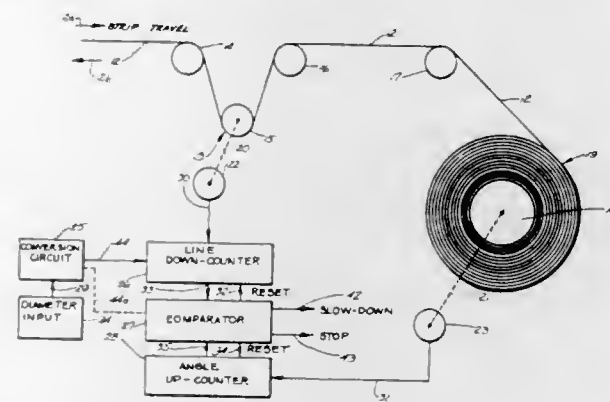
5 Claims

1. In an apparatus of the type in which strip material passes a bridle means and a rotating mandrel about which it is wound and unwound, having the improvement for automatically stopping the rotation of said mandrel and the coil wound thereon when a preselected coil diameter has been achieved, said improvement comprising:

- a comparator logic means and at least one angle preset, said comparator logic means adapted to receive input angle data, to compare said input angle data to said angle preset upon receipt of a comparison enabling signal, to respond with first and second output reset signals when said comparison is not satisfied and to respond with output control signals when said comparison is satisfied;
- input interfacing means associated with said angle preset for establishing said preselected coil diameter, said pre-

lected coil diameter defining in conjunction with said angle preset, a preselected coil diameter arc-length equivalent;

- down-counting means communicating with said input interface means and preset thereby at said preselected coil diameter arc-length equivalent, said down-counting means adapted to generate and transmit said comparison enabling signal to said comparator logic means upon achievement of a zero count and to thereafter be reset to said preselected coil diameter arc-length equivalent by said first reset signal from said comparator logic means.
- first pulse generating means in association with said bridle means, said first pulse generating means transmitting pulses to said down-counting means reflecting strip travel past said bridle means;



- second pulse generating means in association with said mandrel, said second pulse generating means outputting pulses proportional to the rotation of said mandrel; and
- up-counting means adapted to count said output pulses from said second pulse generating means, said count representing the angle subtended by said preselected coil diameter arc-length equivalent as wound into a coil upon said mandrel, to continuously apply said count to said logic comparator means, and to be reset by said second reset signal;

whereby, said comparator logic means compares said angle preset to said count representing said subtended angle upon enablement by said comparison enabling signal, said comparator logic means repetitively resetting said downcounting means and said up-counting means until said comparison is satisfied whereupon, said comparator logic means initiates said output control signal for terminating mandrel rotation.

3,898,437

GOLF CART MILEAGE AND YARDAGE INDICATING DEVICE

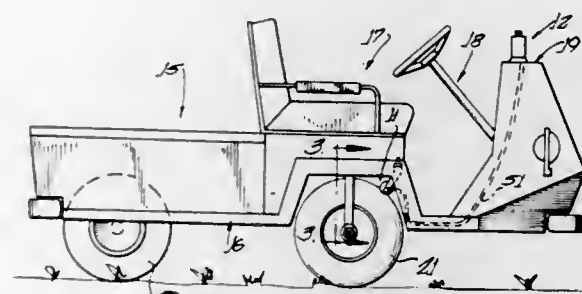
Eugene G. Butler, 1770 E. Los Olas Blvd., Apt. No. 503, Fort Lauderdale, Fla. 33301

Filed Mar. 21, 1974, Ser. No. 453,522

Int. Cl. G01C 22/00

U.S. Cl. 235-95 R

1 Claim



1. A mileage and yardage indicating device intended for use on a powered golf cart having wheels in supporting ground engagement, the device comprising;

a drive roll unit adapted to be mounted to said cart, said drive unit including a roller in contact with any one of said supporting wheels of said cart;

a measuring device adapted to be mounted on said cart in a position providing ease of visibility and viewability to a driver of said cart, said measuring device including a resettable yardage indicating mechanism and a non-resettable total mileage indicator mechanism, and

flexible means interconnecting said drive roll unit to said measuring device for operating the same, said drive roll unit comprises;

a bracket adapted to be connected to a body portion of said golf cart adjacent to one of said supporting wheels thereof;

an arm member adapted to be pivotally connected to said bracket;

a shaft rotatably supported at a projecting free end of said arm member and extending outwardly therefrom in a direction parallel to the axle of said supporting wheel;

a roller manufactured of resilient material disposed concentrically with said shaft and affixed thereto for rotation therewith, a portion of the circumference of said roller disposed in a driven engagement with a portion of said wheel such that rotation of said roller will effect the simultaneous rotation of said roller and said shaft affixed thereto;

spring means resiliently biasing said roller into contact with said wheel; and

means associated with one end of said shaft adapted to detachably affix thereto one end of said flexible means for transmitting rotation of said roll unit to said measuring device;

said measuring device comprises;

a hollow closed housing having an open front end;

a dial face affixed to said housing in a position closing said open front end thereof;

yardage indicating indicia extending about the peripheral edge of said dial face and having a zero position;

a pointer shaft extending normal to said dial face and having one end projecting outwardly of said dial face and an opposite end disposed inwardly of said housing, said shaft mounted for rotation relative to said housing, a longitudinally disposed slot extending partially into said inner end of said shaft;

a gear wheel affixed to said shaft slightly inwardly of said face end thereof and disposed inwardly of said dial face, said gear adapted to drive said shaft in one direction while permitting free movement of said shaft in the opposite direction;

a ratchet gear disposed concentrically with said pointer shaft centrally thereof and extending radially therefrom for rotation therewith;

a concentrically coiled spring having one end affixed in said slotted end of said pointer shaft and having an opposite end affixed to said housing, said spring being tensioned upon rotation of said pointer shaft in a first direction by said sprocket gear with said spring force urging said shaft in said opposite direction;

a ratchet lever associated with said ratched gear and having one end in movable contact with said ratchet gear and having its opposite end projecting exteriorly of said housing, said ratchet lever preventing rotation of said pointer shaft in said opposite direction when in engagement with said ratchet gear and permitting said spring to rotate said pointer shaft in said opposite direction when out of engagement with said ratchet gear so as to return said pointer to said position zero;

a pointer having one end adapted to be affixed to said front end of said pointer shaft and having an opposite end adapted to point to respective yardage indicia on said dial face as said pointer rotates thereabout; and

a sprocket gear disposed concentrically with said opposite end of said flexible drive shaft and in meshed engagement with said first mentioned sprocket gear to drivably rotate

the same in said one direction upon movement of said golf cart.

3,898,438

PROGRAMMABLE METHOD FOR DIGITAL ANIMATION APPARATUS FOR ASSEMBLING ANIMATION DATA

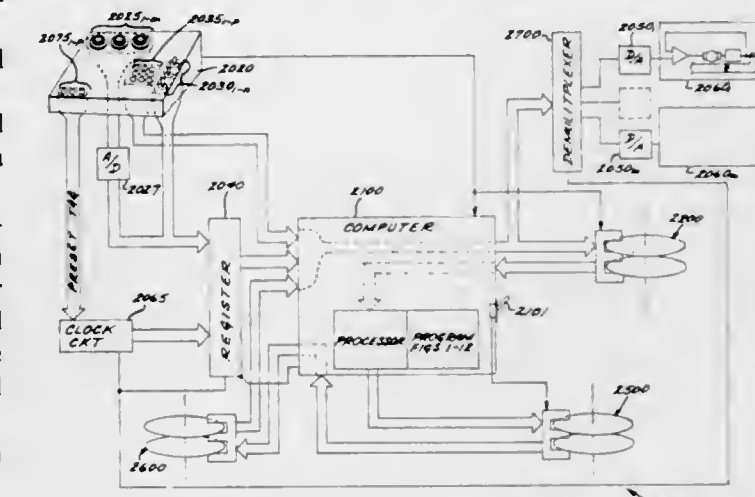
Robert A. Nater, Granada Hills, and William H. Roberts, Corona del Mar, both of Calif., assignors to Walt Disney Productions, Burbank, Calif.

Filed Sept. 28, 1972, Ser. No. 293,018

Int. Cl. G06f 15/20

U.S. Cl. 235-151

1 Claim



1. In a system for the acquisition of data for the sequential control of an animated presentation, a plurality of variably positionable devices, each connected to be proportionally positioned according to supplied units of transmitted data, said devices connected to control said animated presentation, manually positionable means for setting in accordance with the position of a selected one of said devices, means for generating electrical signals in accordance with said setting, means for generating timing signals incrementing at a predetermined rate, means for storing said electrical signals in association with said timing signals, means for shifting said electrical signals in said storing means for storage in association with different ones of said timing signals, means for retrieving said electrical signals from said storing means and transmitting said signals to said selected one of said devices.

3,898,439

SYSTEM FOR OPERATING INDUSTRIAL GAS TURBINE APPARATUS AND GAS TURBINE ELECTRIC POWER PLANTS PREFERABLY WITH A DIGITAL COMPUTER CONTROL SYSTEM

Terry J. Reed, Latrobe, and Gerald L. Rankin, Irwin, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 20, 1970, Ser. No. 82,467

Int. Cl. G06b 15/56

U.S. Cl. 235-151.21

8 Claims

1. A gas turbine electric power plant comprising a gas turbine having compressor, combustion and turbine elements, a generator coupled to said gas turbine for drive power, a fuel system for supplying fuel to said gas turbine combustion element, means for operating said fuel system to energize said turbine, a digital computer and an input/output system therefor, means for operating said computer to determine a fuel demand representation for desired turbine operation, means for controlling said fuel system operating means as a function of said fuel demand representation, means for detecting a plurality of independent turbine exhaust temperature values, means for operating said computer to determine a temperature representation of actual exhaust temperature from said

3,898,444

BINARY COUNTER WITH ERROR DETECTION AND TRANSIENT ERROR CORRECTION

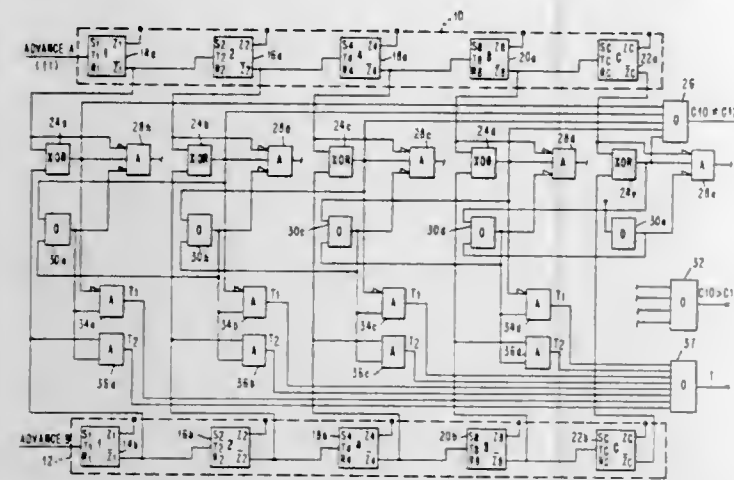
Vincent A. Cordi, Vestal, and Chester S. Gurski, Endwell, both of N.Y., assignors to IBM Corporation, Armonk, N.Y.

Filed Dec. 28, 1973, Ser. No. 429,447

Int. Cl.² H03K 21/34

U.S. Cl. 253-153 AP

5 Claims U.S. Cl. 235-156



2. A counter capable of correcting transient errors as opposed to errors resulting from a hard failure comprising:
 - a. two channels each comprising a separate n stage counter with ripple carry for storing a desired count in duplicate;
 - b. logic means coupled to the two n stage counters for determining if the count of one n stage counter is equal to or greater than the count in the other n stage counter; and
 - c. transfer means coupled to the two counters and the logic means for attempting to replace the count in the counter with the higher count with the count in the counter with the lower count when the logic means determines that the count of the two n stage counters differ whereby a determination by the logic means that the counts are equal after the transfer indicates that the difference between the counts in the two n place counters was the result of a transient error.

3,898,445

DIGITIZING DEVICE

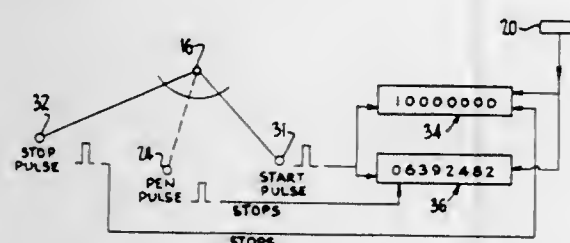
Iain Donald Graham MacLeod, Watson; Horst Peter Cantor, Sutton, and Stephen Kaneff, Red Hill, all of Australia, assignors to The Australian National University, Canberra, Australia

Filed Nov. 26, 1973, Ser. No. 418,894

Int. Cl.² G08C 9/06

U.S. Cl. 235-154

21 Claims



1. A digitizing device comprising means for generating three beams of light, means for spreading each beam to a fan-shaped beam, means for moving each fan-shaped beam through a working environment in a direction at right angles to the plane on each beam and at right angles to each other, light-sensitive means in said environment which gives rise to electrical signals when light is incident thereon, and positioning means responsive to the electrical signals to relate the position of the light-sensitive means in the environment to the relative positions of the light beams when striking the light-sensitive means during each sweep through the working environment.

3,898,446

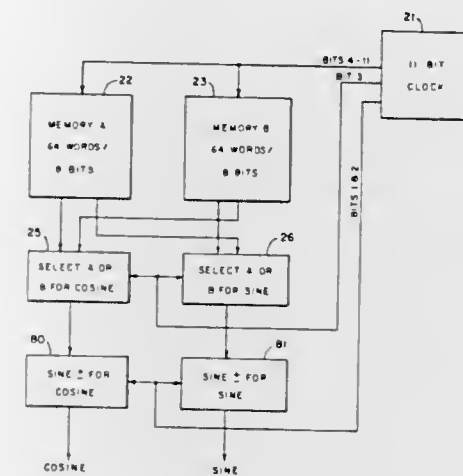
QUADRATIC PHASE MEMORY

Bernard W. Vatz, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sept. 6, 1974, Ser. No. 503,834

Int. Cl.² G06F 15/34

6 Claims



1. A system for producing sine and cosine values of a rotating vector comprising memory means containing magnitude values for a rotating vector stepped in discrete steps over a 90° range; selector means connected to said memory means whereby said magnitude values will be presented at outputs of the memory means in the proper step sequence of the rotating vector; sign generating means connected to the outputs of said memory means so as to provide the magnitude values with a proper sign in accordance with the quadrant in which the rotating vector is located; outputs of said selector means being so related to the rotating vector as to provide signals indicating the quadrant said rotating vector is in; outputs of said selector means being connected to said sign generating means so as to control the sign said sign generating means will apply to the magnitude values; said memory means is divided into first and second sections; said first section containing the magnitude values stepped in discrete steps of the sine of the angles from 0° to 45°; said second section containing the magnitude values of the sine of 90° to 45° in discrete steps; first and second outputs of said first and second sections; said selector means being connected to the first and second sections of said memory means so as to cause the first section to read out the magnitude values at its output sequentially from 0° to 45°, and said second section to read the magnitude values sequentially from 90° to 45° at its output whereby one section presents the sine magnitude value and the other section presents the cosine magnitude value; said sign generating means comprising first and second sign generating means each having an input and an output; switching means connected between the outputs of the first and second sections of the memory means and the inputs of said first and second sign generating means so as to connect the output of the section having the sine magnitude value to the first signal generating means input and to connect the output of the section having the cosine magnitude value to the input of the second signal generating means; and said selector means being connected to said switching means so as to control the operation thereof in accordance to which half of a particular quadrant the rotating vector is located.

3,898,447

ANALOG ARITHMETIC CIRCUIT

Theodore B. Bozarth, Jr., Perkasi, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

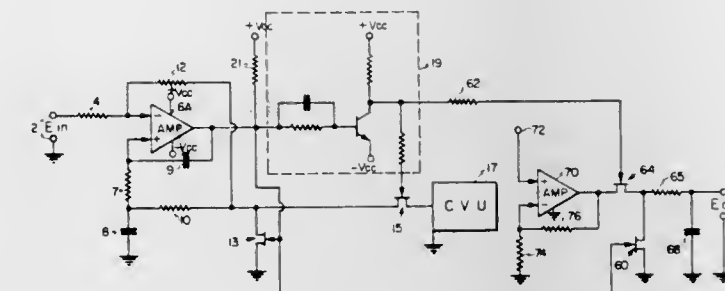
Continuation of Ser. No. 393,572, Aug. 31, 1973, abandoned.

This application July 19, 1974, Ser. No. 490,027

Int. Cl.² G06G 7/16

U.S. Cl. 235-194

7 Claims



1. A signal modulating circuit comprising
 - a signal comparator means having a first input and a second input and arranged to produce an output signal representative of the difference between input signals applied to the first and second inputs,
 - a source of a constant reference signal,
 - signal storage means connected to the second input of said signal comparator means,
 - first circuit means arranged to apply an input signal applied to said signal modulating circuit to said first input of said amplifier means,
 - first switch means for selectively connecting an output signal from said constant reference signal source to said signal storage means,
 - second circuit means arranged to apply said output signal from said first switch means to said first input of said comparator means concurrently with said input signal,
 - second switch means for selectively discharging said storage means, and
 - switch control means responsive to an output signal from said amplifier means for closing said first switch means in response to a first state of an output signal from said amplifier means while opening said second switch means and for closing said second switch means in response to a second state of said output signal of said amplifier while opening said first switch means, said first and second switch means being alternately operated thereby.

3,898,448

SPIRAL SCAN GENERATOR

James M. Clark, 50 Clara Pl., Cedar Grove, N.J. 07009

Filed Sept. 26, 1973, Ser. No. 401,014

Int. Cl. G06f 1/02

U.S. Cl. 235-152

7 Claims

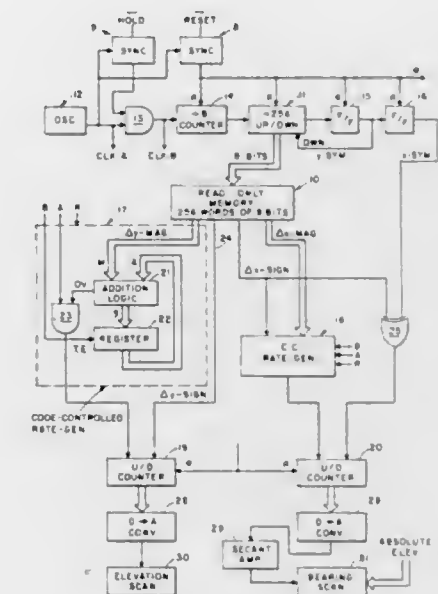
1. Apparatus for controlling a displaceable means so as to have it move along a spiral path comprising
 - a memory having stored therein a sequence of n-bit binary signals designating the $\pm\Delta X$ and $\pm\Delta Y$ values obtained by calculating the positional changes between pre-selected adjacent locations along a spiral path that has one end thereof at the origin of a coordinate system and the other end at a remote location therefrom;
 - means for periodically addressing said memory so as to read out the stored $\pm\Delta X$ and $\pm\Delta Y$ signals as either a forward sequence which corresponds to an expanding spiral or a

reverse sequence which corresponds to a contracting spiral;

means for converting the $\pm\Delta X$ and $\pm\Delta Y$ signals so read out to a pair of pulse trains whose pulse repetition rates are determined by the numerical values of said $\pm\Delta X$ and $\pm\Delta Y$ signals;

a pair of up and down counters;

means for feeding each pulse train to a different one of said counters whereby the count registered therein changes in



the interval between successive read outs of said memory by amounts equal to the numerical values of said $\pm\Delta X$, $\pm\Delta Y$ signals,

the direction of each change of count being determined by the sign associated with said $\pm\Delta X$ and $\pm\Delta Y$ signals; and

means for converting the counts registered in said up and down counters to X and Y analog voltages,

said analog voltages controlling the movement of said displaceable means.

3,898,449

ARRANGEMENT AND METHOD FOR USING A MAGNETIC TAPE TO CONTROL HARDWARE TO LOAD, CHECK AND ROUTINE A CORE MEMORY

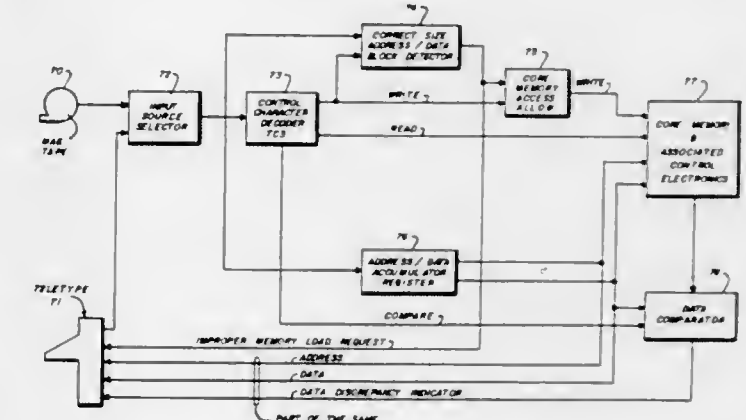
Rafael A. Sanabria, Elmhurst, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Sept. 17, 1973, Ser. No. 398,131

Int. Cl. G11c 29/00

U.S. Cl. 235-153 AC

6 Claims



1. A method of loading, checking and routing a core memory including a plurality of cores as storage elements and electronic control elements for accessing said cores to write into and to read data stored therein, comprising the steps of:
 - a. providing on a magnetic tape a plurality of characters to formulate a plurality of sets of address and data blocks, each

set of address and data blocks including an address location within said core memory and the data which is stored in or is to be written into said address location;

- b. providing on said magnetic tape between each said set of address and data blocks a control character which represents to said electronic control elements one of a pair of commands to execute a write access to core and a read access from core,
- c. writing the data in a data block into the core memory in the address location corresponding to the address block of the same set of address and data blocks when the control character is a command to execute a write access into core,
- d. reading and comparing the data in a data block of a set of address and data blocks with the data read from an address location corresponding to the address block of the same set of address and data blocks for correspondence when the control character is a command to execute a read access from core.

3,898,450

RELIABLE FLASHLIGHT

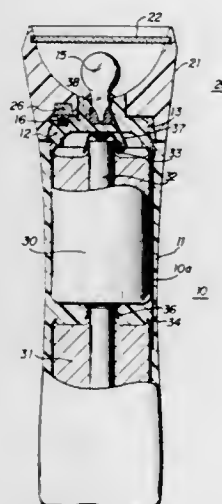
Jack S. Kilby, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 1, 1973, Ser. No. 412,007

Int. Cl. F21H 7/00

U.S. Cl. 240—10.66

4 Claims



1. In a flashlight with a separable reflector unit, the combination comprising:

- a. a lamp, a battery and a magnetically operable switch having permanent connecting means to form a series circuit therefrom,
- b. said circuit being mounted in a permanent housing with at least a portion of said lamp exposed, and
- c. a cover mounted on said housing with a reflector and a magnet movable with respect to said housing to operate said switch.

3,898,451

RECTANGULAR SEALED BEAM HEADLAMP UNIT

Joe W. Murphy; Thomas E. Persing, and Clinton D. Hartzell, all of Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed July 29, 1974, Ser. No. 492,546

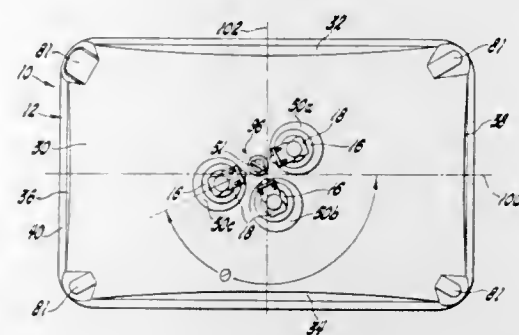
Int. Cl. F21M 3/00

U.S. Cl. 240—41 SB

4 Claims

1. A reflector for a lighting unit comprising: a molded member having all surfaces thereon with a positive draft angle with respect to a mechanical axis substantially through the center of the unit; a paraboloidal reflecting surface on the member having an optical axis inclined with respect to the mechanical axis; means on said member defining a plane normal to said mechanical axis; a plurality of raised ferrule bosses formed on the rear surface of said member, said ferrule bosses having

axes parallel to said mechanical axis and being offset with respect to the mechanical axis and said paraboloidal axis to provide equal ferrule boss heights as measured from said plane



to compensate for the inclination between said axes thereby provide equal masses and prevent distortion due to differing cooling rates thereat.

3,898,452

ELECTRON MULTIPLIER GAIN STABILIZATION

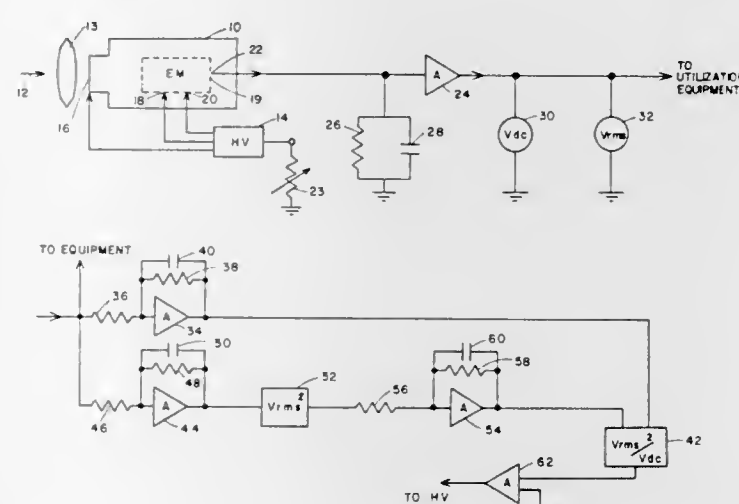
Richard J. Hertel, Fort Wayne, Ind., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Aug. 15, 1974, Ser. No. 497,782

Int. Cl. H01J 43/30

U.S. Cl. 250—207

6 Claims



1. Apparatus for controlling gain of an electron multiplier comprising:

- electron multiplier means having input and output electrodes,
- direct voltage supply means applying direct voltage between said input and output electrodes,
- signal input means applying a direct current input signal to said input electrode, said output electrode providing a direct current output signal proportional to said direct current input signal multiplied by the gain of said multiplier and a noise current output signal, said gain being proportional to the ratio of the mean square of said noise current output signal with respect to said direct current output signal,
- load means for converting said direct and noise current output signals to a direct voltage output signal and a noise voltage output signal respectively,
- means for comparing said direct voltage output and noise voltage output signals to determine the gain of said multiplier with respect to a reference level, and
- means for varying said direct voltage supply means to control said gain of said electron multiplier in accordance with the differences of said direct voltage output and noise voltage output signals with respect to said reference level.

3,898,453

SOLID STATE OPTICAL JUNCTION DEVICES AND ARRAYS AND SYSTEMS INCORPORATING SAME

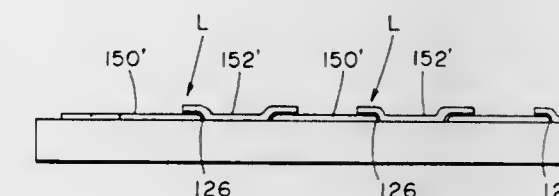
Ali Javan, Boston, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 62,380, Aug. 10, 1970, Pat. No. 3,755,678. This application Aug. 20, 1973, Ser. No. 389,783

Int. Cl. H01J 39/12

U.S. Cl. 250—211 J

24 Claims



1. An electronic device responsive to optical radiation incident thereupon to generate an electrical effect dependent upon the said incident radiation, said device comprising a solid non-metallic substrate, a solid metal deposit thereon, a solid dielectric layer upon a portion of said metal deposit, and a second solid metal deposit on said substrate, said second metal deposit having a limited common area with said first metal deposit, the respective common portions of said metal deposits being in intimate contact with opposite sides of and separated by said dielectric layer, said dielectric layer being of limited thickness, said common region thereby defining a metal to metal junction, a portion of one of said metal deposits extending away from said junction having a width related to the wave length of said optical radiation and forming an antenna responsive to said incident radiation to generate an alternating electrical current at the frequency of said radiation and to conduct said current to said junction, said junction having a non-linear current-voltage characteristic with respect to said current whereby said current and said junction can interact to produce said electrical effect.

3,898,454

OPTICAL AIR DATA SENSOR

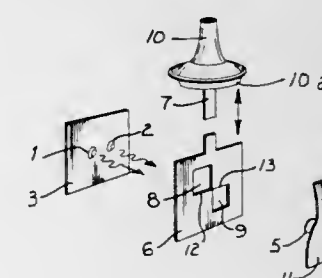
Robert E. Friday, Lenexa, and Ralph V. Cole, Olathe, both of Kans., assignors to King Radio Corporation, Olathe, Kans.

Filed Aug. 27, 1973, Ser. No. 392,016

Int. Cl. G01D 5/34

U.S. Cl. 250—231 P

7 Claims



1. An optical air data sensor avionics system for use with a pressure sensitive aneroid, the system comprising:

- a light activated sensor element having a signal output therefrom;
- at least two effective light sources, said light sources remotely located from said sensor element and operable to variably illuminate same;
- a shutter located between said light sources and said light activated sensor and operable to variably impede light passage between said sources and said sensor, said shutter defining at least two openings to allow the passage of light from a respective source therethrough;

means interconnecting said shutter and said aneroid to effect the movement of said shutter in accordance with the pressure being sensed by said aneroid; said openings and said sources being arranged to inversely vary light transmission therethrough to said sensor in accordance with said shutter movement; and said signal output from said sensor element being variable in accordance with the direction and amount of said shutter movement.

3,898,455

X-RAY MONOCHROMATIC AND FOCUSING SYSTEM

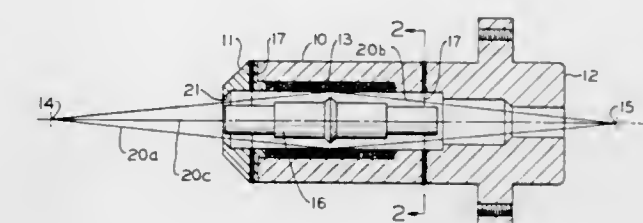
Thomas C. Furnas, Jr., 2869 Scarborough Rd., Cleveland, Ohio 44118

Filed Nov. 12, 1973, Ser. No. 414,782

Int. Cl. G01M 23/00

U.S. Cl. 250—280

13 Claims



1. An X-ray monochromatic and focusing system comprising: a source of X-ray radiation, a tubular support for the acceptance and passage of said radiation, diffractive pieces of bent crystal arcuately enclosed within the inner periphery of the tubular support to obtain a high relative aperture of X-rays focused into emergent diffracted X-ray beams onto a desired area, means interposed within the inner periphery of the crystal lined support to intercept the undiffracted X-ray beam and to shield the entire desired area from the undiffracted radiation and define the spectral range of the X-rays emergent from the crystal, and means for performing X-ray spectral analysis.

3,898,456

ELECTRON MULTIPLIER-ION DETECTOR SYSTEM

Leonard A. Dietz, Schenectady, N.Y., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed July 25, 1974, Ser. No. 491,988

Int. Cl. B01D 59/44; G01T 1/20; H01J 39/34

U.S. Cl. 250—299

6 Claims

1. A combined electron-multiplier ion-detector system for use in a mass spectrometer comprising:

- an ion beam source,
- an electrostatic lens which receives, deflects and focuses the ion beam into
- an electron multiplier, having an extended dynode unit consisting of a first conversion dynode and five additional electron multiplying dynodes,
- an accelerating lens means connecting said electron multiplier to

optically aligned gas detectors, one for each component in the mixture to be measured;
 means for producing for each of said components said plurality of interference voltages each representing the interference of that component with a respective one of the other components to be measured;
 means for combining the interference voltages from each component related to a given other component to provide a second composite interference voltage corresponding to the magnitude of said first composite interference voltage for each component to be measured; and
 cancelling means for combining said first and second composite interference voltages with opposing senses.

3,898,463

SCINTILLATION COUNTING APPARATUS

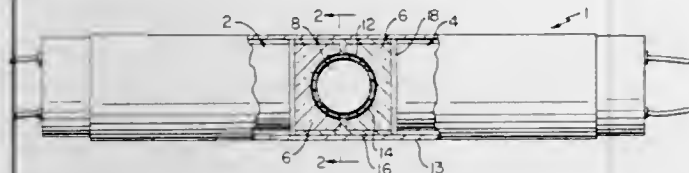
John E. Noakes, Athens, Ga., assignor to Task, Inc., Oak Ridge, Tenn.

Filed Aug. 13, 1973, Ser. No. 387,764

Int. Cl. G01t 1/20

U.S. Cl. 250-367

11 Claims



1. In liquid scintillation counting apparatus for measuring the energy of beta particle decay events, the apparatus including a light-tight housing impermeable to beta radiation, a photomultiplier tube encased in said housing by means such that outside light does not enter the housing, a well-type sample chamber, a transparent sample vessel therefor, an optical coupling medium interposed between the sample vessel chamber and photomultiplier tube so that substantially all of the photons generated by a scintillator in the sample vessel are transmitted through the optical coupling into the photomultiplier tube, and means such as shielding and independent detection for excluding background radiation, the improvement wherein background radiation is simultaneously counted and sorted from true beta events, including (a) as the optical coupling medium, an inorganic phosphor, (b) an optical sample well liner to protect the inorganic phosphor from atmospheric attack, the optical liner having a photon absorptivity of less than 20 per cent as wavelengths in the range of 3500 to 4200 Angstroms, and (c) discriminator means for differentiating low amplitude, fast rise time, liquid scintillator-generated pulses from large amplitude, slow rise time, inorganic phosphor-generated pulses.

3,898,464

ION CHAMBER INSTRUMENT

Donald Henry Stephan, Cleveland, Ohio, assignor to VLN Corporation, Cleveland, Ohio

Continuation of Ser. No. 269,702, July 7, 1972, abandoned.

This application Mar. 25, 1974, Ser. No. 454,177

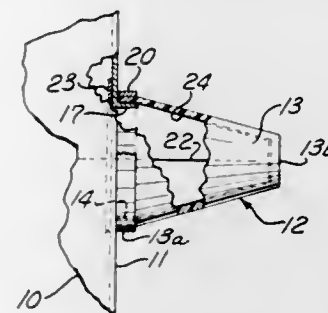
Int. Cl. G01t 1/18

U.S. Cl. 250-374

16 Claims

1. A combined wall and electrode for use in forming an enclosing wall of air ionization chambers in a radiation measuring instrument, said wall to be penetrated by the radiation to be measured and having outer and inner surfaces, said wall

being of cellular self-supporting material having a substantially uniform areal density and an electrically conducting



coating on said inner surface, said material having an average effective atomic number of between about 4 and about 9.

3,898,465

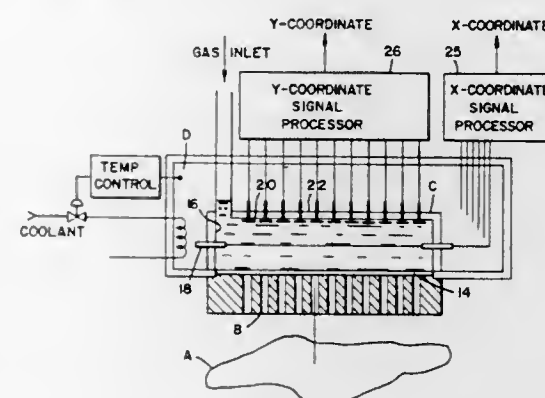
IMAGING TRANSDUCER FOR RADIATION PARTICLES
 Haim Zaklad, Berkeley, Steven E. Derenzo, El Cerrito, Richard A. Muller, Berkeley, and Robert George Smits, Lafayette, all of Calif., granted to U.S. Energy Research and Development Administration under the provisions of 42 U.S.C. 2182

Filed Mar. 5, 1973, Ser. No. 337,974

Int. Cl. G01t 1/18

U.S. Cl. 250-389

12 Claims



1. A radiation imaging transducer for imaging said radiation directed along a preselected path from a target, said transducer comprising a chamber including means for confining noble gas in other than a gaseous state; a window formed from one of the walls of said chamber for permitting radiation exterior of the chamber to enter into the interior of said chamber along said preselected path; a noble gas within said chamber having a portion thereof in other than a gaseous state; means connected to said chamber to maintain said portion of said noble gas in other than a gaseous state; first and second electrode arrays disposed substantially normal to the path of said incoming radiation with said portion of said noble gas between said electrodes; and, means for maintaining a voltage potential to promote electron flow from the direction of one of said electrode arrays and means for detecting said electron migration connected to at least one of said electrode arrays.

3,898,466

DEVICE FOR MEASURING NEUTRON FLUX

Katsuhiko Kawashima, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Aug. 3, 1973, Ser. No. 385,250

Claims priority, application Japan, Aug. 9, 1972, 47-79668

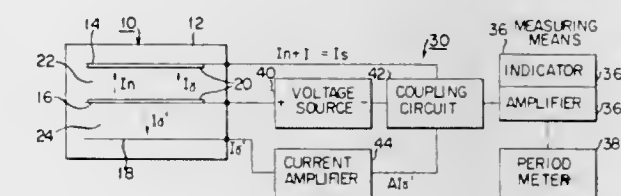
Int. Cl. G01t 3/00

U.S. Cl. 250-390

10 Claims

1. A device for measuring a neutron flux, comprising, in combination, a biased gamma ray compensated ionization chamber including first means responsive in use to both a neutron flux and gamma rays to produce a first output current

having components representative of the neutron flux and the gamma ray flux, and second means responsive to the gamma rays but substantially non-responsive to the neutron flux to produce a second output current representative of the gamma ray flux; a variable gain current amplifier connected to said second means of said ionization chamber to amplify said second output current to equal the component of the first



output current representative of the gamma ray flux, a coupling circuit connected to both said first means of said ionization chamber and said current amplifier to provide a difference current equal to the difference between the first output current and the amplified second output current, and measuring means connected to said coupling circuit to determine the neutron flux by measuring the difference current

3,898,467

METHOD AND APPARATUS FOR CONTINUOUS MONITORING AND CONTROL OF NEUTRON ABSORPTION PROPERTIES OF CHEMICAL SHIM WITH TEMPERATURE COMPENSATION

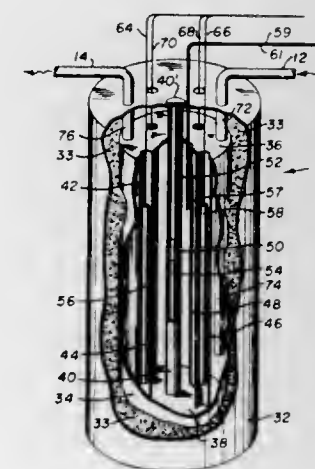
Glen Elwin Schukei, South Windsor, and Joseph Edward Kowles, Glastonbury, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Mar. 18, 1974, Ser. No. 451,725

Int. Cl. G01t 3/00

U.S. Cl. 250-390

9 Claims



1. In combination with a chemical shim concentration analyzer of the type wherein a sample of liquid containing dissolved chemical shim is bombarded with neutrons and a flux of unabsorbed neutrons is detected after passing through the liquid sample by neutron detectors spaced from the neutron source to generate a signal related to chemical shim concentration, the improvement comprising:

- means for generating a temperature signal (T) which varies as a function of the temperature of said liquid through which said detected neutrons pass unabsorbed;
- means responsive to said temperature signal generation means for generating a compensation signal commensurate with change of liquid sample chemical shim concentration due to change in temperature of said liquid sample; and
- means for correcting said signal related to chemical shim concentration by an amount commensurate with said compensation signal.

3,898,468

ELECTRIC DEVICE FOR THE TREATMENT OF A GASEOUS FLUID

Robert Guerin, Puteaux, France, assignor to Georges Brunet and Aime Pramaggiore, both of Villejuif, France

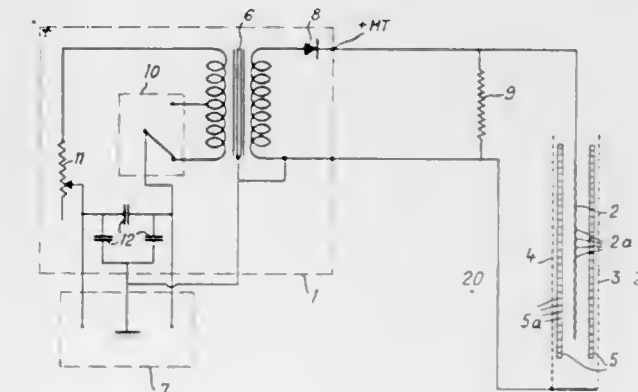
Filed July 3, 1973, Ser. No. 376,162

Claims priority, application France, July 26, 1972, 72.26934

Int. Cl. C10g 21/02

U.S. Cl. 250-535

15 Claims



1. Apparatus for destroying pollutant molecules such as SO₂, H₂S, NH₃, CH₄, or of the type C_nH_p, and for increasing the quantity of negative ions contained in a gaseous fluid, comprising:

- electric generator means for generating unidirectional pulsed current, said generator means having at least one positive pole and a negative pole; and
- at least one treatment element to be disposed in the gaseous fluid to be treated, the treatment element including (i) a back electrode connected to said positive pole to receive said unidirectional pulsed current, (ii) an insulating layer disposed on one side about said back electrode to insulate electrically at least one face of said back electrode from said gaseous fluid, and (iii) a front electrode grid connected to said negative pole and covering said insulating layer on the side opposite said one side about said back electrode, said back electrode including a plurality of substantially pin-point projecting zones distributed uniformly over the entire area of at least a side which faces towards said front electrode wherein each zone acts as a point of emission of positive polarity of an electric induction field wherein said back electrode, said insulating layer and said front electrode grid are in contact with each other.

3,898,469

DATA ROUTER FOR A FLAW DETECTION SYSTEM

Peter H. Nichols, Cheshire, and Monty M. Merlen, Stamford, both of Conn., assignors to Intec Corporation, Norwalk, Conn.

Filed May 31, 1974, Ser. No. 475,189

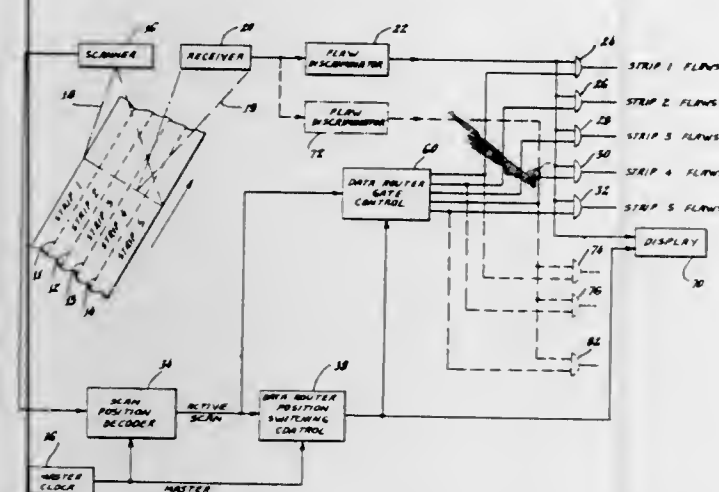
Int. Cl. G01n 21/32

U.S. Cl. 250-563

8 Claims

- A data router for a flaw detection system, comprising
- a source of radiation,
- a scanner for scanning said source successively over a surface of material being examined,
- a receiver having a detector means for receiving radiation applied by said source from said surface of material producing signals in response to the intensity of radiation applied to said detector means,
- flaw discriminator means having said signals from said detector means applied thereto for passing flaw signals of predetermined characteristics in accordance with the requirements of said flaw discriminator means,
- scan position means coupled to said scanner for indicating the position of said source on said material,

- f. data router means coupled to said scan position means for electrically dividing said material into a plurality of strips by producing an output on the occurrence of predetermined demarcation lines delineating different strips on said material as said source is scanned thereacross,
- g. a plurality of flow gates corresponding in number to the number of strips provided by said data router means,



- h. means for respectively coupling each of said flow signals to said plurality of flow gates, and
- i. means for coupling said data router means to said plurality of flow gates for enabling said flow gates in succession as said source moves across said material, thereby providing flow signals from said flow gates in accordance with their occurrence on a predetermined strip of said material.

3,898,470

SCANNING ARRANGEMENT FOR MULTI-FUNCTION OPERATION

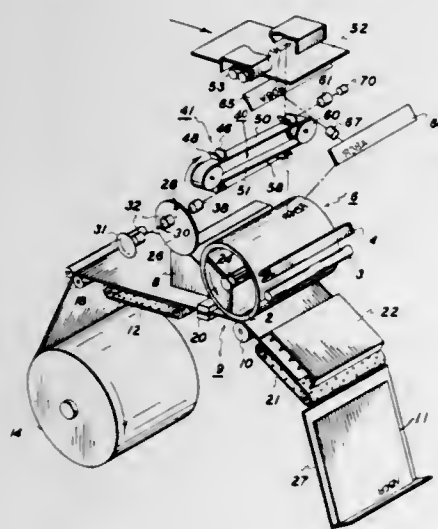
Kent W. Hemphill, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 12, 1973, Ser. No. 423,955

Int. Cl. G01n 21/30

U.S. Cl. 250-567

3 Claims



1. A multi-function apparatus capable of copying documents onto a recording medium, generating information onto a recording medium in accordance to pulsating signals, and for scanning a document in a facsimile transmitter mode, said apparatus comprising: a recording medium, means for providing a pulsating beam, a document station, light means separate from said beam for illuminating said document station, and a photosensor, scanning means located in the path of said pulsating beam to scan said beam across said recording medium, said scanning means also being located in the path of light reflected from said document station to scan successive portions of information at said document station to said photosensor, and means for imaging information illuminated by said

light means at said document station to said recording medium.

3,898,471

ELECTRIC GENERATOR RESPONSIVE TO WAVES IN BODIES OF WATER

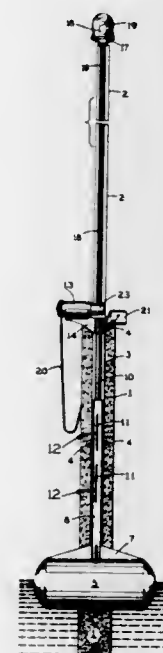
Enos L. Schera, Jr., 8254 S.W. 37th St., Miami, Fla. 33155

Filed Aug. 15, 1974, Ser. No. 497,653

Int. Cl. F03B 13/12

U.S. Cl. 290-42

9 Claims



1. A float operated electric generator responsive to surface waves of a body of water comprising a fixed base means having a vertical portion thereof extending a predetermined distance into the said body of water,
- a substantially rectangular metal rail of predetermined length secured in vertical position on said vertical portion of said base means,
- a metal rack of predetermined pitch secured along the front side of said rail between the lowest level of said body of water and terminating at the top of said rail,
- said rail having a straight groove on opposite sides thereof extending from a predetermined small distance from the lower end thereof and extending upward a predetermined distance substantially equal to the distance between the low and high water level,
- a hermetically sealed float means of predetermined size having a bracket extending outward therefrom and retaining a roller engaged in each opposite said groove with said bracket having a third roller engaged against the outer side of said rail,
- a linear vertical extension of said float positioned in spaced parallel relation to said rail terminating in a second bracket means for supporting an electric generator and including an extension thereof retaining a like roller journaled transversely on opposite sides of said rail and said third roller journaled transversely on the rear of said extension provided to retain the vertical movement of the generator in a linear path, the said generator provided with gear means engaged with said rack for rotation by the vertical oscillation of said generator when oscillated by said float within the length of said rack for generating electricity by said generator when said float is vertically oscillated by water waves.

3,898,472

OCCUPANCY DETECTOR APPARATUS FOR AUTOMOTIVE SAFETY SYSTEM

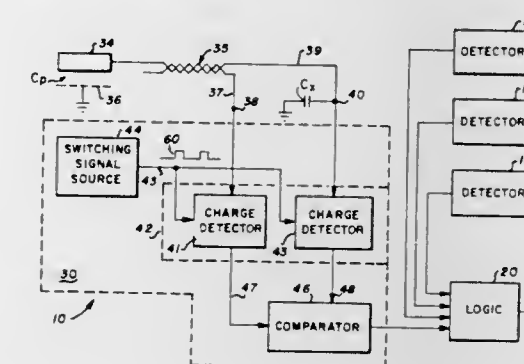
David K. Long, Sunnyvale, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed Oct. 23, 1973, Ser. No. 408,681

Int. Cl. B62D 45/00

U.S. Cl. 307-10 SB

9 Claims



1. In an automotive safety system including a seat occupancy detector, other automotive function detectors and electronic logic responsive to signals developed thereby for preventing operation of the automobile unless the detectors develop output signals in a predetermined sequence, an improved occupancy detector comprising:

- means forming an occupant sensing capacitor having a first capacitance when a particular seat is occupied and a second capacitance when said seat is not occupied;
- a reference capacitor;
- means for charging said occupant sensing capacitor and said reference capacitor;
- first charge detecting means coupled to said occupant sensing capacitor and operative to develop a first signal commensurate with the capacitance of said occupant sensing capacitor;
- second charge detecting means coupled to said reference capacitor and operative to develop a second signal commensurate with the capacitance of said reference capacitor; and
- comparator means responsive to said first signal and second signal and operative to compare said signals and develop an output signal representative of the relationship therebetween.

3,898,473

SENSING SYSTEM FOR SENSING STATE OF WEAR OF SEATBELT

Atsushi Ueda; Kosaku Uota, and Mitsunaki Ishii, all of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Himeji, Japan

Filed Nov. 6, 1973, Ser. No. 413,200

Claims priority, application Japan, Dec. 18, 1972, 47-127398

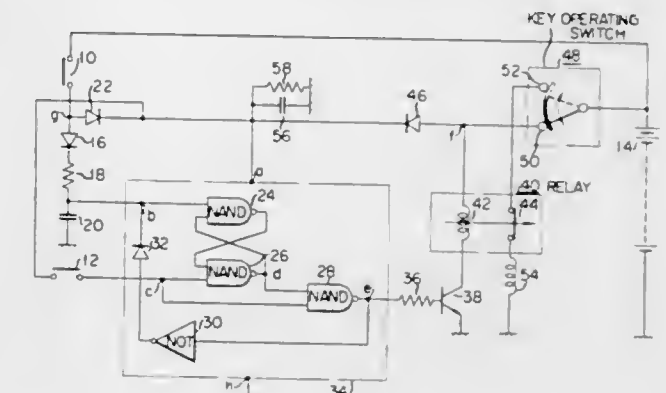
Int. Cl. H02g 3/00

U.S. Cl. 307-10 SB

4 Claims

1. A sensor system for sensing a state of wear of a seat belt comprising, in combination, a first normally open seat switch adapted to be closed when sat on by a vehicle occupant, a second normally open switch adapted to be closed by the fastening of a seat belt, a FLIP-FLOP circuit including a pair of input terminals operatively coupled to said first and second switches respectively and an output, said FLIP-FLOP circuit being operated in response to the operation of either of said first and second switches, a time delay circuit interposed between one input to said FLIP-FLOP circuit and said first switch, a first gate circuit including a pair of inputs connected to the output of said FLIP-FLOP circuit and said second switch, respectively, and additional means are provided including a transistor operatively connected to said first gate circuit and responsive to an output signal from said first gate

circuit, a starter relay including a winding connected to said transistor and a set of contacts connected to both a key operating switch and a starter winding, said set of contacts adapted to be open when said first switch is closed while said second switch is open, as well as when said second switch is closed followed by the closure of said first switch, thereby preventing



3,898,474

POWER CIRCUIT

Michiro Funatsu, Yokohama; Akio Nakashima, Yokohama, and Eiichi Matsumura, Tokyo, all of Japan, assignors to Nippon Electric Company, Limited and Hitachi, Ltd., both of Japan

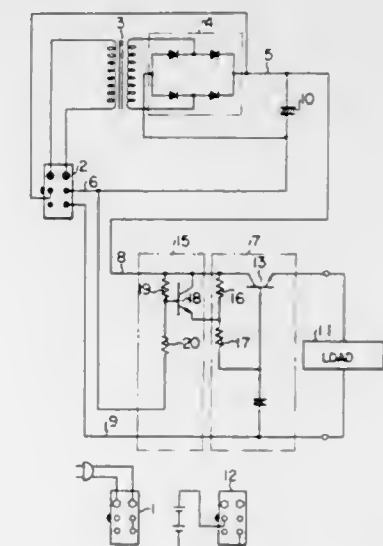
Filed June 7, 1974, Ser. No. 477,460

Claims priority, application Japan, June 11, 1973, 48-64838

Int. Cl. H02j 9/04

U.S. Cl. 307-66

6 Claims



1. A power circuit comprising an AC power supply, a DC power supply, a rectifying circuit, and active filter circuit connected to an output terminal of the rectifying circuit, switching means for connecting, when the input power is an AC power, the AC power to the input terminals of the rectifying circuit and for connecting, when the input power is a DC power, the DC power to the input terminals of the active filter, first and second resistors connected in series for setting the inter-terminal voltage of the active filter, and a transistor connected in parallel to the first resistor, the switching means turning the transistor off when the input power is the AC power and turning the transistor on when the input power is the DC power to vary the inter-terminal voltage of the active filter depending on whether the input power is the AC power or the DC power.

3,898,475

ENGINE START PROHIBITION SYSTEM

Takaaki Mogi, Fujisawa, Japan, assignor to Nissan Motor Company Limited, Yokohama, Japan

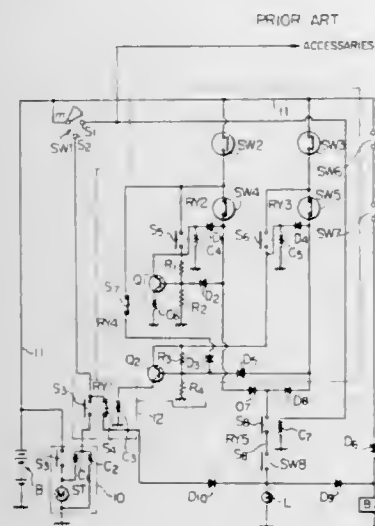
Filed Dec. 3, 1973, Ser. No. 420,905

Claims priority, application Japan, Dec. 4, 1972, 47-138548; Mar. 2, 1973, 48-25809

Int. Cl. B60r 21/10

U.S. Cl. 307-10 SB

5 Claims



1. An engine start prohibition system for prohibiting the engine start of a motor vehicle equipped with at least one safety harness when said at least one safety harness is not correctly set, which comprises:

ignition switch means for producing a preparation signal and a motor start signal;
motor start gate means for passing therethrough said motor start signal when energized;
first energizing means for energizing said motor start gate means when said at least one safety harness is correctly set; and
second energizing means for energizing said motor start gate means when said ignition switch means produces said preparation signal during a predetermined time period after when said ignition switch means once stops to produce said preparation signal.

3,898,476

MEANS FOR PROVIDING REDUNDANCY OF KEY SYSTEM COMPONENTS

Thomas M. Straus, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

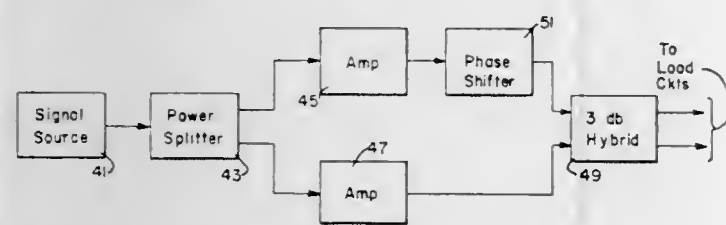
Division of Ser. No. 280,624, Aug. 14, 1972, Pat. No.

3,818,237. This application Oct. 11, 1973, Ser. No. 405,340

Int. Cl. H01J 19/82

U.S. Cl. 307-149

3 Claims



1. A system comprising:
a source for developing a first signal;
first means coupled to said source for developing second and third signals in response to the first signal;
second and third means coupled to said first means for respectively changing the second and third signals to fourth and fifth signals;
fourth means coupled to said second means for controlling the phase relationship of the fourth signal in relation to that of the fifth signal; and

a device coupled to said third and fourth means for developing a pair of output signals in response to at least one of the fourth and fifth signals.

3,898,477

SELF RATIOING INPUT BUFFER CIRCUIT

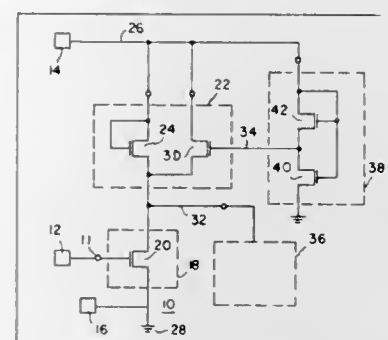
John K. Buchanan, Tempe, Ariz., assignor to Motorola, Inc., Chicago, Ill.

Filed June 3, 1974, Ser. No. 475,376

Int. Cl. H03K 19/08, 19/40, 3/353

U.S. Cl. 307-205

7 Claims



gating signal, said clamping circuit including means for referencing the pulse coupled through it to the reference level regardless of the level of the base line drift of the waveform accompanying the signal pulse, said clamping circuit including a series capacitor and a shunt switch normally biased to a low impedance state for maintaining the voltage of one electrode of the capacitor substantially at the reference level, said shunt switch being driven to a high impedance state in response to the gating signal for enabling a voltage that is a replica of the pulse to be developed at the one electrode, and means for detecting the amplitude of the voltage of said one electrode.

3,898,482

NOISE SUPPRESSION CIRCUIT

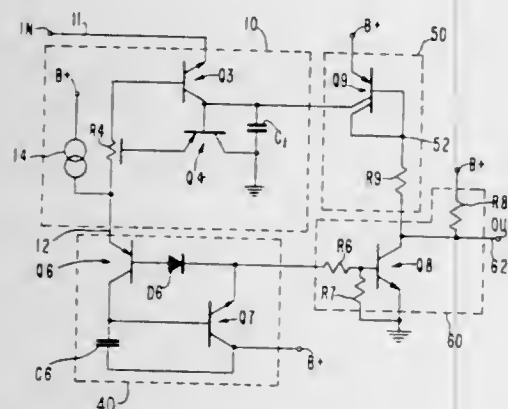
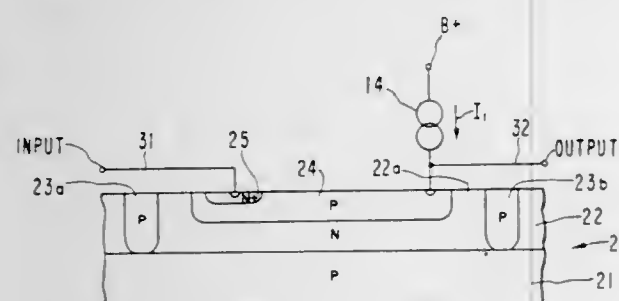
James G. Holt, Jr., Mountain View, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed Mar. 29, 1974, Ser. No. 456,326

Int. Cl.² H03K 5/08

U.S. Cl. 307-237

13 Claims



1. A noise suppression circuit comprising in combination:
 - a. an input means and an output means;
 - b. a first transistor having a collector, an emitter coupled to said input means, and a base coupled to a first impedance means;
 - c. a second transistor having a base coupled to said collector of said first transistor, a collector coupled to a first reference potential, and an emitter integral with said first impedance means;
 - d. a third transistor having an emitter coupled to said first impedance means, a collector, and a base coupled to a second impedance means;
 - e. a fourth transistor having an emitter coupled to said second impedance means, and said output means, a base coupled to the collector of said third transistor, and a collector coupled to a second reference potential; and
 - f. a switching means coupled between said output means and said base of said second transistor, and such that said second transistor is enabled for a first state of said output means and disabled for a second state of said output means.

3,898,483

BIPOLAR MEMORY CIRCUIT

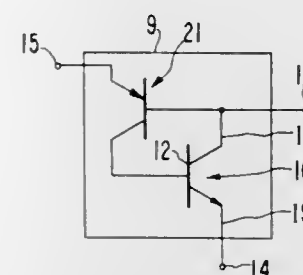
Wendell B. Sander, Cupertino, and Michael P. Anthony, San Carlos, both of Calif., assignors to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed Oct. 18, 1973, Ser. No. 407,710

Int. Cl.² G11C 11/40

U.S. Cl. 307-238

4 Claims



1. A memory circuit comprising:
 - a. a storage cell including a single bipolar transistor having emitter, base and collector electrodes;
 - b. a collector-base junction between said base and said collector which acts to provide a capacitor for capacitive charge storage;
 - c. a first terminal means for coupling a charging means to one of the emitter and collector electrodes of said transistor for charging said collector-base capacitor, the charged condition of said capacitor being indicative of a first state of said memory storage cell;
 - d. a second terminal means for coupling a pulse supply means to said transistor for applying a sensing pulse of a predetermined magnitude and polarity to one of said emitter and collector electrodes of said single bipolar transistor;
 - e. a discharging means including the emitter-base junction of a second bipolar transistor of the opposite polarity type from said single bipolar transistor, said emitter-base junction of said second bipolar transistor being connected in series with the base-collector junction of said single bipolar transistor, and the collector electrode of said second bipolar transistor being coupled to the base electrode of said single bipolar transistor;
 - f. a third terminal means for coupling a detecting means to said transistor for detecting the degree of forward bias on the emitter-base junction through one of said collector and emitter electrodes simultaneously with the application of sensing pulse, for determining what state the cell is in.

3,898,484

MONOLITHIC HORIZONTAL PROCESSING CIRCUIT WITH SELECTABLE DUTY CYCLE

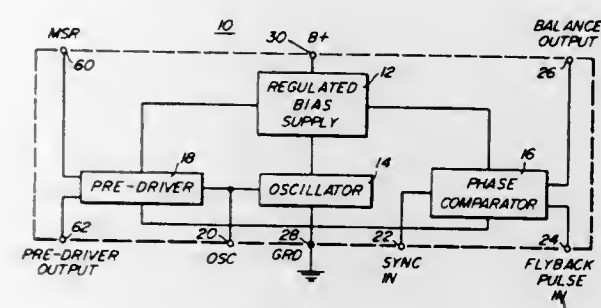
Milton E. Wilcox, Tempe, Ariz., assignor to Motorola, Inc., Chicago, Ill.

Division of Ser. No. 256,523, May 24, 1972, Pat. No. 3,812,387. This application Oct. 24, 1973, Ser. No. 409,350

Int. Cl. H03k 5/00

U.S. Cl. 307-261

10 Claims



1. An electronic switch circuit for providing an output oscillatory signal of substantially square wave configuration in

response to an oscillatory signal of essentially sawtooth configuration and wherein the duty cycle of the square wave may be preset to a desired ratio, the electronic switch circuit including in combination:

- a first circuit means for selectively controlling the setting of a switching threshold of the electronic switch circuit and providing a reference voltage at an output terminal thereof;
- a first transistor of a first conductivity type having a control electrode adapted to receive the sawtooth signal and an output electrode; and
- a second transistor of a second conductivity type having a first control electrode connected to said output electrode of said first transistor, a second control electrode connected to said output terminal of said first circuit means and adapted to receive said reference voltage, and an output electrode, said second transistor being rendered conductive and nonconductive as the voltage excursion of said sawtooth signal swings above and below said reference voltage to provide the output oscillatory signal of substantially square wave configuration, said reference voltage controlling the ratio of the duty cycle.

3,898,485

DC VOLTAGE REGENERATING TRANSFORMER COUPLING DEVICE

Kazuo Katou, Ibaraki-ken, Japan, assignor to Hitachi, Ltd., Japan

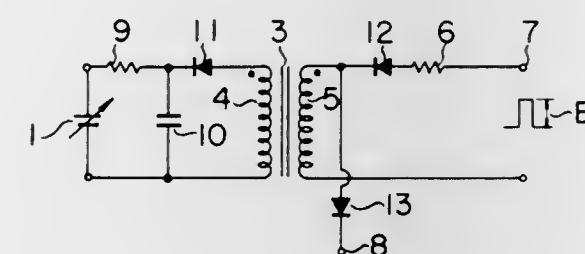
Filed May 14, 1974, Ser. No. 469,878

Claims priority, application Japan, May 16, 1973, 48-53545; Aug. 20, 1973, 48-92499

Int. Cl. H02m 7/46, 7/52; H03k 3/26

U.S. Cl. 307-282

11 Claims



1. A transformer coupling device comprising a pulse transformer having at least an input winding and an output winding, an electrical switch normally in the off-state connected to the input winding of the pulse transformer, and a DC voltage source connected to the input winding of the pulse transformer through the switch, whereby, when the DC voltage of the DC voltage source is to be regenerated, the output winding of the pulse transformer is supplied with such a pulse voltage as enabling the voltage induced on the input winding by the pulse voltage on the output winding to be sufficiently high to turn the switch temporarily on to generate on the output winding a voltage proportional to the DC voltage.

3,898,486

STABILIZED THRESHOLD CIRCUIT FOR CONNECTION TO SENSING TRANSDUCERS AND OPERATION UNDER VARYING VOLTAGE CONDITIONS

Wolf Wessel, and Harald Kizler, both of Schwieberdingen, Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

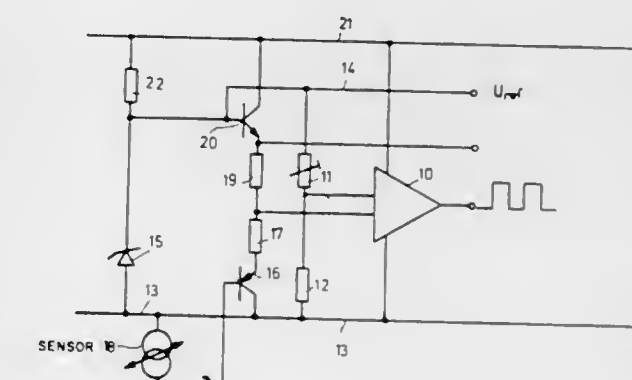
Filed Sept. 13, 1973, Ser. No. 396,879

Claims priority, application Germany, Oct. 25, 1972, 2252185

Int. Cl.² H03K 17/60

U.S. Cl. 307-297

5 Claims



1. Stabilized threshold circuit to obtain a derived output signal from a gas composition sensing transducer (18) comprising

- a reference voltage generator circuit (15, 22) connected across the supply circuit (13, 21) and having stabilized reference output terminals (13, 14);
- a voltage divider circuit (11, 12) connected to the stabilized output terminals (13, 14) and thus to the reference voltage (U_{ref}) generated by said reference voltage generating circuit;
- an operational amplifier (10) connected as a threshold switch;
- an emitter follower transistor (16) having one terminal of the transducer (18) connected to the base thereof, one current supply terminal of the emitter follower transistor being connected to one terminal (13) of the supply circuit and the other current supply terminal being in circuit connection with said stabilized output terminal (14), the operational amplifier having one input connected to the tap point of the voltage divider circuit (11, 12) and the other input to the output of the emitter-follower connected transistor, the other terminal of the transducer (18) being connected to a stabilized output terminal (13) of the supply circuit;
- and a compensation semiconductor element (20) having a semiconductor junction, one terminal of said junction being connected to the reference voltage, a balancing resistor (19) connected in series with said junction with one terminal thereof, and to the main current path of the emitter follower transistor (16) with the other terminal thereof, to provide a stabilized voltage thereto, the junction characteristics of the compensation semiconductor element being similar to the junction characteristics of the semiconductor junctions of the emitter-follower transistor (16).

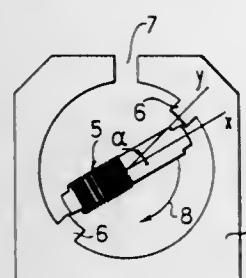
3,898,487 LINEAR MOTOR

Janusz Sobiepanek, Gif sur Yvette, and Jean-Claude Untersee, Paris, both of France, assignors to Societe Generale de Constructions Electriques et Mecaniques ALSTHOM, France

Filed Nov. 13, 1973, Ser. No. 415,351
Claims priority, application France, Nov. 13, 1972, 72.402207

U.S. Cl. 310—80 Int. Cl. H02k 7/06

16 Claims



1. A linear motor comprising a stator having a generally tubular shape, an even number of ferromagnetic elements having the shape of a helix disposed coaxially within said stator, and a movable member disposed within said stator and including means for producing a rotating field coaxial with said stator so as to produce a linear movement of said movable member along the axis of said stator as a result of the interaction between said rotating field and said ferromagnetic elements, said stator being longitudinally interrupted along a line parallel to its axis and said movable member being mechanically connected to an object to be moved, placed outside of the stator by a linkage traversing said longitudinal interruption.

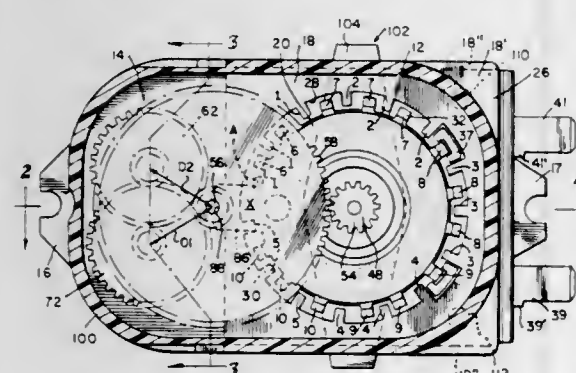
3,898,488 ELECTRIC MOTOR CONSTRUCTION

Robert D. Erwin, Speedway; Richard H. Weber; Bill G. Kilmer, both of Indianapolis, and Benjamin F. Chestnut, Greenwood, all of Ind., assignors to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Continuation of Ser. No. 229,808, Feb. 28, 1972, abandoned.
This application Feb. 4, 1974, Ser. No. 439,461

U.S. Cl. 310—83 Int. Cl. H02K 7/10

9 Claims



1. An electric motor construction comprising:
a. a substantially rectangular mounting plate,
b. a U-shaped outer field plate having a substantially flat bottom portion and upstanding legs extending therefrom, said U-shaped outer field plate disposed over said mounting plate to provide an enclosure linearly extending to an area near the center of said mounting plate, an aperture disposed in said flat-bottom portion, and poles provided in said U-shaped outer field plate extending into said aperture,

c. an energizing winding carried by said mounting plate within said enclosure,
d. an inner field plate disposed above said energizing winding having poles intermeshing said poles of said U-shaped outer field plate,
e. a permanent magnet rotor disposed above said energizing winding and rotatable within said intermeshed poles and having a plurality of magnetic poles along its periphery,
f. at least one shaft extending from said mounting plate juxtaposition said enclosure,
g. a speed reduction means including at least one gear rotatably journaled on said shaft,
h. an arm extending from said inner field plate and a notch in a distal end of said arm at least partially surrounding said shaft so as to provide a means for locating the center distance between said gear and said rotor, and
i. means operably connecting said rotor with said speed reduction gear.

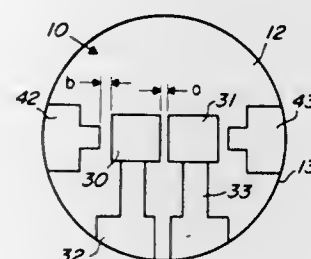
3,898,489 PIEZOELECTRIC RESONATORS INCLUDING MASS LOADING TO ATTENUATE SPURIOUS MODES

John J. Grady, Chicago, and Theodore E. Lind, Lombard, both of Ill., assignors to Motorola, Inc., Chicago, Ill.

Filed Mar. 4, 1974, Ser. No. 448,139

U.S. Cl. 310—9.8 Int. Cl. H04r 17/00

7 Claims



1. A piezoelectric resonator with attenuated spurious response comprising:

a. a piezoelectric crystal plate having two major surfaces and a surrounding edge;
b. an electrode fixedly positioned in overlying relationship on each of said major surfaces, said electrodes being approximately coextensive and directly opposite and providing a main frequency mode of operation and spurious modes upon proper energization thereof;
c. an electrically conducting tab fixedly positioned in overlying relationship on each of said major surfaces and extending from electrical connection with said electrode on each respective major surface outwardly to the surrounding edge of the major surface, said conducting tabs extending outwardly to the surrounding edge in different directions so substantially no portions thereof are directly opposite each other;
d. a pseudo tab positioned in overlying relationship on each of said major surfaces approximately coextensive with and directly opposite each of said conducting tabs, said pseudo tabs being spaced from said electrodes a distance sufficient to allow propagation of the spurious modes between said conducting tabs and said pseudo tabs toward the outer edge of said plate while decoupling substantial propagation of the main mode.

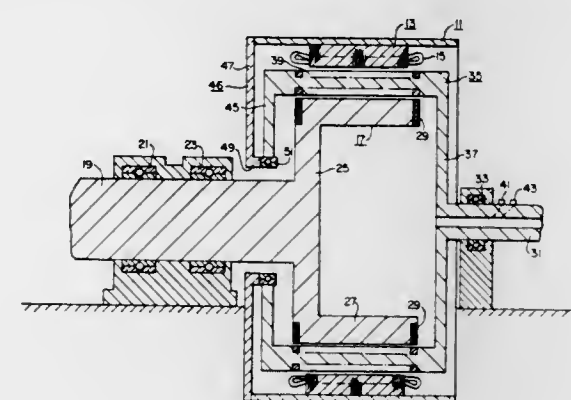
3,898,490 SUPERCONDUCTIVE AC DYNAMOELECTRIC MACHINES HAVING TWO ROTORS

Leonard N. Wedman, Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 24, 1973, Ser. No. 399,883

U.S. Cl. 310—52 Int. Cl. H02k 9/00

9 Claims



1. A superconductive AC dynamoelectric machine comprising:

a stator having a stator winding located thereon;
a first rotor connected to the drive shaft of the machine and mounted for rotation therewith, said first rotor having a first rotor winding located thereon; and
a second rotor mounted for rotation and bearing a superconducting field winding designed to operate at cryogenic temperature located between said stator and said first rotor, said second rotor comprising
a first shell adjacent said stator; and
a second shell adjacent said first rotor, said first and second shells forming a chamber therebetween to contain said superconducting field winding and magnetic material forming magnetic poles.

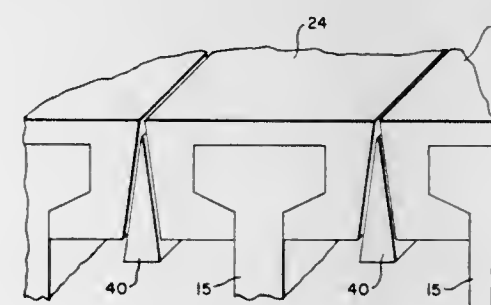
3,898,491 DAMPER WINDING FOR TURBINE GENERATOR ROTORS

Lawrence J. Long, and William C. Brenner, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 10, 1973, Ser. No. 405,197

U.S. Cl. 310—183 Int. Cl. H02K 1/22, 1/18

5 Claims



1. A rotor for a dynamoelectric machine having a generally cylindrical rotor body with a plurality of longitudinal slots therein forming teeth between them, windings disposed in at least some of said slots, damper means comprising a plurality of longitudinal conductors disposed on the surface of the rotor, a conductor being placed on each of said teeth, each conductor being a bar of low resistance material having a longitudinal recess therein such that the bar is adapted to fit over a tooth and engage both sides thereof to hold the bar in place, each tooth having a shoulder thereof and each bar engaging under the shoulders on both sides of a tooth, and

means for forcing adjacent bars into tight engagement and electrical contact with each other throughout their length.

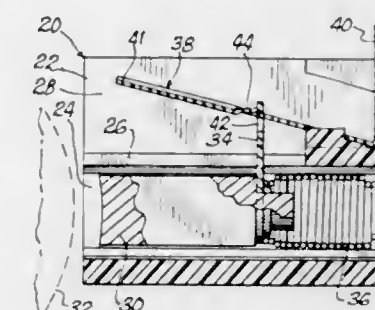
3,898,492 CURRENT INTERRUPTING BRUSH HOLDER ASSEMBLY

Louis J. Vassos, Park Ridge; William P. Elzer, Harwood Heights, and Alex F. Gawron, Chicago, all of Ill., assignors to Skil Corporation, Chicago, Ill.

Filed Jan. 21, 1974, Ser. No. 435,323

U.S. Cl. 310—242 Int. Cl. H02k 13/00

14 Claims



1. A brush holder assembly which interrupts current flow from a power source to an electric motor commutator comprising:

brush means positioned within said holder for conducting current from said source to said commutator; and
means for automatically and affirmatively disconnecting said brush means from said power source in response to the former wearing down to a predetermined size.

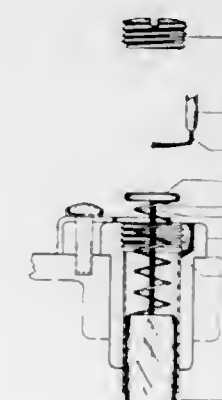
3,898,493 BRUSH HOLDER HAVING A MINIMAL NUMBER OF PARTS

Richard H. Schaffer, Ocala, Fla., assignor to The Bison Company, Ocala, Fla.

Filed June 29, 1973, Ser. No. 374,989

U.S. Cl. 310—247 Int. Cl. H01r 39/40

4 Claims



1. A brush holder for holding an electrical brush in position for contacting conducting portions of rotating electrical machinery or the like, comprising a housing having a tubular portion, said tubular portion having an open end and having an inner configuration such that a brush is slidably received therein, said brush having a metallic contact disk to which it is electrically connected, said disk being of a size to fit atop said open end of said tubular portion at such time as said brush is disposed in said tubular portion, a portion of said housing extending beyond the open end of said tubular portion, said housing portion being threaded at a location closely adjacent said open end of said tubular portion, a threaded cap screw arranged to be threadedly received in the threads of said housing portion and being larger in diameter than said disk, a groove in said housing portion, cutting essentially transversely

across the threads thereof, said groove being of a depth such that an insulated electrical wire can reside therein without preventing said cap screw from being threadably received in the threads of said housing portion, the insulated wire having a stripped end adjacent said disk, such that a portion of bare electrical wire can be clamped against said disk by said cap screw, so as to make good electrical contact with said disk and therefore said brush, as a result of the tightening of said cap screw.

3,898,494

INTEGRATED HEATER ALKALI VAPOR LAMP

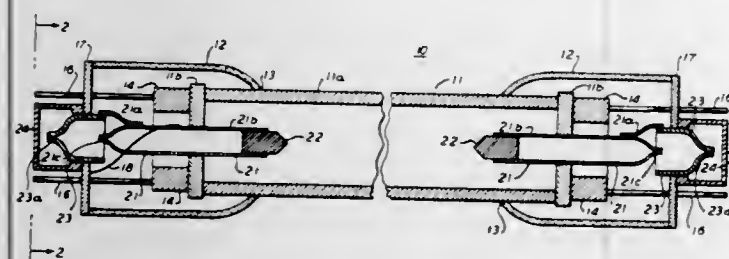
Stephen Levy, Ocean, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 3, 1974, Ser. No. 511,859

Int. Cl.² H01J 1/02

U.S. Cl. 313-15

9 Claims



1. An alkali vapor lamp, which comprises: a transparent, cylindrical envelope for containing said alkali vapor; an electrode at each end of said envelope; an evacuated chamber at each end of said envelope and in engagement therewith; and at least one heating element in each of said chambers for heating said envelope, thereby to establish the alkali vapor in said lamp.

3,898,495

CIRCULAR FLUORESCENT LAMP WITH TWO-PIECE SNAP-LOCK BASE

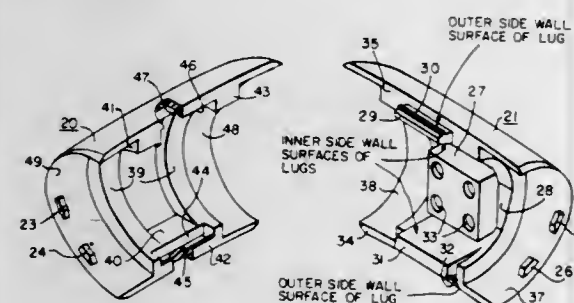
Phillip A. Livera, Bloomfield, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 5, 1974, Ser. No. 458,380

Int. Cl.² H01J 5/60; B28B 13/05

U.S. Cl. 313-51

14 Claims



1. A low-pressure gaseous discharge lamp comprising, in combination: a tubular vitreous envelope of annular configuration having sealed ends that are disposed in spaced opposing relationship; a hollow base of resilient electrically non-conductive material consisting of two segments that are disposed in enclosing relationship with the sealed ends of said envelope and span the opening therebetween, each of said base segments having planar faces that constitute the side edges of the base segments and are held in abutting relationship along a plane that extends across the opening between and intersects the sealed ends of the envelope, terminal means secured to one of said base segments,

flexible lead wires extending from the sealed ends of said envelope into said base and connected to said terminal means, and

means holding the base segments in the aforesaid enclosing and spanning relationship with the sealed ends of said envelope and in abutting relationship with each other solely by means of a frictional interfitting of said base segments,

said holding means comprising a pair of slot-like recesses in a central portion of one of said base segments and located inwardly from the planar faces thereof, and a pair of elongated integral locking lugs on the central portion of the other of said base segments that are located inwardly from and extend beyond the respective planar faces thereof and are seated in mating and snap-interlocking relationship with the slot-like recesses in said one base segment,

the inwardly-disposed and outwardly-disposed side wall surfaces of said pair of lugs being substantially flat along the region that is contiguous with the planar faces of the associated base segment and lying in planes that are tilted relative to one another in a manner such that the angle defined by the planes which are coincident with the inwardly-disposed side wall surfaces of said lugs is greater than the angle which is defined by the planes that are coincident with the outwardly-disposed side wall surfaces of said lugs.

3,898,496

MEANS FOR OBTAINING A METAL ION BEAM FROM A HEAVY-ION CYCLOTRON SOURCE

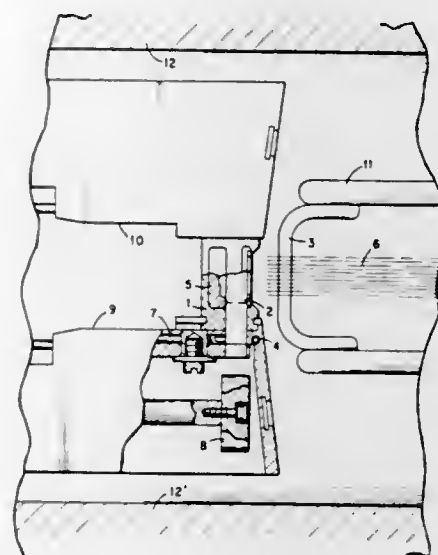
Ed D. Hudson, Knoxville, and Merrit L. Mallory, Oak Ridge, both of Tenn., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Aug. 12, 1974, Ser. No. 497,176

Int. Cl.² H01J 61/06, 61/16; H05H 13/00

U.S. Cl. 313-62

6 Claims



1. In an isochronous cyclotron provided with a magnetic field, an internal ion source provided with an arc chamber, an accelerating electrode for withdrawing ions from said arc chamber, said accelerating electrode effecting the acceleration of said ions through said cyclotron as guided by said magnetic field, and an ion beam extraction system for extracting a desired separated ion beam from said cyclotron, the improvement comprising providing a heavy mass arc support gas to said ion source selected from the group consisting essentially of krypton and xenon, and providing a plate mounted on the back wall of said ion source arc chamber, said plate constructed from a sputterable material, whereby during operation of said cyclotron said plate is bombarded by returning energetic low-charged gas ions that failed to successfully cross the initial accelerating gap between said ion source and

said accelerating electrode such that some of the atoms dislodged from said plate become ionized in the ion source arc column and are extracted from said cyclotron as a useful beam of heavy ions.

3,898,497

INFRARED CAMERA TUBE

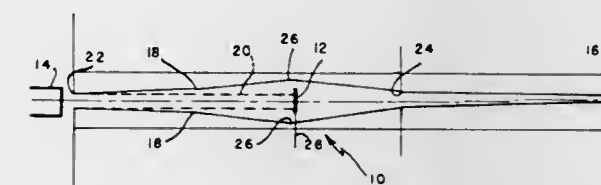
George A. Saum, Florissant, Mo., and Hans G. Sippach, Syracuse, N.Y., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 1, 1970, Ser. No. 77,357

Int. Cl. H01J 31/49

U.S. Cl. 313-388

1 Claim



1. In an infrared camera tube having a cathode for producing an electron beam and a photoconductor the improvement therein comprising a cathode aperture of predetermined diameter located coincidental with the axis of said cathode, an electrical focus lens located proximate said photoconductor for refocusing said electron beam, an obscuring flap of heat insulating, nonmagnetic material located intermediate said cathode aperture and said focus lens at a point where said electron beam begins to bulge, said obscuring flap having a diameter at least as great as said predetermined diameter but not so great as the diameter of said bulge whereby an infrared radiation emanating from said cathode is blocked by said obscuring flap and the electrons pass to said photoconductor.

3,898,498

CHANNEL MULTIPLIER HAVING NON-REFLECTIVE AMORPHOUS ALUMINUM LAYER OBTURATING CHANNEL ENTRANCES ON SIDE FACING PHOTOCATHODE

Henry Dermott Stone, Iain Craig Paton Millar, and David Henry Nicholls, all of Salfords, near Redhill, England, assignors to U.S. Phillips Corporation, New York, N.Y.

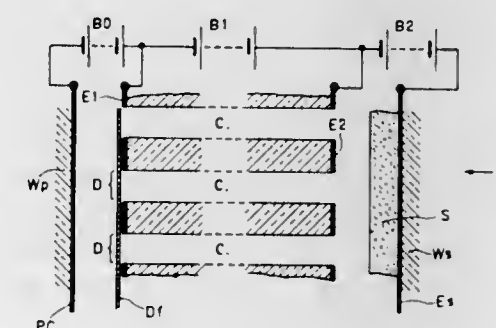
Filed Jan. 14, 1974, Ser. No. 433,534

Claims priority, application United Kingdom, Jan. 18, 1973, 2678/73

Int. Cl. H01J 39/02, 43/22, 39/14

U.S. Cl. 313-95

3 Claims



1. In a channel plate image intensifier device of the type wherein a photocathode closely faces the input side of a channel plate electron multiplier, said input side having an electron permeable input electrode membrane obturating the entrances to the channels of said channel plate electron multiplier, the improvement wherein said input electrode membrane comprises a layer of reflective aluminum facing said channels and a layer of non-reflective amorphous aluminum facing said photocathode.

3,898,499

MAGNETICALLY CONTROLLED ELECTRON MULTIPLIER SWITCH

Kazuyoshi Nagao, Yokohama, and Koichi Morikawa, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Japan

Continuation of Ser. No. 67,130, Aug. 26, 1970, abandoned.

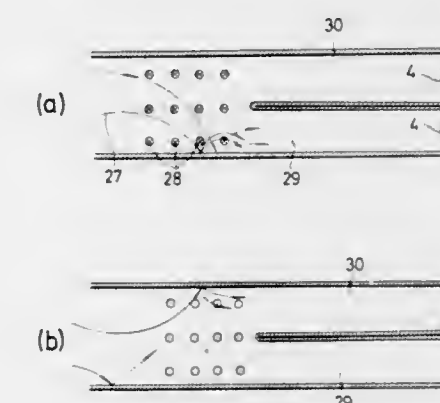
This application Mar. 26, 1973, Ser. No. 345,249

Claims priority, application Japan, Sept. 29, 1969, 44-77657

Int. Cl. H01J 43/14, 43/22

U.S. Cl. 313-103

1 Claim



1. A multiplier apparatus, comprising a member forming an elongated passage, the inside of said member being coated with secondary electron emission material, means for generating an electron flow in the longitudinal direction of the passage, magnetic field generating means provided outside the member for generating a magnetic field transverse to the longitudinal direction of the passage and a shielding plate inside the member and remote from the opening thereof, said shielding plate having its surfaces coated with secondary emission material and dividing the two sides of the passage longitudinally from each other and being oriented parallel to the magnetic field, said apparatus including means for varying the magnetic field to control the flow of the electrons to one side or the other.

3,898,500

HALOGEN TYPE FILAMENT LAMP CONTAINING PHOSPHORUS AND NITROGEN

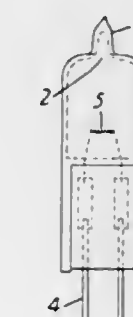
Robert Bernard Johnston, and John Michael Rees, both of London, England, assignors to Thorn Electrical Industries Limited, London, England

Continuation of Ser. No. 1,404, Jan. 8, 1970, abandoned. This application Sept. 10, 1973, Ser. No. 395,610

Int. Cl. H01J 61/26; H01k 1/50

U.S. Cl. 313-174

4 Claims



4. An electric incandescent lamp comprising: a closed light transmitting envelope of a high temperature-resisting material; electrically-conducting lead-in wires sealed through said envelope; a tungsten filament inside said envelope connected to said lead-in wires; and a fill comprising an inert gas and nitrogen, phosphorus and a halogen, said nitrogen, phosphorus and halogen having being formed by thermal dissociation of a phosphonitrilic halide.

3,898,501

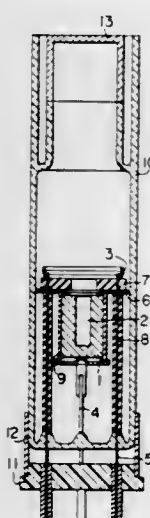
LIGHT SOURCE LAMP FOR ATOMIC LIGHT ABSORPTION ANALYSIS

Akira Hosoya; Makoto Tadokoro, both of Hitachi; Sadami Tomita, Katsuta; Yoji Arai, Katsuta, and Shinji Mayama, Katsuta, all of Japan, assignors to Hitachi, Ltd., Japan
Filed May 9, 1974, Ser. No. 468,528

Claims priority, application Japan, May 11, 1973, 48-51644
Int. Cl. H01j 61/08

U.S. Cl. 313-178

10 Claims



1. A lamp used as light source for atomic light absorption analysis, comprising a cathode having a hollow, an anode arranged in the vicinity of said cathode, a hermetical envelope to enclose said cathode and anode, and gaseous atmosphere contained in said envelope, wherein said cathode is formed of a molten alloy of silver and at least one metal selected from the group consisting of zinc, bismuth, cadmium, tin and lead and which can emit the same resonance spectral line as the metal to be analyzed, and said alloy has a purity equal to or higher than 99.9 percent.

3,898,502

RARE-GAS-DISCHARGE LAMP

Giulio Garrone, Strada Comunale Mirafiori 35-67, Turin, Italy

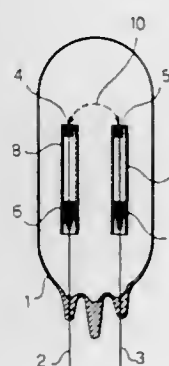
Filed July 11, 1974, Ser. No. 487,561

Claims priority, application Italy, July 17, 1973, 69131/73

Int. Cl. H01j 61/10

U.S. Cl. 313-205

5 Claims



1. A rare-gas-discharge lamp, comprising a glass bulb filled with a rare gas into which bulb the electrodes penetrate, characterized in that each electrode passes, at least over a portion of its length, within a refractory and dielectric screen provided with at least an opening allowing the discharge propagation and having linear size much smaller than the length of the electrode portion which is screened, so that, when the discharge occurs, a nearly punctate light source is obtained.

3,898,503

DUAL CATHODE STRUCTURE

Joel Shurgan, Washington Township, N.J., assignor to Duro-Test Corporation, North Bergen, N.J.

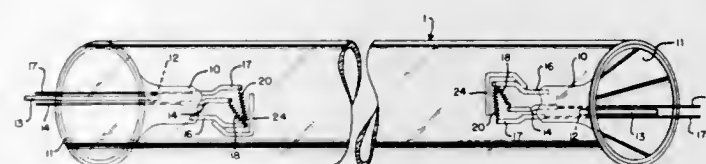
Continuation of Ser. No. 791,245, Jan. 15, 1969, abandoned.

This application Dec. 16, 1970, Ser. No. 98,899

Int. Cl. H01j 17/06

U.S. Cl. 313-206

10 Claims



1. A fluorescent lamp of the type in which the cathodes receive current from a source of alternating current electrical voltage external to the lamp which supplies both heating current and operating voltage comprising

a sealed envelope having a phosphor coating on the internal wall thereof and having a fill gas and an ionizable medium therein,

a cathode structure means at each end of the envelope comprising an electron emissive cathode means, first and second electrically conductive leads connected to spaced points on said cathode means and extending outside of the envelope to electrically connect the cathode means to the voltage source so that alternating current from the source will flow through the portion of the cathode means electrically connected between said leads to provide heating current to the cathode during the entire time that the lamp is operating and alternately make the structure emit electrons and attract electrons during the negative and positive half cycles of the operating voltage respectively to produce an arc stream discharge,

and electrically conductive probe means for at least one of said cathode structure means having one end electrically connected only to an intermediate point of its respective electron emissive cathode means between said spaced points and the other end positioned within the envelope to extend into the path of the arc stream discharge to collect positive ions when the said one electron emissive cathode is emitting electrons and to collect electrons when said one electron emissive cathode is attracting electrons, said positive ions and said electrons collected by said other end of said probe means being alternately conducted to said one end of said probe means and then to a portion of the electron emissive cathode means of said one cathode structure means, the collected ions causing the heating current flowing through the electron emissive cathode means of said one cathode structure means causing a redistribution of the current to neutralize the ions, and the collected electrons also flowing through a portion of the electron emissive cathode means.

3,898,504

HIGH PRESSURE METAL VAPOR DISCHARGE LAMP

Hidezoh Akutsu, Ashiya; Haruo Yamazaki, Shiga-ken; Takio Okamoto, Kusatsu; Yoshiaki Watarai, and Shoichi Baba, both of Takatsuki, all of Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan

Continuation-in-part of Ser. No. 204,866, Dec. 6, 1971, abandoned. This application Nov. 15, 1973, Ser. No. 416,015

Claims priority, application Japan, Dec. 9, 1970, 45-109842

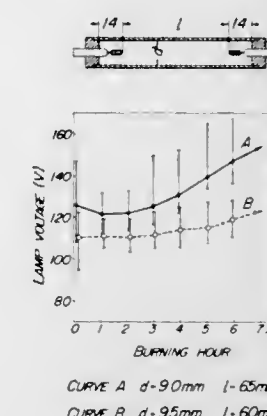
Int. Cl. H01j 61/30, 61/18

U.S. Cl. 313-220

9 Claims

1. A high pressure sodium vapor discharge lamp comprising a tube envelope containing therein sodium, inert starting gas, buffer gas comprising at least one of mercury and cadmium and discharge electrodes sealed in said envelope, said lamp satisfying the following relation between the tube diameter d

in millimeters and an average potential gradient E in volts per centimeter



$E \geq 37.7 - 2.05d$,
wherein $E \leq 25$ and $d > 9$.

3,898,505

INCANDESCENT LAMP WITH WALL BUMPER

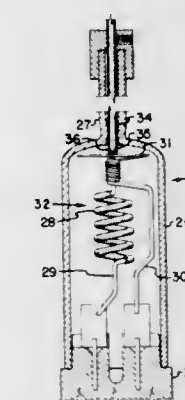
George K. Danko, Bedford Heights, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 22, 1974, Ser. No. 444,747

Int. Cl. H01j 1/88, 19/42; H01k 1/18

U.S. Cl. 313-271

2 Claims



1. A single-ended electric incandescent lamp comprising: a tubular envelope of vitreous light-transmitting material having a pinched seal at one end and a tipped off exhaust tube at the other; a pair of spaced heavy rigid conductors of unequal length embedded in said pinch seal, each having an attached foil portion extending hermetically through said pinch seal to provide external connections; the inner end of the shorter conductor terminating within said envelope in a spudded end close to the pinch-sealed end of said envelope; the longer conductor extending longitudinally along a side wall of the envelope and terminating in turns tightly wrapped around an axial spud having a portion extending toward the pinch-sealed end of the lamp; a coiled coil filament of refractory metal wire and substantially linear configuration fastened to and extending between the spudded end of said shorter conductor and said spud; and a coil support of relatively fine flexible wire having one end formed into a loop slightly smaller in diameter than the inside diameter of said envelope and the other end formed into turns wrapped tightly over the turns of said longer conductor around said spud, said support serving as a wall bumper to maintain the filament in place without obstructing the flow of flushing gas during the pinch sealing of said lamp and to absorb shocks and vibration during life of the lamp.

3,898,506

INCANDESCENT FILAMENT LAMPS

John Willoughby Thomas Wright, deceased, late of Leicester, England; by Audrey Mabel Wright, legal executor, and by Denis Wilfred Clarke, legal executor, both of Leicester, England, assignors to Thorn Electrical Industries Limited, London, England

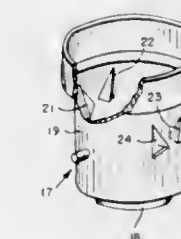
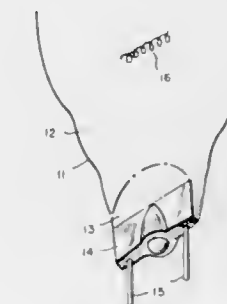
Continuation of Ser. No. 827,497, May 23, 1969, abandoned.

This application Apr. 8, 1974, Ser. No. 458,976

Int. Cl. H01j 5/48

U.S. Cl. 313-318

5 Claims



1. An electric lamp comprising an envelope having a pinch seal at one end thereof; a pair of lead wires extending from the inside to the outside of said envelope, at least one of said lead wires being sealed through and extending beyond said pinch seal, a cap disposed about said pinch seal, seating means including a plurality of lugs extending inwardly of said cap and abutting said pinch seal to prevent rotational movement of said envelope, said at least one lead wire being fixedly attached near its outer end to said cap to hold said seal against said lugs and to prevent said envelope from moving axially relative to said cap.

3,898,507

ANTI-RATTLE ASSEMBLY SUPPORT

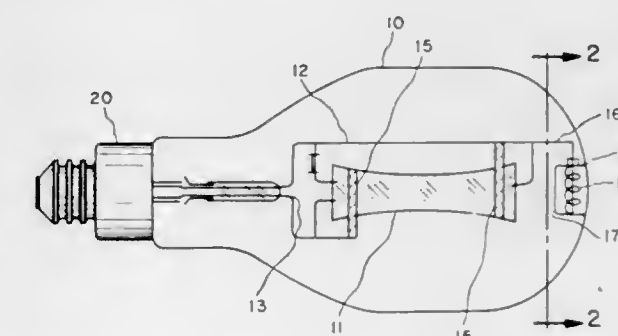
Barry Bolt, Lakewood; Thomas Jacobs, Trenton, and Piet Peters, Cranbury, all of N.J., assignors to North American Philips Corporation, New York, N.Y.

Filed Feb. 22, 1974, Ser. No. 444,914

Int. Cl. H01j 7/00

U.S. Cl. 313-323

5 Claims



1. In a gas discharge and/or filament lamp, an anti-rattle support structure comprising: a lamp envelope having an inwardly directed projection at one end of said envelope distal from the base of the lamp; a supporting rod extending in the axial direction of the

lamp for supporting the lamp elements, said rod having an approximately closed loop formed at one end thereof; and a helically-coiled spring disposed over the loop of said supporting rod to form a coil-on-loop arrangement, the inwardly directed projection being inserted into the coil-on-loop arrangement whereby the helically-coiled spring tightly and resiliently embraces the projection of the envelope.

3,898,508

TEMPERATURE COMPENSATED SHADOW MASK FOR A COLOR CATHODE-RAY TUBE

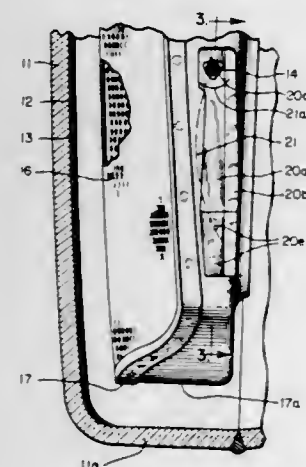
Nicholas P. Pappadis, Chicago, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Dec. 19, 1968, Ser. No. 785,171

Int. Cl.² H01J 29/07, 31/20

U.S. Cl. 313-405

2 Claims



1. A color cathode-ray tube having a faceplate section including (a) a rectangular image area bearing deposits of three different phosphor materials defining a multiplicity of phosphor triads, (b) a flange normal to the periphery of said area and (c) support pins extending inwardly from said flange on both sides and on the top and/or bottom of said tube, further having a color-selection electrode of essentially the same size and shape as said image area including (d) a mask component having a field of apertures individually aligned with an assigned one of said triads and (e) a rectangular frame of angular cross section having one part parallel to the axis of the tube to which the peripheral portion of said mask is attached and having another part disposed transverse to said axis, and also having an improved arrangement for mounting said electrode in spaced parallel relation to said image area comprising:

a pair of similar elongated leaf springs individually formed of two metallic pieces having different temperature coefficients of expansion, arranged in side-by-side abutting relation and mechanically fastened to one another along their abutting surfaces,

said springs facing the same direction relative to the top of said frame with the piece of higher temperature coefficient closer to said image area,

said springs being secured at one end to said frame by means of weld connections made only to corresponding points on opposing side portions of said one part of said frame, said springs being contoured to bridge the space between said frame and said support pins on the side portions of said faceplate flange and having an aperture at the opposite end dimensioned to accept said support pins and form a pivoted connection therewith,

and the length of each of said springs being proportioned in relation to the aforesaid difference in coefficients of expansion to effect pivotal movement of said springs about their associated pins and axial displacement of said frame toward said image area as the tube attains its operating temperature.

3,898,509 CATHODE-RAY TUBE HAVING LITHIUM SILICATE GLARE-REDUCING COATING WITH REDUCED LIGHT TRANSMISSION AND METHOD OF FABRICATION

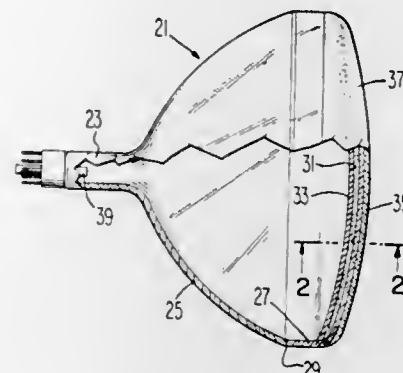
Malcolm George Brown, Jr., Lancaster, and Donald Walter Barch, Columbia, both of Pa., assignors to RCA Corporation, New York, N.Y.

Filed Sept. 28, 1970, Ser. No. 76,032

Int. Cl. H01J 31/26; B44d 5/02

U.S. Cl. 313-478

8 Claims



1. A cathode-ray tube including, on its viewing surface, an image-transmitting, glare-reducing coating having a rough surface and composed of a lithium silicate material and carbon particles, said particles having an average particle size less than about 100 millimicrons and being present in proportions sufficient to reduce the light transmission through said coating by a predetermined amount.

5. In a method for preparing an image-transmitting glare-reducing coating on the viewing surface of a cathode ray tube, the steps including

a. warming a surface of a glass support to about 30°C to 100°C,

b. coating said surface with an aqueous solution containing about 1 to 10 weight percent of a lithium-stabilized silica sol, said sol having an $\text{SiO}_2:\text{Li}_2\text{O}$ ratio of about 4:1 to 25:1, and 0.5 to 6.0 weight percent of the weight of said sol of carbon particles, having an average particle size less than about 100 millimicrons,

c. drying said coating,

d. heating said dry coating at about 150°C to 300°C for about 10 to 60 minutes,

e. and incorporating said glass support into said cathode ray tube.

3,898,510 ELECTRICAL CONDUCTIVE MEANS FOR TRAVERSING A CATHODE RAY TUBE ENVELOPE TO EFFECT MULTIPLE CONNECTIONS THEREIN

Charles A. Davis, Auburn, and Donald L. Say, Waterloo, both of N.Y., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed June 27, 1974, Ser. No. 483,554

Int. Cl.² H01J 29/02, 29/07, 29/88

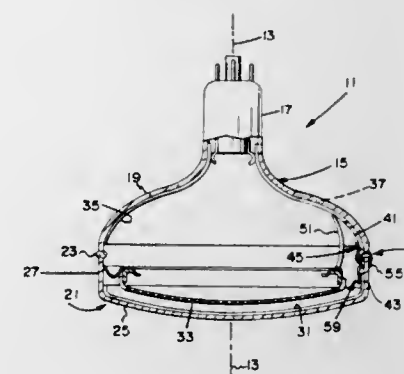
U.S. Cl. 313-482

6 Claims

1. Improved electrical conductive means in a cathode ray tube structure whereof the envelope has a longitudinal axis therethrough and includes a face panel having a viewing portion and an encompassing sidewall therearound terminated by a perimetric sealing seat which is bonded by a fritted seal therealong to a compatible sealing seat terminating the wall of a related contiguous funnel portion of the envelopic integration, said electrical conductive means being a through-the-seal electrical conductive member comprising:

a substantially U-shaped metallic transversal element formed of a longitudinal strip of electrical conductive material substantially configured as a pseudo-horseshoe shaping having two opposed legs oriented in a common direction and joined by a planar bridging portion therebetween to effect straddle-orientation and clamping engage-

ment on a terminal wall portion of said envelope, the first of said legs being located adjacent to the internal surface of said envelope with the second of said legs being adjacent to the external surface thereof, the terminal ends of said legs being dimensioned apart and individually flared



3,898,511 FLUORESCENT LAMP CONTAINING AMALGAM-FORMING MATERIAL FOR REDUCING STABILIZATION TIME

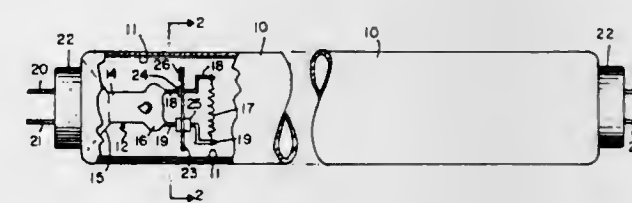
Walter A. Johnson, Beverly, and Howard W. Milke, Danvers, both of Mass., assignors to GTE Sylvania Incorporated, Danvers, Mass.

Filed Apr. 22, 1974, Ser. No. 463,004

Int. Cl.² H01J 61/28, 61/42

U.S. Cl. 313-490

9 Claims



1. A low-pressure mercury vapor discharge lamp comprising:

an hermetically sealed, elongated light-transmitting envelope containing an inert ionizable fill gas and a quantity of mercury,

a mount structure including a stem sealed to and extending inwardly from each end of said envelope and an electrode supported at the inward end of each of said stems,

at least one of said mount structures having attached thereto a fixed heat shield disposed between the electrode thereof and its respective end of said lamp for providing a relatively cool end chamber in said lamp during the operation thereof, and

a quantity of amalgam-forming material disposed on a surface within said lamp proximate said heat shield and solely in the region between said heat shield and its respective end of said lamp, whereby said amalgam-forming material is operative to absorb and store mercury in said region while the lamp is inoperative and rapidly release the mercury into said region when the lamp is ignited, whereupon the mercury vapor pressure is controlled by said cool end chamber and the time required to reach a state of stabilized light output is reduced.

3,898,512

PHOTOFLASH LAMP ARRAY SEQUENCING CIRCUITS

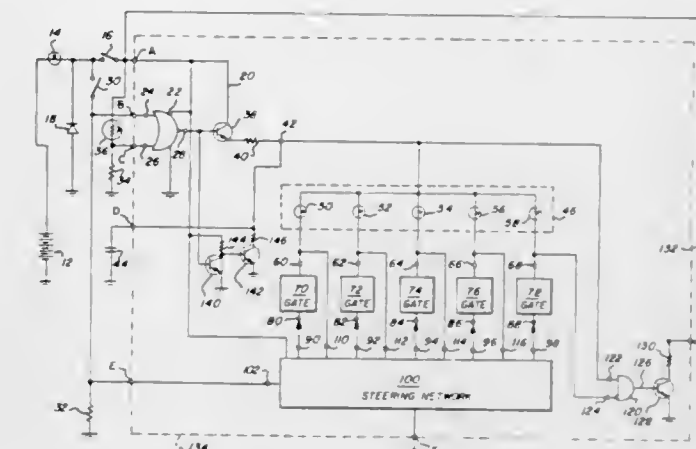
Robert J. Buck, Dover, N.J., assignor to Berkey Photo, Inc., Paramus, N.J.

Filed Mar. 8, 1974, Ser. No. 449,280

Int. Cl. F21k 5/02; H05b 43/02

U.S. Cl. 315-89

15 Claims



1. A circuit for successively flashing a plurality of N associated photoflash lamps and comprising:

a plurality of N gate controlled switching elements, each of said gate controlled switching elements being arranged for series coupling with a respective one of said N associated photoflash lamps;

a capacitor having two terminals;

circuit means coupled to said capacitor and said gate controlled switching elements for coupling each series combination of said associated photoflash lamps and said gate controlled switching elements between the terminals of said capacitor;

circuit means coupled to said gate controlled switching elements for selectively causing said gate controlled switching elements to be conductive;

a power source for supplying current to and charging said capacitor;

current limiting means coupled to said capacitor and said power source for limiting the flow of current from said power source to said capacitor when one of said gate controlled switching elements is conductive; and discharge circuit means coupled to said capacitor for discharging said capacitor following the flashing of one of said photoflash lamps.

8. A circuit for flashing a plurality of N associated photoflash lamps in connection with the operation of a photographic apparatus and comprising:

light responsive means disposed to receive light from the subject to be photographed;

circuit means coupled to said photographic apparatus for sequentially flashing said photoflash lamps in response to successive actuations of said photographic apparatus; and flash defeat means coupled to said light responsive means and said circuit means for preventing the flashing of said photoflash lamps when the brightness of the light received by said light responsive means is above a predetermined level.

10. A circuit for flashing a plurality of N associated photoflash lamps in connection with the operation of a photographic apparatus and comprising:

circuit means for sequentially flashing said photoflash lamps in response to successive actuations of said photographic apparatus in a predetermined sequence with the Nth associated photoflash lamp being the last to be fired; sensing means for coupling to said Nth associated photoflash lamp and determining the electrical conductivity of said Nth associated photoflash lamp; and indicator means coupled to said sensing means for indicating whether said Nth associated photoflash lamp has previously been flashed.

a thermionic electrode and at least one adjacent discharge electrode, means for applying a hold off voltage to the control grid, and means for enabling triggering pulses to be superimposed on said hold off voltage, the plasma generated, during operation, serving as a source of charged particles whereby immediately upon reversal of the bias of the anode-cathode path after triggering of the tube, a current flow may be achieved with a minimum of bombardment of the anode structure by high energy ions.

3,898,519

SYSTEM FOR GENERATING MULTISTABLE VOLTAGE AND/OR CURRENT STEPS

Wolfgang Schroder, Pforzheim, Germany, assignor to International Standard Electric Corporation, New York, N.Y.

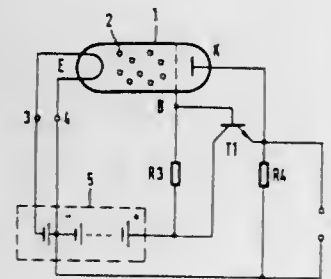
Filed May 28, 1974, Ser. No. 473,617

Claims priority, application Germany, May 25, 1973, 2326722

Int. Cl. H03k 4/02; H01j 17/02

U.S. Cl. 315—352

17 Claims



1. An apparatus exhibiting a plurality of stable voltage or current levels, comprising:

- a closed envelope;
- a gas disposed in said envelope, said gas being of the type having atoms that may be activated to different stable energy levels;
- an emitter electrode disposed in said envelope for emitting electrons;
- a collector electrode disposed in said envelope and spaced from said emitter electrode for collecting the electrons;
- electron accelerating electrode disposed between said emitter and collector electrodes and spaced therefrom;
- means associated with said emitter electrode for causing electrons to be emitted therefrom; and
- means for applying potential differences between the emitter and the accelerating electrodes whereby the emitted electrons are accelerated through the gas towards said accelerating and collector electrodes said potential difference being correlated with the spaces between the electrodes and the pressure of said gas to prevent ionization of the atoms, so that at potential differences corresponding to the stable energy levels of the atoms the atoms absorb energy from collisions with the accelerated electrons and as a result undergo a quantized energy jump while the colliding electrons undergo a deceleration so that a reduced number of electrons reach the collector electrode thereby reducing the collector current and causing the electrons to be taken up by the accelerating electrode, whereby stable voltage and current levels are exhibited at the potential differences corresponding to the stable energy levels of the atoms.

3,898,520

DEFLECTION COILS AND SYSTEM HAVING TWO QUADRIPOLE FIELDS AT A FORTY FIVE DEGREE ANGLE WITH RESPECT TO EACH OTHER

Jan Gerritsen, Adrianus Hubertus Kantelberg, and Gerrit Kool, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

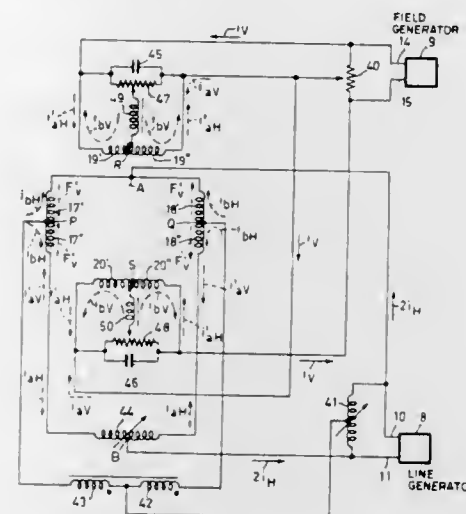
Filed Aug. 23, 1973, Ser. No. 390,701

Claims priority, application Netherlands, Sept. 6, 1972, 7212106; July 2, 1973, 7309173

Int. Cl. H01j 29/56

U.S. Cl. 315—370

20 Claims



1. Colour television display apparatus provided with a cathode-ray tube having a display screen and a system of deflection coils comprising a magnetic core on which a first and a second deflection coil unit are provided, each unit comprising two coil halves, said deflection coil system being slid on the neck of the cathode-ray tube for deflecting at least one electron beam generated in the cathode-ray tube into two substantially orthogonal directions, means for applying a deflection current originating from the deflection current generator through each coil half, means for generating approximately at the area of the deflection plane of the electron beam of a quadripolar field system including means for applying a first correction current to the coil halves of the first deflection coil unit and a second correction current induced in the coil halves of the second deflection coil unit, the deflection coil halves being toroidally wound on the core, and means for generating a second quadripolar field system approximately at the area of the deflection plane of the electron beam including means for applying at least a third correction current to the coil halves of one of said deflection coil units, the substantially coinciding polar axes of the second quadripolar field system being shifted approximately 45° relative to the substantially coinciding polar axes of the first quadripolar field system.

3,898,521

ELECTRON BEAM CONTROL SYSTEM

Tsunenari Saito, and Yoshio Aoki, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jan. 25, 1974, Ser. No. 436,792

Claims priority, application Japan, Feb. 2, 1973, 48-14681[U]

Int. Cl. H01j 29/56

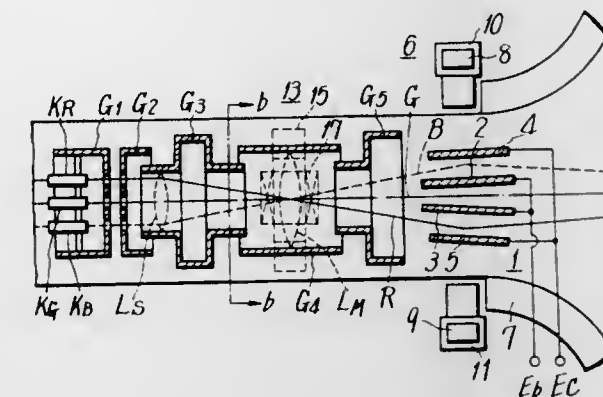
U.S. Cl. 315—370

6 Claims

1. An electron beam control system for apparatus utilizing a color cathode ray tube comprising:

- a. a color cathode ray tube having a luminescent screen, beam generating means for emitting a plurality of electron beams to said screen, all of said electron beams being aligned substantially in a common plane, and an electron focus lens disposed between said beam generating means and said screen having a substantially central portion at which said electron beams cross over;

- b. beam deflecting means disposed between said beam generating means and said screen, said beam deflecting means producing a magnetic field through which said electron beams pass for moving said electron beams in a direction parallel to said common plane, said magnetic field affecting deformation of the cross-sectional shape of each of said electron beams; and



- c. means for compensating for the cross-sectional shape deformation of each of the electron beams including a magnetic yoke disposed around the substantially central portion of said electron focus lens, said magnetic yoke producing an additional magnetic field through which each of said electron beams pass for acting on the cross-sectional shape of each of said electron beams so as to compensate for the deformation caused by the magnetic field of said beam deflecting means.

3,898,522

TELEVISION RECEIVER POWER SUPPLY SYSTEM AND PROTECTIVE CIRCUITRY THEREFOR

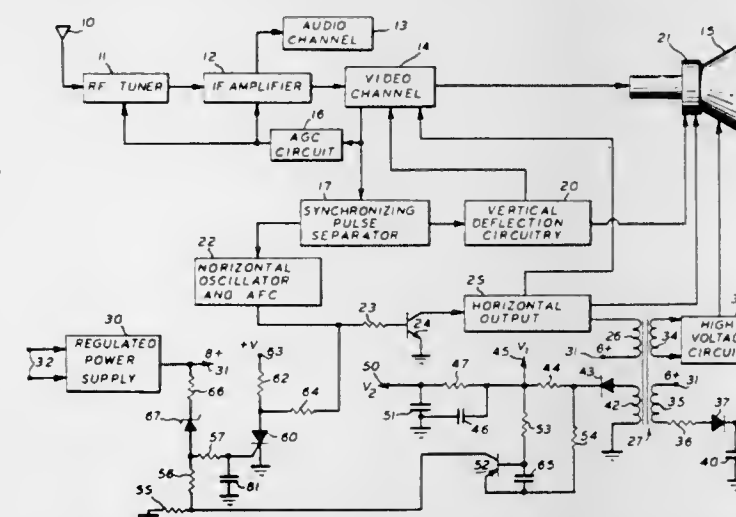
Arthur Harold Klein, Oakfield, and Robert Charles Wheeler, Elba, both of N.Y., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed Dec. 3, 1973, Ser. No. 420,765

Int. Cl. H01J 29/52

U.S. Cl. 315—379

12 Claims



- 1. In a television receiver having an image display device and deflection apparatus associated therewith, said deflection apparatus including a deflection circuit and an output transformer connected thereto, power supply means comprising: means connected to said deflection apparatus for providing energizing voltage to said deflection apparatus; a winding on said output transformer; rectifying means connected to said winding for providing a unidirectional voltage by rectification of pulses from said winding during the trace portion of the scanning of said image display device; current sensing means connected to said rectifying means for providing an output signal indicative of current flow through said rectifying means in excess of a predetermined magnitude; and

switching means connected to said current sensing means and to said deflection circuit for switching said deflection circuit to an inoperative condition in response to said output signal.

3,898,523

LINE DEFLECTION CIRCUIT FOR CATHODE RAY TUBE

Peter Lorentz Wessel, Donskitoppen 10 E, 1346 Gjettem, Norway

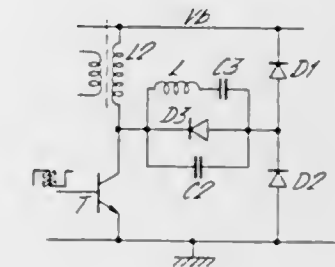
Filed Oct. 3, 1973, Ser. No. 403,342

Claims priority, application Norway, Oct. 4, 1972, 3549/72

Int. Cl. H01j 29/70

U.S. Cl. 315—408

4 Claims



1. Line deflection circuitry for cathode ray tubes, comprising:

- a D.C. voltage source and an inductance connected thereto; switch means connected to said D.C. voltage source through said inductance and controlled by input pulses; first and second diodes serially connected to each other between said D.C. voltage source and ground for providing a line deflection output signal;
- a third diode connected between said inductance at the junction of said switch means and said inductance and the junction of said first and second diodes; and
- a parallel resonant circuit connected in parallel with said third diode and including a deflection coil in series with a charging capacitor in one branch thereof, and a return trace capacitor in the other branch thereof.

3,898,524

HORIZONTAL DEFLECTION CIRCUIT FOR TELEVISION RECEIVERS

Klaus Reh, Albershausen, Germany, assignor to International Standard Electric Corporation, New York, N.Y.

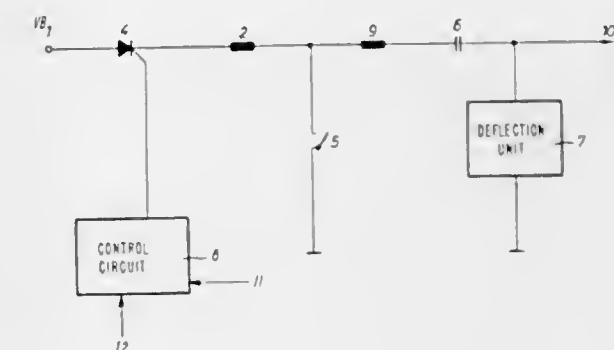
Filed Oct. 11, 1973, Ser. No. 405,381

Claims priority, application Germany, Oct. 17, 1972, 2250857

Int. Cl. H01j 29/70

U.S. Cl. 315—408

10 Claims



1. A horizontal deflection circuit for television receivers, comprising:

- means for controlling the horizontal sweep;
- means for controlling commutation;
- a deflection unit controlled by the previously mentioned means;

a d.c. voltage source;
a storage inductance connected in series with the d.c. voltage source and the deflection unit, said commutation control means formed and arranged to apply d.c. energy to the storage inductance from the d.c. source during periods of commutation; and
a controlled semiconductor switch connected in series with the d.c. voltage source and the storage inductance, the conducting period of the semiconductor switch being variable as a function of a control variable across the deflection unit.

3,898,525

HYSTERESIS VOLTAGE SUPPLY FOR DEFLECTION SYNCHRONIZING WAVEFORM GENERATOR

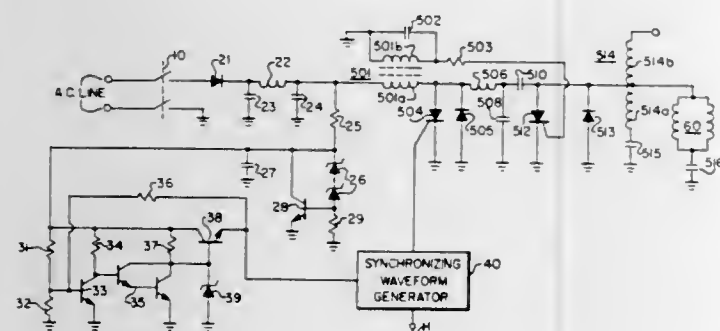
Steven Alan Seckler, Clark, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 9, 1974, Ser. No. 496,224

Int. Cl. H01j 29/70

U.S. Cl. 315-411

4 Claims



1. A hysteresis power supply for a deflection system, comprising:

means for generating deflection synchronizing waveforms when direct current operating voltage supplied thereto exceeds a first amplitude;
a source of direct current operating voltage including energy storage means chargeable from zero voltage to some nominal operating voltage after energization of said source;
a deflection current generator including switching means and a deflection winding coupled to said means for generating deflection synchronizing waveforms and to said source of direct current operating voltage for deriving direct current operating voltage therefrom for switching in response to said deflection synchronizing waveforms for generating deflection current in said deflection winding; and

switching means coupled to said source of direct current operating voltage and to said means for generating deflection synchronizing waveforms for switching from a first state to a second state for allowing direct current to flow from said source of direct current operating voltage to said means for generating deflection synchronizing waveforms and for remaining in said first state for inhibiting operation of said means for generating deflection synchronizing waveforms until direct current operating voltage supplied from said source to said means for generating deflection synchronizing waveforms exceeds a second amplitude substantially greater than the first amplitude for insuring that said switching induced in said deflection current generator by operation of said means for generating deflection synchronizing waveforms does not reduce said direct current operating voltage supplied to said means for generating deflection synchronizing waveforms below said first amplitude.

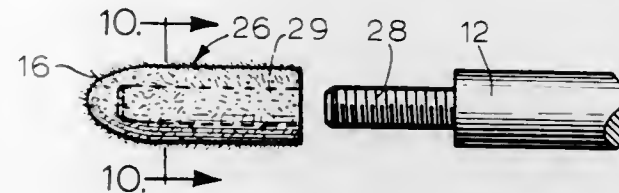
3,898,526

STATIC DISCHARGE APPARATUS AND SEVERAL METHODS FOR MANUFACTURING THE STATIC DISCHARGE APPARATUS

Charles D. Hendricks, 403 Sunnycrest Ct., Urbana, Ill. 61801
Continuation-in-part of Ser. No. 148,619, June 1, 1971, abandoned. This application Apr. 30, 1973, Ser. No. 355,930
Int. Cl. H01t ; B64d 45/02

U.S. Cl. 317-2 E

30 Claims



1. A method for manufacturing a static discharge means comprising the steps of:
impregnating a matrix material with a plurality of whisker-like conductive particles wherein said whisker-like conductive particles are oriented in a manner such that they extend substantially radially from said matrix material thereby forming a composite material;
removing a portion of said composite material whereby said composite material is conformed to a preselected shape whereby said whisker-like conductive particles extend substantially radially; and
exposing a plurality of ends of said whisker-like particles by removing a portion of said matrix material thereby forming said static discharge means.

3,898,527

MOTOR PROTECTION APPARATUS AND METHOD

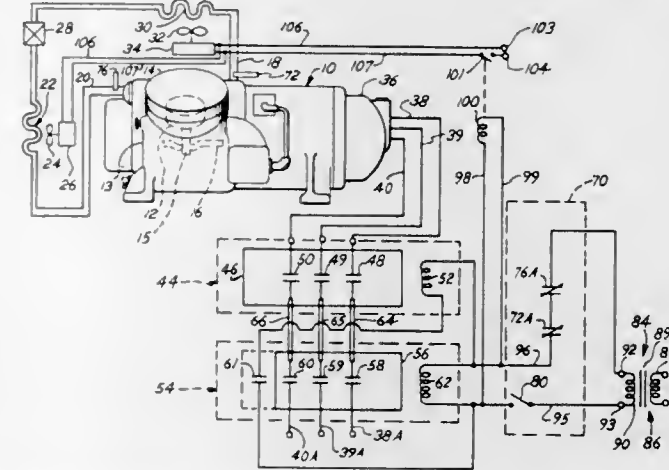
Richard E. Cawley, Hurst, Tex., assignor to Lennox Industries, Inc., Marshalltown, Iowa

Filed June 26, 1974, Ser. No. 483,293

Int. Cl. H02h 7/08

U.S. Cl. 317-13 R

15 Claims



1. In a refrigerant compressor of the type having a compression mechanism for receiving a refrigerant gas from a suction line, compressing the refrigerant gas and discharging the compressed refrigerant gas, a motor for operating the compression mechanism and conductor means for applying electrical power to the motor, improved apparatus for protecting the compressor motor comprising in combination:

first switch means connected in series with the conductor means, said first switch means being normally in an open position and being movable to a closed position;
second switch means connected in series with the first switch means, said second switch means being normally in an open position and being movable to a closed position;

first operating means for moving the first switch means to the closed position in response to a pilot signal and for opening the first switch means in the absence of the pilot signal;

generating means for generating the pilot signal;
third switch means operable in a first state for operatively connecting the generating means to the first operating means and operable in a second state for operatively disconnecting the generating means from the first operating means;
second operating means for urging the second switch means toward the closed position and urging the third switch means into the first state in response to the pilot signal and for urging the second switch means toward the open position and urging the third switch means into the second state in the absence of the pilot signal; and
third operating means for transmitting the pilot signal to the first and second operating means in response to a demand for operation of the compressor so that the first and second switch means are moved to their closed positions to apply electrical power to the compressor motor, and for preventing the pilot signal from being transmitted to the first and second operating means in the absence of a demand for operation of the compressor so that the first and second switch means are normally both moved to the open position to stop the compressor motor or the first switch means is moved to the open position alone to stop the compressor motor in case the second switch means fails in the closed position.

3,898,528

ELECTRICAL CONNECTION AND PROTECTION DEVICE

Erhard Runtsch, Hemsbach, and Volker Schmitt, Bammental, both of Germany, assignors to Brown, Boveri & Cie Aktiengesellschaft, Mannheim, Germany

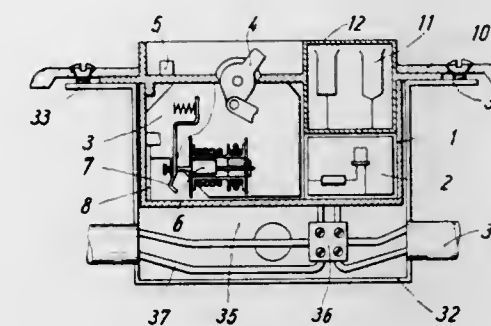
Filed Sept. 21, 1973, Ser. No. 399,415

Claims priority, application Germany, Sept. 23, 1972, 2246845

Int. Cl. H02h 1/02

U.S. Cl. 317-18 D

9 Claims



1. An electrical connection and protection device for use with an electrical socket, comprising a housing box, a switching mechanism in the housing box for disconnecting power to the housing box, said switching mechanism having a control element and testing means; said housing box enclosing a double contact point for making and breaking connections, a disconnect magnet coupled to the double contact point and having a fixed core and a moving armature, electronic circuit means responsive to external currents and coupled to said windings for energizing at least one of the windings in response to the currents; a socket having a connector jack, a cover for holding said connector jack and covering the housing.

3,898,529

GROUND FAULT INTERRUPTER CIRCUIT WITH GROUNDED NEUTRAL CONDUCTOR PROTECTION

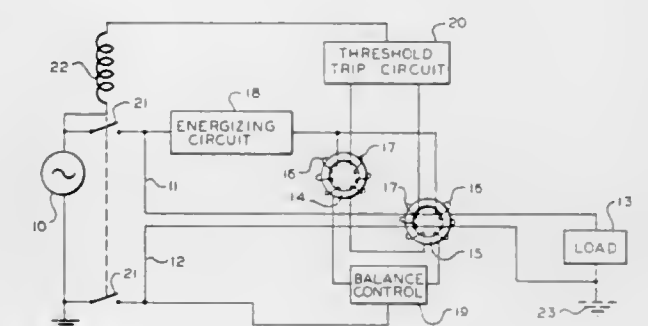
Arthur L. Reenstra, Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 6, 1973, Ser. No. 422,228

Int. Cl. H02h 3/28

U.S. Cl. 317-18 D

4 Claims



1. A ground fault interrupter circuit for detecting the presence of an electrical fault resulting in the leakage of electrical current from a load circuit to ground, comprising:

line and neutral electrical conductors for coupling a power supply to the load circuit, said neutral electrical conductor being coupled to ground to define a path for leakage current from said load circuit to ground;
first and second selectively energizable saturable core magnetic means electrically coupled to the power supply, one of said magnetic means being inductively coupled to adjacent sections of said electrical conductors intermediate said load circuit and the power supply;
means, coupled to said magnetic means, for energizing said saturable core magnetic means to establish magnetic fields, the magnetic field established by the magnetic means inductively coupled to said electrical conductors being affected by unequal current flow therethrough caused by the occurrence of a grounded neutral conductor fault condition, the magnetic field established by the other of said magnetic means being unaffected by such current flow;
means, coupled to said magnetic means, for sensing an effect on the magnetic field established by said magnetic means inductively coupled to said electrical conductors caused by said unequal current flow, and generating an electrical output signal in response thereto as an indication of current leakage to ground from said load circuit.

3,898,530

PROTECTIVE DEVICES FOR ELECTRIC POWER TRANSMISSION SYSTEMS

Leonardo Perez-Cavero, Stafford, England, assignor to The General Electric Company Limited, London, England

Filed Nov. 27, 1973, Ser. No. 419,289

Claims priority, application United Kingdom, Nov. 28, 1972, 54834/72

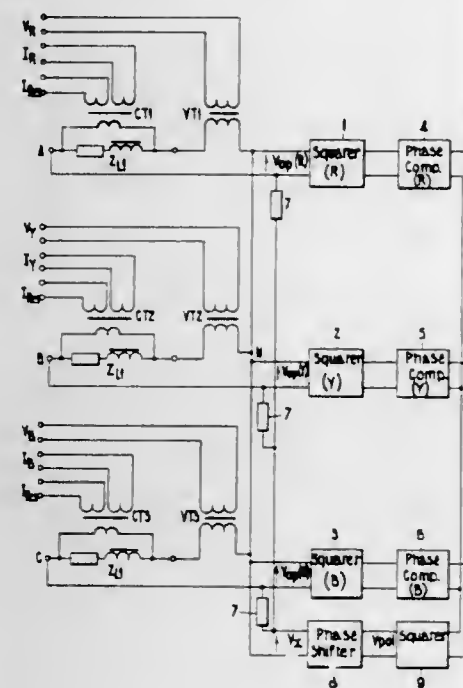
Int. Cl. H02h 3/26

U.S. Cl. 317-27 R

6 Claims

1. A device for use in detecting earth faults within a predetermined distance of the device along a polyphase electric power transmission system comprising: means for generating a polarising voltage which has a predetermined relation with a voltage which, for a fault to earth at a point at a distance not greater than said predetermined distance along the line from said device, has a value equal to the zero-sequence voltage at that point; means for generating a plurality of further voltages, one for each phase of the system, each of which further volt-

ages has a predetermined relation with the polarising voltage when an earth fault occurs; and monitoring means for detect-



3,898,531

SEGREGATED PHASE COMPARISON RELAYING APPARATUS

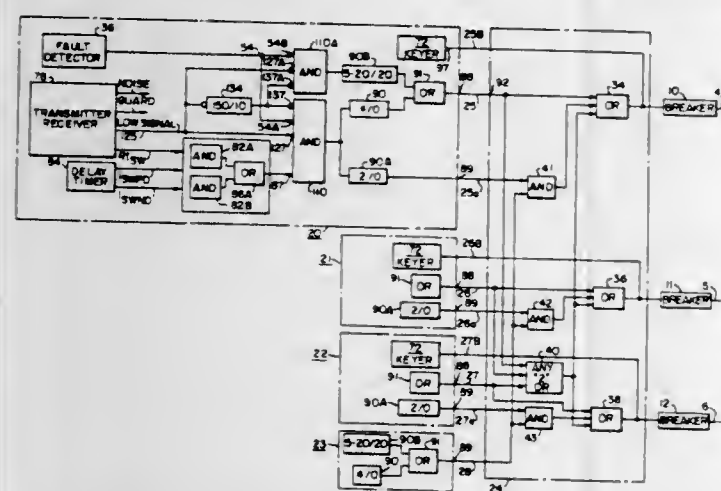
Walter L. Hinman, Jr., New Providence, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 25, 1974, Ser. No. 436,758

Int. Cl. H02h 3/38, 7/26

U.S. Cl. 317-27 R

13 Claims



1. A breaker tripping system for a polyphase power transmission having an n number of phase conductors and an n number of breakers controlling the energization of said phase conductors, said systems comprising an n number of phase conductor fault determining networks individually associated with said n phase conductors, each of said fault determining networks having an output terminal energized with a logical fault signal in response to the occurrence of a fault on the said phase conductor with which it is associated, a residual fault determining network associated with said line, said residual fault determining network having an output terminal energized with a logical fault signal in response to the occurrence of a residual fault on the said line, n number of AND networks, each said AND network having a plural number of inputs and an output, first circuit means individually connecting a first of said inputs of said n AND networks to said output terminal of said n phase conductor fault determining networks, second circuit means connecting a second of said inputs of said n AND networks to said output terminal of said residual fault determining network, and third circuit means

individually connecting said output of said n AND networks to said n breakers, each said AND network being operable in response to the existence of a logical fault signal at both of its said inputs to provide a tripping signal at its said output terminal for its associated said breaker.

3,898,532

PROTECTION CIRCUIT FOR TRANSISTORIZED AUDIO POWER AMPLIFIER

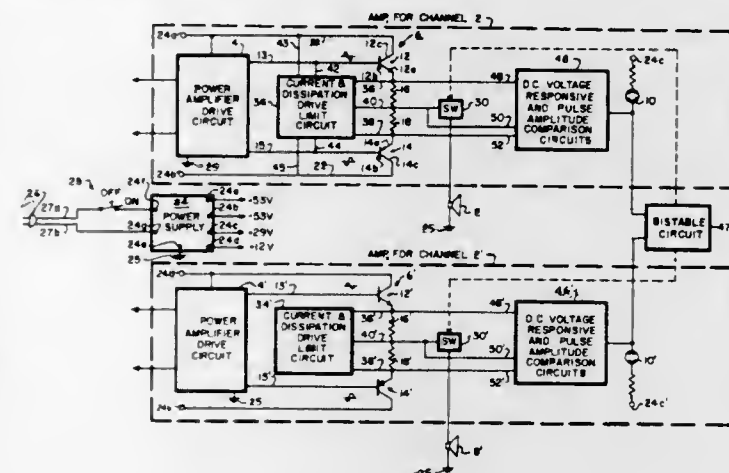
Howard L. Frank, Skokie, Ill., assignor to Sherwood Electronics Laboratories, Inc., Chicago, Ill.

Filed Jan. 28, 1974, Ser. No. 437,392

Int. Cl. H02h 7/20

U.S. Cl. 317-31

14 Claims



1. A power amplifier which is to amplify an input AC signal with a varying amplitude and waveshape with minimum signal distortion, said power amplifier comprising: transistor or transistor-like current amplifying means with load terminal means connected through load circuit means to the terminals of a source of direct current voltage and control terminal means connected to signal drive means which varies the magnitude of drive current fed through the load terminal means, and a protection circuit including means responsive both to various combinations of progressively lower than normal impedances in the load circuit means and progressively increasing degrees of control drive current applied to said transistor or transistor-like current amplifying means for producing a given control signal when such combined conditions approach transistor damaging conditions of operation, and load current termination means responsive to said given control signal by resettablely terminating current flow in said transistor or transistor-like current amplifying means for at least a considerable period following the disappearance of said control signal.

3,898,533

FAIL-SAFE SURGE PROTECTIVE DEVICE

Frank George Scudner, Jr., Bethlehem, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 11, 1974, Ser. No. 449,969

Int. Cl. H02H 1/04, 3/22

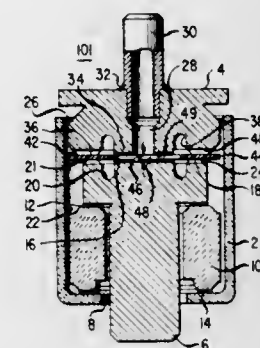
U.S. Cl. 317-61

4 Claims

1. A surge protective device comprising a housing having first and second ends and a bore extending therethrough, a first electrode disposed in said first end of said housing and extending into said bore, and a second electrode disposed in said second end and extending into said bore in opposing spaced relation to said first electrode, CHARACTERIZED IN THAT:

each said first and second electrode includes a discharge portion and a control portion in opposed relation to said discharge portion and said control portion, respectively, of the other of said electrodes to form a gap between said discharge portions, said discharge portion and said control portion are coplanar, and at least one of said electrodes has a depression therein separating said discharge portion and said control portion thereof; and

a spacer of insulative material is disposed between said control portions for controlling said gap, said spacer extends over said depression for increasing the distance between said control portions around said spacer to a



magnitude substantially greater than the magnitude of said gap whereby discharges between said electrodes are confined to said discharge portions away from said control portions and said spacer.

3,898,534

PIEZOELECTRIC LIGHTER WITH IMPACT MECHANISM

Walter Mohr, Frankfurt am Main, Germany, assignor to Braun Aktiengesellschaft, Frankfurt am Main, Germany

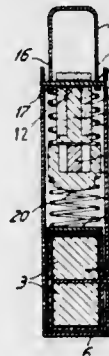
Filed Aug. 10, 1973, Ser. No. 387,380

Claims priority, application Germany, Sept. 6, 1972, 2243727; Jan. 19, 1973, 2302638

Int. Cl. F23q 3/00

U.S. Cl. 317-81

5 Claims



1. A piezoelectric igniter of the type normally used in a lighter comprising

a magnetically non-conductive housing;
a piezoelectric transducer and an impact mechanism disposed in said housing and including a hammer movable between a normal rest position and an impact position away from said rest position and whereat said hammer has an impact with said transducer;
an electric circuit including electrical leads and electrodes connected to the piezoelectric transducer for ignition purposes;
spring means being operable to exert a force against said hammer in a direction toward said transducer when the potential energy of the spring means is increased;
resilient retraction means for said hammer of smaller force than said spring;
an actuating member operable to increase the potential energy of said spring means; and
a magnetic circuit comprising a fixed part, a movable part, one of said parts including a magnet having pole faces and both said parts being magnetically conductive, said parts being sufficiently closely adjacent each other in the rest position of the hammer for closing the magnetic circuit substantially free from any air gap, said movable part being connected to the hammer and being movable there-

with and being operable due to the magnetic force exerted between said parts to hold said hammer in said rest position against the force of said spring means throughout that portion of the increase in potential energy of said spring means which is at least inferior to said magnetic force;

said hammer including a pot-shaped magnetically conductive member disposed in said hammer and having an open side, said movable part being a magnet disposed in said member, said fixed part comprising a magnetically-conductive yoke, the open side of said magnetically-conductive member being disposed next to said yoke in the rest position of said hammer.

3,898,535

MOUNTING FRAME FOR ELECTRONIC COMPONENTS

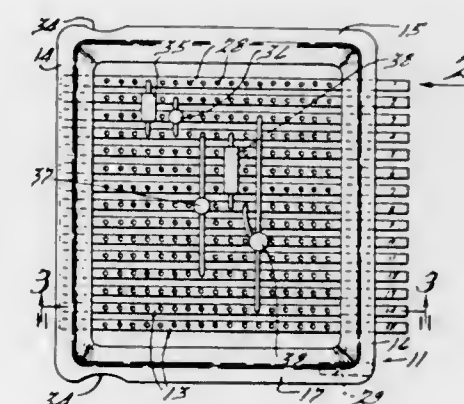
Robert J. Ebbert, Rochester, Mich., assignor to Design Products Corporation, Troy, Mich.

Filed Sept. 12, 1963, Ser. No. 308,411

Int. Cl. H05K 7/20, 7/18

U.S. Cl. 317-100

13 Claims



1. In a mounting frame for electronic components, an open rectangular frame of rigid electrically insulative material, and a plurality of pins of electrically conductive material extending through one leg of said open frame in spaced parallel relation, said pins having terminal portions outwardly of said open frame and main portions inwardly of said open frame, the legs of said open frame having substantial thickness in the direction of the axis of the opening formed by the open frame, said main pin portions being in a common plane parallel to and spaced from a plane passing through the central portion of said open frame, the ends of said main pin portions remote from said terminal portions extending through apertured portions of the leg of said open frame opposite said first-mentioned leg, the ends of said pins passing through said last-mentioned apertured portions being accessible to an electrical probe from the outside of said last-mentioned frame leg.

3,898,536

MODULAR APPARATUS FOR PRINTED CIRCUIT BOARD RACK

Fred M. Wyshak, Marlboro, and Harry L. Barrett, Jr., Wayland, both of Mass., assignors to Atlee Corporation, Woburn, Mass.

Filed Jan. 7, 1974, Ser. No. 431,078

Int. Cl. H02b 1/02

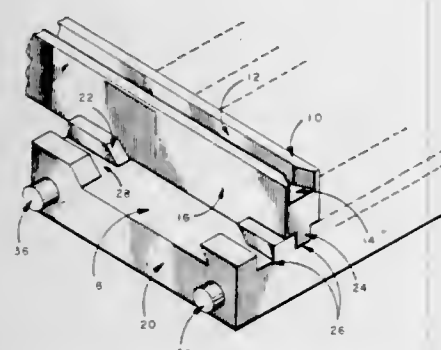
U.S. Cl. 317-101 DH

5 Claims

1. A modular component apparatus for constructing a printed circuit board guide and support rack comprising in combination:

a longitudinal guide rail having a circuit board edge receiving groove longitudinally disposed in one face thereof;
said guide rail having at least one parallelogram shaped protrusion longitudinally positioned at each end of said guide rail on the face opposite said groove, the lower surface of each of said protrusions skewed toward its associated guide rail ends;

a mounting bar positioned at each end of said guide rail perpendicular to the longitudinal axis of said guide rail, said bars having a guide rail protrusion receiving recess longitudinally disposed in at least one face thereof; and



frame means for joining said mounting bars in rack configuration.

3,898,537

MODULAR HIGH VOLTAGE DC POWER SUPPLY WITH A REMOVABLE COMPONENT RACK

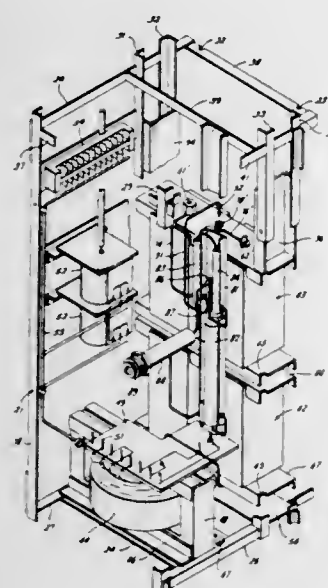
Weldon D. Mayse, and Joseph D. Winslow, Jr., both of Houston, Tex., assignors to Petrolite Corporation, St. Louis, Mo.

Filed June 7, 1974, Ser. No. 477,402

Int. Cl. H02m 7/00; H05k 5/00

U.S. Cl. 317-103

6 Claims



1. A high-voltage DC power supply for an electrical field treater comprising:

- a. an open-top metal case adapted to be filled with transformer oil and carrying a removable waterproof cover secured thereto;
- b. a rack removably mounted within said metal case, said rack having a base and a plurality of upright supports forming a vertical guideway receiving at least one voltage multiplier module, said vertical guideway carrying keying means whereby each said voltage multiplier module is installed in said vertical guideway in only one orientation;
- c. a transformer mounted upon said base within said rack and having a primary winding connectable to a source of power and a secondary winding connected to terminal connectors carried upon an insulated base member mounted on said rack, said terminals forming the AC and DC inputs to each said voltage multiplier module;
- d. said at least one voltage multiplier module received within said vertical guideway and carrying superimposed and subtended complementary terminal connectors received on said terminal connectors on said insulated base member, said superimposed and subtended complemen-

tary terminal connectors being oriented in pairs whereby a plurality of voltage multiplier modules can be mounted in a superimposed relationship with electrical interconnection being effected by said complementary terminal connectors;

- e. each voltage multiplier module having top and bottom insulator members enclosing capacitors and rectifiers with integral wiring therein forming a voltage multiplier stage, one pair of superimposed and subtended complementary terminals forming electrical interconnection to AC input and output terminals from said secondary winding of said transformer and another of said pairs of superimposed and subtended complementary terminals forming electrical interconnection to DC input and output terminals and said secondary winding of said transformer, a flexible conductor having a mating connector at one end and connected to a resistor network at the other end forming the DC output of the power supply, each voltage multiplier module carrying a superimposed connector receiving the mating connector on said flexible conductor, said mating connector connected to the DC output of said voltage multiplier module and received in the superimposed connector on the topmost voltage multiplier module in said vertical guideway;
- f. an upright insulating member carrying said flexible conductor and said resistor network; and
- g. a high voltage output bushing mounted in a wall of said case for conducting high-voltage current to an external electrical field treater, and the interior terminal of said bushing connected to said resistor network.

3,898,538

ANTI-STATIC FOOTWEAR

John Arthur Dalton, Armadale, Australia, assignor to Stat-E-Con Pty. Limited, Melbourne, Australia

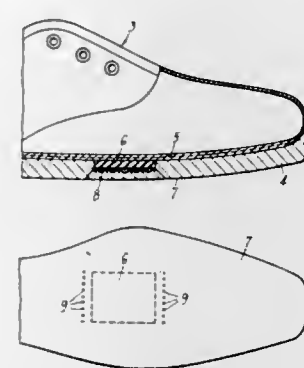
Filed Dec. 12, 1973, Ser. No. 423,991

Claims priority, application New Zealand, Dec. 12, 1972, 169,311

Int. Cl. A61n 1/14

U.S. Cl. 317-2 B

5 Claims



1. Anti-static footwear having an electrically insulating outer sole and an insole the resistance of which is liable to drop substantially upon absorption of moisture from the wearer's foot, comprising a member of substantially constant resistance which conductively connects the lower surface of said insole with an exposed face of said outer sole such that when a wearer of said anti-static footwear stands upon the ground, the resistance of the total electrical path, between his foot within said footwear and said ground contacted by said exposed face of said outer sole, remains substantially between a required upper limit and a required lower limit, even if said insole should in use become a perfect conductor, said member comprising:

- A. a panel which contacts said lower surface of said insole and is thinner than said outer sole so that no part of said panel extends to or beyond said exposed face of said outer sole, and
- B. a conductive means which electrically connects said panel with said exposed face of said outer sole.

3,898,539

THIN-FILM SOLID ELECTROLYTIC CAPACITOR AND A METHOD OF MAKING THE SAME

Susumu Yoshimura; Yoshimasa Ito, and Mutsuaki Murakami, all of Kawasaki, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kawasaki, Japan

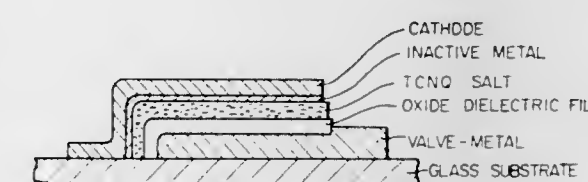
Filed Mar. 16, 1973, Ser. No. 341,897

Claims priority, application Japan, Mar. 17, 1972, 47-27767

Int. Cl. H01g 9/05

U.S. Cl. 317-230

6 Claims



1. A thin-film solid electrolytic capacitor comprising, a valve metal, an oxide dielectric film formed thereon, a vapor deposited film of a TCNQ salt formed on said dielectric film and a cathode, said TCNQ salt film having a thickness of at most about 10 μ .

3,898,540

CERAMIC DISK TRIMMER CAPACITOR

Manfred Bremstahler, Ruckersdorf, Germany, assignor to Firma Stettner & Co., Lauf, Pegnitz, Germany

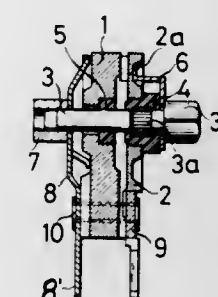
Filed Oct. 24, 1974, Ser. No. 517,410

Claims priority, application Germany, Nov. 9, 1973, 2355977

Int. Cl. H01G 5/06

U.S. Cl. 317-249 D

12 Claims



1. Ceramic trimmer capacitor having a stator disk (1) which is partly metallized and formed with an opening therein; a rotor disk (2) which is at least partly metallized; a metallic shaft (3) connected to the rotor (2) and passing through the opening in the stator; and means (7, 8) securing the shaft in position in the opening and thus maintaining the rotor against the stator, characterized in that the rotor is formed with a central opening, the shaft (3) being retained in said opening; one side of the stator is formed with an unmetallized central zone (1a) recessed from the outer circumferential zone of the stator to form a central depression; a bushing means (4, 5) of low dielectric, non-metallic material filled into at least one of said openings and surrounding said shaft (3), to increase the spacing between the metal of the rotor shaft (3) and the metallized portions of the stator forming the stator electrode (1c) while positively journaling the shaft (3).

3,898,541

CAPACITORS AND METHOD OF ADJUSTMENT

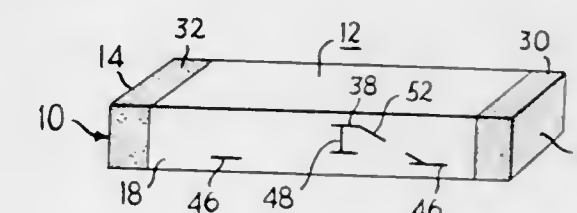
Barton L. Weller, Easton, Conn., assignor to Vitramon, Inc., Bridgeport, Conn.

Filed Dec. 17, 1973, Ser. No. 425,224

Int. Cl. H01G 1/147, 4/06

U.S. Cl. 317-261

13 Claims



1. A multilayer monolithic ceramic capacitor comprising a dielectric material body, a first group of electrode layers embedded within the dielectric material body of the capacitor, each of said electrode layers having a margin portion and an electric field region, said first group of electrodes being divided into two sets with the margin portions of the electrodes of one set extending to and coextensive with one terminal end of the capacitor and the margin portions of the electrodes of the other set extending to and coextensive with the other terminal end of the capacitor; a conductive coating on each terminal end of the capacitor, said conductive coating electrically connecting together each of the electrodes having a margin portion extending to and coextensive with said terminal end; at least one connecting electrode each of said connecting electrodes having at least one tab extending to and coextensive with a side surface of the capacitor and a first terminal portion extending to and coextensive with one of the terminal ends of the capacitor, the connecting electrode being electrically connected through the first terminal portion and the conductive coating on said terminal end to each of the electrodes having a margin portion extending to and coextensive with that terminal end; and, at least one adjusting electrode embedded within the dielectric material body of the capacitor, each of said adjusting electrodes having at least one tab which extends to and is coextensive with a side surface of the capacitor.

3,898,542

SEWING MACHINE MOTOR SPEED CONTROLLER ASSEMBLY

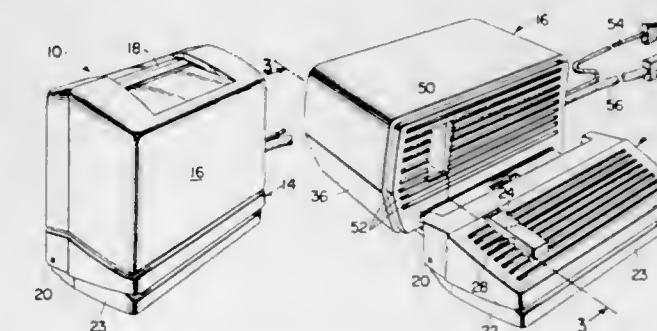
Wayne A. Current, Cranford, N.J., assignor to The Singer Company, New York, N.Y.

Filed Apr. 1, 1974, Ser. No. 457,157

Int. Cl. H01C 10/10

U.S. Cl. 317-262 R

3 Claims



1. A sewing machine motor speed controller assembly comprising a housing having selected electrical circuit components mounted therein for operable connection with a sewing machine, said housing including means for readily detachably and operably connecting said housing to a sewing machine, a foot controller having motor regulating components mounted therein, said foot controller being connected with said housing for positioning said foot controller in a first operative position with said foot controller being disposed on a supporting surface, and for positioning said foot controller in a second inop-

erative position wherein said foot controller is nested against said housing to form a substantially integral and portable speed controller unit.

3,898,543

ELECTRIC MOTORS

Alexander Richard William Broadway; William Fong, and Gordon Hindle Rawcliffe, all of Bristol, England, assignors to National Research Development Corporation, London, England

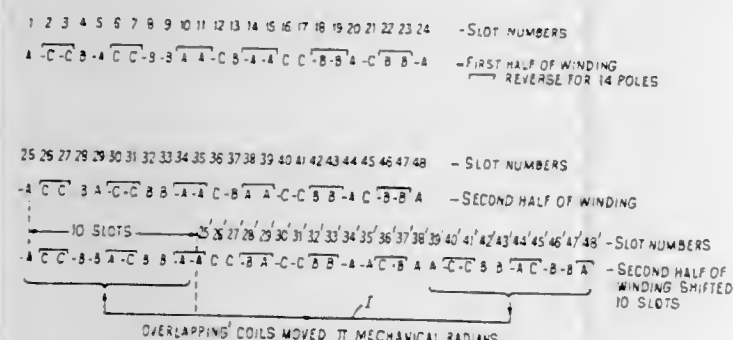
Filed Jan. 31, 1974, Ser. No. 438,270

Claims priority, application United Kingdom, Apr. 13, 1973, 17942/73

Int. Cl. H02p 7/42

U.S. Cl. 318—224 R

5 Claims



1. A three-phase, alternating-current, speedchanging electric machine, comprising a motor or generator, in which pole-changing is effected by the method of pole-amplitude modulation, having a composite three-phase stator winding comprising two component windings, said two component windings having their corresponding phase-windings arranged both in the same phase of the resultant said composite winding, each said component winding comprising two identical halves of a pole-amplitude modulation winding providing the operating pole-numbers required for the said speed-changing machine by even-cycle pole-amplitude modulation, the two said half-windings being spaced apart from each other around the composite stator winding periphery by a spacing other than a single-slot spacing and being connected together for one said pole-number to provide equal parallel circuits, in which pole-changing is effected by alternate series/parallel connection of phase-winding parts of the said composite winding by six-terminal, terminal means.

3,898,544

DC BRUSHLESS MOTOR

Kinzi Tanikoshi, Tokyo, Japan, assignor to Canon Kabushiki Kaisha and Canon Seiki Kabushiki Kaisha, both of Tokyo, Japan

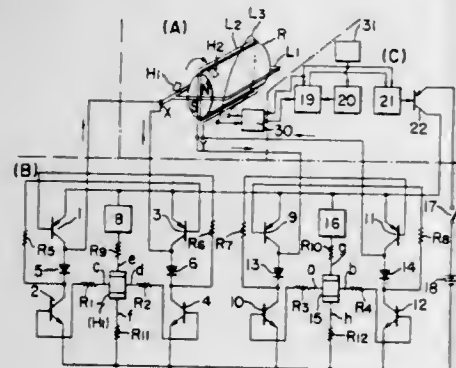
Filed Feb. 5, 1973, Ser. No. 329,844

Claims priority, application Japan, Feb. 3, 1972, 47-12408

Int. Cl. H02k 29/00

U.S. Cl. 318—254

7 Claims



1. A DC brushless motor comprising:

a rotor having magnetic poles of opposite polarities thereof; a stator member having one pair of flux-producing windings positioned in torque-producing relation with said rotor, each of said windings having a conductor extended in parallel with a direction of the rotation axis of said rotor, and respective windings being arranged in a spaced relation to one another by substantially 90°; a pair of magnetic conversion means positioned in flux-sensing relationship to said magnetic poles; and driving control means having a single pair of driving circuits for applying a flux-producing current to respective ones of said windings, each of said driving circuits including two symmetrically disposed transistor circuits, each comprising a first transistor having its input terminal coupled to a different one of the output terminals of one of said magnetic conversion means and a second transistor having its output terminal coupled to a terminal of one of said windings, and means for interconnecting an output terminal of said first transistor in one of said transistor circuits with an input terminal of said second transistor in the other one of said transistor circuits, so that said flux-producing current selectively flows through one of the two windings every 90° as said rotor rotates and the direction of said current is reversed every 180° as said rotor rotates, thereby torque is produced to continuously rotate said rotor unidirectionally.

3,898,545

MOTOR CONTROL CIRCUIT

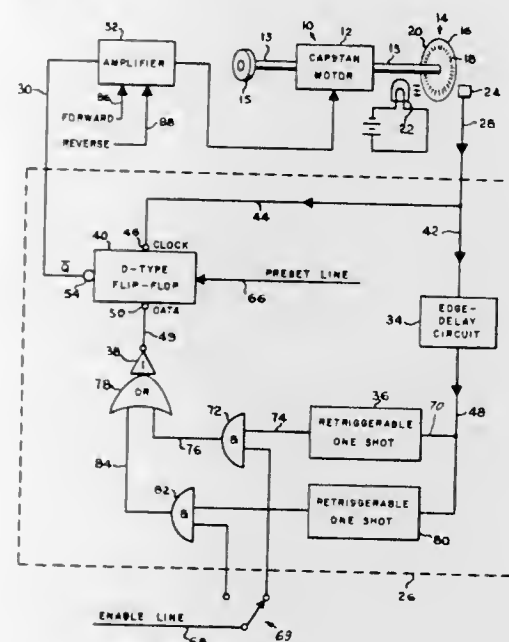
Paul L. Coppa, Norristown, and Louis G. Orsatti, Philadelphia, both of Pa., assignors to Mohawk Data Sciences Corporation, Utica, N.Y.

Filed May 25, 1973, Ser. No. 363,908

Int. Cl. H02p 5/06

U.S. Cl. 318—313

6 Claims



1. A motor control circuit for maintaining an armature of a d-c electric motor at constant speed, comprising: speed sensing means responsive to the armature rotation for producing a motor signal, the period of which is inversely proportional to the armature speed; a time delay circuit which delays the leading edge of the motor signal in each motor signal period; a retriggerable one-shot circuit responsive to the delayed leading edges of the motor signal to produce a pulse of a fixed reference width only during those motor signal periods which are greater than the reference width; and a bistable circuit having input connections to receive said motor signal and said reference pulses and being set to a first state for applying a continuous drive signal to said motor so long as said one-shot circuit produces reference

pulses and to be set to its other state during motor signal periods which are shorter than the reference width.

3,898,546

SOLID STATE SYNCHRONIZER SYSTEM WHICH USES THE ZERO CROSSING POINT OF A SYNCRO OUTPUT AS A REFERENCE

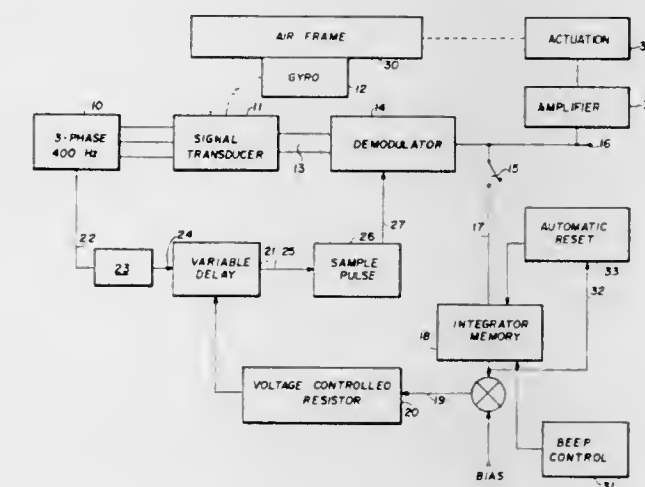
Delbert E. Haskins, Irving, Tex., assignor to Textron Inc., Providence, R.I.

Filed May 10, 1974, Ser. No. 468,896

Int. Cl. B64c 17/06; G05b 7/00; H03b 3/06; H03d 13/00

U.S. Cl. 318—591

15 Claims



1. A synchronizer system comprising:
a. a synchro transmitter having a gyro controlled rotor and excited from an a.c. source,
b. a demodulator adapted momentarily to sample the output of said transmitter once every n cycles of the voltage from said a.c. source where n is greater than 1,
c. an integrator responsive to the pulsed output of said demodulator, and
d. a feedback network responsive to said integrator for controlling the instant of sampling said output to null said output voltage.

3,898,547

ELECTRIC VEHICLE CHARGER SHUT-OFF INTERLOCK SYSTEM

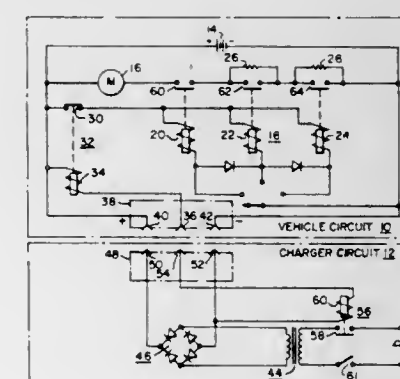
Charles W. Poole, Redlands, Calif., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 11, 1974, Ser. No. 460,251

Int. Cl. H01M 10/46; H02J 7/02; H02H 11/00

U.S. Cl. 320—2

7 Claims



1. Means for charging the batteries of an electric vehicle driven by a direct current drive motor comprising:
a battery charger having an alternating current input and a direct current output;
first relay means disposed on the electric vehicle for preventing current flow to the direct current drive motor when activated;

second relay means disposed in said battery charger for preventing charging current from flowing when not activated and for allowing charging current flow when activated;
connecting means for connecting the output connections of said battery charger to the batteries of the electric vehicle; and,
said connecting means comprises three electrical contacts, a first connection to the positive terminals of the battery, a second connection to the negative terminals of the battery and a third connection completing an electric circuit activating said first relay means and said second relay means.

3,898,548

ELECTRICITY METER FOR ACCUMULATOR BATTERIES

Michel Perelle, Versailles, and Paul Schott, Chaville, both of France, assignors to Les Redresseurs Statiques Industriels P. Benit & cie, Chaville, Hauts de Seine, France

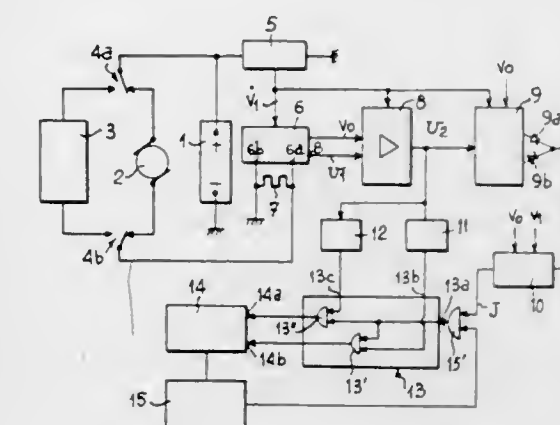
Filed Dec. 5, 1973, Ser. No. 421,754

Claims priority, application France, Dec. 6, 1972, 72.43392

Int. Cl. H01m 45/06

U.S. Cl. 320—48

3 Claims



1. An electricity meter for an accumulator battery having an adding direction of operation corresponding to charging current flowing into the battery and a deducting direction of operation corresponding to discharging current flowing out of the battery comprising: a shunt, an amplification circuit connected to said shunt, an impulse generator connected to said amplification circuit for generating impulses having a frequency proportional to the current intensity on discharge or charge passing through said shunt, a device for counting and indicating the counted number of impulses, and threshold means and logic means coacting together for enabling the counting of said impulses in the adding direction only when the discharge current has an absolute value greater than a first pre-determined threshold value and enabling the counting of said impulses in the deducting direction only when the charging current has an absolute value greater than a second pre-determined threshold value, a rectifier circuit connected between said impulse generator and amplification circuit and supplying at its output a voltage having the same polarity irrespective of the direction of the current in said shunt, an input circuit connected to the input of said amplification circuit and comprising two voltage dividers supplied with a stabilized voltage derived from said accumulator battery, a tapping on one of said voltage dividers being connected to an amplifier for producing a reference voltage under practically zero impedance, and the other of said voltage dividers having two arms in the lower arm of which is inserted said shunt.

3,898,549

VARIABLE DUTY CYCLE BALANCED DC/DC POWER CONVERTER

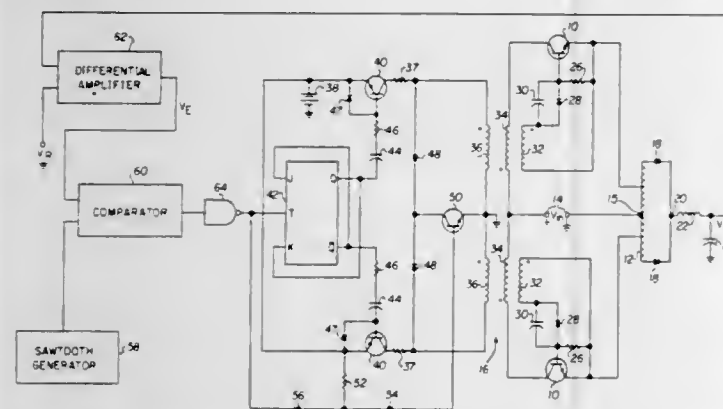
Daniel M. Mitchell, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Apr. 22, 1974, Ser. No. 462,695

Int. Cl.² H02M 3/335

U.S. Cl. 321-2

14 Claims



1. A variable duty cycle balanced DC/DC power converter comprising:

transformer means having an input winding with a center tap for connection to one terminal of a DC power supply; a pair of switching circuit means, each being connected between a different end of the input winding of said transformer means and the other power supply terminal for passing current therethrough when enabled; and control circuit means for alternately enabling said switching circuit means periodically to pass DC pulses therethrough wherein the period of enablement which determines the pulse duty cycle is initiated by one control signal, maintained thereafter by a second control signal derived from the current flow through the enabled switching circuit means, and terminated by a third control signal.

3,898,550

POWER CONTROL CIRCUIT

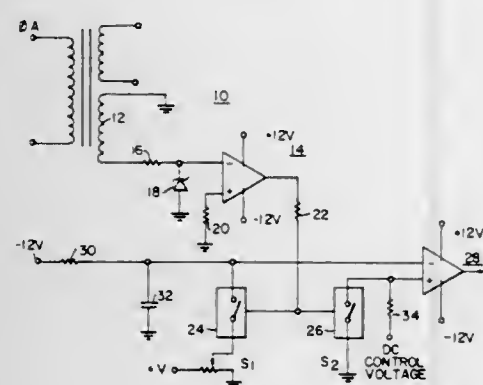
Dirk J. Boomgaard, Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 12, 1974, Ser. No. 487,942

Int. Cl. H02P 13/24

U.S. Cl. 321-16

8 Claims



1. A power control circuit for supplying an output pulse train for controlling the firing of a thyristor power modulator, one circuit and one modulator being interconnected in each phase of a polyphase electrical machine or transformer, comprising:

- a first comparator means having an output and dual inputs: inverting and non-inverting;
- first and second switching means having open and closed positions;
- a resistor-capacitor circuit, connected to a d.c. source through said first switching means the magnitude of said source being a function of the desired angle of conduction for the thyristors in said power modulator, said capacitor being in parallel with said first switching means and with said inverting input;

d. a variable d.c. control voltage source connected to said non-inverting input through said second switching means, the selected d.c. control voltage magnitude being a function of the desired angle of conduction for the thyristors in said power modulator;

e. means for disciplinal operation of the opening and closing of said switching means, in unison and in timed sequence, whereby said first comparator delivers on its output a pulse train which is a function of said desired angle of conduction.

3,898,551

AVERAGE VOLTAGE DETECTOR FOR NONLINEAR WAVEFORMS

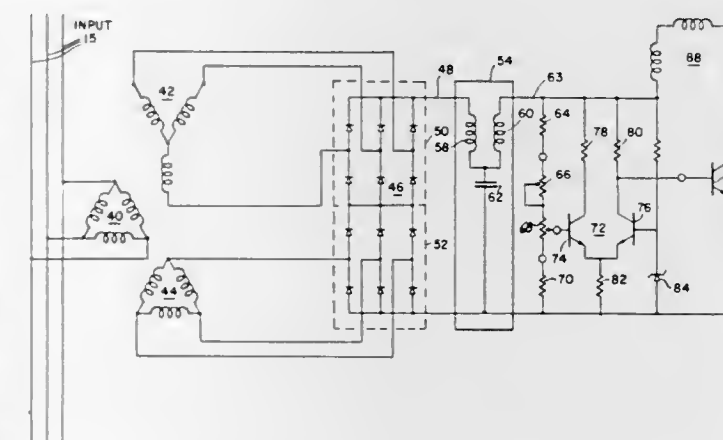
Robert B. Webb, Turnersville, N.J., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 2, 1974, Ser. No. 466,365

Int. Cl.² H02P 9/30

U.S. Cl. 322-28

10 Claims



1. A voltage regulator system for a voltage generator providing a 3-phase output comprising:

- first means for converting said 3-phase output to a waveform of a higher phase;
- rectifier means coupled to receive and rectify said higher-phase waveform;
- filter means coupled to the output of said rectifier means with a high cutoff frequency for filtering out high frequencies and noise, said filter means having a minimal voltage discharge during its operation;
- comparing means coupled to said filter means for providing an error signal representative of the difference between the filtered signal and a reference voltage; and
- second means responsive to said error signal for controlling said voltage generator.

3,898,552

DC STATIC SWITCH CIRCUIT WITH IMPROVED TRANSISTOR SURGE CURRENT PASS CAPABILITY

Donal E. Baker, Elida, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 21, 1974, Ser. No. 444,588

Int. Cl.² G05F 1/58

U.S. Cl. 323-9

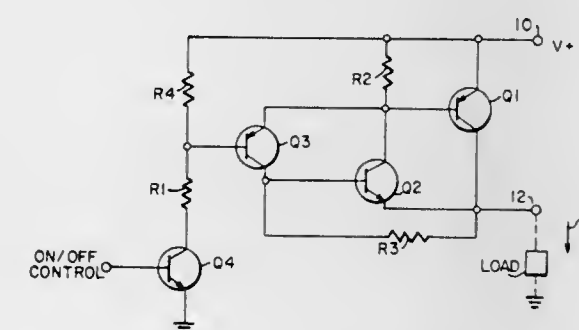
4 Claims

1. Static switch apparatus for controlling the application of DC power from a direct voltage source to a load and comprising:

- a first transistor of a first polarity having an emitter, a base, and a collector with a first terminal connected to said emitter for connection to the source of power and a second terminal connected to said collector for connection to the load;
- a second transistor of an opposite polarity to said first polarity having an emitter, a base, and a collector;
- said first transistor base and said second transistor collector being interconnected;

said second transistor emitter being directly connected with said second terminal; a third transistor of said first polarity having an emitter, a base, and a collector;

said second transistor collector and said third transistor emitter being interconnected;



said second transistor base and said third transistor collector being interconnected; and said third transistor base having means for applying input signals thereto.

3,898,553

CIRCUIT FOR SUPPLYING POWER TO A LOAD

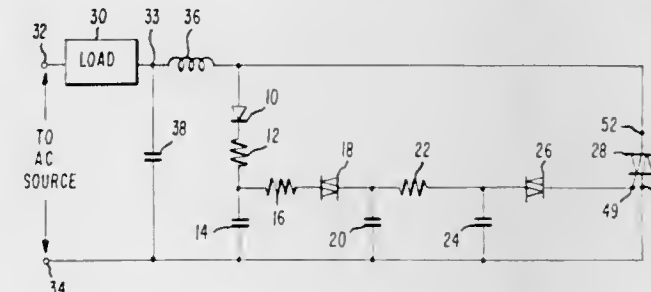
Urbain Marcel Van Boggett, Sleutelhoflaan, Belgium, assignor to RCA Corporation, New York, N.Y.

Filed Apr. 26, 1974, Ser. No. 464,508

Int. Cl.² G05F 3/04

U.S. Cl. 323-19

10 Claims



1. A circuit for intermittently applying alternating current power to a load, said circuit comprising, in combination:

- first and second terminals to which an a.c. operating voltage may be applied, said load being connected at one terminal to said first terminal;
- a first charging circuit comprising first charge storage means connected between the other terminal of said load and said second terminal;
- a second charging circuit comprising a first threshold element and an impedance essentially in series with a second charge storage means, said second charging circuit being connected across said first charge storage means, said second charge storage means for receiving a charge from said first charge storage means whenever the voltage across said first charge storage means exceeds the voltage across said second charge storage means by the value of the threshold voltage of said threshold element;
- a control current responsive switch having a control terminal for receiving a control current and having two switch terminals, one coupled to said second terminal and the other coupled to said other terminal of said load, said latter connection comprising a feedback path, whereby the application of charging voltage to said first charging circuit is controlled by the state of said switch, said switch closing causing charge to cease flowing into said first charging means and said switch opening permitting charge to flow into said first charging circuit; and
- means for closing said switch comprising an impedance, a third charge storage means and a second threshold element, said second element connected between said third charge storage means and said control terminal, said impedance and said third charge storage means connected across said second charge storage means, control

current being applied to said control terminal of said switch whenever voltage across said third charge storage means equals the threshold of said second threshold element.

3,898,554

MEASURED-VALUE TRANSDUCER WITH A COMPENSATING BRIDGE CIRCUIT

Ole Friis Knudsen, Sonderborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

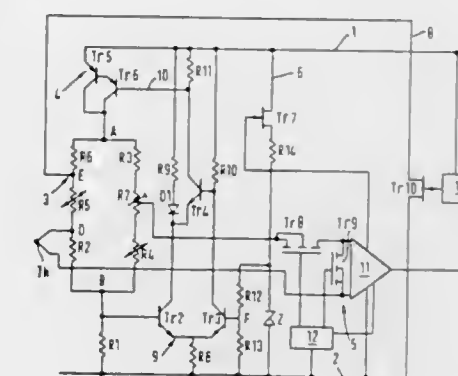
Filed Nov. 14, 1973, Ser. No. 415,569

Claims priority, application Germany, Nov. 16, 1972, 2256197

Int. Cl. G05f 1/58

U.S. Cl. 323-40

6 Claims



1. A measuring-transducer circuit arrangement suitable for a two-line telemetering system, the arrangement comprising: a bridge circuit having a compensating resistor and having two bridge diagonals; a current regulator; a resistor arrangement including at least one resistor; said current regulator and said resistor arrangement being connected in a series path with one of said bridge diagonals, said current regulator being directly connected on one side of said bridge circuit adjacent to said compensating resistor and said resistor arrangement being directly connected to the other side of said bridge circuit; a measuring amplifier connected to the other of said bridge diagonals and having an output; a circuit path connecting said output of said measuring amplifier to said compensating resistor and said measuring amplifier controlling a compensating current which in use flows in said compensating resistor; said current regulator being connected in a loop through which said compensating current flows; means to derive a control signal in dependence upon the voltage across said one resistor in said resistor arrangement and to supply said control signal to said current regulator to maintain said voltage substantially constant; and a direct voltage supply common to both said bridge circuit and said measuring amplifier.

3,898,555

LINEAR DISTANCE MEASURING DEVICE USING A MOVEABLE MAGNET INTERACTING WITH A SONIC WAVEGUIDE

Jacob Tellerman, Bayside, N.Y., assignor to Tempo Instrument Inc., Plainview, N.Y.

Filed Dec. 19, 1973, Ser. No. 426,075

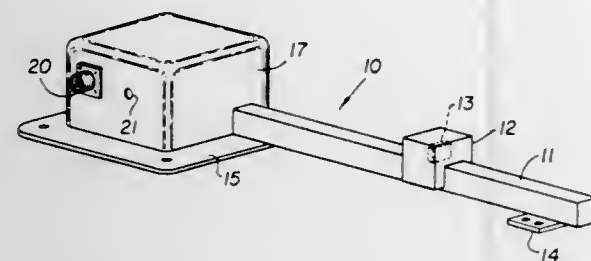
Int. Cl.² G01R 33/00

U.S. Cl. 324-34 D

11 Claims

1. A linear distance measuring device comprising, sonic waveguide means formed of a tubular member of magnetostrictive material, electrical conducting means located within said waveguide means, said conducting means having an outside diameter less than the inside diameter of said waveguide means and being in unattached relationship with said waveguide means, pulse generating means for applying electrical pulses to said electrical conducting means, magnet means movable along said waveguide means, mode converter means located in a fixed position along said waveguide means for generating an electrical signal in response to the reception of

a sonic torsion pulse launched by said magnet means when an electrical pulse is applied to said electrical conducting means, circuit responsive means for measuring the time interval between the application of an electrical pulse to said electrical



conducting means and the reception of a sonic pulse by said signal generating means, and means responsive to said circuit means for indicating the position of said movable magnet means relative to said electrical signal generating means.

3,898,556

MAGNETOGRAPHIC TEST HEAD WITH AN ENDLESS MAGNETIC STORAGE TAPE WITH MEANS TO TENSION THE TAPE ON BOTH SIDES OF THE PRESSURE ROLLER

Wolfgang Trautmann, Reutlingen-Detzingen, Germany, assignor to Institut Dr. Forster, Reutlingen, Germany

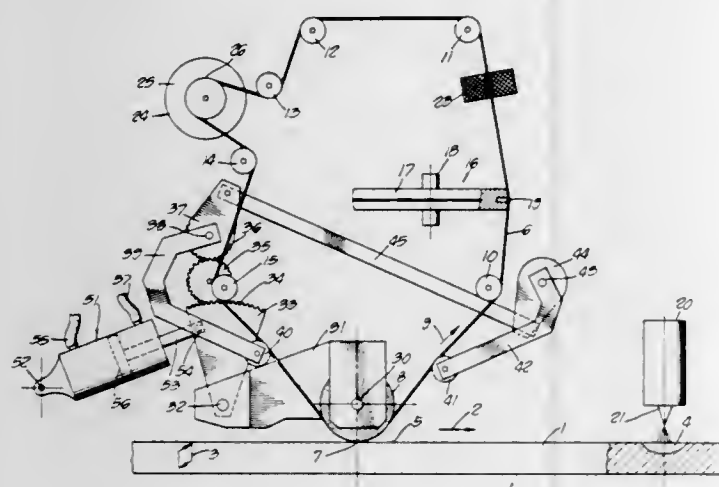
Filed Feb. 25, 1974, Ser. No. 445,596

Claims priority, application Germany, Feb. 28, 1973, 2309968

Int. Cl. G01r 33/12

U.S. Cl. 324-37

7 Claims



1. Magnetographic test head apparatus for recording the presence of a defect in a moving part in which the defects are identified by a magnetic field extending outwardly of the part at the defect location, comprising:
 - a continuous magnetic tape belt;
 - a pressure roller urging the tape belt into contact with the outer surface of the moving part, said roller being movable toward and away from said tape belt; and
 - first and second means interconnected with the pressure roller and responsive to movement of said roller toward said tape belt for applying tension to the tape on both sides of said roller, respectively.

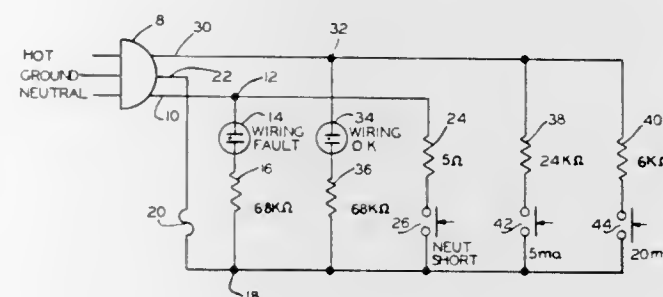
3,898,557 ELECTRICAL DEVICE FOR TESTING A GROUND FAULT CIRCUIT INTERRUPTER

Joseph P. Strock, Syracuse, N.Y., assignor to Daltec Systems, Inc., Syracuse, N.Y.

Continuation-in-part of Ser. No. 414,631, Nov. 12, 1973, abandoned. This application Apr. 15, 1974, Ser. No. 460,765
Int. Cl. G01r 31/02

U.S. Cl. 324-51

6 Claims



1. An electrical device for testing a ground fault interrupter comprising:

a plug with a plurality of prongs designated as ground, neutral and charged, said prongs being dimensioned to be received in correspondingly designated receptacles of a ground fault interrupter or a circuit protected by a ground fault interrupter;

circuit means in the device connected across each prong designated as charged and the ground prong to determine if the charged prong is received by a charged receptacle; circuit means connected across each charged prong and the ground prong to create a current differential between the prongs received by the charged and neutral receptacles, said current differential means including a switch connected in series with an impedance element capable of drawing a current equal to the trip current of the apparatus being tested; and

circuit means connected across the neutral and ground prongs to short circuit the neutral prong to a low impedance ground.

3,898,558

DIRECT READING MICROWAVE REFRACTOMETER

Moody C. Thompson, Jr., Boulder, Colo., assignor to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed July 30, 1974, Ser. No. 493,004

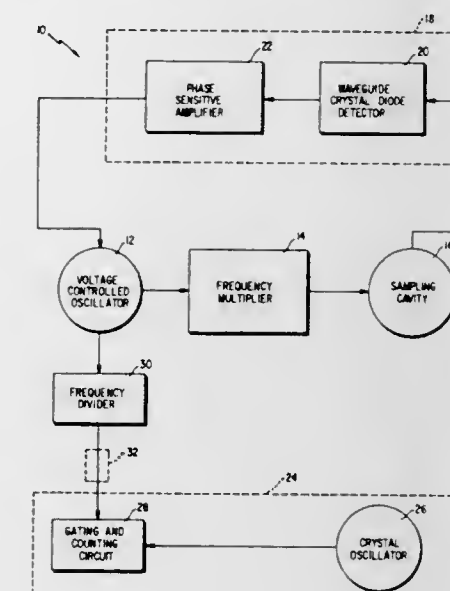
Int. Cl. G01R 27/04

U.S. Cl. 324-58.5 C

7 Claims

1. In a microwave refractometer of the type which produces an output signal which is a function of the index of refraction of a sampling cavity, the combination comprising:
 - a. a first reference oscillator having a variable oscillation frequency;
 - b. a sampling cavity electrically coupled to an output of said first reference oscillator, said sampling cavity having a variable resonant frequency which is an inverse function of the index of refraction of said sampling cavity;
 - c. means electrically coupled between said sampling cavity and said first reference oscillator for varying the oscillation frequency of said first reference oscillator as a function of the resonant frequency and thus the index of refraction of said sampling cavity; and

- d. means electrically coupled to an output of said first reference oscillator for producing an output signal which



varies as a linear function of the index of refraction of said sampling cavity.

3,898,559

METHOD AND APPARATUS FOR TESTING TRANSISTORS

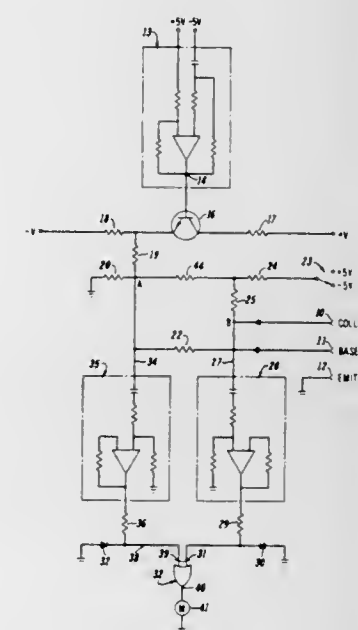
Marlin D. Westra, Sioux Falls, S. Dak., assignor to Sencore Incorporated, Sioux Falls, S. Dak.

Filed Feb. 5, 1973, Ser. No. 329,639

Int. Cl. G01r 31/22; 25/00

U.S. Cl. 324-158 T

5 Claims



1. A circuit for testing bipolar and field effect transistors, comprising
 - a first terminal connector for connection to the collector of a bipolar transistor or to the drain of a field effect transistor,
 - a second terminal connector for connection to the base of a bipolar transistor or to the gate of a field effect transistor,
 - a third terminal connector for connection to the emitter of a bipolar transistor or to the source of a field effect transistor,
 - an oscillator having an a square wave output,

means coupling the output of said oscillator to said second terminal connector, and means including an exclusive-or logic gate responsive to the relative phase relationship of the A.C. signals at said first and second terminal connectors to indicate when said signals are 180° out-of-phase, thereby to signify that an operative bipolar or field effect transistor is connected to said terminal connectors.

3,898,560

APPARATUS FOR TESTING ROTORS OF ELECTRIC MOTORS

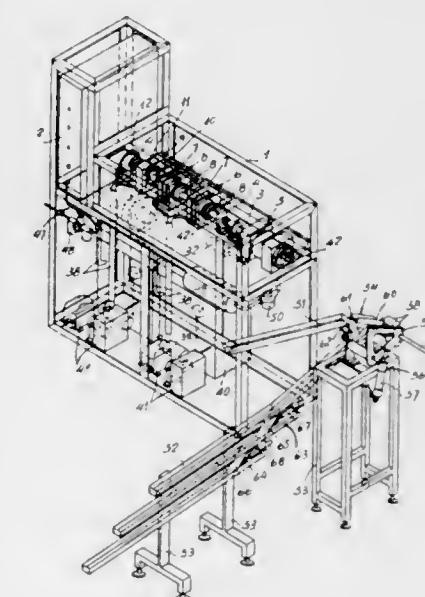
Vicente Palazon Farreras, and Jose Pons Soley, both of Barcelona, Spain, assignors to Unidad Hermetica, S.A., Sabadell (Barcelona), Spain

Filed June 6, 1973, Ser. No. 367,330

Claims priority, application Spain, Aug. 16, 1972, 406347
Int. Cl. G01r 31/02

U.S. Cl. 324-158 MG

7 Claims



1. Apparatus for testing rotors of electric motors including:
 - a housing; a rotatable shaft; bearings secured to the housing and rotationally supporting the shaft; a releasable clamping device mounted on said shaft for holding the rotors to be tested; a master stator selected from one of a plurality of master stators, each corresponding to a type of rotor to be tested; means for securing the selected master stator to the housing about the shaft at a position where it will surround the rotor to be tested when in position; means for loading and unloading the rotors to be tested to and from the clamping device at the start and finish of one test cycle; and means for routing the tested rotors along different channels according to the results of the test, the releasable clamping device for rotors to be tested comprising a threaded coupling mounted on the end of the shaft; a tubular spindle coupled to said coupling; an abutment shoulder on said spindle for making contact with one end face of the rotor to be tested; a plurality of radial apertures in said spindle and a plurality of claws, one each within an aperture for engaging said rotor to be tested.

3,898,561

TESTER FOR ELECTRICAL DEVICES

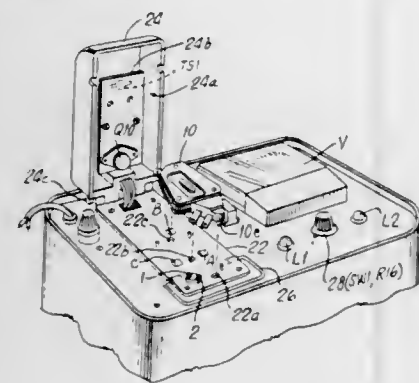
Thomas H. Leighton, Sr., Stevensville, Mich., assignor to Heath Company, Benton Harbor, Mich.

Filed Aug. 20, 1973, Ser. No. 389,800

Int. Cl. G01r 31/02

U.S. Cl. 324—158 R

32 Claims



1. A tester for voltage regulators each having a field current switch circuit, said tester comprising:

- means for testing the field current switch circuit of a voltage regulator at a low temperature with a high test current applied to said field current switch circuit;
- means disposed in heat exchanging relationship with said field current switch circuit and responsive to said high test current for gradually raising its temperature and thereby raising the temperature of said field current switch circuit;
- means responsive to the raising of the temperature of said field current switch circuit for testing the field circuit of the voltage regulator at a high temperature with said high test current;
- means responsive to the reaching of a defined threshold level by said raised temperature for testing the field circuit of the voltage regulator at a high temperature with a test current which is low as compared to said high test current; and
- means for indicating the results of each of the tests at a low temperature and a high test current, at a high temperature and a high test current and at a high temperature and a low test current.

3,898,562

ADJUSTABLE PROBE HOLDER

David M. Mizikar, Mt. Pleasant, and George P. Schanzenbach, Greensburg, both of Pa., assignors to Carrier Corporation, Syracuse, N.Y.

Filed May 28, 1974, Ser. No. 473,627

Int. Cl. G01R 1/06

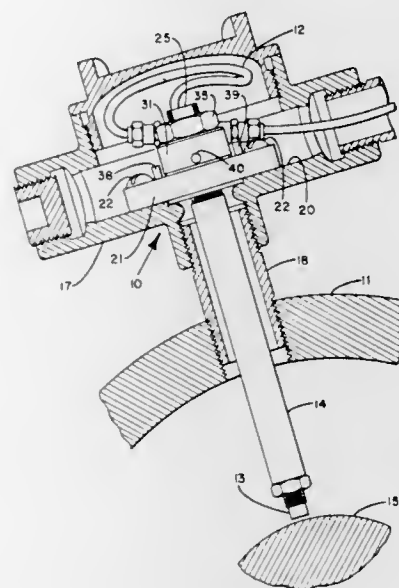
U.S. Cl. 324—158 P

5 Claims

1. Apparatus for accurately locating an externally mountable sensing device within a substantially enclosed machine for electrically observing a body contained therein over a defined air gap, the apparatus comprising:

- a mounting structure secured to the outside of the machine adjacent to the observed body and being arranged to support a probe assembly, the structure having an opening coaxially aligned with an opening formed in the machine and a reference surface positioned a predetermined distance from the observed body;
- a removable probe assembly supported within the mounting structure including;
- a plate receivable upon said reference surface having a threaded hole therein overlying the opening in the machine;
- an elongated probe holder being adapted to pass through said opening and having a threaded shank on one end thereof mated into said threaded hole in the plate and an electrical sensing element at the other end positionable in close proximity to the body to be observed,

an adjusting means slidably mounted upon the shank end of the probe holder having at least one flat surface for contacting a complementary surface upon the shank whereby rotation of said adjusting means causes the probe holder to be threaded into or out of said plate,



stop means operatively associated with the adjusting means for limiting the range of rotation thereof to prevent the sensing element from contacting the observed body, removable clamping means for securing the plate to said reference surface whereby the probe assembly is insertable and removable from said machine.

3,898,563

SOLID STATE BICYCLE SPEEDOMETER, TACHOMETER, AND ODOMETER DEVICE

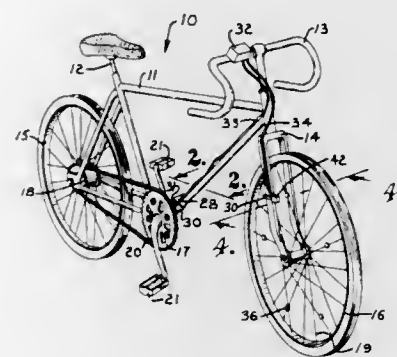
David E. Erisman, 515 S. Maguire, Warrensburg, Mo. 64093

Filed Nov. 15, 1973, Ser. No. 415,973

Int. Cl. G01p 3/12

U.S. Cl. 324—166

2 Claims



1. An electronic tachometer for selective multispeed bicycles having a drive sprocket and at least one wheel, the tachometer comprising:

- magnetic means attached to said drive sprocket for inducing pulses in a sensor;
- a sensor coil, said coil located in operative proximity to said magnetic means on the frame of said bicycle to generate a plurality of electrical pulses when said magnetic means rotates with said drive sprocket;
- means for amplifying said electrical pulses;
- means connected to said amplifying means for producing substantially square wave pulses; and
- means for indicating the rotational velocity of said drive sprocket in response to said square pulses regardless of the selected bicycle speed.

3,898,564

MARGIN MONITORING CIRCUIT FOR REPEATERED DIGITAL TRANSMISSION LINE

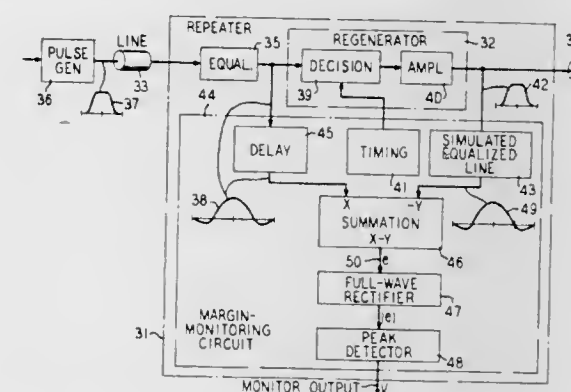
Frederick Donald Waldhauer, Fair Haven, and Dan Holden Wolaver, Middletown, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 11, 1974, Ser. No. 450,168

Int. Cl. H04B 3/36; H03H 7/36

U.S. Cl. 325—13

14 Claims



1. In a regenerative repeater for regenerating digital signals passed as pulse signals through a transmission medium, said repeater including an equalizer and connected in tandem with said equalizer a regenerator having means for admitting an input pulse signal from said equalizer and means for producing a regenerated output pulse signal, and means for deriving information about the margin against regenerative error in said repeater comprising means for generating a model pulse signal from said regenerator output pulse signal, means for delaying said regenerator input pulse signal, means for comparing said delayed regenerator input signal with said model pulse signal, and means responsive to said comparison for deriving an error signal containing said information.

3,898,565

MAGNETIC WAVE COMMUNICATION SYSTEM

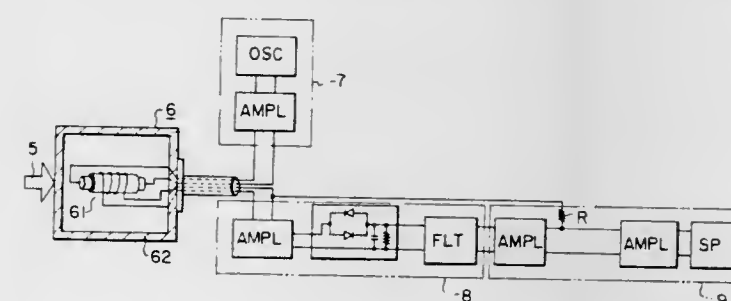
Shinjiro Takeuchi; Satoshi Ichioka, both of Toda, and Tadashi Inoue, Tokyo, all of Japan, assignors to Mishima Kosan Co., Ltd., Kitakyushu, Japan

Continuation-in-part of Ser. No. 200,687, Nov. 22, 1971, abandoned. This application Oct. 18, 1973, Ser. No. 407,627 Claims priority, application Japan, Mar. 5, 1971, 46-11711

Int. Cl. H04b 5/00, 13/02

U.S. Cl. 325—28

1 Claim



1. A receiver for use in a magnetic wave communication system comprising:

- an antenna means for converting an incoming audio frequency magnetic field to an electric signal having positive and negative asymmetrical amplitudes, said antenna means comprised of an orthogonal type magnetic sensing antenna having an inductor coil to prevent deterioration of sensitivity in the signal and a casing, said antenna being housed in said casing;
- a conductor having a magnetic thin film coated thereon, said conductor being formed on said inductor coil;
- an excitation power source connected to said conductor to excite said thin film;
- a signal treating means coupled to said inductor coil for detecting an amplitude difference between said positive

and negative asymmetrical amplitudes of the electric signal to produce a detected output signal; and

- a control circuit means coupled to said signal treating means having a resistor and a speaker, and including said resistor operatively coupled between said speaker, and said antenna means whereby said speaker converts said detected output signal to an audible output signal.

3,898,566

METHOD AND APPARATUS FOR REDUCING DISTORTION IN MULTICARRIER COMMUNICATION SYSTEMS

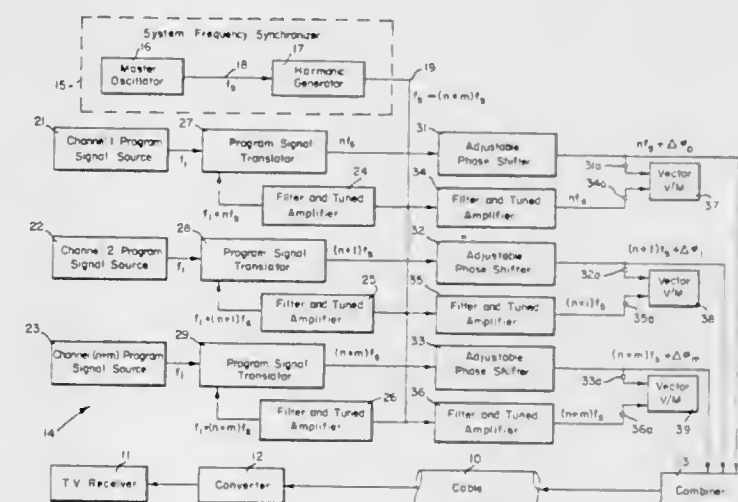
Israel Switzer, North York, Canada; Arie Zimmerman, Santa Monica, Lucius T. La Fleur, Torrance, and Patrick A. Segrave, Santa Monica, all of Calif., assignors to Phasecom Corporation, Hawthorne, Calif.

Continuation-in-part of Ser. No. 293,796, Oct. 2, 1972, abandoned. This application Feb. 1, 1973, Ser. No. 328,888

Int. Cl. H04b 3/50

U.S. Cl. 325—308

29 Claims



18. Headend equipment for a system for transmission of a plurality of television programs on a plurality of channels in a single cable, each channel having the same predetermined frequency bandwidth, said equipment comprising:

- a. a source of synchronizing signal having a predetermined fundamental fixed frequency equal to said frequency bandwidth of a channel;
- b. means to derive from said synchronizing signal a plurality of video carrier signals having frequencies which are coherent harmonics of any order without restriction of the frequency of said synchronizing signal fundamental frequency, at least one of said carrier signals being an even order harmonic of said synchronizing signal; and
- c. means utilizing a different one of said plurality of carrier signals to transmit a television program signal over each one of said plurality of channels, said fundamental frequency synchronizing signal thus simultaneously controlling the frequency relationships of said video carriers for said plurality of channels and setting the minimum frequency separation between the video carriers of adjacent pairs of channels at an integral multiple of the frequency of said first synchronizing signal so that sum and difference beat frequencies of any order which result from any beat combination of said video carriers and which fall within one of said channels will zero beat with the video carrier thereof.

3,898,567

CRYSTAL-LOCK TUNING SYSTEM FOR TUNING REGULARLY AND IRREGULARLY SPACED CHANNEL FREQUENCIES

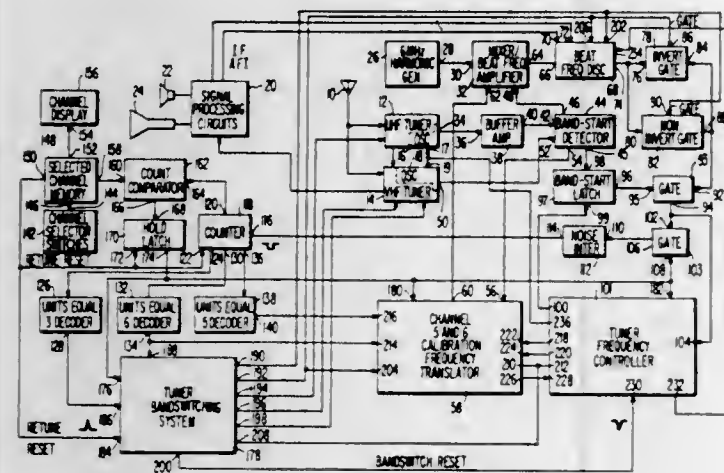
John Barrett George, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed June 3, 1974, Ser. No. 476,084

Int. Cl. H04b 1/16

U.S. Cl. 325-470

21 Claims



1. A television tuning system comprising:

tuning means for receiving radio frequency signals corresponding to any one of a plurality of television channels and having a tunable local oscillator means for producing a corresponding oscillator signal, certain of said oscillator signal frequencies having a uniform frequency of separation and at least one of said oscillator frequencies having a different frequency of separation from an adjacent channel oscillator frequency;

sweep generator means coupled to said oscillator means for varying the tuning thereof in a predetermined manner; signal generating means for producing a plurality of reference signals at frequencies having said uniform frequency separation;

frequency translating means coupled to said local oscillator means for selective translation of said oscillator signal frequencies;

frequency discriminator means having first and second inputs coupled to said frequency translating means and to said signal generating means, respectively, for producing an output signal representative of frequency differences between said selectively translated oscillator signal frequencies provided by said frequency translating means and each of said reference signals as said tuning is varied;

counting means coupled to said discriminator means for producing an output count representative of said oscillator signal passing through a predetermined frequency relationship with respect to each of said reference signals; channel selector means for producing a stored count representative of a selected television channel;

comparator means coupled to said counting means and to said channel selector means for providing a hold signal to said sweep generator means in response to a match between said output count and said stored count, thereby terminating said variation of said oscillator frequency;

decoder means coupled to said counting means for identifying the presence of at least one particular output count; said frequency translating means being responsive to said particular output count and said hold signal for said translation of said oscillator signal frequencies; and

frequency shifting means coupled to said frequency translating means for changing said oscillator frequency by a shift frequency equal to the difference between said different frequency of separation and said uniform frequency of separation.

3,898,568

SIGNAL SYNTHESIZER EMPLOYING AN AUTOTRANSFORMER HAVING A TAPPED COIL

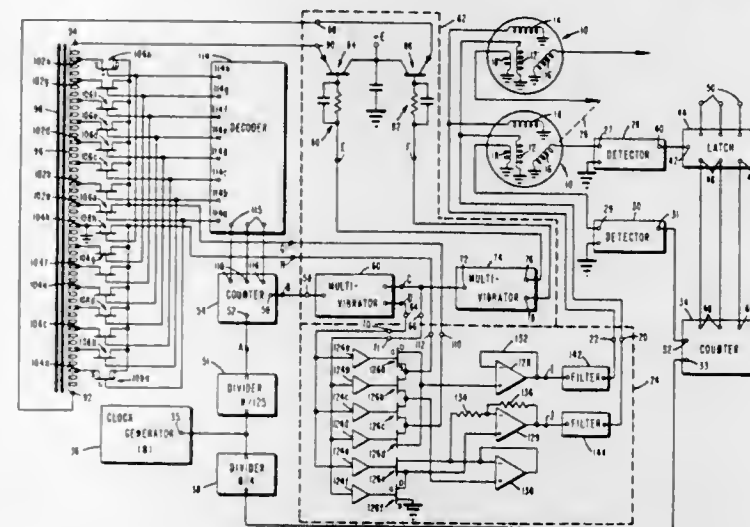
Seymour Barth, Searingtown, N.Y., assignor to AstroSystems, Inc., Lake Success, N.Y.

Continuation of Ser. No. 288,995, Sept. 14, 1972, Pat. No. 3,849,774. This application June 7, 1974, Ser. No. 477,261

Int. Cl. H03b 19/00; H05k 13/02

U.S. Cl. 328-14

11 Claims



1. A signal synthesizer for producing a stepped voltage having a fundamental sinusoidal frequency component and low harmonic content comprising:

an impedance element having at least one group of spaced taps thereon,

first switching means connected to said impedance element for coupling a reference voltage of selected polarity and constant value across said group of spaced taps, said taps being positioned on said impedance element to provide a voltage at each tap which is a sinusoidal function of said position with respect to a tap maintained at a fixed potential, and

second switching means connected to said impedance element and having an output terminal, said second switching means coupling sequentially the taps on said impedance element to said output terminal between each reversal by said first switching means of the polarity of said reference voltage to provide between each of said polarity reversals a stepped voltage at said output terminal corresponding to a half-cycle of said fundamental sinusoidal component.

3,898,569

TRANSMISSION LINE CURRENT TRANSFORMER

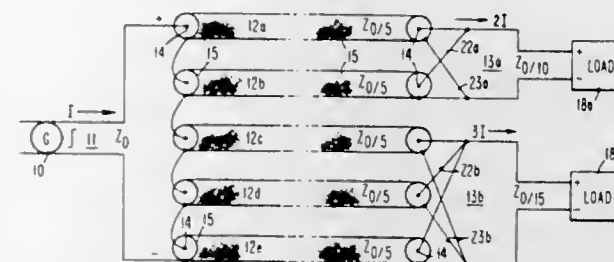
Jerry K. Radcliffe, Owego, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 24, 1974, Ser. No. 473,025

Int. Cl. H03K 5/02

U.S. Cl. 328-53

3 Claims



1. Apparatus for providing fast rise-time current pulses, comprising

a plurality n of low impedance transmission lines of substantially equal length each with a characteristic impedance substantially equal to Z_0/n , and each having positive and negative input terminals and output terminals,

means connecting the positive and negative input terminals of said lines in a string, the positive terminal of each line, except the first, being connected to the negative terminal of the preceding line in the string,

means, including a two-wire feed line having an impedance substantially equal to Z_0 , connected to the positive input terminal of the first of said n lines and to the negative input terminal of the n th of said lines, for injecting a current pulse of magnitude I and voltage V into said lines to transform said current pulse into n currents of magnitude I and voltage V/n ,

means connecting the positive and negative output terminals of at least some of said n lines in parallel to form subset groupings consisting of desired numbers of n lines, and

means including a plurality of two-wire output lines, each of said output lines being connected in parallel to the positive and negative output terminals, respectively, of a respective one of said groupings simultaneously to provide a fast rise-time current pulse in each respective output line of a magnitude approaching I times the number of n lines in the corresponding grouping, each specific output line having an impedance substantially equal to Z_0 divided by n times the number of n lines in the subset grouping connected to that specific output line.

3,898,570

HIGH SPEED CONTROL CIRCUIT

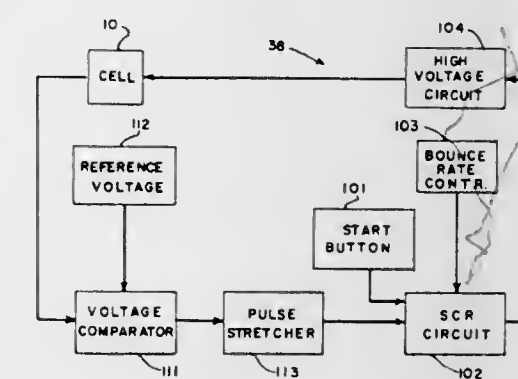
Theodore D. Jayne, Painesville, Ohio, assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 749,521, July 26, 1968. This application Oct. 23, 1973, Ser. No. 406,459

Int. Cl. G01P 15/08; H03K 17/74

U.S. Cl. 328-69

6 Claims



1. A high speed control circuit comprising:

a comparator circuit adapted to receive an electrical signal for providing a first output signal upon said electrical signal exceeding a predetermined magnitude;

a pulse stretcher circuit connected to said comparator circuit for providing a second output signal for a predetermined period of time upon receipt of said first output signal;

a silicon controlled rectifier circuit connected to said pulse stretcher circuit for providing a third output signal upon receipt of said second output signal;

a bounce rate controller circuit connected to said silicon controlled rectifier circuit for determining the magnitude and duration of said third output signal; and

a manual controller connected to said silicon controlled rectifier circuit for providing an enabling signal to said silicon controlled rectifier circuit to enable said rectifier circuit to provide said third output signal.

3,898,571

PULSE SHAPE DETECTOR

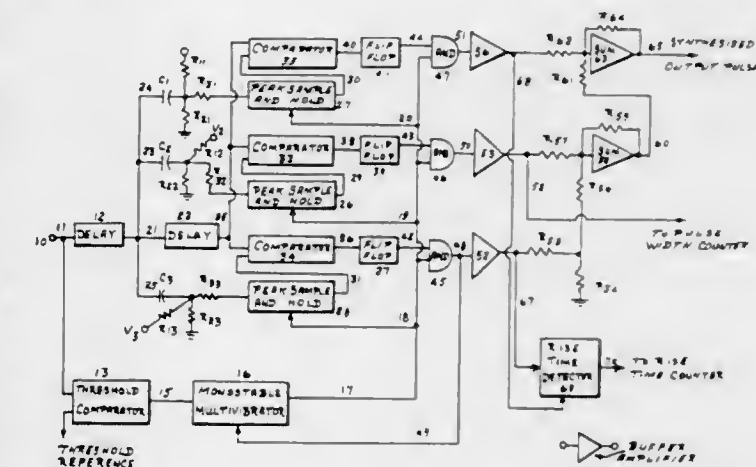
Samuel J. Caprio, Severna Park, Md., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 13, 1974, Ser. No. 469,196

Int. Cl. H03k 5/01; H04b 1/10

U.S. Cl. 328-145

8 Claims



1. A pulse shape detector apparatus for synthesizing the input pulse to a logarithmic amplifier comprising in combination:

a control means to receive the output pulse from said logarithmic amplifier, said control means comparing said output pulse to a predetermined threshold level, said control means generating a control signal when said output pulse exceeds said predetermined threshold level,

a sample and compare means receiving said output pulse, said sample and compare means having a first, second and third sampling rate, said first sampling rate providing a first pulse having a first predetermined level, said second sampling rate providing a second pulse having a second predetermined level, said third sampling rate providing a third pulse having a third predetermined level, said control means providing said control signal to said sample and compare means to reset said sample and compare means to process said output pulse,

a logic control means connected to said sample and compare means to receive said first, second and third pulses therefrom, said logic control means receiving said control signal from said control means, and

a summing network connected to said logic control means to receive said first, second, and third pulses, said logic control means being reset by said control signal to apply said first, second and third pulses to said summing network, said summing network summing said first, second and third pulses to provide a synthesized output pulse, said synthesized output pulse representing the synthesized pulse waveform of said input pulse to said logarithmic amplifier, said second pulse representing the pulse width of said input pulse to said logarithmic amplifier.

3,898,572

CODE REGENERATING NETWORK FOR PULSE CODE COMMUNICATION SYSTEMS

Kotaro Kato, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan

Filed Dec. 5, 1973, Ser. No. 422,124

Claims priority, application Japan, Dec. 7, 1972, 47-123096

Int. Cl. H03k 5/01; H04b 1/10

U.S. Cl. 328-164

6 Claims

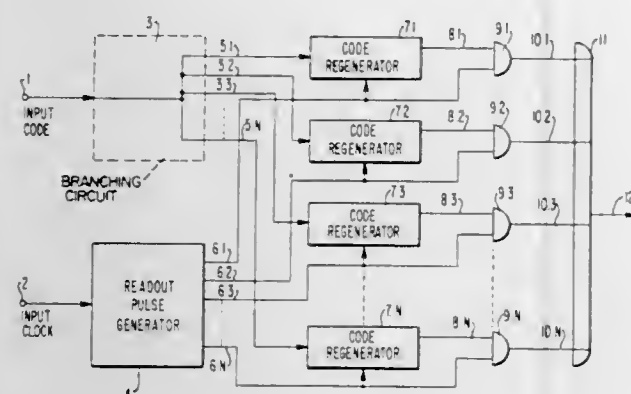
1. A code regenerating network for use in a receiver for a pulse code communication system, comprising:

a branching circuit for branching an incoming high-speed code signal train into N code trains of the same high speed (N being a positive integer equal to or greater than 2);

a readout pulse generating circuit for receiving clock pulses with a speed coincident with the clock rate R of said

high-speed code signal train and for generating N readout pulse trains, each of said pulse trains having a clock rate R/N and having a phase which differs by one clock pulse from the immediately preceding train;

N code regeneration circuits supplied respectively with said N outputs from said branching circuit as their signal inputs and said N outputs from said readout pulse generating circuits as their readout pulses;



NAND gates for detecting respectively coincidence between the outputs of said N code regenerating circuits and said readout pulses corresponding thereto; and an OR gate for taking the logical sum of the outputs of said N AND gates and for making a regenerated signal output equivalent to said high-speed code signal train.

3,898,573

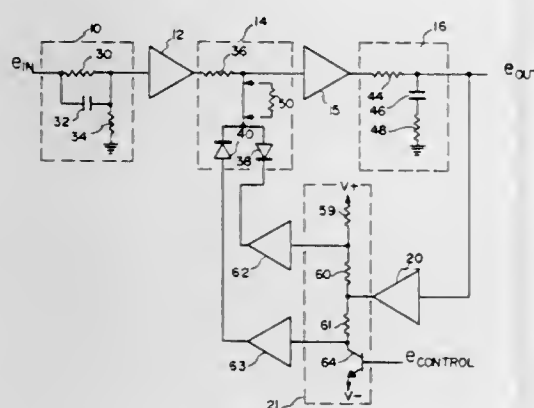
VOLTAGE CONTROLLED NON-LINEAR FILTER

Stanley A. Sherman, 46 Stoneleigh Rd., Trumbull, Conn. 06611

Filed Dec. 7, 1973, Ser. No. 422,909
Int. Cl.² H04B 15/00

U.S. Cl. 328-167

19 Claims



1. Apparatus for frequency separation of an electrical wave having low frequency and high frequency components comprising clipping means having an input, an output and a clipping level setting input, said electrical wave being supplied to said input, low-pass filter means having an input and output, said input of said low-pass filter means being connected to said output of said clipping means, said first amplifying means having an input and an output, said output of said low pass filter means being connected to said input of said first amplifying means, a bias generating means having an input, an output and a control input, said output of said first amplifying means being connected to said input of said bias generating means, a control voltage being coupled to said control input of said bias generating, said output of said bias generator being connected to said clipping level setting input of said clipping means, said clipping level being set by the superposition of the controlled bias and the low frequency components produced at said output of said low pass filter means to instantaneously set said clipping level responsive to the magnitude of said low

frequency components, said clipper separating said high and low frequency components of said electrical wave.

3,898,574

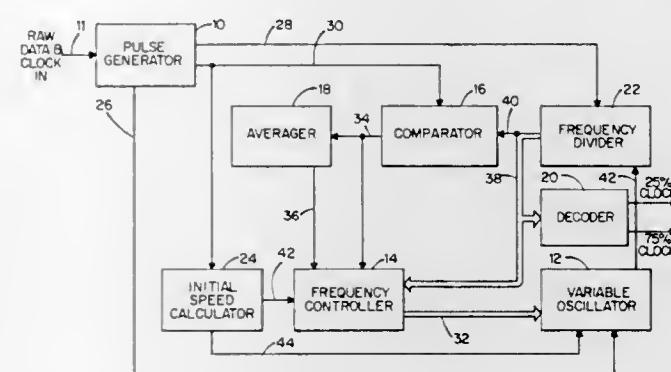
INFORMATION DETECTION APPARATUS HAVING A DIGITAL TRACKING OSCILLATOR

William Reed Allen, Reading, and Ralph M. Lombardo, Jr., Lowell, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Jan. 2, 1974, Ser. No. 430,113
Int. Cl.² H03K 9/06, 5/20

U.S. Cl. 329-104

10 Claims



1. Information detection apparatus comprising:

- A. means for receiving a plurality of first signals representative of said information and clock signals provided with said information;
- B. control means for providing a second signal;
- C. oscillator means, responsive to said second signal, for generating a plurality of third signals having a frequency determined by the value of said second signal;
- D. comparator means for determining the frequency relationship between said plurality of first signals and said plurality of third signals;
- E. means, including said control means and responsive to said comparator means, for changing the value of said second signal and thereby change the value of the frequency of said plurality of third signals to more closely correspond to a predetermined fraction of the frequency of said plurality of first signals; and
- F. means, responsive to said plurality of third signals, for providing a fourth signal and a fifth signal between which one of said plurality of first signals may be detected.

3,898,575

SWITCH ARRANGEMENT FOR V_{RE} COMPENSATION OF PUSH-PULL AMPLIFIERS

Hanspeter Koch, Wohlen AG, Switzerland, assignor to Patenhold Patentverwertungs- & Elektro-Holding A.G., Glarus, Switzerland

Filed Jan. 21, 1974, Ser. No. 435,273

Claims priority, application Switzerland, Jan. 24, 1973, 916/73

Int. Cl. H03f 3/26

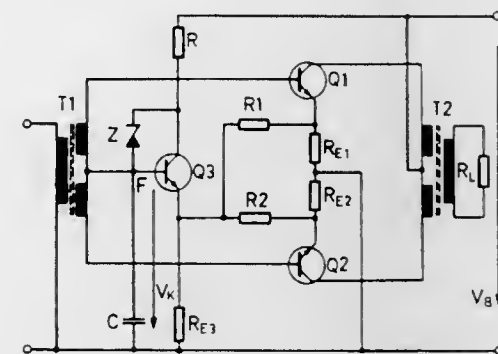
U.S. Cl. 330-15

5 Claims

1. In a push-pull amplifier comprised of a drive transformer, an output transformer, and first and second transistors, the input winding of the drive transformer receiving the signal to be amplified, the output winding of the drive transformer having its opposite terminals coupled to the base electrodes of the first and second transistors respectively and having a center tap, a feed voltage source having one of its poles coupled to the center tap through a capacitor, the emitters of said first and second transistors each being coupled through respective first and second resistances to said one pole of the feed voltage and the collectors of said first and second transistors being coupled to the opposite terminals of the output transformer primary winding whose center tap is coupled to the remaining pole of the feed voltage and whose secondary

winding is coupled to the load means, the improvement comprising:

- a compensation transistor whose base and emitter electrodes are respectively coupled to the drive transformer secondary winding center tap and a common terminal,



the emitters of said first and second transistors each being connected to said common terminal, the emitter and collector electrodes of said third transistor being respectively coupled to the opposite poles of the feed voltage through collector and emitter resistors.

3,898,576

DIRECT-COUPLED AMPLIFIER PROVIDED WITH NEGATIVE FEEDBACK

Hirokazu Fukaya, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan

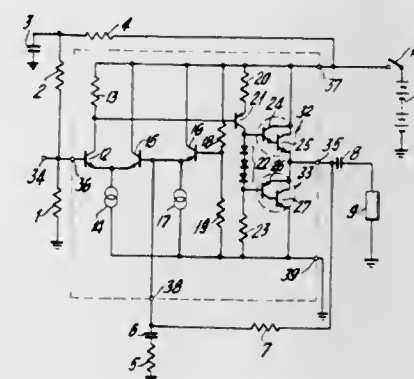
Filed Oct. 10, 1973, Ser. No. 405,185

Claims priority, application Japan, Oct. 11, 1972, 47-102156

Int. Cl.² H03F 1/08

U.S. Cl. 330-28

9 Claims



1. A direct-coupled amplifier comprising:

- a power supply terminal;
- a first amplifier stage connected to said power supply terminal;
- a second amplifier stage connected to receive the output of the first amplifier stage for further amplification;
- a load connected to receive the output of the second amplifier stage and connected to ground; and
- a feedback circuit including a first resistor for providing negative feedback from the output of said second amplifier stage to the input side of said first amplifier stage, a series-connected capacitor and second resistor connected between said first amplifier stage and ground, and transistor means connected to said feedback path for charging said capacitor to raise the feedback voltage across said capacitor more rapidly than the voltage at said power supply terminal upon the initial application of a power supply voltage to said power supply terminal, thereby preventing spurious output during the transient period following the application of a power supply voltage.

3,898,577

CONSTANT IMPEDANCE AMPLIFIER

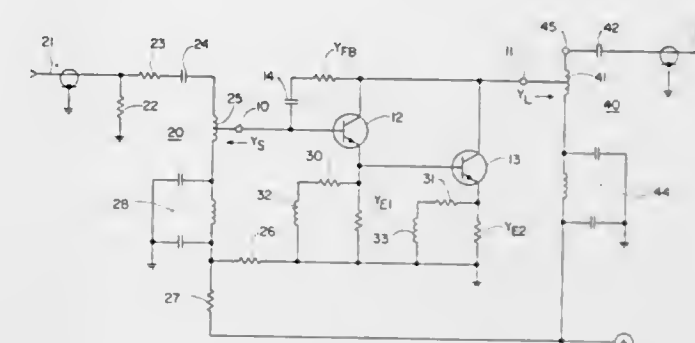
Frederick Thomas Halsey, Ottawa, Canada, assignor to Northern Electric Company Limited, Montreal, Canada

Filed Sept. 26, 1974, Ser. No. 509,392

Int. Cl.² H03F 1/34

U.S. Cl. 330-28

3 Claims



1. A constant impedance amplifier comprising:

- input, output and common terminals, the input and common terminals being connected to a signal source of admittance Y_S , and the output and common terminals being connected to a load of admittance Y_L ;
 - first and second transistors, the base of the first transistor being connected to said input terminal, the emitter of the first transistor being connected to the base of the second transistor, and the collectors of the two transistors being connected together and to said output terminal;
 - means for coupling operating voltages to said transistors; first and second resistive admittances Y_{E1} and Y_{E2} connected between the respective emitters of the first and second transistors and the common terminal; and
 - a resistive admittance Y_{FB} connected between the collectors and the base of the first transistor;
- the admittances having approximately the relationship:
- $$Y_S \approx Y_L \approx \sqrt{Y_{FB}(Y_{E1} + Y_{E2})}.$$

3,898,578

INTEGRABLE POWER GYRATOR

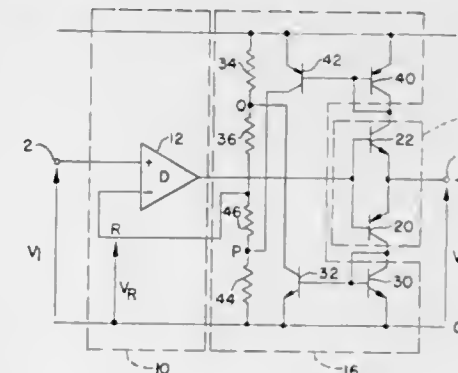
James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Erwin S. Hochmair, Vienna, Austria

Filed May 18, 1973, Ser. No. 361,666

Int. Cl.² H03F 9/00

U.S. Cl. 330-63

10 Claims



1. A gyrator circuit comprising two voltage-controlled-current sources (VCCS's) connected in a loop, one of the VCCS's producing a 180° phase change and termed the inverting VCCS, and the other producing a 0° phase change and termed the non-inverting VCCS, the non-inverting one of the VCCS's comprising: a differential amplifier having a pair of input terminals, one of which constitutes the input to the non-inverting VCCS; a complementary output stage driven by the output of the differential amplifier for producing the output of the non-inverting VCCS and driving the inverting VCCS; and a current-to-voltage converter responsive to the output stage of the non-inverting VCCS for producing a feed-

back voltage that is applied to the other of the pair of input terminals to the differential amplifier of the non-inverting VCCS.

3,898,579

FREQUENCY CONTROL CIRCUITS FOR PHASE LOCKED LOOP FREQUENCY SYNTHESIZERS

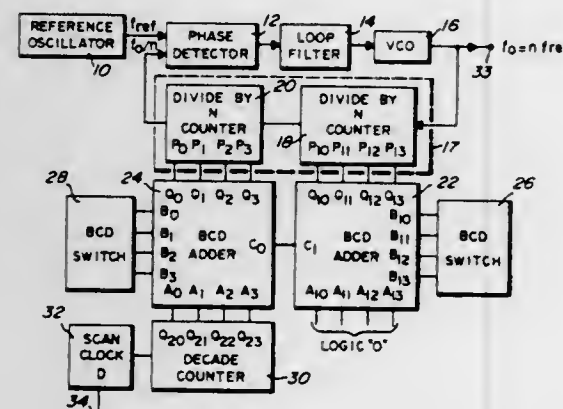
Don W. Aldridge, Mesa, Ariz., assignor to Motorola, Inc.,
Chicago, Ill.

Filed Jan. 2, 1974, Ser. No. 430,266

Int. Cl. H03B 3/08

U.S. Cl. 331-1 A

16 Claims



1. In a frequency synthesizer circuit adapted to automatically provide a plurality of output signals at an output terminal, the frequency synthesizer having a phase locked loop with a divide-by-N counter having input terminals, a control circuit for adjusting the divide-by-N counter including in combination:

adder means having a plurality of output terminals connected to the input terminals of the divide-by-N counter, a first set of input terminals, and a second set of input terminals;

first circuit means having output terminals connected to said first set of input terminals of said adder means, said first circuit means being adapted to determine the lowest frequency of the output signal at the output terminal of the phase locked loop;

counter means having an input terminal, a reset terminal and a plurality of output terminals, said plurality of output terminals being connected to said second set of input terminals of said adder means;

clock means having an output terminal connected to said input terminal of said counter means, said counter means being responsive to an output signal from said clock means to provide an output signal, said adder means being responsive to said output signal of said counter means to adjust the divide-by-N counter and thereby increment the frequency of the output signal at the output terminal of the phase locked loop; and

logic means connected from said output terminals of said counter means to said reset terminal of said counter means, said logic means being responsive to the output signal state of said counter means reaching a predetermined condition to provide a control signal which resets said counter means to control the number of output frequencies in a scanning cycle of the frequency synthesizer.

3,898,580

DUAL TIME CONSTANT PHASE LOCK OSCILLATOR

Larry R. Millsap, Orange, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 17, 1973, Ser. No. 425,351

Int. Cl. H03B 3/04

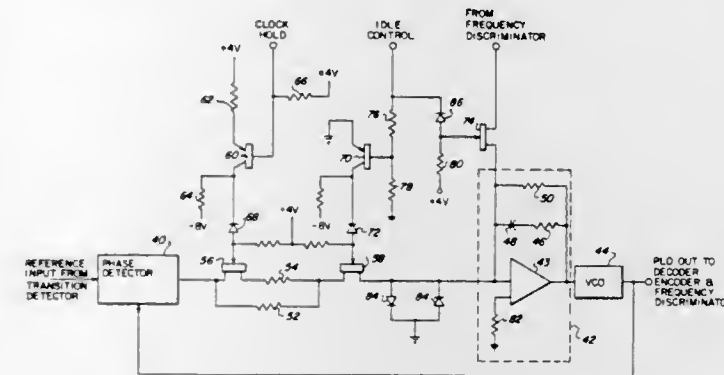
U.S. Cl. 331-15

12 Claims

1. In a digital disc storage system, means for generating a

clock signal proportional to the frequency of data read from a disc, said means for generating a clock signal comprising:

- a phase lock loop having a phase lock oscillator therein,
- said phase lock loop including an amplifying means, for amplifying an input signal to said phase lock oscillator



said input signal being derived from data read from said disk,

- means for generating a control signal in response to a read command, and
- means responsive to said control signal for varying the gain of said amplifying means.

3,898,581

ELECTRONIC SWITCH

Hermann Karl Zierhut, Rietheim, Germany, assignor to J. & J. Marquardt, Germany

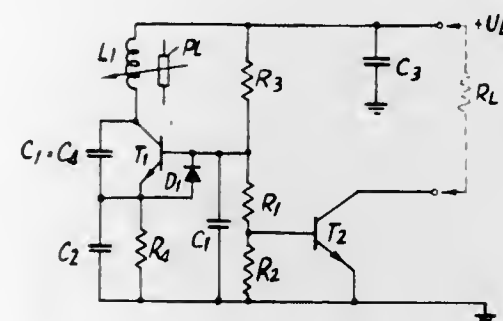
Filed May 14, 1974, Ser. No. 469,756

Claims priority, application Germany, Sept. 8, 1969,
1945357

Int. Cl. G08b 23/00

U.S. Cl. 331-65

11 Claims



1. Arrangement for contactless signalling pulses comprising, in combination, a transistor oscillator including a transistor having a base, an emitter and a collector, and including a resonance circuit with a non-linear oscillation characteristic; said resonance circuit connecting said collector to an external source of potential; a feedback capacitor connected directly between the emitter and collector of said transistor; high frequency by-pass means connected between one of said emitter and said base and the ground; externally accessible damping means operatively associated with said resonance circuit and operable, when actuated, to control said resonance circuit, utilizing its non-linear oscillation characteristic, between a state of undamped oscillation of said oscillator, wherein the base current of said transistor has a positive polarity, and a state of damped oscillation of said oscillator, wherein the base current of said transistor has a negative polarity to abruptly change the polarity of the base current of said transistor between positive polarity and negative polarity; and voltage amplitude responsive switching means connected to said one of said emitter and said base of said transistor and operable, responsive to the abrupt change in the transistor oscillator output voltage, resulting from such reversal of the polarity of the base current of said transistor, to effect a switching operation.

3,898,582

TRANSMITTER ENCODER WITH OUTPUT FOR A TIME PERIOD

Andrew F. Deming, Alliance, Ohio, assignor to The Alliance
Manufacturing Company, Inc., Alliance, Ohio

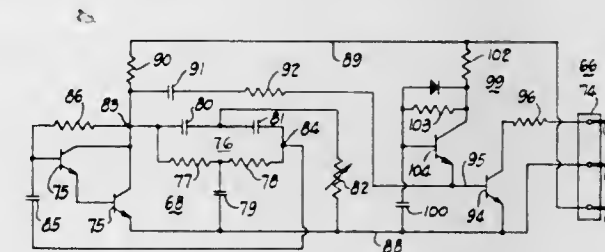
Division of Ser. No. 204,149, Dec. 2, 1971, Pat. No. 3,823,378.

This application Feb. 7, 1974, Ser. No. 440,473

Int. Cl. H03b 5/26, 5/30

U.S. Cl. 331-75

8 Claims



1. A transmitter encoder, comprising in combination, first and second terminals with said second terminal adapted to be connected to a DC source,

means to develop a given frequency,
an output transistor having input and output electrodes,
means connecting said output electrodes to said first and second terminals,

means applying the output of said frequency developing means to said input electrodes of said transistor to effect intermittent conduction thereof at said given frequency rate,

timing circuit means including timing capacitive means and a timing transistor,

means connecting said capacitive means to said second terminal for a change of charge condition,

means connecting said timing capacitive means to said timing transistor to turn on said timing transistor upon said timing capacitive means being charged to a predetermined value,

and means connecting said timing transistor to said output transistor to turn on continuously said output transistor upon said timing capacitive means charging to said predetermined value and turning on said timing transistor.

3,898,583

LASER STABILIZATION TECHNIQUE

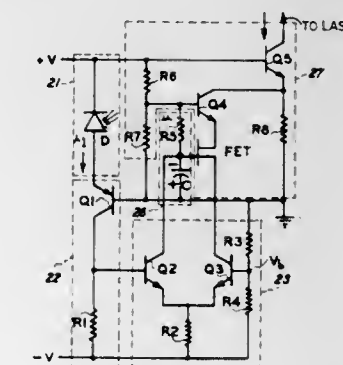
David R. Shuey, Webster, N.Y., assignor to Xerox Corporation,
Stamford, Conn.

Continuation-in-part of Ser. No. 239,144, March 29, 1972,
abandoned. This application Dec. 28, 1973, Ser. No. 429,246

Int. Cl. H01s 3/09

U.S. Cl. 331-94.5 S

7 Claims



1. In combination with a laser for providing a beam of monochromatic coherent radiation in response to a discharge current, a control circuit for stabilizing said beam at a predetermined set point energy level, said control circuit comprising in combination

detector means coupled to said laser for providing a first signal having a voltage which tends to track any variations in the energy level of said beam, said detector means

including a photodetecting diode positioned to intercept said coherent light beam for providing a current proportional to the energy level of said beam, and a buffer amplifier responsive to the current from said photodetecting diode for providing said first signal, said buffer amplifier including an operational amplifier having an inverting input, a non-inverting input and an output,

comparator means including a differential amplifier having one input coupled to receive said first signal and another input held at a reference voltage corresponding to said set point energy level of said beam for comparing said first signal against said reference voltage level to provide an error signal having a voltage proportional to any difference between the energy level of said beam and said set point level,

integrating means including a capacitor coupled to said comparator means to provide a feedback signal having a level proportional to a time-average value of said error signal,

means coupled between said integrating means and said laser for applying said feedback signal to said laser for adjusting said discharge current to thereby stabilize said beam at said set point level,

means for biasing the non-inverting input of said operational amplifier at said reference voltage level,

a first feedback loop including a resistor connected from the output to the inverting input of said operational amplifier, means for biasing the inverting input of said operational amplifier at a predetermined level, and

a diode connected to said inverting input for neutralizing the dark current through said photodetecting diode so that the dark current is prevented from affecting the feedback signal.

3,898,584

GAS DYNAMIC LASER DEVICE AND METHOD OF OPERATING SUCH A DEVICE

Gunthard Born, Munich, Germany, assignor to Messerschmitt-Boelkow-Blohm GmbH, Munich, Germany

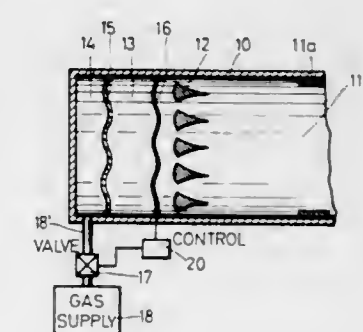
Filed Oct. 26, 1973, Ser. No. 410,181

Claims priority, application Germany, Nov. 9, 1972,
2254798

Int. Cl. H01s 3/22, 3/09

U.S. Cl. 331-94.5 G

18 Claims



1. A method of operating a pulsed gas dynamic laser device, the gas of which is a mixture of N_2 , CO_2 , and H_2O , comprising supplying during the gas outflow additional pressure to the combustion chamber of said laser device for maintaining the pressure in the combustion chamber during the outflow of said gas at a substantially constant level within the range of 10 to 100 atm, wherein the gas temperature is simultaneously maintained at a substantially constant level within the range of 1000° to 3000°K during the gas outflow, and whereby the proportions of N_2 , CO_2 and H_2O are maintained within the following ranges: N_2 about 80 to 99% by volume, CO_2 about 1 to 20% by volume, and H_2O about 0.5 to 5% by volume, whereby the efficiency is increased to such an extent that a population decrease of the CO_2 -OOL-level is avoided during the entire pulse duration.

3,898,585

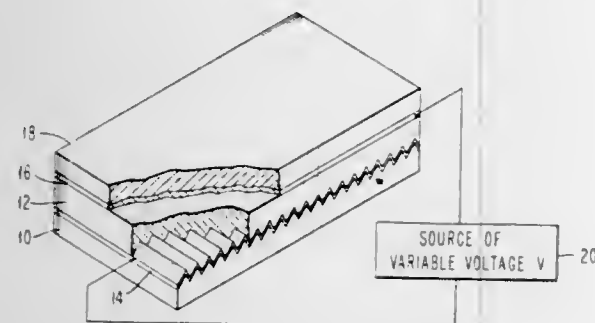
LEAKY CORRUGATED OPTICAL WAVEGUIDE DEVICE
Paul F. Heidrich, Mahopac, and Peter Stephen Zory, Jr., Ossining, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 14, 1974, Ser. No. 432,926

Int. Cl. H01s 3/00

U.S. Cl. 331-94.5

8 Claims



1. A leaky corrugated optical waveguide device comprising:
 - a thin film, thickness modulated, dielectric optical waveguide whose opposite surfaces are planar and corrugated, respectively, the corrugated surface forming a diffraction grating with a pitch d for reflecting various diffraction orders of the propagating wave, said waveguide having an index of refraction n_1 at a light wavelength λ ; and
 - a light-transparent first planar electrode overlying said planar surface of said waveguide;
 - a second planar electrode overlying said corrugated surface;
 - means for causing a light wave to propagate in said waveguide, whereby a leaky light wave of the first diffraction order of the propagating wave is reflected from said corrugated surface and transmitted through said planar surface and said first electrode; and
 - means for applying a variable electric potential across said electrodes to vary n_1 and thereby a parameter of the leaky wave.

3,898,586

COAXIAL SHORT PULSED LASER

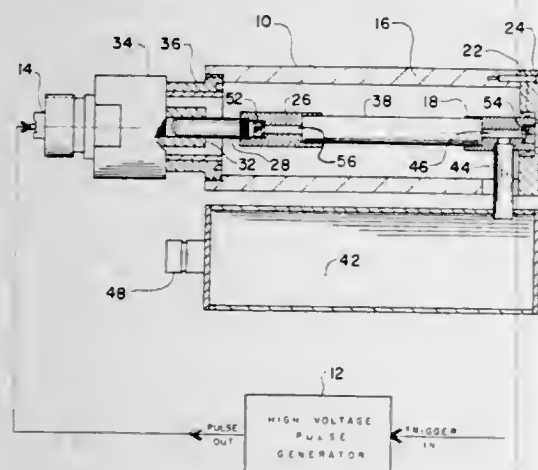
Melvin A. Nelson, and Terence J. Davies, both of Santa Barbara, Calif., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Jan. 8, 1974, Ser. No. 431,817

Int. Cl. H01s 3/22, 3/09

U.S. Cl. 331-94.5 G

14 Claims



1. A system for producing light pulses of short duration comprising:
 - an outer cylindrical housing of an electrically conductive material,
 - a pair of longitudinally spaced apart electrodes axially aligned within said housing,

an optical window in the forward one of said pair and an optical mirror in the rearward, said window and said mirror being axially aligned for discharge of a light pulse in the forward direction,
means for maintaining a volume of a gas lasing medium of a selected diameter at a selected pressure between said pair of electrodes in a manner whereby said lasing gas is continually refreshed by diffusion, said means including a reservoir external to said housing and a conduit connecting said reservoir with said space between said electrodes,
means for conductively connecting said forward electrode to said housing,
means for conductively connecting said housing to the outer conductor of a coaxial cable,
means for conductively connecting said rearward electrode to the inner conductor of said coaxial cable,
an essentially opaque, rigid, high dielectric strength potting material substantially filling the space within said housing not occupied by said axially aligned members,
means for applying an electrical pulse of selected characteristics to said coaxial cable.

3,898,587

MULTIPLE-SOURCE PLASMA-OVERLAP LASER

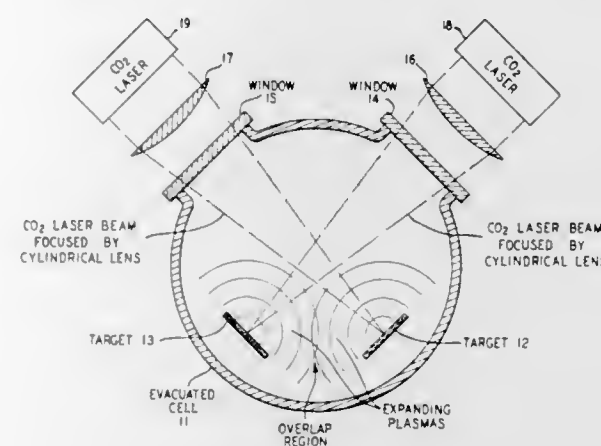
William Frank Brinkman, Jr., Berkeley Heights; William Thomas Silfvast, Holmdel Twp., Monmouth County, and Obert Reeves Wood, II, Holmdel, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 25, 1974, Ser. No. 436,494

Int. Cl. H01s 3/22, 3/09

U.S. Cl. 331-94.5 P

10 Claims



1. A plasma generator comprising first and second bodies of material containing first and second atomic species, respectively, said first and second bodies extending parallel to and being spaced from a particular axis, pulsed means for vaporizing material from said first and second bodies producing first and second plasmas, respectively, expanding in pulses in directions leading to overlap of said plasmas on said axis, said vaporizing means ionizing the first and second atomic species to selected degrees permitting one species to transfer energy to the ionized portion of the second species in the region of overlap, and means for utilizing selected properties of the plasma.

3,898,588

DIODE LASER PUMPING

Lars-Erik Skagerlund, Karlskoga, Sweden, assignor to AB Bofors, Bofors, Sweden

Filed June 19, 1973, Ser. No. 371,360

Claims priority, application Sweden, July 3, 1972, 8744/72

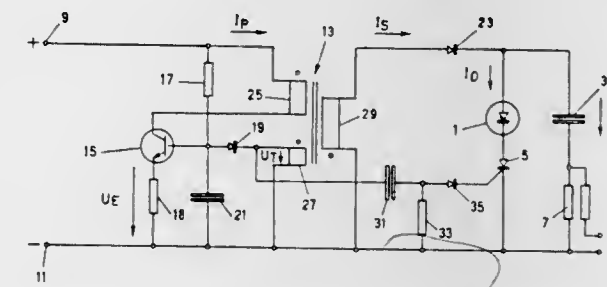
Int. Cl. H03k 3/30, 3/42; H05b 41/392

U.S. Cl. 331-112

11 Claims

1. An apparatus for pumping a diode laser, which comprises:

a capacitor;
a first controlled switching means, the diode laser being connected to said capacitor via said first controlled switching means; and
means for alternately charging the capacitor from a D.C. voltage source to a specific energy level and discharging the capacitor through the diode laser by temporarily closing said first controlled switching means when said specific energy level of the capacitor has been reached, said means including:
a pulse controlled transistor switching means;
a transformer having a primary winding, a secondary winding and a feedback winding, the primary winding being connected to one terminal of the D.C. voltage source and the collector of the transistor, the secondary winding



being connected to the capacitor via a unidirectional conducting means poled so that the transformer will be unloaded when the transistor is conducting, and the feedback winding being connected to the base of the transistor via a diode and to the other terminal of the D.C. voltage source for supplying control pulses to the transistor;

means for providing transistor base supply;
an emitter resistor connected between the emitter of the transistor and said other terminal of the D.C. voltage source thereby to provide a self oscillating circuit with the transistor becoming periodically conducting by said control pulses during a predetermined interval; and
discharge control means for periodically causing said first controlled switching means to be closed temporarily while the transistor is conducting.

3,898,589

PULSE POSITION AND PHASE MODULATOR

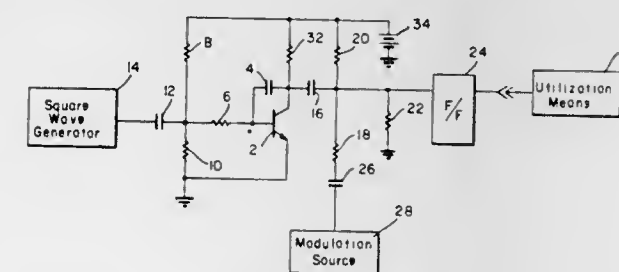
Galen F. Tustison, Palos Verdes Peninsula, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed May 2, 1974, Ser. No. 466,361

Int. Cl. H03K 7/04

U.S. Cl. 332-9 R

6 Claims



1. An electronic circuit comprising:
 - a source of radio frequency wave energy having a given frequency;
 - a source of modulating energy having frequency components substantially lower than said given frequency;
 - means for additionally combining said radio frequency wave energy and said modulating energy to form a composite signal;
 - a trigger circuit with an input and an output; and
 - means for coupling said composite signal to said input of said trigger circuit, said trigger circuit further having a fixed threshold level which intersects said composite

signal, said trigger circuit also being only responsive to every other crossing of the threshold by said composite signal, said trigger circuit further generating an output pulse of substantially constant amplitude and width in response to said crossings of the threshold by said composite signal.

3,898,590

PROGRESSIVE AMPLITUDE MODULATOR

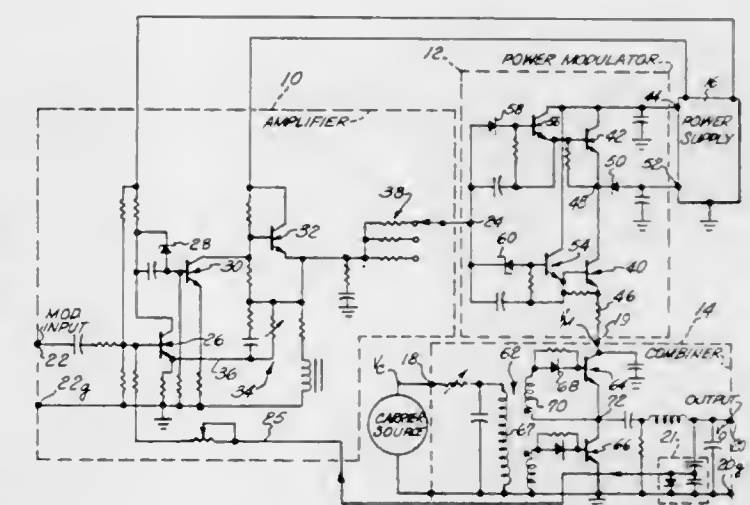
Hilmer I. Swanson, Quincy, Ill., assignor to Harris-Intertype Corporation, Cleveland, Ohio

Filed Dec. 26, 1973, Ser. No. 427,520

Int. Cl. H03c 1/38

U.S. Cl. 332-31 T

13 Claims



1. In an electrical circuit for modulating a carrier wave, combining means for modulating the amplitude of a carrier wave in accordance with a varying characteristic of a modulating control signal which varies in accordance with a varying characteristic of an input signal, said combining means having an input to which said modulating control signal is to be applied, and first circuit means having an input to which said input signal is applied and an output connected to said input of said combining circuit, said first circuit means comprising a first d.c. power source providing a voltage of a first magnitude, a second d.c. power source providing a voltage of magnitude which is higher than said first power source, first modulating means of variable conductivity connected to said first power source and said output of said first circuit means to supply modulated signal current to said output over a first range from a minimum to a first predetermined level, second modulating circuit means of variable conductivity connected between said second power source and said output for supplying modulated signal current to said output over a second range from said first predetermined level to a higher second predetermined level, and control means connected to said first modulating means for effecting modulation of said first modulating means in accordance with a first range of said input signal corresponding to said first range of said modulating control signal to supply substantially all of the current to said output from said first power source up to said predetermined level and to said second modulating means to vary the conductivity thereof in accordance with said input signal to effect the supply from said second power source to said output of substantially all the modulating signal current when the current is to be in said second range of said modulating control signal for a corresponding second range of said input signal higher than the first range thereof including means for applying a signal corresponding to said input signal to each of said modulating means.

3,898,591

DISPERSIVE DELAY DEVICES

Wilfrid Sinden Mortley, Great Baddow; Stanley Frederick Clarke, Chelmsford, and Stuart Norman Radcliffe, Shenfield, all of England, assignors to The Marconi Company Limited, Chelmsford, England

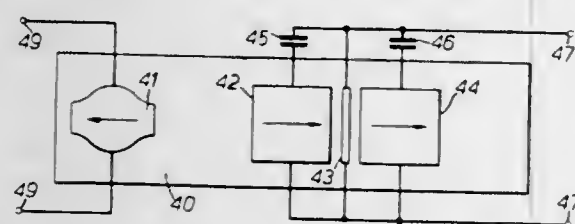
Filed Oct. 1, 1973, Ser. No. 402,251

Claims priority, application United Kingdom, Oct. 5, 1972, 45918/72

Int. Cl. G01s 7/30; H03h 9/30

U.S. Cl. 333-30 R

10 Claims



1. A dispersive delay device for time compressing a frequency swept input pulse, including dispersive delay means operative to produce from the input pulse an output signal in the form of a central spike flanked by two side lobes and means for deriving from the input pulse at least one correction pulse which is frequency swept in the opposite direction to the input pulse and for subtracting the, or each, derived correction pulse from a, or a respective, side lobe so as to reduce the amplitude of the side lobe.

3,898,592

ACOUSTIC SURFACE WAVE SIGNAL PROCESSORS

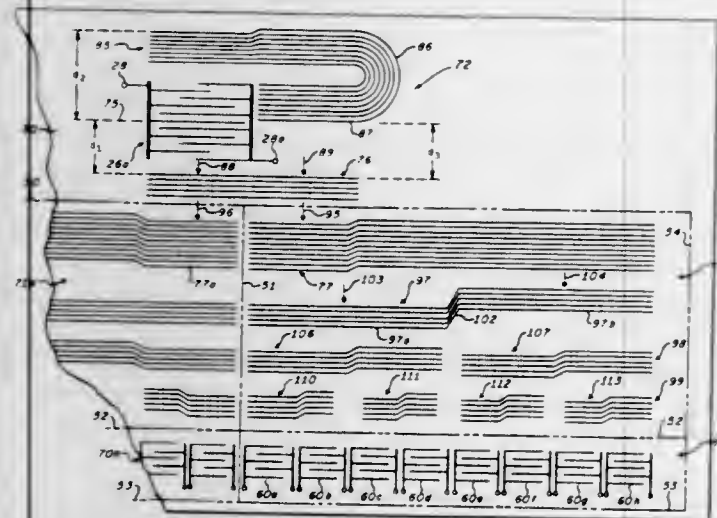
Leland P. Solie, Acton, Mass., assignor to Sperry Rand Corporation, New York, N.Y.

Filed May 8, 1974, Ser. No. 468,126

Int. Cl. H03h 9/26, 9/30, 9/32

U.S. Cl. 333-72

23 Claims



1. Signal propagation apparatus for processing acoustic signals flowing as discrete acoustic wave beams having individual frequency bands comprising:

substrate means for propagating said discrete acoustic wave beams along a surface thereof,

signal frequency band combining means including a plurality of stepped multiple conductor coupler means responsive to said discrete surface acoustic wave beams for forming a single surface wave acoustic beam of predetermined width,

additional stepped multiple conductor coupler means responsive to said single surface wave acoustic beam for substantially decreasing the predetermined width of said beam,

lineal multiple conductor coupler means responsive to said decreased width surface wave acoustic beam for generating first and second side-by-side surface acoustic waves, reflecting multiple conductor coupler means for reversing

the direction of propagation of said first side-by-side surface acoustic wave, and surface wave acoustic transducer means at said surface for receiving said second and reflected first side-by-side surface acoustic waves for generating a corresponding electrical output.

3,898,593

SWITCHABLE RESISTIVE ATTENUATORS

Umar Qureshi, Kingston, England, assignor to The Solartron Electronic Group Limited, Farnborough, England

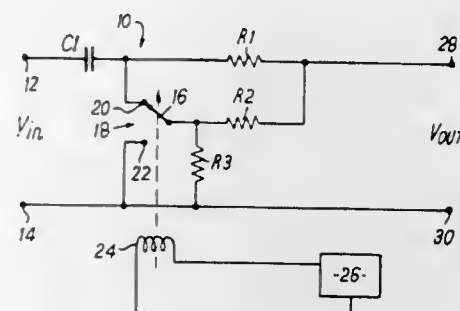
Filed Sept. 26, 1973, Ser. No. 400,862

Claims priority, application United Kingdom, Oct. 14, 1972, 47518/72

Int. Cl. H03H 7/24, 7/26

U.S. Cl. 333-81 R

4 Claims



1. A switchable resistive attenuator comprising first and second input terminals between which an A.C. voltage to be attenuated may be applied, a capacitance, a first resistance having one end connected to said first input terminal via said capacitance, a second resistance having one end connected to the other end of the first resistance, an output terminal connected to the junction between the first and second resistances, and switching means having first and second settings for coupling the other end of said second resistance to said one end of said first resistance in the first of said settings and for coupling said other end of said second resistance to said second input terminal in the second of said settings, the output voltage from the attenuator appearing between said output terminal and the second input terminal, whereby the effect of insulation resistance and stray capacitance of the switching means on the magnitude of the output voltage is substantially eliminated.

3,898,594

MICROWAVE SEMICONDUCTOR DEVICE PACKAGE

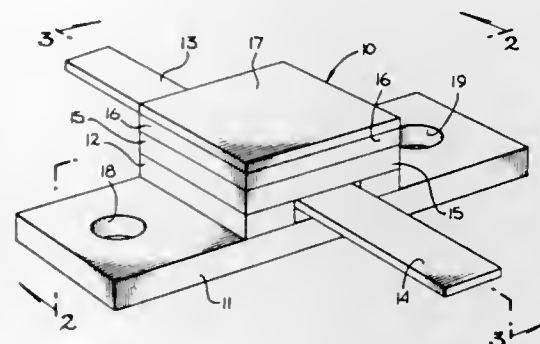
Arthur Kenneth Hochberg, Torrance, and Richard Edward Hejmanowski, Cypress, both of Calif., assignors to TRW Inc., Los Angeles, Calif.

Filed Nov. 2, 1973, Ser. No. 412,486

Int. Cl. H01l 1/14; H01p 1/00

U.S. Cl. 333-97 R

7 Claims



1. A mounting structure for supporting a semiconductor device having at least two active regions comprising:

3,898,596

AUXILIARY CONTACT INTERLOCK FOR ELECTROMAGNETIC CONTACTOR

Edward L. Richards, Allquippa, and Stephen S. Dobrosielski, Beaver, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 8, 1974, Ser. No. 468,335

Int. Cl. H01h 3/00

U.S. Cl. 335-192

5 Claims

- a. an electrically conductive header;
- b. a thermally conductive member having top and bottom surfaces and having a plurality of apertures therethrough from the top to the bottom surface thereof, said thermally conductive member being coupled to said conductive header to provide a good thermal path for said semiconductor device, said semiconductor device being mounted upon and in good thermal contact with said thermally conductive member;
- c. first, second and third metallized regions disposed on the top surface of said thermally conductive member, each of said first, second and third metallized regions being in communication with one of said apertures, said first, second and third metallized regions being electrically insulated from each other, one region thereof being adapted to receive the semiconductor device;
- d. fourth, fifth and sixth metallized regions disposed on the bottom surface of said thermally conductive member, each being in communication with one of said apertures, said fourth, fifth and sixth metallized regions being electrically insulated from each other and in electrical contact with said first, second and third metallized regions respectively; and
- e. hermetic sealing means secured to the top surface of said thermally conductive member for forming a hermetic cavity about said first, second and third metallized regions and the semiconductor device secured thereon during high temperature cycling; wherein each of said first and second metallized regions are bounded by and electrically insulated from said third metallized region, the semiconductor device being connected to said second metallized region and in electrical communication with said fifth metallized region, and including first and second contact leads each connected to one of said fifth and sixth metallized regions respectively.

3,898,595

MAGNETIC PRINTED CIRCUIT

Larry L. Launt, Holcomb, N.Y., assignor to Cunningham Corporation, Honeoye Falls, N.Y.

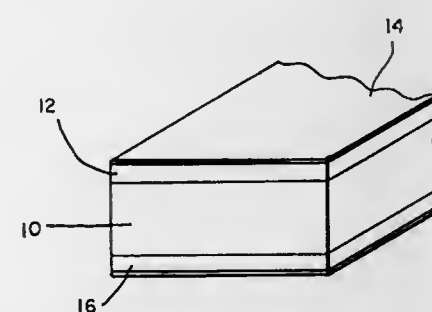
Continuation of Ser. No. 85,932, Nov. 2, 1970, abandoned.

This application Mar. 30, 1972, Ser. No. 239,764

Int. Cl. H01h 67/30

U.S. Cl. 335-152

7 Claims



1. A magnetic printed circuit board in combination with a matrix of electrical reed relays, said matrix including at least one reed switch having a pair of magnetic switch elements and

at least one electromagnetic coil with a pair of magnetic pole units extending from each end thereof for actuating said reed switch elements, said magnetic printed circuit board comprising:

a baseboard of insulating material, and a pattern of magnetically permeable material laminated in a thin layer to one side of said baseboard,

said magnetic layer forming at least one cell pattern corresponding to each electromagnetic coil and the reed switch to be actuated thereby,

each said cell pattern including a pair of spaced-apart pole piece areas disposed so that each pole piece area is in magnetic connection with

1. A shock-responsive device comprising an electromagnetic contactor and an auxiliary contact interlock, the electromagnetic contactor comprising a first pair of movable and stationary contacts, electromagnetic means for closing the contacts and comprising a first crossbar, the first crossbar being subject to an open-contact position, the first crossbar being subject to fluctuations in response to shock forces on its axis of travel between the open and closed positions of the contacts when the first crossbar is in the open-contact position, the auxiliary contact interlock comprising a housing, a movable contact carrier and a second pair of movable and stationary contacts within the housing, the movable contact carrier comprising a bridging contact carrier and a rod supporting said carrier, said carrier comprising a second crossbar and the second pair of movable contacts on the second crossbar, the second crossbar being mounted on the rod, the rod being mounted for longitudinal movement between open and closed contact positions in the housing, the rod being biased in the open position, said carrier also comprising a loading spring and a shock spring both mounted on the rod and on the side of said carrier adjacent to the electromagnetic contactor, the loading spring being disposed on the rod and between said carrier and a spring backup member on the rod, the shock spring being disposed between the spring backup member and a spring stop member on the rod, the loading spring having a lower spring constant than the shock spring, and the spring backup member being slidably mounted on the rod toward the shock spring.

3,898,597

PAIRS OF OPPOSITELY ROTATABLE RING MAGNETS FOR A COLOR TELEVISION DISPLAY DEVICE

Renso Vonk, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

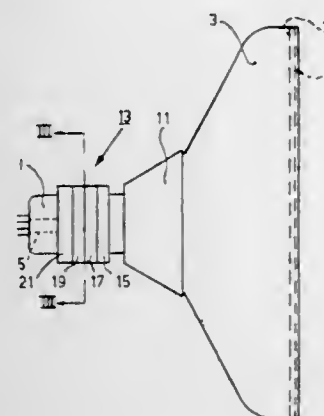
Filed Sept. 13, 1974, Ser. No. 505,657

Claims priority, application Netherlands, Sept. 14, 1973, 7312741

Int. Cl. H01f 7/00

U.S. Cl. 335-212

2 Claims



1. A display device for colour television, comprising a display tube having a cylindrical neck portion in which three electron guns are adjacently arranged in one plane, and a flared portion, comprising a colour selection electrode and a display screen, the neck portion having provided thereon a correction device comprising a first pair of permanently, diametrically magnetized rings which are rotatable about the tube axis, characterized in that the correction device (13) comprises a second pair (21) of permanently, diametrically magnetized rings which are rotatable about the axis of the tube (1, 3), the fixation of the rings allowing only a rotation of the rings of each pair (19, 21) in opposite directions and through identical angles, the arrangement being such that the resultant magnetic field (H_{10}) of the first ring pair (19) is always perpendicular to the plane of the electron guns (5), the resultant magnetic field (H_{21}) of the second pair (21) always being parallel to this plane.

3,898,598

DYNAMIC ELECTROACOUSTIC TRANSDUCER

Takemitsu Asahi, Tokyo, Japan, assignor to Foster Tsushin Kogyo Kabushiki Kaisha, Tokyo, Japan

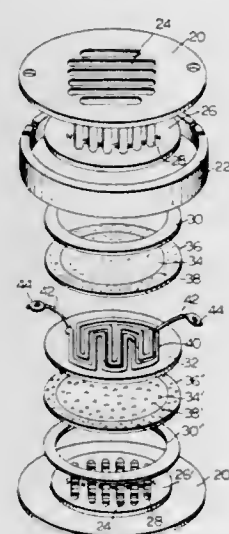
Filed Oct. 30, 1974, Ser. No. 519,211

Claims priority, application Japan, Jan. 24, 1974, 49-10929; Jan. 24, 1974, 49-10930

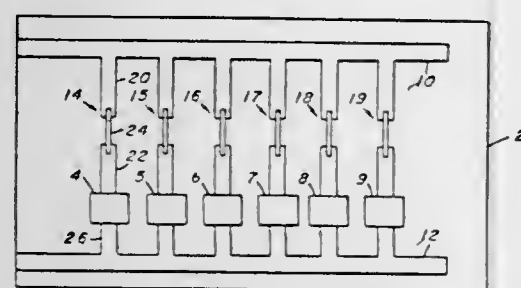
Int. Cl. H01f 7/00

U.S. Cl. 335-231

8 Claims



pair of permanent-connection members made of electrically conducting metal and between said pair of said permanent-connection members a link member made of electrically conducting metal, said method comprising



applying across selected ones of said link members an electrical potential that is sufficiently large to cause to be passed through said selected ones of said link members a current of such density as to be capable of causing rupture of said link members by the phenomenon of defect-aided electromigration but not so great as to cause melting of said link member by joule heating.

3,898,604

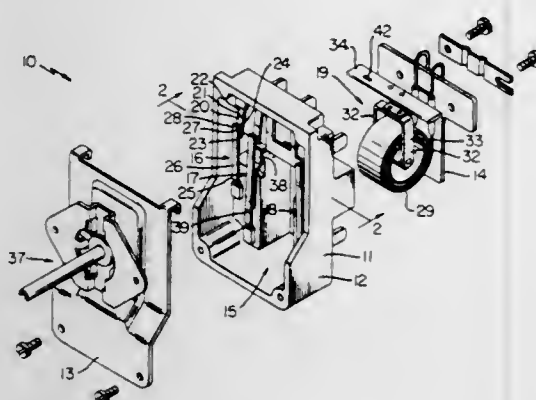
CONTROL DEVICE HAVING AUTOMATIC SWITCH OPENING MEANS AND METHOD OF MAKING THE SAME

Donald F. Weekes, Weston, and James Sim, Oakville, both of Canada, assignors to Robertshaw Controls Company, Richmond, Va.

Filed Feb. 11, 1974, Ser. No. 441,413
Int. Cl. H01h 37/42

U.S. Cl. 337-322

10 Claims



1. In a control device having electrical switch means and temperature responsive fluid operated means for opening said switch means when said fluid operated means senses a certain temperature or above the same and for closing said switch means when said fluid operated means senses a temperature below said certain temperature, the improvement comprising means operatively associated with said switch means and said fluid operated means for automatically opening said switch means when said fluid operated means loses a certain amount of its fluid.

3,898,605

INTEGRATED OPTICAL BOLOMETER FOR DETECTION OF INFRARED RADIATION

William K. Burns, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 19, 1974, Ser. No. 480,914
Int. Cl. H01C 7/08

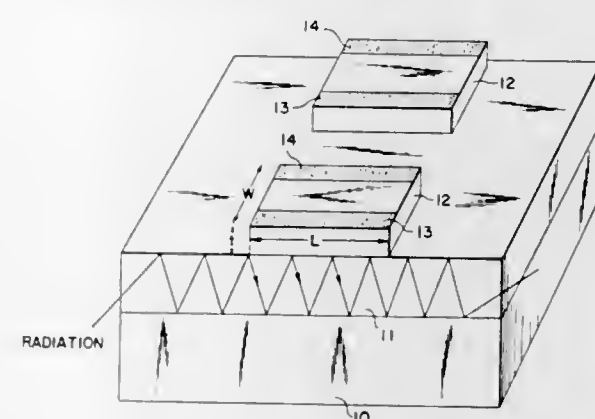
U.S. Cl. 338-18

4 Claims

1. A fast response room temperature integrated optical waveguide-bolometer for the detection of infrared radiation

traversing said waveguide in a direction parallel with the length of said bolometer; which comprises:

- a substrate of high thermal conductivity material;
- a layer of high thermal conductivity material on said substrate;
- said layer of high thermal conductivity material on said substrate having an index of refraction which is greater than the index of refraction of said substrate thereby forming an optical waveguide;



at least one bolometer on said layer of high thermal conductivity material of said waveguide;
said bolometer formed by a thin film of low reflectivity, high absorptivity, high thermal conductivity material having an index of refraction greater than that of said layer on said substrate and so positioned with the length thereof parallel with the direction of radiation passage through said waveguide.

3,898,606

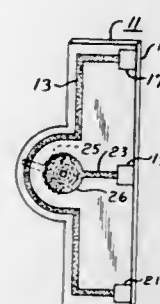
CONSTANT CURRENT VARIABLE VOLTAGE DIVIDER

Christ J. Dumas, Forest View, and Leo J. Aubel, Deerfield, both of Ill., assignors to American Plasticraft Company, Chicago, Ill.

Filed Aug. 30, 1973, Ser. No. 393,077
Int. Cl. H01c 9/02

U.S. Cl. 338-48

4 Claims



1. A constant current variable voltage divider comprising, an electrically non-conductive substrate having at least one substantially planar surface, a plurality of conductive terminals on said surface, a resistive base film formed on said surface for forming a first electrically resistive path, said first path being electrically connected at its ends to respective terminals, a second resistive base film formed on said surface for forming a second electrically resistive path, said second resistive path comprising an elongated resistive portion and a relatively enlarged resistive portion, said elongated resistive portion having one end thereof connected to a respective third terminal and the other end connected to said relatively enlarged resistive portion, selectively adjustable conductive contactor means supported on said surface for rotatable movement thereon and having a portion thereof in sliding mechanical and electrical contact with said first resistive path and another portion thereof in sliding mechanical and electrical contact with the said relatively enlarged resistive portion, whereby a constant current flow may be maintained between the terminals connecting to said first path and a variable

voltage may be selectively coupled by said adjustable conductive contactor means, said second resistive path and said third terminal.

3,898,607

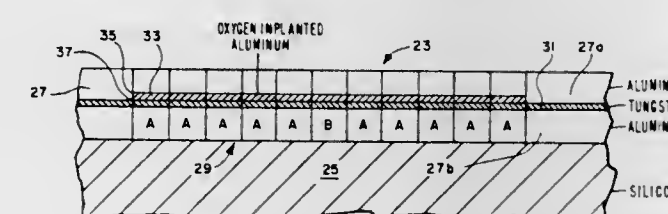
HIGH VALUE VERTICAL RESISTORS BY ION IMPLANTATION AND METHOD FOR MAKING SAME

Harold S. Gurev, Scottsdale, Ariz., assignor to Motorola, Inc., Chicago, Ill.

Filed Feb. 28, 1974, Ser. No. 446,838
Int. Cl. H01C 1/012

U.S. Cl. 338-308

4 Claims



1. The method for forming a vertical resistor in combination with a semiconductor body comprising the steps of: forming a first layer sandwich aluminum on said semiconductor body followed by a tungsten layer and followed by an aluminum layer to form a sandwich structure, and implanting oxygen ions at a predetermined depth into said sandwich structure.

3,898,608

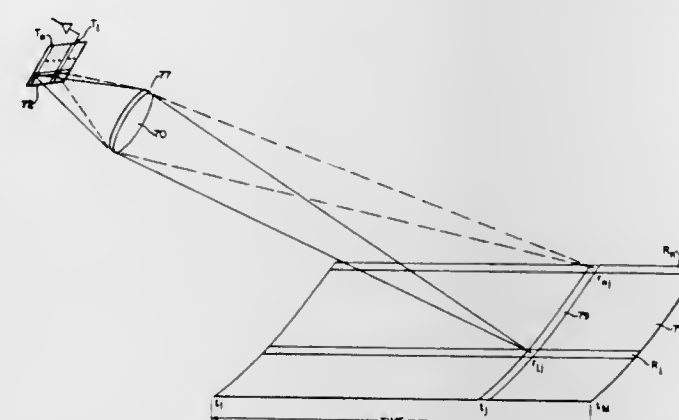
ACOUSTIC CAMERA APPARATUS

Charles H. Jones, Murrysville, Pa., and George A. Gilmour, Severna Park, Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 29, 1974, Ser. No. 456,419
Int. Cl. G01s 9/66

U.S. Cl. 340-3 R

14 Claims



1. An acoustic camera for imaging a target area comprising:
A. receiver means for forming a plurality of adjacent receiver beams each for receiving acoustic returns from respective adjacent receiver strips of said target area, said receiver strips being relatively long in the target range direction and relatively narrow in a direction perpendicular thereto;
B. transmitter means for insonifying said target area to be viewed and operable to provide a short time pulse of acoustic energy to insonify a strip relatively narrow in said range direction and at least equal to the width of said target area to be viewed;
C. said transmitter means being arranged that said insonifying strip sweeps out said target area from a minimum range R_m to a maximum range of interest R_M in a predetermined time period, the intersection of said insonifying strip with said receiver strips defining a plurality of elemental areas;
D. said receiver means including a plurality of elongated receiver transducers and an acoustic focusing element

positioned relative to said plurality of receiver transducers and having at least one spherical surface arranged to focus, from said minimum range R_m out to said maximum range R_M , acoustic returns from respective ones of said elemental areas onto respective ones of said receiver transducers;

E. said receiver transducers being operable to provide respective output signals in response to impingement of focused acoustic returns; and
F. means for processing and displaying said output signals.

3,898,609

UNDERWATER EXPLORATION DEVICE

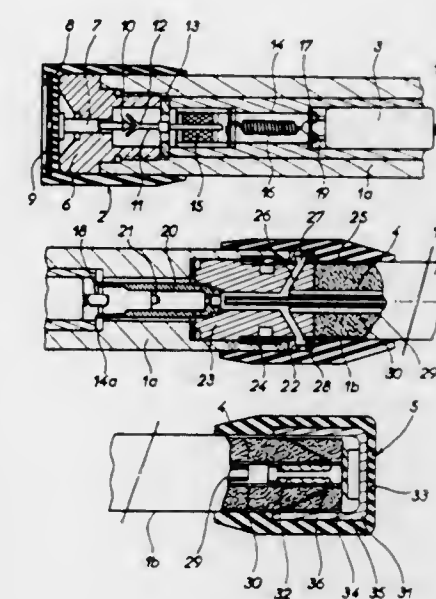
Christian Charles, Brest, France, assignor to Centre National pour l'Exploitation des Océans (CNEXO) and Le Nickel, both of Paris, France, part interest to each

Filed Nov. 21, 1973, Ser. No. 417,939
Claims priority, application France, Nov. 21, 1972, 72.41224

Int. Cl. G08b 5/40

U.S. Cl. 340-4 R

11 Claims



1. An underwater apparatus of the smoke generator kind, comprising a generally cylindrical body; a resilient cap sealing one end of said body, firing control means arranged in the cylindrical body connected with said resilient cap to be acted upon by hydrostatic pressure transmitted through said cap, said firing control means being arranged to adopt a repose position, an idle position, and an actuating position; actuating means for influencing the firing control means responsive to a predetermined external hydrostatic pressure exerted on the resilient cap to cause the firing control means to shift from the repose position to the idle position, and to shift from the idle position to the actuating position responsive to the external hydrostatic pressure being reduced virtually to zero; ignition means for igniting a smoke-producing compound in the cylindrical body responsive to the firing control device being shifted to the actuating position; smoke discharge means; pressure detachable means for plugging the discharge means while the smoke-producing compound remains unignited and for detaching from and opening the discharge means responsive to pressure being generated when the smoke producing compound is ignited, and protective means protecting said firing control means from accidental actuation.

3,898,615

TIRE CONDITION MONITORING SYSTEM

Akio Hosaka, Yokohama, Japan, assignor to Nissan Motor Company Limited, Yokohama, Japan

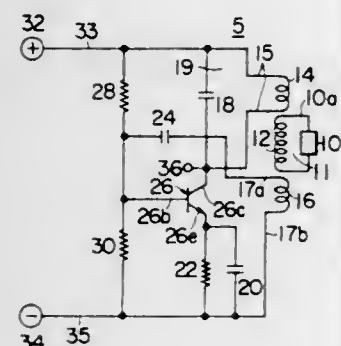
Filed Mar. 18, 1974, Ser. No. 452,470

Claims priority, application Japan, Mar. 19, 1973, 48-32567

Int. Cl.² B60C 23/00

U.S. Cl. 340—58

1 Claim



1. A system for automatically detecting an abnormal condition of a vehicle tire, comprising:

a sensor rotatable with the tire for detecting the abnormal condition;

a rotatable coil concentrically mounted on a framework of a wheel on which the tire is fitted and connected in a series circuit arrangement with said sensor so that the impedance of the series circuit is reduced below a predetermined value by said sensor in response to the detected abnormal condition;

an oscillator mounted on the vehicle structure including a pair of separate coils mounted adjacent to and on the inner side of said rotatable coil for inductive coupling therewith through said rotatable coil when the impedance of the series circuit is below said predetermined value; said pair of coils being spaced apart to face separate peripheral areas of said rotatable coils; and

an alarm device connected to said oscillator to produce a warning signal in response to oscillation therein;

whereby when the impedance of the series circuit is below said predetermined value, inductive coupling between said fixed and rotatable coils allows sufficient feedback for said oscillator to produce oscillation therein.

3,898,616

THRESHOLD LOGIC CIRCUIT FOR DETECTING EXACTLY M OUT OF A SET OF N SIGNALS

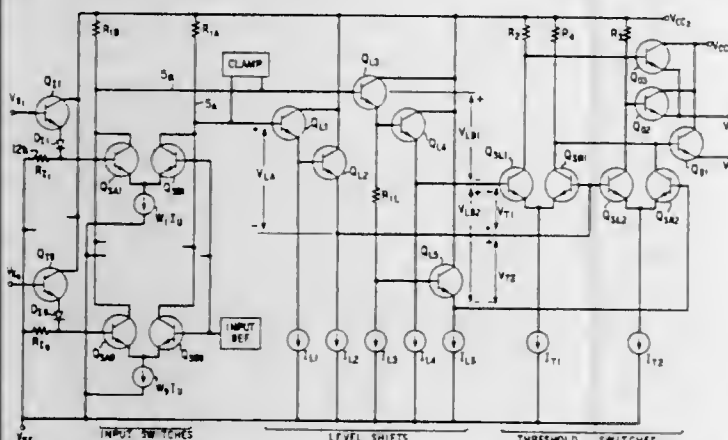
Charles Richmond Baugh, Lincroft, and Bruce Allen Wooley, Colts Neck, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 18, 1974, Ser. No. 489,572

Int. Cl.² G06F 11/08

U.S. Cl. 340—146.1 AB

10 Claims



1. Apparatus comprising

A. input circuit means responsive to N input digital signals for generating a first differential pair of signals represent-

tative of the number of input signals having a prescribed value;

B. level shifting means responsive to said first differential pair of signals for generating N₁ pairs of second differential signals, N₁ > 1, and

C. N₁ first differential switches, each comprising means for generating an output whenever a respective one of said pairs of second differential signals exceeds a respective first predetermined value.

3,898,617

SYSTEM FOR DETECTING POSITION OF PATTERN

Seiji Kashioka, Kokubunji, and Masakazu Ejiri, Tokorozawa, both of Japan, assignors to Hitachi, Ltd., Japan

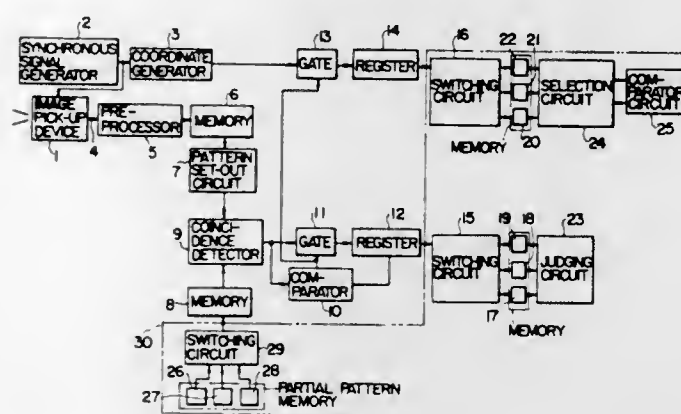
Filed Feb. 22, 1974, Ser. No. 444,858

Claims priority, application Japan, Feb. 22, 1973, 48-21636

Int. Cl. G06k 9/04

U.S. Cl. 340—146.3 H

15 Claims



1. A system for detecting the position of a pattern comprising:

image pickup means for sequentially scanning an image of an object to produce first signals representative thereof; memory means for storing signals representative of a two-dimensional standard pattern which corresponds to a selected portion of a two-dimensional pattern of the object;

first means, responsive to said first signals, for generating second signals representative of sequential portions of a two-dimensional pattern of said object as sequentially scanned by said image pickup means;

second means, responsive to the scan of said object by said image pickup means, for generating third signals representative of the respective sequential positions of said sequentially scanned two-dimensional pattern portions;

third means, coupled to said memory means and said first means, for comparing the signals stored in said memory means with said second signals, to thereby detect which of said sequentially scanned two-dimensional pattern portions has the greatest degree of coincidence with said standard pattern; and

fourth means, coupled to said second and third means for calculating the coordinates of a specific position within the two-dimensional pattern of said object on the basis of the coordinates of the position of that pattern portion having the greatest degree of coincidence with said standard pattern.

3,898,618

FAIL-SAFE PRIORITY SYSTEM

James H. Scheuneman, St. Paul, Minn., assignor to Sperry Rand Corporation, New York, N.Y.

Filed June 10, 1974, Ser. No. 477,942

Int. Cl. H04q 9/00; H03k 5/20

U.S. Cl. 340—147 LP

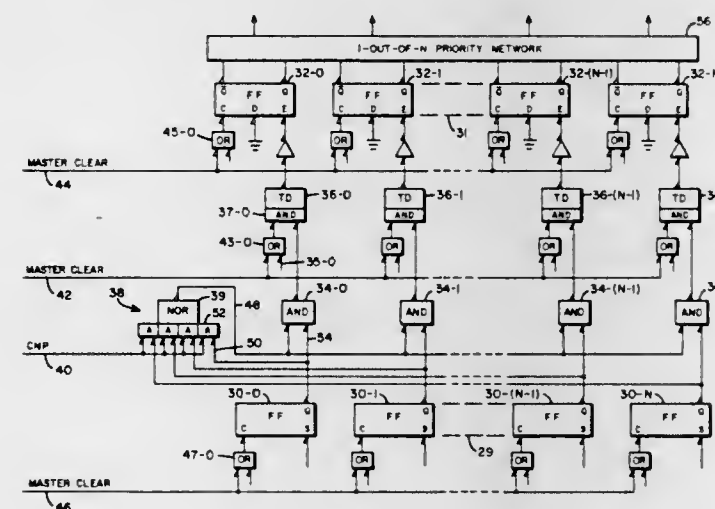
4 Claims

1. A fail-safe priority system, comprising:

receiving means for receiving a plurality of priority request signals;

holding means for holding selected ones of said priority request signals;

a plurality of tunnel diode detector means, each adapted to receive a separate associated one of said priority request signals from said receiving means for coupling the associated one of said priority request signals to said holding means;



clocking means, intermediate said receiving means and said plurality of tunnel diode detector means, generating a clocking signal when said holding means holds no selected ones of said priority request signals, for coupling to the associated ones of said tunnel diode detector means the priority request signals that have been received by said receiving means since the previous clocking signal.

3,898,619

OBJECT LOCATION/IDENTIFICATION SYSTEM

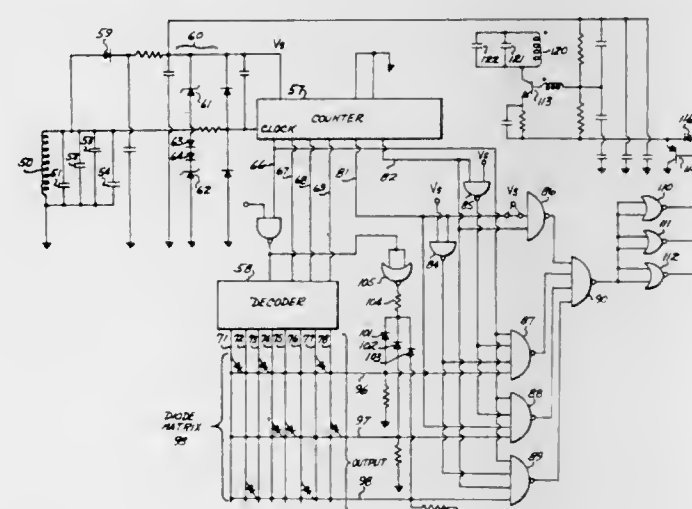
Bruce W. Carsten, North Vancouver, and Stanley Knotek, Vancouver, both of Canada, assignors to Glenayre Electronics, Ltd., North Vancouver, Canada

Filed June 29, 1973, Ser. No. 374,914

Int. Cl.² G01S 9/56; H04Q 7/00, 9/00

U.S. Cl. 340—152

12 Claims



1. An object location/identification system comprising a transceiver means and at least one unpowered responder means and further comprising:

means in said transceiver means generating a continuous alternating current interrogating clock signal having a predetermined frequency;

first means in said transceiver means and said responder means for inductively coupling said interrogating clock signal from said transceiver means to said responder means;

resonant circuit means in said responder means for detecting said interrogating clock signal;

circuit means in said responder means generating a DC power signal from said detected interrogating clock signal;

counter means in said responder means responsive to said detected interrogating clock signal and powered by said DC power signal for generating output pulses at predetermined counts of said interrogating clock signal;

means in said responder means responsive to said output pulses for generating a pulse series signal representing code data uniquely identified with said responder means, said pulse series signal having a repetition rate derived from said interrogating clock signal;

means in said responder means powered by said DC power signal for generating a data carrier signal having a frequency substantially greater than said predetermined frequency of said interrogating clock signal;

means in said responder means for controlling said data carrier signal generating means with said pulse series signal to produce an intermittent data signal, said code data being represented in binary format, the presence of said data carrier signal representing one binary state and the absence of said data carrier signal representing the other binary state; and

second means in said responder means and in said transceiver means inductively coupling said intermittent data signal from said responder means to said transceiver means.

3,898,620

SYSTEM FOR TRANSFERRING BITS BETWEEN A PLURALITY OF ASYNCHRONOUS CHANNELS AND A SYNCHRONOUS CHANNEL

Jean Leterrier, Chatou, France, assignor to Compagnie Europeenne de Teletransmission - C. E. T. T., Paris, France

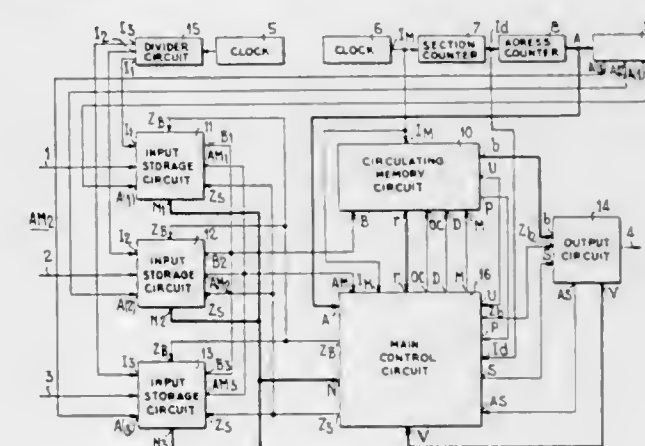
Filed Apr. 5, 1973, Ser. No. 348,052

Claims priority, application France, Apr. 11, 1972, 72.12639

Int. Cl. G11c 9/00, 21/00

U.S. Cl. 340—172.5

7 Claims



1. A bit transfer system for transferring data bits from each one of a number of asynchronous channels to a synchronous channel, the number of the asynchronous channels not exceeding a predetermined integer K greater than 1, and the number of data bits per data character not exceeding a predetermined integer n greater than 1 for any one of the asynchronous channels, said system comprising:

K first circuits respectively including K first terminal memories each having a one-bit capacity, each of said K first circuits comprising means for coupling to an asynchronous channel, means for successively transferring the bits from said asynchronous channel to its terminal memory, and signal generating means for generating a signal upon a bit entering its terminal memory;

a circulating intermediate memory comprising K.C sections

respectively including K.C data compartments and K.C. auxiliary compartments, C being an integer greater than 1, each data compartment comprising n successive cells for storing a character, each auxiliary compartment comprising j auxiliary cells, j being an integer greater than 1, for storing bits indicating the amount of occupation of the data compartment belonging to the same section; each of said cells having a one-bit storage capacity; said circulating intermediate memory comprising an assembly of (n+j) shift registers having successive stages and means for applying thereto the same clock pulses, said assembly of shift registers comprising n successive data shift registers for the circulation of said data compartments and j auxiliary shift registers for the circulation of said auxiliary compartments;

an address circuit fed by said clock pulses, for determining in said intermediate memory K groups of C successive sections respectively including K groups of C successive data compartments and assigning said K groups of data compartments and said K groups of sections to said K first terminal memories respectively through delivering address signals indicative of the position of said groups of sections in said shift registers;

a (K+1)th circuit having means for coupling to a synchronous channel, and including a (K+1)th terminal memory having an n-bit capacity for storing the characters successively extracted from said intermediate memory, transfer means for receiving each character successively stored in said (K+1)th terminal memory and successively transferring the bits thereof to said synchronous channel, signal generating means for generating signals indicating that said (K+1)th terminal memory is available for receiving a further character, and a timing circuit for determining the time channels respectively assigned to the characters originating from said K first terminal memories respectively, through delivering timing signals indicative of the time intervals respectively allowed for transferring characters from said K groups of data compartments respectively to said (K+1)th terminal memory;

auxiliary means coupled to the last two stages of said auxiliary shift registers for delivering auxiliary signals indicating whether the data compartment then occupying the penultimate stages of said data shift registers is or is not occupied by a complete character, and which is the first unoccupied cell of the data compartment then occupying the last stages of said data shift registers; and control means, controlled by said address signals, said clock pulses, said auxiliary signals, said timing signals, the signals from said signal generating means of said K first circuits, and the signals from said signal generating means of said (K+1)th circuit, for:

-writing bit by bit the bits successively stored in said K first terminal memories respectively, in the groups of data compartments respectively assigned to said K first terminal memories, so that the first available data compartment of a group, in the direction of circulation of the intermediate memory, successively receives the bits of a complete character, each writing-in of a bit in a data compartment occurring upon this data compartment entering the first stages of said data shift registers, and simultaneously modifying the contents of the auxiliary compartment of the section to which this data compartment belongs;

-transferring the complete characters successively stored in the first data compartments of said groups to said (K+1)th terminal memory during said time intervals respectively allowed for said groups respectively, each transfer from the first data compartment of a group to said (K+1)th terminal memory occurring upon said data compartment leaving the last stages of said data shift registers, and transferring the contents of each one of the sections of this group other than the first one to the preceding section of this group, this being hereinafter referred to as "contents transfer operation."

3,898,621 DATA PROCESSOR SYSTEM DIAGNOSTIC ARRANGEMENT

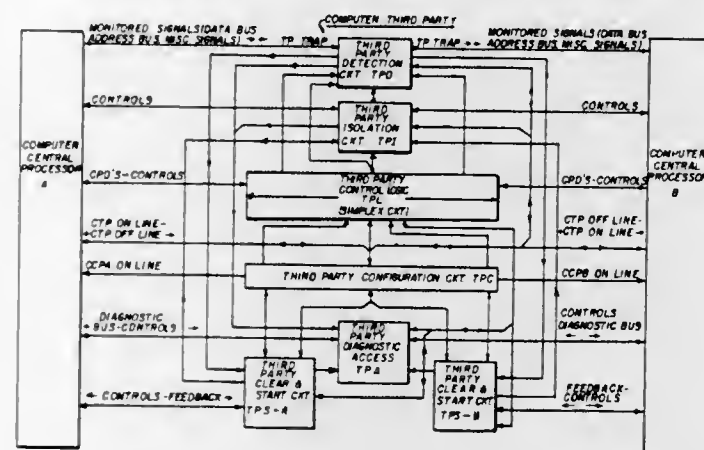
Paul A. Zelinski, Elmhurst, and Leo V. Jones, Jr., Chicago, both of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Apr. 6, 1973, Ser. No. 348,575

Int. Cl. G06F 11/00, 11/06; G01R 31/00

U.S. Cl. 340—172.5

12 Claims



1. Diagnostic apparatus for controlling the isolation of the cause of fault conditions occurring in data processor means including memory means for storing normal data processing information and for storing test data signals utilizable during diagnostic operations, said processor means normally performing data processing operations and for generating test signals, said processor means generating output signals when operating normally in response to input circuits of said processor means being enabled, said apparatus comprising:

monitoring means responsive to a fault condition occurring in said output signals of said data processor means for generating an isolation signal;

control means responsive to said isolation signal for causing said data processor means to halt its normal processing operations;

means for causing said data processor means to perform at least one series of predetermined operations in response to the stored test input signals from the memory means enabling the input circuits of the data processor means to cause it to generate test output signals in a predetermined manner;

second memory means for storing correct signals corresponding to the expected first and second output test signals; and

matching means for comparing at least some of said output test signals with said correct signals to generate a match signal when the compared output test signals are not the same as said correct signals; and

means responsive to said match signal to indicate which one of the output test signals did not match with the correct signal, whereby the fault condition is isolated to that portion of the processor means causing the match signal.

3,898,622 DATA ENTRY DISPLAY TERMINAL

James Lucian Maynard, Northfield; John Patrick Klosky, Mentor, and Suresh Laherilal Vasa, Warrensville Heights, all of Ohio, assignors to Addressograph-Multigraph Corporation, Cleveland, Ohio

Filed June 26, 1973, Ser. No. 373,773

Int. Cl. G06f 3/14, 3/02

U.S. Cl. 340—172.5

16 Claims

1. A display terminal comprising:

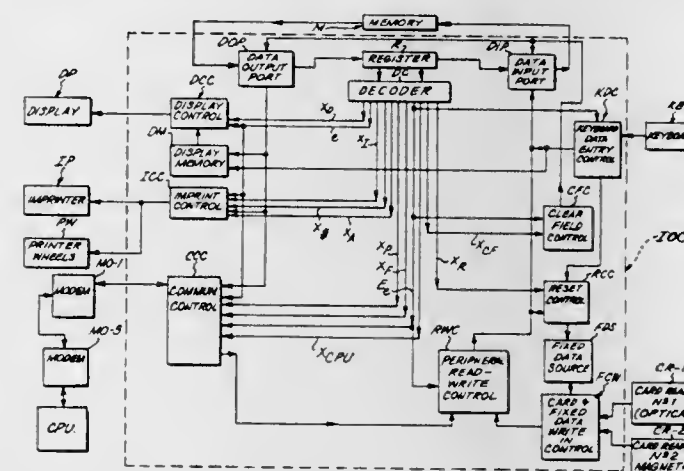
display memory means for storing a maximum of D data characters, wherein D is more than one, which have been entered therein for storage;

data entry control means for entering data characters into said display memory means so that not more than the last

D data characters entered are stored by said display memory means;

means for cyclically outputting said stored data characters in a character series sequence in the order said data characters were entered into said display memory means; display means having at least D display positions, 1 through D, for presenting visual representations of D data characters;

means for decoding said data characters as they are sequentially outputted by said outputting means in said character series sequence for providing output signals to said



display means indicative of which of a plurality of different visual representations is to be displayed at a selected one of said display positions for each decoded data character;

display position control means synchronized with said outputting means and said decoding means for selecting one of said D display positions at which a visual representation of a decoded data character is to be displayed such that the last data character entered into said display memory means is displayed at position 1 and the first one of said last of said D data characters entered is displayed at position D.

3,898,623 SUSPENSION AND RESTART OF INPUT/OUTPUT OPERATIONS

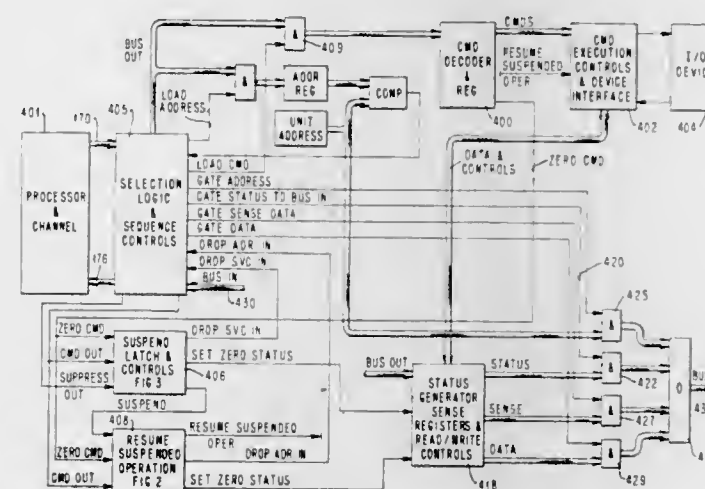
Roger L. Cormier, Pleasant Valley, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 5, 1973, Ser. No. 367,281

Int. Cl. G06f 3/00, 9/18; G06h 13/00

U.S. Cl. 340—172.5

7 Claims



1. In an input/output control mechanism including a channel and a control unit, said channel including means for executing a start I/O instruction to initiate a particular I/O operation the improvement comprising:

means at said control unit for registering a manifestation indicating that an I/O operation is suspended to thereby hold said control unit in a suspended state;

means in said channel for executing a restart instruction whereby said channel is set in such a state that said channel can resume the I/O operation;

means at said channel for sending a predetermined command to said control unit to resume said operation; and means at said control unit operative in response to said predetermined command and to said registering means for resuming said input/output operation at the point of suspension,

whereby a previously started I/O operation may be suspended during the execution of a channel program upon the occurrence of some condition requiring a delay before the operation can be continued.

3,898,624 DATA PROCESSING SYSTEM WITH VARIABLE PREFETCH AND REPLACEMENT ALGORITHMS

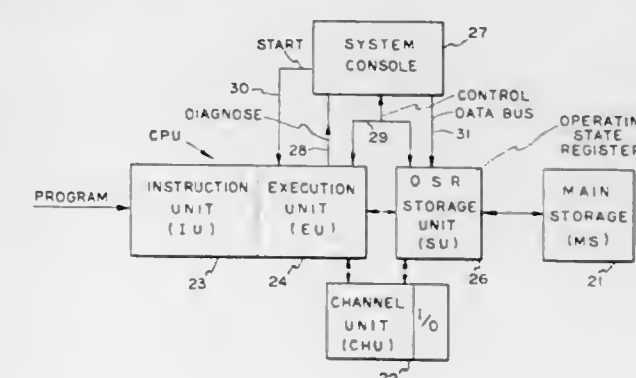
Richard J. Tobias, Santa Clara, Calif., assignor to Amdahl Corporation, Sunnyvale, Calif.

Filed June 14, 1973, Ser. No. 369,900

Int. Cl. G06f 7/28, 13/08; G05b 13/02

U.S. Cl. 340—172.5

7 Claims



1. A data processing system comprising, a processing unit, for providing addresses of locations to be accessed, main storage having a plurality of addressable locations, buffer storage having a plurality of addressable locations for coupling said processing unit to said main storage, addressing means for storing a current address for accessing said buffer storage,

control means for controlling the sequencing of addresses to said first addressing means for accessing said buffer store, detecting means for detecting the accessing of said buffer storage by said first addressing means to determine if a preselected criteria is met,

means, responsive to said detecting means and to said control means, for causing said addressing means to access said buffer storage with an address and at a buffer store location determined in response to said preselected criteria,

means for changing said preselected criteria whereby the conditions under which information is to be stored in said buffer storage are altered.

3,898,625 ANALOGUE RECURSIVE PROCESS CONTROL SYSTEM

Ralph James Lamden, 7 Weald Rise, Tilehurst, Reading, England

Continuation-in-part of Ser. No. 91,464, Nov. 20, 1970, abandoned. This application June 14, 1973, Ser. No. 370,006

Claims priority, application United Kingdom, Nov. 20, 1969, 56774/69; Apr. 18, 1970, 18634/70.

Int. Cl. G06f 3/05

U.S. Cl. 340—172.5

7 Claims

1. A computational system comprising:

a digital memory for storing a number of digital instruction words, each represented by a plurality of bits, said plurality of bits including a first group thereof for providing an analogue signal selection signal, a second group thereof for providing a function determining signal, and a third

end of said shaft and when said light exits from the other open end of said shaft, and

b. a plurality of bearing means mounting said shaft, said at least one pair of hollow radially extending arms axially located between at least two of said plurality of bearing means.

3,898,630

HIGH VOLTAGE INTEGRATED DRIVER CIRCUIT

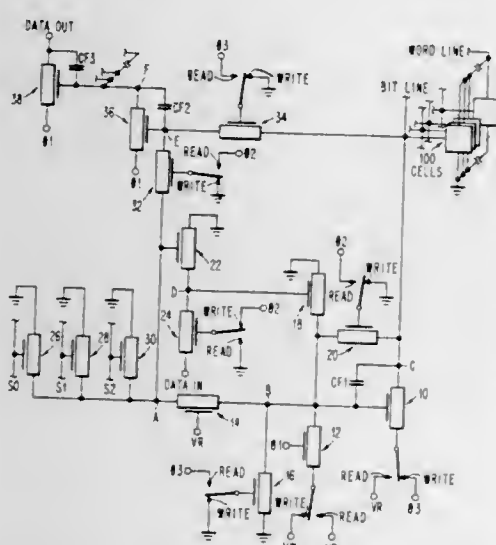
Aage A. Hansen, and Ralph D. Lane, both of Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 11, 1973, Ser. No. 405,617

Int. Cl.² G11C 11/40

U.S. Cl. 340-173 R

11 Claims



1. An integrated read mostly digital electronic memory array for storing information, comprising:
 - a plurality of memory elements requiring significantly higher potentials for writing information than for reading information formed on a semiconductor substrate,
 - a bit line also formed on said same semiconductor substrate and electrically connected to at least several of said memory elements;
 - a high voltage integrated driver circuit also formed on said same semiconductor substrate connected to said bit line, said high voltage integrated driver circuit being connectable to two independent sets of a plurality of potential terminals, each said plurality of potential terminals being either a steady state potential level or a pulsating potential level, said high voltage integrated driver circuit comprising field effect transistors having predetermined avalanche breakdown potential, several of said potential terminals providing potential levels in excess of said predetermined avalanche breakdown, each said plurality of field effect transistors exposed to said higher than avalanche breakdown potential having a current path from its gating electrode to a suitable potential, thereby preventing the accumulation of avalanche breakdown charge.

3,898,631

STORAGE INDICATOR

Eugene Clifford Brown; Gary Robert Heinberg, both of Poughkeepsie; Arthur Leroy Henry, Wappingers Falls; Robert Edward Mahoney, Poughkeepsie; Robert Mark Unterberger, Hopewell Junction, and Thomas Richard Wright, Shokan, all of N.Y., assignors to IBM Corporation, Armonk, N.Y.

Filed Dec. 13, 1973, Ser. No. 424,384

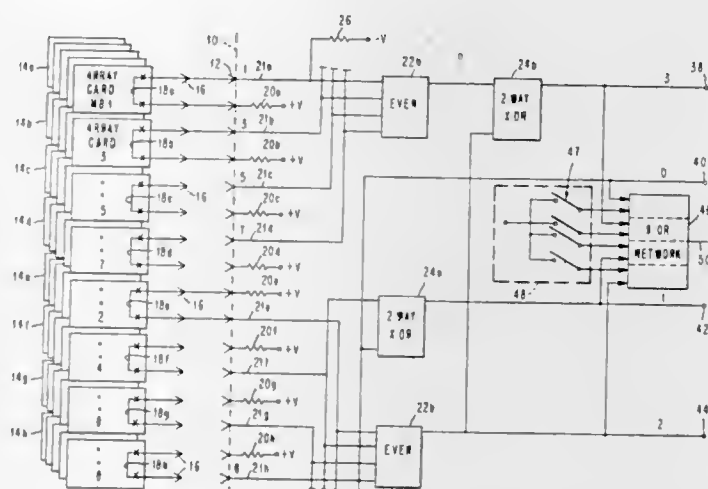
Int. Cl.² G11C 5/02, 29/00

U.S. Cl. 340-173 R

3 Claims

1. In a memory in which the amount of storage can be changed in segments by the addition or removal of memory array cards from an interface, apparatus for indicating the

amount of storage available in the memory unit, comprising: circuit means associated with each segment of array cards for providing an indication to the interface that the array cards of that segment are present at the interface;



detection means at a number of locations in the interface for the generation of a separate signal for the presence of array cards at each of those locations, and

logic circuit means for receiving all of the detection signals from the different detection means and providing a binary output indicative of the number of bits of storage present at the interface.

3,898,632

SEMICONDUCTOR BLOCK-ORIENTED READ/WRITE MEMORY

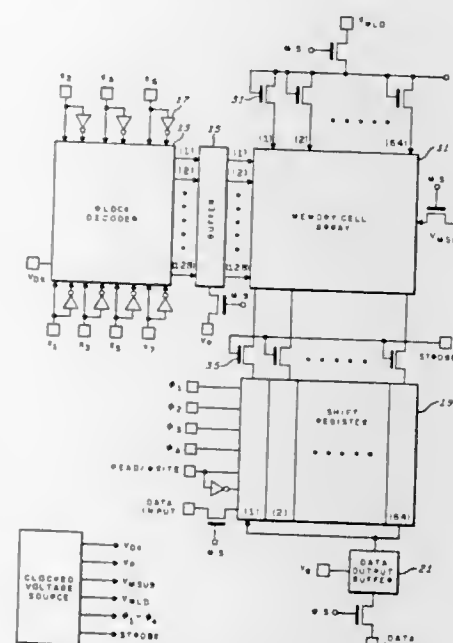
Ralph F. Spencer, Jr., Carlisle, Mass., assignor to Sperry Rand Corporation, New York, N.Y.

Filed July 15, 1974, Ser. No. 488,628

Int. Cl. G11C 11/40

U.S. Cl. 340-173 R

6 Claims



1. A digital memory system comprising an array of variable threshold insulated gate field effect memory transistors each having source, drain and gate electrodes and being arranged in 2^n blocks and m word columns on a common substrate.

said memory transistors being characterized in that they display a conduction threshold which may be shifted to a high or low level by the application of a negative or positive WRITE voltage respectively, across the gate insulator of said transistor, said transistors being further characterized in that information may be read out of said transistor by application of an intermediate-valued READ voltage across the gate insulator,

means for producing direct or inverted enabling signals in response to received WRITE or READ command signals respectively,

clocked means for applying READ and WRITE sequences of voltage pulses to components in said system,

means in said clocked means for applying specified gate voltages to the memory transistors in an addressed block selected in accordance with the value of a received address signal,

means in said clocked means for simultaneously applying voltage pulses to the drain electrodes of all memory transistors in said array,

shift register means containing m stages, each of said stages corresponding to a different one of said word columns, said stages being arranged in first and second groups so that the stages in one group correspond to alternate word columns and the stages in the other group correspond to the intermediate word columns,

means for simultaneously coupling each of said stages to the source electrodes of each of the transistors in the corresponding word column in response to a STROBE pulse from said clocked means so that information may be transferred between the memory transistors in the addressed block and the corresponding stages in the shift register,

each of said groups including an input stage and an output stage, said input stages including means for alternatively coupling binary input signals from a common input terminal to both input stages in response to a WRITE command signal or coupling feedback binary signals from the corresponding output stage in response to a READ command signal,

said clocked means including means for producing $m/2$ repetitive sequences of timing pulses in an interval between STROBE pulses, each sequence including a first pair of coincident timing pulses and a second pair of delayed coincident timing pulses,

said coupling means in the input stages of said first and second groups including means for enabling that coupling means in response to said first and to said delayed pairs of coincident timing pulses respectively, whereby successive binary input signals are coupled alternately to the input stages in said first and second groups,

each of said register stages including means for transferring data from that stage to the succeeding stage in response to a single complete sequence of timing pulses,

said READ sequence of voltage pulses including an access phase preceeding the occurrence of the repetitive sequences of timing pulses, said clocked means including means for producing a STROBE pulse and a voltage of READ magnitude to the addressed memory transistors during an access phase, whereby information stored in the addressed memory transistors is read into the shift register during said access phase,

said clocked means also including means for producing positive and negative WRITE voltages successively to the addressed memory transistors and then a charging voltage to all memory transistors while said sequences of timing pulses are being applied to the shift register, whereby addressed memory transistors are prepared for the entry of fresh data,

said clocked means still further including means to produce concurrent STROBE and negative WRITE pulses after the termination of said sequences of timing pulses so that information in the shift register may be transferred to the addressed memory transistors.

3,898,633

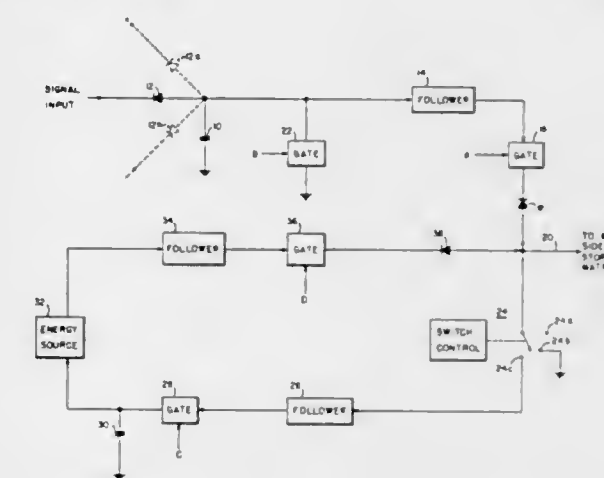
ANALOG MEMORY RETENTION TIME EXTENDER
Garold K. Jensen, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 649,792, June 27, 1967. This application Apr. 2, 1969, Ser. No. 812,934

Int. Cl.² G11C 11/24

U.S. Cl. 340-173 R

3 Claims



1. An electrical circuit for use with a capacitor storage matrix comprising:
 - an input lead connecting said electrical circuit and the input side of said storage matrix:
 - first branch means connected to said input lead and functioning to receive new signals and to provide a path for said new signals to said input lead and including:
 - a capacitor connected to be charged by said new signals and gating means which function to periodically discharge said capacitor and
 - second branch means connected to said input lead and functioning to either increase the strength of signals in said input lead or to erase signals in said input lead and including a three position switch, the first switch position connecting said input lead to an open circuit, the second switch position connecting said input lead to ground and the third switch position connecting said input lead to a closed circuit which includes an energy source.

3,898,634

MAGNETIC-WIRE MEMORY SYSTEM

Toshikazu Yoneyama, Komabayashi, Japan, assignor to Toko Kabushiki Kaisha, Japan

Continuation of Ser. No. 315,466, Dec. 15, 1972, abandoned.

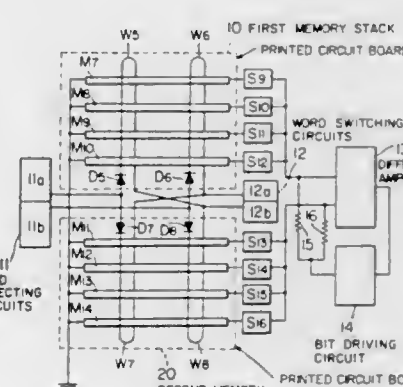
This application Aug. 16, 1974, Ser. No. 498,101

Claims priority, application Japan, Dec. 18, 1971, 46-102285

Int. Cl.² G11C 11/155

U.S. Cl. 340-174 RC

5 Claims



1. A magnetic-wire memory system of a balanced, address selecting matrix tape which comprises a first memory stack

and a second memory stack each including an equal number of magnetic lines and each including an equal number of word lines, and arranged in a symmetrical manner, a word driving circuit comprising word selecting circuits and word switching circuits commonly provided for these stacks in a manner such that operation of one word selecting circuit causes a potential variation in a selected word line of each stack while simultaneous operation of one word switching circuit energizes the selected word line of only one stack, a differential amplifier having inputs connected to receive output signals from the magnetic lines of a different one of these stacks, a plurality of bit selecting switching circuits connected respectively to all of the information lines, resistor means, and a bit driving circuit arranged to drive two magnetic lines symmetrically through said resistor means and corresponding bit selecting switching circuits, whereby when one aligning word line and two magnetic lines are selected by the word driving circuit and the corresponding switching circuits, information signals including noises are delivered from one of the magnetic wires while only noises are delivered from the other magnetic wire, and the noises cancel each other in the differential amplifier.

3,898,635

POSITION MEASURING TRANSFORMER

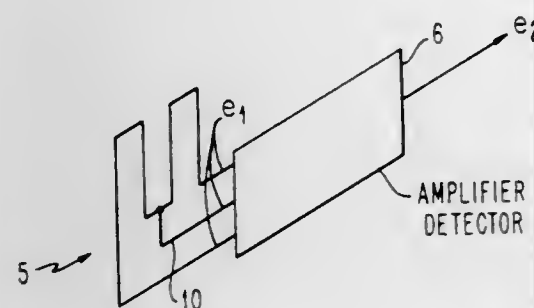
Robert Wayne Kulterman, Boca Raton, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 20, 1973, Ser. No. 426,837

Int. Cl.² H01R 33/04

U.S. Cl. 340—196

1 Claim



1. A position sensitive transformer device, comprising:
 - a primary inductor means for radiating flux, said primary inductor means comprising a series of uniformly spaced and parallelly disposed electrical conductors, said conductors being connected together in a series circuit;
 - a primary oscillator means for generating high frequency alternating current signals of varying potential relative to a ground potential, said primary oscillator means being connected in parallel with said primary inductor means to complete an electrical circuit therewith;
 - a secondary inductor means for receiving said radiated flux from said primary inductor means, said secondary inductor means comprising a series of uniformly spaced and parallelly disposed electrical conductors, the spacing thereof being equal to the spacing of the conductors of said primary inductor means, said conductors being connected together in a series circuit and further having a center tap located at the mid point of said series connected array of electrical conductors; and
 - a detector and amplifier means for detecting and amplifying electrical signals relative to the electrical ground of said oscillator means, which signals are induced in said secondary inductor means;
 - said detector and amplifier means being connected in parallel with said secondary inductor means to complete an electrical circuit therewith, and with said center tap being referenced to ground potential;
 - said detector and amplifier means further including means for detecting the zero potential level of said induced signals in said secondary inductor means at the amplitude modulated minima of said signals induced in said second-

dary inductor by the relative motion between said primary inductor means and said secondary inductor means; said primary and secondary inductor means being mounted on adjacent surfaces and positioned parallel to one another and spaced apart by a distance less than said spacing between said conductors of said primary and said secondary inductor means, said primary and secondary inductor mounting surfaces further including means for producing relative movement between said surfaces in a direction of travel perpendicular to said parallelly disposed conductors of said primary and said secondary inductors mounted thereon and parallel to said surfaces on which said inductors are mounted, thereby varying the induction between said primary and secondary inductors and creating an amplitude modulated induced signal in said secondary inductor means during movement thereof relative to said primary inductor means.

3,898,636

SOLID STATE CONTROL AND DISPLAY BOARD

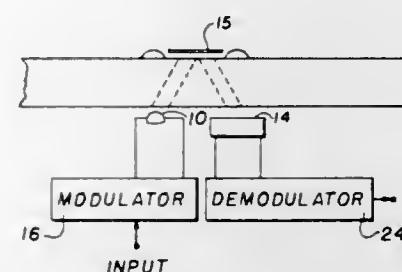
Edwin W. Smith, Del Mar, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 2, 1974, Ser. No. 466,432

Int. Cl.² G08B 5/22; H04N 3/14; H04Q 1/00; G09F 9/14

U.S. Cl. 340—225

1 Claim



1. In a control and display board for the control and display of communication switching, data transfer switching, data sampling for monitor test of operating systems and the like; the combination comprising:
 - a. a plurality of display points,
 - b. light emitting diode means associated with each of said display points for indicating the status of switch, connections associated, respectively, with each of said display points,
 - c. modulator means coupled to said each of said light emitting diodes for modulating said diode with an input signal,
 - d. light sensitive detector means associated with said light emitting diode means for sensing the modulated light signal emitted by said light emitting diode means,
 - e. movable light reflecting means associated with said display points for reflecting light emitted by said light emitting diode means to said light sensitive means when positioned to cover one of said display points,
 - f. demodulator means connected to said light sensitive detector means for providing an output signal when said display point is covered by said reflecting means.

3,898,637

DETECTION MEANS FOR GAS ENTERING HUMAN BLOOD SYSTEM FROM EXTRA-CORPOREAL TUBING
Eugene B. Wolstenholme, 365 W. Bristol Rd., Northampton Twp., Southampton, Pa.

Filed July 27, 1973, Ser. No. 383,284

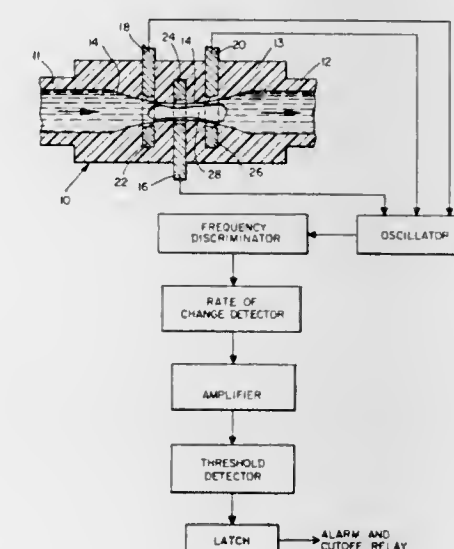
Int. Cl.² G08B 21/00; A61M 5/14

U.S. Cl. 340—239 R

8 Claims

1. Apparatus for use with a system to detect discontinuities in a medium in a fluid path comprising:
 - a housing unit having ingress and egress portions adapted to be connected in fluid communication with a flow line,

said housing unit further including a central portion having a controlled restriction with which said ingress and egress portions communicate; and



a plurality of substantially annular sensing elements which externally encircle said controlled restriction, at least one of said elements being disposed along said controlled restriction intermediate the ends thereof, said elements being separated from the area within the controlled restriction by a wall of predetermined thickness.

3,898,638

DIFFERENTIAL TEMPERATURE SENSOR SYSTEM AND IMPROVEMENTS IN A FLUID FLOW DETECTOR

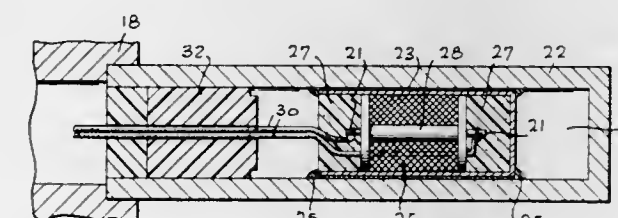
Robert A. Deane, 22344 Mandell St., Canoga Park, Calif. 91304, and Malcolm M. McQueen, 19430 Marilla St., Northridge, Calif. 91324

Filed Aug. 9, 1973, Ser. No. 386,962

Int. Cl.² G08B 21/00

U.S. Cl. 340—243

10 Claims



1. An improved differential temperature sensor system, which system comprises a plurality of spaced probes thermally connected to a heat source probe, said spaced probes and heat source probe adapted for insertion into a flow path, running substantially perpendicular to each of said probes, each of said spaced probes comprising:

- a. a hollow closed casing defining a central cavity;
- b. a heat sensor wire disposed on a support block within said cavity;
- c. means for interconnecting said wire with a power source and with means for detecting fluctuations in resistance of said wire with temperature, each of said casings and the components therein being essentially identical in construction so as to have substantially the same thermal length, external surface finish, external and internal diameter geometry and composition, whereby said system exhibits improved thermal accuracy.

3,898,639

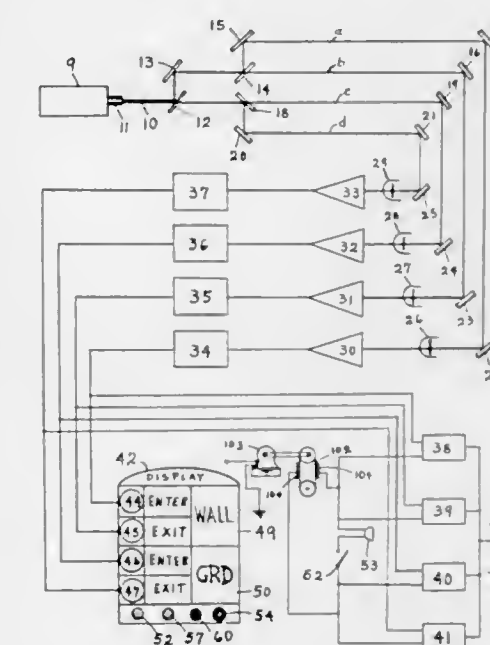
SECURITY SURVEILLANCE LASER SYSTEM
Hrand M. Muncheryan, 1735 Morningside St., Orange, Calif. 92667

Filed Aug. 24, 1972, Ser. No. 283,542

Int. Cl. G08b 13/18

U.S. Cl. 340—258 B

11 Claims



1. A security surveillance laser system for surveying and detecting unauthorized entry or exit of a person at the enclosure of a restricted area, said system comprising: a housing having therein means for producing and projecting a single laser beam, means disposed within said housing for splitting said single laser beam into an array of equal-energy laser beams with the sum of the energies thereof equal to the energy of said single laser beam, radiation-sensing elements corresponding to the number of split laser beams disposed in said housing adjacent to said means for producing and projecting a single laser beam, rows of laser radiation-diverting means positioned laterally and adjacent the top and near-ground level on each side of said enclosure, along the entire length thereof, each of said rows of radiation-diverting means receiving a split laser beam to deploy successively said laser beam from one radiation-diverting means to another along said enclosure to a corresponding radiation-sensing element in said housing, each of said radiation-sensing elements having a first means to amplify the photosignal from the respective row of radiation-diverting means and a second means electrically coupled to said first means and adapted to sustain a quiescent operational state of said system during absence of occurrence of an event therein; means for producing acoustic signals provided thereon with multiple acoustic tracks, each of which being electrically coupled to one of said second means and activated thereby; said second means being further adapted to sense through said first means an interruption in the respective laser beam upon being crossed by a person and to determine the direction of crossing thereof, thereby transforming the quiescent operational state of that section of the system comprising the respective radiation-sensing element, the first and second means, and the respective track of said means for producing acoustic signals into an active operational state; means electrically coupled to said means for producing acoustic signals to receive an acoustic signal therefrom and to modulate and amplify said signal for transmission to an annunciator located remotely from said housing to alert authorized personnel of the type of event occurring at the enclosure of the restricted area; and, display means electrically coupled to each of said radiation-sensing elements through the corresponding second means thereof for simultaneously receiving therefrom a display signal resultant from the type of interruption of the respective laser beam sensed by the respective radiation-sensing element; said display means including a

control means for the control of said security surveillance laser system.

3,898,640

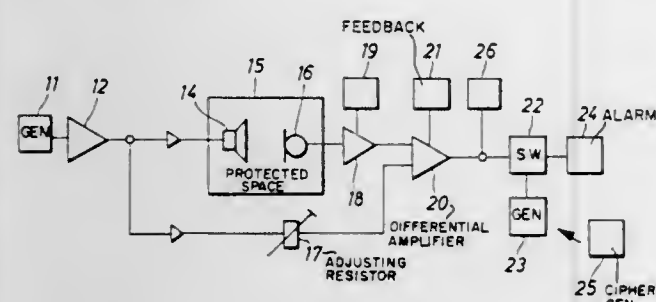
METHOD AND APPARATUS FOR PROVIDING SPACE SECURITY BASED UPON THE ACOUSTICAL CHARACTERISTICS OF THE SPACE

Erich Hossbach, Neumarkt-Muhlen, Germany, assignor to Faser-und Kunststoff Presswerk Romen KG, Germany
Filed July 24, 1973, Ser. No. 382,192
Claims priority, application Germany, July 31, 1972, 2237613

Int. Cl. G08b 13/16

U.S. Cl. 340-258 R

11 Claims



1. A method of providing a security protection for a space, comprising the steps of:

generating compressional oscillations in the infrasonic frequency range to occupy substantially completely said space to be protected, said compressional oscillations in the infrasonic frequency range having a frequency which is no greater than half the natural resonant frequency of said space;

detecting the fundamental compressional wave of said compressional oscillations in the infrasonic frequency range; and

triggering a security measure responsive to the detected fundamental compressional wave of said compressional oscillations in the infrasonic frequency range in response to changes in the effective volume of said space to be protected independently of any movement within said space.

3,898,641

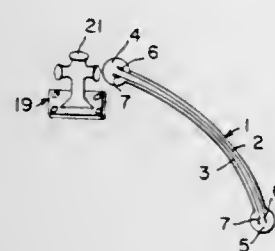
SECURITY ROPE ALARM MEANS

Philip M. Banner, 28 Oxford Rd., Massapequa, N.Y. 11758
Filed Dec. 23, 1971, Ser. No. 211,210

Int. Cl. G08b 13/06

U.S. Cl. 340-280

9 Claims



1. A Marine Security Alarm Means comprising, ropelike means for securing a boat mooring bit to a dock mooring bit having a first electrically conductive means incorporated in said rope like means, second electrically conductive means on one of said mooring bits, alarm indicator means, said first and second electrically conductive means being connected to said alarm indicator means, whereby when said ropelike means is lifted from said mooring bit, said

alarm indicator means is activated by said lifting or separation from said mooring bit.

3,898,642

COPLANAR ANALOG DISPLAY DEVICES OF THE VARIABLE LENGTH BAR TYPE

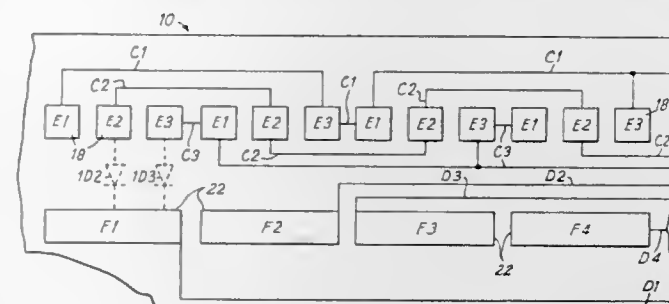
Howard Anthony Dorey, Godalming, and Desmond Wheable, Camberley, both of England, assignors to The Solartron Electronic Group Limited, Farnborough, England
Filed Aug. 20, 1973, Ser. No. 389,851

Claims priority, application United Kingdom, Aug. 19, 1972, 38780/72

Int. Cl. G09f 9/32; G02f 1/18

U.S. Cl. 340-324 R

14 Claims



1. An analogue display device for producing an analogue display in response to a digital signal, the device comprising a substantially coplanar array of electroluminescent devices arranged in a line, the array containing M adjacent groups of N adjacent light-emitting electroluminescent devices, where $N > 2$, and the devices each having a first energising input and a second energising input; N coplanar first conductors, the r^{th} first input of the electroluminescent devices of each odd-numbered group and the $(N+1-r)^{th}$ first input of the electroluminescent devices of each even-numbered group (where $r = 1$ to N) being connected to a respective one of said first conductors, none of said first conductors crossing another; and M coplanar second conductors, each respectively connected to all the second inputs of the electroluminescent devices of a respective one of the M groups.

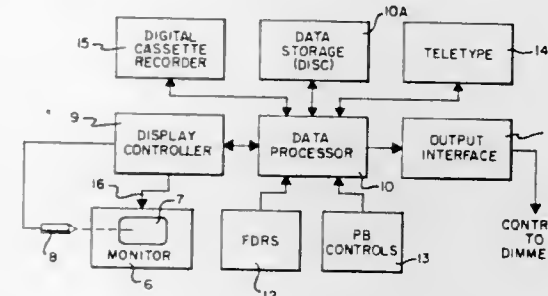
3,898,643

ELECTRONIC DISPLAY CONTROLLED STAGE LIGHTING SYSTEM

Adrian Ettlinger, 7 Lefurgy Ave., Westchester City, N.Y.
Continuation-in-part of Ser. No. 134,979, April 18, 1971, abandoned. This application Aug. 24, 1973, Ser. No. 391,481
Int. Cl. G06f 3/14

U.S. Cl. 340-324 A

21 Claims



1. Display-controlled apparatus for controlling a plurality of stage lighting circuits, comprising: display means for displaying data in the form of a character matrix; selecting means for selectively designating portions of the displayed character matrix; a data processor connectable to said display means and said selecting means, said data processor including: first data storage means for storing a plurality of digital data records, each data record including data representing a

plurality of lighting circuit values, each circuit value being associated with one of the lighting circuits to be controlled;

second data storage means for storing a single digital data record representing a plurality of lighting circuit values; selective retrieving means connectable to said first and second data storage means for transferring selected data records from said first data storage means to said second data storage means;

means for causing said display means to display characters identifying the lighting circuits controlled in a first portion of said character matrix;

means connectable to said second data storage means and said display means for causing said display means to display characters representing the circuit values stored in said second data storage means in said first portion of said character matrix adjacent said characters identifying the lighting circuits with which said circuit values are associated;

circuit value changing means connectable to said second data storage means and said selecting means for changing the circuit values of the data record stored in said second data storage means in response to the designation by said selecting means of the associated lighting circuit identifying characters in said first portion of said character matrix display; and

a digital-to-analog converter means connectable to said second data storage means for converting the digital data record stored in said second data storage means to a plurality of voltages for controlling the stage lighting circuits.

3,898,644

TV DISPLAY SYSTEM

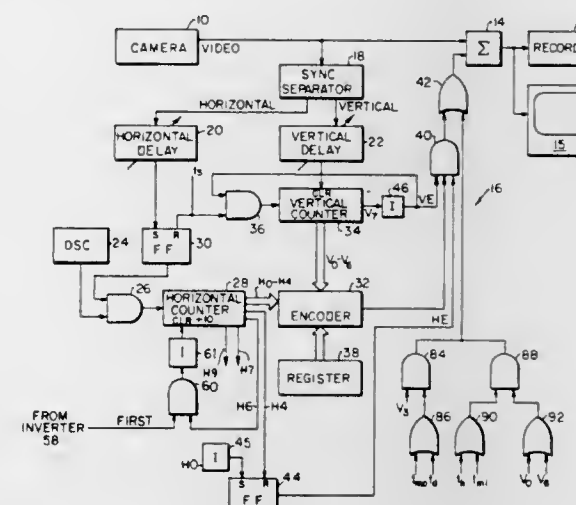
Larry K. Baxter, Lexington, Mass., assignor to QSI Systems, Inc., West Newton, Mass.

Filed Sept. 13, 1973, Ser. No. 396,797

Int. Cl. G08B 5/36

U.S. Cl. 340-324 AD

8 Claims



1. A character display system for displaying characters in raster form, said system comprising

A. a raster encoder that converts the combination of

1. vertical timing signals,
2. horizontal timing signals and
3. character code signals representing a character to be displayed into signals corresponding to a raster presentation of the character,

B. means for generating the horizontal timing signals,

C. means for generating the vertical timing signals,

D. a circulating character shift register that

1. shifts in response to shift signals,
2. contains, in the form of said character code, the characters to be displayed, and

3. includes

i. output conductors that provide to said encoder the character code input therefor, said characters being arranged in said shift register so as to be shifted to said output conductors in the order in which they are to be displayed,

ii. a counter as one stage thereof,

E. means for incrementing said counter to update the displayed information,

F. means for applying shift signals to said shift register in synchronism with the tracing of the portions of the raster lines associated with the respective displayed characters.

3,898,645

DISPLAY APPARATUS FOR A REGISTRATION CONTROL SYSTEM WHERE MOVEMENT IS REPRESENTED BY ENCODER PULSES

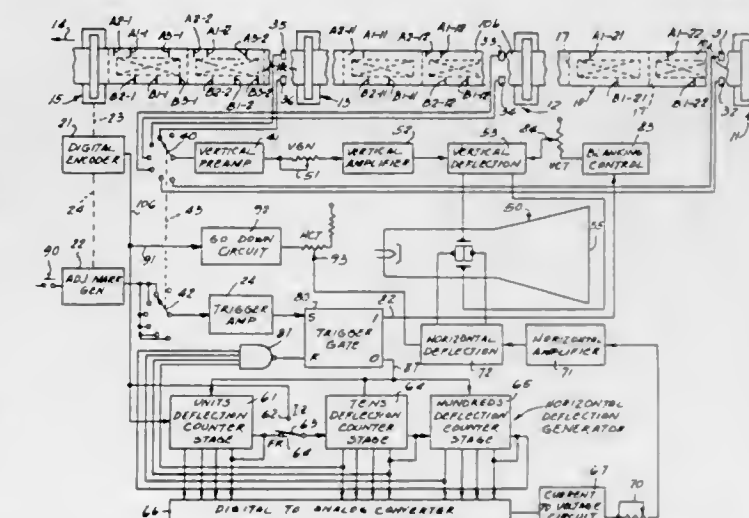
Daniel A. Coberley, Danville, Ill., assignor to Hurlertron Altair, Danville, Ill.

Filed Jan. 28, 1974, Ser. No. 436,987

Int. Cl. G06f 3/14

U.S. Cl. 340-324 A

10 Claims



1. In a system for controlling the cyclical application of work at successive work applying stations to a moving work receiving material at repeat intervals and such that the work applied at the successive stations has a desired registration condition and wherein a reference pulse is generated to mark the beginning of each cycle at a work applying station and a scanner pulse is generated at each work applying station in each cycle to represent the point of application of the work to the work receiving material at such station, apparatus for displaying such scanner pulses to facilitate set up, comprising a display device having a display screen and having first and second deflection means for controlling deflection along respective first and second coordinate axes on said display screen, said second deflection means being connectable to receive said scanner pulses during set up of the system,

encoder means for coupling with work receiving material for generating encoder pulses as a function of successive increments of movement thereof to subdivide the repeat intervals,

a counter deflection generator having a counter input connected to said encoder means for counting of encoder pulses and having an output connected with said first deflection means for producing uniform deflection along said first coordinate axis of the display screen as a function of movement of said work receiving material, and having a counter cycle control input for initiating a counting cycle of said deflection generator and responsive to a reference pulse marking the beginning of a cycle at a work applying station to initiate a counting cycle of the deflection generator,

said deflection generator having a first counting condition wherein a given maximum deflection along the first deflection axis is produced in response to counting of a first number of encoder pulses corresponding to at least a substantial proportion of a repeat interval between suc-

cessive applications of work at a work applying station and having a second counting condition wherein such given maximum deflection along said first deflection axis is produced in response to counting of a second number of encoder pulses equal to a fraction of said first number, and

switch means connected with said deflection generator and operable to selectively place said deflection generator in said first counting condition to display substantially all of the scanner pulses occurring during successive repeat intervals and thereby to facilitate selection of a desired scanner pulse and in said second counting condition to display a scanner pulse occurring in a selected portion of successive repeat intervals, whereby the system can be adjusted to display a selected scanner pulse on an enlarged scale on said display screen.

3,898,646

LIQUID CRYSTAL DYNAMIC DRIVE CIRCUIT

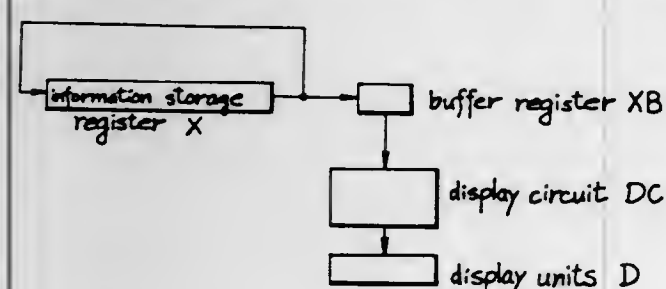
Isamu Washizuka, Kyoto, and Saburo Katsui, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Nov. 21, 1973, Ser. No. 418,043

Claims priority, application Japan, Nov. 22, 1972, 47-117554

Int. Cl. G08b 5/36

U.S. Cl. 340-336

9 Claims



1. A display system comprising an information register for storing multi-digit information to be displayed, a plurality of liquid crystal display units each having a first optical state and a second optical state, said plurality of liquid crystal display units providing a visual indication of the multi-digit information at their first optical states, and means for applying to the liquid crystals signals of a high frequency sufficient to turn the liquid crystal units to their second optical states to erase said visual indication when said information is initially transmitted to the liquid crystal units.

3,898,647

DATA TRANSMISSION BY DIVISION OF DIGITAL DATA INTO MICROWORDS WITH BINARY EQUIVALENTS

Pier Giuseppe Morra, C.so Plebisciti, 3, 20129 Milan, and Loris Crudeli, Frazione Saliceto, 12060 Pocapaglia (Cuneo), both of Italy

Filed July 23, 1973, Ser. No. 381,617

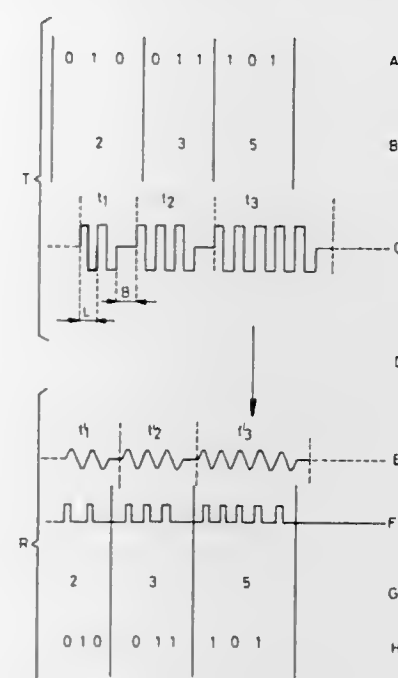
Claims priority, application Italy, July 21, 1972, 27264/72
Int. Cl. H03k 13/00

U.S. Cl. 340-347 DD

3 Claims

1. A method for the automatic electronic transmission of data by means of an electronic transmitter and an electronic receiver, comprising the steps of inserting into the transmitter in digital form the data to be transmitted in the form of a series of microwords each consisting of three bits whose different arrangements correspond each to a different one of eight possible decimal integers, electronically counting the number of microwords in said series, electronically converting each said microword into a train of symmetrical pulse pairs followed by a pause, the number of pulse pairs in each said train being equal to the integer that corresponds to the associated microword binary meaning, transmitting said trains of pulse pairs with interspersed pauses to said receiver, in said receiver

counting in an electronic counter each said train of pulse pairs, resetting said counter during each said pause, electronically reconstructing in said receiver each microword that corresponds to the number of pulse pairs counted during each pulse train, electronically counting the number of microwords



thus reconstructed, and, when said number of microwords thus reconstructed equals said number of microwords in said series, electronically producing an output of said reconstructed microwords, thereby reconstructing the transmitted data in the form of the same said series of microwords.

3,898,648

SYNCHRO-TO-DIGITAL CONVERTER

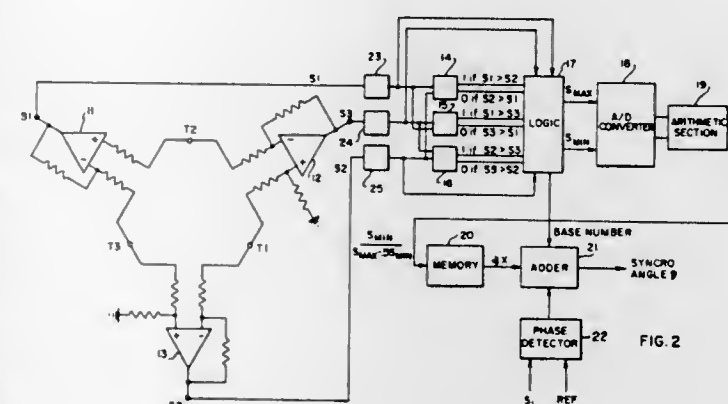
Michael C. Garlazzo, Bowie, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 7, 1973, Ser. No. 422,619

Int. Cl. G08C 9/04

U.S. Cl. 340-347 SY

2 Claims



1. A synchro to digital converter having synchro signals S1, S2, and S3, comprising:

means for comparing said three synchro signals with each other to determine the 30° zone being examined and producing a base angle based on said zone, and yielding S_{max} and S_{min} , wherein S_{max} is the largest synchro signal and S_{min} is the smallest synchro signal of signals S1, S2, and S3;
means for converting analog signals S_{max} and S_{min} into digital form;
means for producing an angle $X = \arctan$

$$\frac{S_{min}}{S_{max}} = .55_{min}$$

means for producing a phase detector angle;
means for adding said base angle with said angle X, and said phase detector angle to supply a synchro angle.

3,898,649

ENCODER DEVICE FOR USE WITH POLYDECADE CONSUMPTION OR USAGE METERS

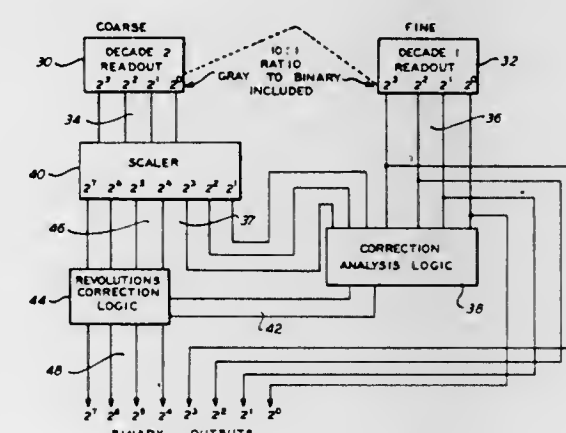
Donald C. Beck, Parsippany, N.J., assignor to Automated Technology Corporation, Hackensack, N.J.

Filed Jan. 18, 1974, Ser. No. 434,422

Int. Cl. G08C 9/00; H03k 13/00

U.S. Cl. 340-347 P

7 Claims



1. Encoding apparatus for providing unambiguous data outputs from polydecade meters of the type including a plurality of successive decades, each decade including a rotatable shaft for a dial indicator associated therewith, successive shaft rotations being related by a fixed gear ratio n therebetween, comprising in combination:

a plurality of encoding wheels, at least one said wheel being coaxially mounted for rotation with the rotatable shaft associated with each decade of said polydecade meter; each said encoding wheel being divided into a plurality of sectors extending about said wheel; machine readable indicia on said wheel for determining which of said sectors is at an angular reference position; means for reading said indicia at the wheels associated with a respectively higher and lower order decade, to provide measured determinations of the rotational positions of said wheels in terms of said sectors; means for establishing the possible rotational range of said lower order decade wheel from said measured value of said higher order wheel; means for comparing the measured rotational position of said lower order wheel with said determined range to generate an adjusting signal; and means for adjusting upwardly, downwardly or leaving unchanged the measured value of said higher decade wheel, in accordance with said determination of whether said lower decade wheel falls within said range.

3,898,650

TAPE RECORDING SYSTEM FOR RADAR

Garold K. Jensen, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 2, 1969, Ser. No. 812,933

Int. Cl. G01S 7/02

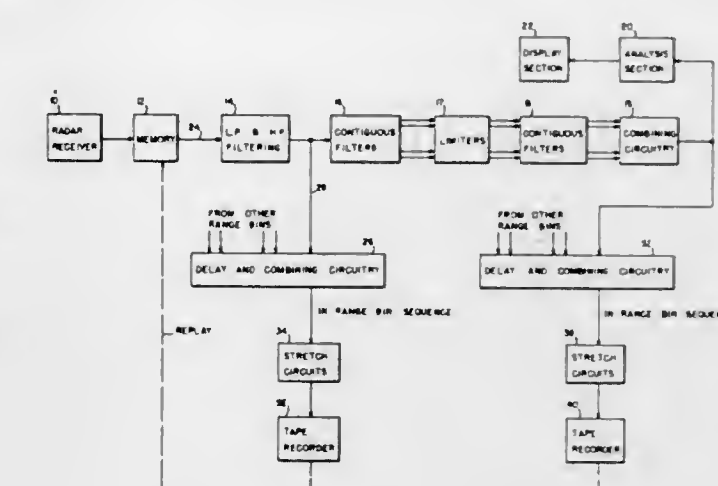
U.S. Cl. 343-5 PC

4 Claims

1. In a radar system wherein the receiver signal is in turn stored in a memory means, read out with time compression, filtered to remove backscatter, narrow-banded by contiguous

filter and limiter means, analyzed and displayed, a tape recording system comprising:

First signal stretching means connected to receive said receiver signal after the backscatter is removed by filtering but before the signal is narrow-banded by said contig-



uous filter and limiter means, said first signal stretching means functioning to stretch signals in a manner inversely related to said time compression and
A first tape recorder connected to said first signal stretching means.

3,898,651

MEMORY NOISE CANCELER

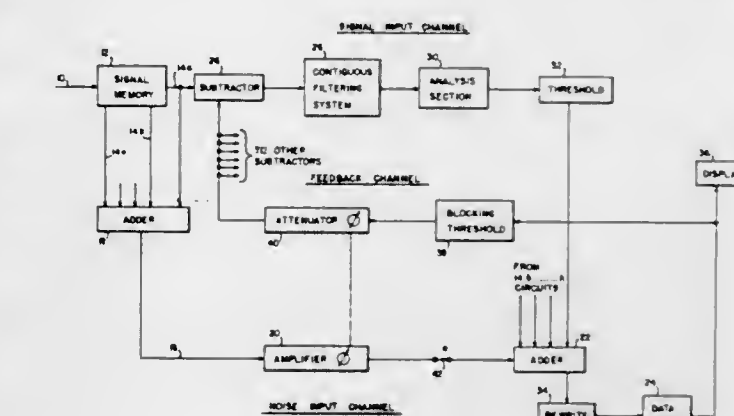
Garold K. Jensen, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 2, 1969, Ser. No. 812,938

Int. Cl. G01S 9/02, 9/42

U.S. Cl. 343-5 DP

8 Claims



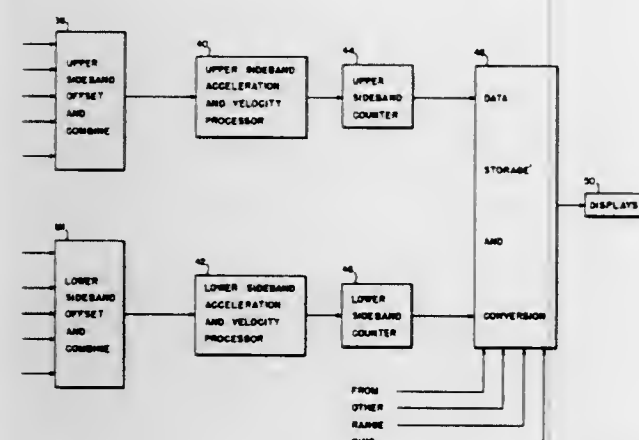
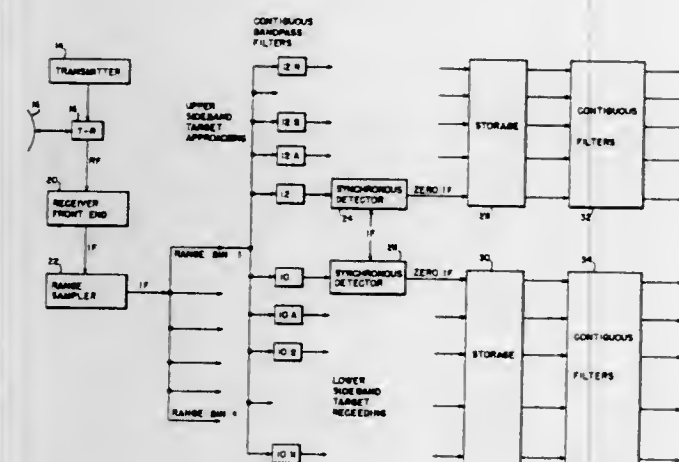
1. A canceler circuit for use in a radar having a receiver, comprising:

data store means connected to receive the output signal of the receiver of said radar;
feedback channel means connected to the output of said data store means functioning to pass only signals below a predetermined threshold;
subtractor means connected to receive the outputs of said radar receiver and said feedback channel means and functioning to produce an output signal by subtracting the feedback channel output from the output of said radar receiver and
signal input channel means connected to the output of said subtractor means and to the input of said data store means and functioning to detect target echo signals and to amplify said target echo signals above said predetermined threshold.

target by the use of a radar which radiates at a pulse repetition frequency f_p , a series of pulses of electromagnetic energy of a predetermined frequency f_0 comprising the steps of:

receiving the echoes of said series of pulses from said target;

obtaining the pulse line spectrum of said echoes by sepa-



rating the frequency components of said received echoes and comparing the number of said frequency components which are received with frequencies above and below said predetermined frequency f_0 as an indication of the direction and velocity of said target.

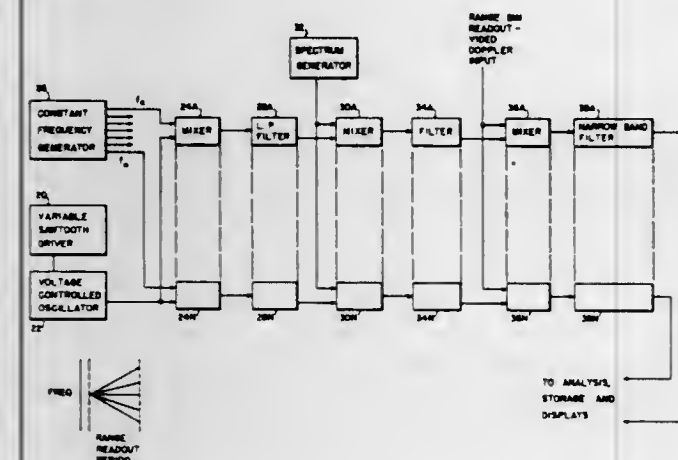
3,898,658 ACCELERATION AND VELOCITY MATCHING LOG GENERATOR

Garold K. Jensen, Alexandria, Va., and James E. McGeogh, Silver Spring, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 2, 1969, Ser. No. 812,939
Int. Cl.² G01S 9/44

U.S. Cl. 343—8

7 Claims



2. An oscillator system particularly suited for use in a radar which transmits pulses of energy having a frequency f_0 at a pulse repetition frequency f_{PRF} , comprising:

Signal producing means for producing sequential signals which are varied in frequency in a manner related to the doppler video signals in said radar for differing anticipated targets;

Spectrum generator means producing a fixed frequency spectrum signal having frequency components related to f_0 and $f_0 \pm n f_{PRF}$ where n is an integer and

Combining means for combining said sequential signals and said fixed frequency spectrum signal.

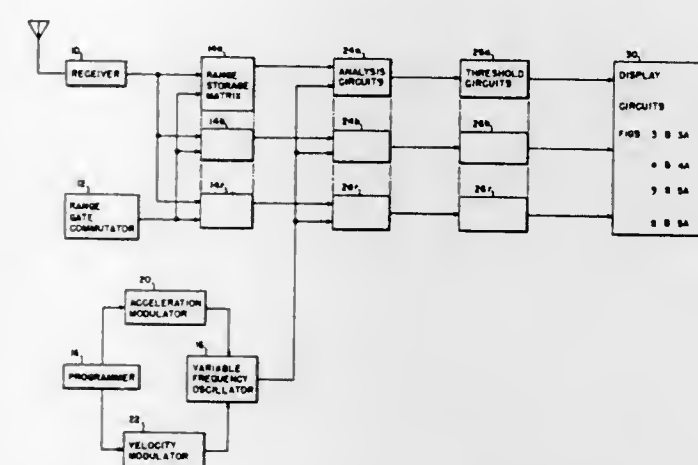
3,898,659 DATA STORAGE AND CONVERSION SYSTEM

Garold K. Jensen, Alexandria, Va., and James E. McGeogh, Silver Spring, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 9, 1969, Ser. No. 833,243
Int. Cl.² G01S 9/44

U.S. Cl. 343—8

12 Claims



1. A radar receiver and display system comprising: receiver means for receiving energy reflections from a target and producing a signal containing doppler frequencies which characterize the velocity and acceleration of said target;

analysis means, connected to said receiver means and including a variable frequency oscillator, for producing an output signal which normally includes only noise but producing an output signal above a predetermined threshold whenever the frequency of said variable frequency oscillator is caused to match the doppler frequencies of said receiver means signal;

threshold means connected to said analysis means and functioning to produce a signal of predetermined amplitude and duration whenever said analysis means output signal is above said predetermined threshold and at other times is substantially zero and

display means connected to said threshold means to present indications representative of differing parameters of said target.

3,898,660 TIME/BANDWIDTH INTERCHANGE SYSTEM

Allen C. Munster, Santa Ana, Calif., assignor to KMS Industries, Inc., Ann Arbor, Mich.

Filed Oct. 15, 1973, Ser. No. 406,487
Int. Cl. G01S 7/28

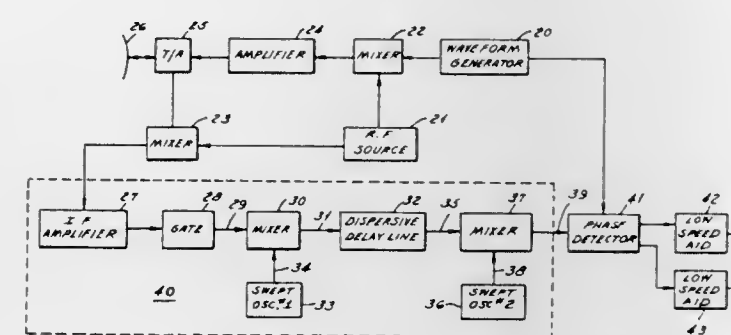
U.S. Cl. 343—17.2 PC

19 Claims

2. In the method of time/bandwidth interchange wherein wide-band frequency modulated pulses are converted to constant-frequency pulses each linearly offset in frequency in proportion to the time between wide-band pulses, the improvement comprising the steps of delaying each of said offset, constant-frequency pulses as a function of frequency such that succeeding delayed, offset constant-frequency pulses do

not overlap in time, and mixing each of said delayed, offset azimuth and range of said simulated target, said means for constant-frequency pulses with a signal having a rate of fre-

receiving a signal including a pair of spaced apart antennas,



quency variation equal to the rate of change of said frequency function.

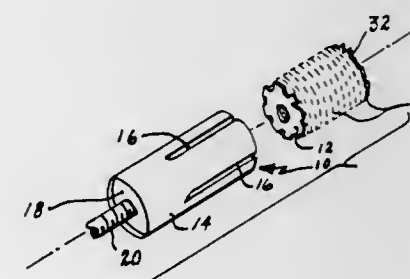
3,898,661 MINI-REGENERATOR

Ronald N. Kelly, Bedford, and Louis Henry Goulston, Stoughton, both of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 29, 1973, Ser. No. 418,318
Int. Cl.² H04K 3/00

U.S. Cl. 343—18 E

4 Claims



1. A mini-regenerator for dispensing articles comprising a housing, a pusher plate slideably mounted within said housing, at least one article to be dispensed located adjacent said pusher plate within said housing, means encompassing said article for aligning said article within said housing, a lead screw threadably engaging said pusher plate for moving said pusher plate, a drive means operably connected to one end of said lead screw for rotating said lead screw and means releasably secured to the other end of said lead screw for locking said article within said housing whereby said article may be expelled from said housing at a predetermined time.

3,898,662 RADAR TARGET SIMULATOR USING NO ELECTRICAL CONNECTION TO RADAR

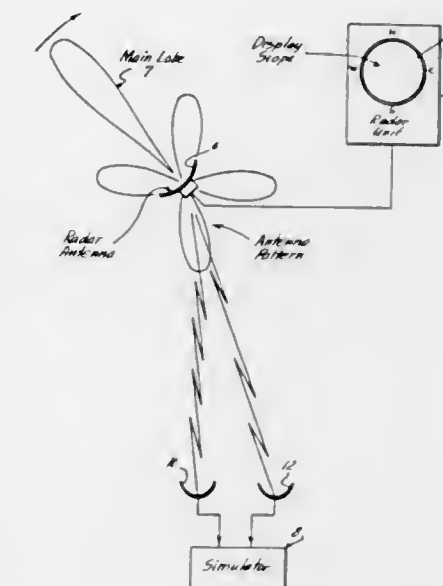
William R. Hom, Baltimore; Frederick J. Jaklitsch, Lutherville, and Raymond H. Bennighof, Phoenix, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 16, 1968, Ser. No. 753,221
Int. Cl.² H04K 3/00

U.S. Cl. 343—18 E

6 Claims

1. In a radar simulator apparatus, the improvement comprising means for receiving a signal from a radar unit having rotating antenna and a display scope, means for determining the rate of rotation of said antenna from said signal, means for transmitting a target signal to cause a simulated target to appear on said display scope, and means operable with said antenna rotation rate determining means for establishing the



said antennas being arranged to intercept a signal from the said rotating antenna of said radar unit.

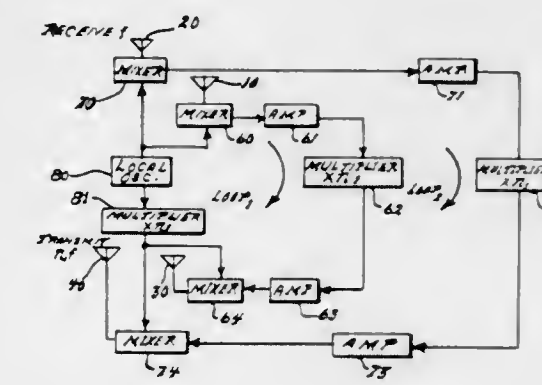
3,898,663 RETRODIRECTIVE TRANSPONDER

Joseph J. Albert, Orlando, Fla., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 1, 1970, Ser. No. 24,940
Int. Cl.² H04B 7/04

U.S. Cl. 343—100 TD

2 Claims



1. A retrodirective transponder comprising a retrodirective antenna array having at least first and second receiving antennas receiving a signal from an illuminating transmitter, at least first and second transmitting antennas re-radiating a signal parallel to the received signal and towards said illuminating transmitter, said first receiving and transmitting antennas being a first pair and said second receiving and transmitting antennas being a second pair, a first cascaded electrical loop interconnecting said first receiving and transmitting antennas consisting of a first mixer, a first amplifier, a first preselected frequency multiplier, a second amplifier, and a second mixer, a second cascaded electrical loop interconnecting said second receiving and transmitting antenna, said second cascaded electrical loop consisting of a third mixer, a third amplifier, a second preselected frequency multiplier, a fourth amplifier, and a fourth mixer, said first and second cascaded electrical loops being of equal length, a common local oscillator having a predetermined frequency output signal, said predetermined frequency output signal being injected into said first and third mixers, and a third preselected frequency multiplier interconnecting said common local oscillator and said second and fourth mixers.

3,898,664

LANDING SYSTEM WITH VARIABLE ANGULAR ELEVATION GLIDE PATH

Jacques Zakhelm, Paris, France, assignor to Office National d'Etudes et de Recherches Aeronautiques, Chatillon-Sous-Bagneux, France

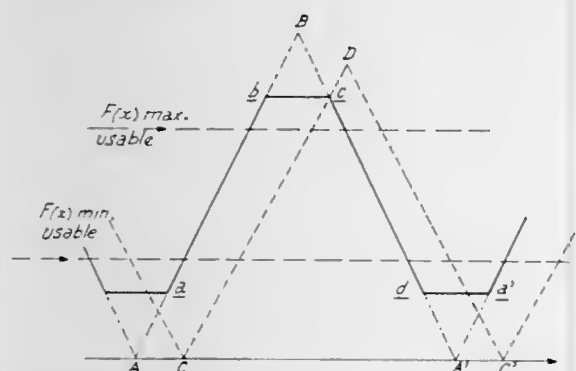
Filed Mar. 11, 1974, Ser. No. 449,595

Claims priority, application France, Mar. 14, 1973, 73.09105

Int. Cl. G01s 1/44

U.S. Cl. 343-108 M

3 Claims



1. A system for directing an aircraft along a path of variable angular direction comprising, at a ground station, a generator of a radiofrequency carrier, an antenna fed by said radiofrequency carrier and having a lobe shaped directive pattern, means for varying the angular direction of the antenna lobe according to a cyclic reciprocating scan movement, the rate of variation of said lobe angular direction being linear in function of time and being equal for the two directions of the reciprocating scan movement, means for modulating said carrier frequency by a modulating signal whose frequency varies linearly and cyclically in function of time with a rate of variation equal to the rate of variation of said lobe angular direction and with a phase delay with respect to said lobe angular direction variation and, aboard said craft, means for demodulating said radiofrequency carrier and detecting said modulating signal, means for detecting the instants at which the frequency of said modulating signal is equal to a predetermined value, means for adding the amplitudes of the modulating signal at said instants thereby obtaining a resultant signal for each cycle of the modulating signal and means for integrating said resultant signal.

3,898,665

MULTIPLEX SYSTEM WITH CIRCUIT FOR RF DEVICE

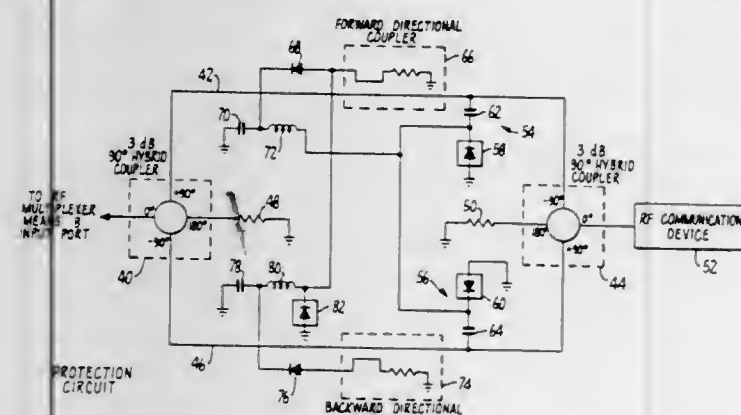
Thomas Weston Parker, Los Gatos, Calif., assignor to Adding-ton Laboratories Incorporated, Santa Clara, Calif.

Filed Aug. 5, 1974, Ser. No. 494,498

Int. Cl. H04j 1/12

U.S. Cl. 343-200

7 Claims



1. Apparatus for simultaneously connecting a plurality of RF communications devices to a common RF transmission means comprising:

RF multiplexer means including a plurality of input ports for connection to said communications devices and an out-

put port for connection to said common transmission means,

a plurality of protection circuit means each connected between one of said input ports and one of said communications devices, each of said protective circuit means including:

first hybrid coupler means having four arms equally spaced 90 electrical degrees for dividing power equally between the two arms spaced +90° and -90° from an arm receiving power when the two arms spaced +90° and -90° are terminated in their characteristic impedance and for applying power to the arm spaced 180° from an arm receiving power when the two arms spaced +90° and -90° are not terminated in their characteristic impedance,

one of said four arms, the 0° arm, of said first hybrid coupler means connected to said one of said input ports,

first load means,

the 180° arm of said first hybrid coupler means connected to said first load means,

first RF transmission line means,

second RF transmission line means,

the +90° arm connected to said first transmission line means,

the -90° arm connected to said second transmission line means,

first directional coupler means for sensing RF power flowing from said one of said input ports in said first or second transmission line means to provide a first current proportional to said RF power,

controllable shunting means responsive to said first current connected between said first and said second transmission line means and ground, respectively, for decreasing the RF resistance between said first and second transmission line means and ground, respectively, as said current increases,

second hybrid coupler means having four arms equally spaced 90 electrical degrees for dividing power equally between the two arms spaced +90° and -90° from an arm receiving power when the two arms spaced +90° and -90° are terminated in their characteristic impedance and for applying power to the arm spaced 180° from an arm receiving power when the two arms spaced +90° and -90° are not terminated in their characteristic impedance,

one of said four arms, the 0° arm, of said second hybrid coupler means connected to said one of said communications devices,

second load means,

the 180° arm of said second hybrid coupler means connected to said second load means,

the -90° arm connected to said first transmission line means, and

the +90° arm connected to said second transmission line means.

3,898,666

ANTENNA MOUNTING ASSEMBLY

Dominick A. Massa, Arlington Heights, Ill., assignor to Warwick Electronics Inc., Chicago, Ill.

Filed Jan. 21, 1974, Ser. No. 434,819

Int. Cl. H01Q 1/24

U.S. Cl. 343-702

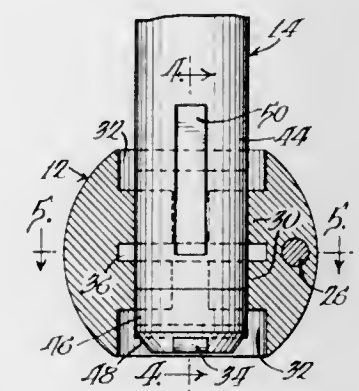
11 Claims

1. An antenna mounting assembly comprising:

a capture member having an axial through bore,

an extendible antenna element slidably movable within the through bore for extension outward from the capture member, the antenna element having adjacent an end thereof a projection which engages a surface of the capture member to prevent disengagement of the antenna element from the capture member and wherein at least one groove extends through the surface and the through bore for mating engagement with the projection to allow slidable axial movement of the antenna element through the bore,

a socket for mounting the capture member, and



release means for allowing the projection to be axially moved through the at least one groove to disengage the antenna element from the capture member.

3,898,667

COMPACT FREQUENCY REUSE ANTENNA

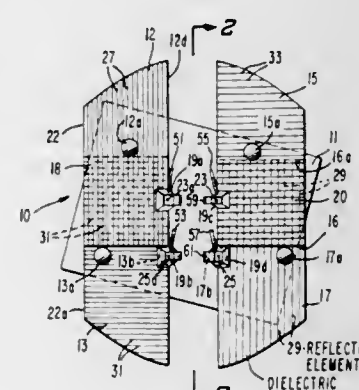
Anthony Rowland Raab, Beaconsfield, Canada, assignor to RCA Corporation, New York, N.Y.

Filed Feb. 6, 1974, Ser. No. 439,871

Int. Cl. H01q 19/12

U.S. Cl. 343-756

7 Claims



1. A compact antenna arrangement for communicating electromagnetic waves with a first and second polarization separated by 90° from one another comprising:

first and second electromagnetic wave reflectors,

each of said reflectors comprising a portion of a paraboloid and having a resultant vertex, focus point and a focal axis,

each of said reflectors having a plurality of parallel electromagnetic wave reflecting elements providing reflection of waves, the elements of one reflector being perpendicular to the elements of the other reflector,

a first feed means located at the focus point of said first reflector and adapted to communicate electromagnetic waves polarized parallel to the reflecting elements of said first reflector to produce a copolarized beam in a first direction,

a second feed means located at the focus point of said second reflector and adapted to communicate electromagnetic waves parallel to the reflecting elements of said second reflector to produce a copolarized beam in a second direction, and

means for mounting said reflectors in an overlapping manner near the vertices with the focus points of said first and second reflectors sufficiently separated from one another, said vertices sufficiently non-overlapping and the focal axes sufficiently separated so that cross-polarized waves generated at either said first or said second reflectors in response to waves communicated with said first and second feeds respectively are scattered away from the copolarized beam of each reflector.

3,898,668

INTEGRATED RADIOMETRIC SEEKER GYRO

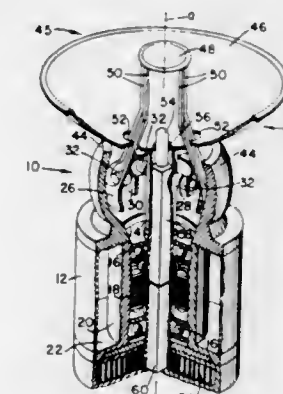
John L. Evans, Oakland, N.J.; Leonard O. Vladimir, Santa Barbara, Calif., and Thomas Hoffmann, Clifton, N.J., assignors to The Singer Company, Little Falls, N.J.

Filed May 15, 1974, Ser. No. 469,943

Int. Cl. H01q 3/00

U.S. Cl. 343-759

9 Claims



1. An integrated gyroscope and antenna system, comprising a gyroscope having a normally stationary case, a hollow drive shaft mounted to said case for rotation therein about a spin axis, means in said case for imparting rotation to said drive shaft about said spin axis, a rotor serving as an inertial mass, a flexible coupling for connecting said rotor to said shaft for rotation therewith, said flexible coupling permitting said rotor to tilt off said spin axis while rotating, stator means for torquing said rotor about axes other than said spin axis and for producing an output indicative of the tilt angle thereof, and a composite antenna including an apertured first reflector rigidly connected to the end of said drive shaft adjacent said rotor for rotation with said shaft, a second reflector spaced from said first reflector, support means rigidly connecting said second reflector to said rotor through said first reflector with sufficient clearance to permit maximum tilting of said second reflector with said rotor, antenna feed means stationary with respect to said case mounted in the open end of said hollow drive shaft and protruding through said first reflector, and waveguide means coupled at one end to said feed means extending within said hollow shaft, the opposite end of said waveguide means providing an electrical output and being rigidly interconnected with said case.

3,898,669

APPARATUS FOR PROVIDING HIGHER ORDER MODE COMPENSATION IN HORN ANTENNAS

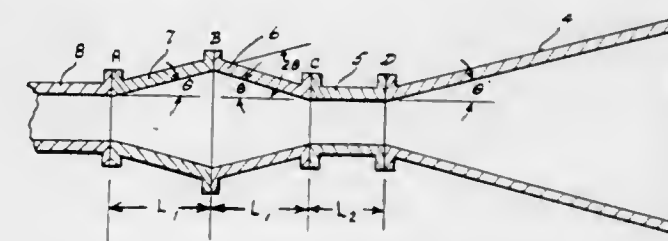
Alan E. Blume, Trotwood, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Division of Ser. No. 360,577, May 15, 1973, abandoned. This application Feb. 22, 1974, Ser. No. 445,049

Int. Cl. H01q 13/00

U.S. Cl. 343-786

2 Claims



1. An LSE₁₂ mode compensated antenna comprising two rectangular waveguide segments, (6), (7), each segment having an outward E-plane flare and having its nonflared end adapted for connection to a rectangular waveguide transmission line, said waveguide segments being jointed at their flared ends, said outward E-plane flares being at an angle that effects

the generation of substantial amounts of LSE₁₂ mode power, a rectangular waveguide transmission line segment (5) connected to the nonflared end of one of said waveguide segments, and

a rectangular antenna horn (4) having an outward E-plane flare connected at its input end to said transmission line segment (5), said waveguide segments (6),(7) and said transmission segment (5) having length dimensions that bring all LSE₁₂ mode power generated in said waveguide segment into phase opposition with LSE₁₂ mode power generated by the E-plane flare angle of said antenna horn.

3,898,670

LINE PRINTER INCORPORATING LIQUID INK JET RECORDING

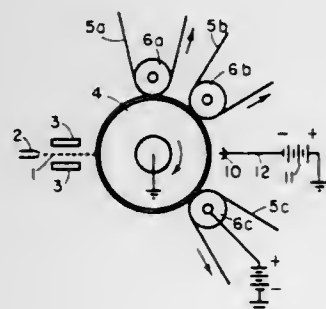
Rolf Bernhard Erikson, Skvadronsgatan 12, Malmo, and Carl Hellmuth Hertz, Skolbanksvagen 8, Lund, both of Sweden
Filed June 21, 1973, Ser. No. 371,979

Claims priority, application Sweden, June 30, 1972, 8632/72

Int. Cl. G01d 1/00; H04n 1/26

U.S. Cl. 346—21

1 Claim



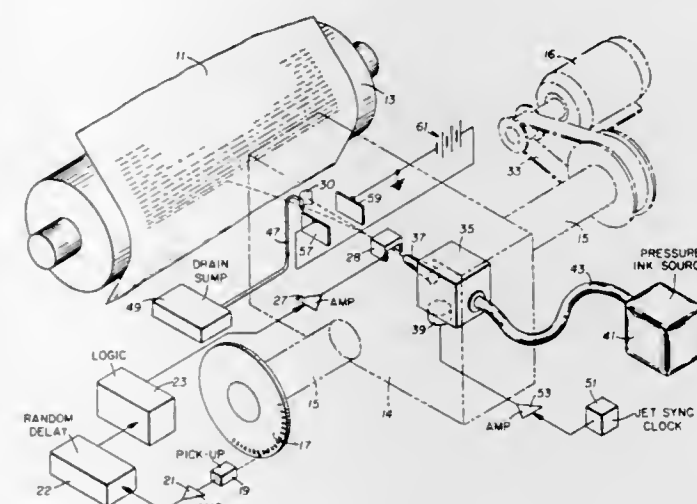
1. A line printer, comprising in combination

- means to generate a controlled ink jet in a mirror-reversed form;
- movable transfer substrate means having a thin-layered insulating surface and being adapted to receive directly on its surface said ink jet and form transferable liquid indicia thereon, the surface of said substrate means being formed of a material which does not absorb said liquid ink and over which said liquid ink does not spread through surface tension forces;
- a plurality of movable web strips adapted for continuous, simultaneous contacting of said transfer substrate means at successive points of its movement;
- pressure applying roll means associated with each of said webs and adapted to maintain contact between said web and said transfer substrate means with a pressure adjusted to permit the direct transfer of a portion of said liquid indicia onto each of said webs and to move said webs through engagement with said transfer substrate means, the last of said pressure applying roll means being electrically conductive;
- means to move said transfer substrate means and said web means at the same linear speed thereby to form a right-reading copy of said indicia on each of said webs;
- means to remove residual ink from said transfer substrate means subsequent to transfer of said liquid indicia onto the last of said web strips; and
- means to deposit an electrical charge of one sign on said transfer substrate means just prior to its contacting the last of said webs and means to deposit an electrical charge of the opposite sign on said last of said webs thereby to serve at least in part as said means to remove residual ink from said transfer substrate means.

3,898,671
INK JET RECORDING
James M. Berry, Deerfield; Anthony J. Hauser, Stone Park, and Gary B. Ollendick, Chicago, all of Ill., assignors to Teletype Corporation, Skokie, Ill.
Filed Dec. 12, 1973, Ser. No. 424,025
Int. Cl. G01d 15/18

U.S. Cl. 346—75

10 Claims



1. An improved ink jet printing system of the type wherein ink is delivered to a nozzle, a transducer vibrates the delivered ink in response to drive signals applied thereto, the ink breaks into droplets after issuing from the nozzle, a charging electrode is positioned in the region in which the ink jet breaks into droplets, the charging electrode is adapted to respond to data signals selectively to charge the droplets as they are formed, the improvement comprising:

- data signal source means for applying data signals to the charging electrode at a first predetermined frequency;
- vibratory drive means for applying drive signals to the transducer at a predetermined frequency which may differ from the first predetermined frequency, whereby a phase relationship exists between the formation of droplets and transitions in the data signals; and
- means for randomly varying the phasing relationship between the data signals and the drive signals from data signal to data signal, thereby reducing the statistical likelihood that droplets will be formed on successive transitions in the data signals.

3,898,672

ELECTROSENSITIVE RECORDING MEMBER

Akiyoshi Yasumori; Katsuichi Ohta, both of Yokohama; Makoto Kunikane, Tokyo; Michiharu Abe, Kawasaki, and Shuichi Karasawa, Kokubunji, all of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 324,829, Jan. 18, 1973, abandoned.

This application June 10, 1974, Ser. No. 478,003

Claims priority, application Japan, Jan. 28, 1972, 47-10897

Int. Cl. G01d 15/34

U.S. Cl. 346—135

6 Claims



1. An electro-sensitive recording member comprising a non-conductive support and an electro-sensitive recording layer formed on the support, said electro-sensitive recording layer containing a binder having a mixture of an electrically reducible metal compound and copper iodide (CuI) dispersed therein; the weight ratio of mixture to binder being from 5:1 to 10:1.

3,898,673

PHASE CONTROL FOR INK JET PRINTER

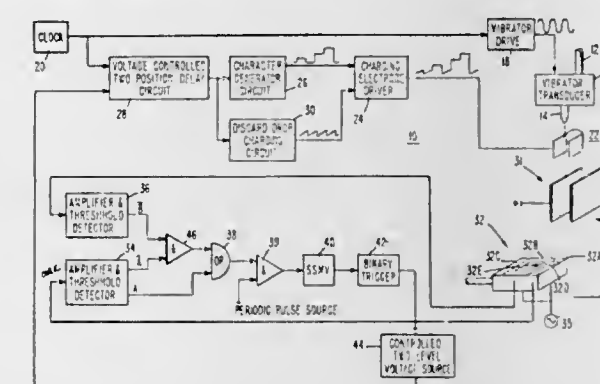
John W. Haskell, Endwell, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 253,065, May 15, 1972, abandoned.

This application July 19, 1973, Ser. No. 380,641

Int. Cl. G01d 18/00

U.S. Cl. 346—140

20 Claims



1. In an ink jet printer system wherein ink under pressure is delivered to a nozzle which is vibrated by a transducer connected to a source of synchronizing signals and driven by said synchronizing signals to produce a stream of drops, and a charging electrode is positioned adjacent said nozzle to charge some of said drops in accordance with variable value information input signals from input information signal means applied to said electrode for deflecting said drops to print data in accordance with said information input signals as said drops move in an electric field between a pair of deflecting electrodes; all other of said drops not being so charged being discarded drops not used to print data;

the improvement in the phase of formation of said ink drops relative to the occurrence of said information input signals comprising means producing a continuous fixed frequency calibration signal having an amplitude less than the minimum information input signal value;

circuit means including means responsive to the relative values of said information input signals and said calibration signal connecting said input information signal means and said calibration signal means to said charging electrode to selectively apply said fixed frequency signal and said information input signals to said charging electrode so that all of said discard drops not charged by information input signals even during the printing of data are charged by said fixed frequency signal;

phase control circuit means connected to said circuit means and said source of synchronizing signals to vary the phase relation between said input information signals and said synchronizing signals, and

a single means positioned to catch all said discard drops and having electrode means positioned to be responsive to said charge on said discard drops connected to said phase control means to control the phase relation between said information input signals and said synchronizing signals, and thereby control the phase relation of said input information signals relative to the formation of said ink drops.

3,898,674

HIGH RESOLUTION NON-IMPACT PRINTER

Paul L. Koch, Saugus, Mass., assignor to The Carter's Ink Company, Cambridge, Mass.

Filed Aug. 10, 1973, Ser. No. 387,347

Int. Cl. G01d 15/06

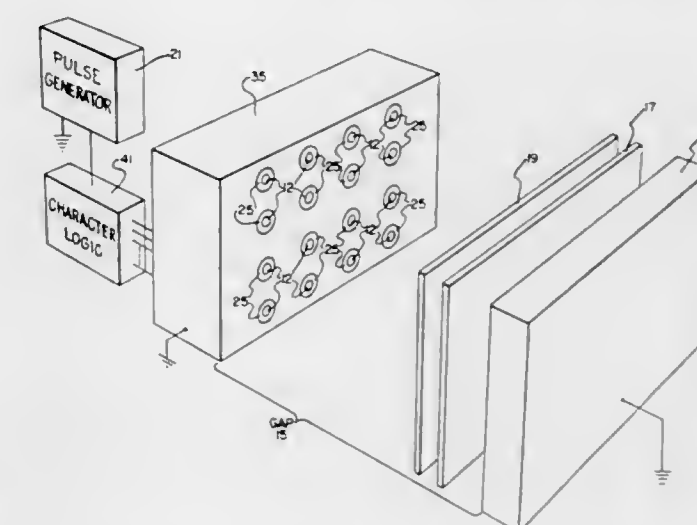
U.S. Cl. 346—74 EH

23 Claims

2. In a printing means employing an electric field to deposit mobile printing particles from a donor sheet to a recipient sheet, said printing means having a field shaping electrode with a printing surface and a side surface extending therefrom, and having a base electrode disposed parallel to and separated

by a printing gap from said printing surface of said shaping electrode, wherein the improvement comprises:

a shield electrode electrically insulated from and disposed about said side surface of said shaping electrode and having a portion surrounding the outer contour of said printing surface, said portion being separated from said printing surface by a uniform shielding gap such that all



points on said portion are substantially equidistant from said outer contour, the magnitude of said shielding gap being related to the magnitude of said printing gap so that substantially all the electric field components emanating from said side surfaces of said shaping electrode terminate on said shield electrode when said shield electrode is maintained at a predetermined electric potential relative to said base electrode.

3,898,675

CAMERA PROVIDED WITH ELECTRONIC SHUTTER OF THE TYPE AUTOMATICALLY CONTROLLING EXPOSURE TIME

Shigeo Ono, Yokohama, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Continuation of Ser. No. 82,433, Oct. 20, 1970, abandoned.

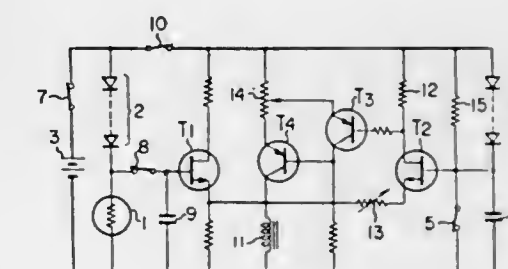
This application May 23, 1973, Ser. No. 362,949

Claims priority, application Japan, Oct. 28, 1969, 44-85677

Int. Cl. G03b 7/08, 9/62

U.S. Cl. 354—24

2 Claims



1. In a camera having an objective lens and an electronically controlled shutter moveable between closed and open positions, an exposure control arrangement comprising:

- a photoconductor element positioned to receive the light passing through the objective lens;
- first diode means series connected with said photoconductor element;
- capacitor memory means;
- switching means for coupling said capacitor memory means to the junction of said photoconductor element and said first diode means during the interval when the light passing through said objective lens is incident on said photoconductor element and for disconnecting said capacitor memory means from said photoconductor when the light

passing through said objective lens is not incident on said photoconductor element;
 an adjustable resistor variable in resistance in proportion to variation in the film sensitivity and the aperture objective lens aperture opening of said camera;
 second diode means series connected with said adjustable resistor;
 a source of operating potential having first and second terminals;
 circuit means connecting said photoconductor element and said adjustable resistor electrically together and to said first terminal, and for connecting said first and second diode means together and to said second terminal;
 a differential amplifier having first and second input terminals and an output terminal;
 circuit means connecting said capacitor means to said first input terminal of said differential amplifier memory and connecting the junction of said adjustable resistor and said second diode means to said second input terminal of said differential amplifier;

time generator means for generating a first voltage proportional to a logarithm of the time lapse interval beginning with movement of said shutter to said open position, said time generating means including a timing capacitor, third diode means series connected to said timing capacitor, trigger switching means connected across said timing capacitor and adapted normally to short circuit said timing capacitor and to open upon movement of said shutter to open position, a resistor, fourth diode means series connected to said resistor, a source of operating potential having first and second terminals, circuit means connecting said timing capacitor and said resistor together and to said first terminal, further circuit means connecting said third and fourth diode means together and to said second terminal, a second differential amplifier having first and second input terminals and an output terminal, circuit means connecting the junction of said timing capacitor and said third diode means to said first input terminal of said second differential amplifier, and further circuit means connecting the junction of said resistor and said fourth diode means to said second input terminal of said second differential amplifier;

comparison circuit means having two input terminals, one being coupled to said output terminal of said differential amplifier and the other being coupled to said time generator means, for comparing said output voltage of said differential amplifier and said first voltage and producing an output signal when the difference between said voltages reaches a predetermined value; and
 shutter actuating circuit means responsive to said output signal of said comparison circuit means for returning said shutter to said closed position.

3,898,676

DISTANCE DETECTING DEVICE

Kazuya Hosoe, Machida and Seiichi Matsumoto, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 20, 1973, Ser. No. 426,523

Claims priority, application Japan, Dec. 27, 1972, 48-3922

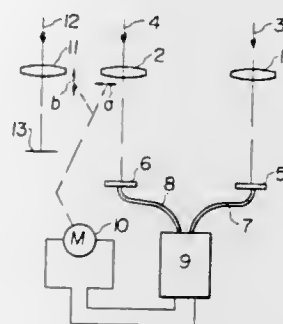
Int. Cl. G03B 7/08, 3/00, 27/52

U.S. Cl. 354-25

16 Claims

1. A distance detecting device, comprising:
 a distance measuring optical system for forming an image of an object to be measured;
 photoelectric transducer means arranged adjacent to the image forming plane of said distance measuring optical system, for developing electrical signals in response to incident light said transducer means including a plurality of photoelectric transducer elements arranged in juxtaposed relationship to each other;
 time serializing means for time serializing the outputs of the

respective elements constituting said photoelectric transducer means so as to form time serialied signals;
 means for producing a time varying reference signal proportional to the distance to said object;
 signal processing means for receiving said time serialied signals and said reference signal and for comparing the time serialied signal and reference signal to generate an output signal corresponding to the condition of focusing of said image of said object; and



focusing degree identifying output means, said means for receiving the output signal from said signal processing circuit for adjusting the relative length of the light path between said distance measuring optical system and said photoelectric transducer means, thereby compensating for the detected condition of the focusing of the image of said object on said photoelectric transducer means formed by said distance measuring optical system so as to detect the distance of said object.

3,898,677

SINGLE LENS REFLEX CAMERA HAVING MEANS FOR AUTOMATICALLY ADJUSTING EMITTED LIGHT

Yasuo Uchida; Kazuo Shiozawa, and Yoshitaka Kuroyanagi, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co. Ltd., Tokyo, Japan

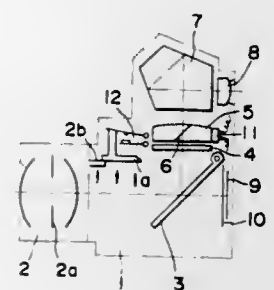
Filed Feb. 11, 1974, Ser. No. 441,276

Claims priority, application Japan, Feb. 9, 1973, 48-17440; Feb. 9, 1973, 48-17441

Int. Cl. G03B 7/14

U.S. Cl. 354-27

3 Claims



1. In a single lens reflex camera provided with an objective lens, an automatically adjustable diaphragm, a shutter release, a view finder having an eyepiece, and means for automatically emitting adjusted light which comprises preparatory light emitting means, main light emitting means and means for control of the main light including a photoelectric element to receive the light reflected from an object illuminated by the preparatory light and passed through the objective lens, the improvement comprising means for effecting automatic adjustment of said diaphragm upon a shutter-releasing operation, means for initiating preparatory light emission after completion of said automatic adjustment of said diaphragm, and means for preventing light from said view finder eyepiece from impinging on said photoelectric element.

3,898,678

CAMERA TO MICROSCOPE ADAPTOR WITH MEANS FOR OPERATING AN EXPOSURE CONTROL

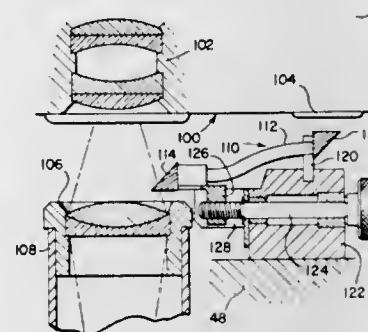
Vivian K. Walworth, Concord, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 3, 1973, Ser. No. 420,915

Int. Cl. G03b 17/48

U.S. Cl. 354-79

19 Claims



1. An apparatus for determining the brightness of a scene imaged by an optical instrument for the purpose of controlling the exposure of a camera positioned to record the image of said scene, said apparatus comprising:

means in the optical path between said instrument and said camera for diverting from said path, from the optical path between said instrument and a portion of any light from said instrument destined to reach the focal plane of said camera at a location outside the boundary of said camera's film format;
 means for conveying said portion away from said diverting means; and
 means for emitting said portion onto a light sensor.

3,898,679

ELECTRICALLY DRIVEN CONTROL DEVICE FOR A CAMERA

Mitsutoshi Ogiso, Kawasaki; Hiroshi Aizawa, Tokyo, and Susumu Kozuki, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

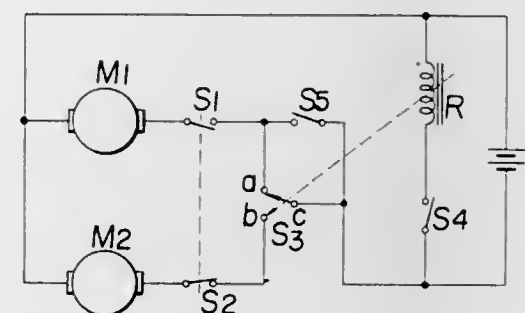
Filed Aug. 14, 1975, Ser. No. 388,270

Claims priority, application Japan, Aug. 16, 1972, 47-82000; Aug. 26, 1972, 47-85589; Sept. 13, 1972, 47-91970; Aug. 30, 1972, 47-100271

Int. Cl. G03b 19/04

U.S. Cl. 354-173

13 Claims



1. An electrically driven control device for a camera comprising:

a power source,
 an electro-magnetic relay connected to both terminals of said power source,
 a first switching means connected to said electromagnetic relay and controlled to ON or OFF by operating a release button,
 a wind-up driving means connected between both terminals of the above mentioned power source to conduct film wind-up and shutter charging,
 a release driving means connected between both terminals of the above mentioned power source to conduct shutter release,

a second switching means connected to the above mentioned wind-up driving means and placed in ON state by completion of said shutter release,
 a third switching means connected to the above mentioned release driving means and placed in ON state by completion of said wind-up, and
 a change over means being placed between the above mentioned power source and the wind-up driving means also the release driving means and changed over by the action of the above mentioned electro-magnetic relay and is connected to the above mentioned release driving means, wherein said change over means is changed over and connected to the wind-up driving means at the time when the above mentioned electro-magnetic relay is not in operation.

3,898,680

CASSETTE FOR FILM

Yoshio Asano, Miyamishi, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan

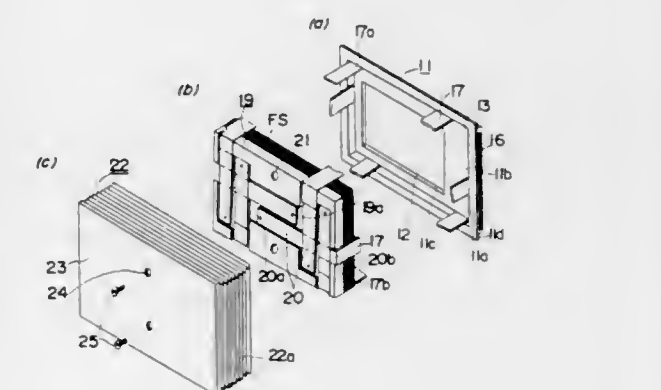
Filed Nov. 21, 1973, Ser. No. 417,835

Claims priority, application Japan, Nov. 21, 1972, 47-116812

Int. Cl. G03b 19/10

U.S. Cl. 354-174

3 Claims



1. A cassette adapted to carry a plurality of film-sheets each of which has an exposure surface, said cassette comprising:

a. a front frame having:
 i. external dimensions which adapt said front frame to be freely fitted into or removed from a camera rear portion positioning frame,
 ii. a well adapted to receive at least one film-sheet carried in the cassette,
 iii. an opening in the front thereof the dimensions of which correspond to those of the exposure surfaces of the film-sheets carried in the cassette, and
 iv. a film-sheet extraction slit in one side thereof the dimensions of which are approximately the same as the cross-sectional dimensions of the film-sheets carried in the cassette;
 b. a plurality of film-sheets at least one of which is received in said well;
 c. a bellows-type cover made of a light-proof material and surrounding said film-sheets; and
 d. flexible, elastic holding bands connecting said front frame to said bellows-type cover, said holding bands being of lengths sufficiently short to exert a continuous force to pull said film-sheets towards said front frame, whereby said bellows-type cover will gradually fold and contract as successive film-sheets are removed from the cassette.

3,898,681

LIGHT SEALED FILM CARTRIDGE

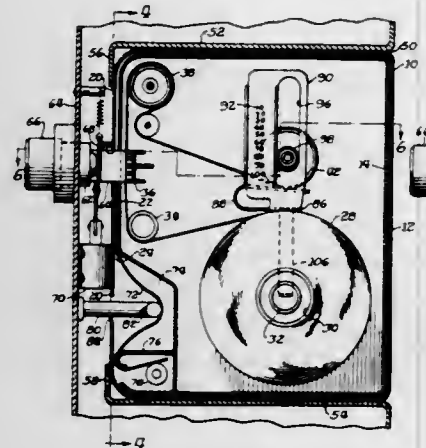
Heinz R. Hertel, Mt. Prospect, and George K. Konagamisu, Chicago, both of Ill., assignors to Bell & Howell Company, Chicago, Ill.

Division of Ser. No. 349,495, April 9, 1973. This application
Feb. 4, 1974, Ser. No. 439,520

Int. Cl.² G03B 23/02

U.S. Cl. 354—216

7 Claims



1. In a film cartridge:
means to rotatably mount a reel of film and a takeup spool in said cartridge;
means to advance said film along a path in said cartridge from said reel to said take-up spool, said film progressively accumulating on said take-up spool and being removed from said reel as said film is advanced along said path, whereby the radial dimension of said reel of film varies as said film is advanced;
means in said cartridge engaging said reel of film and adapted to change positions in said cartridge proportional to said variances in said radial dimension of said reel of film, said means in said cartridge engaging said reel of film comprises spring means disposed between the film remaining on said reel and the film accumulated on said take-up spool whereby said spring means applies a constant radial compression force to said film;
visual indicator means attached to said means engaging said reel of film and movable therewith; and
aperture means in said cartridge adjacent a portion of said visual indicator means whereby said indicator means are displayed through said cartridge to reveal the quantity of film remaining on said reel of film.

3,898,682

PIVOTING BLADE SHUTTER FOR PHOTOGRAPHIC PURPOSES

Helmut Ettischer, Ruit, Germany, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 18, 1973, Ser. No. 425,898

Claims priority, application Germany, Dec. 22, 1972,
2262960

Int. Cl.² G03B 9/16, 9/26

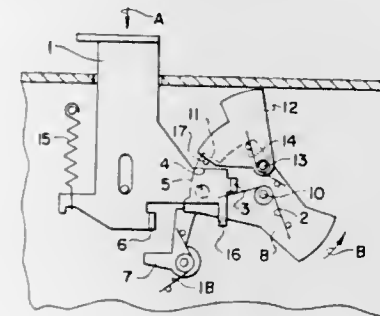
U.S. Cl. 354—253

4 Claims

1. A shutter mechanism for covering and uncovering an exposure aperture in a photographic camera, said shutter mechanism comprising:

first shutter means for initiating an exposure, said first shutter means being movable relative to the exposure aperture between a closed position wherein said first shutter means covers the exposure aperture and an open position wherein said first shutter means uncovers the exposure aperture;
shutter drive means cooperating with said first shutter means for effecting movement of said first shutter means to its open position;
second shutter means for terminating the exposure, said second shutter means being movable relative to the expo-

sure aperture between an open position wherein said second shutter means uncovers the exposure aperture and a closed position wherein said second shutter means covers the exposure aperture;
said first and second shutter means having cooperating means therewith for moving said second shutter means to its open position in response to movement of said first shutter means to its closed position and for restraining said second shutter means against movement toward its closed position until said first shutter means begins to move from its closed position to its open position; and
resilient means for coupling said first shutter means to said second shutter means and for biasing said second shutter



means toward said closed position, said resilient means having a biasing force sufficiently less than said shutter drive means to effect relative separation between said first and second shutter means during an exposure, said shutter mechanism being free of other means for preventing or delaying movement of said second shutter means towards its closed position when said first shutter means moves toward its open position, whereby when said first shutter means is moved from its closed position to its open position by said shutter drive means, said second shutter means can momentarily remain in its open position due solely to its own inertia and then be propelled to its closed position under the influence of said resilient means.

3,898,683

APPARATUS FOR PHOTOGRAPHING DENTAL STUDY MODELS

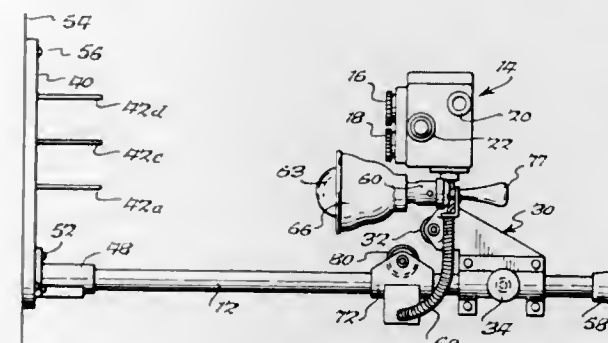
Peter R. Breads, Buffalo, N.Y., assignor to Great Lakes Orthodontic Laboratory Inc., Buffalo, N.Y.

Filed Aug. 13, 1973, Ser. No. 388,032

Int. Cl. G03b 15/00

U.S. Cl. 354—292

10 Claims



1. Apparatus for making photographic records of three dimensional dental study models comprising:

a. frame means;
b. a multiple exposure camera connected to said frame means;
c. supporting means on said frame means and spaced from said camera, said supporting means comprising a planar background element disposed in a plane perpendicular to the optical axis of said camera and a plurality of supporting elements on said background element arranged in a plurality of rows spaced along the surface of said element facing said camera in the field of view of said camera,

there being at least one supporting element in each of said rows, each supporting element being adapted to hold a three dimensional study model manually placed thereon and to hold a three dimensional study model in different orientations thereon; and

d. adjustable means connecting said camera to said frame means in a manner allowing selective movement of said camera in a direction generally parallel to the plane of said background element and from row to row relative to said supporting elements;
e. whereby a plurality of different photographic views of a study model are made on a single photographic record member by manually placing the model successively in different orientations on successive ones of said supporting elements and taking corresponding successive exposures with said camera.

3,898,684

DIFFUSION GUARDED METAL-OXIDE-SILICON FIELD EFFECT TRANSISTORS

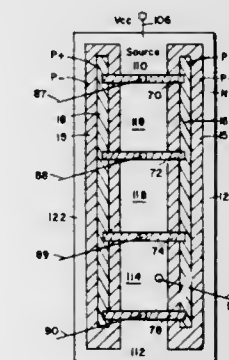
Uryon S. Davidsohn, Scottsdale, Ariz., assignor to Motorola, Inc., Chicago, Ill.

Division of Ser. No. 95,521, Dec. 7, 1970, which is a continuation-in-part of Ser. No. 86,544, Nov. 2, 1970. This application Aug. 5, 1974, Ser. No. 494,437

Int. Cl.² H01L 29/78, 27/02

U.S. Cl. 357—23

12 Claims



1. In a field effect transistor integrated circuit, the improvement comprising:

a body of semiconductor material of a relatively high resistivity and first conductivity type and having an upper surface;
a source region of relatively low resistivity and opposite conductivity type extending from said surface into said body;
a drain region of relatively low resistivity and opposite conductivity type extending from said surface into said body, and said drain region being in spaced relationship with said source region;
a plurality of gate regions positioned adjacent said drain region and between said drain region and said source region and each of said gate regions being of relatively high resistivity and first conductivity type and being formed integrally with said body;
a plurality of guard regions of said first type conductivity and lower resistivity when compared to said body extending from said surface into said body and each of said guard regions being in spaced relationship with said drain area and each of said guard regions abutting portions of said gate regions;
said gate regions jointly with said guard regions being alternately positioned to surround said drain region;
said source extending around said gate regions and said guard area; and
a plurality of gate electrodes and each of said electrodes adherent to said surface and overlying corresponding gate regions and having each opposite end of each respective gate electrode extending at least to a corresponding portion of such guard region which abuts a respective gate

region, and each of said electrodes including a gate oxide layer of substantially uniform thickness along its length positioned over a corresponding gate region, and spurious current flow between the two regions separated by said corresponding gate region is prevented by the combination of said guard region and said gate electrode and said guard region blocks current flow around said gate electrode, and said current flow through a respective gate region only flows under said gate electrode and a gate oxide layer of substantially uniform thickness along its length.

3,898,685

CHARGE COUPLED IMAGING DEVICE WITH SEPARATE SENSING AND SHIFT-OUT ARRAYS

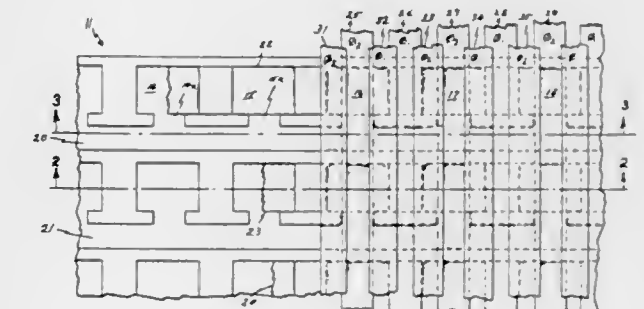
William E. Engeler, Scotia, and Jerome J. Tiemann, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 240,843, April 3, 1973, abandoned, which is a continuation of Ser. No. 69,651, Sept. 4, 1970, abandoned. This application Aug. 27, 1973, Ser. No. 391,634

Int. Cl. H01L 17/00, 19/00

U.S. Cl. 357—24

8 Claims



1. A semiconductor electrooptical converter comprising a substrate of semiconductor material,
a first conducting member insulated from said substrate and spaced at regularly spaced portions along its length in relation to said substrate to define a first plurality of storage regions in said substrate, each storage region underlying a respective regularly spaced portion of said first conducting member,
a plurality of conductive electrodes insulatingly spaced adjacent to said conducting member and successively along the length thereof, said conductive electrodes insulatingly overlying said substrate to define a second plurality of storage regions in said substrate, each storage region underlying a respective conductive electrode, said conductive electrodes and corresponding storage regions being arranged into at least two sets with each of the electrodes of one set being succeeded by a respective electrode of another set,
means for coupling each of the storage regions of said first plurality to a respective adjacent storage region of one of said sets,
means including said electrodes and corresponding charge storage regions forming a charge storage and transfer channel for the transfer of charge along the surface adjacent portion of said substrate,
means for exposing said substrate to a spatially varying pattern of radiation to develop and store charges of variable quantity in said storage regions of said first plurality.

3,898,686

SEMICONDUCTOR RADIATION DETECTOR

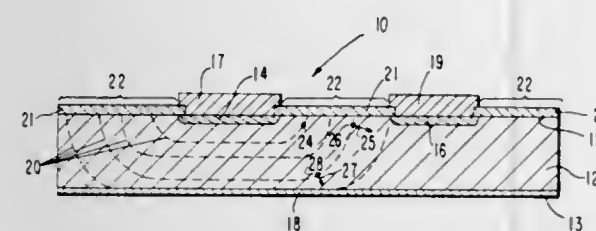
Jan Conradi, Dollard des Ormeaux, Canada, assignor to RCA Limited, Bellevue, Canada

Filed Mar. 11, 1974, Ser. No. 449,999

Int. Cl.² H01L 27/14, 31/00, 29/12

U.S. Cl. 357-30

14 Claims



1. A radiation detector comprising a body of intrinsic semiconductor material having a pair of opposed surfaces, two spaced regions of opposite conductivity type in said body at one of said surfaces, a third region of either conductivity type at the other of said surfaces, and means for applying a reverse biasing voltage between the two spaced regions, and for biasing said third region with the same polarity as the spaced region having the same conductivity as said third region, whereby a depletion region is provided in the intrinsic body and the current output from the regions of the same conductivity type provide an indication of the wavelength of radiation falling on said body.

3,898,687

MOLDED CHASSIS FOR RECORD CARD HANDLING MACHINE

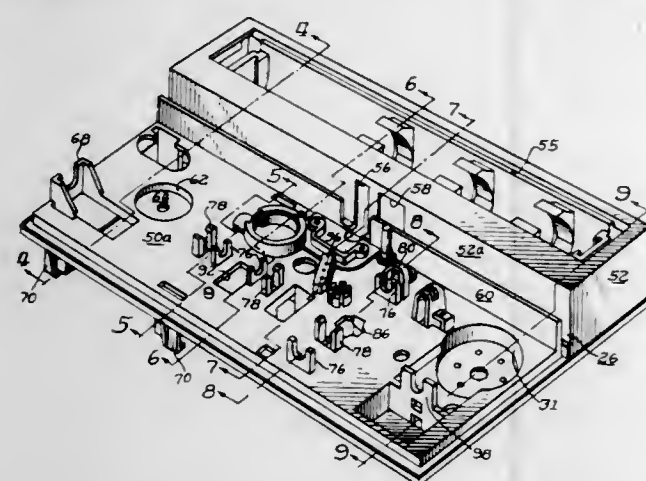
Josef Schmidt, Chicago, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed June 6, 1973, Ser. No. 367,514

Int. Cl. G11b 25/04

U.S. Cl. 360-2

1 Claim



1. A chassis for mounting mechanical and electrical components to provide a record card handling machine for recording and playing messages on a magnetic stripe portion of a record card, which chassis comprises a unitary structure including:

1. a plate element defining a deck portion having upper and lower surfaces;
2. a plurality of walls defining a battery compartment along one edge of said deck portion including a side wall upstanding at the deck portion edge;
3. an upstanding flange adjacent said deck portion edge upstanding from the deck portion and parallel to and extending lengthwise along said battery compartment side wall defining a groove therebetween with the floor of the groove defined by the upper surface of the deck portion along the deck edge;
4. an opening in said battery compartment side wall for receiving a capstan for driving record cards along said groove;

5. port means through the deck for receiving and mounting an electric motor for driving the capstan;
6. integral with the deck portion at the upper surface thereof:

- a. an aligned pair of bearing block means for receiving a shaft at axially spaced positions and a pair of opposing ears defining a snap receiver associated with each bearing block for retaining the shaft portion within the bearing block;
 - b. an opening in said deck portion associated with said bearing block means for accommodating an arm extending from the shaft;
 - c. a spring anchor block; and
 - d. an upstanding plate having a receiver opening at its free end for receiving a rotary switch; and
7. integral with the deck portion at the lower surface thereof:
 - a. a plurality of ribs for radially engaging the base of a post to secure the post in position upstanding from said lower surface;
 - b. circuit board mounting means including four corner posts each having a pair of inwardly projecting fingers defining a receiver therebetween for receiving the edge of a circuit board and supporting the circuit board in a position spaced from and parallel to the deck portion lower surface, the fingers of two of said corner posts facing the fingers of the other two;
 - c. a pair of spaced depending U-brackets having aligned slide receiving openings for receiving a slide member operable by the shaft arm and parallel to the deck, one of said brackets including a second opening for receiving a second slide member;
 - d. port means for mounting a crank for operating the second slide member; and
 - e. a pair of stop lugs for limiting the movement of the crank means.

3,898,688

VISUAL AND MAGNETIC RECORD

Joseph R. Andreaggi, Short Hills; Robert J. Graf, Newark, and Matthew J. Relis, Teaneck, all of N.J., assignors to Joseph R. Andreaggi, Short Hills, N.J.

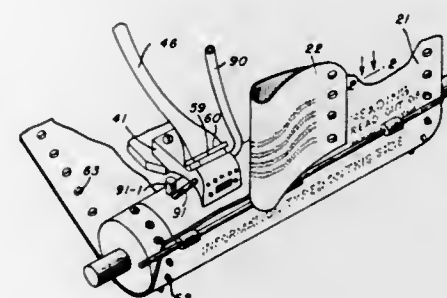
Division of Ser. No. 250,872, May 8, 1972, Pat. No. 3,823,405.

This application Dec. 28, 1973, Ser. No. 429,203

Int. Cl. G11b 5/00

U.S. Cl. 360-4

5 Claims



1. A record comprising a singular composite flexible sheet having a visually readable front surface and a backing on the reverse side thereof comprised of a magnetizable flexible material, the front surface of said sheet having a multiplicity of alphanumeric characters visually recorded thereon in at least one single line, said magnetizable material including, at least one track comprised of discrete groups of magnetically coded characters applied to the exterior surface of said backing, each of the character groups composed of a number of equally spaced, magnetic characters defined by north-south or south-north magnetizations, each group of magnetic characters corresponding to each of said visually recorded characters and being in a fixed positional position relationship therewith,

and essentially degaussed areas on said exterior surface of said backing between adjacent groups of magnetic characters.

3,898,689

CODE CONVERTER

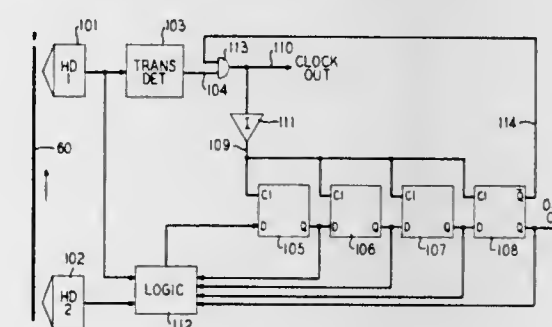
Robert Joseph D'Orazio, Jackson, N.J., and Gerald Steven Soloway, Brooklyn, N.Y., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 2, 1974, Ser. No. 494,030

Int. Cl. G11b 5/09; G06k 7/08

U.S. Cl. 360-40

12 Claims



1. Apparatus for reading a binary bitstream having a first level and a second level and wherein regular transitions between said first and second levels occur at the beginning and end of each bit interval and wherein the presence or absence of irregular transitions between said first and second levels occurring intermediate the beginning and end of each of said bit intervals are representative of the data carried by said bitstream, comprising

first and second sensor means spaced apart a fixed distance s and adapted to simultaneously sense the level of said bitstream thereat,

detector means responsive to said first sensor means adapted to provide an indication at each of said regular and irregular transitions between said first and second levels,

memory means for determining the number of irregular transitions occurring in the portion of said bitstream between said first and second sensor means, and

logic means jointly responsive to said first and second sensor means and said memory means for

- a. providing a first output indication if the levels sensed by said first and second means are the same and said number of irregular transitions is even, or if the levels sensed by said first and second means are different and said number of irregular transitions is odd, and
 - b. providing a second output indication if the levels sensed by said first and second means are the same and said number of irregular transitions is odd, or if the levels sensed by said first and second means are different and said number of irregular transitions is even,
- wherein said memory means is jointly responsive to said detector means and said logic means for separating said regular transitions from said irregular transitions.

3,898,690

PHASE-LOCKED LOOP FOR AN ELECTRONIC SECTORING SCHEME FOR ROTATING MAGNETIC MEMORY

Ashok K. Desai, Chatsworth, Calif., assignor to Pertec Corporation, Chatsworth, Calif.

Filed Sept. 6, 1974, Ser. No. 503,728

Int. Cl. G11b 5/09

U.S. Cl. 360-51

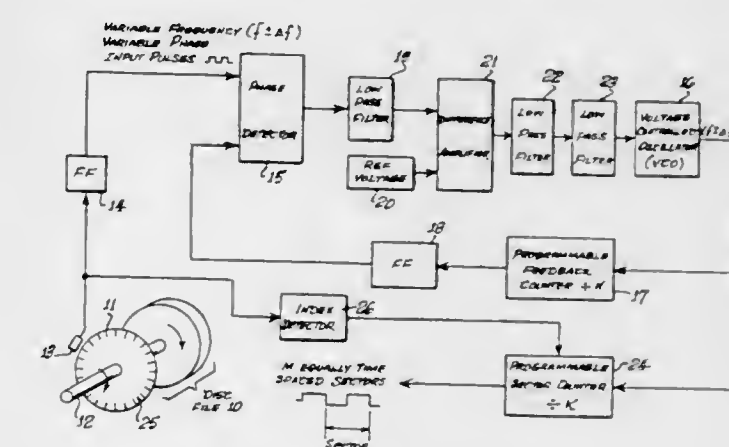
7 Claims

1. Apparatus for electronically dividing a rotating memory into a whole number of equally time spaced sectors comprising:

means mechanically connected to rotate in unison with said memory, said means being divided into a number of evenly spaced sectors by sector marks,

means for detecting said sector marks and generating a pulse train at a frequency $f \pm \Delta f$, where Δf represents the magnitude of fluctuations in frequency of the pulse train due to fluctuations in the speed of revolution of said memory,

a phase-locked loop for producing an output signal at a frequency significantly greater than said train of pulses by



a known factor, said loop being stabilized in phase and frequency by continual phase comparison of said train of pulses with a feedback signal produced by continually dividing said output signal by said known factor, and digital means for continually dividing said output signal by a predetermined integer to produce a timing signal having a number of cycles equal to said whole number of equally time spaced sectors.

3,898,691

INCREMENTAL TAPE DRIVE WITH CLAMP AND DEFLECTOR

Shunsaku Nakauchi, Tokyo, and Yasuo Ueno, Urawa, both of Japan, assignors to Kokusai Gijutsu Kaihatsu Kabushiki Kaisha, Tokyo, Japan

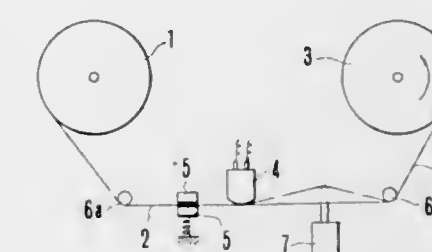
Filed Oct. 12, 1973, Ser. No. 405,866

Claims priority, application Japan, Oct. 17, 1972, 47-103190; Sept. 14, 1973, 48-103299

Int. Cl. G11b 5/09

U.S. Cl. 360-52

13 Claims



1. In an incremental digital magnetic tape recording apparatus in which a magnetic tape is advanced intermittently passing through a magnetic write/read recording head between a pair of tape supply and take up means for recording intermittent input signals, the improvement which comprises braking means for applying a braking force upon said magnetic tape, means for applying a torque upon said take up means to take up said magnetic tape under a predetermined tension smaller than said braking force, and deflector means for deflecting said magnetic tape away from the direction of its normal travel between said magnetic head and said take up and supply means, said deflector means being provided on each side of said magnetic head for incrementally advancing said tape in the take-up direction for writing and alternately incrementally stepping the tape in the reverse direction toward the tape supply means for read after write checking.

3,898,692

AUTOMATIC PLAYER FOR TAPE CASSETTES

Yoshifumi Teruuchi, Osaka; Masayuki Namiki, Chiba, and Tomio Nishii, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Division of Ser. No. 58,549, July 27, 1970, Pat. No. 3,778,066.

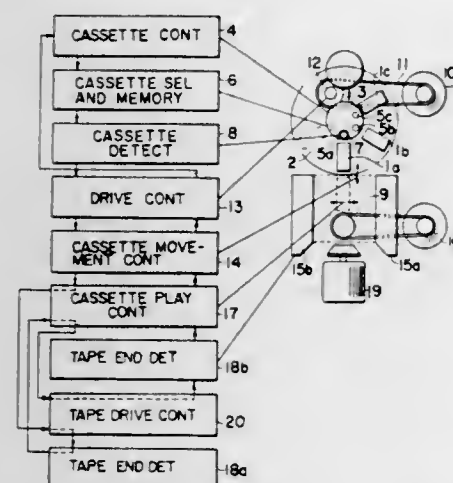
This application Mar. 21, 1973, Ser. No. 343,424

Claims priority, application Japan, July 28, 1969, 44-60690; July 28, 1969, 44-60691; July 28, 1969, 44-60692; July 28, 1969, 44-60693; July 28, 1969, 44-60694; July 28, 1969, 44-60695; July 28, 1969, 44-60696; July 28, 1969, 44-60697; July 28, 1969, 44-60698; July 28, 1969, 44-60699; July 28, 1969, 44-60700; July 28, 1969, 44-60701; July 28, 1969, 44-60702; July 28, 1969, 44-60703; July 28, 1969, 44-60704

Int. Cl. G11b 23/04, 15/18

U.S. Cl. 360-69

7 Claims



1. An automatic player for magnetic tape cassettes each of which contains a supply reel and a take-up reel and a tape wound between the reels therein, comprising a rotatable cassette mounting means adapted to hold a plurality of cassettes radially each in such a position that a head insertion hole and a pinch roller insertion hole are located outwardly with respect to the center of said cassette mounting means, a cassette playback means provided adjacent said cassette mounting means, a cassette selection detecting means associated with said cassette mounting means for selectively detecting a specific one of said cassettes during the rotation of said cassette mounting means, said detecting means coacting with a stop means for the cassette mounting means for stopping the rotation thereof in accordance with the actuation of said detecting means, a cassette carrying means for carrying the specific one of said cassettes from said cassette mounting means horizontally with respect to said cassette playback means, and cassette return means associated with said cassette carrying means for returning the selected cassette being mounted on the playback means to the original position in said cassette mounting means upon completion of the playing.

3,898,693

VIDEO RECORDER/REPRODUCER TRANSPORT USING VACUUM COLUMNS AND SERVOS

David T. L. Chang, Palo Alto, Calif., assignor to Video Memory Corporation, Santa Clara, Calif.

Filed Aug. 26, 1974, Ser. No. 500,533

Int. Cl. G11B 15/46, 15/58, 21/18

U.S. Cl. 360-73

11 Claims

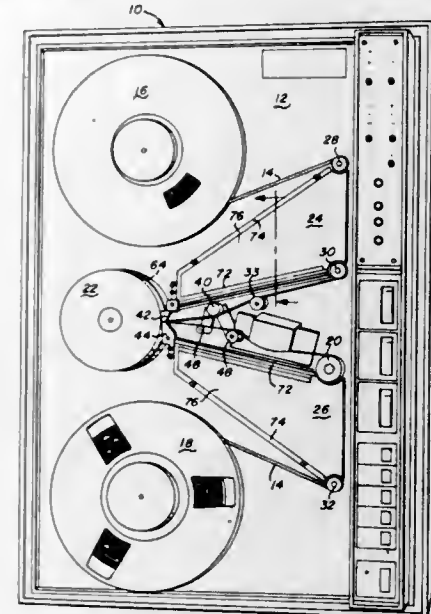
1. A video magnetic tape recording/playback transport apparatus, comprising in combination:

- a tape supply means for providing a supply of magnetic recording tape;
- a tape take-up means for receiving tape supplied by said tape supply means;
- a drive capstan means intermediate the tape supply means and the tape take-up means for driving tape intermediate the tape supply means and the tape take-up means;

a helical head scanner assembly positioned intermediate said capstan and one of said tape means and having a pair of substantially cylindrical coaxially closely spaced drums having a clearance gap therebetween, one of said drums being fixed and the other being rotatable relative to the fixed drum, the head scanner assembly including a record head and a playback head angularly spaced relative to one another and means for driving said heads in a rotary path about the axis of the drums;

means for guiding magnetic tape along a helical path about said drums extending substantially diagonally across said gap and the path of said heads;

means for rotating said rotatable drum and said heads about the axis of the drums;



a first V-shaped vacuum chamber intermediate the helical head scanner and the tape supply means with first sensing means for sensing the position of tape within said first chamber and generating first signals responsive to the position of tape within said first chamber;

a second V-shaped vacuum chamber intermediate the helical head scanner and the tape take-up means with second sensing means for sensing the position of tape within said second chamber and generating second signals responsive to the position of tape within said second chamber; and servo control means responsive to the first signals and the second signals for generating servo control signals to the drive capstan.

3,898,694

TAPE RECORDING APPARATUS WITH SPEED CONTROL FOR A THREE PHASE HEAD DRIVE MOTOR

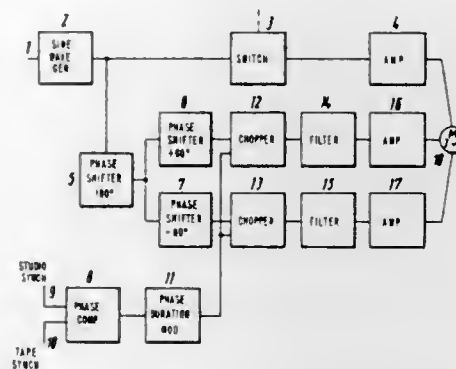
Rolf Müller, Seeheim, Germany, assignor to Robert Bosch Fernsehanlagen G.m.b.H., Darmstadt, Germany

Filed Oct. 17, 1973, Ser. No. 407,048

Int. Cl. G11B 21/02

U.S. Cl. 360-75

5 Claims



DESIGN PATENTS

GRANTED AUGUST 5, 1975

ERRATA

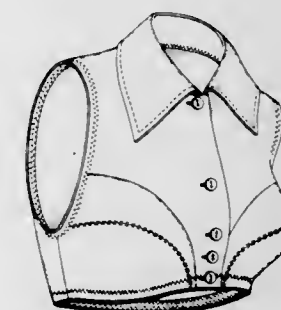
For	See
CLASS	PATENT NO.
019-028.....	236,200

DESIGNS

AUGUST 5, 1975

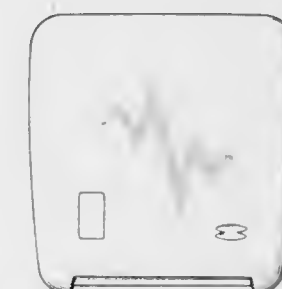
236,171
COMBINED DICKEY AND BRA
Harry W. Froehlich, 1344 Marinette Road,
Pacific Palisades, Calif. 90272
Filed May 14, 1973, Ser. No. 360,369
Term of patent 3½ years
Int. Cl. D2—02

U.S. Cl. D2—211



236,174
COVER FOR TOWEL CABINET
Erwin B. Bahnsen, Oak Brook, Ill., assignor to
Steiner American Corporation
Filed Aug. 24, 1973, Ser. No. 391,348
Term of patent 14 years
Int. Cl. D6—06

U.S. Cl. D6—96



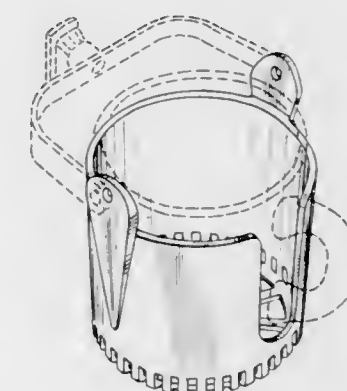
236,172
LITERATURE HOLDER
Franklin G. Berlin, 2222 Avenue of the Stars,
Los Angeles, Calif. 90067
Filed July 16, 1973, Ser. No. 379,240
Term of patent 14 years
Int. Cl. D20—02

U.S. Cl. D6—25



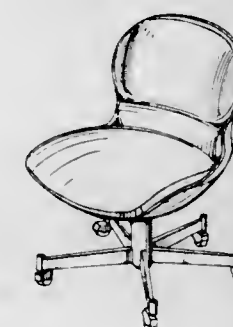
236,175
RECEPTACLE FOR DRINK HOLDERS
Donald E. Wintz, Minneapolis, Minn., assignor to Alad-
din Manufacturing Company, Minneapolis, Minn.
Filed Dec. 28, 1973, Ser. No. 429,693
Term of patent 14 years
Int. Cl. D6—04; D23—02

U.S. Cl. D6—93



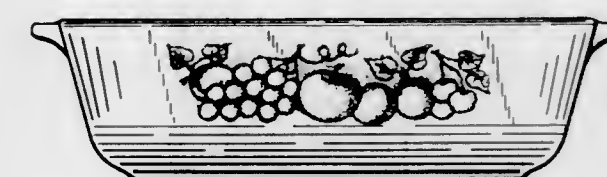
236,173
CHAIR OR SIMILAR ARTICLE
Fred Ruf, Arlesheim, Switzerland, assignor to Giroflex-
Entwicklungs-AG, Koblenz, Switzerland
Filed Dec. 11, 1972, Ser. No. 313,949
Claims priority, application Switzerland June 29, 1972
Term of patent 14 years
Int. Cl. D6—01

U.S. Cl. D6—30



236,176
REFRIGERATOR DISH OR THE LIKE
Estelle G. Rothstein, Corning, N.Y., assignor to
Corning Glass Works
Filed Feb. 25, 1974, Ser. No. 445,614
Term of patent 14 years
Int. Cl. D7—01

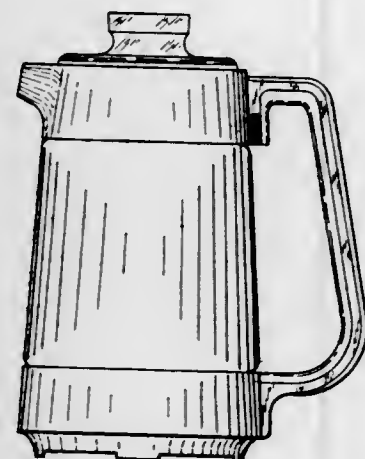
U.S. Cl. D7—21



236,177

COFFEE MAKER OR THE LIKE
Theodore M. Reyda, Painted Post, N.Y., assignor to
Corning Glass Works
Filed Dec. 26, 1973, Ser. No. 427,574
Term of patent 14 years
Int. Cl. D7—02

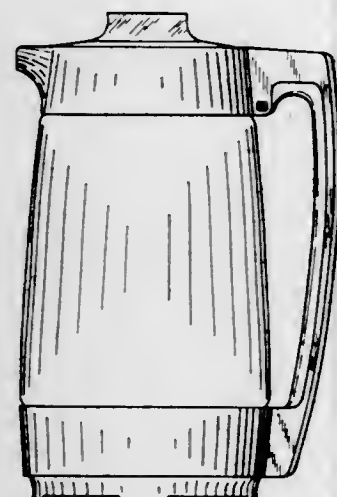
U.S. Cl. D7—62



236,178

COFFEE MAKER OR THE LIKE
Paul D. Young, Horseheads, N.Y., assignor to
Corning Glass Works
Filed Dec. 26, 1973, Ser. No. 427,575
Term of patent 14 years
Int. Cl. D7—02

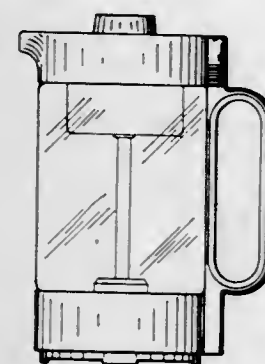
U.S. Cl. D7—62



236,179

COFFEE MAKER OR THE LIKE
Richard W. Greger, Corning, N.Y., assignor to
Corning Glass Works
Filed Dec. 26, 1973, Ser. No. 427,576
Term of patent 14 years
Int. Cl. D7—02

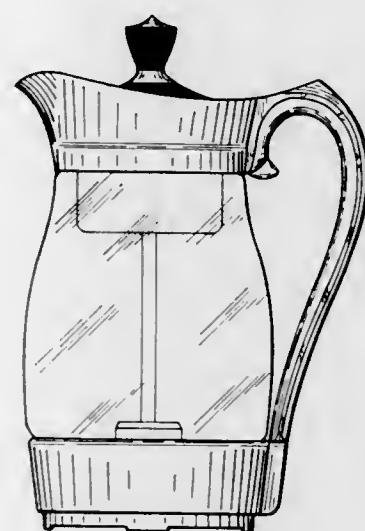
U.S. Cl. D7—62



236,180

COFFEE MAKER OR THE LIKE
Richard W. Greger, Corning, N.Y., assignor to
Corning Glass Works
Filed Dec. 26, 1973, Ser. No. 427,577
Term of patent 14 years
Int. Cl. D7—02

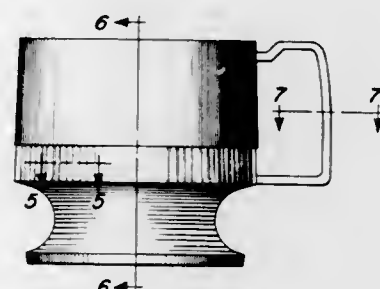
U.S. Cl. D7—62



236,181

HOLDER FOR DISPOSABLE DRINKING CUP
Paul Davis, Swampscott, Mass., assignor to Sweetheart
Plastics, Inc., Wilmington, Mass.
Filed May 2, 1973, Ser. No. 356,417
Term of patent 14 years
Int. Cl. D7—01

U.S. Cl. D7—70



236,182

SKILLET OR THE LIKE
Alice Kiernan, Lewiston, Maine, and Patricia A. Luzier
and Gregory Mirow, Corning, N.Y., assignors to
Corning Glass Works
Filed Apr. 20, 1973, Ser. No. 353,122
Term of patent 14 years
The term of this patent subsequent to July 1, 1989,
has been disclaimed
Int. Cl. D7—02

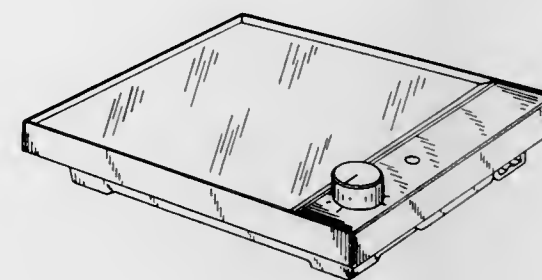
U.S. Cl. D7—97



236,183

TABLE RANGE OR THE LIKE
Richard W. Greger, Corning, N.Y., assignor to
Corning Glass Works
Filed Nov. 19, 1973, Ser. No. 417,222
Term of patent 14 years
Int. Cl. D7—02

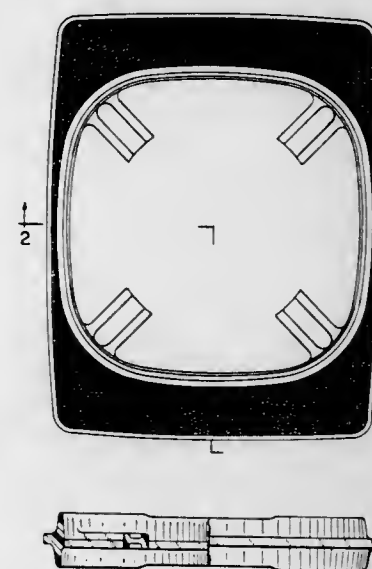
U.S. Cl. D7—122



236,184

SERVING CRADLE OR THE LIKE
Richard W. Greger, Corning, N.Y., assignor to
Corning Glass Works
Filed Nov. 19, 1973, Ser. No. 417,223
Term of patent 14 years
Int. Cl. D7—06

U.S. Cl. D7—130

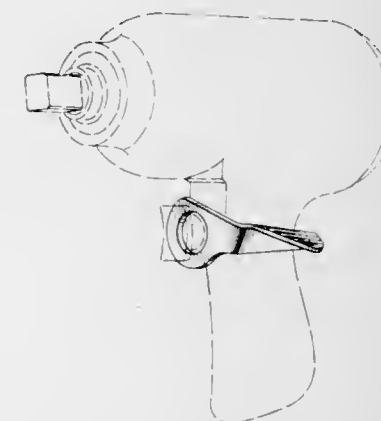


236,185

AIR TOOL REVERSING LEVER
George R. Curtiss, Chardon, and Earl E. Rush, Mentor,
Ohio, assignors to Cooper Industries, Inc., Houston,
Tex.

Filed Aug. 9, 1974, Ser. No. 495,997
Term of patent 14 years
Int. Cl. D8—03, 99

U.S. Cl. D8—70

236,186
BOTTLE

Eric Frachon, Paris, France, assignor to Societe Anonyme
des Eaux Minerales d'Evian, Evian-les-Bains, Haute-
Savoie, France
Filed Nov. 30, 1973, Ser. No. 420,674
Claims priority, application France May 30, 1973
Term of patent 7 years
Int. Cl. D9—01

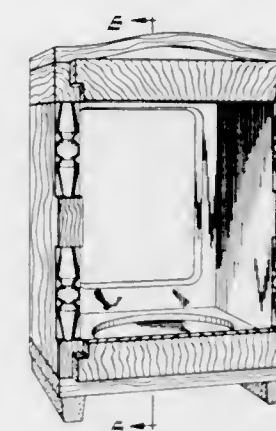
U.S. Cl. D9—159



236,187

**PACKAGING CONTAINER FOR A COFFEE
MAKER OR THE LIKE**
Cornelis van Spronsen, Akron, Ohio, assignor to Stephen
Gould Paper Company, Inc.
Filed Mar. 30, 1973, Ser. No. 346,406
Term of patent 7 years
Int. Cl. D9—03

U.S. Cl. D9—201



236,188

TABLET DISPENSER
Jerome Gould, Encino, Calif., assignor to Sterling
Drug, Inc., New York, N.Y.
Filed Oct. 31, 1972, Ser. No. 302,520
Term of patent 14 years
Int. Cl. D9—03

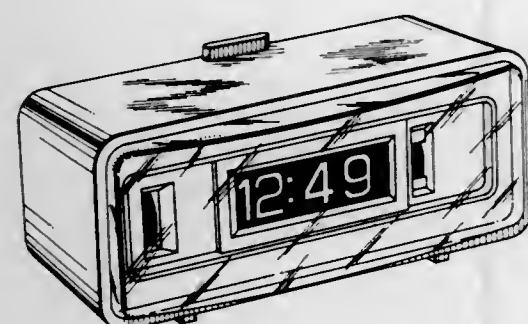
U.S. Cl. D9—222



236,189

DIGITAL CLOCK OR SIMILAR ARTICLE
Theodore G. Daher, Stratford, Conn., assignor to
General Electric Company
Filed Jan. 28, 1974, Ser. No. 437,540
Term of patent 14 years
Int. Cl. D10-01

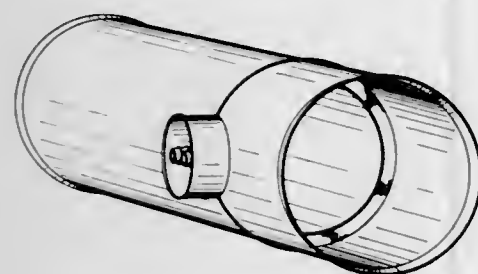
U.S. Cl. D10-15



236,190

FLOWMETER CONDUIT
Arne Wibring, Jonkoping, Sweden, assignor to
Aktiebolaget Svenska Flaktfabriken
Filed Feb. 8, 1974, Ser. No. 440,800
Claims priority, application West Germany Aug. 21, 1973
Term of patent 14 years
Int. Cl. D10-04

U.S. Cl. D10-96



236,191

ILLUMINATED PEDESTRIAN TRAFFIC SIGNAL
Henry Dowding, Staten Island, N.Y., assignor to The
Marbelite Company, Inc., Brooklyn, N.Y.
Filed Jan. 11, 1974, Ser. No. 432,756
Term of patent 14 years
Int. Cl. D10-06

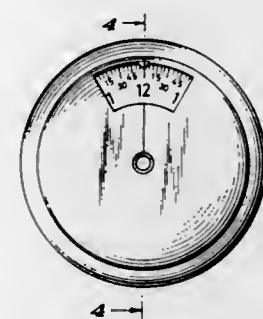
U.S. Cl. D10-114



236,192

WATCH DIAL
Jacques Braconnier, Chatillon-le-Duc, France, assignor to
TMX Sales S.A., Lausanne, Switzerland
Filed Dec. 12, 1973, Ser. No. 426,622
Claims priority, application Switzerland Oct. 26, 1973
Term of patent 14 years
Int. Cl. D10-02

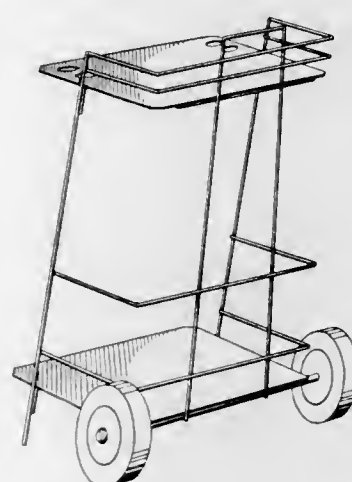
U.S. Cl. D10-124



236,193

UTILITY CART
Charles E. Anderson, Jr., 806 Maple Crest Drive,
Baltimore, Md. 21211
Filed Feb. 12, 1974, Ser. No. 441,905
Term of patent 14 years
Int. Cl. D12-02

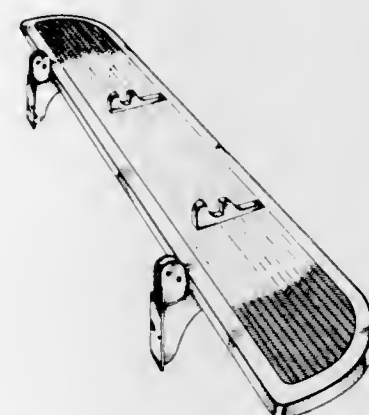
U.S. Cl. D12-34



236,194

BOARDING PLATFORM FOR POWER-BOATS
Roger L. Hendrickson, Rte. 1, Bradshaw Road,
Mount Vernon, Wash. 98273
Filed Feb. 11, 1974, Ser. No. 440,961
Term of patent 14 years
Int. Cl. D12-99

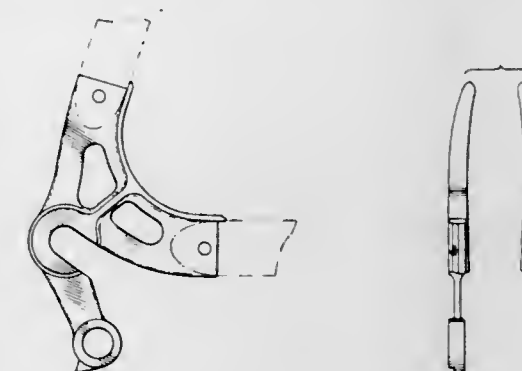
U.S. Cl. D12-70



236,195

SET OF BICYCLE FORK TIPS
Arthur D. Stump, 643 Hightree Road,
Santa Monica, Calif. 90402
Filed Sept. 12, 1973, Ser. No. 396,452
Term of patent 14 years
Int. Cl. D12-11

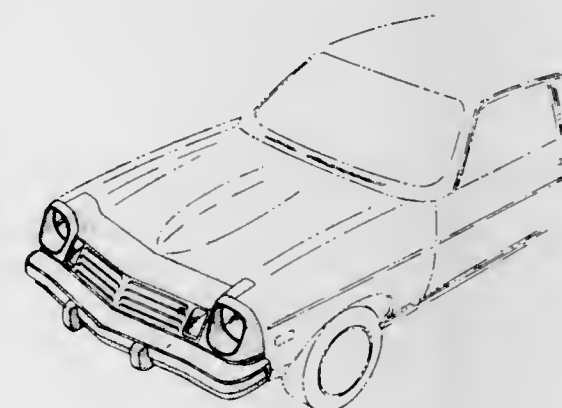
U.S. Cl. D12-118



236,196

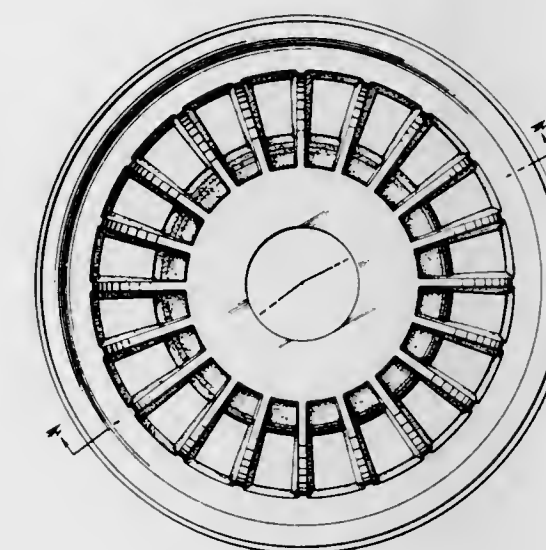
**COMBINED BUMPER, FRONT PANEL, GRILLE
AND HEADLIGHT ASSEMBLY**
Henry G. Haga, Bloomfield Hills, and Jerry P. Palmer,
Royal Oak, Mich., assignors to General Motors Corpo-
ration, Detroit, Mich.
Filed Feb. 22, 1974, Ser. No. 444,865
Term of patent 3½ years
Int. Cl. D12-08

U.S. Cl. D12-170

236,197
WHEEL

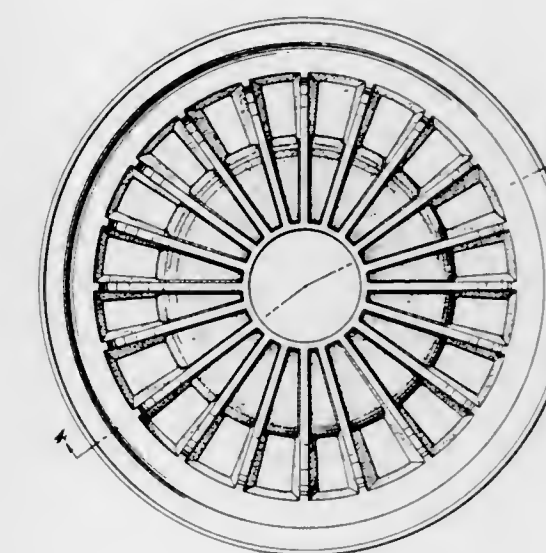
Henry James Clary, Orange, Calif.
(16427 S. Avalon Blvd., Gardena, Calif. 90248)
Filed Jan. 23, 1974, Ser. No. 435,696
Term of patent 14 years
Int. Cl. D12-16

U.S. Cl. D12-211

236,198
WHEEL

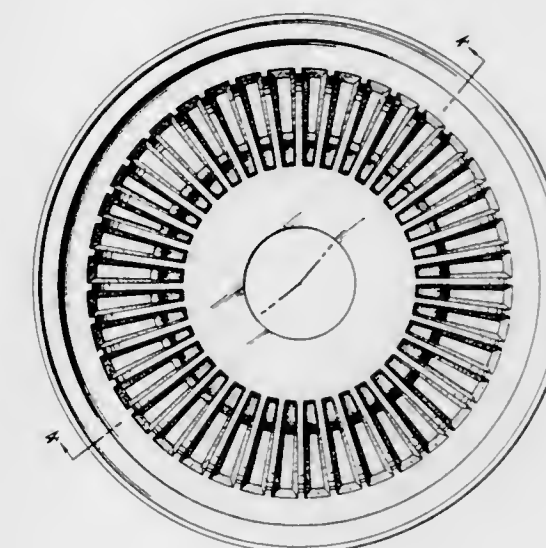
Henry James Clary, Orange, Calif.
(16427 S. Avalon Blvd., Gardena, Calif. 90248)
Filed Jan. 23, 1974, Ser. No. 435,698
Term of patent 14 years
Int. Cl. D12-16

U.S. Cl. D12-211

236,199
WHEEL

Henry James Clary, Orange, Calif.
(16427 S. Avalon Blvd., Gardena, Calif. 90248)
Filed Jan. 23, 1974, Ser. No. 435,699
Term of patent 14 years
Int. Cl. D12-16

U.S. Cl. D12-211



236,200

MENU HOLDER

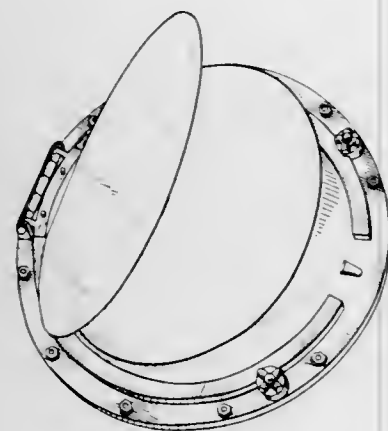
Robert A. Summers, 5 Coventry Drive,
Freehold, N.J. 07728

Filed Apr. 19, 1973, Ser. No. 352,564

Term of patent 14 years

Int. Cl. D7—06

U.S. Cl. D19—28

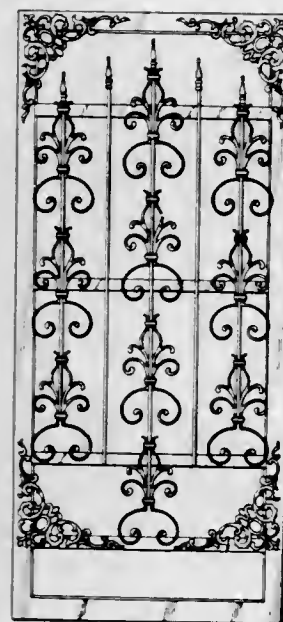
236,201
DOORTed Shoush, Independence, Mo., assignor to Ted Shoush
Company, Inc., Independence, Mo.

Filed May 14, 1973, Ser. No. 360,109

Term of patent 14 years

Int. Cl. D25—02

U.S. Cl. D13—1 M



236,202

WINDOW SASH GUIDE

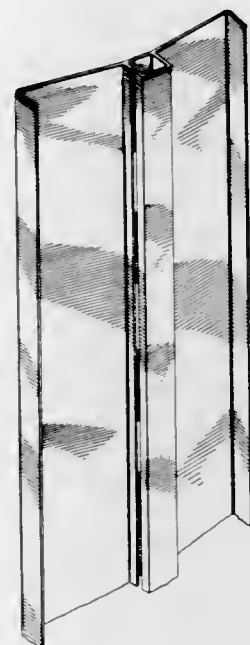
Arthur M. Starck, Goode, Va., and William R. Starck,
Greenwich, Conn., assignors to A.M.S. Corporation,
South Norwalk, Conn.

Filed Jan. 15, 1973, Ser. No. 323,645

Term of patent 14 years

Int. Cl. D25—01

U.S. Cl. D13—6



236,203

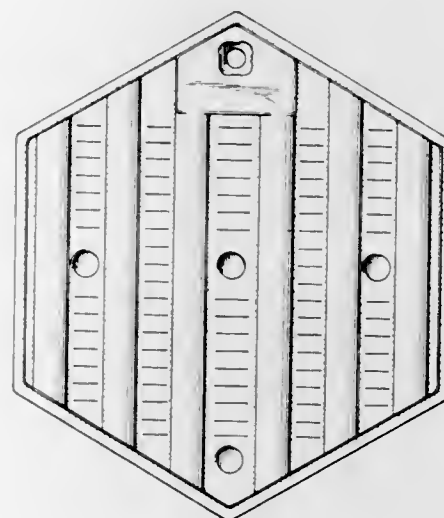
UNDERGRAVEL FILTER BASE FOR
AQUARIUM FILTERSHarvey K. Cohen, 149—21 84th St., Howard Beach, N.Y.
11414, and Arnold Conn, 253 West End Ave., Brook-
lyn, N.Y. 11235

Filed Nov. 26, 1973, Ser. No. 418,900

Term of patent 14 years

Int. Cl. D23—01

U.S. Cl. D23—4



236,204

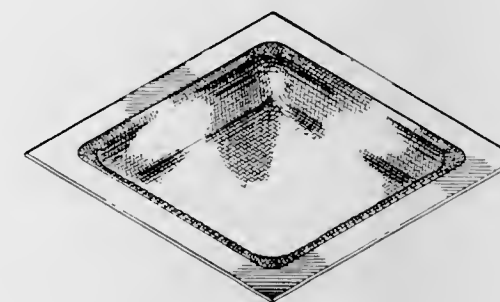
STRAINER FOR ROOF DRAINS, FLOOR SINKS
AND THE LIKEDouglas J. Cooper, Scottsdale, Ariz., assignor to Specialty
Sheet Metal Co., Phoenix, Ariz.

Filed Apr. 29, 1971, Ser. No. 138,861

Term of patent 14 years

Int. Cl. D23—01

U.S. Cl. D23—41



236,205

CHILD'S TRAINING SEAT

David Harman Powell, Maldon, England, assignor to
Pye Limited, Cambridge, England

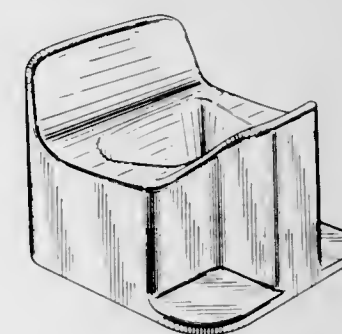
Filed Mar. 11, 1974, Ser. No. 449,847

Claims priority, application Great Britain Sept. 13, 1973

Term of patent 14 years

Int. Cl. D23—02

U.S. Cl. D23—53

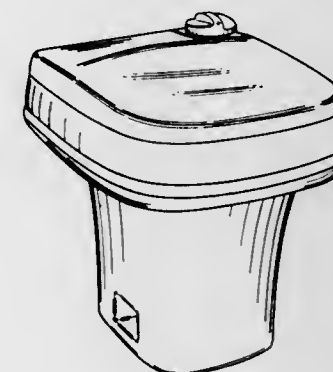
236,206
TOILETCharles W. McHose, Hawthorne, Calif., assignor to
Thetford Corporation, Ann Arbor, Mich.

Filed Dec. 19, 1973, Ser. No. 426,430

Term of patent 14 years

Int. Cl. D23—02

U.S. Cl. D23—67



236,207

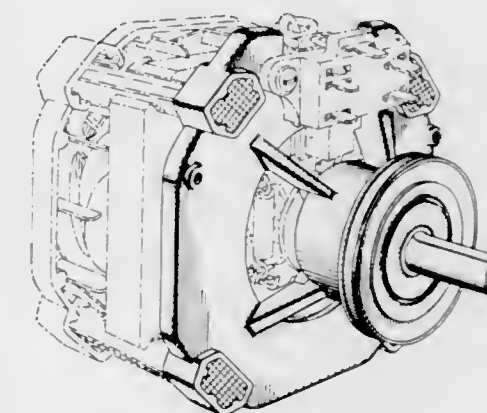
END FRAME FOR A DYNAMOELECTRIC
MACHINEDoran D. Hershberger, Sycamore, Ill., assignor to
General Electric Company, Fort Wayne, Ind.

Filed Apr. 21, 1972, Ser. No. 246,514

Term of patent 14 years

Int. Cl. D13—01

U.S. Cl. D26—5 A



236,208

ELECTRONIC CALCULATING MACHINE

Shinya Takano, Osaka, Japan, assignor to Sharp Kabu-
shiki Kaisha (Sharp Corporation), Osaka, Japan

Filed Sept. 24, 1973, Ser. No. 400,023

Claims priority, application Japan Apr. 17, 1973

Term of patent 14 years

Int. Cl. D18—01

U.S. Cl. D26—5 C



236,209

**LIGHT EMITTING GAS DISCHARGE MATRIX
DISPLAY PANEL**

William D. Petty, Perrysburg, and Larry J. Lohmann,
Centerville, Ohio, assignors to Owens-Illinois, Inc.,
Toledo, Ohio

Continuation-in-part of design application Ser. No.
280,906, Aug. 15, 1972, now Patent No. 230,989.

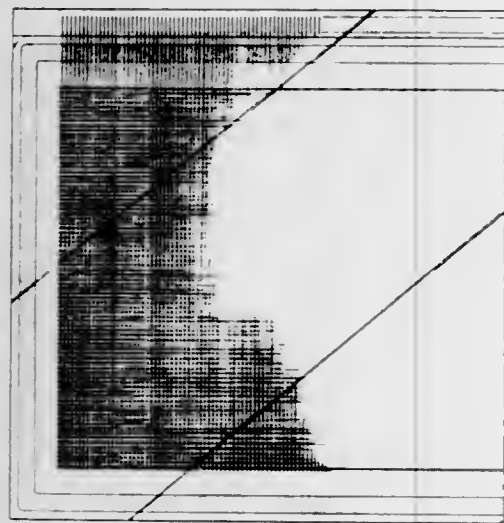
This application Dec. 14, 1973, Ser. No. 425,048

Term of patent 14 years

The term of this patent subsequent to Mar. 26, 1988,
has been disclaimed

Int. Cl. D14—02

U.S. Cl. D26—5 C



236,210

**LIGHT EMITTING GAS DISCHARGE MATRIX
DISPLAY PANEL**

Larry J. Lohmann, Centerville, Gerald E. Wojcik and
Richard A. Martel, Toledo, Ohio, and Fred E. Mansur,
Temperance, Mich., assignors to Owens-Illinois, Inc.,
Toledo, Ohio

Continuation-in-part of design application Ser. No.
202,066, Nov. 24, 1971, now Patent No. 230,987.

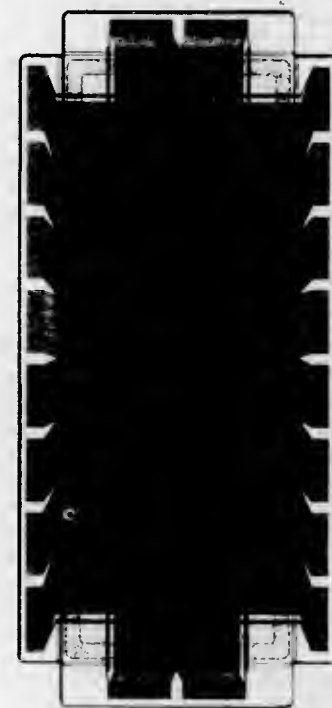
This application Dec. 14, 1973, Ser. No. 425,049

Term of patent 14 years

The term of this patent subsequent to Mar. 26, 1988,
has been disclaimed

Int. Cl. D14—02

U.S. Cl. D26—5 C



236,211

**ENCLOSURE FOR SWITCHING EQUIPMENT
AND THE LIKE**

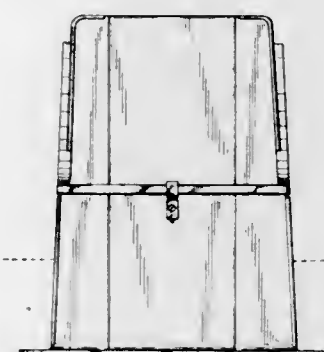
James B. McClure, 7810 Scenic Drive,
Kansas City, Mo. 64152

Filed Apr. 15, 1974, Ser. No. 460,828

Term of patent 14 years

Int. Cl. D13—03

U.S. Cl. D26—13 C



236,212

ELECTRONIC MUSICAL ACCESSORY

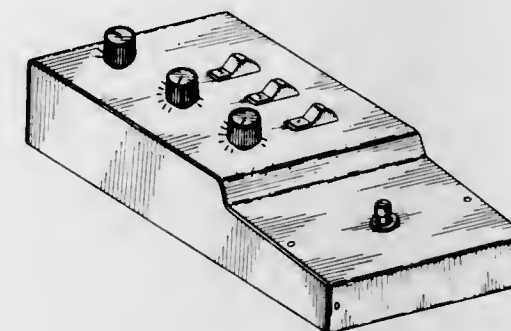
Michael L. Beigel, Warwick, Herbert Ross, Bronx, and
Alan R. Wallerstein, Freeport, N.Y., assignors to Musi-
tronics Corporation, Rosemont, N.J.

Filed May 17, 1973, Ser. No. 361,273

Term of patent 14 years

Int. Cl. D14—99

U.S. Cl. D26—14 L



236,213

SUPPORT FOR TELEPHONE RECEIVER

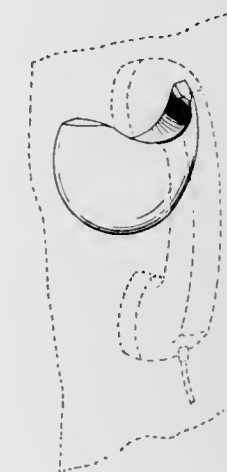
James David Paterson, 211 Wonham St. S.,
Ingersoll, Ontario, Canada

Filed Nov. 20, 1973, Ser. No. 417,608

Term of patent 14 years

Int. Cl. D14—03

U.S. Cl. D26—14 A



236,214

ASH TRAY

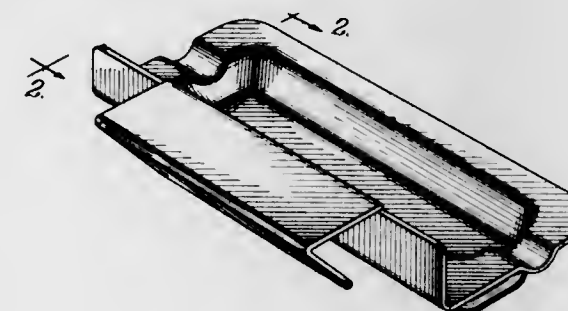
Joan W. Blutter, 2801 N. Sheridan Road,
Chicago, Ill. 60657

Filed Aug. 6, 1973, Ser. No. 385,688

Term of patent 14 years

Int. Cl. D27—03

U.S. Cl. D27—14



236,215

TABLE LIGHTER

Katsuhiko Umeda, Tokyo, Japan, assignor to Westminster
Industries Inc., New York, N.Y.

Filed Dec. 29, 1972, Ser. No. 319,916

Term of patent 14 years

Int. Cl. D27—05

U.S. Cl. D27—39



236,216

MOBILE CHRISTMAS TREE

Raymond Fred, 705 Bradley Road,
Lake Forest, Ill. 60045

Filed Apr. 6, 1973, Ser. No. 348,727

Term of patent 14 years

Int. Cl. D11—01

U.S. Cl. D29—1 A



236,217
VASE

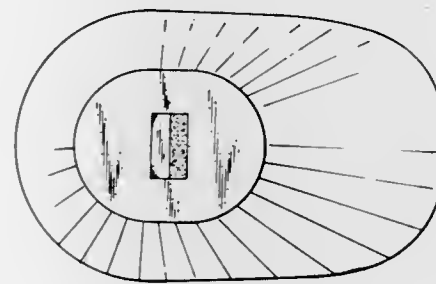
Bror Johansson, % Belysnings-AB Kenbro, Box 253,
S-201 22, Malmo 1, Sweden
Filed Dec. 4, 1973, Ser. No. 421,619
Claims priority, application Sweden June 5, 1973
Term of patent 14 years
Int. Cl. D11—02
U.S. Cl. D29—28 R

236,218
ANIMAL FIGURE

Charles J. Walsh, 35 Mountain Ave.,
White River Junction, Vt. 05001
Filed Jan. 25, 1974, Ser. No. 436,799
Term of patent 14 years
Int. Cl. D21—01
U.S. Cl. D34—2 A



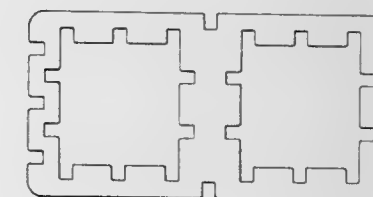
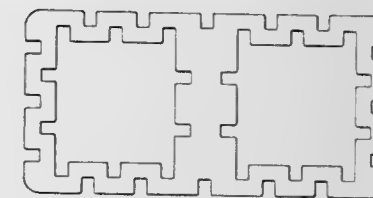
236,219
PORTABLE PITCHER'S MOUND
John J. Goeders, Altoona, Iowa, assignor to
True-Pitch, Inc., Altoona, Iowa
Filed Sept. 11, 1972, Ser. No. 287,675
Term of patent 14 years
Int. Cl. D21—02
U.S. Cl. D34—5 GP



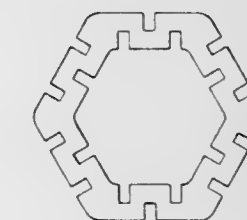
236,220
MAGNETIZED TETHERED GOLF BALL
AMUSEMENT DEVICE
Robert N. Nicodemus, Jr., and Rebecca Sue Nicodemus,
both of 5 E. Frederick St., Walkersville, Md. 21793
Continuation-in-part of design application Ser. No.
367,714, June 7, 1973. This application Oct. 18,
1973, Ser. No. 407,507
Term of patent 14 years
Int. Cl. D21—01
U.S. Cl. D34—15 P



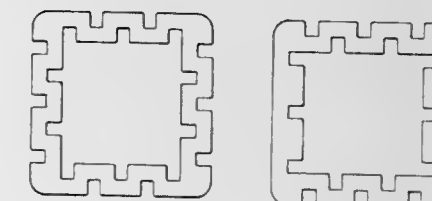
236,221
TOY CONSTRUCTION PIECE
Jack G. McAllister, 2701 N. Douglas Drive 55422, and
Richard O. Bartz, 7017 Mark Terrace Drive 55435,
both of Minneapolis, Minn.
Original design application Feb. 12, 1973, Ser. No.
331,503. Divided and this application Sept. 16,
1974, Ser. No. 506,587
Term of patent 14 years
Int. Cl. D21—01
U.S. Cl. D34—15 GG



236,222
TOY CONSTRUCTION PIECE
Jack G. McAllister, 2701 N. Douglas Drive 55422, and
Richard O. Bartz, 7017 Mark Terrace Drive 55435,
both of Minneapolis, Minn.
Original design application Feb. 12, 1973, Ser. No.
331,503. Divided and this application Sept. 16,
1974, Ser. No. 506,589
Term of patent 14 years
Int. Cl. D21—01
U.S. Cl. D34—15 GG



236,223
TOY CONSTRUCTION PIECE
Jack G. McAllister, 2701 N. Douglas Drive 55422, and
Richard O. Bartz, 7017 Mark Terrace Drive 55435,
both of Minneapolis, Minn.
Original design application Feb. 12, 1973, Ser. No.
331,503. Divided and this application Sept. 16,
1974, Ser. No. 506,590
Term of patent 14 years
Int. Cl. D21—01
U.S. Cl. D34—15 GG



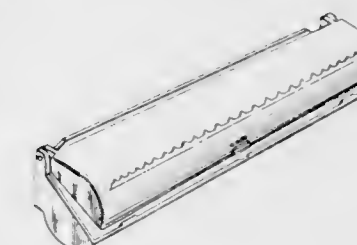
236,224
EARRING
Helen J. Hardison, 8218 Pommel, Houston, Tex. 77088
Filed Aug. 7, 1973, Ser. No. 386,458
Term of patent 14 years
Int. Cl. D11—01
U.S. Cl. D45—9



236,225
INVERTIBLE CANDLESTICK
James E. Vickers, 3005 Garfield St.,
Tallahassee, Fla. 32301
Filed Aug. 13, 1974, Ser. No. 497,091
Term of patent 14 years
Int. Cl. D26—01
U.S. Cl. D48—2



236,226
DISPENSER FOR PLASTIC FILM WRAP
Gerard Jamois, Nogent-sur-Marne, and Sylvain Bluntz,
Paris, France, assignors to Colgate-Palmolive Company,
New York, N.Y.
Filed July 12, 1973, Ser. No. 378,742
Claims priority, application France Feb. 9, 1973
Term of patent 14 years
Int. Cl. D20—02
U.S. Cl. D52—2 C



236,227

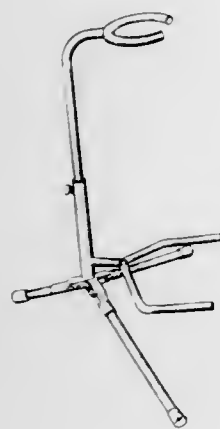
FOLDABLE STAND FOR A MUSICAL INSTRUMENTRalph C. Kester, Jr., 1531 20th Ave. N.,
Lake Worth, Fla. 33460

Filed July 30, 1973, Ser. No. 383,801

Term of patent 14 years

Int. Cl. D17-99; XD6-99

U.S. Cl. D56-1 E



236,228

COMBINED RADIO, PHONOGRAPH AND SPEAKER CABINETRyoichi Takeoka, Tokyo, Japan, assignor to Matsushita
Electric Industrial Co., Ltd., Kadoma, Osaka, Japan

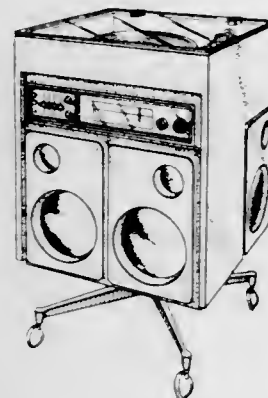
Filed Oct. 10, 1972, Ser. No. 296,403

Claims priority, application Japan Apr. 10, 1972

Term of patent 14 years

Int. Cl. D14-01

U.S. Cl. D56-4 C



236,229

COMBINED RADIO AND RECORD PLAYERYuji Shimizu, Suita, and Noboru Shirasaki, Amagasaki,
Japan, assignors to Matsushita Electric Industrial Co.,
Ltd., Kadoma, Osaka, Japan

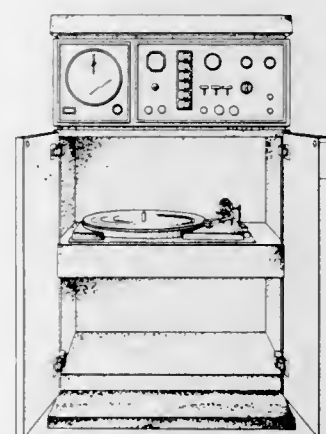
Filed Oct. 4, 1972, Ser. No. 298,910

Claims priority, application Japan Apr. 5, 1972

Term of patent 14 years

Int. Cl. D14-03

U.S. Cl. D56-4 C



236,230

DUAL PROJECTOR, OR SIMILAR ARTICLEPeter Hartwein, Schwalbach, Taunus, Germany, assignor
to Braun Aktiengesellschaft, Frankfurt am Main, Ger-
many

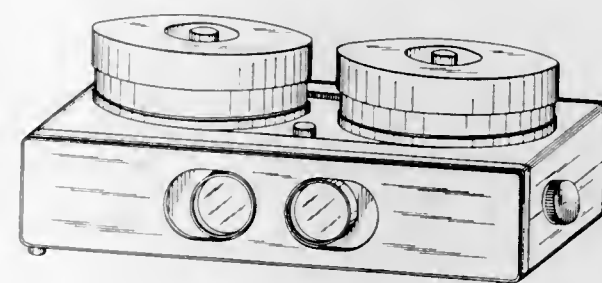
Filed Mar. 15, 1973, Ser. No. 341,346

Claims priority, application Germany Sept. 29, 1972

Term of patent 14 years

Int. Cl. D16-02

U.S. Cl. D61-1 J



236,231

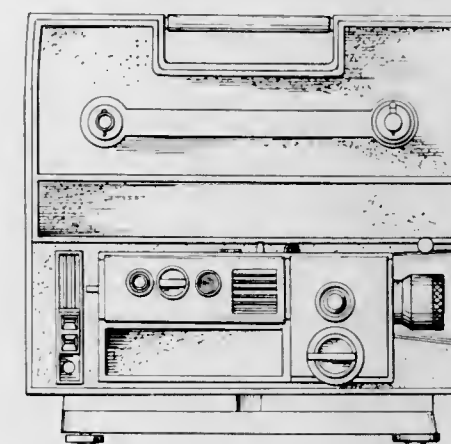
MOTION PICTURE PROJECTORRobert E. Bourke, Weston, Conn., assignor to
GAF Corporation, New York, N.Y.

Filed July 27, 1973, Ser. No. 383,396

Term of patent 14 years

Int. Cl. D16-02

U.S. Cl. D61-1 K



236,232

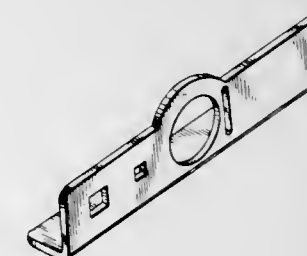
CAMERA LENS MOUNTING ADAPTORBen Kleinerman, New Hyde Park, N.Y., assignor to
Tiffen Manufacturing Corp., Roslyn Heights, N.Y.

Filed Sept. 10, 1973, Ser. No. 395,752

Term of patent 7 years

Int. Cl. D16-05

U.S. Cl. D61-1 E



236,233

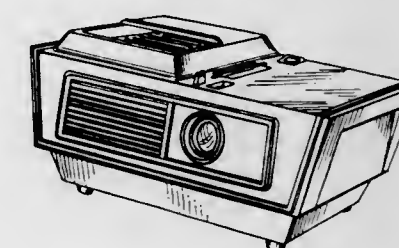
TRANSPARENCY PROJECTORRobert M. Simonelli, Palatine, Ill., assignor to
GAF Corporation, New York, N.Y.

Filed Jan. 30, 1974, Ser. No. 438,000

Term of patent 14 years

Int. Cl. D16-02

U.S. Cl. D61-1 J



236,234

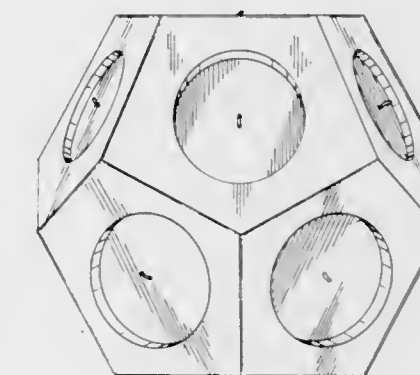
MULTIPLE WICK CANDLE OF DODECAHEDRON SHAPEHarold R. Hansen, 2395 Monroe St.,
Eugene, Oreg. 97405

Filed Aug. 13, 1973, Ser. No. 387,900

Term of patent 14 years

Int. Cl. D26-04

U.S. Cl. D73-1 B



236,235

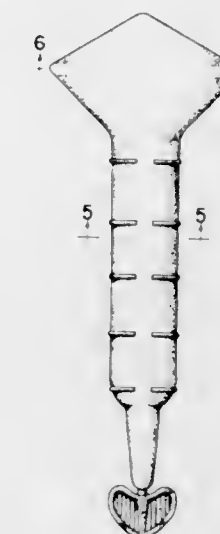
MEDICAMENT DISPENSING CONTAINER WITH TWIST-OFF CLOSUREStanley F. Payton, Pottstown, Pa., assignor to American
Home Products Corp., New York, N.Y.

Filed Jan. 30, 1973, Ser. No. 327,891

Term of patent 14 years

Int. Cl. D24-04

U.S. Cl. D83-1 Q

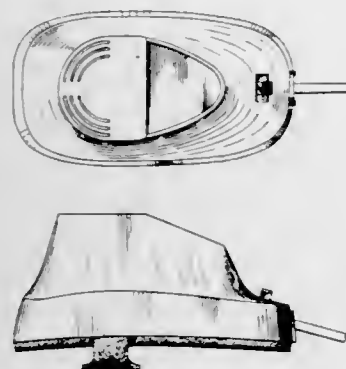


236,236

HAND MASSAGER

Samuel L. McNair, Overland Park, Kans., assignor to Dazey Products Co., Kansas City, Mo.
Filed July 16, 1973, Ser. No. 371,737
Term of patent 14 years
Int. Cl. D28—03

U.S. Cl. D83—1 T



236,237

FOLDING COMB

Juichiro Tade, 1623 Saidaiji-machi, Nara, Japan
Filed Oct. 3, 1973, Ser. No. 403,186
Term of patent 7 years
Int. Cl. D28—03

U.S. Cl. D86—8

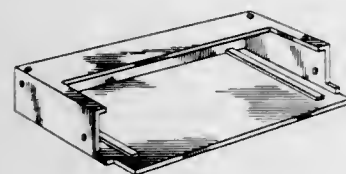


236,238

HOLDER FOR MAGNETIC TAPE CASSETTES

Sven Anders Larsson, Frejavagen 3, 172 46 Sundbyberg, Sweden
Filed Apr. 4, 1973, Ser. No. 347,787
Claims priority, application Sweden Oct. 12, 1972
Term of patent 14 years
Int. Cl. D9—99

U.S. Cl. D87—1 D



236,239

DRY SHAVER OR SIMILAR ARTICLE

Maarten Willem van Lelyveld, Drachten, Netherlands assignor to U.S. Philips Corporation, New York, N.Y.
Filed Aug. 29, 1973, Ser. No. 392,750
Claims priority, application Switzerland Mar. 1, 1973
Term of patent 14 years
Int. Cl. D28—03

U.S. Cl. D95—3 A



236,240

DRY SHAVER OR SIMILAR ARTICLE

Maarten Willem van Lelyveld, Drachten, Netherlands assignor to U.S. Philips Corporation, New York, N.Y.
Filed Aug. 29, 1973, Ser. No. 392,751
Claims priority, application Switzerland Mar. 1, 1973
Term of patent 14 years
Int. Cl. D28—02

U.S. Cl. D95—3 A



236,241

DRY SHAVER OR SIMILAR ARTICLE

Maarten Willem van Lelyveld and Klaas Tiemen Oord, Drachten, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Aug. 31, 1973, Ser. No. 393,474
Claims priority, application Switzerland Mar. 1, 1973
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**LIST OF REISSUE PATENTEEES**

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Erickson, J. David; and Kronmal, Richard A. Automatic card distributor. 3,897,954, Cl. 273-149.00R.

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Evans, David, to S&C Electric Company. High voltage switch operating mechanism. 3,898,420, Cl. 200-153.0SC.

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Evans, Ralph L., Jr.: See—
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Felice, Klaus; Sedlmeier, Josef; Wiedemann, Otto; and Gierer, Walter, to Wacker-Chemie GmbH. Process for making phthalic anhydride. 3,898,249, Cl. 260-346.400.

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- Frank, Howard L., to Sherwood Electronics Laboratories, Inc. Protection circuit for transistorized audio power amplifier. 3,898,532, Cl. 317-31.000.
- Franklin, Kenneth Winston. Delivery mechanism for packaging machine. 3,897,886, Cl. 221-222.000.
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- Fried, John H.; and Harrison, Ian T., to Syntex Corporation. Naphthyl acetaldehyde imines. 3,898,281, Cl. 260-566.00R.
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- Fuji Fudai Kabushiki Kaisha: See—
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- Furihata, Hiroyuki, to Olympus Optical Company, Ltd. Endoscope with facile bending operation. 3,897,775, Cl. 128-6.000.
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- Gaon, David E., to GTE Automatic Electric Laboratories Incorporated. Error detection and protection circuits for duplicated peripheral units. 3,898,386, Cl. 179-8.00R.
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- Gariazzo, Michael C., to United States of America, Navy. Synchro-digital converter. 3,898,648, Cl. 340-347.05Y.
- Garman, Ronald H.; and Mackoway, John P., Jr., to Caterpillar Tractor Co. Coupling device for governor control. 3,897,693, Cl. 74-491.000.
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- Gattenby, Herbert H. Inflatable, detachable gap filler for camper caps. 3,897,970, Cl. 296-23.00MC.
- Gaul, Michael F., to Crypt Systems, Inc. Crypt structure. 3,897,663, Cl. 52-136.000.
- Gauntz, John M.: See—
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- General Tire & Rubber Company, The: See—
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- Genho, Robert. Laser level and square. 3,897,637, Cl. 33-227.000.

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- George, John Barrett, to RCA Corporation. Crystal-lock tuning system for tuning regularly and irregularly spaced channel frequencies. 3,898,567, Cl. 325-470.000.
- Gerela, Roy R. Football place-kicking device. 3,897,948, Cl. 273-55.00B.
- Germanas, Dalia; and Pollitzer, Ernest L., to Universal Oil Products Company. Cobalt-and-sulfur-containing olefin isomerization process catalyst. 3,898,179, Cl. 252-439.000.
- Gerritsen, Jan; Kantelberg, Adrianus Hubertus; and Kool, Gerrit, to U.S. Philips Corporation. Deflection coils and system having two quadrupolar fields at a forty five degree angle with respect to each other. 3,898,520, Cl. 315-370.000.
- Ghelardoni, Mario; Pestellini, Vittorio; Pisanti, Nicola; and Volterra, Giovanna, to A. Menarini S.A.S. Substituted N-phenylbenzamides. 3,898,278, Cl. 260-559.00S.
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- Ghrist, William D., III: See—
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- Giaimo, Edward Charles, Jr., to RCA Corporation. Method of making a transparency of a colored image in a magneto-electric printing system. 3,898,082, Cl. 96-1.200.
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- Giles, Robert D., to International Nickel Company, Inc., The. Process for producing iron electrode. 3,898,098, Cl. 136-25.000.
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- Glover, John A. Method and apparatus for actuating an operating means for an automatic fire extinguishing apparatus. 3,897,828, Cl. 169-43.000.
- Glover, Richard Warmath; and Oldewurtel, Edward Joseph, to Black and Decker Manufacturing Company. The Double cam drive for a hedge trimmer having two reciprocating cutting blades. 3,897,630, Cl. 30-220.000.
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Jensen, Garold K., to United States of America, Navy. Tape recording system for radar. 3,898,650, Cl. 343-5.0PC.

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Jensen, Garold K., to United States of America, Navy. Radar data converter and display system. 3,898,656, Cl. 343-7.700.

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- Johnson, Robert Henry, to Motorola, Inc. Weapon delivery system. 3,897,917, Cl. 244-3.160.
- Johnson, Walter A.; and Milke, Howard W., to GTE Sylvania Incorporated. Fluorescent lamp containing amalgam-forming material for reducing stabilization time. 3,898,511, Cl. 313-490.000.
- Johnston, Robert Bernard; and Rees, John Michael, to Thorn Electrical Industries Limited. Halogen type filament lamp containing phosphorus and nitrogen. 3,898,500, Cl. 313-174.000.
- Jones, Charles H.; and Gilmour, George A., to Westinghouse Electric Corporation. Acoustic camera apparatus. 3,898,608, Cl. 340-3.00R.
- Jones, Christopher Robin; Williams, Malcolm; and Brunt, Geoffrey Albert Kenyon, to C. A. V. Limited. Fuel systems for engines. 3,897,762, Cl. 123-139.00E.
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- Jones, John Robert, to BP Chemicals International Limited. Production of gaseous olefins from petroleum residue feedstocks. 3,898,299, Cl. 260-683.00R.
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- Jozlin, Joseph A. Secondary combustion chambers for internal combustion engines. 3,897,769, Cl. 123-191.00R.
- Jungbluth, Leroy F.; and Black, James B., to Twin Disc, Incorporated. Apparatus and method for disassembly of a tapered, keyless connection by means of fluid pressure. 3,898,010, Cl. 403-15.000.
- Junghans, Rudi, to Heidelberger Druckmaschinen Aktiengesellschaft. Washing device for a blanket cylinder of an offset printing press. 3,897,726, Cl. 101-425.000.
- Jungmann, Axel: See—
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- Kagari, Yoshiharu: See—
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- Kalb, John W., to Ohio Brass Company, The. Insulator with resin-bonded fiber rod and elastomeric weathersheds, and method of making same. 3,898,372, Cl. 174-179.000.
- Kaliszewski, Edmond S.: See—
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- Kametani, Tetsuji, to Nippon Chemiphar Co., Ltd. Rescinamine-like compounds and a process for producing the same. 3,898,215, Cl. 260-240.0AL.
- Kaminsky, Daniel, to Warner-Lambert Company. Process for the preparation of substituted pyrano (3,2-c) (1,2)benzothiazine 6,6-dioxides. 3,898,218, Cl. 260-243.00R.
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- Kane, Richard E.: See—
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Livera, Phillip A., to Westinghouse Electric Corporation. Circular fluo-rescent lamp with two-piece snap-lock base. 3,898,495, Cl. 313-51.000.

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Louis, Gerhard; and Bohm, Harald, to Licentia-Patent-Verwaltungs-G.m.b.H. Bipolar low-pressure electrode for gas fuel cells. 3,898,102, Cl. 136-86.00D.

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- Maynard, James Lucian; Klosky, John Patrick; and Vasa, Suresh Laherlal, to Addressograph-Multigraph Corporation. Data entry display terminal. 3,898,622, Cl. 340-172.000.
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- Stewart, Tobias, Jr. Portable siphon apparatus. 3,897,808, Cl. 141-323.000.
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- Stone, Henry Dermott; Millar, Iain Craig Paton; and Nicholls, David Henry, to U.S. Philips Corporation. Channel multiplier having non-reflective amorphous aluminum layer obturating channel entrances on side facing photocathode. 3,898,498, Cl. 313-95.000.
- Stout, Joseph V., to M & T Chemicals Inc. Novel glazing composition and method. 3,898,091, Cl. 106-48.000.
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- Straus, Thomas M., to Hughes Aircraft Company. Means for providing redundancy of key system components. 3,898,476, Cl. 307-149.000.
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- Strecker, Ruediger A. H.; and Haiss, Hermann S., to United States of America, Navy. Solid 5-aminotetrazole nitrate gas generating propellant with block copolymer binder. 3,898,112, Cl. 149-19.900.
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- Struwe, Burckhard: See—
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- Suzuki, Takeo: See—
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- Swopsher, John A.; and Riddell, Vernon A., to La Salle Machine Tool, Inc. Torque and turn wrench apparatus. 3,897,834, Cl. 173-12.000.
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- Tabak, Fernando, to Universal Oil Products Company. Recuperative form of thermal-catalytic incinerator. 3,898,040, Cl. 23-277.00C.
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- Takeo; Nishiue, Yoshihiro; Tadokoro, Katsumasa; Fukagawa, Toshimasa; Harada, Isamu; Misawa, Akira; Watanabe, Kazuo; and Saito, Kazuo, 3,897,996.
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- Takada, Takezo, deceased (by Takada, Juichiro, legal representative), to Takata Kojyo Co., Ltd. Pendulum type inertia switch. 3,898,400, Cl. 200-61.480.
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- Taylor, Louis N. Method of making patterned composite material. 3,898,117, Cl. 156-163.000.
- Taylor, Percy Ronald, to Monsanto Ltd. Production of improved ceramic shell moulds. 3,898,313, Cl. 264-225.000.
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Van Lelyveld, Maarten W., and Oord. 236,241.
Van Lelyveld, Maarten W., to U.S. Philips Corp. Dry shaver or similar article. 236,239, 8-5-75, Cl. D95-3.
Van Lelyveld, Maarten W., to U.S. Philips Corp. Dry shaver or similar article. 236,240, 8-5-75, Cl. D95-3.
Van Lelyveld, Maarten W., and K. T. Oord, to U.S. Philips

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Corp. Dry shaver or similar article. 236,241, 8-5-75, Cl. D95-3.
 Vickers, James E. Invertible candlestick. 236,225, 8-5-75, Cl. D48-2.
 Walsh, Charles J. Animal figure. 236,218, 8-5-75, Cl. D34-2.
 Wallerstein, Alan R.: See—
 Belgel, Michael L., Ross, and Wallerstein. 236,212.
 Westminster Industries Inc.: See—
 Umeda, Katsuhiko. 236,215.
 Wibring, Arne, to Aktiebolaget Svenska Flaktfabriken. Flow-meter conduit. 236,190, 8-5-75, Cl. D10-96.
 Wintz, Donald E., to Aladdin Mfg. Co. Receptacle for drinks holders. 236,175, 8-5-75, Cl. D6-93.
 Wojcik, Gerald E.: See—
 Lohmann, Larry J., Wojcik, Martel, and Mansur. 236,210.
 Younge, Paul D., to Corning Glass Works. Coffee maker or the like. 236,178, 8-5-75, Cl. D7-62.

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ISSUED AUGUST 5, 1975

NOTE.—First number, class; second number, subclass; third number, patent number

3R	CLASS 2	141R	3,897,641	405	CLASS 74	38.2	CLASS 106	6F	CLASS 136	14R	CLASS 174
9	3,897,596	142R	3,897,642	491	3,897,691	38.2	3,898,090	6R	3,898,096	28	3,898,367
	3,897,597			516	3,897,693	48	3,898,091		3,898,097	36	3,898,368
	3,897,598				3,897,694	49	3,898,092	25	3,898,098	68.5	3,898,369
10	CLASS 4	28C	3,897,643	665B	3,897,695	54	3,898,093	75	3,898,099	72A	3,898,370
	3,897,599	104.01	3,897,644	682	3,897,696	104	3,898,094	83R	3,898,100	179	3,898,371
255	3,897,600	160	3,897,645	732	3,897,697			83T	3,898,101		3,898,372
	3,897,601			745	3,897,698	119	CLASS 108	86D	3,898,102		CLASS 175
				801	3,897,699		3,897,738	120FC	3,898,103	93	3,897,836
10.2	CLASS 8	15	3,897,646			8F	CLASS 110	166	3,898,104	228	3,897,837
26	3,898,032	42.38	3,897,647				3,897,739				
137	3,898,033	43.13	3,897,648	3	CLASS 75		CLASS 112		CLASS 137		CLASS 176
149	3,898,034	43.15	3,897,649	60	3,898,076	228	3,897,740	5	3,897,798	60	3,897,838
173	3,898,036	54.5R	3,897,650		3,898,077			68	3,897,799	68	3,898,125
					3,898,078		CLASS 114	309	3,897,800	87	3,898,126
10	CLASS 13	51	3,898,055		3,898,079		.5F	344	3,897,801		CLASS 178
14	3,898,365	58	3,898,056	134S	3,898,080	16E	3,897,741	478	3,897,802	2C	3,898,373
35	3,898,366			171	3,898,081	16R	3,897,742	524	3,897,803	5.1	3,898,374
						61	3,897,743	527.8	3,897,804		3,898,375
	CLASS 15					218	3,897,745	637	3,897,805	5.8R	3,898,376
104.3SN	3,897,602	43	3,897,651	52.4R	3,897,701	235A	3,897,746	832	3,897,806	6	3,898,377
244R	3,897,603	351	3,897,652	119	3,897,702					6.8	3,898,378
344	3,897,604	352	3,897,653	177UJ	3,897,703					7.1	3,898,379
382	3,897,605	375	3,897,653			5	CLASS 82	36	3,897,747	7.3R	3,898,380
							3,897,704			7.5R	3,898,381
71	CLASS 16						3,897,705	7	3,897,748		CLASS 179
114	3,897,607	56	3,897,655	341	3,897,706	31.5	3,897,749	637	3,897,750	1VC	3,898,383
145	3,897,608	123G	3,897,656	455	3,897,707					1E	3,898,384
		125	3,897,657	560	3,897,707					1N	3,898,385
	CLASS 17	163	3,897,658							6R	3,898,386
39	3,897,609	165.71	3,897,659				CLASS 119			8R	3,898,387
71	3,897,610	165.77	3,897,660				3,897,751			15BM	3,898,388
		287	3,897,661				33	3,897,752		15BS	3,898,389
	CLASS 21						51R	3,897,753		16F	3,898,390
2.7R	3,898,037									16F	3,898,391
58	3,898,038									99	3,898,392
108	3,898,039									119R	3,898,393
										146R	3,898,394
230PC	3,898,041									175.2R	3,898,395
230R	3,898,042									175.3A	3,898,396
252R	3,898,044										
258.5	3,898,045										
259	3,898,046										
277C	3,898,040										
281	3,898,047										
	3,898,048										
284	3,898,043										
288B	3,898,050										
288R	3,898,049										
301SP	3,898,051										
	CLASS 24										
230SL	3,897,611										
265B	3,897,612										
273	3,897,613										
25.16	3,897,614										
	3,897,615										
149.5B	3,897,616										
195	3,898,052										
197.5	3,898,053										
198	3,898,054										
203B	3,897,617										
420.5	3,897,618										
421	3,897,619										
430	3,897,620										
434	3,897,621										
452	3,897,622										
571	3,897,625										
574	3,897,626										
578	3,897,627										
580	3,897,628										
30	CLASS 30										
220	3,897,629										
	3,897,630										
22	CLASS 32										
32	3,897,632										
77	CLASS 33										
180R	3,897,633										
189	3,897,634										
203.13	3,897,635										
227	3,897,636										
	3,897,637										
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110	3,897,639										
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37	3,897,868	179	3,897,890	133	3,897,932	455P	3,898,260	249D	3,898,540	
218	3,897,869	263	3,897,891	248	3,897,933	456A	3,898,262	261	3,898,541	
241	3,897,870					456P	3,898,263	262R	3,898,542	
CLASS 200	66	3,897,892	CLASS 252	3,898,167		463	3,898,264	CLASS 318	224R	3,898,543
6A	3,898,397	91	3,897,893	8.55C	3,898,166	464	3,898,265	254	3,898,544	
44	3,898,398	25A	3,897,894	8.7E	3,898,168	465D	3,898,266	313	3,898,545	
47	3,898,399	42.1B	3,897,895	32.7E	3,898,169	465.9	3,898,267	591	3,898,546	
61.48	3,898,400			49.6	3,898,170	471A	3,898,270	CLASS 320	2	3,898,547
61.91	3,898,401	2		62.1L	3,898,171	471R	3,898,269	48	3,898,548	
67DB	3,898,402	49		62.1P	3,898,172	473R	3,898,271	CLASS 321	2	3,898,549
83C	3,898,404	112		301.4S	3,898,173	477	3,898,272	16	3,898,550	
83J	3,898,405	122		408	3,898,174	479R	3,898,273	CLASS 322	28	3,898,551
83Q	3,898,403			428	3,898,175	501.13	3,898,275	CLASS 323	9	3,898,552
144B	3,898,406	49			3,898,176	517	3,898,276	40	3,898,554	
148R	3,898,408	112		CLASS 228	3,898,177	517	3,898,277	CLASS 324	34D	3,898,555
153SC	3,898,409	122		2	3,898,178	534R	3,898,278	37	3,898,556	
159B	3,898,421	17R		44	3,898,179	552R	3,898,279	51	3,898,557	
CLASS 203	6	3,898,134	CLASS 229	432	3,898,180	559S	3,898,280	58.5C	3,898,558	
9	3,898,135	26		439	3,898,181	561N	3,898,281	158MG	3,898,560	
CLASS 204	30	3,898,136	CLASS 230	441	3,898,182	566A	3,898,282	158P	3,898,562	
43G	3,898,137	61.11D	3,898,432	449	3,898,183	566R	3,898,283	158R	3,898,561	
49	3,898,138	61.11R	3,898,433	455R	3,898,184	567.6M	3,898,284	158T	3,898,559	
56R	3,898,139	61.12N	3,898,434		3,898,185	583P	3,898,285	166	3,898,563	
73A	3,898,140	92DN	3,898,436		3,898,186	593P	3,898,287	CLASS 325	13	3,898,564
129.43	3,898,141	92WT	3,898,435		3,898,187	621H	3,898,289	28	3,898,565	
158	3,898,142	95R	3,898,437		3,898,188	641	3,898,290	308	3,898,566	
159.12	3,898,143	151	3,898,438		3,898,189	643D	3,898,291	470	3,898,567	
159.15	3,898,144	151.13	3,898,440		3,898,190	650R	3,898,292	CLASS 326	13	3,898,564
181	3,898,145	151.21	3,898,439		3,898,191	652.5R	3,898,293	28	3,898,565	
195M	3,898,146		3,898,441		3,898,192	653.1R	3,898,294	308	3,898,566	
217	3,898,147		3,898,442		3,898,193	655	3,898,295	470	3,898,567	
252	3,898,148	152	3,898,443		3,898,194	666B	3,898,296	CLASS 327	14	3,898,568
275	3,898,149	153AC	3,898,444		3,898,195	668A	3,898,297	53	3,898,569	
300	3,898,150	153AM	3,898,445		3,898,196	681.5	3,898,298	69	3,898,570	
308	3,898,151	153AP	3,898,446		3,898,197	683R	3,898,299	145	3,898,571	
CLASS 206	73	3,897,871	194	3,898,447		827	3,898,300	164	3,898,572	
146	3,897,872	CLASS 207	8R	3,897,903		876R	3,898,301	167	3,898,573	
153	3,897,873	8R	3,897,903		3,898,198	880B	3,898,302	CLASS 329	104	3,898,574
315	3,897,874	CLASS 208	14	3,897,904		953	3,898,303	15	3,898,575	
89	3,898,153	15	3,897,905		3,898,199	956	3,898,305	28	3,898,576	
139	3,898,154	15	3,897,906		3,898,200	964	3,898,307	63	3,898,578	
216	3,898,155	187	3,897,907		3,898,201	CLASS 261	3,898,308	CLASS 331	1A	3,898,579
CLASS 209	1	3,898,156	265.39	3,897,907		CLASS 264	3,898,309	15	3,898,580	
124	3,897,875	306	3,898,157		3,898,202	94	3,898,310	65	3,898,581	
CLASS 210	22	3,898,158	586	3,897,908		103	3,898,311	75	3,898,582	
44	3,898,159	65	3,897,909		3,898,203	122	3,898,312	94.5G	3,898,584	
45	3,898,160	77	3,897,910		3,898,204	125	3,898,313	94.5P	3,898,586	
152	3,898,161	CLASS 241	77	3,897,910		125	3,898,314	94.5S	3,898,583	
170	3,898,162	35.5R	3,897,911		3,898,205	125	3,898,315	94.5	3,898,585	
246	3,898,163	56A	3,897,912		3,898,206	122	3,897,942	112	3,898,588	
521	3,898,164	107.4	3,897,913		3,898,207	122	3,897,942	CLASS 332	9R	3,898,589
CLASS 211	27	3,897,876	130.1	3,897,915		122	3,897,942	31T	3,898,590	
147R	3,897,880	155M	3,897,916		3,898,208	122	3,897,942	CLASS 333	30R	3,898,591
317	3,897,881	CLASS 244	3.16	3,897,917		122	3,897,942	72	3,898,592	
517	3,897,882	3.19	3,897,918		3,898,209	122	3,897,942	81R	3,898,593	
CLASS 214	6P	3,897,877	110C	3,897,920		122	3,897,942	97R	3,898,594	
18N	3,897,878	86A	3,897,879		3,898,210	122	3,897,942	CLASS 335	152	3,898,595
147R	3,897,880	118R	3,897,919		3,898,211	122	3,897,942	192	3,898,596	
317	3,897,881	CLASS 246	34CT	3,897,921		122	3,897,942	212	3,898,597	
517	3,897,882	CLASS 248	42	3,897,922		122	3,897,942	231	3,898,598	
10.49	3,898,410	42	3,897,922		3,898,212	122	3,897,942	302	3,898,599	
10.55C	3,898,412	75	3,897,923		3,898,213	122	3,897,942	CLASS 336	96	3,898,600
10.55R	3,898,411	164	3,897,924		3,898,214	122	3,897,942	136	3,898,601	
10.79	3,898,413	216	3,897,925		3,898,215	122	3,897,942	CLASS 337	273	3,898,602
72	3,898,414	223	3,897,926		3,898,216	122	3,897,942	297	3,898,603	
73	3,898,415	256.4N	256.4N		3,898,217	122	3,897,942	322	3,898,604	
80	3,898,416	268BC	268BC		3,898,218	122	3,897,942	CLASS 338	18	3,898,605
121LM	3,898,417	273	3,898,233		3,898,219	122	3,897,942	48	3,898,606	
121P	3,898,418	281	3,898,234		3,898,220	122	3,897,942	308	3,898,607	
130	3,898,419	283R	3,898,235		3,898,221	122	3,897,942	CLASS 339	5A	3,897,990
201	3,898,422	288CF	3,898,236		3,898,222	122	3,897,942	75MP	3,897,991	
203	3,898,423	293.53	3,898,238		3,898,223	122	3,897,942	97C	3,897,992	
216	3,898,424	293.62	3,898,239		3,898,224	122	3,897,942	99R	3,897,993	
105	3,898,425	293.9	3,898,237		3,898,225	122	3,897,942	176M	3,897,994	
107	3,898,426	306.7C	3,898,240		3,898,226	122	3,897,942	CLASS 340	3R	3,898,608
170	3,898,427	307D	3,898,242		3,898,227	122	3,897,942	4R	3,898,609	
444	3,898,430	309.5	3,898,243		3,898,228	122	3,897,942	15.5CP	3,898,610	
522	3,898,431	309.6	3,898,244		3,898,229	122	3,897,942	52D	3,898,612	
534	3,898,432	326.15	3,898,245		3,898,230	122	3,897,942	52R	3,898,613	
CLASS 220	18	3,897,883	326.5B		3,898,231	122	3,897,942	57	3,898,614	
269	3,898,227	333	3,898,246		3,898,232	122	3,897,942	CLASS 341	5A	3,897,990
320	3,897,884	344	3,898,247		3,898,233	122	3,897,942	75MP	3,897,991	
345	3,897,885	367	3,898,248		3,898,234	122	3,897,942	97C	3,897,992	
CLASS 221	222	3,897,886	367	3,898,249		3,898,235	122	3,897,942	99R	3,897,993
26	3,897,887	535	3,898,250		3,898,236	122	3,897,942	176M	3,897,994	
38	3,897,888	563	3,898,251		3,898,237	122	3,897,942	CLASS 342	3R	3,898,608
		567	3,898,252		3,898,238	122	3,897,942	4R	3,898,609	
			3,898,253		3,898,239	122	3,897,942	15.5CP	3,898,610	
			3,898,254		3,898,240	122	3,897,942	52D	3,898,612	
			3,898,255		3,898,241	122	3,897,942	52R	3,898,613	
			3,898,256		3,898,242	122	3,897,942	57	3,898,614	
			3,898,257		3,898,243	122	3,897,942	CLASS 343	5DP	3,898,651
			3,898,258		3,898,244	122	3,897,942	5PC	3,898,650	
			3,898,259		3,898,245	122	3,897,942	6R	3,898,652	
			3,898,260		3,898,246	122	3,897,942	7ED	3,898,653	
			3,898,261		3,898,247	122	3,897,942	7A	3,898,654	
			3,898,262		3,898,248	122	3,897,942	7.5	3,898,655	
			3,898,263		3,898,249	122	3,897,942	7.7	3,898,656	
			3,898,264		3,898,250	122	3,897,942	8	3,898,657	
			3,898,265		3,898,251	122	3,897,942	17.2PC	3,898,660	
			3,898,266		3,898,252	122	3,897,942	18E	3,898,661	
			3,898,267		3,898,253	122	3,897,942	100TD	3,898,662	
			3,898,268		3,898,254	122	3,897,942	108M	3,898,664	
			3,898,269		3,898,255	122	3,897,942	200	3,898,665	
			3,898,270		3,898,256	122	3,897,942	702	3,898,666	
			3,898,271		3,898,257	122	3,897,942	756	3,898,667	
			3,898,272		3,898,258	122	3,897,942	759	3,898,668	
			3,898,273		3,898,259	122	3,897,942	786	3,898,669	
			3,898,274		3,898,260	122	3,897,942	CLASS 346	21	3,898,670
			3,898,275		3,898,261	122	3,897,942	74EH	3,898,674	
			3,898,276		3,898,262	122	3,897,942	75	3,898,671	

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3,898,254	3,897,874	3,898,482	3,897,722	3,897,897	3,897,716
3,898,364	3,897,884	3,898,483	3,897,865	3,897,908	3,897,718
3,898,394	3,897,896	3,898,496	3,897,902	3,897,924	3,897,871
3,898,446	3,897,944	3,898,516	3,897,922	3,897,951	3,898,087
3,897,614	3,897,946	3,898,547	3,897,993	3,897,952	3,898,168
3,897,667	3,897,950	3,898,580	3,898,110	3,897,955	3,898,315
3,897,854	3,897,965	3,898,586	3,898,117	3,897,957	3,898,338
3,897,899	3,897,977	3,898,589	3,898,140	3,897,971	3,898,342
3,897,917	3,897,979	3,898,594	3,898,375	3,897,975	3,898,355
3,897,973	3,898,005	3,898,624	3,898,390	3,897,980	3,898,417
3,897,985	3,898,012	3,898,636	3,898,428	3,897,981	3,898,451
3,898,352	3,898,017	3,898,638	3,898,437	3,897,984	3,898,452
3,898,380	3,898,019	3,898,639	3,898,471	3,897,994	3,898,488
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3,897,634	3,898,119	3,898,158	3,898,463	3,898,173	3,897,601
3,897,637	3,898,122	3,898,558	3,898,612	3,898,179	3,897,620
3,897,648	3,898,125	3,898,627	3,898,627	3,898,227	3,897,646
3,897,682	3,898,130	3,897,616	3,897,616	3,898,287	3,898,454
3,897,683	3,898,132	3,897,680	3,897,680	3,898,348	3,897,633
3,897,690	3,898,160	3,897,700	3,897,700	3,898,361	3,897,773
3,897,695	3,898,188	3,897,795	3,897,795	3,898,386	3,897,806
3,897,702	3,898,222	3,897,891	3,897,891	3,898,395	3,897,812
3,897,703	3,898,273	3,898,031	3,897,663	3,898,398	3,898,535
3,897,727	3,898,281	3,898,032	3,897,666	3,898,420	3,897,610
3,897,730	3,898,289	3,898,040	3,897,668	3,898,449	3,897,802
3,897,739	3,898,328	3,898,045	3,897,671	3,898,457	3,897,872
3,897,744	3,898,336	3,898,099	3,897,674	3,898,489	3,897,873
3,897,749	3,898,350	3,898,163	3,897,678	3,898,492	3,897,842
3,897,753	3,898,354	3,898,223	3,897,693	3,898,508	3,898,114
3,897,754	3,898,377	3,898,240	3,897,697	3,898,517	3,897,613
3,897,760	3,898,389	3,898,245	3,897,713	3,898,526	3,897,630
3,897,767	3,898,392	3,898,321	3,897,725	3,898,532	3,897,684
3,897,778	3,898,402	3,898,332	3,897,736	3,898,590	3,897,710
3,897,797	3,898,403	3,898,388	3,897,737	3,898,606	3,897,728
3,897,803	3,898,427	3,898,467	3,897,794	3,898,621	3,897,731
3,897,804	3,898,434	3,898,541	3,897,796	3,898,628	3,897,746
3,897,823	3,898,435	3,898,573	3,897,798	3,898,645	3,897,751
3,897,826	3,898,438	3,897,647	3,897,805	3,898,666	3,897,836
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		3,898,250		3,898,393	3,898,587	3,898,673	3,898,286	3,898,637	
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			34 :	3,897,627		3,897,766	3,897,920		
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				3,897,733		3,897,800	3,897,937		
				3,897,782		3,897,809	3,897,948		
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				3,898,082		3,898,083	3,898,078		
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				3,898,284		3,898,444	3,898,455		
				3,898,327		3,898,456	3,898,464		
				3,898,330		3,898,458	3,898,481		
				3,898,347		3,898,470	3,898,505		
				3,898,353		3,898,497	3,898,545		
				3,898,358		3,898,510	3,898,552		
				3,898,429		3,898,522	3,898,570		
				3,898,448		3,898,555	3,898,582		
				3,898,478		3,898,557	3,898,614		
				3,898,494		3,898,568	3,898,622		
				3,898,495		3,898,569	3,898,669		
				3,898,503		3,898,583	3,897,600	40 :	
				3,898,507		3,898,585	3,897,640		
				3,898,512		3,898,595	3,897,827		
				3,898,525		3,898,623	3,898,058		
				3,898,531		3,898,630	3,898,152		
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6 : 3,755	3,756	3,757	3,758	3,759	
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DEFENSIVE PUBLICATIONS APPLICATIONS
[Notice of Dec. 16, 1969, 869 O.G. 6877]

10 : T937,006	17 : T937,004	34 : T937,002	T937,003	T937,005	42 : T937,001
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of the
UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

August 12, 1975



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DEPARTMENT
OF COMMERCE

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OFFICIAL GAZETTE of the
UNITED STATES PATENT and TRADEMARK OFFICE

August 12, 1975

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District Office deposits should be limited to checks in payment of issue fees, new application papers wherein priority dates or statutory bars may be involved, amendments where the six month statutory period for response is about to expire, trademark oppositions, Section 8 affidavits, trademark renewals, and to other papers for which the patent and trademark statutes do not provide a remedy for failure to obtain a particular date.

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SEATTLE, 98109, 706 Lake Union Bldg., 1700 Westlake Ave. North (206) 442-5615.

C. MARSHALL DANN,

Commissioner of Patents and Trademarks.

July 18, 1975.

Patent Suits

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AUGUST 12, 1975

U. S. PATENT AND TRADEMARK OFFICE

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3,055,988, B. B. Bauer, MAGNETIC PHONOGRAPH PICKUP; 3,077,521, Ahrens, Kuhn, Richter, STEREOPHONIC MOVING MAGNET PHONOGRAPH PICKUP; 3,077,522, Gunter, Anderson, STEREOPHONIC PICKUP CARTRIDGE, filed Aug. 29, 1974, D.C., S.D. Fla. (Miami), Doc. 74-1092-C-JE, Shure Brothers Inc. v. Walder Electronic Distributors Co. Defendant is hereby permanently enjoined from infringing plaintiff's patent directly or indirectly, Jan. 27, 1975.

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3,244,445. (See 3,134,583.)

3,250,847, H. C. Chamberlin, MUSICAL INSTRUMENT WITH RECORD TYPE TONE GENERATOR; 3,749,808, C. S. Nelson, Jr., LOW DISTORTION OPTICAL ORGAN, filed May 30, 1974, D.C.N.J. (Newark), Doc. C-74-792, Opsonar Organ Corporation v. General Electro Music, Inc. Consent judgment for permanent injunction, Sept. 26, 1974.

3,308,491, W. R. Spence, CUSHION STRUCTURE, filed Oct. 13, 1970, D.C., S.D.N.Y., Doc. 70-C-4470, Stryker Corp. v. Ortho Industries, Inc. Judgment entered Apr. 8, 1971.

3,321,027, Johnson, Frase and Morkoski, SELF-RESTORING PLOW TRIP, filed Mar. 27, 1975, D.C., S.D. Ill. (Peoria), Doc. RI-C-75-6, International Harvester Company v. Deere and Company.

3,325,411, F. N. Stepanek, Jr., COMPOSITIONS CONTAINING CHLORINATED ISOCYANURATES AND METHODS FOR STABILIZING AND TABLETTING THE SAME, filed Oct. 2, 1974, D.C., S.D. Fla. (Fort Lauderdale), Doc. (FL)74-300-C-WM, Aspen Industries, Inc. v. Chem Lab Products, Inc.

3,459,199, J. F. Connell, TEASING AND UNSNARLING IMPLEMENT, filed Mar. 27, 1975, D.C., N.D. Ga. (Atlanta), Doc. C75-570A, Jerry F. Connell, Gary F. Burns and Conelco, Inc. v. Clairol, Inc.

3,462,858, F. W. Francklyn, SHELLFISH HARVESTING MACHINE, filed Mar. 27, 1975, D.C., W.D. Wash. (Seattle), Doc. C75-215-S, Gilbert W. Francklyn v. Guilford Packing Company.

3,512,923, Dixon and Coppock, DRY CLEANING PROCESS, filed Sept. 23, 1974, D.C., C.D. Calif. (Los Angeles), Doc. 74-2757-WPG, Peter R. Dixon et al. v. J. C. Penney Co., Inc.

3,514,074, R. E. Self, HIGH ENERGY LOSS FLUID CONTROL, filed Mar. 21, 1975, D.C., C.D. Calif. (Los Angeles), Doc. CV-75-1012-R, Richard E. Self v. Atlantic Richfield Co. and Chanslor-Western Oil & Dev. Co.

3,552,469, L. M. Corless, TIRE BEAD SEATER; 3,675,705, same, TIRE BEAD SEATING AND INFLATION APPARA-

TUS; 3,805,871, same, TIRE MOUNTING, BEAD SEATING AND INFLATION APPARATUS AND METHOD OF USE, filed Feb. 6, 1975, D.C., N.D. Ill. (Chicago), Doc. 75c402, B and J Manufacturing Co. v. Royal Industries and Rubber Inc. Same, filed Feb. 6, 1975, D.C., N.D. Ill. (Chicago), Doc. 75c401, B & J Manufacturing Company v. FMC Corporation.

3,619,381, G. R. Fitterer, DETERMINING OXYGEN CONTENT OF MATERIALS; 3,752,753, same, METHOD OF FABRICATING A SENSOR FOR THE DETERMINATION OF THE OXYGEN CONTENT OF LIQUID METALS; 3,773,641, same, MEANS FOR DETERMINING THE OXYGEN CONTENT OF LIQUID METALS, filed Feb. 22, 1973, D.C., W.D. Pa. (Pittsburgh), Doc. 74-183, Fitterer Engineering Assoc. Inc. and Dr. George R. Fitterer v. United States Steel Corp. et al. Defendants have infringed on patents up to Jan. 1, 1975, case amicably settled thereafter, Feb. 27, 1975.

3,631,686, F. A. Kautz, MULTIZONE AIR-CONDITIONING SYSTEM WITH REHEAT, filed Apr. 8, 1975, D.C. Del. (Wilmington), Doc. 75-90, International Telephone and Telegraph Corp. v. American Air Filter Company, Inc.

3,650,427, E. Franklin, TWO PIECE DOUBLE WALLED CONTAINER, filed Mar. 7, 1975, D.C., S.D.N.Y., Doc. 75-C-1154, Calumet Mfg. Co., Inc. v. Ethyl Corporation.

3,655,173, B. J. Costello, CONVEYOR FOR FUSING AND HEATING SYSTEMS, filed Jan. 24, 1973, D.C.N.J. (Trenton), Doc. 100-73, Spectra Instruments, Inc. v. Argus Engineering Co., Inc.

3,675,705. (See 3,552,469.)

3,742,908, D. H. Merino, ANIMAL HABITAT, filed Apr. 1, 1975, D.C., N.D. Ill. (Chicago), Doc. 75c1037, Mattel, Inc. v. Pets International Ltd. Inc. and Genyk Products Limited.

3,749,808. (See 3,250,847.)

3,752,753. (See 3,619,381.)

3,773,641. (See 3,619,381.)

3,802,373, R. E. Lagerquist, ENCAPSULATING SLEEVE FOR HEADSTAY OF A SAILBOAT, filed Mar. 19, 1975, D.C. Md. (Baltimore), Doc. Y-75-325, Rolf E. Lagerquist v. Hood Sailmakers, Inc. and Hood Yacht Systems.

3,805,871. (See 3,552,469.)

3,811,453, C. Bretton, METHOD AND MEANS FOR ATTACHING A HAIR SUPPLEMENT, filed Apr. 4, 1975, D.C. Minn. (St. Paul), Doc. 4-75-C-149, Allen Arthur, Inc., doing business as DK Studios v. Monte Carlo Hair Piece Co., also known as Monte Carlo Hairpieces, Inc.

3,827,554, J. W. Richard, BEAN SIZER AND BROKEN BEAN ELIMINATOR, filed Apr. 4, 1975, D.C., S.D. Fla. (Miami), Doc. 75-514-C-WM, James W. Richard and Conveyor Line Products Corp. v. American Conveyor Corporation.

3,841,231, E. J. Hlinsky, SIDE FRAME KEY FOR AN AXLE BEARING ASSEMBLY IN A RAILWAY TRUCK, filed Mar. 12, 1975, D.C., N.D. Ill. (Chicago), Doc. 75c0790, MacLean-Fogg Lock Nut Company v. R. W. Mac Company and Robert W. MacDonnell.

3,842,561, M. Wong, ADJUSTABLE CEILING STRUT, filed Mar. 21, 1975, D.C., N.D. Calif. (San Francisco), Doc. C-75-0556-RFP, Mynin Wong v. Carlos Interior Systems, Inc.

3,844,158, F. W. Mercer, MOBILE MUFFLER SHOP, filed Mar. 3, 1975, D.C., C.D. Calif. (Los Angeles), Doc. CV-75-779-R, American Machine & Hydraulics, Inc. v. Floyd W. Mercer, doing business as Wholesale Brake Supply.

3,845,349, T. Lieberman, LINE SYNCHRONIZED STROBE LIGHT, filed Feb. 25, 1975, D.C., C.D. Calif. (Los Angeles), Doc. CV 75-625-AAH, Theodore Lieberman et al. v. American Lighting Specialties.

3,852,790, J. A. Robinson, UNIVERSAL MOUNT FOR ELECTRONIC FLASH UNIT, filed Mar. 20, 1975, D.C., N.D. Ill. (Chicago), Doc. 75c923, Acme-Lite Manufacturing Co. v. International Telephone & Telegraph Corp.

Re. 25,360, E. G. Rice, COMBINATION STOCKINGS AND PANTY, filed Mar. 21, 1975, D.C., W.D.N.C. (Charlotte), Doc. C-C-75-78, Tights, Inc. v. Brevoni Hosiery Corporation (formerly Schulte & Dieckhoff (USA), Inc.).

Certificates of Correction for the Week of Aug. 12, 1975

Re. 28,304	3,859,313	3,879,423	3,884,710
3,882,704	3,860,525	3,879,434	3,884,754
3,657,242	3,861,351	3,880,004	3,884,915
3,729,409	3,863,375	3,880,498	3,884,958
3,773,571	3,863,781	3,880,595	3,884,971
3,775,055	3,864,495	3,880,843	3,885,062
3,782,319	3,865,156	3,880,988	3,885,175
3,785,787	3,865,259	3,881,014	3,885,296
3,803,326	3,867,094	3,881,185	3,885,395
3,808,205	3,867,951	3,881,599	3,885,398
3,818,113	3,868,832	3,881,632	3,885,454
3,821,134	3,869,719	3,881,654	3,885,483
3,822,872	3,871,337	3,881,919	3,885,507
3,822,926	3,872,543	3,882,032	3,885,570
3,826,609	3,873,303	3,882,037	3,885,580
3,829,340	3,873,433	3,882,155	3,885,603
3,836,526	3,873,537	3,882,223	3,885,604
3,836,608	3,875,070	3,882,618	3,885,646
3,837,147	3,875,375	3,882,734	3,885,755
3,839,408	3,875,955	3,882,742	3,885,804
3,840,136	3,875,984	3,882,888	3,885,949
3,843,977	3,876,181	3,883,038	3,885,954
3,844,766	3,876,195	3,883,202	3,886,106
3,845,277	3,876,822	3,883,219	3,886,203
3,846,827	3,876,959	3,883,369	3,886,275
3,849,479	3,877,102	3,883,387	3,886,451
3,849,997	3,877,139	3,883,493	3,886,455
3,852,289	3,877,305	3,883,542	3,886,523
3,852,370	3,877,386	3,883,651	3,886,952
3,853,952	3,877,706	3,883,740	3,887,018
3,854,940	3,877,947	3,883,828	3,887,069
3,855,091	3,878,201	3,884,014	3,887,213
3,855,143	3,878,222	3,884,025	3,887,442
3,855,527	3,878,247	3,884,027	3,887,966
3,855,776	3,878,331	3,884,088	3,888,275
3,856,587	3,878,347	3,884,154	3,888,283
3,856,783	3,878,477	3,884,247	3,888,462
3,856,847	3,878,571	3,884,356	3,888,463
3,857,399	3,878,575	3,884,435	3,888,472
3,857,888	3,878,765	3,884,447	3,888,558
3,858,402	3,878,985	3,884,481	3,890,532
3,858,473	3,879,139	3,884,515	
3,858,553	3,879,172	3,884,663	
3,859,277	3,879,419	3,884,694	

Patents Available for Licensing or Sale

D. 234,997. CUP-SAUCE ASH TRAY COMBINATION. James Stamper, 129 Swaab St., Las Vegas, Nev., 89110.

3,648,746. MAG RIM ADAPTER. Clayton Beamon, P.O. Box 371, Wilson, N.C., 27893.

3,817,401. SELF-PROPELLED DURAL-JACK HOIST. Clifford E. Becker, 817 Camella Drive, Paradise, Calif., 95969.

3,864,365. CARBONIC ACID DERIVATIVES OF ESTRADIOL AND PROCESSES OF THEIR PRODUCTION. Veb Jenapharm, Germany. Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y. 10017.

3,866,992. WRITING UTENSIL. A. W. Faber-Castell, Germany. Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,884,191. ANIMAL BATHING AND DRYING APPARATUS. Pansy M. Stout, 208 Christine Drive, Sacramento, Calif., 95815.

3,875,604. SHOWER BACK SCRUBBER. Isadore T. Wurn, 436 Ruddiman Drive, Muskegon, Mich., 49445.

3,875,951. CASE FOR A COMB. Lung Shin Yang, Taiwan. Correspondence to: Millen, Raptis & White, 1911 Jefferson Davis Highway, Arlington, Va., 22202.

3,879,762. INVALID'S APRON AND BIB. Evelyn L. Herman, 7009 Lower Grove Lane, House Springs, Mo., 63051.

3,878,634. THE TWIN HOOKERS—FLOATING FISHING DEVICE. Jacob R. Quimpo, 3406 Mt. Aachen Ave., San Diego, Calif., 92111.

3,885,247. SELF-ADHERING GARMENT PROTECTOR OR SURGICAL DRESSING WITH SCHERING ACTION. Rosemary J. Kost, 8231 Broadmoor Road, Mentor, Ohio, 44060.

3,888,034. ADJUSTABLE FISHING POLE HOLDER. Kenneth G. McGuire, 5010 Sorento Road, Sacramento, Calif., 95835.

3,888,324. ELECTRIC VEHICLE. Robert G. Kossow, 4941 62nd St., Sacramento, Calif., 95820.

3,888,642. STEAM DUST SCRUBBER ATTACHMENT FOR EXHAUST STOCK. James Toyama, 1980 Cedar Ave., Long Beach, Calif., 90806.

3,892,348. FOLDING CONTAINER. Benedikt Rohner, assignee, Neher A. G. Switzerland. Correspondence to: Ohlin, Fisher, Spivak, McClelland & Maier, Cristal Square Five-Suite 400, 1755 S. Jefferson Davis Hwy., Arlington, Va., 22202.

The following 13 patents are offered by: Peter T. Rado, Ide & Haigney, 41 E. 42nd St., New York, N.Y., 10017.

3,029,473. VACUUM POST-CURING OF INFUSIBLE PLASTIC MATERIAL.

3,038,551. SELF-DAMPING MATERIAL AND SONAR DOME FORMED THEREFROM.

3,095,336. HIGH STRENGTH CERAMIC COMPOSITIONS AND METHODS FOR PREPARING THE SAME.

3,123,176. SONAR DOME.

3,136,380. SONAR DOME AND SELF-DAMPING COMPONENT THEREOF.

3,543,348. INJECTION MOLD APPARATUS.

3,671,159. EJECTING GIANT ARTICLES FROM INJECTION MOLD.

3,723,584. METHOD OF MAKING AN ELECTROFORMED MOLD HAVING HEAT TRANSFER CONDUITS AND FOAM POLYURETHANE FOUNDATION.

3,733,161. STRUCTURIZER MOLD.

3,734,985. GLASS FIBER REINFORCED THERMOPLASTIC CELLULAR PLASTICS.

3,744,775. MIXING OF MOLTEN PLASTIC AND GAS.

3,763,293. PROCESS OF MOLDING GIANT ARTICLES OF STRUCTURED PLASTIC.

3,796,779. MIXING OF MOLTEN PLASTIC AND GAS.

General Electric Company is prepared to grant non-exclusive licenses under the following 26 patents on reasonable terms to domestic manufacturers.

Applications for licenses under the following 8 patents may be addressed to: Patent Counsel, Mobile Radio Prod. Dept., General Electric Company, Lynchburg, Va., 24502.

3,878,589. SEPARABLE FASTENING DEVICE.

3,888,320. VOLTAGE REGULATOR COARSE CONTROL DEVICE UTILIZING CURRENT LIMITING REACTOR MEANS.

3,542,986. QUICK-MAKE, QUICK-BREAK ACTUATION FOR HIGH VOLTAGE ELECTRICAL CONTACTS.

3,586,802. LOAD BREAK DEVICE WITH ARC EXTINGUISHING MATERIAL.

3,691,291. SPLICE FOR JOINING HIGH VOLTAGE CABLES.

3,763,461. ELECTRIC CABLE TERMINATION MODULE HAVING A GAS-TRAP VALVE.

Applications for licenses under the following 3 patents may be addressed to: Patent Counsel, Lamp Business Division, General Electric Company, Nela Park, Cleveland, Ohio, 44112.

3,816,054. PHOTOFLASH LAMP HAVING NON-SHORTING CONSTRUCTION.

3,817,683. PHOTOFLASH LAMPS.

3,884,615. FLASH LAMP MOUNT CONSTRUCTION.

Applications for licenses under the following 3 patents may be addressed to: General Electric Company, Construction Materials Div., 4755 Kingsway Drive, Suite 416, Indianapolis, Ind., 46205. Attn.: Div. Patent Counsel.

3,844,150. APPARATUS FOR FORMING COILS USING ROUND CONDUCTOR WIRE.

3,846,824. IMPROVED THERMALLY CONDUCTIVE AND ELECTRICALLY INSULATIVE MOUNTING SYSTEMS FOR HEAT SINKS.

3,873,809. HIGH TEMPERATURE GAS FURNACE.

Applications for licenses under the following 3 patents may be addressed to: Patent Counsel, Chemical and Metallurgical Division, General Electric Company, 500 West Wilson Bridge Road, Columbus, Ohio, 43285.

3,341,920. CUTTING TOOL.

3,341,921. CUTTING INSERT.

3,341,923. CUTTING TOOL.

Applications for licenses under the following 11 patents may be addressed to: Patent Counsel, Major Appliance Business Group, General Electric Company, Appliance Park, Louisville, Ky., 40225.

3,145,553. CLOTHES WASHING MACHINE.

3,513,866. WASHING MACHINE WITH IMPROVED LIQUID AND ADDITIVE DISPENSING MEANS.

3,699,785. ADDITIVE DISPENSING ARRANGEMENT.

3,831,292. CONDENSER APPARATUS.

3,858,330. CONDENSER APPARATUS.

3,859,004. CONDENSER APPARATUS.

3,868,005. FRICTION CLUTCH WITH CENTRIFUGAL AND MAGNETIC SPEED CONTROL.

3,871,806. INJECTION MOLDING APPARATUS.

3,875,268. CONDENSER APPARATUS.

3,875,462. FOOD WASTE DISPOSER.

3,875,679. CONDENSER APPARATUS.

Eastman Kodak Company announces that non-exclusive licenses are available to responsible applicants under the following 7 patents.

Applications for licenses may be addressed to the Director, Patent Department, Eastman Kodak Company, 343 State St., Rochester, N.Y., 14650.

3,616,735. BLOCKING MECHANISM FOR USE WITH PHOTOGRAPHIC APPARATUS TO AUTOMATICALLY CONTROL FLASH IN RESPONSE TO SCENE BRIGHTNESS.

3,687,037. FILM CARTRIDGE AND CAMERA EMPLOYING SAME.

3,705,696. FILMSTRIP AND FILMSTRIP RETENTION DEVICE.

3,767,132. DEVICE FOR WINDING A FILMSTRIP.

3,816,134. PHOTOGRAPHIC COLOR DEVELOPING SOLUTIONS CONTAINING P-TOLUENESULFONIC ACID SALTS OF P-PHENYLENEDIAMINES.

3,832,179. INHIBITION OF FOG IN PHOTOGRAPHIC COLOR DEVELOPMENT.

3,839,045. PHOTOGRAPHIC COLOR DEVELOPER SOLUTION STABILIZED WITH LITHIUM IONS.

The RCA Corporation offers to grant non-exclusive licenses on reasonable term and conditions under the following 58 patents.

Inquiries respecting licenses under RCA patents should be addressed to RCA Corporation, Staff Vice President, Domestic Licensing, 30 Rockefeller Plaza, New York, N.Y., 10036.

3,881,734. ROTARY STYLUS CLEANER.

3,882,041. EUROPIUM-ACTIVATED ALKALINE-EARTH PYROPHOSPHATE PHOSPHORS.

3,882,207. PROCESS OF PRODUCING DOUBLE-SIDED HOLOGRAPHIC REPLICAS.

3,882,214. TRAPEZOIDAL SMOOTH GROOVES FOR VIDEO DISC.

3,882,267. VIDEO PLAYBACK SYSTEM TRACKING ARM AND PICKUP ASSEMBLY.

3,882,273. OPTICAL BEAM SCANNING SYSTEM.

3,882,327. ABSOLUTE VALVE CIRCUIT EMPLOYING OPPOSITE CONDUCTIVITY TYPE SWITCHES.

3,882,328. CROSS OVER DETECTOR AND RECTIFIER.

3,882,350. DYNAMIC CONVERGENCE CIRCUIT.

3,882,407. AMPLIFIER BLANKING CIRCUIT.

3,882,419. VARACTOR TUNED IMPATT DIODE MICRO-WAVE OSCILLATOR.

3,882,420. MAGNETICALLY TUNABLE FERRITE STRIP-LINE TRAPATT MODE OSCILLATOR AND AMPLIFIER CIRCUITS.

3,882,493. DOPPLER CORRELATION RADAR EXHIBITING REDUCED TIME SIDE LOBES.

3,882,494. DOPPLER CORRELATION RADAR PROVIDING COMBINED TARGET DETECTION AND RANGING.

3,882,495. DOPPLER CORRELATION RADAR PROVIDING COARSE-RANGE DETECTION RESOLUTION.

3,882,728. TEMPERATURE SENSING CIRCUIT.

3,883,313. MODIFIED CZOCHRALSKI-GROWN MAGNESIUM ALUMINATE SPINEL AND METHOD OF MAKING SAME.

3,883,703. METHOD FOR CONDITIONING TRANSMISSION LINES UTILIZING ADJUSTABLE EQUALIZERS AND A RECORDING TECHNIQUE.

3,883,888. EFFICIENCY LIGHT EMITTING DIODE.

3,883,891. REDUNDANT SIGNAL PROCESSING ERROR REDUCTION TECHNIQUE.

3,884,007. HERMETIC SEAL AND METHOD.

3,884,539. METHOD OF MAKING A MULTIALKALI ELECTRON EMISSIVE LAYER.

3,885,061. DUAL GROWTH RATE METHOD OF DEPOSITING EPITAXIAL CRYSTALLINE LAYERS.

3,887,371. PHOTOGRAPHIC METHOD FOR PRINTING VIEWING-SCREEN STRUCTURE INCLUDING TREATMENT OF EXPOSED COATING WITH AMMONIUM COMPOUND.

3,887,878. TRANSISTOR SERIES AMPLIFIER.

3,887,879. CURRENT MIRROR.

3,887,880. BIAS CIRCUITRY FOR STACKED TRANSISTOR POWER AMPLIFIER STAGES.

3,887,916. CORRELATOR AND CONTROL SYSTEM FOR VEHICULAR COLLISION AVOIDANCE.

3,887,924. SCANNING ANTENNA.

3,888,053. METHOD OF SHAPING SEMICONDUCTOR WORKPIECE.

3,888,493. APPARATUS FOR INHIBITING A PLURALITY OF RECORDS FROM BEING DISPOSED ON A TURNTABLE.

3,888,706. METHOD OF MAKING A COMPACT GUARDBANDED MOS INTEGRATED CIRCUIT DEVICE USING FRAMELIKE DIFFUSION MASKING STRUCTURES.

3,889,151. ENERGIZING TECHNIQUE FOR ELECTROLUMINESCENT DEVICES.

3,889,253. RASTER-SCAN DISPLAY SYSTEM HAVING IMPROVED MEANS FOR READING OUT STORED GAME-SCORE INFORMATION.

3,889,260. ANALOG ECHO PROTECTION CIRCUIT FOR DME.

3,889,551. EQUIPOSIE MECHANISM.

3,890,194. METHOD FOR DEPOSITING ON A SUBSTRATE A PLURALITY OF EPITAXIAL LAYERS IN SUCCESSION.

3,890,630. IMPATT DIODE.

3,890,632. STABILIZED SEMICONDUCTOR DEVICES AND METHOD OF MAKING SAME.

3,890,633. CHARGE-COUPLED CIRCUITS.

3,891,478. DEPOSITION OF EPITAXIAL LAYER FROM THE LIQUID PHASE.

3,891,886. CATHODE RAY TUBE HAVING A LUMINESCENT SCREEN INCLUDING A TWO COMPONENT WHITE-EMITTING PHOSPHORIC MIXTURE.

3,891,891. HIGH VOLTAGE PROTECTION CIRCUIT.

3,891,892. START-UP CONTROL CIRCUIT FOR SCR DEFLECTION.

3,891,895. GROUND FAULT DETECTION.

3,891,935. TRANSISTOR BIASING ARRANGEMENT.

3,885,198. HIGH VOLTAGE REGULATOR.

3,885,201. FAIL-SAFE HIGH VOLTAGE PROTECTION CIRCUIT.

3,885,860. FABRICATION OF LIQUID CRYSTAL DEVICES.

3,886,307. ON-OFF SYSTEM FOR TELEVISION RECEIVERS.

3,886,394. IMAGE DISPLAY EMPLOYING FILTER COATED PHOSPHOR PARTICLES.

3,886,410. SHORT CIRCUIT PROTECTION APPARATUS FOR A REGULATED POWER SUPPLY.

3,886,435. VBE VOLTAGE SOURCE TEMPERATURE COMPENSATION NETWORK.

3,886,454. CONTROL APPARATUS FOR A TWO-WAY CABLE TELEVISION SYSTEM.

3,886,460. PULSE POSITION DISCRIMINATOR.

3,886,464. SELF-BIASED COMPLEMENTARY TRANSISTOR AMPLIFIER.

3,886,466. BIAS CIRCUITRY FOR STACKED TRANSISTOR POWER AMPLIFIER STAGES.

3,886,505. SEMICONDUCTOR PACKAGE HAVING MEANS TO TUNE OUT OUTPUT CAPACITANCE.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF JULY 5, 1975

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	10-7-74
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director..... Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	10-7-74
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director..... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	11-19-74
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director..... Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	10-7-74
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director.... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	11-4-74
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director..... Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	12-4-74
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director..... Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	7-2-74
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director..... Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	10-8-74
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director... Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	12-11-74
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-2-74
DESIGNS, GROUP 290—C. D. QUARFORTH, Director..... Industrial Arts; Household, Personal and Fine Arts.	5-13-74
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—D. J. STOCKING, Director..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	11-14-74
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director..... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	11-21-74
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—G. M. FORLENZA, Director..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletary; Printing; Typewriters; Stationery; Information Dissemination.	1-2-75
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	10-11-74
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director..... Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	1-2-75

Expiration of patents: The patents within the range of numbers indicated below expire during August 1975, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,845,625 to 2,849,713 inclusive
Plant Patents..... Numbers 1,740 to 1,745 inclusive

REISSUE PATENTS

GRANTED AUGUST 12, 1975

ERRATA

See	See
CLASS	PATENT NO.
228-180.....	28,509

REISSUES

AUGUST 12, 1975

Matter enclosed in heavy brackets [] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 28,508

LOIN PULL AND RIB CUT MACHINE

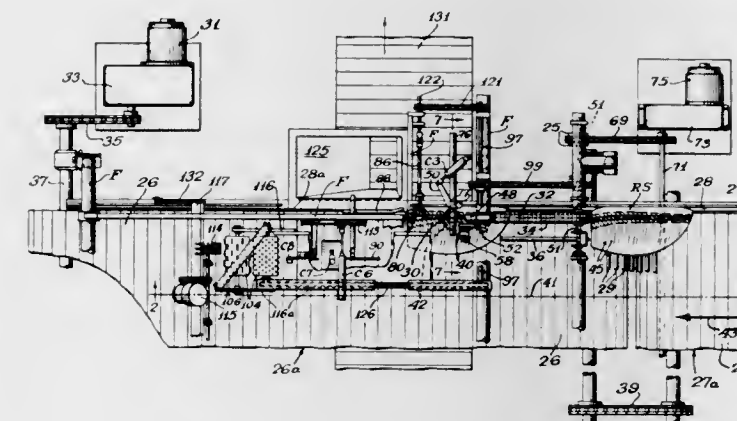
Richard R. Neebel, Waterloo; Clarence L. Harms, Cedar Falls; James D. Neebel, Denver, and Richard E. Doerfer, Waterloo, all of Iowa, assignors to Container Corporation of America, Cedar Falls, Iowa

Original No. 3,546,737, dated Dec. 15, 1970, Ser. No. 719,320, Apr. 8, 1968. Application for reissue Nov. 19, 1971, Ser. No. 200,425

Int. Cl. A22c 17/04

U.S. Cl. 17-1 G

58 Claims



1. In a loin pull and rib cut machine, conveyor means operable to convey pork sides through said machine, said machine having a loin pull station, a loin push-off station and a rib cut station, loin pull mechanism at said loin pull station comprising a scribe saw and a U-shaped loin pull knife, said scribe saw being positioned with respect to said conveyor means to scribe the ribs of the pork side adjacent one edge of the loin, said loin pull knife having a portion immediately following said scribe saw and a portion to cut under the loin, means for causing said scribe saw and said portion immediately following it to follow the shape of the loin comprising a shoe carried by said scribe saw and adapted to follow the contour of the back bone of the pork side, means to bias said shoe toward the back bone, means at said push-off station to push the cut loin from the pork side, and means at said rib cut station to cut the ribs from the pork side.

Re. 28,509

COMPENSATING BASE FOR LEAD-FRAME BONDING
Benjamin Piechocki, deceased, late of Bethlehem, Pa., by Stephen H. Fletcher, Short Hills, N.J., assignors to Western Electric Company, Incorporated, New York, N.Y.

Original No. 3,729,810, dated May 1, 1973, Ser. No. 207,854, Dec. 14, 1971. Application for reissue Jan. 28, 1974, Ser. No. 437,079

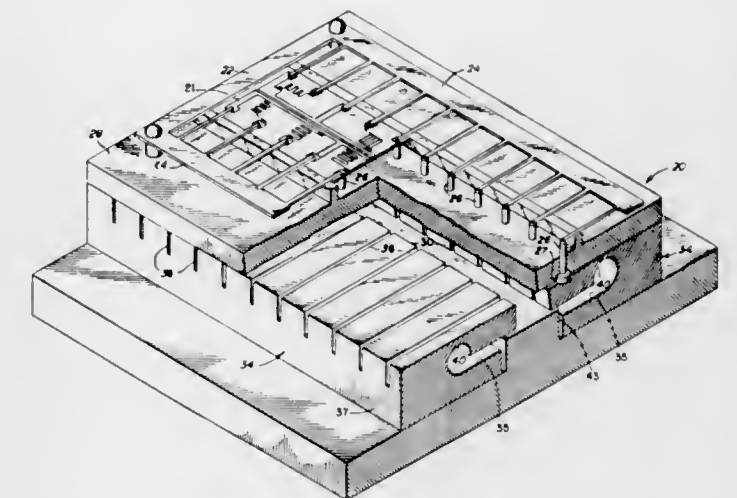
Int. Cl. B23k 5/22

U.S. Cl. 228-180

4 Claims

1. A method of bonding a plurality of leads to a brittle planar article which comprises the steps of:
supporting the article with a plurality of cantilever spring elements extending from a base with a space between the elements and the base, each element being located below a point where a lead is desired and each element being movable independently of the others; and
compressively engaging all of the desired leads simultaneously against said brittle supported article to bond said leads to said article, whereby the spring elements are

deflected independently of one another into the space between the elements and the base to reduce stresses intro-



duced to said article during said compressive engagement thus preventing cracking of the article.

Re. 28,510

SPINDLE ASSEMBLY

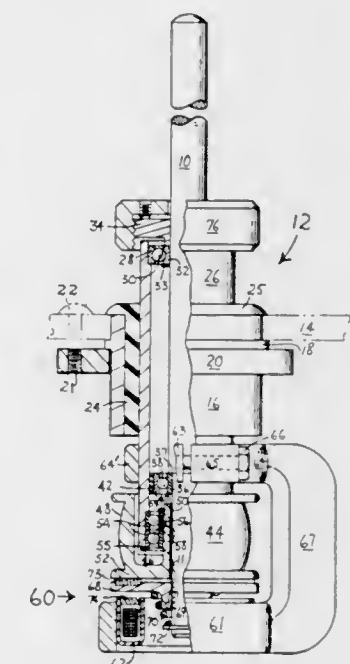
Gordon C. Anderson, Clemson, and John D. Page, Greenville, both of S.C., assignors to Maremont Corporation, Chicago, Ill.

Original No. 3,640,062, dated Feb. 8, 1972, Ser. No. 77,058, Oct. 1, 1970. Application for reissue Feb. 8, 1973, Ser. No. 330,564

Int. Cl. D01h 7/12, 7/22

U.S. Cl. 57-88

14 Claims



1. An improved spindle assembly for textile spinning and twisting machines comprising:
a spindle blade;
a single bearing support sleeve concentric with said spindle blade;
a driving whirl concentric with both said spindle blade and said support sleeve;
a plurality of spindle bearing sets aligned and supported by and intermediate said spindle blade and said support sleeve; and

phic state being characterized by uniform optical clarity throughout said light control stratum, whereby, when said microcrystalline medium is in said crystalline state, said visual image stratum is presented in an opaque format for observation in terms of diffuse light and, when said microcrystalline medium is in said amorphous state, said visual image is presented in a transparent format for projection in terms of condensed light.

Re. 28,516

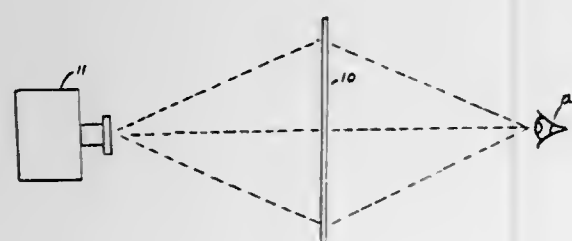
POLYMERIC REAR PROJECTION SCREENS

Chen-I Lu; Edward D. Morrison, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Original No. 3,573,141, dated Mar. 30, 1971, Ser. No. 838,304, July 1, 1969. Application for reissue Mar. 29, 1973, Ser. No. 345,921

Int. Cl. C03b 21/60; C08f 45/14

U.S. Cl. 428—213

19 Claims



1. In a polymeric sheet especially adapted for use as a rear projection screen; said sheet

- (a) consisting essentially of polypropylene having a melt flow rate of at most about 90,
- (b) having a thickness of from about 20 to about 80 mils such that it transmits light; and
- (c) having two surface layers containing relatively smaller crystalline spherulites and a core layer containing relatively larger crystalline spherulites; the diameter of the larger crystals in said core layer being between about 15 and about 45 microns and said core layer being at least three-fourths as thick as said sheet, and said sheet containing at least about 60 weight percent of crystalline spherulites having average diameters of from about 5 to about 20 microns;

the improvement which comprises incorporating evenly through said sheet at least about 2 weight percent of finely divided, particulate "crystal deforming material," said crystal deforming material (i) being non-nucleating, (ii) having a refractive index within about 0.05 unit of that of said polypropylene, and (iii) having particle diameters in the range of from about 5 to about 50 microns.

16. An improved rear projection screen material as in claim 1, wherein said "crystal deforming material" is calcium carbonate.

Re. 28,517

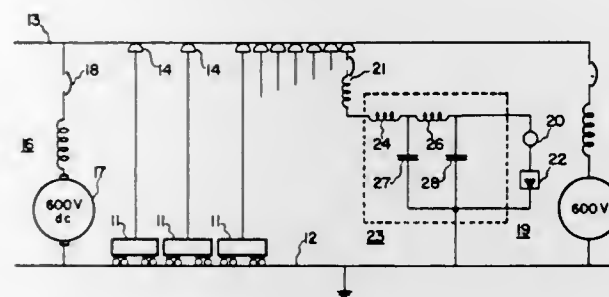
FILTER-TO-LINE TRANSIENT ISOLATOR

Ernest F. Weiser, Erie, Pa., assignor to General Electric Company, Erie, Pa.
Original No. 3,731,150, dated May 1, 1973, Ser. No. 215,572, Jan. 5, 1972. Application for reissue July 1, 1974, Ser. No. 484,588

Int. Cl. H02h 7/10

U.S. Cl. 317—20

8 Claims



1. An improved protective circuit for limiting a line in-rush and out-rush of current from a propulsion system input filter, wherein the current flow between a DC power source and the filter is selectively attenuated and alternatively unattenuated to enable drawing power without a loss, wherein the improvement comprises:

- a. a static power conversion unit for converting direct current from the DC power source into alternating current;
- b. a filter connected between said power conversion unit and said DC power source for filtering the ripple voltage from said power conversion unit and ripple current from said DC power source, said filter comprising at least one capacitor in parallel with said power conversion unit and at least one reactor in series with said power conversion unit and power source, said reactor having both a saturable core portion and a non-saturable core portion; and
- c. means for occasionally and alternately charging and discharging said capacitor through said reactor; wherein said reactor is so constructed that during periods of charging of said capacitor the flux in said saturable core portion moves toward a condition of positive saturation and during periods of discharging of said capacitor and the flux therein moves toward a condition of negative saturation, thereby providing during these periods an inductive reactance to substantially attenuate the current flow through said saturable core portion, whereas during periods of steady state current in-flow, subsequent to the charging of said capacitor, said saturable core portion remains saturated to allow for the substantially unimpeded flow of current therethrough, and said non-saturable core portion offers a relatively small fixed reactance, which combines with that of said capacitor to perform the filtering function.

PLANT PATENTS

GRANTED AUGUST 12, 1975

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,760

CHRYSANTHEMUM PLANT

Grace Y. Nakano, 1166 Bryant Ave.,
Mountain View, Calif. 94040
Filed Jan. 21, 1974, Ser. No. 435,321

Int. Cl. A01h 5/00

U.S. Cl. Plt.—79

1 Claim

1. A new and distinct variety of Chrysanthemum plant having the characteristics of a bronze flower.

3,761

POINSETTIA PLANT

Ned Keefer, Andrews, Ind., assignor to
Paul Ecke, Jr., Encinitas, Calif.

Filed June 20, 1974, Ser. No. 481,453

Int. Cl. A01h 5/00

U.S. Cl. Plt.—86

1 Claim

1. A new and distinct variety of poinsettia plant, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a general similarity in most respects to the variety "Dark Red Annette Hegg" (Plant Pat. No. 3,160), including a short growing and compact plant habit, a uniform and fast rooting habit, a self-branching habit which produces multiple blooms without pinching off the terminal buds, attractive green foliage, distinctive, attractive and stable dark pink bracts instead of dark red bracts like "Dark Red Annette Hegg," and long-lasting plant qualities.

3,762

WHITE ASH TREE

Willet N. Wandell, Rte. 3, Myra Station Road,
Urbana, Ill. 61801

Filed June 27, 1974, Ser. No. 483,887

Int. Cl. A01h 5/12

U.S. Cl. Plt.—51

1 Claim

1. The variety of white ash substantially as shown and described herein, characterized particularly by an extremely robust growing habit, larger leaflets and a stronger petiole, together with a heavy dense compact habit of growth without pruning and trimming.

3,763

POINSETTIA PLANT

Rolf Grotum, Bendingbostel, Germany, assignor to
Paul Ecke, Jr., Encinitas, Calif.

Filed Aug. 19, 1974, Ser. No. 498,725

Int. Cl. A01h 5/00

U.S. Cl. Plt.—86

1 Claim

1. A new and distinct variety of poinsettia plant, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a short-growing and compact plant habit, a uniform and fast rooting habit, a self-branching habit resulting in the production of multiple blooms without pinching off the terminal buds as required for other poinsettia varieties, attractive green foliage which is darker green in color than the foliage of "Annette Hegg," attractive brighter brick red bracts than the normal red bracts of "Annette Hegg," said bracts having less tendency to droop than the bracts of "Annette Hegg" when the plants reach maturity, and the bright brick red color of the bracts being more stable and retaining their brilliance much longer when the plants are used for home decoration, long-lasting plant qualities, and a distinctly earlier blooming habit than other standard Hegg varieties.

3,764

POINSETTIA PLANT

Thormod Hegg, Lierbyen, Norway, assignor to
Paul Ecke, Jr., Encinitas, Calif.

Filed Aug. 19, 1974, Ser. No. 498,726

Int. Cl. A01h 5/00

U.S. Cl. Plt.—86

1 Claim

1. A new and distinct variety of poinsettia plant, substantially as herein shown and described, characterized particularly as to novelty by its general similarity to the variety "Dark Red Annette Hegg" (Plant Pat. No. 3,160), but being principally distinguished therefrom by its earlier blooming habit, much darker green foliage color, dark red bracts which are more stable and retain their brilliance much longer and with less tendency to fade when grown under the same conditions as "Dark Red Annette Hegg," and less tendency of the bracts to droop when the plants reach maturity.

PATENTS

GRANTED AUGUST 12, 1975

ERRATA

For CLASS	See PATENT NO.
228-122.....	3,898,729
060-525.....	3,898,841
060-653.....	3,898,842
061-013.....	3,898,843
061-035.....	3,898,844
061-045 D.....	3,898,845
061-046.....	3,898,846
061-046.5.....	3,898,847
061-053.52.....	3,898,848
061-053.52.....	3,898,849
061-053.52.....	3,898,850
061-053.52.....	3,898,851
061-072.4.....	3,898,852
062-055.....	3,898,853
062-062.....	3,898,854
062-075.....	3,898,855
062-098.....	3,898,856
062-117.....	3,898,857
062-135.....	3,898,858
062-135.....	3,898,859
062-155.....	3,898,860
062-177.....	3,898,861
062-197.....	3,898,862
062-208.....	3,898,863
062-272.....	3,898,864
062-280.....	3,898,865
062-306.....	3,898,866
062-507.....	3,898,867
063-002.....	3,898,868
063-015.....	3,898,869
063-018.....	3,898,870
074-010.15.....	3,898,871
195-028.....	3,898,959
122-250 R.....	3,899,031
128-058.....	3,899,115
250-301.....	3,899,213
195-062.....	3,899,376
196-129.....	3,899,420
250-199.....	3,899,428
250-199.....	3,899,429
250-199.....	3,899,430
235-150.2.....	3,899,671
350-293.....	3,899,672
250-532.....	3,899,682
250-532.....	3,899,683
250-535.....	3,899,684
250-536.....	3,899,685

PATENTS

GRANTED AUGUST 12, 1975

GENERAL AND MECHANICAL

3,898,696

BASEBALL GLOVE

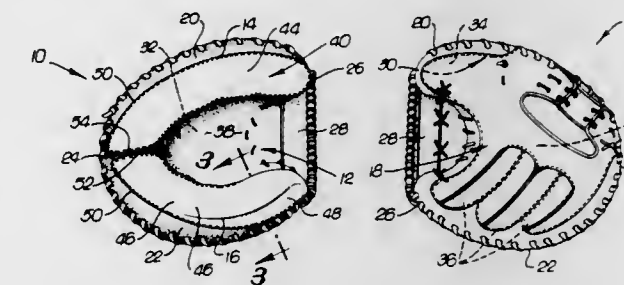
Alexander Campanis, 3113 Coronado Dr., Fullerton, Calif. 92635

Filed Oct. 15, 1974, Ser. No. 514,373

Int. Cl.² A41D 13/08

U.S. Cl. 2—19

8 Claims



1. A baseball glove provided with a front, catching side having thumb and finger edges and an opposed, rear side spaced from said catching side, said rear and catching sides being interconnected along opposite edges thereof by thumb and finger edge surfaces and being provided therebetween with a hand-receiving cavity having a palm portion, a thumb portion extending along said thumb edge surface and a finger portion extending along said finger edge surface, said catching side having a heel portion and a tip portion and having a pocket extending from adjacent said heel portion of said catching side toward said tip portion thereof and overlying at least said palm portion of said hand-receiving cavity, said pocket being of a relatively dull, substantially nonreflective color, said catching side having a marginal portion of a bright, contrasting, reflective color at least partially surrounding said pocket and extending along said thumb and finger edges of said catching side at least substantially from said heel portion to said tip portion thereof, said marginal portion occupying at least a major part of that portion of said catching side which lies adjacent said pocket.

3,898,697

KNEE PROTECTIVE GEAR

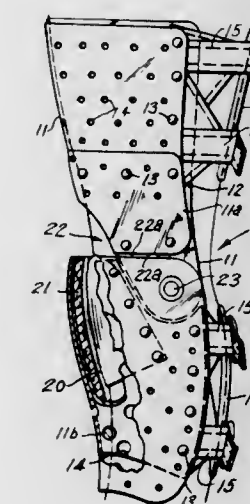
Charles C. Whitehead, 113 Glenmore Ave., Baltimore, Md. 21228

Filed Nov. 13, 1973, Ser. No. 415,311

Int. Cl. A61F 5/00

U.S. Cl. 2—22

1 Claim



1. A knee protective gear, comprising in combination an upper member of generally semicylindrical shape so to rest

against an above knee portion of a person's leg, said upper member being comprised of an outer, curved steel portion and an inner curved plastic portion that are riveted together, perforated openings through said portions in order to reduce perspiration by a wearer, a lower edge of said upper member being upwardly arched at its center so to form downwardly depending opposite side ends in said steel portion, a flanged axle through each said depending side end, said axle being axially aligned with each other, and a lower portion pivotally attached on said axles, said lower portion being of generally semicylindrical shape so to rest against and below a knee portion of a person's leg, and being comprised of a knee sling perforated with openings therethrough so to reduce perspiration, a padding on an inner side of said sling for positioning against a person's knee, and each said upper and lower member having a plurality of straps secured to each side edge thereof for securement together by buckle means, said straps extending around an outer side of plastic plates positioned against a rear side of said wearer's leg, said plates being secured by rivets to certain of said straps.

3,898,698

NECKTIE

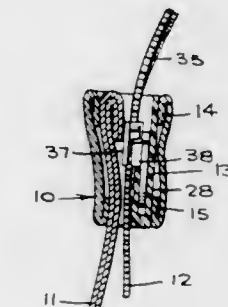
David J. Byrd, Orange, and Deane F. Harris, Gordonsville, both of Va., assignors to Byrd Associates, Orange, Va.

Filed Jan. 24, 1974, Ser. No. 436,377

Int. Cl.² A41D 25/02

U.S. Cl. 2—150

18 Claims



1. A necktie comprising a knot portion having an opening therethrough, rigid body imparting means disposed in said opening and secured to said knot portion, a first depending tie portion secured to said knot portion, a second depending tie portion having a neck embracing loop extending through the opening in said knot portion, the lower inner edges of the neck embracing loop of said second depending tie portion having interlockable means, and means secured to said rigid means, within said opening and operatively connected to said interlockable means for interlocking and unlocking said interlockable means upon relative movement between said interlockable means and said interlocking and unlocking means for varying the size of said loop.

3,898,699

CAP HAVING KNITTED CROWN AND CROCHETED BRIM AND METHOD FOR MAKING THE SAME

Donald Zientara, Greendale, and Richard A. Smith, Brookfield, both of Wis., assignors to Zwicker Knitting Mills, Appleton, Wis.

Filed Mar. 5, 1974, Ser. No. 448,252

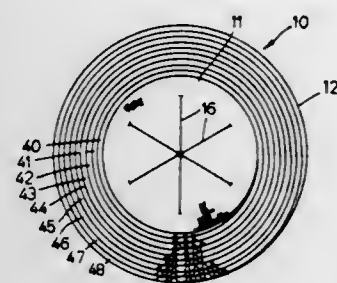
Int. Cl.² A42C 1/00

U.S. Cl. 2—192

11 Claims

1. A cap comprising: a crown formed of a knitted tubular sleeve having a lower edge and a relatively stiff crocheted,

brim connected to and extending entirely around and outwardly from said edge, said crocheted brim comprising a continuous band of crocheted stitching connected to and



around said lower edge of said crown spirally wound to extend outwardly therefrom in successive rows, each row being secured by stitching to an adjacent row.

3,898,700

EAR PROTECTING DEVICE FOR SAFETY CAPS

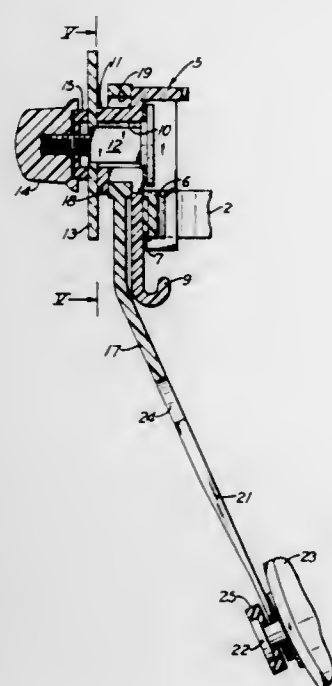
Ellison L. Davison, Gibsonia, and Leo D. Ziegler, Monroeville, both of Pa., assignors to Mine Safety Appliances Company, Pittsburgh, Pa.

Filed June 26, 1974, Ser. No. 483,409

Int. Cl. A42b 1/06

U.S. Cl. 2—209

9 Claims



1. An ear protecting device for mounting on a safety cap having a brim, said device comprising a band adapted to surround the crown of such a cap, a pair of brackets mounted on the band at opposite sides thereof and provided with downwardly extending hooks for hooking under the edge of the brim, each of said brackets having an opening therethrough above said band, the axis of the opening extending substantially radially of the band, a cylindrical flange projecting outwardly from the bracket around said opening, a pair of spring arms for supporting ear covers, each arm having a hole through one end receiving one of said flanges, an ear cover carried by the other end of the arm, and a retaining lug projecting radially from the outer end portion of each cylindrical flange and overlapping the arm supported by the flange to hold it thereon, the wall of said arm hole being provided with a radial notch to enable the arm to be slipped off said flange after the arm has been rotated on the flange to align the notch with said lug.

3,898,701

IMPLANTABLE HEART VALVE

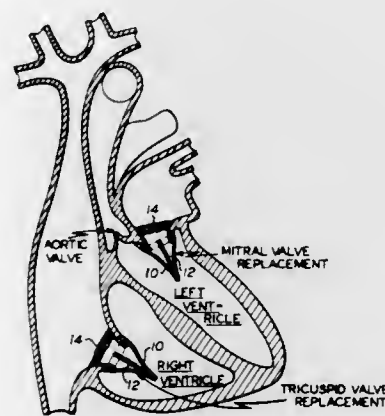
Joseph La Russa, 451 Rutledge Dr., Yorktown Heights, N.Y. 10598

Filed Jan. 17, 1974, Ser. No. 434,321

Int. Cl. A61f 1/22

U.S. Cl. 3—1.5

5 Claims



1. Heart valve comprising:
 - a. a flattened, flexible tubular body;
 - b. spacing means inserted into and opening the upstream end of said tubular body, the downstream end of said tubular body forming a flap valve with inner working surfaces that contact each other when the valve is closed and move apart when the valve is open;
 - c. a centrally positioned, flat, tongue-like anti-inversion member carried by said spacing means and extending into the tubular body between the working surfaces thereof, a portion of said working surfaces contacting said anti-inversion member when the valve is closed and the remaining portion of said working surfaces contacting each other around said anti-inversion member when the valve is closed; and
 - d. an annular mesh sleeve embedded in the upstream end of said tubular body for suturing the valve to the heart tissue.

3,898,702

ADJUSTABLE BED

Robert Goodman, Gladwyne, Pa., assignor to RCA Corporation, New York, N.Y.

Filed June 3, 1974, Ser. No. 476,056

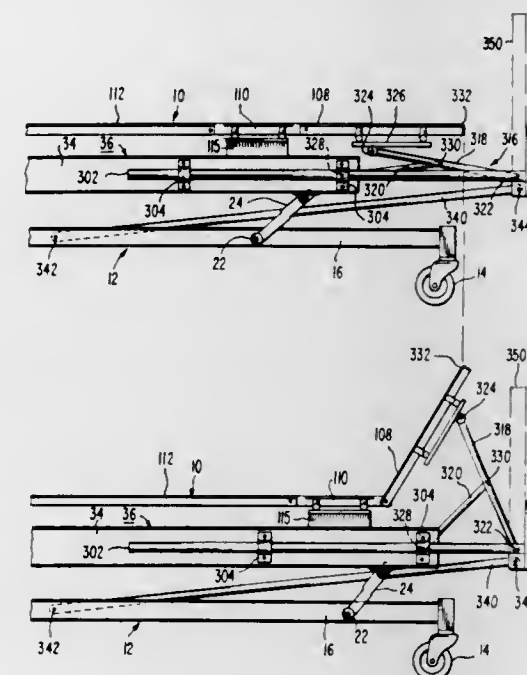
Int. Cl. A61G 7/10

U.S. Cl. 5—68

8 Claims

1. An adjustable bed comprising, in combination:
 - a. an elongated base first frame;
 - b. a second frame generally parallel to and movable relative to said base frame along the length dimension thereof;
 - c. a third frame pivotally coupled to said second frame, the pivotal axis being perpendicular to the length dimension of said first frame;
 - d. a fourth frame movable relative to said second frame in a direction parallel to the length dimension of said first frame, coupled to said first frame in such a manner as to prevent substantial movement along the length dimension of said first frame;
 - e. motion translating means coupling said third frame and fourth frame for causing said third frame to pivot about its pivotal axis as said second frame moves longitudinally

relative to said fourth frame; and means for creating longitudinal motion of said second frame



relative to said first frame and said fourth frame for causing said third frame to pivot about its axis.

3,898,703

METHOD AND MEANS FOR INCREASING THE AIR PRESSURE WITHIN SELF-INFLATED HOLLOW BODIES FOR USE AS CUSHIONS AND FOR LIKE PURPOSES

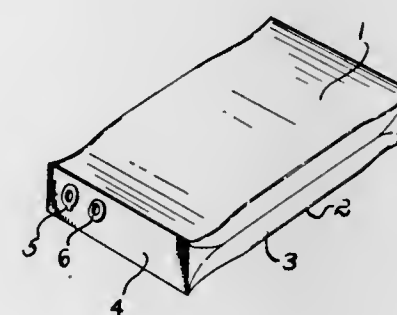
Paul Stamberger, 552 W. University Parkway, Baltimore, Md. 21210

Division of Ser. No. 228,223, Feb. 22, 1972, Pat. No. 3,829,918, which is a continuation-in-part of Ser. No. 76,734, Sept. 30, 1970, Pat. No. 3,643,268, which is a continuation-in-part of Ser. No. 738,657, June 20, 1968, Pat. No. 3,553,113, which is a continuation-in-part of Ser. No. 453,252, May 5, 1968, abandoned. This application Jan. 3, 1974, Ser. No. 430,555

Int. Cl. A47C 27/08

U.S. Cl. 5—348 R

6 Claims



1. A method for increasing the air pressure within an air-inflated, box-like, air-impervious body comprising a top portion and a bottom portion of substantially the same size and configuration connected along their marginal edges in airtight relation by a flexible air-impervious interconnecting member forming the sides and end portions of said body and of a height sufficient to form an air-inflated body of the desired height, and wherein said interconnecting member has a stiff portion extending along a portion of the length thereof which is movable to and from a substantially vertical position to and from a substantially horizontal position overlying the adjacent portion of said top portion, and wherein said body is provided with a manually-operable air inlet and air outlet valve which is closed following the inflation of said body and which is opened to permit the escape of air from said body when said body is collapsed and deflated, the steps of moving said stiff portion from its substantially vertical position to a substan-

tially horizontal position when said valve is closed to force the air within said body adjacent said stiff portion into the remaining portion of said body to increase the air pressure within said remaining portion, and retaining said stiff portion in its substantially horizontal position when said body is in use as an air-inflated cushion, pillow, mattress or the like.

3,898,704

CONVERTIBLE SEAT-BED EQUIPMENT

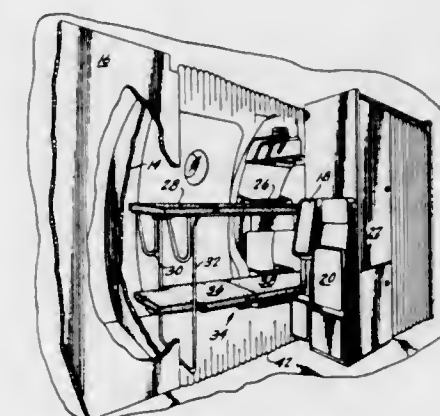
William C. Gallaher, San Clemente; Jerome P. Stephens, Orange; Phillip J. Testa, Norwalk, and James E. Wein, Orange, all of Calif., assignors to McDonnell Douglas Corporation, Santa Monica, Calif.

Filed July 18, 1974, Ser. No. 489,468

Int. Cl. A47C 13/38

U.S. Cl. 5—2 R

6 Claims



1. A convertible seat-bed equipment for converting a reclining seat into a bed comprising:
 - a. a seat back frame pivotally mounted at a pivot point near the top thereof to a wall;
 - b. a seat bottom frame pivotally connected at the rear end thereof to said seat back frame;
 - c. arcuate rails on said wall;
 - d. rollers on said seat back frame engageable with said rails as said seat bottom frame is moved fore and aft to desired seat back frame inclination;
 - e. said arcuate rails having a roller engaging surface, points thereon of which are of equal distance from said seat back frame pivot point.

3,898,705

CONVERTIBLE INFLATION CONTROL FOR UNDERWATER DIVING VESTS

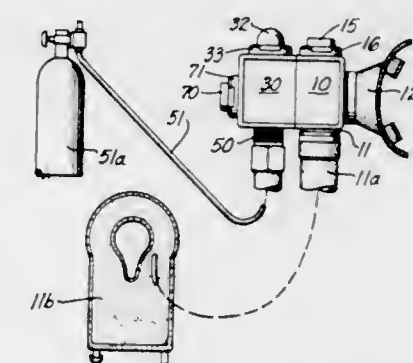
Manfred Schuler, Costa Mesa, Calif., assignor to Pittman Products, Inc., Huntington Park, Calif.

Filed Sept. 13, 1974, Ser. No. 505,789

Int. Cl. B63C 9/24

U.S. Cl. 9—313

12 Claims



1. An inflation control for underwater diving vests comprising a first oral inflation housing having a mouthpiece outlet and a vest outlet, a valve controlling the flow of air between said outlets, a push button control mounted on said first housing for opening said valve, said first housing being usable by a diver.

itself for oral inflation of said vest and for emergency breathing of air from said vest, a plate removably mounted on said first housing, said plate closing off passage means in said first housing extending from a portion of said vest outlet beyond said valve, a second housing adapted to be connected to said first housing upon the removal of said plate, said second housing converting said control for inflation of said vest from a source of air pressure, said second housing having passage means connecting with the passage means in said first housing for the flow of air under pressure through both of said housings from the source of air under pressure to said vest outlet beyond said valve.

3,898,706

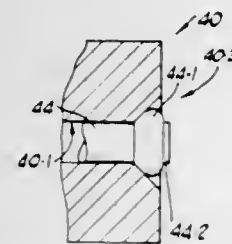
METHOD OF FORMING A RECESS IN A FASTENING ELEMENT HEAD

Louis France Rivalland, and Aubrey Richard McGarry, both of Westville, South Africa, assignors to Utility Products (Proprietary) Limited, Durban, South Africa
Filed Nov. 6, 1973, Ser. No. 413,295
Claims priority, application South Africa, Nov. 21, 1972, 72/8229

Int. Cl. B23g 9/00; B21k 1/46

U.S. Cl. 10-10 R

6 Claims



1. A method of forming a centrally located axially outwardly directed cruciform recess suitable for use with a chisel-ended screw driver and comprising a pair of intersecting slots which are substantially flat-bottomed and have their ends closed off in the axially outwardly directed end face of the head of a fastening element including a shank and a head at one end of the shank, the head being substantially circular in end elevation and the slots having substantially flat floors located in a common plane normal to the polar axis of the element, which method comprises the steps of:

preforming the head in blank by cold-working with a rough punch having a concave die formation such as to render the head in blank at least in part substantially rectangular in end elevation; and

cold-forging the recess by means of a finisher punch provided with a cruciform die formation comprising a pair of intersecting slot-forming formations having flat coplanar outwardly directed faces, the die formation being located centrally relative to the head during the cold-forging step, with the flat faces of the slot forming formations normal to the polar axis of the element, the slot forming formations being aligned with the head so that they extend substantially along the diagonals of the head during the cold-forging step.

3,898,707

LOW BALANCED REACTANCE DELTA CLOSURE FOR ELECTRIC ARC FURNACE TRANSFORMERS

James J. Trageser, Pittsburgh, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

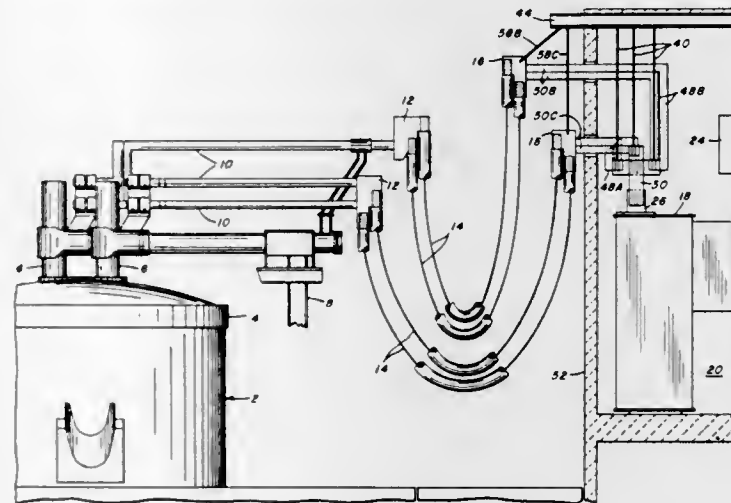
Continuation-in-part of Ser. No. 432,918, Jan. 14, 1974, abandoned. This application July 23, 1974, Ser. No. 491,080
Int. Cl. H05b 7/10

U.S. Cl. 13-12

9 Claims

1. In a three phase electric arc furnace, a low balanced reactance delta closure connecting a power transformer to flexible cables comprising

a row of secondary coil terminal blades projecting from a face of the transformer;
a plurality of terminal risers, one of each of said risers being connected to each terminal blade;
a tubular phase collector for each phase, said collectors being arranged generally parallel to said row of blades and delta connected to said risers;



a tubular phase conductor for each phase, said conductors being arranged generally parallel to each other and in a triangular spatial relation, each of said phase conductors having means connecting one end thereof to one of said phase collectors and;
a flexible cable terminal head for each phase mounted on the other end of each of said phase conductors, said other ends being terminated to provide a generally triangular spatial relation for the flexible cables connected to said terminal heads.

3,898,708

DOOR HINGE ADJUSTABLE CLOSING SPRING

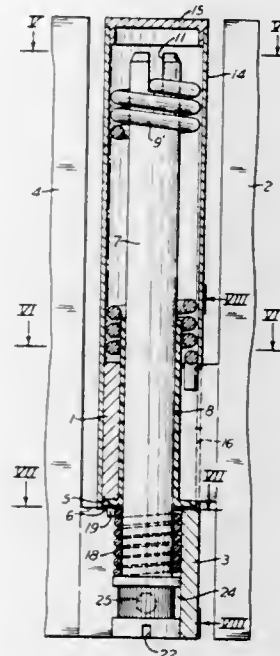
Joseph W. Gwozdz, Clark Summit, Pa., assignor to McKinney Manufacturing Company, Scranton, Pa.

Filed Dec. 30, 1974, Ser. No. 537,086

Int. Cl. E05F 1/08

U.S. Cl. 16-72

13 Claims



1. A door hinge comprising a jamb leaf having a knuckle, a door leaf having a knuckle above the jamb leaf knuckle and supported by it, a hinge pin extending through said knuckles and having an exposed end portion projecting from one of them, the pin being stationary in one of said knuckles during opening and closing of the hinge, there being relative rotation between the other knuckle and the pin during said opening and closing, a closing coil spring encircling said projecting end portion of the pin and having one end anchored to the pin and

having its opposite end anchored in fixed position relative to said other knuckle, the spring being coiled in the direction that will cause it to be wound more tightly during opening of the hinge, and an adjustment coil spring tightly encircling the pin in the knuckle in which the pin is stationary, one end of the adjustment spring being free and the other end being anchored to the surrounding knuckle, and the adjustment spring being coiled in the direction that will permit the pin to be turned manually in it to wind the closing spring more tightly.

3,898,709

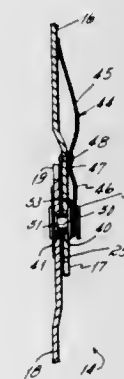
HINGE FOR KNEE BRACE

Hector E. Lewis, deceased, late of Cincinnati, Ohio, by June Rae MacLean, executrix, Millford, Ohio, assignors to Surgical Appliance Industries, Inc., Cincinnati, Ohio
Filed Sept. 26, 1974, Ser. No. 509,449

Int. Cl. E05D 11/10

U.S. Cl. 16-145

8 Claims



1. A lockable hinge for a knee brace, said hinge comprising: a first and a second elongated hinge arm;
a pivot connection between said first and second hinge arms, said pivot connection being disposed near one end of each arm, whereby said arms can be rotated to a plurality of angular positions relative to one another;
each of said arms having a locking aperture formed therein spaced from said pivot connection, a locking pin, and a locking pin support member;
means supporting said locking pin support member upon said first arm, said pin being in alignment with said locking aperture in said first arm;
spring means urging said pin through the aperture in said first arm and toward said second arm, said pin being effective to enter the aperture in said second arm to lock said hinge arms in a predetermined angular position when the aperture in said second arm is brought into alignment with said pin; and
means responsive to lateral pressure for causing said pin to be shifted outwardly and withdrawn from the aperture in said second hinge member to free said hinge members for relative rotation.

3,898,710

PROCESS AND APPARATUS FOR PRODUCING READILY PROCESSIBLE STAPLE FIBER AND TOW

Charles Wayne Cook, Salisbury, N.C., assignor to Fiber Industries, Inc., Charlotte, N.C.

Filed Aug. 1, 1972, Ser. No. 277,026

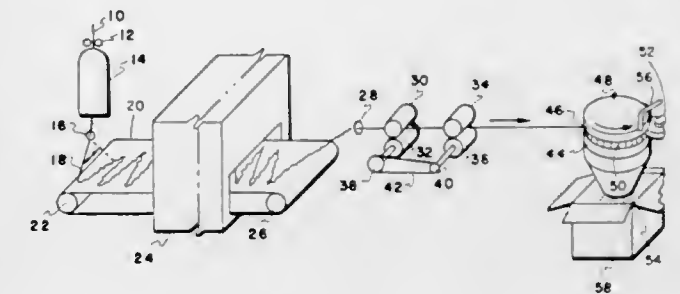
Int. Cl. D01g 1/00

U.S. Cl. 19-46

9 Claims

1. A method of producing crimped staple fibers from a crimped filamentary tow, said method comprising pulling said crimped tow by a cutting means through two nips defined by two pairs of idler rolls, prior to cutting said tow, at least one roll of each of said pairs of idler rolls being provided with a patterned surface, said pairs being geared to one another such that the upstream pair is not permitted to rotate at as high a peripheral speed as the downstream pair and such that a

differential pulling of said filaments through said nips relative to one another is obtained, thereby deregistering adjacent



3,898,711

CONTINUOUS SOFT MAT PERFORATOR

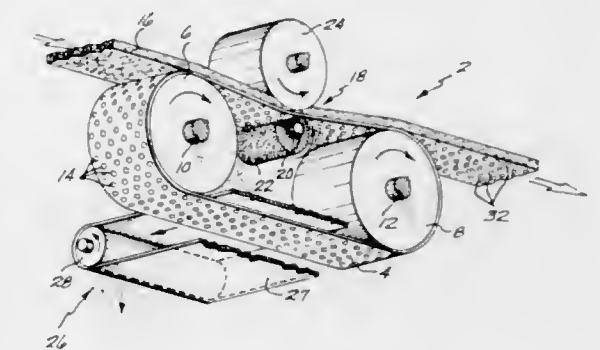
Raymond August Van Vliet, Castle Rock, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.

Filed Oct. 5, 1973, Ser. No. 404,068

Int. Cl. D04H 11/00

U.S. Cl. 19-161 P

7 Claims



1. An apparatus for forming apertures in soft mat material at a forming station comprising:
a perforated band adapted to carry the soft mat material on one surface thereof through the forming station, and
a sweeping member positioned at the forming station in engagement with the opposite surface of the perforated band and having means adapted to extend through the perforations and to move faster relative to the perforated band in order to sweep a portion of the soft mat material back through and from the perforations as the mat material is carried through the forming station.

3,898,712

FIBRE CONTROL ARRANGEMENTS FOR TEXTILE DRAFTING SYSTEMS

Reginald Mayman Blackburn, and Harold Edwin Airey, both of Accrington, England, assignors to Platt International Limited, England

Filed Aug. 17, 1973, Ser. No. 389,223

Claims priority, application United Kingdom, Aug. 18, 1972, 38696/72

Int. Cl. D01H 5/86

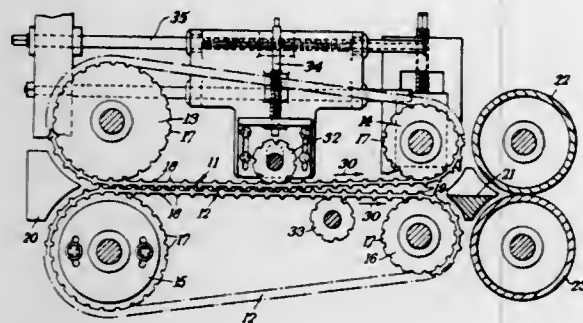
U.S. Cl. 19-244

7 Claims

1. A fibre control arrangement for a drafting system for textile fibres comprising:

a first endless conveyor,
a second endless conveyor having a run thereof face-to-face with and adjacent to a run of the first conveyor, said conveyors being mounted for movement at a predetermined speed; the adjacent runs of the conveyors being divided into two stretches, a first stretch in which the conveyors are substantially parallel and a second stretch in which the conveyors diverge, the second stretch fol-

lowing the first stretch in the direction of travel of the conveyors;
a plurality of projections spaced apart along the conveying surfaces of the two conveyors, the projections defining a plurality of depressions therebetween, the projections of the first conveyor registering with the depressions of the second conveyor along the adjacent runs; and



a pair of delivery drafting rollers mounted for rotation at a higher peripheral speed than the speed of the conveyors whereby fibres conveyed between the adjacent runs of the conveyors in a non-linear path are drafted by the conveyors and the delivery drafting rollers, and whereby less control is exercised by the adjacent runs of the two conveyors on textile fibres at the delivery region than at the feed region respectively at opposite ends of said conveyor.

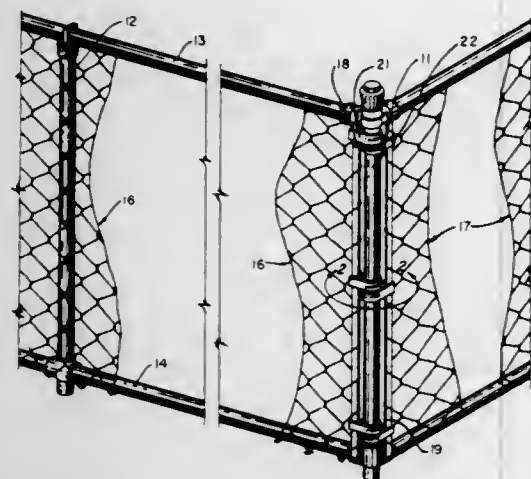
3,898,713 TENSION BAND

Robert L. Nelson, and Susan J. Nelson, both of 756 Orion Ln., Foster City, Calif. 94404

Filed Sept. 17, 1973, Ser. No. 398,174
Int. Cl.² A44B 21/00

U.S. Cl. 24-73 SA

5 Claims



1. A tension band of the type including a support engaging portion with outwardly extending fingers, the improvement comprising an elongated slot formed near the end of one of said fingers, a locking member formed by bending the end of the other finger towards said one finger, a hook having a neck portion and a head portion at the end of said locking member, said head portion extending farther toward one edge of said other finger than the edge of said slot extends toward the corresponding one edge of said one finger, said head portion formed to extend through said slot, a cam surface extending toward said one edge on the outside edge of said head portion, whereby when said hook engages the edge of said elongated slot in said one finger said cam surface moves said other finger laterally relative to said one finger until said head portion passes through said elongated slot and said head portion springs back in a reverse lateral direction to hook the end of said one finger, whereby said fingers are locked together without tension applied thereto.

3,898,714

PIPE ALIGNMENT CLAMP

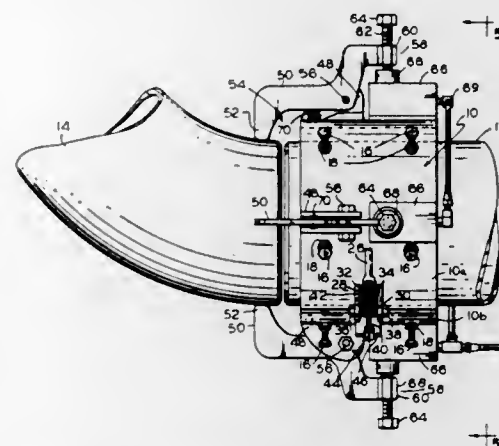
James D. McFadden, 2300 Jefferson Ave., Anchorage, Alaska 99503

Filed Oct. 9, 1973, Ser. No. 404,491

Int. Cl.² A44B 21/00; B25B 1/20; B23K 5/22

U.S. Cl. 24-81 PE

27 Claims



1. A device for holding two sections of pipe in alignment for welding one to the other, such device comprising:
a circumferential band removably securable to a first of said sections of pipe which is to be welded to a second of said sections of pipe,
movable dogs mounted from said band and having forward ends for securely engaging the second of said sections of pipe, said dogs extending outwardly of the region of the joint between the two pipe sections to permit welding between the pipe sections,
and operating means interengageable between said band and said movable dogs for bringing about the movement of the forward ends of said dogs toward the second of said pipe sections in supporting relation to the second of said pipe sections when said band is removably secured to the first of said pipe sections.

3,898,715

FITTING FOR ADJUSTING A SAFETY BELT

Arnold Balder, Wasbuttel, Germany, assignor to Klippan GmbH Hamburg, Hamburg, Germany

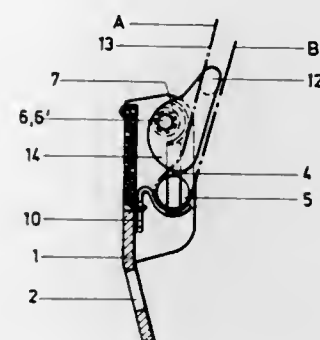
Filed Apr. 17, 1974, Ser. No. 461,676

Claims priority, application Germany, Apr. 21, 1973, 2320314

Int. Cl.² A44B 11/00

U.S. Cl. 24-196

7 Claims



1. A device for adjusting a belt, especially a safety belt for use in motor vehicles and the like, which device comprises a U-shaped housing with a base mounted to the vehicle, said housing provided with a non-rotatable clamping roller, surrounded at least partially by a shaped part, said roller longitudinally displaceable in said housing in slots in the direction in which the belt is pulled, a belt laid around the clamping roller with the slots extending parallel to the base of the housing, bores located in the housing, a locking roller offset from the slots rotatably mounted in the bores and connected to and

rotating with a rocking lever, the arms of which each have a control cam face cooperating with the clamping roller.

3,898,716

ROTATABLE STOP FASTENER

John F. Aylott, Frimley, England, assignor to Dzus Fastener Co. Inc., West Islip, N.Y.

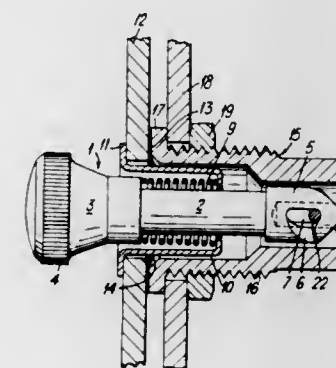
Filed Jan. 31, 1974, Ser. No. 438,472

Claims priority, application United Kingdom, Feb. 1, 1973, 5127/73

Int. Cl.² A44B 17/00

U.S. Cl. 24-221 K

5 Claims



1. A quick acting fastener which is locked by longitudinal reciprocation of one of the fastening members comprising:
a cylindrical socket member having a cross pin extending diametrically thereacross and also having means for fixedly attaching it to a part to be fastened;
a stud member having a head portion at the rear end and a relatively reduced shank portion at the forward end and also having means for attaching it to another part to be fastened for both axial and rotary motion, said stud member having at its forward end a pair of generally straight inclined portions meeting along a generally straight line at the terminal end of said stud member, a slot extending through said inclined portions transversely of said line and open at the forward end, and having extending rearwardly from said slot a pair of diametrically opposed cam slots, a locking shoulder on the forward wall of the cam slots for locking engagement with the cross pin upon rotation of the stud member, the wall forming each cam slot portion opposite the shoulder tapering axially rearwardly from the shoulder from a point substantially opposite to the shoulder and to a point circumferentially beyond the shoulder, so that axial reciprocation of the stud by pressing on the head causes the camming surfaces to engage the cross pin to rotate the stud member and cause the cross pin to have locking engagement with the cam slots; and
a compression spring surrounding the shank of the stud to normally urge the stud member away from the socket member.

3,898,717

RELEASABLE PAPER CLIP

Hermann Schwartz, Pfaffikon, Switzerland, assignor to Siegfried Peyer, Basch, Switzerland

Filed Oct. 9, 1973, Ser. No. 404,608

Claims priority, application Switzerland, Oct. 10, 1972, 14767/72

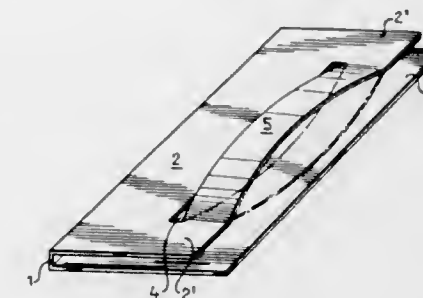
Int. Cl.² A44B 21/00

U.S. Cl. 24-259

4 Claims

1. A releasable paper clip comprising
a piece of stiff resilient sheet material bent or folded over in substantially U-shaped profile, the legs of the U being not necessarily of the same length and providing an upper and lower guide faces for a paper sheet or stack that may be inserted into the clip,

one of said guide faces (2) having at least one slit (4) substantially parallel to the fold (the bottom of the U) (1), said slit(s) together with the edge portions (2', 2'') of said guide face beyond the end(s) of said slit(s) forming boundaries of an arched strip (5) of said sheet material bowed out of the plane of said guide face and connecting



with said edge portions in said plane at its ends, said arched strip constituting a bistable spring element in one stable position of which the arched strip (5) applies pressure against the opposite guide face (3) and in the other position of which the arched strip (5) is wholly outside the space between said guide faces (2, 3).

3,898,718

APPARATUS FACILITATING BURIAL IN THE VERTICAL POSITION

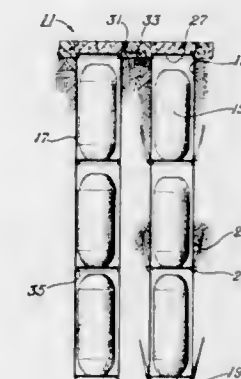
Marcus P. Eubank, P.O. Box 7576, Longview, Tex. 75601

Filed Dec. 3, 1973, Ser. No. 421,043

Int. Cl. A61g 17/00; E04h 13/00

U.S. Cl. 27-35

5 Claims



1. A burial structure comprising:
a. a plurality of vertically oriented burial bores;
b. a plurality of respective casings disposed in respective bores, said casing being adapted to receive a plurality of vertically oriented corpse containers and being sealingly connected with a bottom end and sealed against influx of water;
c. removable top lids connected with the top of respective said casings for allowing access to the interior of said casing within said bore;
d. individual supports disposed at a plurality of respective levels within respective said casings for supporting said corpse containers individually within each said casing; and
e. a plurality of corpse containers having corpses there-within and disposed in vertical orientations within respective said casings within respective said bores on respective said individual supports; said corpse containers including foamed plastic loosely conformably fitting both front and back of said corpse therewithin for supporting said corpse in a vertical position; said corpse containers comprising a high density plastic skin that is unitary with a foamed plastic interior; said high density skin and said foamed plastic interior being sealable about a corpse before being disposed vertically in said casing within said bore; said foamed plastic traversing both in front of and in back of said corpse and extending to meet and mate

with the foamed plastic in the opposite half when said corpse container is closed about said corpse such that sealant can be disposed on the mating surfaces of said foamed plastic, as well as said high density skin, to seal said corpse container.

3,898,719

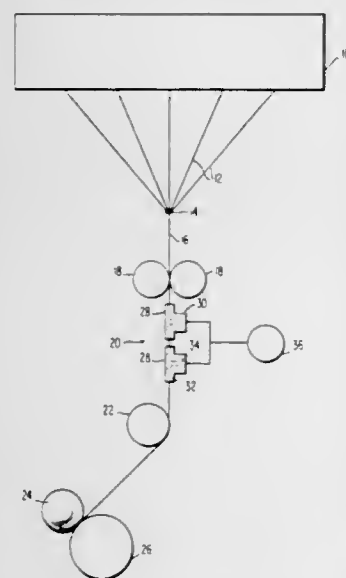
METHODS AND APPARATUS FOR INTERLACING YARN
Neil E. Lloyd, Rock Hill, S.C., assignor to Celanese Corporation, New York, N.Y.

Filed Mar. 20, 1974, Ser. No. 452,890

Int. Cl. D02g 1/16

U.S. Cl. 28—1.4

23 Claims



1. Yarn interlacer apparatus for subjecting a bundle of yarn filaments to turbulent fluid movement such that the filaments become compacted and interlaced, the interlacer apparatus comprising:

- means defining a yarn processing bore having yarn inlet and outlet ends;
- means for passing a continuous bundle of yarn filaments through said yarn processing bore; and
- means for establishing, in said bore, separately traveling fluid flows generating a plurality of shock wave formations which extend completely across the path of travel of said yarn filaments such that said filaments pass through and continuously contact said shock wave formations and become compacted and interlaced thereby.

3,898,720

METHOD OF PROVIDING A FLUORESCENT LAMP STEM WITH AN INTEGRAL MERCURY-VAPOR PRESSURE REGULATING MEANS

Chalmers Morehead, Upper Montclair, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 293,239, Sept. 28, 1972. This application

May 28, 1974, Ser. No. 473,959

Int. Cl. H01j 9/18, 7/18, 7/26

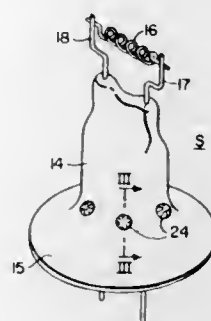
U.S. Cl. 29—25.13

9 Claims

1. In the manufacture of a glass stem assembly for a low-pressure electric discharge lamp of a type that is dosed with a controlled amount of mercury after the stem assembly is sealed to the lamp envelope, the method of providing said stem assembly with integral means for controlling the mercury-vapor pressure within the finished lamp, said method comprising the steps of:

- forming a compact body of a metal that has a melting point below the softening point of the glass stem assembly and combines with mercury to form an amalgam,
- heating the glass stem assembly to a temperature above the melting point of the amalgamative-metal,
- placing the body of amalgamative-metal in contact with the surface of the heated stem assembly until the metal body

is fused to the stem assembly, and then



maintaining the metal body and stem assembly in such position until they cool and the metal body rigidifies and is secured to the stem assembly.

3,898,721

DIFFUSION BONDED CATHODE FOR ELECTRON DISCHARGE DEVICE

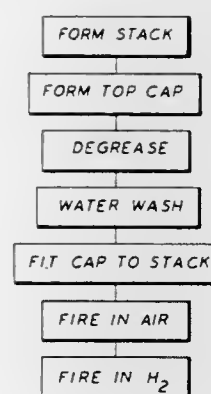
John J. Decker, and Donald R. Kerstetter, both of Emporium, Pa., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed May 18, 1973, Ser. No. 361,830

Int. Cl. H01J 9/00; B23K 31/02

U.S. Cl. 29—25.14

2 Claims



1. A method of fabricating cathodes for electron discharge devices, said cathodes comprising a hollow tubular stack and a substantially cup-shaped top cap fitted over one end of said stack and affixed thereto, said method comprising the steps of: forming said tubular stack from a nickel alloy containing at least about 95% nickel; forming said top cap from a nickel alloy containing at least about 95% nickel; said top cap having an internal diameter just large enough to fit over the external diameter of said stack; cleaning said stack and said top cap; drying said stack and top cap; fitting said top cap onto said stack to form a cathode assembly; firing said assembly in air to oxidize any volatile contaminants thereon at a temperature of above about 500°–600°C; and firing said assembly in a reducing atmosphere at a temperature sufficiently high to form a diffusion bond between said top cap and said stack, said cathode assembly reaching a temperature of about 1,100°C for at least one minute during said firing in said reducing atmosphere.

3,898,722

PROCESS FOR FORMING AN ELECTRODE

D. Paul Foote, Sierra Madre, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 2, 1973, Ser. No. 347,277

Int. Cl. H01g 13/00

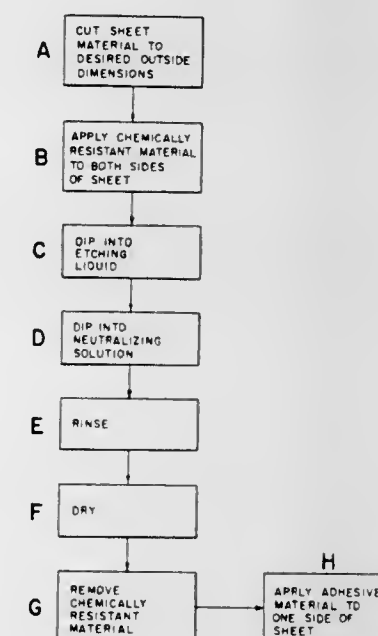
U.S. Cl. 29—25.42

4 Claims

1. A method for forming an electrode for use in a cassette for enclosing in a light-tight environment a photoconductor layer formed on a conductive substrate, said photoconductor layer having a latent electrostatic charge formed thereon, said

cassette including lid and bottom portions, said photoconductor layer being supported in the bottom portion and said electrode being affixed to the lid portion of said cassette, said method comprising the steps of:

- a. cutting a starting material comprising a layer of dielectric material sandwiched between two electrically conductive surfaces to a predetermined size such that the starting material may be affixed to said lid portion,
- b. applying an etchant resistant material to selected portions of both conductive surfaces, said selected portions corresponding to a desired electrode pattern,



- c. subjecting the starting material to an etchant whereby the non-selected portions of the conductive surfaces are removed from the starting material,
- d. removing the starting material from the etchant,
- e. removing the etchant resistant material from said starting material, and
- f. applying an adhesive material to one of the conductive surfaces and affixing the starting material to said cassette lid.

3,898,723

MODEL VEHICLE RACETRACK TOOL

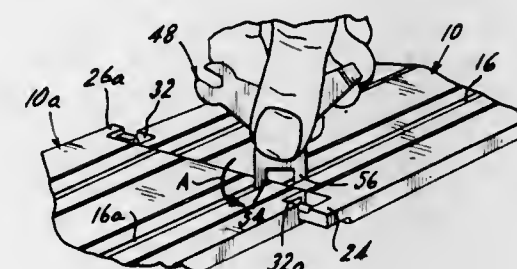
James S. Kirby, Huntington Station, and Louis Accornero, Hempstead, both of N.Y., assignors to Aurora Products Corporation, West Hempstead, N.Y.

Filed Feb. 4, 1974, Ser. No. 439,009

Int. Cl. B23P 19/00

U.S. Cl. 29—200 H

9 Claims



1. A tool for use in assembling and disassembling like adjacent track sections for model vehicles, each of said track sections including a longitudinally extending body of insulating material having two ends, said track section having a substantially flat top wall forming a running surface for said model vehicles and including a guide groove of substantially equal longitudinal extent with said track section for use in guiding model vehicles, said guide groove having generally upstanding side walls depending from said track section top wall, a projection from each end of said track section, a laterally extending hook being fixed to each of said projections,

said hooks facing in laterally opposite directions, a recess in each end of said track section constructed and arranged to receive a corresponding projection of a like adjacent track section, a hook retaining means at each end of said track section and spaced from the end thereof for releasably engaging a corresponding laterally extending hook of a like adjacent track section, and detent means located on each end of said track section for coacting with corresponding detent means of an interconnected like adjacent track section for normally maintaining an aligned relationship of said guide grooves of said two like adjacent interconnected track sections, each corresponding hook and hook retaining means including means for urging like adjacent, in registration, track sections toward one another and into engagement in response to the application of oppositely directed lateral forces thereto thereby overriding coacting corresponding detent means of said adjacent track sections, said tool comprising a gripping section for use in holding said tool, a track engaging member fixed to said gripping section and at least one lever arm fixed to said gripping section for use in applying a turning force to said tool, said track engaging member including two depending spaced legs, each of said legs being constructed and arranged to be inserted within a guide groove of one of said track sections in a given direction and rotatable therein in a direction orthogonal to said given direction, said legs being fixed relative to said gripping section so that a turning force applied to said gripping section in said orthogonal direction causes said legs to rotate in said orthogonal direction, said legs being spaced apart a distance sufficient to permit a simultaneous insertion of each of said legs within the respective guide grooves of each of two of said adjacent track sections with corresponding hooks and hook retaining means arranged in registration, said tool being usable to translate said orthogonal turning force applied to said tool into said oppositely directed lateral force on said track sections by coaction between said spaced legs and a side wall of said respective guide grooves of said adjacent track sections.

3,898,724

IMPACT TOOL

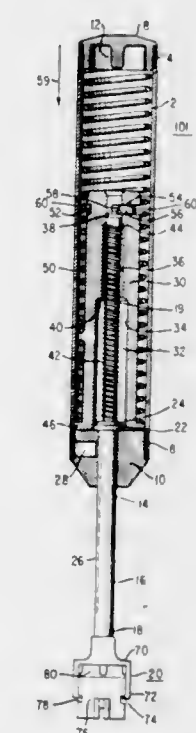
Theodore Alan Conorch, East Orange, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 11, 1974, Ser. No. 522,329

Int. Cl. H01R 43/00

U.S. Cl. 29—203 H

11 Claims



1. A tool adapted for terminating wires in bifurcated terminals comprising a head for contacting said wires, a plunger on which said head is mounted for moving said head with respect to said terminals, and an impact mechanism for impacting said

plunger to thereby apply forces to said head to terminate said wires characterized in that said impact mechanism includes:

- a hammer having an internal passageway therethrough to receive said plunger therein, said plunger includes a flange thereabout and said passageway includes a shoulder around the periphery thereof adapted to impact said flange;
- a power spring surrounding substantially the entire length of said hammer for imparting a force to said hammer for impacting said plunger; and
- a return spring about said plunger within said passageway for returning said plunger to an initial position after said impacting.

3,898,725

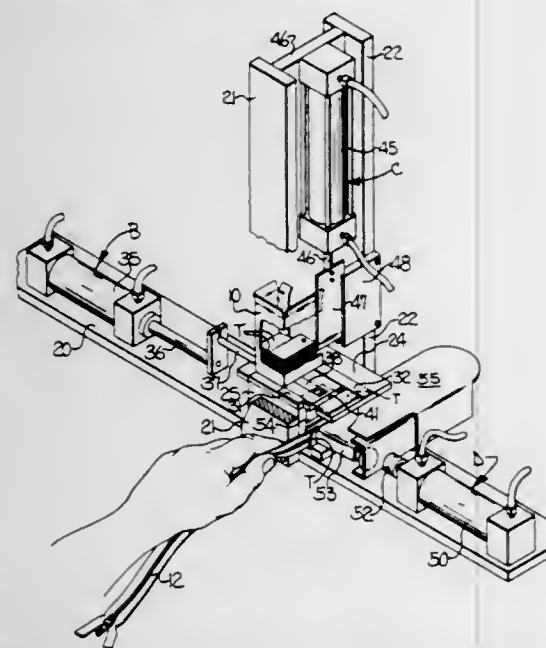
APPARATUS FOR APPLYING HANG TABS TO ZIPPERS
Joseph V. Carter, II, Shelby, N.C., assignor to Lily Mills Company, Shelby, N.C.

Filed Dec. 10, 1974, Ser. No. 531,237

Int. Cl.² B23Q 7/10

U.S. Cl. 29—211 R

8 Claims



1. An apparatus for applying hang tabs to zippers comprising:

- a. a magazine for supporting a stack of hang tabs in flat condition,
- b. means for successively removing the bottom hang tab from the stack and moving the same to an adjacent folding station,
- c. means for folding the hang tab along a line extending through the medial portion of the tab to provide a pair of legs of substantially equal length and for maintaining the hang tab in this folded condition to receive the end of a zipper between the legs thereof, and
- d. means for applying a staple through the legs of the hang tab and the end of the zipper positioned therebetween to connect together the legs of the hang tab and to secure the end of the zipper therebetween.

3,898,726

METHODS AND DEVICE FOR POSITIONING AND ASSEMBLING FREE-FITTING PARTS

Jean Godart, and Guy Faure, both of Billancourt, France, assignors to Regie Nationale des Usines Renault, Billancourt and Automobiles Peugeot, Paris, both of, France

Filed June 18, 1973, Ser. No. 370,650

Claims priority, application France, July 25, 1972, 72.26705

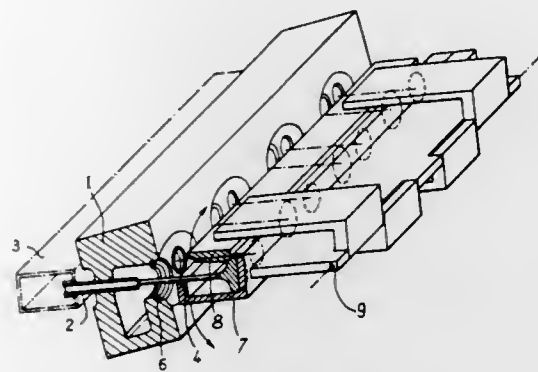
Int. Cl.² B23P 19/04

U.S. Cl. 29—213

1 Claim

1. A device for assembling valves in an internal combustion engine having hollow valve guides for receiving the stems of said valves comprising:

positioning means for placing said valve stems in alignment with and in close proximity to one end of said valve guides including a valve support having collapsible holding members; and



means for creating a vacuum at the other end of said hollow valve guides so that by said vacuum said stems are sucked into said hollow guides, said collapsible holding members being adapted to release said valves after said valves are sucked into said guides.

3,898,727

METHOD AND APPARATUS FOR JOINING A FLEXIBLE WAVEGUIDE TO ANOTHER ELEMENT

Antonio Ferrentino, Monza, Italy, assignor to Industrie Pirelli S.p.A., Milan, Italy

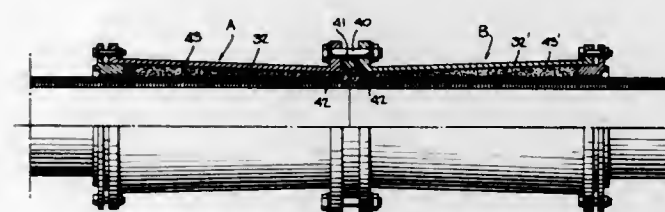
Filed Dec. 20, 1973, Ser. No. 426,495

Claims priority, application Italy, Feb. 2, 1973, 19943/73

Int. Cl. H01p 11/00

U.S. Cl. 29—600

5 Claims



1. A method for joining a flexible waveguide having a cylindrical inner surface and forming part of a telecommunication line to another element of said line having a similar cylindrical inner surface comprising:

- inserting a first portion of an accurately sized, rigid body within said cylindrical surface of said waveguide, said portion being expandable in diameter and said body having a second portion exteriorly of said waveguide which is accurately aligned with respect to the axis of said expandable portion,
- expanding said first portion of said body into contact with said cylindrical inner surface of said waveguide,
- positioning a first hollow securing member around the exterior of said waveguide at the end thereof said member having an interior size greater than the exterior size of said waveguide to permit adjustment thereof with respect to the axis of said waveguide,
- aligning the axis of said member with said axis of said second portion of said body and hence, with the axis of said cylindrical inner surface of said waveguide,
- securing said member to said waveguide with said axis of said member so aligned,
- similarly positioning, aligning and securing on the exterior and at the end of said element a second hollow securing member of an interior size greater than the exterior size of said element to secure said second member to said element with its axis accurately aligned with the axis of said cylindrical inner surface of said element,
- each of said securing members having means for accurately aligning the axis of one thereof with the axis of the other thereof,

after removal of said body, bringing said end of said waveguide adjacent to said element without a gap therebetween and aligning the axis of said waveguide with the axis of said element by aligning the axes of said first and second securing members with the use of said aligning means thereof, and

securing said first member to said second member with their axes so aligned by releasable securing means.

3,898,728

JOINING OF TUBULAR SECTIONS

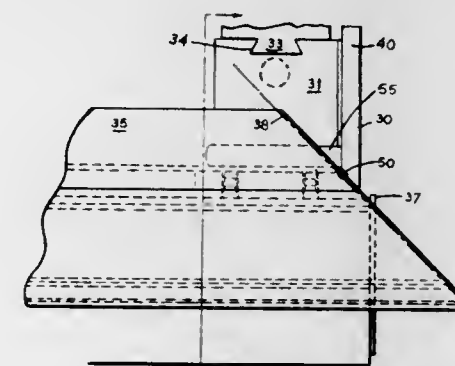
Paul E. Rousseau, Brussels, Belgium, assignor to Sadacem Societe Anonyme, Brussels, Belgium

Continuation-in-part of Ser. No. 260,259, June 6, 1972. This application May 21, 1973, Ser. No. 362,459

Int. Cl. B23p 11/02

U.S. Cl. 29—446

4 Claims



1. In a method for forming a miter joint between mating ends of sections having at least one tubular element wherein a right angle connector of a width and thickness slightly less than the internal dimensions of the tubular elements and with opposite arms bearing longitudinal slits extending substantially along said arms with a small web therebetween is positioned within the tubular elements of said sections to bridge the juncture of the joined sections and the slit halves of each arm are wedged outwardly into expansion with three of the internal walls of the tubular elements by pins driven transversely through the walls of the sections and into said slits, the improvement for securing a precise alignment between the joined sections which comprises: positioning one of the arms of the connector in the tubular element of a first section at a position therein past its intended joint line, securing said connector in the tubular element of the first section by driving at least one metal pin through a wall of the first section and the slit halves of said arm to expand said slit halves of said arm into a three-walled contact with the internal walls of said tubular element and thereafter positioning the second section on the remaining arm of said connector, applying a force, axially, to said second section to compress said sections and draw said connector into precise alignment on the juncture plane of said joined sections and thereupon driving at least one metal pin through the wall the the second section to enter the slit of the connector's remaining arm and expand its halves outwardly into binding engagement with the internal walls of the second section

3,898,729

METHOD OF MAKING DRILL PROOF PLATE FOR SAFES

Charles H. Greene, Cincinnati, Ohio, assignor to Ohio Knife Company, Cincinnati, Ohio

Division of Ser. No. 659,828, June 8, 1967, Pat. No. 3,807,970, which is a continuation of Ser. No. 395,127, Sept. 9, 1964. This application Feb. 1, 1974, Ser. No. 438,741

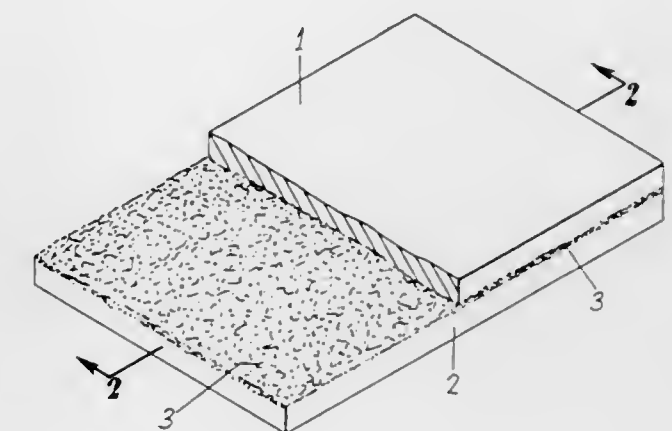
Int. Cl.² B23K 31/02

U.S. Cl. 228—122

8 Claims

1. A method of manufacturing a plate structure comprising the steps of providing at least two metallic sheets, arranging

said sheets to form a laminated structure, preforming a thin uniformly distributed layer of abrasive particles on a carrier web, utilizing said carrier web to locate said abrasive particle



layer between adjacent surfaces of said sheets and fusing said sheets together to form a unitary plate structure with said particles embedded in the line of fusion between said sheets.

3,898,730

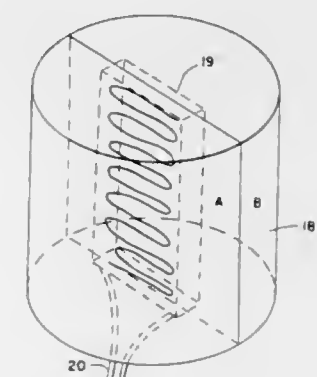
BONDING METHOD IN THE MANUFACTURE OF CONTINUOUS REGRESSION RATE SENSOR DEVICES
William H. Haraway, Jr., Walter J. Dale, and Edwin A. McErlan, all of Hampton, Va., assignors to The United States of America as represented by the United States National and Space Administration Office of General Counsel-Code GP, Washington, D.C.

Filed Dec. 12, 1973, Ser. No. 424,038

Int. Cl. H01c 1/02

U.S. Cl. 29—613

3 Claims



1. A method of making a continuous regression rate sensor device comprising:

- machining a first retaining member for a rate sensor grid from an ablative material selected from the molded group consisting of 50:50 by weight phenolic-nylon material and a phenolic-carbon-fiber reinforced compound having a fifty percent resin content,
- machining a second retaining member for the sensor grid from the same material as said first retaining member,
- each of said first and said second retaining members being machined so as to provide mating surfaces on at least a portion of the exterior thereof,
- each of said first and said second retaining members being further machined to provide a mating recess in the respective mating surfaces thereof of such dimension as to receive a sensor grid therein when the two retaining

members are positioned with the mating surfaces thereof abutting each other,

applying a thin coating of a liquid phenolic resin to the area of said mating surface of each said first and second retaining members that encompasses the recess therein and drying the coated surfaces at ambient temperature for approximately 30 minutes,

heating the resin coated retaining members at a temperature of approximately 185°F. for 5 minutes to effect B staging of the phenolic resin,

applying a thin coat of the phenolic resin adhesive to the recessed area of one of the retaining members,

immediately positioning a sensor grid in the coated recess and permitting the phenolic resin adhesive to dry at ambient temperature to thereby acquire sufficient "tackiness" to retain the grid in position during further assembly,

connecting electrical lead wires to the sensor grid of such length as to extend away from the first and second retaining members,

placing said first and said second retaining members in abutting relationship with the sensor grid positioned therebetween

securing said first and said second retaining members together and heating the secured unit at a temperature of approximately 330°F. to thereby cure the phenolic resin adhesive and bond the first and second retaining members into a unitary structure containing the sensor grid with lead wires extending therefrom.

3,898,731

METHOD OF MAKING ELECTRICAL CONNECTORS
Sandiford Ring, and Russell K. Ring, both of P.O. Box 14666, Houston, Tex. 77021

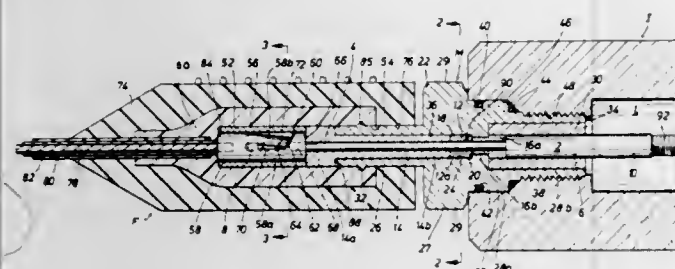
Division of Ser. No. 249,359, May 1, 1973, Pat. No. 3,793,608.

This application Nov. 30, 1973, Ser. No. 420,388

Int. Cl.² H02G 15/00

U.S. Cl. 29—629

2 Claims



1. A method for producing a male member for an electrical connector comprising the steps of:

- assembling said male member having a pin, a sealing annulus circumferentially surrounding a first portion of said pin intermediate the ends thereof, a pair of refractory sleeves circumferentially surrounding other portions of said pin on opposite sides of and adjoining said annulus, and a metal jacket circumferentially surrounding said annulus and portions of said sleeves directly adjacent said annulus;
- heating said male member by induction heating, such that said jacket is selectively heated at a greater rate than said annulus and said sleeves;
- cooling said male member sufficiently slowly to allow annealing of said annulus.

3,898,732

DRY SHAVER

Erich Krainer, Klagenfurt, Austria, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 13, 1974, Ser. No. 450,765

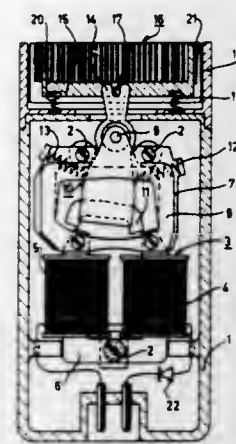
Int. Cl.² B26B 19/02, 19/28; H02K 33/00

U.S. Cl. 30—43.92

8 Claims

1. In an electric shaver operable with an AC supply variable between 50Hz and 60Hz, and including a vibrator type elec-

tric motor having a stator with wire windings thereon, and a damped mechanical vibration system comprising an armature, spring means, and a reciprocable cutter, said system having a normal oscillation frequency of twice the supply frequency,



the improvement wherein said vibration system has a resonant frequency higher than 60 Hz, and said apparatus comprises means for establishing the oscillation frequency of the vibration system as equal to the supply frequency.

3,898,733

CABLE STRIPPER

Joseph Tilmon Cormier, 1130 Main St., Tewksbury, Mass. 01876

Filed Aug. 5, 1974, Ser. No. 494,560

Int. Cl.² B21F 13/00; B26B 29/02

U.S. Cl. 30—90.4

6 Claims



1. A cable stripper comprising a straight edged blade having a handle at one end, the blade having a longitudinally extending straight cutting edge and a free end forming a generally square stripping point with the cutting edge of the blade, and a cable guide mounted in fixed relation on said blade, the guide comprising a pair of plates one at either side of the blade covering the stripping point, said plates each being provided with a flat portion secured to the blade and extending outwardly away from each other in the region of the stripping point, terminating in terminal portions which are substantially parallel to each other, the stripping point projecting from the bottom of the guide at a point where the outwardly extending portions merge with the flat portions attached to the blade, said stripping point being wholly within the guide.

3,898,734

SHEARS

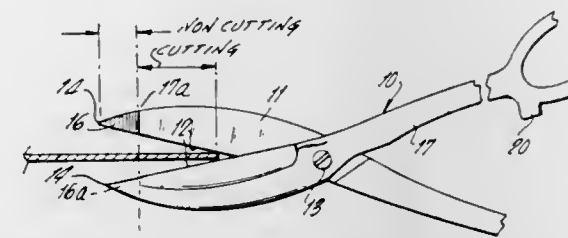
Jess Dorkin, 1340 S. Ocean Blvd., Pompano Beach, Fla. 33062

Filed Mar. 29, 1974, Ser. No. 456,150

Int. Cl.² B26B 13/06

U.S. Cl. 30—233

5 Claims



1. A shears comprising two elongated handle members, a pivot member coupling the handle members is swingable relationship to each other, a cutting blade on one end of each handle member having a generally planar innerface, said blades being in juxtaposition, a blade tip at the end of the blade opposite the handle member, a cutting edge on each blade adapted to receive a work part therebetween, said blade tips having an edge integral with the cutting edge of the blade and extending away from the planar face of the blade.

3,898,735

KNIFE FOR CUTTING OUT CLIPPINGS

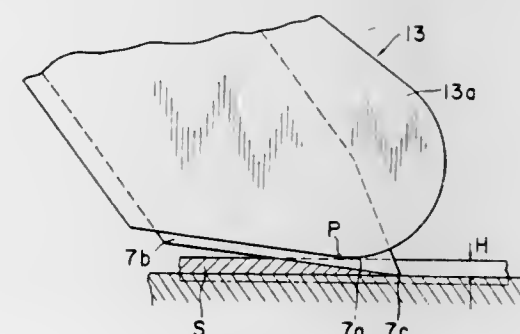
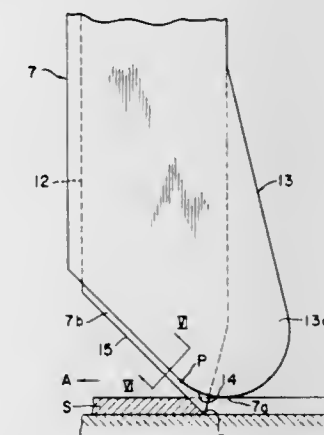
Shohachi Himeno, Tokyo, Japan, assignor to Conde Kabushiki Kaisha, Japan

Filed May 9, 1973, Ser. No. 358,809

Int. Cl.² B26B 3/00, 29/02

U.S. Cl. 30—294

4 Claims



1. A knife for cutting out clippings from a sheet of paper, comprising a knife blade of generally planar shape and having a contact surface substantially perpendicular to the plane of the blade for sliding contact with a surface of the paper and a cutting edge disposed in the vicinity of said contact surface and extending beyond the contact surface by a cutting depth distance, said contact surface having a contour of a convex fair curve, when viewed in the direction perpendicular to the plane of the blade, of a large radius of curvature, the relationship between the dimensions and shapes of said contact sur-

face and the cutting edge being so selected that the depth of cut of the cutting edge into the paper can be adjustably varied by varying the angular attitude of the knife blade relative to the paper, said contact surface having a contour of a convex fair curve formed by an edge surface of a bulbous projection extending rearwardly with respect to the cutting direction of the knife, the blade piece in planar view having two long sides and at least one short side at an acute angle to one of the long sides, the short side forming a straight cutting edge with a cutting tip at the vertex of the acute angle, the contact surface being parallel to the cutting edge for a major portion of the length of the cutting edge then rising arcuately from a point slightly forwardly of the cutting tip with respect to cutting advance of the knife and extending rearwardly of the cutting tip along the arc progressively departing thereby from the straight line portion parallel to the cutting edge, the cutting edge extending beyond the contact surface along the parallel portion by a cutting depth distance corresponding to the small thickness of a single sheet of paper, whereby when the knife is held at an angle to the surface of the paper with the parallel portion of the contact surface in contact with the paper, the cutting edge is limited by said contact surface portion to cut the paper only to a depth substantially equal to its thickness, the arcuate portion of the contact surface being such that for varying thicknesses of single sheets of paper the knife may be tilted progressively rearwardly to cut increasing thicknesses of single sheets of paper, the use of the knife in upright attitude to the paper positioning a portion of the arcuate portion of the contact surface in sliding contact with the paper at a point rearwardly of the cutting tip with respect to cutting advance of the knife.

3,898,736

ORTHODONTIC APPLIANCE AND METHOD OF USING SAME

Earl O. Bergersen, 950 Linden Ave., Winnetka, Ill. 60093

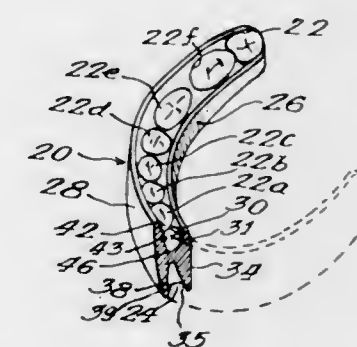
Continuation-in-part of Ser. No. 614,723, Feb. 8, 1967. This

application June 30, 1969, Ser. No. 837,667

Int. Cl. A01c 7/00

U.S. Cl. 32—14 B

5 Claims



1. The method of positioning teeth comprising the steps of: providing a limited number of preformed resilient tooth positioning appliances of different preselected standard configuration and dimension; measuring the oral cavity of the patient to determine the applicable standard size appliance for that patient; selecting such an appropriate standardized size appliance from the preformed group provided; and inserting the selected appliance into the patient's mouth in bite abutting position.

3,898,737

DENTAL SPIGOT CONTROL DEVICE

Raymond Cope, 3541 Springvalley Rd., Birmingham, Ala. 35223

Filed July 30, 1973, Ser. No. 383,978

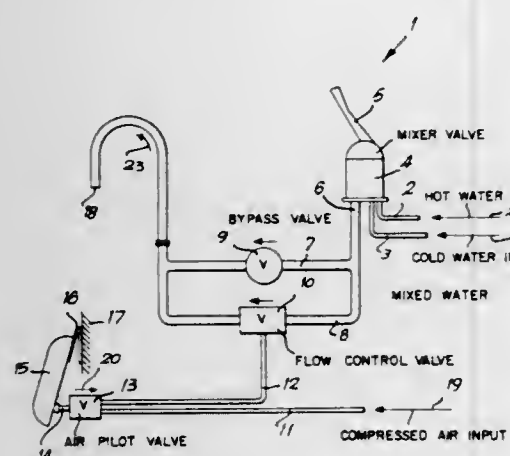
Int. Cl.² A61C 19/02

U.S. Cl. 32—22

7 Claims

1. A dental spigot device comprising in combination: a water conduit means including at least one water-receiving

conduit and in series therewith a flow control valve and a water outlet, fluid control means for controllably preventing outflow of water from said outlet, and fluid switch means for turning off and on fluid to said fluid control means, said fluid control means being responsive to fluid turned off and on by said fluid switch means, said fluid switch means including respective conduits receivable of pressurized fluid and opera-



tively connecting the fluid switch thereof to the fluid control means, and said fluid switch means further including manual actuation lever therefor, and in series between the water-receiving conduit and the flow control means, there being a mixer valve means receivable of conduits for each of hot and cold water delivery separately thereto, with a unitary outlet to the flow control means.

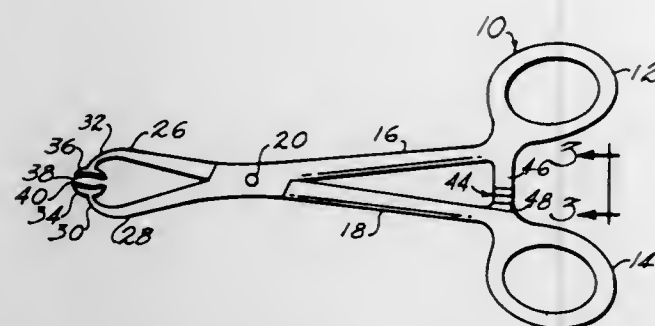
3,898,738

DENTAL INSTRUMENT

John E. Linder, 5039 Winding Branch Dr., Atlanta, Ga. 30338
Filed Dec. 10, 1973, Ser. No. 423,511
Int. Cl. A61c 11/02

U.S. Cl. 32-41

7 Claims



1. In a dental instrument for grasping a dental crown and the like which has a shape and surface similar to a tooth:
a. a scissors comprising a pair of movable members each having a tip opposed to and spaced from the other,
b. manually operated scissors handles on the respective members on said instrument for moving the tips of said members towards or away from each other selectively to grasp or release a crown and the like therebetween,
c. and a small cushioned and contoured pad affixed to each tip in opposed relationship on said tips, said pads being shaped to fit the opposite exterior of a crown and the like, whereby a dental crown and the like may be grasped by pressure on said handles from the hands causing said movable members to close said pads on said crown and the like and be held in place during fitting and cementing.

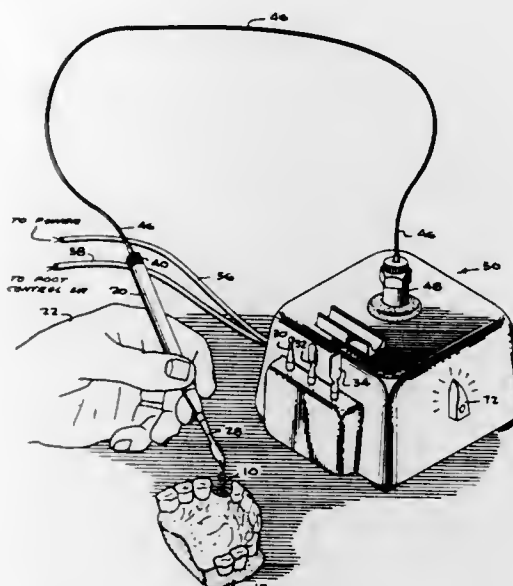
3,898,739

VIBRATING DENTAL PACKER

Donald W. Gayso, 1092 Perkins Ter., Memphis, Tenn. 38117
Filed Feb. 16, 1973, Ser. No. 332,817
Int. Cl. A61c 3/08

U.S. Cl. 32-53

9 Claims



1. Hand operated apparatus for enabling the application of damp or dry powdery material into a working area and for subsequently enabling uniform compacting of the powdery material in the working area, said apparatus comprising a main vibration power source comprising an electric vibrator having a physically movable output member providing mechanical vibrations, a rigid pencil-shaped hand piece having first and second ends, accessory tip mounting means connected to said first end of said hand piece for fixedly connecting an accessory tip to said hand piece and a flexible wire-like mechanical vibration conveying means extending between said second end of said hand piece and said physically movable output member for continuously conducting a sufficient quantum of vibrations from said main vibration power source to said hand piece and an accessory tip mounted thereon to enable the compacting of said powdery material by said accessory tip.

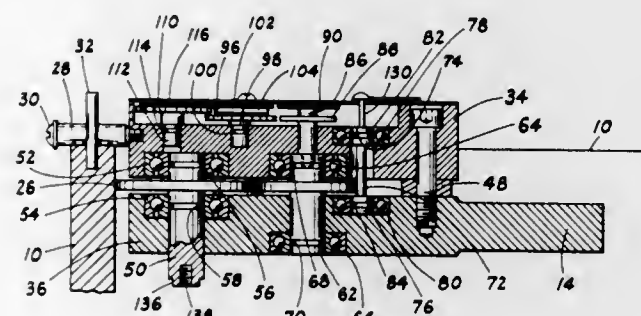
3,898,740

APPARATUS FOR DETERMINING THE DIAMETERS OF ROUND OBJECTS

Albert L. Mefford, 1120 E. Jones, Sapulpa, Okla. 74066
Filed Jan. 19, 1973, Ser. No. 325,212
Int. Cl. G01b 3/12, 5/08

U.S. Cl. 33-142

1 Claim



1. Apparatus for measuring the diameter of a circular object comprising a measuring device adapted to bear against and move along the surface whose diameter is to be measured, a measuring roller mounted on a first shaft for rotation in said measuring device and having a diameter exactly equal to a multiple or sub-multiple of the standard of measurement in which the diameter is to be expressed, said measuring wheel being adapted to move circumferentially exactly the same amount as the movement of said measuring device over the

full circumference of the surface whose diameter is to be measured, means for translating the number of revolutions of said measuring roller into the exact diametral measurement of said object, a second shaft mounted for rotation in said measuring device, a contacting roller mounted on said second shaft and having an outer periphery adapted to contact said surface and contacting the outer periphery of said measuring roller whereby said contacting roller is in driving relationship with respect to said measuring roller, a third shaft mounted for rotation in said measuring device, a second measuring roller keyed to said third shaft and having its outer periphery engaging the outer periphery of the first mentioned roller whereby said first measuring roller is in driving relation with respect to said second measuring roller, the diameter of said second measuring roller being an exact sub-multiple of the diameter of said first measuring roller, wherein the shaft of said first measuring roller and the shaft of said contacting roller are mounted respectively in bearings in said measuring device where the center-to-center distance between these respective bearings is slightly less than the combined radial measurements of said contacting roller and said first measuring roller and wherein the shaft of said second measuring roller is mounted for rotation in a bearing in said measuring device, the center-to-center distances between the bearings for the shafts of said first and second measuring rollers being slightly less than the combined radial measurements of said first and second measuring rollers, all of said shafts being resiliently mounted in their respective bearings, whereby positive contact is assured in said driving relationships.

3,898,741

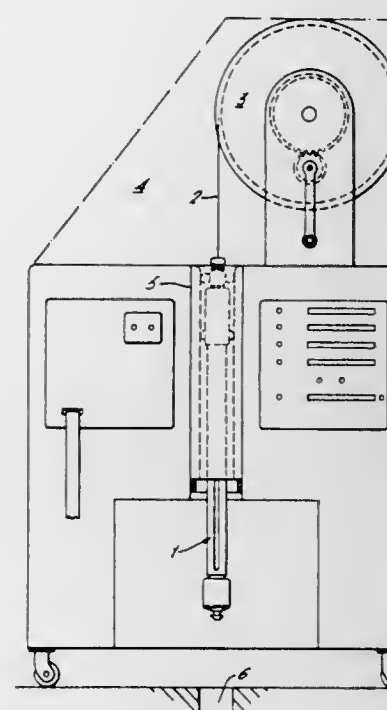
MEASURING APPARATUS

Wilfred Casey, Preston, England, assignor to British Nuclear Fuels Limited, Lancashire, England
Filed Apr. 8, 1974, Ser. No. 459,228
Claims priority, application United Kingdom, May 21, 1973, 24214/73

Int. Cl. G01B 5/12

U.S. Cl. 33-178 F

11 Claims



1. Measuring apparatus for making measurements within a downwardly extending channel, the apparatus comprising an elongated probe, a probe support means for suspending the probe within the channel at successive stepwise points therealong, an electrical conductor associated with the probe support means, a measurement indicator connected to the conductor exteriorly of the channel, the probe including an anchorage means for the probe support means, a track which extends parallel and stationary relative to the longitudinal axis of the probe, a carriage captive on the track and movable

therealong, a measuring transducer mounted on said carriage and having an electrical output connected electrically to the conductor and means for moving the carriage along the track to take measurements while the probe is stationary.

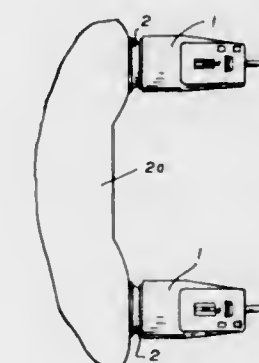
3,898,742

HEADLIGHT TESTING APPARATUS

Wayne E. Hunnicutt, Rt. 1, Box 445, Big Bend, Wis. 53103
Continuation of Ser. No. 171,873, Aug. 16, 1971, abandoned.
This application Feb. 19, 1974, Ser. No. 443,868
Int. Cl. G01c 15/12

U.S. Cl. 33-288

14 Claims



1. An apparatus for testing the adjustment of a headlamp of a vehicle resting on a support surface comprising a housing including securement means adapted to secure the housing to the lens of a headlamp of a vehicle with the longitudinal axis of the housing coinciding to the longitudinal axis of the headlamp, a spirit level mounted on the housing with its longitudinal axis parallel to the longitudinal axis of the housing in a horizontal plane, adjustment means coupled to the spirit level for shifting the longitudinal axis of the spirit level relative to the housing to a horizontal orientation while the housing is positioned on the support surface with its longitudinal axis parallel to the longitudinal axis of the vehicle, said spirit level being shifted by the adjustment means indicating the degree of vertical adjustment of the headlamp upon the housing being secured to the headlamp, said vertical orientating means including a sight means having an optical path oriented longitudinally of the housing for indicating the relative alignment of the longitudinal axis of the housing to the slope of the ground prior to attachment to the headlamp, said sight means including an opening positioned on an end of the housing and a second opening positioned on the top of the housing, the housing further includes lateral sight means to indicate the horizontal alignment of the headlamp, and the lateral sight means having an optical path including a view opening to provide an image external of the housing and further including a second opening positioned on said housing in confrontation to an external target, and said lateral sight means including a sight member and a sight element coupled to the housing and lying in spaced relationship along said optical path.

3,898,743

PIPE TARGET ASSEMBLY

Rudolph S. Myeress, Richmond Heights, Ohio, assignor to Allied Steel & Tractor Products, Incorporated, Cleveland, Ohio

Filed Nov. 1, 1973, Ser. No. 412,006

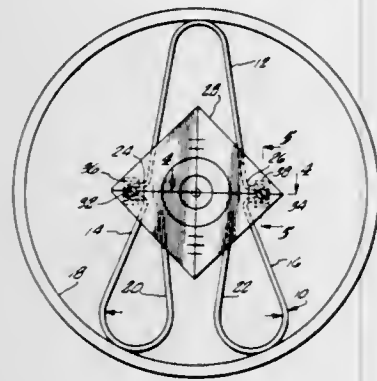
Int. Cl. G01c 15/06

U.S. Cl. 33-293

11 Claims

1. A target assembly for defining a point on the centerline of a pipe, comprising:

a resilient frame formed from a wire defining three points of contact for engaging the inner wall of a pipe said three points lying in a plane which is generally perpendicular to the axis of the pipe, said resilient frame being capable of deflecting symmetrically when subject to symmetrical compression loading;



a target; and
means for mounting said target centrally on said resilient frame, said means allowing symmetrical deflection of said frame when said frame is subjected to symmetrical compression loading.

3,898,744

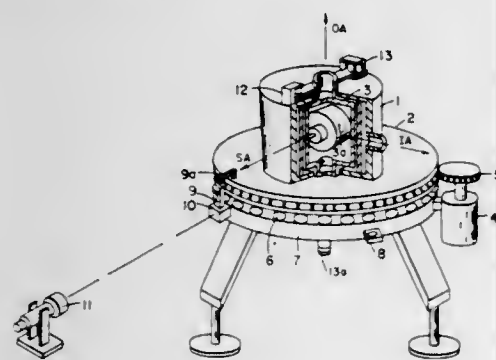
CONSTANT PRECESSED GYROCOMPASS

James V. Johnston, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 303,896, Nov. 6, 1972; abandoned, which is a continuation-in-part of Ser. No. 855,468, Sept. 3, 1960, abandoned. This application Feb. 12, 1974, Ser. No. 441,928
Int. Cl.² G01C 19/36

U.S. Cl. 33—324

3 Claims



1. A constant precessed gyrocompass including: a level platform about a first axis; an integrating gyro mounted on said platform and including an outer housing fixed to said platform and an inner cylinder carrying the rotor of said gyro, said inner cylinder, rotatable with respect to said outer housing parallel to the plane of said platform, said gyro having an input axis, and an output axis, and a spin axis of said rotor, with said spin axis and said input axis in a plane parallel to said platform, and said output axis coincident with said first axis; means for providing output pulses when said gyro inner cylinder exerts a torque about its output axis, with the polarity of said pulses dependent on the direction of said torque; means for rotating said inner cylinder of said gyro with respect to said outer housing in response to said output pulses, whereby said inner cylinder of said gyro tends to maintain a predetermined angular relationship with said outer housing and said platform as the platform rotates; adjustable means for providing a position pulse for each revolution of said platform; means connected both to said means for providing output pulses and to said adjustable means, for providing an indication of the angular displacement of said adjustment means from the

north-south plane with respect to said first axis when it provides its position pulse.

3,898,745

DRYING APPARATUS FOR CONCENTRATING SOLUTIONS

Eric Harald Carlsson, Angelholm, Sweden, assignor to Eric Harald Carlsson, Angelholm, Sweden

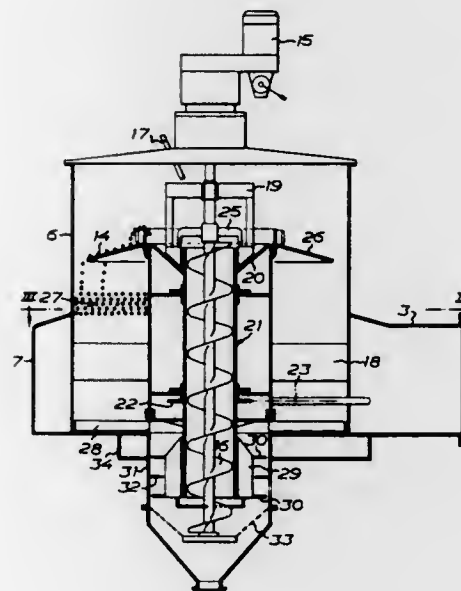
Filed Aug. 27, 1973, Ser. No. 391,095

Claims priority, application Sweden, Sept. 1, 1972, 11312/72

Int. Cl. F26b 3/00, 3/36

U.S. Cl. 34—9

9 Claims



1. Apparatus for contacting a first substance, such as a liquid, semi-solid or solid material, with a second substance, such as drying gas, said apparatus comprising a container with a bed of a large number of spherical contact bodies adapted to be circulated through the container in a path which, in the order mentioned, comprises a material application zone in which the first substance is applied to the contact bodies, a main treatment zone located in the upper part of the bed, a peripheral point of introduction for the second substance, a final treatment zone located in the lower part of the bed, and a separation zone located beneath the bed for separating ready-processed material from the contact bodies, said separation zone including a perforated bottom allowing ready-processed material to pass, but retaining the contact bodies for returning them to the material application zone by means of a centrally disposed screw conveyor which includes a surrounding sleeve and extends down towards the perforated bottom, wherein the sleeve surrounding the screw of the screw conveyor is rotatable relative thereto, the material application zone having material application means rotatably disposed at the upper end of the screw conveyor and including spreading means mounted for rotation with the rotatable sleeve of the screw conveyor for spreading said contact bodies in a uniform layer on said bed; said screw conveyor being provided at its lower end with separation means comprising rotatable infeed arms secured to the rotatable sleeve of the screw conveyor for rotation therewith for feeding contact bodies from the lowermost part of said bed to a gap inside and underneath the infeed arms, said gap being formed by an inner separation rotor connected with the shaft of said screw conveyor for rotation therewith, and an outer stationary separation stator concentric with said inner separation rotor, said perforated bottom being disposed underneath said gap.

3,898,746

DRIVER TRAINER SYSTEM

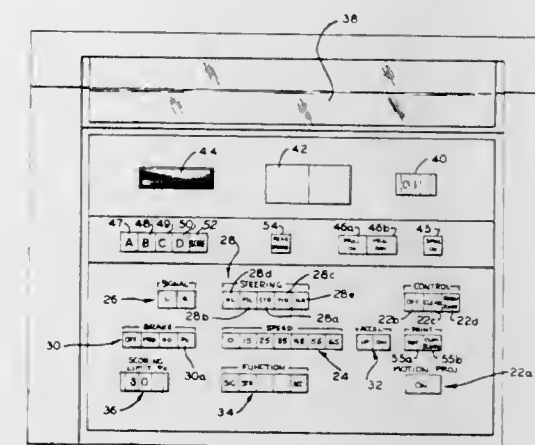
Norman R. Seidle, Vestal, N.Y., assignor to The Singer Company, Binghamton, N.Y.

Filed Feb. 6, 1973, Ser. No. 330,001

Int. Cl. G09b 9/02

U.S. Cl. 35—11

9 Claims



6. In a system for training vehicle operators wherein actual performances of vehicular functions by students on simulated controls are monitored and compared with desired performances of said vehicular functions to determine the correctness of said actual performances, the improvement comprising the combination of: percentile selection means providing a range of percentile numbers from which a selected percentile number may be chosen; vehicular function of selection means providing a plurality of vehicular functions from which a selected function may be chosen;

means for calculating the percentage of correct performances of a selected vehicular function for each of said students;

means for comparing each student's percentage of correct performances with a selected percentile number; and means responsive to said comparing means for providing an indication of those students whose percentage of correct performances of said selected function is less than said selected percentile number.

3,898,747

LASER SYSTEM FOR WEAPON FIRE SIMULATION

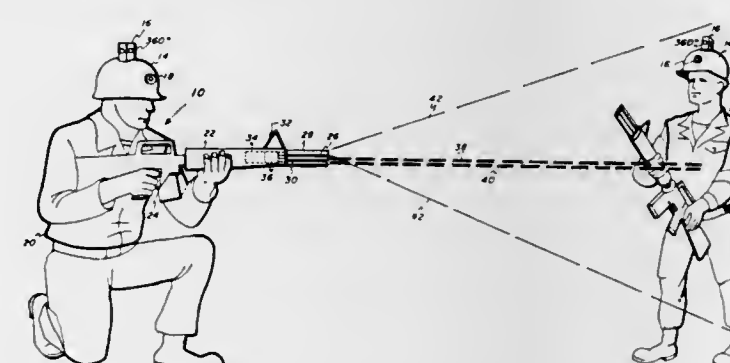
Albert H. Marshall, Maitland, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 24, 1974, Ser. No. 482,544

Int. Cl. F41g 3/26

U.S. Cl. 35—25

9 Claims



1. A weapon fire kill simulator system comprising:

- a laser transmitter means for producing a narrow fire beam and a wide angle kill beam,
- laser power source means and hit detector-actuator means,
- a weapon having a trigger switch and means for mounting all said above mentioned means integral with said weapon and in position to direct said laser means and said hit

detector-actuator means in the direction in which said weapon is aimed,

d. a man target carrying equipment including apparel or patches of retroreflective material, a 360° kill beam detector-actuator means and an alarm system actuated from said kill detector-actuator means upon energization of the latter,

e. said laser means being connected for producing said fire beam when said trigger switch is closed to direct said fire beam to said target and a retroreflected fire beam from said apparel to said hit detector-actuator means,

f. said hit detector-actuator means being connected to actuate said laser means to produce said wide angle kill beam to actuate said kill detector-actuator and hence said alarm system.

3,898,748

TEACHING OR LIKE DEVICES

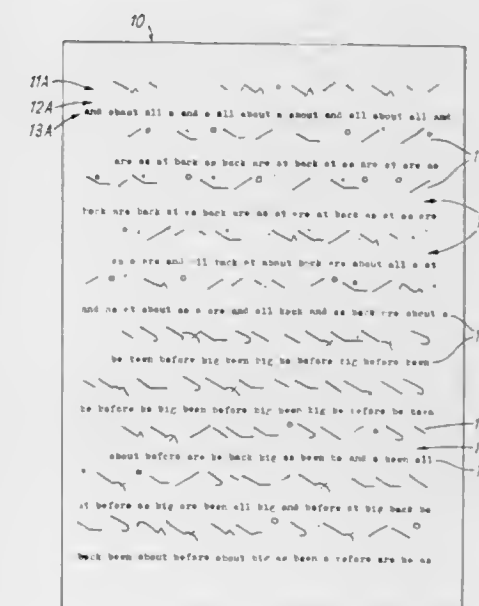
Robert George Flanders, 76 Tarnwood Pk. Court Rd., Eltham, London SE9, England

Filed Jan. 9, 1974, Ser. No. 431,697

Int. Cl. G09b 3/04

U.S. Cl. 35—48 A

1 Claim



1. A method of practicing typing and shorthand, comprising the steps of:

- providing a sheet which has vertically spaced lines of shorthand characters, a blank space disposed below each of said lines and being substantially coextensive therewith, and a typed transcription of said lines of shorthand characters disposed below each of said blank spaces;
- positioning said sheet in a typewriter such that a student can type in each blank space an attempted transcription of the line of shorthand characters disposed immediately above the blank space, while the transcription disposed immediately below the blank space is hidden by the typewriter; and
- exposing the hidden transcription in the typewriter; whereby an immediate check on the accuracy of the student's transcription and typing is provided.

3,898,749

REMOVABLE SOLE FOR SHOE SKATE

Joseph P. Famolare, Jr., Florence, Italy, assignor to Famolare, Inc., New York, N.Y.

Filed Dec. 16, 1974, Ser. No. 532,929

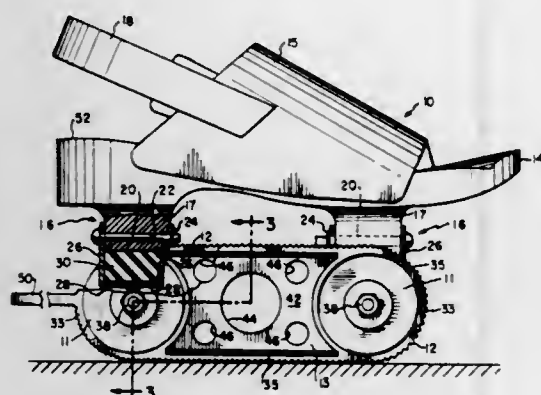
Int. Cl.² A43B 00/00; A63C 3/00

U.S. Cl. 36—2.5 R

11 Claims

1. A removable walking sole construction for roller skates having at least one pair of tandem skate wheels, said sole construction comprising

- a. a first and second wear surface means for covering at least the bottom portions of each of said skate wheels;
b. clamping means for securely engaging each of said tandem skate wheels; and



- c. substantially rigid stabilizing means interconnecting said clamping means and for cooperating therewith to prevent the rotation of said wheels.

3,898,750

UNIVERSAL SIZE DISPOSABLE SHOE COVER

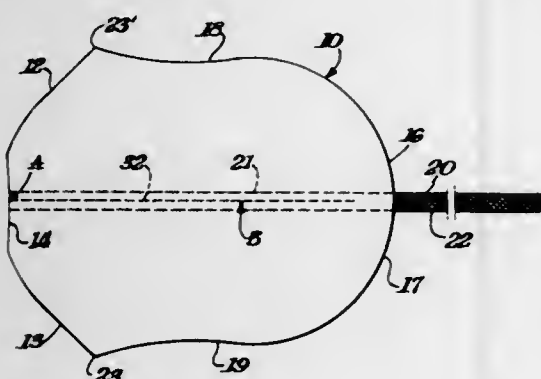
Louis S. Epstein, 6603 Governor Printz Blvd., Wilmington, Del. 19809

Filed Mar. 7, 1973, Ser. No. 338,916

Int. Cl. A43b 3/16, 23/00

U.S. Cl. 36-49

9 Claims



1. A blank for conversion to a shoe covering which blank comprises a top section, a bottom section and two side sections, the top section comprising two portions in its foremost part which portions are joined by a substantially straight portion, each of said two portions being angularly flared to its respective side section, the bottom section comprising two portions each being rounded toward its respective side section, the terminal of each rounded bottom portion being joined to the terminal of its respective angularly flared top portion through a curve comprising one of said respective side sections which curve extends away from the center of the blank.

3,898,751

ATHLETIC SHOE CLEAT

Paul R. Gustin, 1766 Langport Ave., Baltimore, Md. 21222

Filed Mar. 26, 1974, Ser. No. 455,028

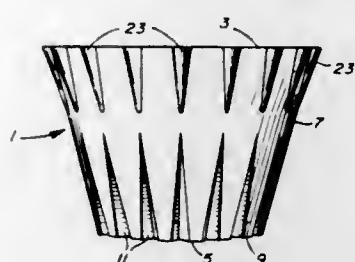
Int. Cl. A43c 15/00

U.S. Cl. 36-67 D

8 Claims

1. A cleat for a football shoe or the like comprising:
a. a base;
b. a tip;
c. a frustoconical body portion converging downwardly from said base to said tip, said body portion and said tip intersecting to form an edge;
d. a plurality of longitudinal grooves in said body portion, said grooves extending into said tip;

- e. the intersection of the sides of said grooves with said body portion and said edge forming angular gripping corners on said body portion and said tip; and



- f. a plurality of upstanding longitudinal gripping members on said body adjacent said base portion.

3,898,752

TREE STUMP PULLING MACHINE

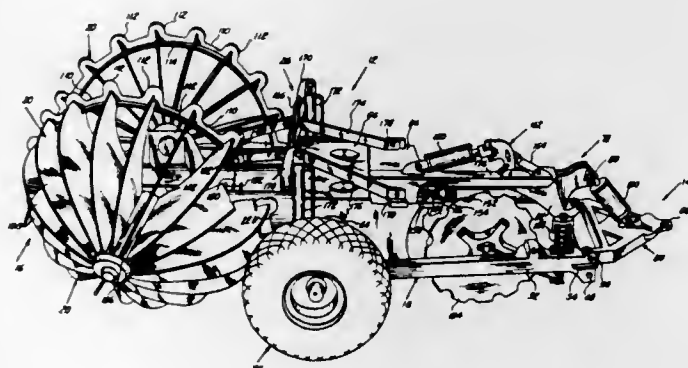
Gene A. Ulve, Lake Mills, Iowa, assignor to Tree-Mate Corporation, Lake Mills, Iowa

Filed May 1, 1973, Ser. No. 356,100

Int. Cl. A01g 23/06

U.S. Cl. 37-2 R

14 Claims



1. In a tree stump pulling machine having a towable frame and rearwardly disposed operatively associated confronting digging wheels to engage a stump and roll it out of the ground, said frame comprising:

parallel spaced side rails having forward and rear ends, respective cross members secured to and connecting said rails at said forward and rear ends,

a rigid plate extending between and secured to the rear end portions of said rails,

said plate being provided with a pair of spaced openings, an upstanding rigid plate on each rail adjacent the rear end thereof,

an upstanding rigid support on the cross member at the forward ends of said rails,

a frame superstructure comprising:

a platform extending between and secured to the upper ends of said plates at the rear end portion of said rails, an elevated horizontal beam disposed on substantially the center line between said rails and extending between and secured to said platform and said upstanding support, and

said platform being provided with a pair of spaced openings to register respectively with said openings in said plate.

4. A machine for pulling tree stumps out of the ground comprising:

a towable frame having a front end and a rear end, a pair of elongated spaced parallel collars each pivotally mounted intermediate their respective opposite ends to the rear of said frame for movement away from and to parallel positions,

a pair of elongated spaced generally parallel tubes having forward and rear ends,

means for slidably jouralling the respective forward ends of said tubes in said respective collars for forward and rearward movement therein,

stop means on said collars operatively associated with said tubes to limit the forward and rearward movement of said tubes relative to said collars,

respective opposed axles on said tubes at the rear thereof each extending laterally outwardly and downwardly,

a digging wheel rotatably mounted on each axle whereby said wheels are in a confronting V shape so that their narrowest separation is towards ground level with said wheels adapted to be embraceably introduced to a tree stump so as to engage the same and roll it out of the ground as said frame is towed by a prime mover,

a laterally expandable and retractable coupling connected to and between said tubes intermediate the points of attachment of said axles thereto, and

means operable between said frame and said coupling to effect the expansion and retraction thereof whereby in expansion the forward ends of said tubes are in forward slidable position and said coupling is at its widest point of expansion to effect the widest point of separation between said tubes and said digging wheels and in retraction said tubes are moved towards their rearward slidable position with said coupling narrowing and acting to move the rear ends of said tubes and digging wheels towards each other.

3,898,753

SNOW PLOW APPARATUS

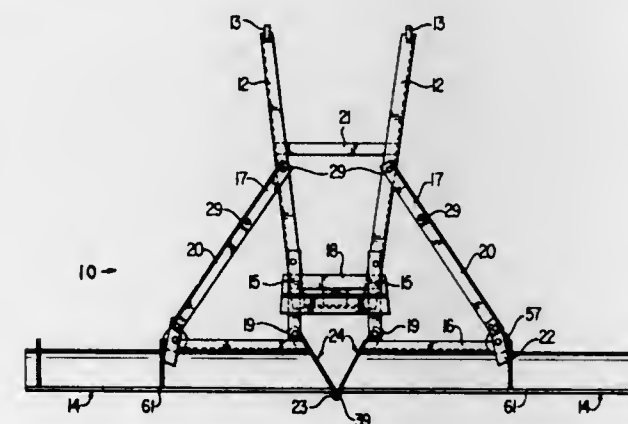
Roy W. Kinnunen, 2118 E. Front St., Ashland, Wis. 54806

Filed Aug. 3, 1973, Ser. No. 385,477

Int. Cl. E01h 5/04

U.S. Cl. 37-46

4 Claims



1. A snow plow having an adjustable blade which may be positioned in either a flat, fully opened position or a retracted V-position for use with a lifting device mounted on the front end of a motor vehicle, comprising:

- a. a plow blade formed of two curved blade segments, the front portion of the inner end of each segment being provided with a plurality of outwardly disposed spaced annular flanges which mesh with corresponding outwardly disposed spaced annular flanges in the inner end portion of the other segment, the two blade segments being joined by a pin having a diameter slightly less than the inner diameter of the cylinder formed by the meshed annular flanges of the two blade segments, so that insertion of the pin into said cylinder results in the blade segments being interlocked in a hinged joint, the inner ends of the blade segments being angularly disposed with respect to each other from the hinged joint when the blade segments are in the flat position to form an opening of a size which is sufficient to allow the blade segments to be adjusted between the flat position and the V-position;
b. a blade housing secured to the rear surface of each blade segment;

c. a support frame including a pair of horizontal push bars, each push bar having a lug arrangement for mounting on

the vehicle and with the push bar being pivotally connected to a respective horizontal bracket pivotally mounted on a brace which is secured to the inner end of one of the blade segments and the adjacent housing; and
d. means attached to the blade housing for varying the angle between blade segments;

the braces connected to the inner ends of the blade segments extending from the blade segments a distance sufficient to allow the brackets to pivot freely on the inner ends of the braces so that the brackets are substantially perpendicular to the blade segments when the plow is in the flat, fully opened position, while the brackets have their brace-connected ends displaced inwardly to lie directly behind the engaged inner ends of the blade segments when the plow is in the V-position.

3,898,754

CLOTHING DATA SYSTEM

Gert Arne Johansson, Lerum, Sweden, assignor to AB Modern Modell, Lerum, Sweden

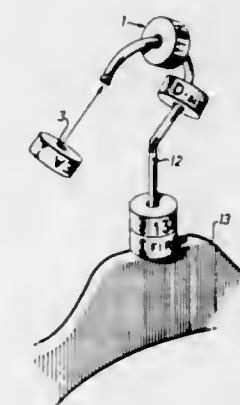
Filed Aug. 16, 1973, Ser. No. 389,071

Claims priority, application Sweden, Sept. 29, 1972, 10367/72

Int. Cl. G09F 3/00

U.S. Cl. 40-322

22 Claims



1. A device adapted to fit onto the hook of a clothes-hanger in order to convey information concerning a garment hung from the clothes-hanger, said device comprising:

- a. an inner wall
i. defining a central traversing hole which is adapted to receive a clothes-hanger hook which is smaller in cross-section than the central traversing hole,
ii. being made of a resilient material, and
iii. having a radial slot therein which extends over the entire longitudinal extent of said inner wall and is of width less than the width of the clothes-hanger hook;
b. a radial wall
i. extending radially from one end of said inner wall,
ii. being made of a resilient material,
iii. being circular in shape, and
iv. having a radial slot herein which communicates with the radial slot in said inner wall and is of width less than the width of the clothes-hanger hook; and
c. an outer wall
i. depending from said radial wall on the same side thereof as said inner wall,
ii. bearing information on the external periphery thereof,
iii. being made of a resilient material,
iv. being circular in longitudinal cross-section, and
v. having a radial slot therein which communicates with the radial slot in said radial wall;
d. said inner, radial, and outer walls together defining an empty, annular volume which
i. is continuous around at least the major portion of the longitudinal cross-section of the device,
ii. is much thicker in the radial direction than said inner and outer walls, and

iii. is open to the exterior of the device on the side thereof opposite to said radial wall, whereby a clothes-hanger hook having a larger cross-section than the width of the slots in said radial and inner walls may be pressed through the slots and into the central traversing hole, where it will be releasably held.

3,898,755

DUCK RETRIEVING DEVICE

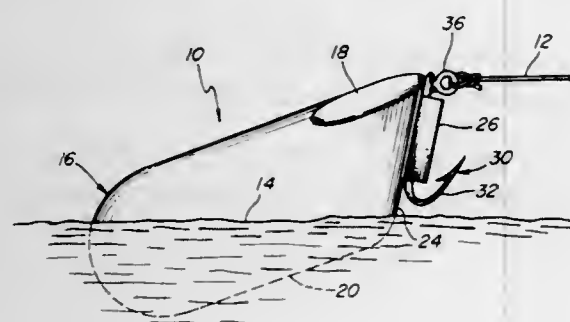
George C. Halvorson, 7528 Girard Ave. South, Richfield, Minn. 55423

Filed Nov. 13, 1972, Ser. No. 305,717

Int. Cl. A01m

U.S. Cl. 43-1

15 Claims



1. A duck retriever comprising an elongated buoyant body for attachment to a fish line having an upwardly sloping face at its forward end, hook means located at the forward end of said body having at least one hook end projecting forwardly from said forward end, said hook means having a relatively straight shank and said one hook end being integral with one end of said shank, means holding said shank in juxtaposition with said face so that said shank extends along said sloping face, said hook end projecting forwardly from said sloping face, and weight means located adjacent the rear of said body.

3,898,756

FISHING ROD HOLDER

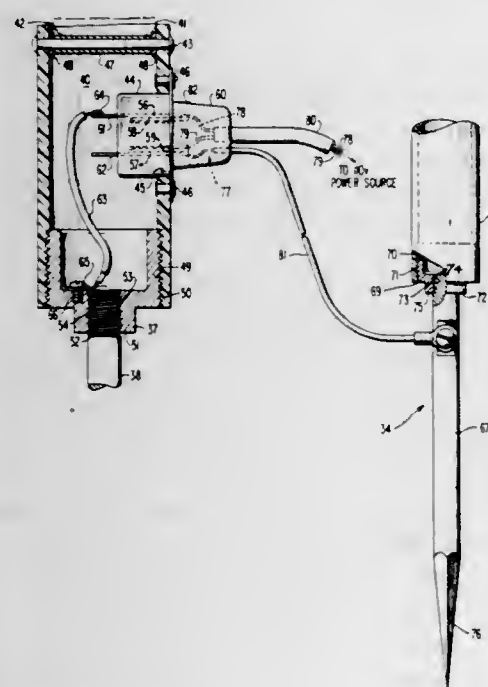
Denver V. Tolle, 954 E. Locust St., Canton, Ill. 61520

Filed Sept. 5, 1974, Ser. No. 503,457

Int. Cl.² A01K 97/10; A01G 7/04

U.S. Cl. 43-21.2

16 Claims



1. A fishing rod holder comprising an elongated non-electrically conductive tubular member open at one end and internally threaded on the other end and having an internal diameter of a size to receive the handle of a fishing rod,

the tubular member being constructed of a material which is non-chafing and sufficiently pliable to prevent damage to the handle of the fishing rod when inserted therein, an externally threaded bushing in tightly threaded engagement with the internal threads on the end of the tubular member, an elongated electrically conductive insertion member for inserting into soil and thereby anchoring the fishing rod holder in a desired location, the bushing having a longitudinally extending internally threaded bore therein, the insertion member being externally threaded on one end and the external threads thereof being in tightly threaded engagement with the internal threads in the bore of the bushing, the said threads of the tubular member, the bushing and the insertion member being tapered pipe-type threads whereby the resultant threaded connections are rigid and vibration resistant, the end of the insertion member remote from the said end having the threads terminating in a sharp point which facilitates inserting the same into soil, an inserter-stabilizer member rigidly mounted on the insertion member and extending outward therefrom at a location intermediate the said threads and point, the inserter-stabilizer forming approximately a 90° angle with the insertion member and being sufficiently removed from the point to allow the insertion member to be inserted into soil to a depth sufficient to anchor the fishing rod holder, and means carried by the electrically conductive insertion member for electrically connecting the same to a source of electricity.

3,898,757

SPINNING LURE

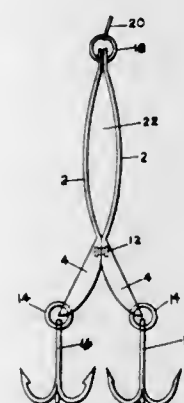
Donald Gentert, 2419 W. Fifth St., Hastings, Nebr. 68901

Filed Jan. 25, 1974, Ser. No. 436,618

Int. Cl.² A01K 85/00

U.S. Cl. 43-42.06

1 Claim



1. A fishing lure having a longitudinal center plane and comprising a pair of teaspoon-shaped objects on opposite sides of the center plane and having relatively shallow bowls and having handles each extending from one end of the bowls and curved outwardly from the center plane to provide an open space between the intermediate parts of the handles, the bowls being attached to the handles at points of attachment and being sloped outwardly from said points of attachment with respect to such center plane, means securing the bowls together at the ends adjacent the handles, back to back, the bowls having means adjacent their tips to carry hooks and the handles having means adjacent their ends remote from the bowls to receive a line.

3,898,758

FISHING LURE

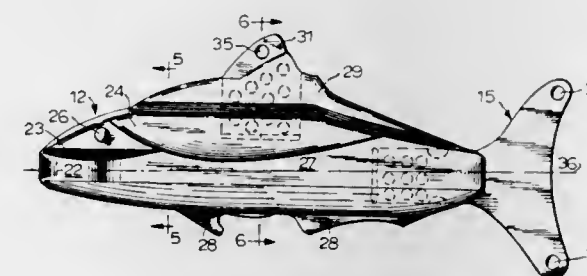
Douglas Swanningson, 2611 75th St., Kenosha, Wis. 53140

Filed Apr. 17, 1974, Ser. No. 461,775

Int. Cl. A01k 85/00

U.S. Cl. 43-42.48

6 Claims



1. A lure for fish wherein the lure cooperates with other similar lures to resemble a school of fish when moved through water in the company of other lures, comprising:

- a generally oblong body portion which resembles that of a fish wherein said body portion is composed substantially of a dense material heavier than water and wherein said body portion is tapered toward fore and aft ends;
- a dorsal fin portion projecting above said body portion between said fore and aft ends, said dorsal fin portion having a connection point therein positioned at the longitudinal center of gravity of said lure, wherein said connection point provides a location at which towing force is applied;
- a pair of elongated depressions on each side of said body portion extending therealong beneath the dorsal fin to create a high pressure area for holding the lure down as the lure is towed; and
- a tail portion of resilient material extending from said aft end of said body portion and diverging away from said body portion, said tail portion cooperating with said body portion to align said body portion axially with the direction of movement of said lure by shifting the center of pressure aft of the connection point at which the towing force is applied.

3,898,759

TROLLING PLANAR RESETTABLE BELOW THE SURFACE OF THE WATER

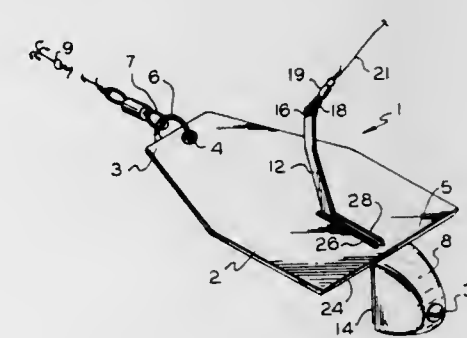
Philip W. Jensen, Hood River, Oreg., assignor to Luhr Jensen & Sons, Inc., Hood River, Oreg.

Continuation-in-part of Ser. No. 327,731, Jan. 29, 1973, abandoned. This application May 29, 1973, Ser. No. 364,357

Int. Cl. A01k 95/00

U.S. Cl. 43-43.13

9 Claims



1. A trolling planer resettable below the surface of the water comprising:

- a planar plate-like planing member having a forward end and a rearward end, said member being adapted alternatively to assume a first, diving position wherein said forward end is below said rearward end and a second surfacing position when said member is parallel to an attached fishing line;

lure attaching means mounted on said rearward end of said planing member;

a tripping lever hingedly attached to said planing member at a point intermediate said ends for rotation with respect to said member when said member moves between said first and second positions;

said tripping lever including an arm to which the line is attached, and a stop plate for limiting the rearward travel of said arm when moving from said second position to said first position;

said tripping lever extending through a slot in said planing member, said arm extending above the planing member, said stop plate extending below the planing member;

attaching means for connecting said lever to a fishing line;

ballast means attached to said planing member forwardly of said tripping lever whereby when tension on said lever from said fishing line is relieved said ballast causes said planing member to rotate about said point to position the forward end of said member below the level of said rearward end thereby resetting said planing member from said second position to said first position,

said ballast means being attached to the under side of said planing member and including a ballast receptacle having ballast material enclosed therein, said receptacle being positioned to engage said stop plate to limit the rearward movement of said arm.

3,898,760

HOOK CONNECTOR

Gerald B. Klein, 13451 Stuart Ct., Broomfield, Colo. 80020

Continuation-in-part of Ser. No. 128,015, March 25, 1971, Pat. No. 3,717,907, and a continuation-in-part of Ser. No. 274,307, July 24, 1972. This application Feb. 23, 1973, Ser. No. 335,081

The portion of the term of this patent subsequent to Feb. 27, 1990, has been disclaimed.

Int. Cl. A01k 91/04

U.S. Cl. 43-44.83

4 Claims



1. A hook connector for attaching a snell onto the shank of the hook, comprising:

- a body of a resilient synthetic resin material having a passageway therethrough which is sized to receive the snell; and an enlarged snell-knot socket at the end of the passageway within the body, whereinto the end of a snell extends from the passageway and is knotted to secure the same in place with the snell knot tightly fitting into the snell-knot socket;
- a socket extending into the connector which is proportioned to receive the hook shank, the bottom of said hook shank socket forming said snell-knot socket, said connector further including a side opening in the body near the bottom of said hook shank socket, said hook shank extending into its socket to a position adjacent said side opening with the end of said hook shank being angled toward said side opening to facilitate guiding a snell from the side opening which is threaded into the passageway from the end of the connector.

3,898,761

INTERLOCKING CONSTRUCTION ELEMENTS

Rami Zohar, Bat-Yam, Israel, assignor to Rami Art, Corporation, Great Neck, N.Y.

Filed Nov. 15, 1973, Ser. No. 416,071

Int. Cl.² A46H 33/08

U.S. Cl. 46—25

4 Claims



1. Interlocking construction apparatus including at least four elongated unitary building elements arranged on support means to form a self supporting structure in which each of said building elements includes first and second longitudinal opposed serpentine sides and two longitudinal opposed substantially planar sides extending between said first and second serpentine sides, each of said serpentine sides including a plurality of substantially planar mutually parallel support surfaces and a plurality of s shaped curved surfaces extending between adjacent ones of said support surfaces and in which the first of said support surfaces of said first serpentine side of each of four of said elements rests on said support means and one of said support surfaces on said second serpentine side of a first of said elements supports one of said support surfaces on said first serpentine side of a second of said elements, one of said support surfaces on the second serpentine side of said second element supports one of the support surfaces on the first serpentine side of a third of said elements, one of said support surfaces on the second serpentine side of said third element supports one of the support surfaces on the first serpentine side of a fourth of said elements and one of the support surfaces on the second serpentine side of said fourth element supports one of the support surfaces on the first serpentine side of said first element.

3,898,762

TOY SPINNING TOP

Peter Balleis, Hermann-Loens-Str. 55, O-8502 Zirndorf, Germany

Filed Nov. 16, 1973, Ser. No. 416,670

Claims priority, application Germany, Nov. 22, 1972, 2257195

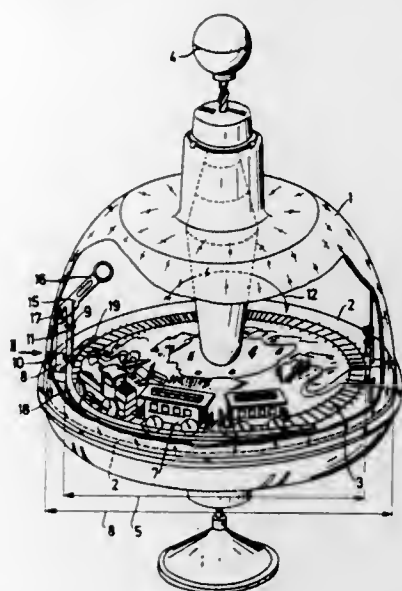
Int. Cl.² A63H 7/02, 7/00

U.S. Cl. 46—67

9 Claims

1. A toy spinning top comprising a transparent dome, a first disc and a second transparent disc of smaller diameter than the first disc covered by said dome, said first and second disc each having a respective marginal region, drive means to rotate said dome and said second disc about an axis and relative to said first disc, a vertically deflectable member mounted of the marginal region of said first disc and projecting into the

marginal region of the second disc, cam means supported on said second disc, said cam means having a cam surface positioned to deflect the deflectable member on rotation of the second disc relative to the first disc.



3,898,763

MODEL AIRCRAFT

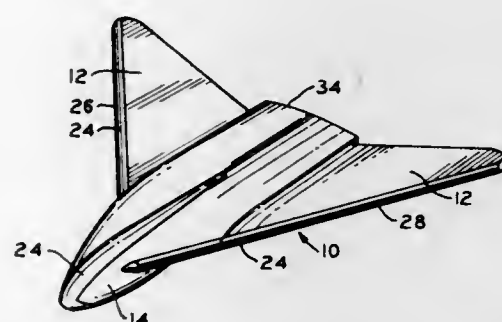
Earl Rizzo, Lakewood, Ohio, assignor to Cosmo, Inc., Cleveland, Ohio

Filed July 24, 1974, Ser. No. 491,316

Int. Cl. A63h 27/00

U.S. Cl. 46—79

11 Claims



1. A one piece high performance type soaring model aircraft comprising a delta wing air foil, a nose pod, and a rudder secured to the rear center portion of the underside of the wing; said wing, nose pod and rudder being formed from a unitary piece of light weight plastic material, and a dowel embedded in the nose pod extending from the front surface of the nose pod rearwardly along the longitudinal axis of the aircraft, wherein impact between the nose and a foreign object is absorbed by said dowel.

3,898,764

COMBINATION DOLL AND MARIONETTE

Richard F. Palmer, 9127 Stevenson Dr., Chicago, Ill. 60016

Filed Feb. 13, 1974, Ser. No. 430,599

Int. Cl.² A63H 7/00

U.S. Cl. 46—126

4 Claims

1. A combination stuffed security type doll and marionette including a pair of shoulder areas, a pair of arms extending outwardly from the shoulder areas and terminating in hand portions, a torso depending downwardly from the shoulder area and a pair of legs depending downwardly from the torso region and terminating in a pair of feet, the doll comprising: A head portion adapted to fit on the doll in position disposed immediately above said shoulder portions;

Means disposed in said torso beneath said shoulder portions and adapted to detachably engage said head portion for detachably retaining said head portion thereon;

A pair of separate chords axially moveable in a free manner and extending vertically through said torso and each having one end affixed to a respective one of said doll foot portions with the opposite end projecting through said torso and terminating in an end disposed outwardly of said torso;

Means affixed to said terminal end of each said chord adapted to be detachably attached to a manipulating chord for the operation of said associated chord extending through said doll torso;

Means affixed to said head portion at the top end thereof and adapted to be detachably attached to a manipulating chord, said means affixed to said top of said head portion and said means affixed to hand portion comprising a ring member affixed thereto adapted to be detachably at-

a hook member adapted to engage said means on said doll body members and said pair of chords in said doll.

3,898,765

FLYING TOY PROJECTILE

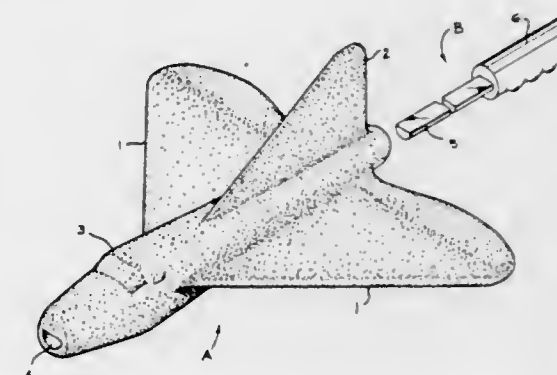
Douglas J. Lee, 1036 1/2 St., Houston, Tex. 77009

Filed July 8, 1974, Ser. No. 486,639

Int. Cl. A63h 27/14

U.S. Cl. 46—81

14 Claims



1. A system for achieving glider flight comprising a launching means comprising a rod having at least one flat surface longitudinally thereon and a projectile comprising an elongated fuselage, at least two aerodynamically stabilizing wings projecting from said fuselage and a channel extending longitudinally through said fuselage, said channel having a configuration adapted to cooperatively receive said rod therethrough and a flat surface for slidably engage said flat surface on said rod for preventing rotation of said projectile about said rod when said rod is engaged through said channel.

3,898,766

COMBINATION PLANTING DEVICE

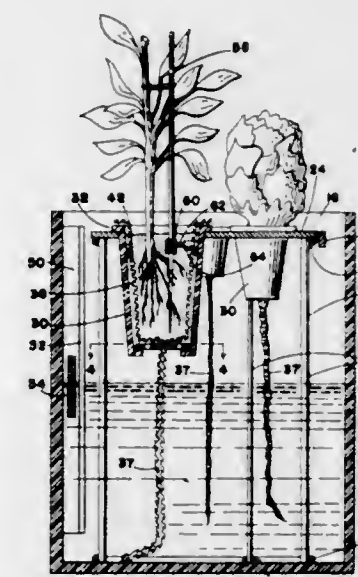
Jacques B. Goldstaub, 547 Merritt Ave., Oakland, Calif. 94610

Filed Jan. 21, 1974, Ser. No. 434,878

Int. Cl.² A01G 27/00

U.S. Cl. 47—38.1

11 Claims



1. A decorative, self-watering planting device comprising in combination an outer water impervious container, said outer container having a bottom, side walls and an open top, an upstanding support frame removably positioned within said outer container, said support frame being generally open in construction and spaced inwardly from the sides of said outer container, a substantially planar removable grid supported on an upper surface of said frame in inwardly spaced relation from the side wall of said outer container, said grid being provided with a plurality of apertures of desired configuration and placement, a plurality of inner plant containers removably

tached to said manipulating chord to convert said doll to a marionette;

Means affixed to each of said hand portions and adapted to be detachably attached to associated ones of said manipulating chords;

A marionette manipulating handle member;

A plurality of manipulating chords each having one end affixed to said manipulating handle and the opposite ends thereof projecting outwardly therefrom and adapted to be attached to said associated means on said doll members for manipulation thereof, said means affixed within the torso comprising a rectangular box-like member having a front surface, a back surface, opposed side surfaces, and opposed top and bottom surfaces, a pair of horizontally spaced apart vertically extending bores extending through said block member between said top and bottom surfaces thereof with each bore adapted to receive one of said operating chords freely therethrough, and a boss member disposed centrally of said top surface and projecting outwardly therefrom and adapted to receive said head portion detachably thereon, and wherein said head portion includes a recess in the next portion thereof of a size and configuration adapted to be snugly received on said boss member for detachably attaching said head portion thereto; and

The projecting terminal ends of each of said manipulating chords having means affixed thereto adapted to be detachably attached to said means associated with said doll whereby said doll may be used as a normal regular doll and also may be readily converted for use as a marionette by attaching said manipulating chords thereto, said doll being characterized further wherein said means affixed to said head top portion and said hand portions are comprised of elastic loops affixed thereto and adapted to be detachably attached to said manipulating chords to convert the doll to a marionette said doll being further characterized wherein said means affixed to said terminal ends of each of said manipulating chords comprises an elongated rigid body member having a closed eyelet defined at one end thereof with the opposite end defining

positioned and supported within the apertures of said grid, said plant containers being provided with support means at an upper peripheral portion whereby the plant containers extend downward within said open frame and said other container, each of said inner plant containers being provided with a removable apertured bottom member, said bottom member providing means to support an inner liner constructed at least in part of fibrous elements capable of transmitting liquid by capillary action, the liner for each of said inner plant containers having a portion extending downward through the apertured bottom member into a lower region of said outer container, the removable bottom member and liner of each of said inner plant containers serving to support a plant and its planting soil within the same, and means to introduce water and nutrient liquids to the lower region of said outer container whereby the same can be transmitted by capillary action through the downward extending portions of said liners which function as wick means for each individual plant container, said combination planting device thereby serving as a self-contained, self-watering combination adapted to continuing life support of a plurality of individual plants contained within said inner plant containers.

3,898,767

AUTOMATIC RECIPRO-FINISHING MACHINE

Hisamune Kobayashi, Nagoya, Japan, assignor to Shikishima Tipton Mfg. Co., Ltd., Nagoya, Japan

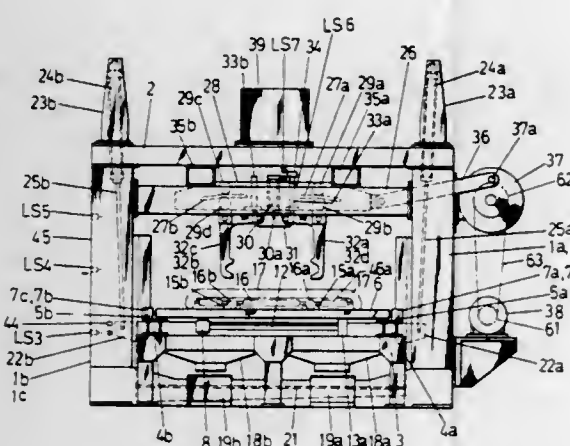
Filed Jan. 15, 1974, Ser. No. 433,491

Claims priority, application Japan, Jan. 19, 1973, 48-8376

Int. Cl. B24b 51/00, 31/00

U.S. Cl. 51-7

5 Claims



1. An automatic reciprocating machine, comprising: traverse guides operatively mounted on said machine; a trough adapted to be filled with abrasive media; means operatively coupled to said traverse guides for finishing a workpiece by reciprocating said workpiece in said trough while filled with abrasive media, said means reciprocatingly moving said workpiece along a path defined by the shape of said traverse guides; means operatively mounted for conveying workpieces to and from said finishing means; means operatively mounted for chucking said workpiece over said finishing means; means operatively coupled to said finishing means for stopping said workpiece at a given position after the finishing operation has been completed; and means operatively coupled to said finishing means, said conveying means, said chucking means, and said stopping means for controlling the operations thereof in a predetermined sequence.

3,898,768

SANDBLASTING APPARATUS

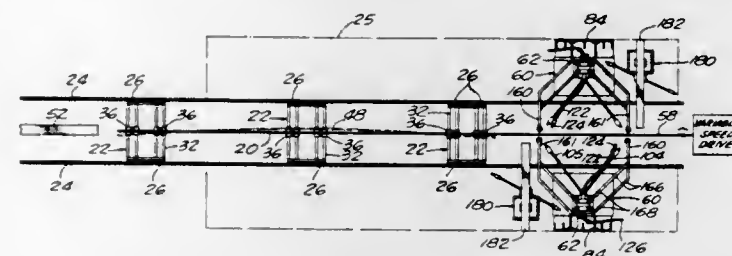
Neal J. Gilbert, Highland, and Edward L. Horton, El Monte, both of Calif., assignors to Enviro-Blast International, Los Angeles, Calif.

Filed May 13, 1974, Ser. No. 469,214

Int. Cl. B24c 3/12

U.S. Cl. 51-15

28 Claims



1. In an apparatus for sandblasting surface areas of elongate structural members having different configurations, the combination of:

means to move the members longitudinally along a path through a sandblasting zone;

at least one horizontal blaster unit in said zone with laterally directed nozzle means movable in an upright orbit to sandblast the surface area of a member of one configuration;

at least one overhead vertical blaster unit in said zone with downwardly directed nozzle means movable in a substantially horizontal orbit to sandblast the surface area of a member of another configuration; and

means respectively supporting said blaster units for independent movement laterally of said path between a position of non-use and an operating position of use, whereby the horizontal blaster unit and the vertical blaster unit may be selectively utilized to sandblast the surface areas of members having different configurations.

3,898,769

METHOD AND APPARATUS FOR CENTRELESS MAGNETIC ABRASIVE POLISHING

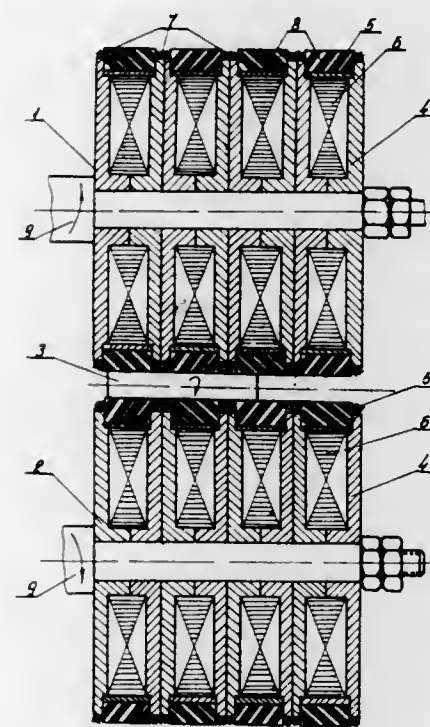
Boris Georgiev Makedonski; Atanas Dimitrov Kochemidov; Ivan Minkov Dumanov, and Stefan Georgiev Payakov, all of Sofia, Bulgaria, assignors to Zniitmash, Sofia, Bulgaria

Filed Apr. 16, 1974, Ser. No. 461,440

Int. Cl. B24B 5/22; B24D 3/00, 17/00

U.S. Cl. 51-88

6 Claims



1. An apparatus for the centreless polishing of a workpiece said apparatus comprising two cylindrical roll means and a

guide means for supporting said workpiece wherein said roll means are positioned with respect to each other such that their axes are not parallel and the axis of said workpiece is above the plane formed by the axes of said roll means, and wherein at least one of said roll means comprises at least one electromagnetic means, at least two guide rings with a working gap therebetween and a ferromagnetic powder in said working gap said ferromagnetic powder being held therein by said electromagnetic means.

3,898,770

LAPPING FIXTURE REFERENCE PLATE ASSEMBLY

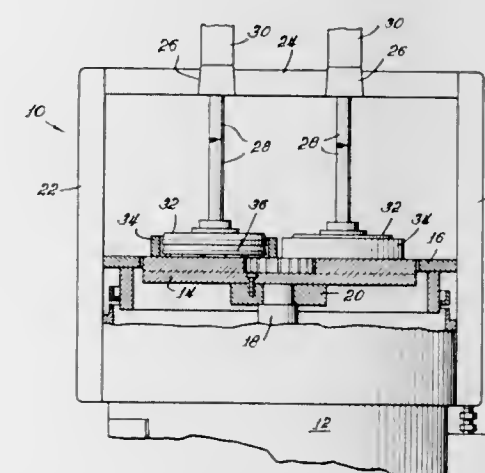
Ernest A. Benz, and James V. Keefe, both of Park Ridge, Ill., assignors to Speedfam Corporation, Des Plaines, Ill.

Filed Nov. 25, 1974, Ser. No. 526,612

Int. Cl. B24B 5/00, 29/00

U.S. Cl. 51-129

4 Claims



1. For use in lap limiting fixture means, a reference plate assembly comprising a horizontal reference plate having an upper surface, a lower workpiece engaging surface, and three circumferentially spaced apart vertical apertures open at their upper ends; and insert units vertically adjustably mounted in said apertures with the plane of the upper ends of said insert units lying below the plane of said upper surface and parallel to the plane of said lower workpiece engaging surface.

3,898,771

GRINDING MACHINE

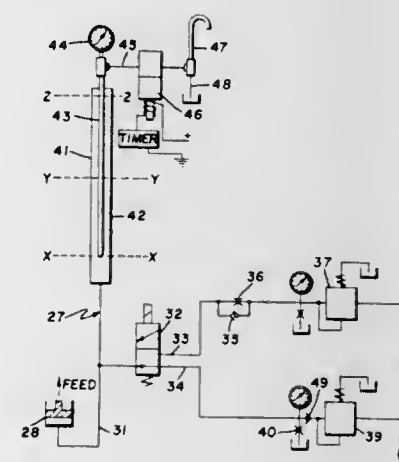
Martin L. Kuniholm, Worcester, Mass., assignor to Cincinnati Milacron-Heald Corporation, Worcester, Mass.

Filed Nov. 19, 1973, Ser. No. 416,980

Int. Cl. B24b 49/08

U.S. Cl. 51-165.9

6 Claims



1. A grinding machine, comprising:

a. a base,

b. a wheelhead table mounted on the base and adapted to carry a workpiece,

c. a wheelhead table mounted on the base and adapted to carry a wheelhead in which is mounted a spindle carrying an abrasive wheel,

d. a controlled-force feed mechanism connecting the base to one of the tables to produce relative movement between the tables to cause engagement of the abrasive wheel and the workpiece for a grinding operation, the feed mechanism including an actuator,

e. a selector valve connected by a conduit to the actuator,

f. a source of low-pressure fluid connected to the valve,

g. a source of high-pressure fluid connected to the valve, the selector valve being operative to connect either source to the conduit and to the actuator, and

h. an air trap communicating with the conduit to retard the build-up of fluid pressure in the actuator when the selector valve connects the source of high-pressure fluid to the actuator, the air trap consisting of a vertical primary tube closed at the ends, a conduit leading from the bottom of the tube to the actuator, and a secondary tube entering the top of the primary tube and extending coaxially from the top end to a position spaced from the bottom, the secondary tube extending from the top of the primary tube, being connected to one side of a solenoid valve which opens when the grinding machine is stopped, and the other side of the solenoid valve being connected to a fitting which has an upwardly-extending branch leading to the atmosphere and a downwardly-extending branch leading to oil storage.

3,898,772

MATERIAL REMOVAL TOOL WITH MULTIPLE CUTTING EDGES

Włodzimierz Sawluk, Hamburg, Germany, assignor to Ernst Winter & Sohn, Hamburg, Germany

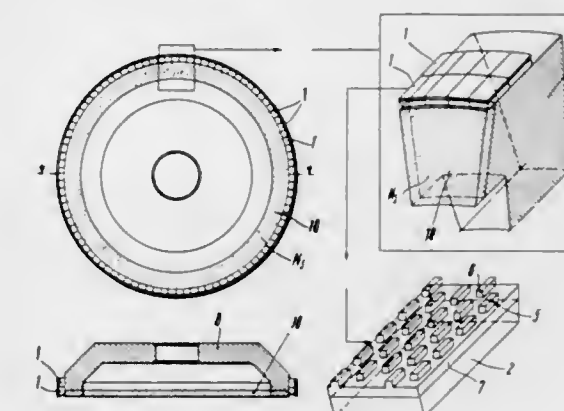
Filed Aug. 3, 1973, Ser. No. 385,478

Claims priority, application Germany, Aug. 4, 1972, 2238387

Int. Cl. B24D 5/02, 7/02

U.S. Cl. 51-206 P

17 Claims



1. In a material removing tool, a combination comprising a base member having an outer surface; and a plurality of cutting elements projecting from said outer surface, each of said cutting elements comprising a plate-shaped portion having a first surface and a plurality of substantially equal projections projecting substantially uniformly spaced from each other from said first surface and each having at least one cutting edge substantially parallel to and spaced from said one cutting edge on the other projections, said plate-shaped portion and said projections thereon being integrally formed from a homogeneous mass of crystalline hard particles of at least one material chosen from the group consisting of crystalline diamond particles and crystalline boron nitride particles, and a connecting member of cemented carbide integral with the surface of said plate-shaped portion opposite said first surface of each cutting element and connecting said cutting elements to said outer surface of said base member uniformly distributed on said outer surface with said at least one cutting edge on all projections extending substantially parallel to each other.

3,898,773

GRINDING DISK

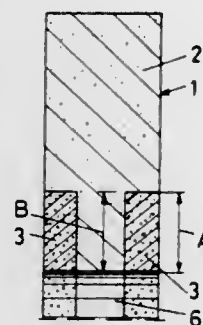
Erich Bogusch, Schwaz, Austria, assignor to Tyrolit-Schleifmittelwerke Swarovski K.G., Schwaz, Austria

Filed Aug. 28, 1973, Ser. No. 392,328

Int. Cl.² B24D 5/04, 5/14

U.S. Cl. 51—206 NF

4 Claims



1. In a grinding disk for high-speed grinding and having an axial borehole therethrough and having a primary grinding layer formed of a grinding material of a desired grinding strength, the improvement comprising:

a ring-shaped zone of increased strength material adjoining said borehole of the grinding disk, said zone of increased strength material comprising at least one disk-shaped element extending radially from said borehole no more than two-thirds of the radius of said disk, each said at least one disk-shaped element having a pair of parallel surfaces formed by planes extending radially outwardly from said borehole and a cylindrical surface joining said pair of parallel surfaces, the axial thickness of said disk-shaped element being less than the axial thickness of said disk, said grinding material and said material of increased strength overlapping one another in the radial direction of said disk within said zone by a radial distance equal to at least a major portion of the radial length of said zone, contact between said grinding material and said at least one disk-shaped element in said zone being only at said cylindrical surface and at least one of said parallel surfaces, and said increased strength material having the same type of bond as the said grinding material of said grinding layer but a different filler therefrom.

3,898,774

CONTINUOUS FEED VIBRATORY FINISHING METHOD WITH DISCHARGE RATE CONTROLLED BY OPERATION OF TUB DISCHARGE CLOSURE

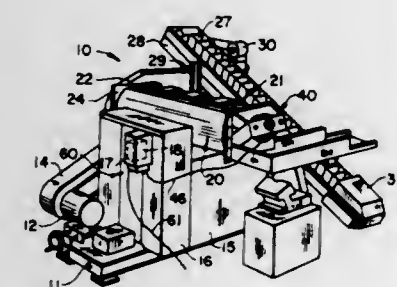
John F. Rampe, Mayfield Heights, Ohio, assignor to Rampe Research, Cleveland, Ohio

Division of Ser. No. 270,700, July 11, 1972, Pat. No. 3,831,322, which is a continuation-in-part of Ser. No. 8,815, Feb. 5, 1970, Pat. No. 3,685,213. This application Feb. 14, 1974, Ser. No. 442,442

Int. Cl. B24b 1/00

U.S. Cl. 51—313

7 Claims



1. A continuous feed process for finishing workpieces in the tub of a vibratory finishing having a closure for selectively opening and closing a tub discharge opening, comprising the steps of:

- feeding workpieces and media into the tub at a location spaced from the discharge opening;
- vibrating the tub to impart a motion to the workpieces and media to preform a finishing operation on the workpieces and to move the workpieces and media from said location toward the discharge opening; and
- repetitively cyclically opening and closing the closure during the period while each workpiece is retained in the tub to control the rate at which workpieces and media discharge through the opening to control the retention time of workpieces within the tub.

3,898,775

INFLATABLE ARENA STRUCTURE

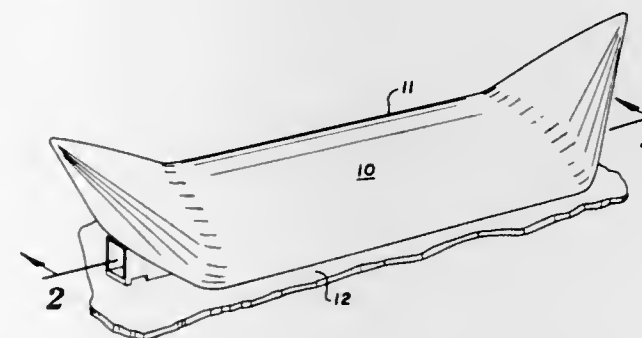
William B. Webb, 600 Simonet Dr., Elk River, Minn. 55330

Filed Aug. 20, 1973, Ser. No. 390,092

Int. Cl.² E04B 1/34

U.S. Cl. 52—2

5 Claims



1. In an air pressure supported structure comprising an envelope of generally flexible sheet material adapted to be maintained in erected disposition by positive fluid pressure provided within the envelope:

- said sheet material forming the envelope being in the form of a rectangular member with a central axis, a transverse axis and first lateral edge surfaces parallel to said transverse axis, and second lateral edge surfaces parallel to said central axis, and being folded upon itself generally along the said central axis to form a member with a generally rectangular configuration and with the superimposed portions of said first lateral edge surfaces of said rectangular member being secured together to form the envelope;
- support means arranged to mount the second lateral edge surfaces of said envelope on a generally rectangular support plane so as to provide, upon inflation, an erected envelope with end extensions diverging upwardly and outwardly from said support plane.

3,898,776

PRECAST CONCRETE HOUSING

Elmer Adrian Cox; Wayne Douglas Tiner, and Ritchey Paul Woods, Jr., all of San Antonio, Tex., assignors to H. B. Zachary Co., San Antonio, Tex.

Division of Ser. No. 191,505, Oct. 21, 1971, Pat. No. 3,772,835. This application July 2, 1973, Ser. No. 375,844

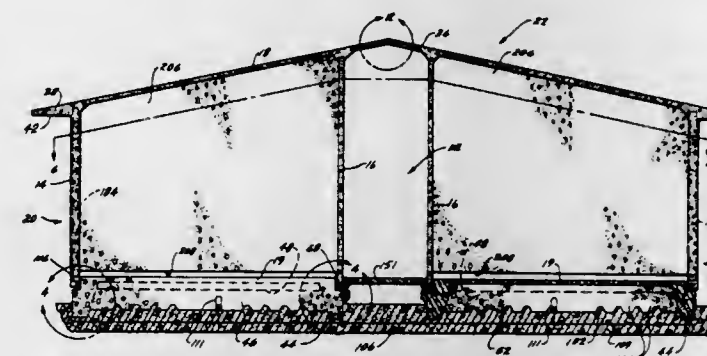
Int. Cl.² E04B 7/02; E02D 27/42

U.S. Cl. 52—79

16 Claims

1. A precast concrete building unit comprising a floor slab, several precast concrete structural panels above the floor slab, said structural panels comprising at least two load-bearing exterior walls joined with the floor slab, a roof cast integrally with the exterior walls, and an interior wall having an end which is cast integrally with at least one of the exterior walls

and a top which is cast integrally with the roof, the interior wall having an undersurface spaced from the upper surface of



the floor slab so that the interior wall does not transmit a load to the floor slab.

3,898,777

DOMES AND VAULT CONSTRUCTION

Tancho D. Georgiev, 78 Hawthorne Ave., Newton, Mass. 01915, and Robert M. Scanzani, 182 Bridge St., Beverly, Mass. 01020

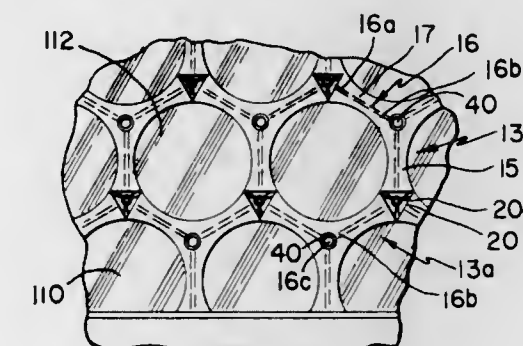
Continuation of Ser. No. 35,777, May 8, 1970, abandoned.

This application Apr. 23, 1973, Ser. No. 353,417

Int. Cl. E04b 1/32, 7/08

U.S. Cl. 52—81

15 Claims



- A curved building formed from
 - a plurality of building elements, each
 - having an inner frame of at least three interconnected generally coplanar rods
 - joined to each other at a common center;
 - extending from said common center at obtuse angles to each other;
 - having fastening means on the outermost ends of at least two of said rods;
 - having an outer skin
 - formed about, and enclosing, at least portions of each of said rods and defining legs along said portions;
 - said portions having inner and outer faces forming inner and outer shell surfaces of said building structure;
 - said portions having end faces generally transverse to said inner and outer faces and forming load-transmitting surfaces for loads applied to said elements;
 - the fastening means on said rods projecting through the end faces on said skin; and
 - a plurality of connectors, each
 - comprising a face plate having at least three face portions, each face portion mating with a corresponding end face of a separate building element in load-transferring relation thereto;
 - an inner hub having a plurality of rods extending radially therefrom, each rod having a fastening element thereon;
 - web means interconnecting the inner hub to the face plate; and
 - apertures in said face plate through which the outermost ends of the rods of the structural elements to be

attached thereto extend, whereby the fastening means of said rods are connected to the corresponding fastening elements of said connector means.

3,898,778

SLOTTED DRAINAGE CONDUIT AND INTEGRAL CONCRETE FLOOR

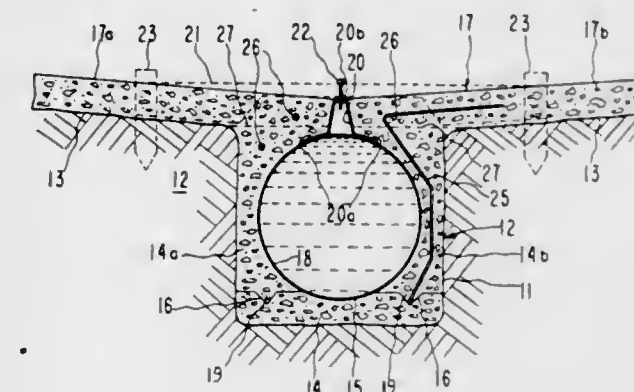
Lennart G. Erickson, 2075 Pioneer Ct., San Mateo, Calif. 94402, and William S. Erickson, 260 Casitas Boulevard, Los Gatos, Calif. 95030

Filed Jan. 10, 1974, Ser. No. 433,017

Int. Cl.² E02B 1/00; E04B 1/345

U.S. Cl. 52—169

24 Claims



1. A method of forming a slotted drainage conduit comprising: forming a trench in the ground; laying a concrete base in the bottom of the trench; placing an inflatable tube on said base; inflating the tube; the transverse dimension of the tube when inflated being less than the width of the trench; holding the tube against substantial lateral movement on the base when the tube is inflated; pouring concrete in the trench onto the base and about and along the tube when the latter is inflated and held on said base; maintaining a region extending upwardly from the tube free of concrete as concrete is poured about the tube; allowing the concrete about the tube to set to a hardened condition to thereby form a conduit having a slot through said region; and deflating the tube and removing the same from the conduit.

3,898,779

MODULAR BUILDING PANELS AND ENCLOSURES

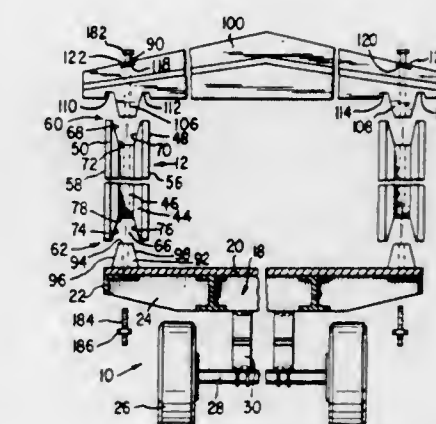
Charles W. Tracy, Tallahassee, Fla., assignor to Apollo Plastics, Inc., Fla.

Continuation-in-part of Ser. No. 407,012, Oct. 16, 1973. This application July 24, 1974, Ser. No. 491,580

Int. Cl.² E04B 7/02; E04C 3/10

U.S. Cl. 52—264

61 Claims



1. A building structure including foundation means supporting a plurality of load-bearing wall panels assembled in side-by-side relationship, each said panel extending the full height of a wall of said structure, and each panel including:

a core of foamed, high density organic resinous material formed as a generally rectangular panel having spaced major surfaces;
 a surface layer bonded to at least one of said major surfaces to provide a finished wall surface;
 interlock means on each side edge of said panel for aligning and interlocking said panel with adjacent panels upon assembly of said structure;
 top channel means formed in and extending across the top edge of said panel, said top channel means being narrower than the thickness of said panel and having a trapezoidal cross section;
 a top beam having a trapezoidal cross section corresponding to the cross sectional shape of said top channel means;
 tension means secured at one end to said foundation and extending vertically through said panel and said top beam; and
 means adjustably securing said tension means to said top beam to draw said top beam down into said top channel means to place said panel in compression and fasten it in position on said foundation, the complementary cross sectional shapes of said top beam and said top channel means preventing splitting of said panel and distributing the compressive load produced by said tension means.

3,898,780

RAINSCREEN WALL PANEL

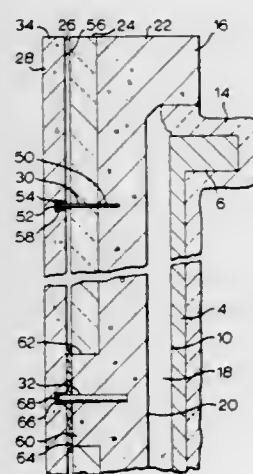
Fred Albert Beer, Toronto, Canada, assignor to Beer Precast Concrete Limited, Scarborough, Canada

Filed Oct. 5, 1973, Ser. No. 403,806

Int. Cl.² E04B 1/74, 2/22

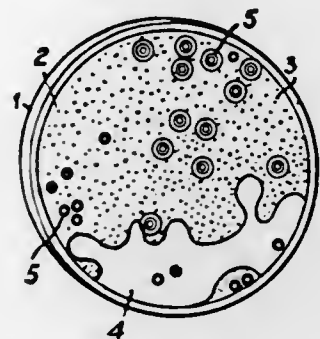
U.S. Cl. 52—303

2 Claims



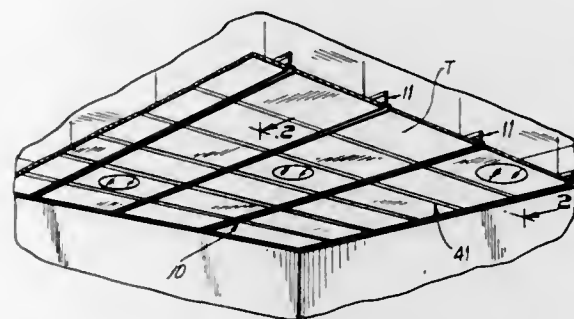
1. A prefabricated rainscreen wall panel comprising a precast reinforced concrete slab capable of withstanding forces to which the panel may be subjected, a rigid layer of thermal insulation over the outer surface of the concrete slab and fixed thereto, a rigid, decorative outer facing sheet extending over the layer of insulation, spaced apart anchors fixing the facing sheet to the concrete slab, a gap for circulation of air separating the facing sheet and the insulation layer, the reinforced concrete slab having a projection through the insulation layer, one of said anchors being embedded in said projection and in the facing sheet, the projection being separated from the facing sheet by a resilient pad, and a passageway through which the gap communicates with the atmosphere, the panel being in the form of a transportable unit and having means on the rear surface of the slab whereby the panel can be attached on a building structure.

3,898,781
TRANSPARENT PAVING TILE STRUCTURE
 Bruno Facchini, Viale Pasubio 3, Milan, Italy
 Filed Nov. 17, 1969, Ser. No. 877,412
 Claims priority, application Italy, Nov. 26, 1968, 24190/68
 Int. Cl. G09f 3/00, 13/34
 U.S. Cl. 52—311 1 Claim



1. A paving tile having two parallel spaced apart walls joined at their edges to define a closed interspace therebetween, a viscous liquid partially filling said interspace and containing air bubbles therein, said walls being made of transparent resilient material there by to allow, upon treading, deformation thereof causing a random movement of said bubbles.

3,898,782
INTEGRATED CEILING SYSTEM
 Anthony C. Donato, Westfield, N.J., assignor to Lightolier Incorporated, Jersey City, N.J.
 Filed Jan. 4, 1974, Ser. No. 430,913
 Int. Cl.² E04B 5/52; E04C 2/42
 U.S. Cl. 52—488 3 Claims



1. An electrified hung ceiling grid construction comprising, in combination, a plurality of horizontally disposed parallel runner members supported in coplanar alignment from a building structure, said runner members including a vertically directed mounting web and horizontally disposed tile support flanges, upper and lower spaced locking flanges in proximate spaced relation to and disposed on either side of said mounting web, said locking flanges and web defining vertically directed locking channels, a plurality of longitudinally spaced, transversely extending locator apertures formed in said mounting webs, cross strut means extending between adjacent runners and locking the same against relative transverse movement, said strut means including at their ends projecting tab members adapted to be inserted through said locator apertures, and adjacent the ends of said struts locking clip members including resilient locking means projecting beyond the upper and lower surfaces of said struts, said locking means being insertible into the space between said locking flanges and being extended into tightly wedged position within said locking channels responsive to rotation of said struts about their longitudinal axes, a plurality of tile support hangers extending between adjacent parallel runners, said support hangers including horizontally extending tile support ledges disposed in coplanar alignment with the tile support flanges of said runners, a plurality of alignment slots formed in said mounting webs of said runners, said slots being regularly

spaced apart in accordance with the desired spacing of said hangers, complementary connector means on said hangers extending through said alignment slots and linking the distal ends of adjacent support hangers, said connector means including a finger on one said hanger slidably engaging a finger socket on the other said hanger, thus to permit relative horizontal movement between said adjacent hangers, the spacing between the clip members at opposite ends of said struts being coordinated with the length of said support hangers whereby, upon rotation of said struts into locking position, the ends of said ledges of said struts are tightly abutted against said flanges of said runners.

3,898,783

BUILDING PANEL AND JOINT

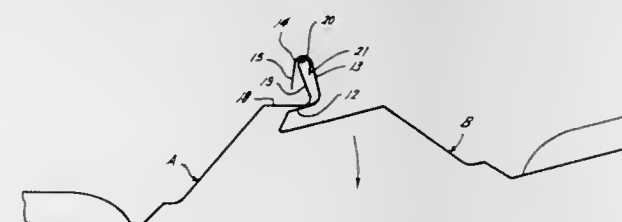
Robert B. Matlock, Houston; Reginald B. Wilmer, Cypress, and Dale L. Ferguson, Houston, all of Tex., assignors to National Steel Products Company, Houston, Tex.

Filed Feb. 4, 1974, Ser. No. 439,408

Int. Cl.² E04D 3/362

U.S. Cl. 52—529

1 Claim



1. A building panel having complementary joint-forming marginal edge portions,
 A. the first of said edge portions having
 1. a first shelf part substantially parallel to the plane of the panel,
 2. a first flange extending outwardly from the outer edge of said shelf part and forming a pivotal corner therewith, and
 3. a male terminal loop on said first flange,
 B. said complementary edge portion having
 1. inner and outer shelf parts and
 2. a connecting part forming a "U" with legs substantially parallel to the plane of the panel,
 3. a second flange extending outwardly at substantially 90° from the reentrant edge of said outer shelf part, and
 4. a female terminal loop on said second flange overlying said outer shelf part,
 C. said male terminal loop being of a width sufficient to snugly fit within the female terminal loop of an adjacent similar panel, and
 D. there being sufficient space between the extremity of said complementary female loop and said outer shelf part to receive said male terminal loop therebetween for engaging said second flange when said adjacent panel is moved edgewise toward said first panel,
 E. said first flange and said outer shelf part being of sufficient length to cause said outer shelf part to engage and slid on said pivotal corner during initial rotation of said adjacent panel about said male loop and thereby enforce snug interfitting of said male loop into said female loop during continued rotation of said adjacent panel to its fully assembled position and to undergird said first shelf part in said latter position to resist shear forces.

3,898,784

BEAM SPLICE CONNECTION

Gale E. Sauer, and Conrad Christel, both of Williamsville, N.Y., assignors to Roblin Hope's Industries, Inc., Buffalo, N.Y.

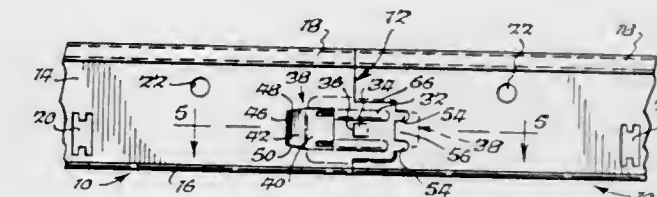
Filed Feb. 20, 1973, Ser. No. 334,049

Int. Cl.² F16B 7/22

U.S. Cl. 52—758 A

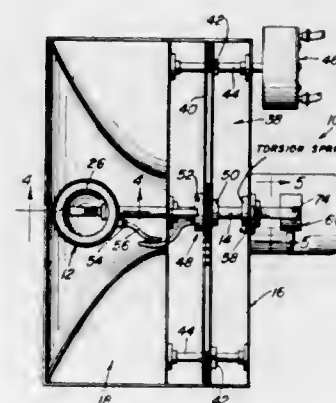
11 Claims

1. A splice connection comprising: at least two coaxially aligned beam members each having a web, connecting means



on adjacent ends of said webs splicing said members in an end-to-end relation, said connecting means comprising a tongue extending beyond the end of each of said webs in a plane laterally offset from its respective web and parallel thereto, a tab extending axially outwardly from each of said tongues and laterally from the plane of said tongue in the general direction of said web, each of said webs having an opening provided therein axially spaced from said ends through which the tab of the other tongue is axially received said openings having a vertical dimension which is substantially equal to the maximum vertical dimension of said tabs,

3,898,785
VACUUM OPERATED FRUIT PICKER
 Clarence W. Chew, 8139 Broughton St., Sarasota, Fla. 33580
 Filed Jan. 25, 1974, Ser. No. 436,682
 Int. Cl.² A01D 46/24
 U.S. Cl. 56—332 6 Claims



1. A vacuum operated citrus picker, comprising, in combination:
 a. vacuum means for engaging a selected article and holding same firmly in place; and
 b. clutch means for selectively rotating the vacuum means and severing an engaged article from a support associated therewith, the vacuum means including valve means for placing a vacuum on an article on contact of the article with the valve means, the vacuum means further including a cup-shaped housing provided with a void and an opening communicating with the void, the opening arranged for receiving at least a portion of an article, a seal arranged around the opening, and a conduit mounted on a wall of the housing and arranged communicating with the void for selectively creating a vacuum therein, with the valve means being a flapper valve arranged in the void for being contacted by an article received in the opening

and extending into the void, and pivotally mounted on the conduit and arranged for normally blocking the conduit and being pivoted to a position unblocking the conduit when contacted by an article.

3,898,786

AIR DELIVERY FOLIAGE WAGON

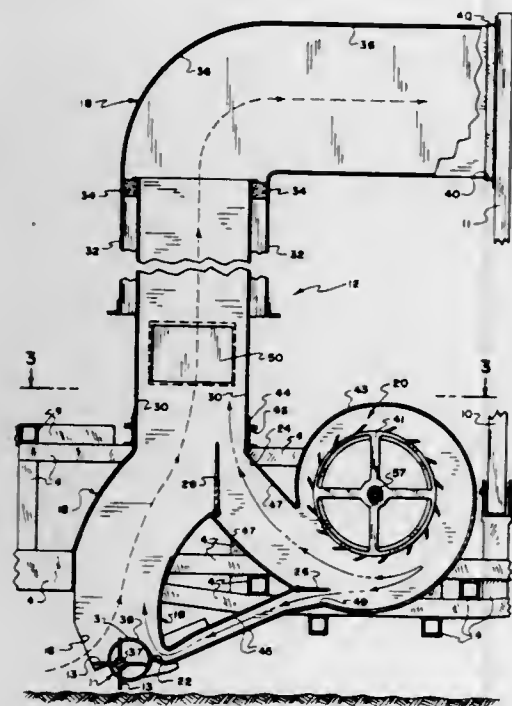
Ezra Cordell Lundahl, Providence, Utah, assignor to Ezra C. Lundahl, Inc., Logan, Utah

Filed Jan. 24, 1974, Ser. No. 436,286

Int. Cl.² H01D 87/00

U.S. Cl. 56-344

19 Claims



1. A wagon for receiving loose foliage to create a stack therefrom comprising:

- a receptacle movable along the ground in a field upon ground-engaging means;
- a mechanism carried at the front end of the receptacle for picking up foliage from the ground, and elevating and depositing the picked up foliage in the receptacle, the mechanism comprising:
- a chute, unobstructed by any mechanical foliage lifting mechanism, comprising an elevated discharge section from which foliage is discharged into the receptacle, a central vertically directed portion and a foliage influent end immediately above the ground, at which end foliage is lifted from the ground into the chute;
- blower means, adjacent but offset from the influent end of the chute, by which air under pressure is obtained;
- first air discharge means operable to communicate air under pressure from the blower means to a first location at the foliage influent end juxtaposed the ground;
- second air discharge means operable to communicate air under pressure from the blower means to another chute location substantially above the first location;
- means selectively controlling the magnitude of respective air flow from the first discharge means and the second discharge means.

3,898,787

HOUSING FOR OPEN-END SPINNING TURBINE

Rolf Wehling, and Rolf Neubert, both of Bremen, Germany, assignors to Fried. Krupp Gesellschaft mit beschränkter Haftung, Essen, Germany

Filed May 9, 1973, Ser. No. 358,804

Claims priority, application Germany, May 12, 1972, 2223068

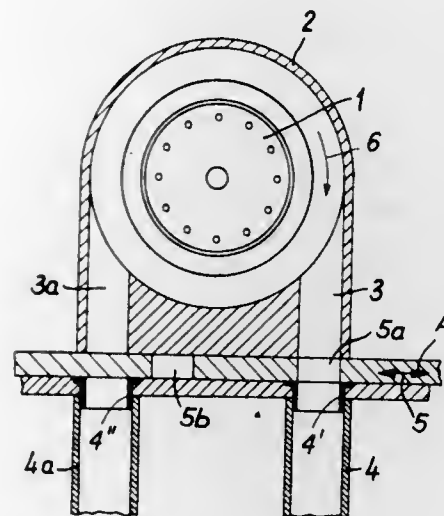
Int. Cl. D01h 7/00

U.S. Cl. 57-58.89

8 Claims

1. A housing for an open-end spinning rotor rotatable in clockwise and counterclockwise directions and operable at

subatmospheric pressure, which includes in combination, chamber means for receiving a spinning rotor, two conduits respectively connectable to a suction device, said conduits being tangentially oriented with respect to said rotor, one of said conduits defining a suction outlet for tangential air withdrawal in the clockwise direction of rotor rotation and the



other of said conduits defining a suction outlet for tangential air withdrawal in the counterclockwise direction of rotor rotation, and control means associated with said conduits and operable selectively to close off either one of said conduits while simultaneously leaving the respective other one of said conduits open for connection to said suction device.

3,898,788

PROCESS OF SPINNING TEXTILE FIBERS

Ernst Fehrer, Auf der Gugl 28, Linz, Austria

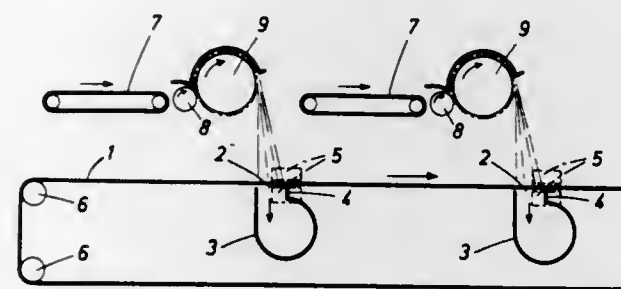
Filed Jan. 7, 1974, Ser. No. 431,041

Claims priority, application Austria, Jan. 17, 1973, 346/73; Oct. 5, 1973, 8501/73

Int. Cl. D01h 1/12

U.S. Cl. 57-156

1 Claim



1. A process of spinning textile fibers which comprises:

- a. continuously moving a carrier having two opposite faces and permeable to flow of air between said two faces in a predetermined direction sequentially through a first zone and a second zone separated from said first zone by a boundary transverse to said direction;
- b. applying suction to one of said faces in said first zone while maintaining equal pressure on said two faces in said second zone, whereby ambient air is caused to flow through said carrier inward of the other face thereof in said first zone, no air flows through said carrier in said second zone, and a current of air is caused to flow in a direction opposite to said predetermined direction from said second zone toward said first zone;
- c. depositing textile fibers on said other face before said carrier passes said boundary from said first zone to said

second zone, whereby said fibers are held to said other face by said air flowing in said first zone, are released from said other face in said second zone, and are twisted between said moving carrier and said current; and
d. withdrawing said twisted fibers from said carrier transversely to the direction of carrier movement adjacent said boundary.

3,898,789

ELECTRIC CLOCK

Friedrich Arzi, Paul Hofert, and Roland Sudler, all of Frankfurt, Germany, assignors to VDO Adolf Schindling AG, Frankfurt, Germany

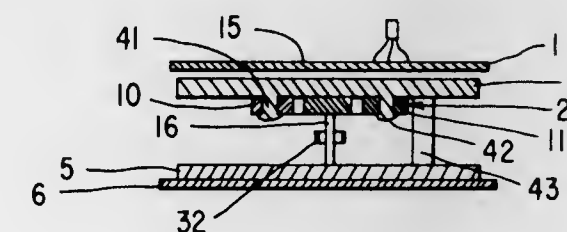
Filed Feb. 22, 1974, Ser. No. 445,290

Claims priority, application Germany, Mar. 8, 1973, 2311445; Aug. 23, 1973, 2342544

Int. Cl. G04c 3/00

U.S. Cl. 58-23 R

7 Claims



1. In an electric clock including a plurality of wheels on spindles, a hand mechanism whose elements are arranged between two plastic plates, an electronic unit for generating a pulse train of constant frequency, and a single phase stepping motor with a permanent-magnet armature responsive to the pulse train, the motor comprising an armature shaft, a stator with a field coil, and a permanent magnet armature, the improvement comprising:

- A. a field coil on a coil spool,
- B. the stator comprising at least two parts joined to the coil spool, each of said parts being provided with at least one fastening element,
- C. bearings molded in the two plastic plates for the wheel spindles and armature shaft,
- D. a recess in at least one of the two plastic plates for the field coil on its spool,
- E. a plurality of correspondingly positioned fastening elements in at least one plate corresponding to the fastening elements in the stator parts, including fastening means for connecting the corresponding fastening elements,
- F. spacer means molded into at least one plate to support the other plate,
- G. a dial face secured to a front one of the two plastic plates,
- H. a printed circuit plate bearing the electronic unit, and
- I. range spacer means molded to a rear one of the two plastic plates for fastening the printed circuit plate on a side of the rear one of the two plastic plates away from the front one of the two plastic plates and in a spaced relationship with the rear one of the two plates.

3,898,790

BATTERY-DRIVEN WATCH WITH BATTERY CONSUMPTION DISPLAY ALARM

Hirotohi Takamune, and Fujio Ishida, both of Tokyo, Japan, assignors to Citizen Watch Company, Limited, Tokyo, Japan

Filed Nov. 8, 1973, Ser. No. 413,951

Claims priority, application Japan, Nov. 9, 1972, 47-112465; Nov. 20, 1972, 47-116312

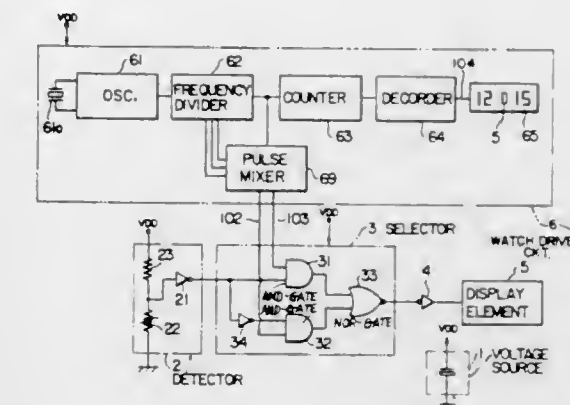
Int. Cl.² G04C 3/00; G04B 19/30; G08B 21/00

U.S. Cl. 58-23 BA

6 Claims

1. In a battery driven electronic watch comprising a watch driver circuit, a battery for feeding current thereto, and a time-indicator operatively connected with said driver circuit, the improvement comprising a binary detector circuit con-

nected to said battery for detecting when the source voltage falls below a predetermined level, a selector and drive circuit connected with the output of said detector, and an electrically illuminatable means connected with said selector and drive circuit, the brightness of said illuminatable means being modi-



fied from its normal state when said source voltage drops below said predetermined level in response to the binary logic output of said detector, said electrically illuminatable means being mounted on the front and normally visible surface of said watch.

3,898,791

ELECTRICALLY DRIVEN TIMERS

Robert Wolber, Lauterbach, Germany, assignor to Gebrüder Junghans GmbH, Schramberg, Wurt, Germany

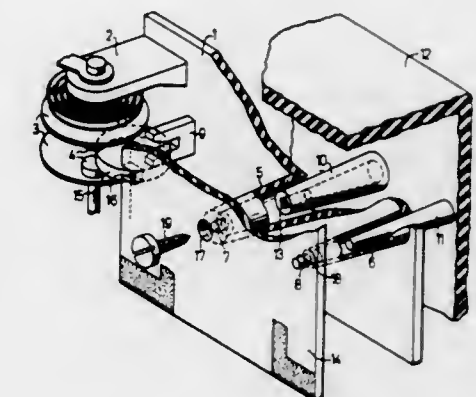
Filed June 25, 1974, Ser. No. 483,036

Claims priority, application Germany, June 30, 1973, 7324375

Int. Cl. G04b 45/00

U.S. Cl. 58-28 A

13 Claims



1. A subassembly for electrically powered timer mechanisms, said subassembly comprising:

- housing means;
- mounting plate means;
- timer means mounted to said mounting plate means including magnet means;
- conductor plate means;
- connecting means for connecting said housing means, mounting plate means, and conductor plate means together;
- coil means mounted to said conductor plate means;
- said connecting means including at least two supporting means for mounting said conductor plate means to said mounting plate means;
- at least one of said supporting means receiving securing means for fixedly securing said conductor plate means to said mounting plate means; and
- alignment means carried by said mounting plate means in predetermined position relative to said magnet means for

aligning said coil means in proper orientation relative to said magnet means when said conductor plate means is mounted to said mounting plate means.

3,898,792

DIGITAL TIMER

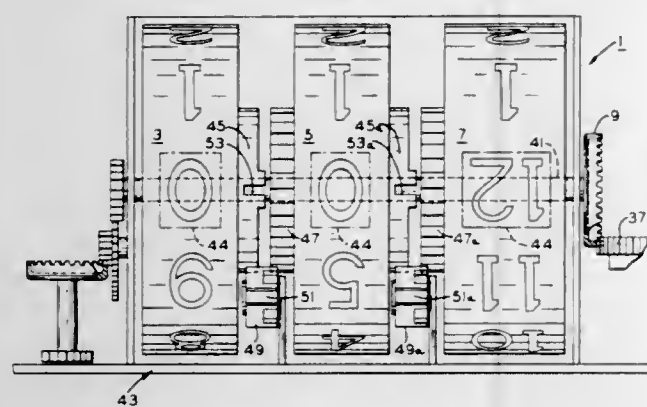
Gene L. Insley, Rock Falls, and Merle J. Lewis, Morrison, both of Ill., assignors to General Electric Company, Fort Wayne, Ind.

Filed Apr. 25, 1974, Ser. No. 464,255

Int. Cl. G04f 3/06; G04b 27/00, 19/02

U.S. Cl. 58—39.5

21 Claims



1. A digital timer comprising means operable generally for indicating digital time and adapted to be reset to a selected time, means for controlling operation of the indicating means, means for driving the controlling means to effect the time indicating operation of the indicating means, means idly driven through the controlling means by the driving means and operable manually for actuating the controlling means to effect the reset of the indicating means to the selected digital time, and the controlling means including means for releasing the drive of the driving means upon the manual operation of the actuating means.

3,898,793

BEARING SYSTEM FOR GAS TURBINE ENGINE

Kenya Nakamura, and Akira Sato, Susono, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

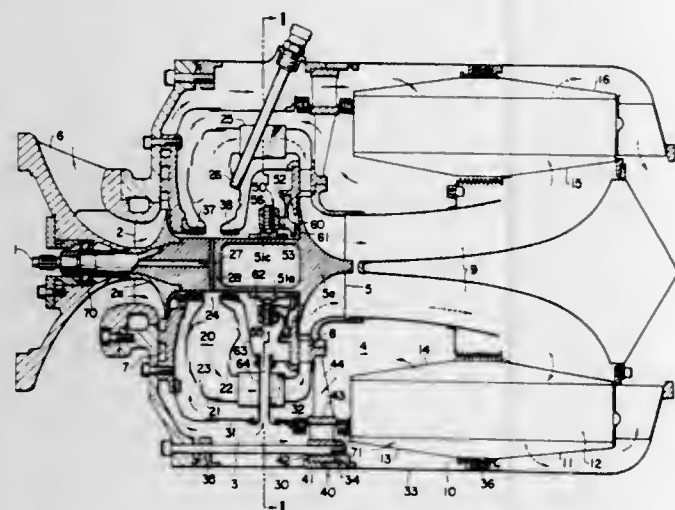
Filed Aug. 8, 1973, Ser. No. 386,493

Claims priority, application Japan, Aug. 17, 1972, 47-81794

Int. Cl. F02c 7/06

U.S. Cl. 60—39.08

8 Claims



1. In a bearing system for supporting the main shaft of a gas turbine engine, said engine including a compressor for delivering air to said engine, a turbine for rotatively propelling said main shaft, and a combustion chamber producing hot gases for delivery to said turbine, the improvement comprising a bearing chamber located intermediate said combustion cham-

ber and said turbine hermetically isolated from other portions of said engine, a dynamic pressure type gas bearing mounted within said bearing member for frictionlessly supporting said main shaft when air under pressure is introduced into said bearing chamber, air passage means for introducing air under pressure from said compressor into said bearing chamber, air outlet means defining a flow path for discharging air from said bearing chamber, and means for regulating the flow of air passing through said outlet means.

3,898,794

POWER PLANT

Hajime Ariga, Yokohama, Japan, assignor to Nissan Motor Company Limited, Japan

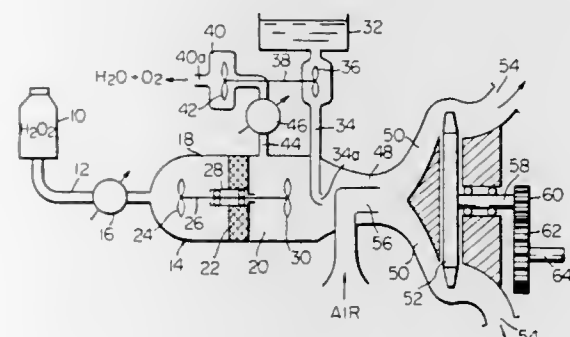
Filed Mar. 26, 1973, Ser. No. 344,618

Claims priority, application Japan, Apr. 1, 1972, 47-32808; Apr. 25, 1972, 47-41669

Int. Cl. F02c 3/20

U.S. Cl. 60—39.18 R

7 Claims



1. A power plant driven by a flow of high-temperature gases comprising, in combination, a source of hydrogen peroxide, a casing, a feed chamber formed in said casing and communicating with said source of hydrogen peroxide, a combustion chamber formed in said casing and axially aligned with said feed chamber, a catalyst disposed in said casing between said feed chamber and said combustion chamber and decomposing hydrogen peroxide supplied from said source of hydrogen peroxide into said catalyst and producing water vapor and oxygen, a shaft rotatably supported by said casing, said shaft extending into said feed chamber and said combustion chamber, a turbine rotatably connected at one end of said shaft extending into said combustion chamber, a pump rotatably connected at the other end of said shaft extending into said feed chamber, said turbine being driven by a mixed gas of said water vapor and said oxygen gas formed by decomposing said hydrogen peroxide, a venturi portion leading from said combustion chamber, a source of fuel communicating with said combustion chamber for supplying thereto fuel to be combusted by said oxygen gas for producing high-temperature gases, a gas flow passageway communicating with said venturi portion to pass said high-temperature gases therethrough, a turbine wheel having blades exposed to the flow of said high-temperature gases in said gas flow passageway and driven by said flow, a fuel pump disposed between said source of fuel and said combustion chamber for feeding fuel thereto, a rotary shaft connected at its one end to said fuel pump, a turbine connected to the other end of said rotary shaft, and a water vapor chamber in which said last-mentioned turbine is located, said water vapor chamber communicating with said combustion chamber to receive said water vapor and oxygen, whereby said last-mentioned turbine is rotated thereby driving said fuel pump.

3,898,795

FUEL SUPPLY SYSTEMS FOR ENGINES

Barrie Gilbert Barker, London, England, assignor to Simms Group Research & Development Ltd., Birmingham, England

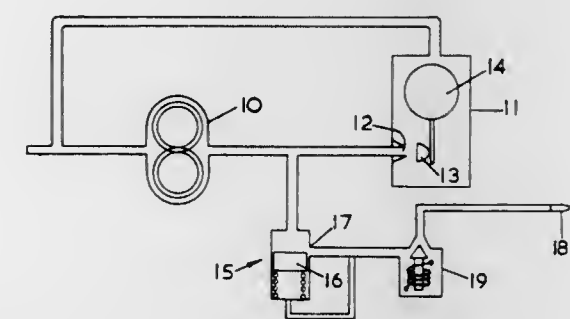
Filed Dec. 21, 1973, Ser. No. 427,117

Claims priority, application United Kingdom, Dec. 23, 1972, 59587/72

Int. Cl. F02c 9/10

U.S. Cl. 60—39.28 R

2 Claims



1. A fuel supply system for a gas turbine engine comprising in combination, an engine driven fuel pump having a delivery volume which varies in proportion to engine speed, a spill valve for spilling fuel between the inlet and outlet of the pump, the outlet of the pump being connected to a spray nozzle disposed to direct fuel into a combustion space of the engine, a regulating valve disposed between the spray nozzle and the outlet of the pump and means for controlling the setting of the spill valve in accordance with various engine control parameters, the arrangement being such that the quantity of fuel delivered to the engine depends upon the speed of the engine and the setting of the spill valve, said regulating valve including a pressure responsive valve element subjected to the outlet pressure of the pump and movable by this pressure against the action of resilient means, said regulating valve including an orifice through which fuel flows to said nozzle, said valve member being moved against the action of the spring to increase the size of said orifice with increasing pressure at the outlet of the pump, the valve element also being responsive to the pressure at the nozzle, this pressure assisting the action of said resilient means.

3,898,796

AMBIENT COMPENSATING MEANS

Raymond P. Canale, Warren, and Leon L. Brantman, Royal Oak, both of Mich., assignors to Colt Industries Operating Corporation, New York, N.Y.

Division of Ser. No. 207,063, Dec. 13, 1971, Pat. No.

3,777,481. This application Jan. 11, 1974, Ser. No. 432,566

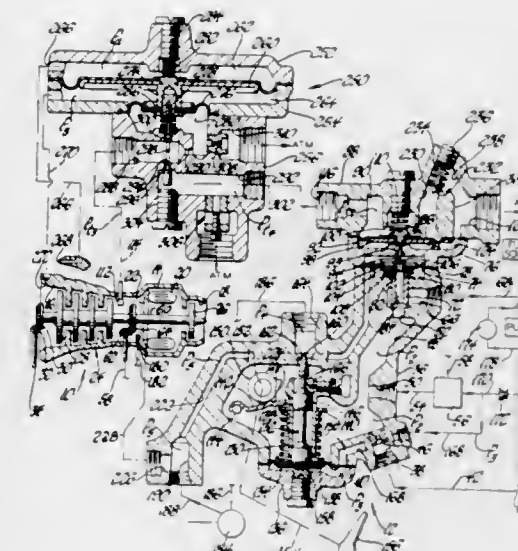
Int. Cl. F02c 9/10

U.S. Cl. 60—39.28 R

9 Claims

1. Ambient compensating means for use with a turbine engine fuel control which has means responsive to a signal pressure related to a pressure generated by the compressor of said turbine engine for governing the rate of metered fuel flow to said turbine engine, said ambient compensating means comprising valving means adapted to be interposed between said means responsive to said signal pressure and said pressure generated by said compressor, and additional pressure responsive means operatively connected to said valving means, said additional pressure responsive means being adapted to be

responsive to changes in engine airflow as affected by ambient conditions for adjustably positioning said valving means in



accordance therewith and correspondingly modify the magnitude of said signal pressure.

3,898,797

COOLING ARRANGEMENTS FOR DUCT WALLS

Robert David Wood, Etwell, England, assignor to Rolls-Royce Limited, London, England

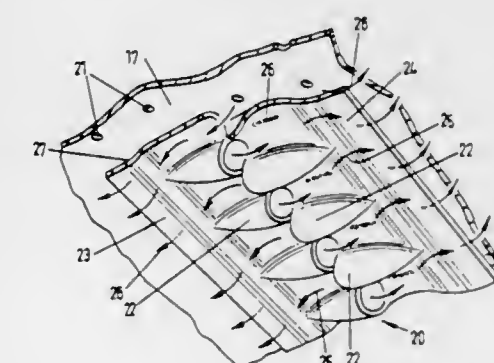
Filed July 30, 1974, Ser. No. 493,154

Claims priority, application United Kingdom, Aug. 16, 1973, 38812/73

Int. Cl. F02C 7/18

U.S. Cl. 60—39.66

4 Claims



1. A wall structure for a hot duct which duct in use contains or conducts hot fluid and which has a cool fluid on the exterior thereof, the wall structure comprising a wall member, means formed on the inside of the wall member and defining first and second pluralities of discrete pockets, the wall member having at least one aperture for each pocket communicating said pocket with the exterior of the wall member to enable the introduction of the cool fluid into said pocket, each pocket having a mouth for discharging the introduced cool fluid, each mouth of the first plurality of discrete pockets being arranged to discharge said cool fluid substantially in a first direction along the interior of the wall to form a cooling film thereon, each mouth of the second plurality of discrete pockets being arranged to discharge said cool fluid substantially in a second direction along the interior of a wall to form a cooling film thereon, wherein said first and second directions are substantially mutually opposed and the mouths of the first plurality of discrete pockets are interdigitated with the mouths of the second plurality of discrete pockets so that substantially each mouth discharges cool fluid between two mouths of the other plurality.

3,898,798

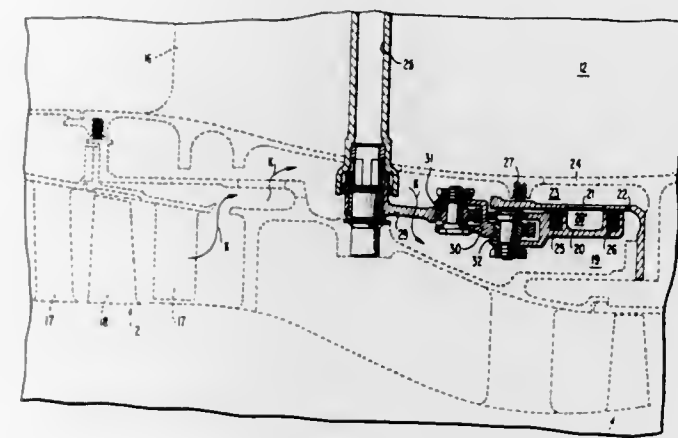
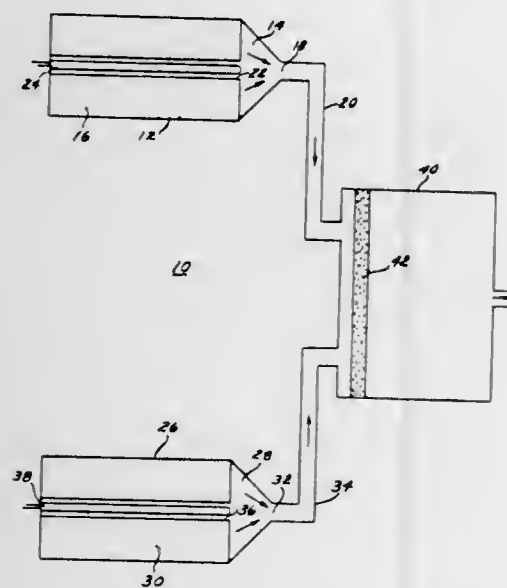
SUBLIMING SOLIDS BI-PROPELLANT FUEL SYSTEM POWER GENERATOR

Laurence O. Williams, Littleton, Colo., assignor to Martin Marietta Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 677,093, Oct. 23, 1967, abandoned. This application Oct. 26, 1972, Ser. No. 301,185
Int. Cl. C06d 5/08, 5/10

U.S. Cl. 60-207

12 Claims



10. The method of producing a high temperature working fluid from a solid fuel which comprises the steps of:

providing a single mass of solid fuel devoid of liquid which has a positive heat of formation and is adapted to sublime with the application of heat to provide a gaseous medium; enclosing said fuel within a gas-tight chamber having an outlet;

applying heat to said fuel in an amount sufficient to produce a gaseous medium with a pressure adequate to force the gases to issue from the chamber;

providing a single mass of solid oxidizer devoid of liquid adapted to sublime with the application of heat to provide a gaseous medium adapted to hypergolically react with said fuel and having a relatively high vapor pressure;

applying heat to said oxidizer in an amount sufficient to produce a gaseous medium with a vapor pressure adequate to force the gases to issue from the chamber;

passing the issuing fuel and oxidizer gases through a catalytic zone containing a catalyst adapted to decompose the gases with the release of heat to produce a high temperature working fluid; and,

expanding said working fluid through a work conversion means to produce work.

3,898,799

DEVICE FOR BLEEDING-OFF COMPRESSOR AIR IN TURBINE JET ENGINE

Wolfgang Pollert, Hebertshausen; Eckhard Kraft, Munich, and Gregor Pennig, Dachau, all of Germany, assignors to Motor- und Turbinen-Union München GmbH, Germany

Filed Sept. 27, 1973, Ser. No. 401,544
Claims priority, application Germany, Sept. 27, 1972, 2247400

Int. Cl. F02c 3/06

U.S. Cl. 60-226 R

46 Claims

1. Apparatus for bleeding off compressor air in a turbine engine of the type having a longitudinal center line and a plurality of mechanically independent compressors; and apparatus comprising:

a first chamber communicated directly with compressor air from one of said compressors,

an internal ring positioned in said first chamber,

an external ring positioned downstream of said internal ring with respect to air flow through said turbine engine,

positioned adjacent and externally of said internal ring with respect to said center line, and including a plurality of openings,

a second chamber communicated with bypass means of the engine which bypass means accommodates air flow therein in bypassing relationship to an engine combustion chamber arranged downstream of said compressors,

and internal ring actuating means for moving said internal ring between closed positions with said internal ring blocking said openings in said external ring to prevent flow from said first chamber to said second chamber and open positions with said internal ring out of blocking relationship with respect to said openings such that air can flow from said first to said second chamber through said openings.

3,898,800

HEAT ENGINE IN THE FORM OF A WATER PULSE-JET

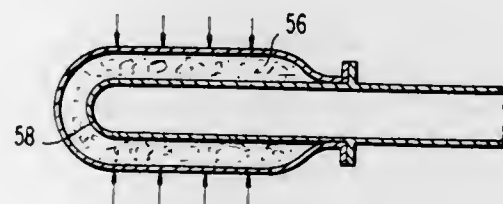
Peter R. Payne, Box 282, Rt. 5, Annapolis, Md. 21401

Filed May 8, 1973, Ser. No. 358,232

Int. Cl. B63h 1/12; F02k 7/02

U.S. Cl. 60-227

9 Claims



1. A heat engine comprising:

a. a tubular member, said tubular member being completely closed at one end and open at the other to a source of working fluid such that the working fluid has access to said tubular member through the open end thereof;

b. heating means for heating the working fluid at the closed end of said tubular member;

c. a material having high specific heat around the closed end of said tubular member to store heat;

d. a jacketing material having high heat conductivity arranged around said material having high specific heat; and

e. cooling means for cooling said tubular member adjacent the open end thereof,

whereby, when said heating means are functioning during use of the heat engine, the working fluid has a liquid and a vapor phase and the working fluid oscillates within the tube as it is alternately vaporized by said heating means and condensed by said cooling means, thereby producing useful power.

3,898,801

REACTION MOTOR EMPLOYING INTERMITTENT EXPLOSIVE COMBUSTION AND IMPULSE TURBINE

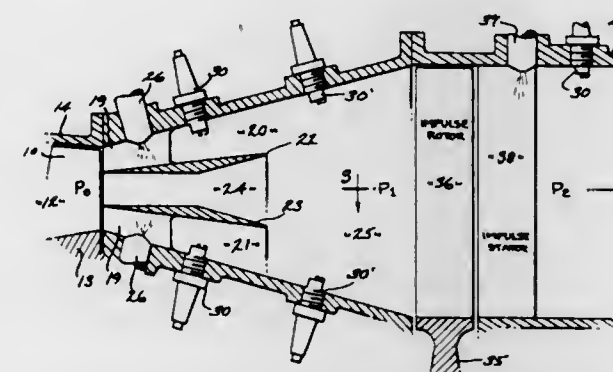
Harlow B. Grow, 16530 Chattanooga Place, Pacific Palisades, Calif. 90272

Filed Oct. 30, 1973, Ser. No. 411,092

Int. Cl. F02k 3/10

U.S. Cl. 60-247

18 Claims



1. A moderate thrust producing gas-turbine including; a compressor section having a working fluid inlet and means discharging compressed working fluid axially at a pressure adapted to support combustion, a nozzle-burner section receiving the axial discharge from said compressor means and comprised of a rearwardly divergent passage conducting the working fluid and with its nozzle area greater than its reception area from the compressor section and having intermittently explosive combustion means for expansion and axial velocity increase of said working fluid, and a turbine section receiving the working fluid from the nozzle-burner section at said axial velocity increase and having a turbine with energy absorbing velocity decreasing and pressure conserving blading driving said compressor and discharging remaining working fluid axially rearward as propulsive thrust.

3,898,802

EXHAUST GAS PURIFYING REACTOR

Tomoo Tadokoro, Kure, and Masayuki Kawata, Hiroshima, both of Japan, assignors to Toyo Kogyo Co., Ltd., Japan

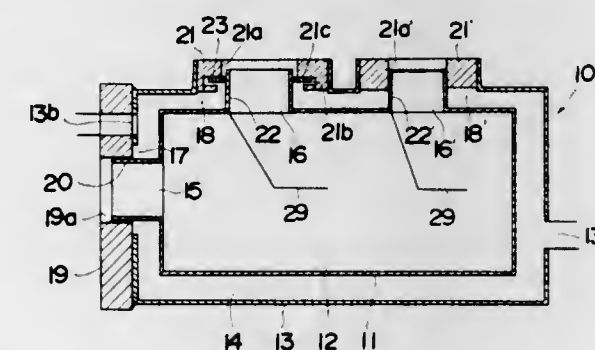
Filed July 2, 1973, Ser. No. 375,478

Claims priority, application Japan, July 3, 1972, 47-66902

Int. Cl. F01n 3/10

U.S. Cl. 60-282

2 Claims



1. A reactor for an internal combustion engine including an engine block, which comprises in combination: an inner shell forming a reaction chamber therein; an outer shell surrounding said inner shell and separated therefrom to define a space therebetween; a pair of intake tubes defining intake passages for introducing exhaust gas from said engine into said reaction chamber;

an exhaust tube means defining an exhaust passage for discharging the exhaust gas from said reaction chamber; said inner and outer shells being rigidly connected with each other by one of said intake tubes to reduce noise and vibration of the reactor during engine operation while the other of said intake tubes is movably connected between

said shells for supporting said inner shell to move in the axial and radially outward directions of said other intake due to the heat expansion of said inner shell.

3,898,803

EXHAUST GAS RECOMBUSTION ASSEMBLY FOR AN INTERNAL COMBUSTION ENGINE

Yoshio Sasaki, and Minoru Morita, both of Nagoya, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

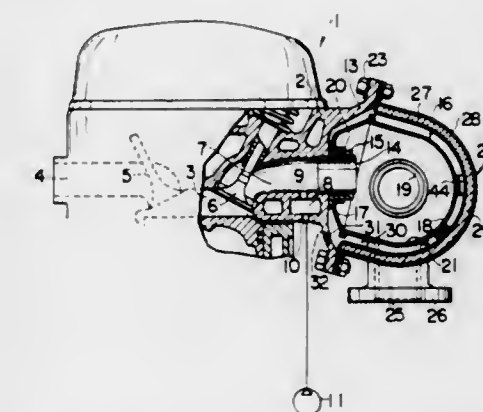
Filed May 31, 1974, Ser. No. 475,268

Claims priority, application Japan, Dec. 21, 1973, 48-142339

Int. Cl. F02b 75/10; F01n 3/10

U.S. Cl. 60-305

7 Claims



1. An exhaust gas recombination assembly for an internal combustion engine including an engine housing and exhaust gas outlet ports, said assembly comprising an inner casing defining an exhaust gas recombination chamber, said inner casing being mounted directly upon said engine housing over said exhaust gas outlet ports to define said recombination chamber in direct flow relationship with said outlet ports, an outer casing surrounding said inner casing, said outer casing being partially formed from integrally extending wall portions of said engine housing, means for supplying secondary air into said exhaust gas outlet ports, and outlet means for said recombination chamber whereby exhaust gases and secondary air are introduced directly from said outlet ports into said recombination chamber with recombined exhaust gases being discharged therefrom through said outlet means.

3,898,804

STRUCTURE OF AN EXHAUST MANIFOLD OF A ROTARY ENGINE

Minoru Morita, Nagoya, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

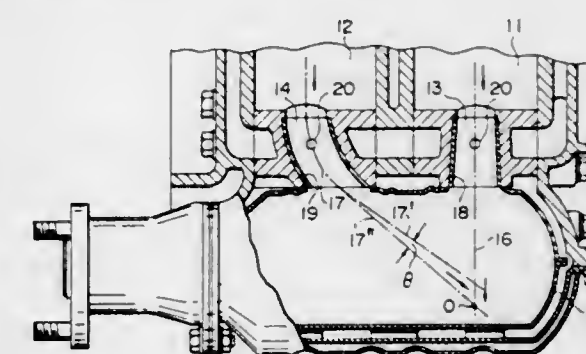
Filed Apr. 30, 1974, Ser. No. 465,485

Claims priority, application Japan, Jan. 16, 1974, 49-7642

Int. Cl. F01n 3/08

U.S. Cl. 60-323

7 Claims



1. A structure of an exhaust manifold of a multi-rotor type rotary engine which comprises a plurality of rotors, wherein exhaust gases delivered from individual combustion chambers corresponding to individual rotors are introduced into a common manifold reactor, characterized in that the lines of ejection

tion of individual exhaust ports corresponding to said individual combustion chambers substantially cut one another at a point located within an internal space of the manifold reactor.

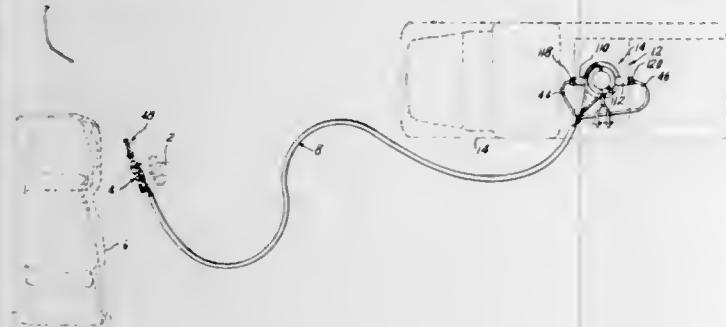
3,898,805

PUMP AND INTENSIFIER UNIT ARRANGEMENT FOR POWERED TOOLS

Lewis B. Good, Jr., 145 Johnson, East Peoria, Ill. 61611
Division of Ser. No. 289,115, Sept. 14, 1972, Pat. No. 3,837,076. This application June 25, 1974, Ser. No. 482,836
Int. Cl. F15b 3/00

U.S. Cl. 60—325

9 Claims



1. In combination, apparatus particularly designed to enable fire department workers to perform effective rescue work, comprising: a fire department pump, designed to pump relatively large quantities of water at relatively low water pressure; a remotely located fluid pressure operated tool; intensifier unit means for converting the relatively low water pressure of said fire department pump into relatively high fluid pressure for operating said tool, said intensifier unit means making it possible to effectively power said tool from said fire department pump and being located remotely from said tool, and comprising: intensifier pump means; water motor means arranged to operate said intensifier pump means; and means connecting said water motor means with said fire department pump; and fluid circuit means connecting said intensifier pump means with said tool.

3,898,806

NOISE REDUCTION APPARATUS

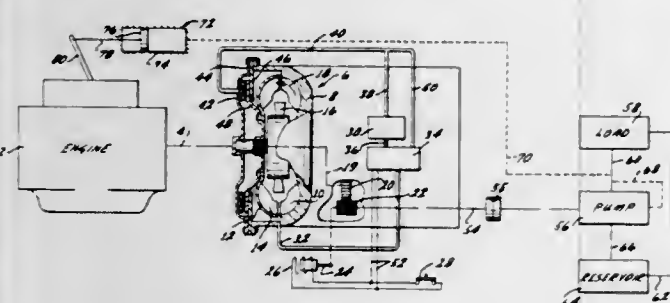
Robert J. Press, Pinole, Calif., assignor to Sargent Industries, Inc., Los Angeles, Calif.

Filed May 17, 1974, Ser. No. 470,861

Int. Cl. F16d 33/00

U.S. Cl. 60—330

36 Claims



1. A noise reduction apparatus for operating a variable volume and variable pressure load, said apparatus comprising: pump means having a capacity which is sufficiently large to supply said load at a relatively low pump speed; engine means operably connected to said pump means through a torque converter and an automatic transmission for supplying power to said pump means in performing a secondary work function at a speed near the idling speed of said engine means; said torque converter including a converter pump driven by said engine means and a converter turbine connected to said automatic transmission; lockup means and a governor controlling said lockup means to lock the converter pump to the converter turbine at

predetermined intervals during the shift pattern of said automatic transmission when the engine means is performing its primary work function, and bypass means to bypass said governor and to actuate said lockup means at speeds near the idling speed of said engine means when the engine means is supplying power to said pump means in performing a secondary work function, whereby the engine means operates in the low noise level region of speeds near its idling speed when supplying power for the pump means through said torque converter and automatic transmission with the torque converter locked up to eliminate slippage between the converter pump and converter turbine.

3,898,807

HYDROSTATIC TRANSMISSION CONTROL SYSTEM

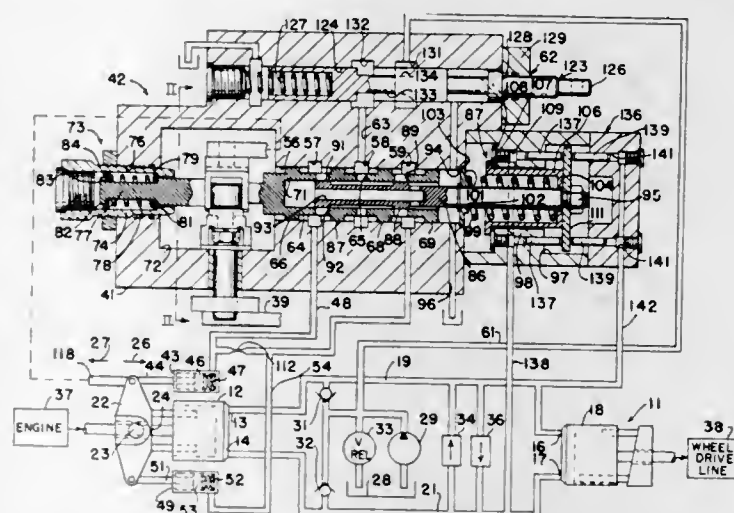
Cyril W. Habiger, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed June 20, 1974, Ser. No. 481,149

Int. Cl. F16H 39/46

U.S. Cl. 60—391

12 Claims



1. A control system for a hydrostatic transmission which has a fluid pump driving a fluid motor through a pair of flow conduits extending therebetween wherein said pump has an element which is movable to vary the volumetric displacement thereof, said control system comprising: fluid actuator means coupled to said pump element for varying said pump displacement in response to pressurized fluid received by said actuator means, a control member movable by an operator to select pump displacement, valve means movable in a first direction in response to movement of said control member to transmit pressurized fluid to said actuator means, follow-up means connected between said pump element and said valve means for shifting said valve means in a second opposite direction in response to movement of said pump element resulting from movement of said valve means in said first direction, and load compensating means for shifting said valve means independently of said control member when the fluid pressure differential between said flow conduits reaches a predetermined value.

3,898,808

CONCENTRIC BRAKE BOOSTER WITH ACCUMULATOR

Jerome T. Ewald, and Richard L. Lewis, both of South Bend, Ind., assignors to The Bendix Corporation, South Bend, Ind.

Filed June 20, 1974, Ser. No. 481,090

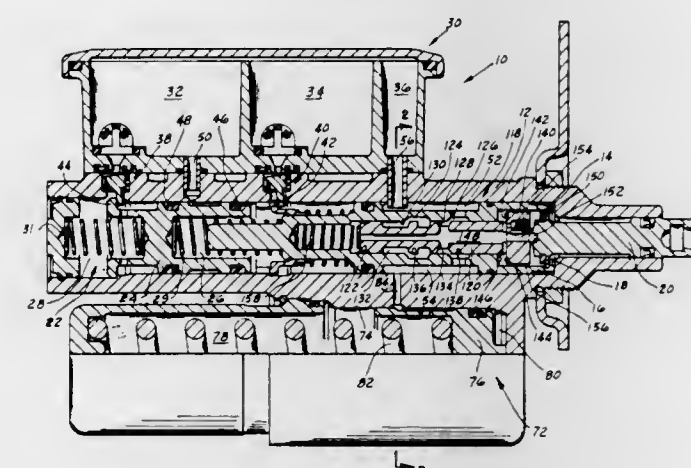
Int. Cl. F15b 20/00

U.S. Cl. 60—403

13 Claims

1. In a vehicle having primary and secondary pressure sources, a hydraulic brake actuating device comprising:

a housing defining a bore therewithin; a primary piston slidably mounted in said bore and cooperating with one end of the latter to define a variable volume pressure chamber therebetween, said primary piston sliding with respect to said housing to effect a brake actuation when fluid pressure from either of said sources is communicated into said pressure chamber;



operator-actuated valve means for controlling communication from said primary pressure source into said pressure chamber; and fluid pressure actuated means responsive to a failure of fluid communication from said primary source into said pressure chamber upon actuation of said operator-actuated valve means, said fluid pressure actuated means thereupon initiating communication between said secondary pressure source and said pressure chamber.

3,898,809

MOTOR VEHICLE OPEN-CENTER SERIES HYDRAULIC CIRCUIT WITH ACCUMULATOR

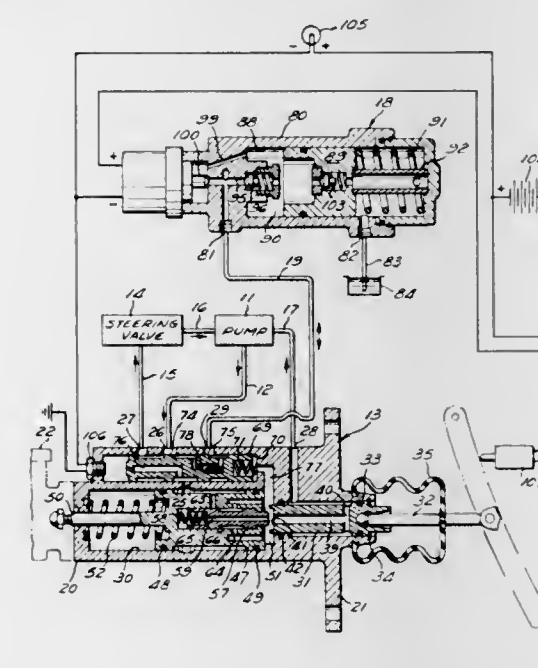
James P. Baker, Portland, Oreg., assignor to The Weatherhead Company, Cleveland, Ohio

Filed Nov. 29, 1973, Ser. No. 419,999

Int. Cl. F15b 1/02, 20/00

U.S. Cl. 60—404

16 Claims



1. A motor vehicle fluid power circuit comprising a pump having an outlet side, a steering valve, a fluid pressure actuated brake booster, and an accumulator, first means hydraulically connecting said pump outlet side to said brake booster and hydraulically connecting said pump outlet side to said steering valve, valve spool means connected in said first means and having one end exposed to the pressure of said pump outlet side and another end exposed to the working pressure in said brake booster, said valve spool means in response to

the working pressure in said brake booster on said other end throttling fluid flow from said pump outlet side and maintaining the pressure of said pump outlet side at at least a predetermined pressure differential above the working pressure of said brake booster under normal operating conditions, means hydraulically connecting said pump outlet side to said accumulator for charging thereof under normal operating conditions, means responsive to movement of said valve spool means in response to a fluid pressure failure in said pump pressure on said one end for supplying pressurized fluid from said accumulator to said valve spool means, and in response to said fluid pressure failure in said pump pressure on said one end said valve spool means hydraulically connects said accumulator fluid pressure to said brake booster and hydraulically isolates said accumulator and brake booster from said pump outlet side and steering valve.

3,898,810

TANDEM PUMP UNIT

Motoichi Ohba, and Keiichi Chiba, both of Tokyo, Japan, assignors to Nissan Motor Company Limited, Yokohama, Japan

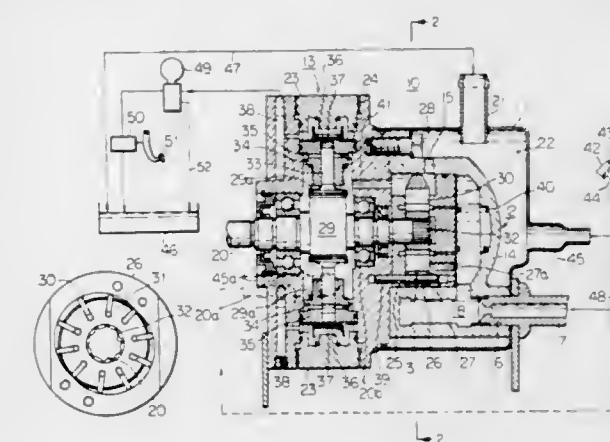
Filed Apr. 15, 1974, Ser. No. 461,215

Claims priority, application Japan, Apr. 16, 1973, 48-45452

Int. Cl. F15B 1/02, 11/16

U.S. Cl. 60—413

8 Claims



1. In a motor vehicle having a closed-type hydraulic system, an open-type hydraulic system and a hydraulic fluid reservoir, and a pump unit, said pump unit comprising: a low pressure pump having a first outlet connected to an inlet of the open-type hydraulic system and a first inlet; a high pressure pump drivable in common with said low pressure pump and having a second outlet connected to an inlet of the closed-type hydraulic system and a second inlet; an outlet of the closed-type hydraulic system being connected to the fluid reservoir and said first and second inlets communicating with both the fluid reservoir and an outlet of the open-type hydraulic system.

3,898,811

CONTROL LINKAGE FOR DUAL PATH HYDRAULIC DRIVE

David H. Seaberg, Davenport, Iowa, assignor to J. I. Case Company, Racine, Wis.

Filed June 20, 1974, Ser. No. 481,027

Int. Cl. F15B 13/09

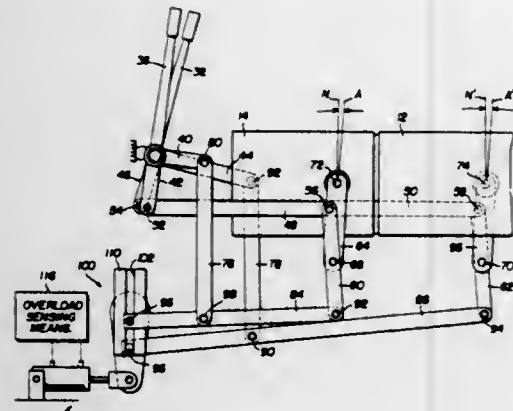
U.S. Cl. 60—421

20 Claims

1. In a prime mover, such as a crawler tractor, skid-steer tractor or the like, having a pair of independently operated variable power sources, said power sources having respective displaceable output control arms, wherein the improvement comprises:

a pivotally mounted overload sensing lever having a pair of spaced, parallel guide surfaces extending radially of the pivot axis;

a pair of follower components slideable along the respective lever guide surfaces; means interconnecting the following components with respective output control arms for displacing the follower components along the guide surfaces from the pivot axis a distance proportional to the power output from the power sources; and



means for pivoting said lever in response to an overload condition and for proportionally reducing the power output from said power sources in accordance with the position of said follower components from said lever pivot axis.

3,898,812

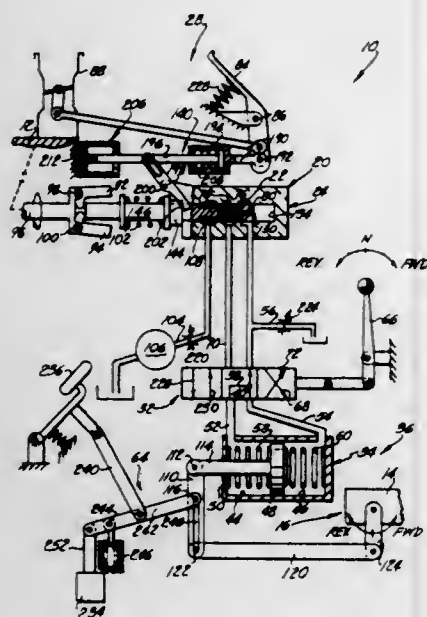
HYDROSTATIC TRANSMISSION CONTROL SYSTEM
Erlan Busch Walton, Farmington Hills, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed June 17, 1974, Ser. No. 479,672

Int. Cl.² F16D 31/00

U.S. Cl. 60—431

25 Claims



1. An apparatus comprising an engine, selectively settable throttle means for varying the operating speed of said engine, a hydrostatic transmission having a pump unit driven by said engine and a motor unit drivingly connected with an output member, fluid motor means for varying the displacement of at least one of said units of said hydrostatic transmission, valve means for porting fluid to said motor means, said valve means including a valve member which is movable to vary the fluid pressure ported to said motor means, means for applying to said valve member a first force which varies as a function of the operating speed of said engine and which urges said valve member in a first direction, means for applying to said valve member a second force which varies as a function of throttle

setting and which urges said valve member in a second direction opposite from said first direction, and means for applying to said valve member a third force which varies as a function of the fluid pressure conducted to said motor means from said valve means and which urges said valve member in said second direction.

3,898,813

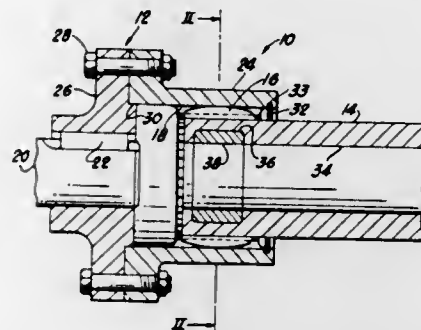
DYNAMICALLY PILOTED GEAR COUPLING
Michael M. Calistrat, Sykesville, Md., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed July 17, 1974, Ser. No. 489,401

Int. Cl. F16d 3/18

U.S. Cl. 64—9 R

10 Claims



1. A dynamically piloted gear coupling comprising: spool means having external spur gear teeth around its outer periphery; sleeve means surrounding said spool means and having internal spur gear teeth around its inner periphery in driving engagement with said external teeth; and dynamic piloting means within said spool means operative upon rotation of said coupling to diametrically expand said spool means for maintaining piloted engagement between said external and internal gear teeth.

3,898,814

MECHANISM FOR CLAMPING AND DRIVING A FLEXIBLE DISC

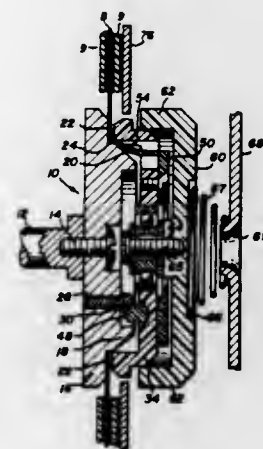
Albert S. Chou, Monte Sereno; Yang Hu Tong, San Jose; Harold C. Medley, Los Gatos, and Warren L. Dalziel, Monte Sereno, all of Calif., assignors to Shugart Associates, Sunnyvale, Calif.

Filed May 13, 1974, Ser. No. 469,411

Int. Cl.² G11B 25/04; F16H 13/00

U.S. Cl. 64—22

10 Claims



1. A mechanism for clamping and driving a flexible disc comprising:

a rotatable spindle formed to include a camming surface, a first disc clamping surface, and a disc registration surface, said spindle being rotatable about an axis; and clamping means including a second disc clamping surface and a registration engaging surface, said clamping means being rotatable about said axis and movable along said axis from a disc loading position to a disc clamping posi-

tion and further including means responsive to spindle rotation and operative to positively transmit said spindle rotation to said clamping means, said clamping means additionally including guide means responsive to misalignment of the inner periphery of said disc relative to said axis when said disc is loaded between said spindle and said clamping means and operative to engage a portion of said inner periphery that contacts said camming surface as said clamping means moves from said disc loading position into a position intermediate said loading and said clamping positions, said guide means serving to cam said inner periphery along said camming surface and into registration with said disc registration surface, whereby when said clamping means is in said clamping position, said disc is clamped between said first and second clamping surfaces and said means responsive to spindle rotation is positively registered with said spindle such that rotation of said spindle is positively transmitted to said clamping means.

3,898,815

PRESSURE AND VOLUME COMPENSATING SYSTEM FOR RECIPROCATING OIL FIELD DRILLING TOOLS
James Whitehurst Young, Irving, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Dec. 6, 1973, Ser. No. 422,240

Int. Cl. F16d 3/06

U.S. Cl. 64—23.7

3 Claims



1. A reciprocating torque transmitting well tool for operation in a borehole filled with a borehole fluid, comprising: an outer member; an inner member, said outer member and said inner member being telescopically arranged; spline means comprising a multiplicity of balls in matching raceways between said outer member and said inner member for transmitting torque; a lubricating fluid between said inner member and said outer member; spring means comprising a multiplicity of disc springs connected to said outer member and connected to said inner member; first seal means between said outer member and said inner member for providing a fluid seal between said lubricating fluid and said borehole fluid; and second seal means between said outer member and said inner member for providing a fluid seal between said lubricating fluid and said borehole fluid, said second seal means including a multiplicity of annular inner seals surrounding said inner member, a retainer element extending around said inner seals, a multiplicity of annular outer seals surrounding said retainer element, and means

for providing said seal means with a limited amount of axial movement.

3,898,816

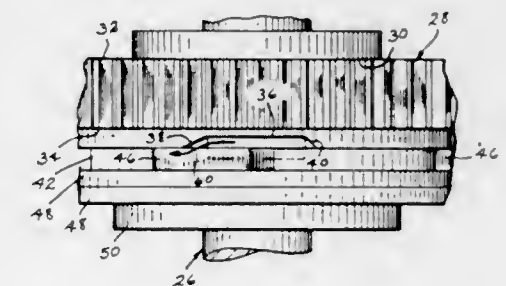
CLUTCH HAVING ROTATABLE POWER TRANSMITTING PARTS WHICH SHIFT RELATIVE TO EACH OTHER AT VARIABLE TORQUE LOADS
Robert E. Lindahl, Elkhart, and Charlie N. French, South Bend, both of Ind., assignors to Masco Corporation of Indiana, Elkhart, Ind.

Filed Jan. 9, 1974, Ser. No. 432,087

Int. Cl. F16d 3/56

U.S. Cl. 64—29

3 Claims



1. In a clutch member including a shaft part rotatable about a longitudinal axis, a power transmitting part journaled upon said shaft part for rotation relative to the shaft part about said longitudinal axis, said power transmitting part having an end face the plane of which is generally perpendicular to the said longitudinal axis, said end face having a pair of oppositely spaced first and second shoulder means defining a groove therebetween, said groove being spaced spaced from said longitudinal axis, arm means anchored to said shaft part and fitting within said groove, said arm means abutting said first shoulder means to cause said power transmitting part and shaft part to rotate as a unit about said longitudinal axis when one of said shaft and power transmitting parts is rotated in one direction of rotation, said arm means abutting said second shoulder means to cause said power transmitting part and shaft part to rotate as a unit about said longitudinal axis when said one power transmitting or shaft part is rotated in the opposite direction of rotation, each of said first and second shoulder means being beveled relative to the plane of said end face, means yieldably urging said arm means into said groove wherein the arm means will be caused to ride over said first and second shoulder means to cause relative rotative movement between said shaft and power transmitting parts when a specific torque between said shaft and power transmitting parts is exceeded, the improvement wherein the angle of bevel of said first shoulder means exceeds the angle of bevel of said second shoulder means, the respective angles of bevel of said first and second shoulder means being determinative of said torque at which said power transmitting and shaft parts experience said relative rotative movement, said relative rotative movement between said shaft and power transmitting parts occurring in said one direction of rotation at a higher torque than the torque at which such relative rotative movement between such parts occurs in said opposite direction of rotation.

3,898,817

ACTUATOR WITH A TORQUE LIMITING DEVICE

Terence John Capewell, Brewood, and Donald Craven, Wolverhampton, both of England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England

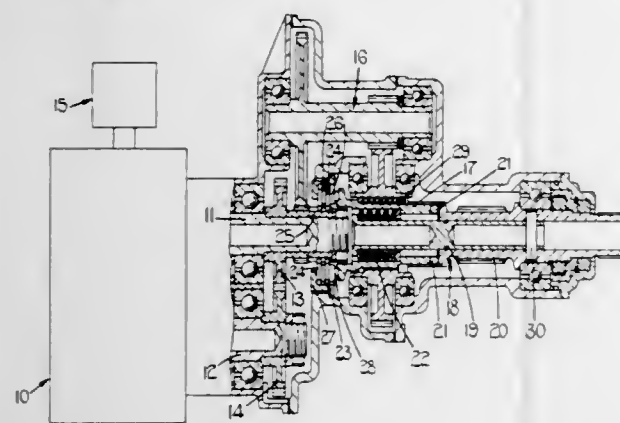
Filed Feb. 11, 1974, Ser. No. 441,447

Claims priority, application United Kingdom, Feb. 20, 1973, 8210/73

Int. Cl. F16d 7/02

U.S. Cl. 64—30 E

7 Claims



1. A rotary actuator comprising a housing, a drive shaft journaled in the housing, a coaxial output shaft journaled in the housing, a coaxial coupling member movable axially of the drive and output shafts, a reduction gear train connecting the drive shaft to the coupling member, coupling means between the coupling member and the output shaft arranged to transmit power from the coupling member to the output shaft and to cause axial displacement of the coupling member when the torque transmitted through the coupling means exceeds a predetermined value, and a brake on the drive shaft arranged to be actuated by such axial displacement of the coupling member.

3,898,818

PATTERN MEANS FOR CIRCULAR KNITTING MACHINES AND METHOD FOR OPERATING SAME

Gerhard Schmidt, Stuttgart, Germany, assignor to Firma Franz Morat GmbH, Stuttgart-Vaihingen, Germany

Continuation of Ser. No. 162,819, July 15, 1971, abandoned.

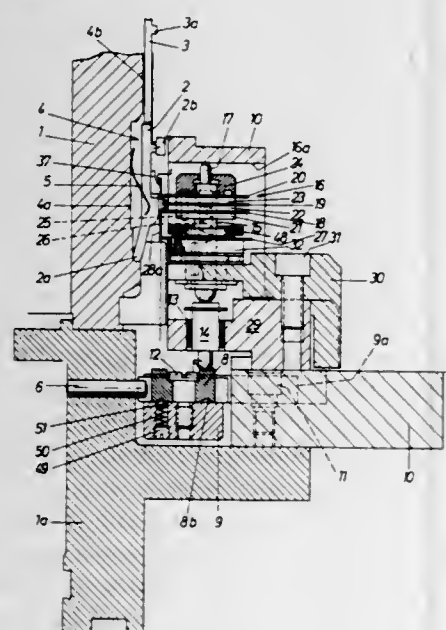
This application Aug. 22, 1973, Ser. No. 390,342

Claims priority, application Germany, Jan. 21, 1971, 2102719; Apr. 15, 1971, 7114392

Int. Cl. D04b 15/74

U.S. Cl. 66—50 B

10 Claims



1. A knitting machine comprising a circular needle cylinder having a plurality of guides, knitting elements arranged within said guides, spring means for selecting desired knitting ele-

ments for knitting a pattern, control means facing said needle cylinder and provided with guide traces for causing selected knitting elements to knit when said needle cylinder and said control means are moved relative to each other, at least one pattern device acting on said spring means for selecting the desired knitting element, said pattern device being movable relative to said needle cylinder and including at least two rotatable pattern elements provided on their circumferences with means for acting on said spring means, means for positioning said pattern elements in a working position for acting on said spring means or in a non-working position, means for positioning only one of said pattern elements in the working position, automatic means for moving another pattern element into the working position after a previously selected number of spring means have passed said pattern device while moving relative to said needle cylinder, whereby each of said pattern elements are selectively brought into the working position in such a sequence that all pattern elements jointly participate in the production of one pattern.

3,898,819

WARP KNITTING MACHINE

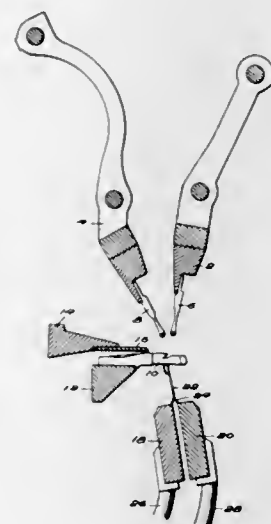
Siegfried F. Brand, RFD 1, Hayes Dr., Yorktown Heights, N.Y. 10598

Continuation-in-part of Ser. No. 838,075, July 1, 1969. This application Sept. 7, 1971, Ser. No. 178,505

Int. Cl. D04B 23/02

U.S. Cl. 66—87

10 Claims



1. A method of knitting novel fabrics on a knitting machine having a row of sinkers, rigidly mounted guide needles disposed above said sinkers, and a row of stitch needles below said sinkers and movable upwardly and downwardly relative to said sinkers, said method comprising, in any sequence a motion described by moving a first portion of the total number of said stitch needles in unison between said sinkers, forming a stitch on said stitch needles of said first portion without forming a stitch on the remainder of said stitch needles, and a motion described by moving a second portion of said stitch needles in unison between said sinkers, forming a stitch on said second portion of stitch needles without forming a stitch on said first portion stitch needles, and simultaneously moving said stitch needles of said first portion and said stitch needles of said second portion between said sinkers forming a stitch on said first and said second portion of stitch needles, said individual stitch needles employing a spacing sufficient to allow said rigidly mounted guide needles to clear when both said first portion and said second portion of stitch needles are simultaneously raised.

3,898,820

WARP KNIT FABRICS

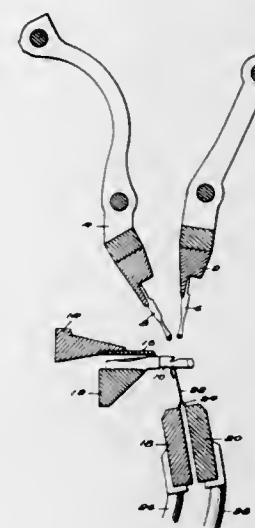
Siegfried F. Brand, RFD 1, Hayes Dr., Yorktown Heights, N.Y. 10598

Division of Ser. No. 178,505, Sept. 7, 1971, which is a continuation-in-part of Ser. No. 838,075, July 1, 1969, abandoned. This application July 12, 1973, Ser. No. 378,758

Int. Cl. D04B 21/00

U.S. Cl. 66—195

3 Claims



1. A single-faced warp knit fabric, having off-set appearing course lines and produced on a warp knitting machine having two guide bars and a split needle bar, the front and back portion of said split needle bar moving alternately, both of said guide bars having one end drawn, and one end missing, said fabric having the following stitch construction:

Front Guide Bar	1-2,	II-III,	3-4,	IV-V,	4-3,	III-II
Back Guide Bar	4-5,	IV-III,	3-2,	II-I,	2-3,	III-IV
Active Needle Bar	I	II	I	II	I	II

where Arabic numerals indicate front-needle-bar-knitting and Roman numerals indicate back-needle-bar-knitting.

3,898,821

TREATMENT CHAMBER FOR A CONTINUOUSLY MOVING WEB

Johannes Kutz, St. Tonis, near Krefeld, Germany, assignor to Eduard Kusters, Krefeld-Forstwald, Germany

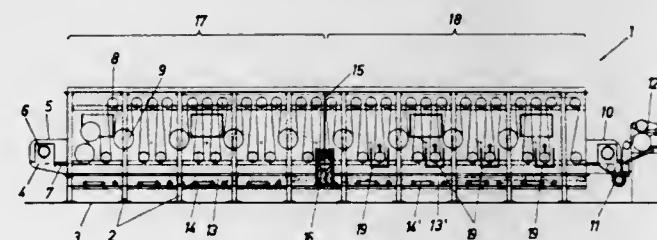
Filed July 2, 1973, Ser. No. 375,743

Claims priority, application Germany, July 6, 1972, 2233308

Int. Cl. F26b 25/00

U.S. Cl. 68—5 E

8 Claims



1. A treatment chamber for treating a continuously moving web of textile material comprising:

- an elongated treatment chamber having means for directing the moving textile web in a winding path there-through;
- means including at least one wall and a lock through which the web passes for separating said elongated chamber into a plurality of at least to sub-chambers, said lock being operable to be opened, to allow free passage of the atmosphere from one chamber to the other and closed to seal one chamber from the other; and

c. means to individually and selectively provide a treatment atmosphere to each of the subchambers.

3,898,822

MORTISE LOCK

Wolfgang Schalm, Senne, Germany, assignor to Schuco Heinz Schurmann & Co., Bielefeld, Germany

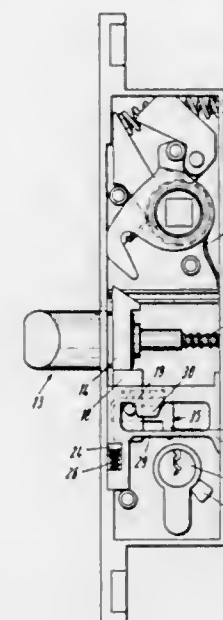
Filed Aug. 8, 1973, Ser. No. 386,739

Claims priority, application Germany, Aug. 10, 1972, 2239390

Int. Cl. E05b 55/06

U.S. Cl. 70—143

11 Claims



1. A mortise lock, comprising a housing; a latch bolt movable in a first direction out of and into said housing between an advanced dead-lock position, an intermediate latching position and a retracted position; a catch slidably mounted in said housing and extending over the entire width thereof into slidable guided, engagement with the width-defining housing walls for shifting movement between a normal rest and a shifted position in a second direction transverse to said first direction and having a cutout provided with a dead-lock part and a latching part, the two parts being spaced in said first direction, and an abutment separating said two parts and extending partly across said cutout in said second direction; a connector on said latch bolt, movable therewith and having a pin extending into said cutout, and an engaging portion; a biasing spring biasing said catch to said rest position; a lock cylinder mounted in said housing for turning movement between two positions in one of which it displaces said catch to said shifted position wherein said pin may move past said abutment from one cutout part to the other; means for moving said latch bolt between the several positions and including a handle-operated member operative to engage said engaging portion and displace said latch bolt to said retracted position, only when said latch bolt is in said intermediate position or inbetween these two positions.

3,898,823

DEVICE FOR RESILIENTLY LOCKING AIRCRAFT CONTROLS

Russell S. Ludeman, 982 Miller Rd., Lake Orion, Mich. 48035

Filed July 23, 1973, Ser. No. 381,905

Int. Cl. B64C 13/14

U.S. Cl. 70—200

4 Claims

1. In combination, an aircraft with controls for rudder, aileron and elevator flight control surfaces, said controls comprising at least one foot-operated rudder pedal and a hand-operated column and wheel for controlling the elevators and ailerons, respectively, and a device for securing said aircraft against rudder, elevator and aileron wind damage, said device comprising a member attached to said pedal, an element attached to said wheel and a telescoping element attached to

and extending between said member attached to said pedal and said element attached to said wheel, said device having resilient means for maintaining a predetermined free length thereof, but permitting either extension or contraction thereof against a resilient resisting force provided by said resilient means, whereby the rudder, elevator and aileron surfaces are restricted against free movement but at least one of the surfaces are permitted some degree of resiliently resisted movement.

3. A device for securing against theft and flight control surface wind damage an aircraft having at least one foot-operated rudder pedal and a hand-operated column and wheel for controlling the elevators and ailerons, said device comprising a member attachable to said pedal, an element attachable to said wheel and a telescoping element attached to and extending between said pedal member and said wheel element, said telescoping element having means for maintaining a predetermined free length thereof but permitting extension or contraction thereof against a resilient resisting force, whereby said rudder, elevator and aileron flight control surfaces are restricted against free movement but permitted some degree of resiliently-resisted movement, said telescoping element comprising a cylindrical tube and a cylindrical rod received therein with clearance, said pedal member comprising a body having oppositely disposed slots formed therein separated by a web, said oppositely disposed slots being adapted to receive the adjacent edges of spaced rudder pedals, said web having

receive a padlock to secure the same to said pedals or said wheel, respectively, the free length of said device between said pedal member and said wheel element slots being substantially the same as the distance between the pedals and the wheel in their neutral positions.

3,898,824

DETENTED COVER ASSEMBLY FOR VEHICLE DECK LID LOCK

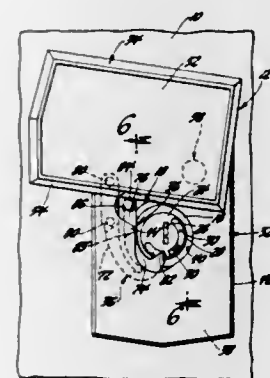
Hans J. Borlinghaus, Clarkston, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 21, 1974, Ser. No. 499,271

Int. Cl.² E05B 17/18

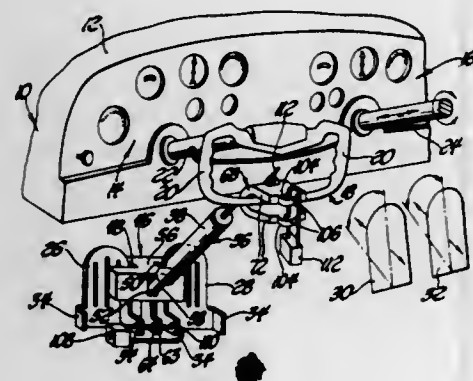
U.S. Cl. 70-455

3 Claims



1. In a vehicle body deck lid supporting a lock including a rotatable key cylinder with an outwardly facing key opening for receiving an appropriate key to permit unlocking rotation of the cylinder, a detented cover assembly for the lock comprising:

- a escutcheon mounted on the deck lid over the lock and defining an aperture allowing the key to be inserted into the key cylinder;
- a cover pivotally mounted on the escutcheon for movement between a closed position covering the aperture in the escutcheon so as to shield the lock from the environment and an open position where the key may be inserted through the escutcheon and into the key cylinder;
- spring means biasing the cover to the closed position;
- a cam carried by the key cylinder for rotation therewith; and
- a leaf spring mounted on the escutcheon and including engagement and detenting portions integral with each other, the detenting portion of the leaf spring being normally located in the path of cover movement toward closed position so as to engage and hold the cover in open position against the bias of the spring means, the engagement portion of the leaf spring being engaged by the cam on the key cylinder during unlocking rotation thereof so as to move this portion of the spring outwardly away from the deck lid, and the juncture of the engagement and detenting portions engaging the escutcheon so as to be restrained from outward movement with the engagement portion in a manner that causes the detenting portion to concomitantly move inward toward the deck lid so as to disengage the open cover and allow closing movement thereof under the bias of the spring means.



a slot formed therein with diverging sides, said pedal member being secured to one end of said tube by means of a connecting member having one end received in said web slot and secured therein by a pivot pin so that said pedal member is pivotable thereon to the extent permitted by said divergent sides, the other end of said connecting member being cylindrical and received in and secured to said tube, the other end of said tube being closed by a cylindrical bushing spring seat member having a portion thereof received in and secured to said tube, said bushing having an axial opening therethrough slidably receiving said rod, the free end of said rod within said tube being secured to a disc-like spacer spring seat member slidable within said tube, at least one free disc-like spacer spring seat member slidable in said tube on at least one side of said disc connected to said rod, at least one helical coil spring disposed in said clearance between said spring seats, the free end of said rod disposed outside said tube being connected to said wheel element, said wheel element comprising a generally "U" shaped body having a base, spaced legs extending from said base with a slot therebetween, said slot being adapted to receive therein said wheel, at least said pedal member or said wheel element having an opening therein to

3,898,825

KEY RING

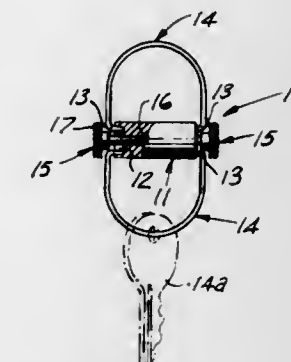
Frank E. Taylor, P.O. Box 756, Wichita, Kans. 67201

Filed Oct. 24, 1974, Ser. No. 517,408

Int. Cl.² A47G 29/10

U.S. Cl. 70-456 R

3 Claims



1. A key ring, comprising a cylinder, a pair of U-shaped wire clips removeably received on said cylinder and a pair of thumbscrews received by said cylinder providing positive retainment means for said wire clips receiving keys.

3,898,826

NON-ROTATING TWO-PART MANDREL AND A METHOD OF FORMING SPIRAL-SEAMED PIPE

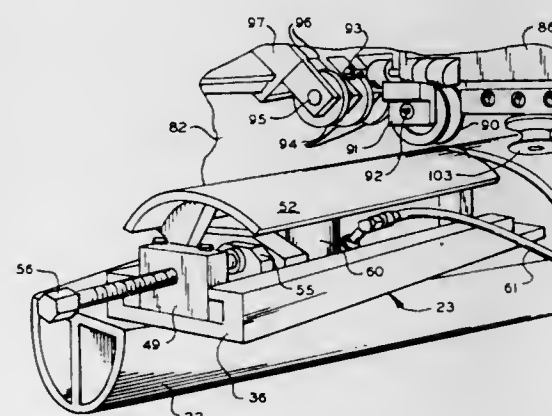
Jack P. Lombardi, R.D. Duguid Rd., Manlius, N.Y. 13104

Filed Sept. 12, 1974, Ser. No. 505,505

Int. Cl. B21c 37/12

U.S. Cl. 72-49

6 Claims



1. A non-rotating two-part mandrel for forming spiral seamed pipe from a formed strip of metal received from a forming mill having synchronously driven rollers for forming an upstanding male locking hook along one edge and an upstanding and downwardly opening female locking hook along the opposite edge, comprising:

- a substantially semi-cylindrical lower mandrel part secured at its inner end to a support tower projecting horizontally under the forming mill, a bending roller on the tower for bending the strip downward, the lower part having at its outer end a flat upper surface and a curved side surface on the far side of the advancing strip adapted to angularly guide the strip as it is received from the mill, an upper mandrel part having a flat lower surface plate at its outer end, a pivot pin projecting vertically upward from the flat upper surface through the surface plate and secured to one of the mandrel parts, a way formed longitudinally on the surface plate and carrying a slide adjustable along the way, the slide carrying a guide plate curved substantially about the midline of the surface plate and adjustable up and down with respect to the plate, the surface plate being angularly adjustable about the pivot pin with respect to the mandrel lower part for forming pipes of different diameters, means for locking the plate in angularly adjusted position, a turntable in the way linked to

the slide and carrying a lower pinch roll, the turntable being angularly adjustable with respect to the way and lockable in adjusted position, the lower pinch roll being adjustable up and down with respect to the surface plate, the lower mandrel post being positioned with respect to the forming mill so that the female hook of the advancing strip passes over the locking pin, the guide plate being adapted to angularly guide the strip so that the male hook of the strip on each succeeding turn of the strip about the mandrel is aligned with and enters the opening of the female hook of the preceding turn, and an upper pinch roll rotatably carried by the tower, the pinch rolls being adjustable for continuously clinching the hooks into a spiral seam as the strip is fed around the mandrel.

3,898,827

FORMING OF SUPERPLASTIC ALLOY SHEET

Colin John Swanson, Bristol, England, assignor to ISC Alloys Limited, London, England

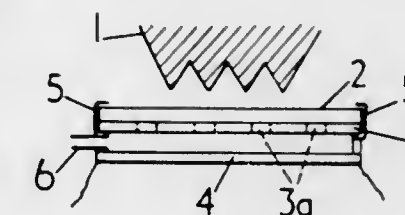
Filed Aug. 15, 1973, Ser. No. 388,418

Claims priority, application United Kingdom, Aug. 16, 1972, 38246/72; Oct. 2, 1972, 45327/72

Int. Cl. B21d 26/04

U.S. Cl. 72-60

9 Claims



1. A method of moulding superplastic alloy sheet material, comprising: holding a blank of sheet material in a substantially fluid-tight manner on top of and in contact with a plate having a plurality of apertures therein and heated by a heat source remote from the plate; heating the blank to a temperature at which it exhibits superplasticity; and applying fluid pressure to the blank through the apertures in the plate to cause the heated sheet to conform to the shape of a projecting mould surface situated above the sheet.

3,898,828

DIE ASSEMBLY AND METHOD FOR INTERIOR ROLL-NECKING-IN A TUBULAR MEMBER

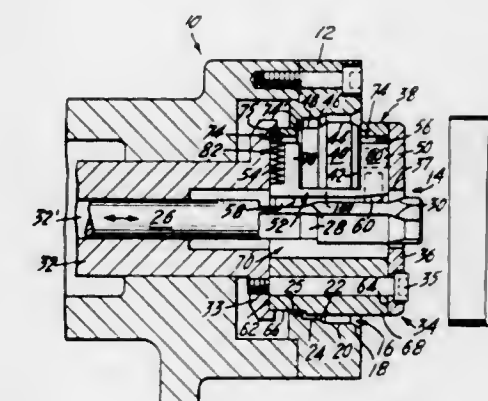
Eugene Cassai, Hackensack; Andrew Halasz, Pompton Plains, both of N.J., and Edward Herman Hanke, Barrington, Ill., assignors to American Can Company, Greenwich, Conn.

Filed Oct. 1, 1973, Ser. No. 402,602

Int. Cl.² B21D 41/02

U.S. Cl. 72-117

12 Claims



1. A die assembly for interior roll-necking-in an end portion of a tubular member comprising: an outer reducing die having a chamber whose walls include an annular inwardly-angled directing surface and an an-

nular rim-forming surface adjoining and axially interior of said directing surface,

a rotatable spindle assembly concentrically mounted within said outer reducing die, said spindle assembly including

a. an axially-movable elongated plunger having cam surfaces thereon,

b. a hollow spindle having pilot mounting means thereon, c. a pilot, said pilot including

i. a cylindrical housing mounted onto said pilot mounting means, said housing having inner and outer end walls, a circumferential sidewall, a bore running from said inner end wall axially through said housing for receiving said plunger, a slot, and a slot extension formed in said side wall, said slot communicating axially with said bore and extending radially from said bore through said slot extension,

ii. a free-wheeling roller mounted within said housing in a manner that the axis of said roller is parallel to the axis of said housing, said roller including a frustoconical portion and an adjoining axially-interior cylindrical portion, the circumferential profile of said roller substantially corresponding to the profile of said outer reducing die chamber surfaces,

iii. means for mounting said roller within said housing slot so that its axis is parallel to that of said housing and so that said roller is radially movable within said slot,

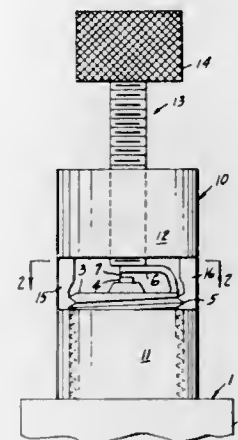
iv. biasing means for biasing said roller radially inward toward said plunger,

v. means for moving said roller radially outward to allow the outer surfaces of said frustoconical and cylindrical roller portion to protrude through said slot extension in said side wall to allow the surfaces of said roller portions to engage the interior wall surfaces of a tubular member placed within the outer reducing die, and

vi. means for axially retaining said roller mounting means within said slot;

vii. means for rotating said pilot housing; and means for independently advancing and retracting said plunger such that when a marginal edge portion of said tubular member is within said reducing die chamber, all of said previously recited means cooperate to move said roller axially outward and cause it to spin against and neck-in said portion of said tubular member and to move said roller radially inward away from said necked-in portion so that said necked-in portion clears said roller when said tubular member is withdrawn from said die assembly.

said mount being formed with relatively narrow connecting pieces connecting said opposite ends to provide spaces



between said pieces to permit insertion of a gage there-through.

3,898,830 ROLL STAND

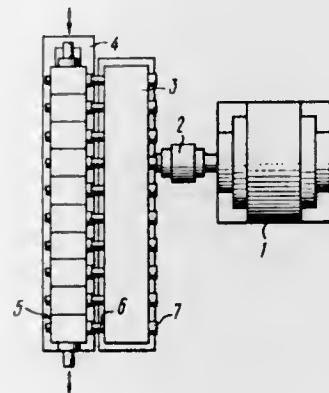
Gleb Pavlovich Borisenko, ploschad Oktyabrskaya, 7, kv. 28; Jury Sergeevich Chernobryvenko, ulitsa Dzerzhinskogo, 16, kv. 7; Jury Georgievich Kutsov, ulitsa Kirova, 8, kv. 9; Arkady Alexeevich Gorbanev, ulitsa Serova, 1-a, kv. 4; Oleg Nikolaevich Kukushkin, ulitsa Suvorova, 13, kv. 21; Vladimir Nikolaevich Krivobokov, ulitsa G. Pushkina 1b, kv. 21; Grigory Gavrilovich Pobegailo, pereulok Uritskogo, 11, kv. 3, and Vitaly Dmitrievich Nashivanko, ulitsa G. Pushkina, 1b, kv. 57, all of Dnepropetrovsk, U.S.S.R.

Filed Sept. 16, 1974, Ser. No. 506,747

Int. Cl. B21b 35/00

U.S. Cl. 72-249

4 Claims



3,898,829

SPARK PLUG ADJUSTING TOOL

Richard M. Sydow, 836 Daniel Dr., Petaluma, Calif. 94952

Filed Nov. 23, 1973, Ser. No. 418,246

Int. Cl. B21d 26/02

U.S. Cl. 72-125

2 Claims

1. A tool for adjusting the spacing between the electrodes of a spark plug comprising:

a mount,

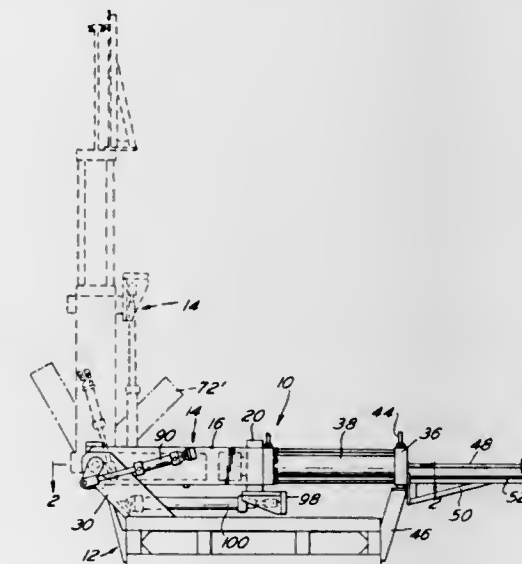
said mount being internally threaded at one end for threaded engagement with the external threads of said plug for securing said mount to said plug,

an adjusting screw threadedly secured to the opposite end of said mount for movement toward and away from one of said electrodes for deforming said one electrode toward another electrode,

1. A roll stand of unit-design mill for rolling metal bars, comprising: three rolls including one work roll and two similar idle rolls; a drive shaft for rotating said work roll and for transmitting energy required for deformation of the bar being rolled; said idle rolls being each installed on a stationary axle, said axle being made hollow and having an electric stator winding positioned thereon in the hollow of said roll and being connected to an alternating current power supply, a circular insert of an electrically conductive material being installed on the internal surface of said roll opposite to said stator winding, an air gap being provided between said stator winding and circular insert, thereby forming an electric motor in each said idle roll for accelerating the latter.

3,898,831
EXTRUSION APPARATUS
Karl W. Kahlefeld, Philadelphia, Pa., assignor to Loomis Products Company, Levittown, Pa.
Filed Feb. 6, 1974, Ser. No. 440,211
Int. Cl. B21C 23/04
U.S. Cl. 72-263

10 Claims



1. Extrusion apparatus comprising a base, a frame pivotably mounted on said base for movement about a transverse horizontal axis from a generally horizontal position to a generally vertical position, a die supported on said frame for movement therewith, a hollow container for supporting material to be extruded through the die, said container being supported on said frame for pivotable movement with said frame about said axis, means supporting said container for independent pivotable movement about said axis, a first motor means connected to said frame for selectively pivoting said frame and container as a unit about said axis for selective extrusion in a horizontal or vertical direction, and second motor means connected to said container for selectively and independently pivoting said container about said axis relative to said frame to facilitate loading of material into said container.

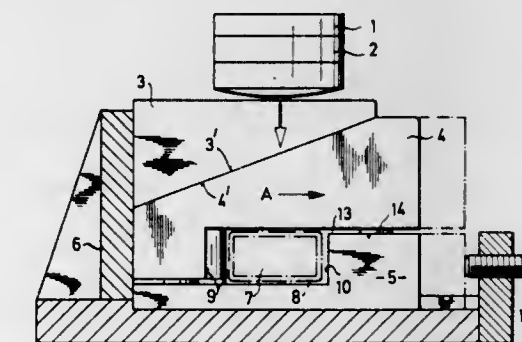
3,898,832
TOOL FOR BENDING WORKPIECES SUCH AS TUBES AND SECTIONS
Gerd-Jürgen Eckold, St. Andreasberg, and Hans Maass, Bad Lauterberg, both of Germany, assignors to Paweck AG, Chur, Switzerland
Filed Sept. 9, 1974, Ser. No. 504,662

Claims priority, application Germany, Sept. 7, 1973, 2345138; Nov. 12, 1973, 2356451

Int. Cl. B21D 7/06

U.S. Cl. 72-389

9 Claims

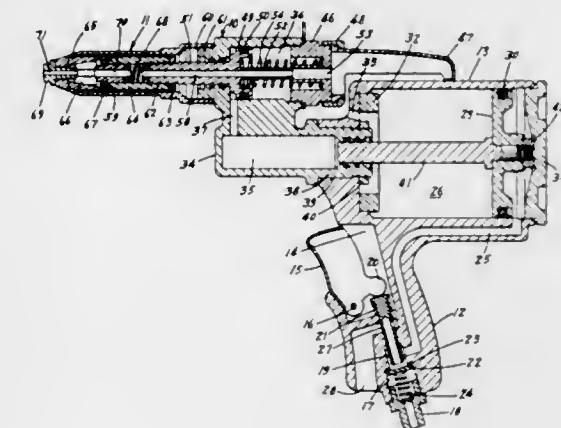


1. A tool for bending workpieces such as tubes and sections, and for use in machines in which the ram strokes occur in rapid succession, comprising: superimposed lower and upper clamping plates; resilient means located between said plates for maintaining them in a slight spaced-apart relationship; a holder within which said plates being disposed for horizontal shifting movement; said plates being shaped at their mutually

facing surfaces to form a cavity corresponding to the cross-section of a particular workpiece to be bent; counter-pressure elements on said holder spaced outwardly of said plates against which the workpiece bears; a pressure plate superimposed over said upper clamping plate for contact by the ram, the mutually facing surfaces of said upper plate and said pressure plate being correspondingly sloped in the same direction; the cavity having opposing vertical walls between which the workpiece is disposed, one of said walls in the direction of bending lying outwardly of the inner surfaces of said counter-pressure element; and the tool being such that each time the ram pressure is applied to said pressure plate, said clamping plates and the workpiece are shifted in the horizontal direction of bending opposite the corresponding slope of said upper plate and said pressure plate surfaces, the workpiece being shifted against the resistance of said counter-pressure elements over a distance corresponding to the effective stroke of the ram.

3,898,833
AIR-HYDRAULIC RIVET GUN
Russell F. Richardson, St. Paul, Minn., assignor to Textron Inc., Providence, R.I.
Filed Apr. 15, 1974, Ser. No. 460,729
Int. Cl. B21j 15/22
U.S. Cl. 72-391

5 Claims



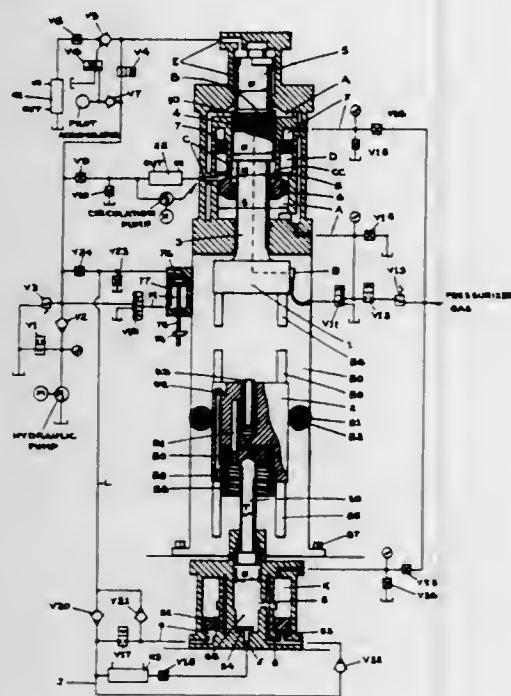
1. A rivet gun for setting blind rivets, said gun comprising:
A. a setting head for engaging and pulling the mandrel of a blind rivet,
B. a body including force exerting means for applying pulling force to said setting head, the direction of said force being generally longitudinal of said body,
C. said force exerting means comprising
1. a first hydraulic pressure chamber within said body having a piston reciprocable therein generally longitudinally of the body,
2. stem means movable with said piston in the same direction,
3. means connecting said stem means to the setting head to operate the same,
4. a second hydraulic pressure chamber disposed within said body in parallel closely spaced apart relation to the first chamber, said chambers being connected through an intercommunicating passage within said body,
5. a piston reciprocable in said second chamber,
6. a third pneumatic pressure chamber within said body in axial alignment with said second chamber,
7. a piston reciprocable in said third chamber and connected to the piston in said second chamber for simultaneous movement thereof,
8. means adapted to connect said third chamber to a source of gas under pressure, and
9. means to regulate flow of gas to said third chamber,
D. a pistol grip handle on said body adjacent to said third chamber.

3,898,834

HIGH ENERGY FORGING PRESS

Kurt H. Kramer, 601 West Ave., Sewaren, N.J. 07077
Continuation-in-part of Ser. No. 886,130, Dec. 18, 1969,
abandoned. This application Aug. 10, 1971, Ser. No. 170,599
Int. Cl. B21j 9/12
U.S. Cl. 72-453

27 Claims



1. A forming machine comprising in combination, a first tooling member, a second tooling member, a common frame, said first and second tooling members being adapted to reciprocate along a common axis on said machine, said first and second tooling members provided with means for attaching forming dies to their adjacent surfaces, primary piston chamber means arranged together with said first tooling member confining primary pressure gas which through expansion is adapted to urge said first tooling member in direction toward said second tooling member,

primary stopping means limiting expansion of said primary pressure gas and limiting distance of travel of said first tooling member in direction toward said second tooling member without disabling said machine whereby an end of stroke position for said first tooling member and a corresponding normal expanded condition of said primary pressure gas are determined independently of second tooling member motion or position,

reset means adapted to compress said primary pressure gas from said normal expanded condition and cause said first tooling member to move from said end of stroke position in direction away from said second tooling member to a beginning stroke position,

stroke initiating means adapted to release said primary pressure gas from said compressed condition and said first tooling member from said beginning stroke position whereby said primary pressure gas propels said first tooling member against said primary stopping means and said primary stopping means operates to limit rest position and whereby said first tooling member is actuated to strike a forming blow against said second tooling member positioned for forming,

secondary piston chamber means arranged in association with said second tooling member,

fluid control means adapted to regulate fluid in said secondary piston chamber means whereby said secondary piston chamber means is caused only in response to operator controlled signal to move said second tooling member along said common axis in direction toward said first tooling member to forming position and whereby said

secondary piston chamber means is caused to maintain said second tooling member at said forming position, said fluid control means adapted to allow said secondary piston chamber means to yield to said induced second tooling member motion and sustain said motion after a single forming blow while first tooling member motion is being curtailed by said primary stopping means whereby said second tooling member is caused to separate completely away from said first tooling member after a single forming blow, secondary stopping means limiting the distance said second tooling member may travel in direction away from said first tooling member after a single forming blow without disabling said machine.

3,898,835

BACKUP TOOL

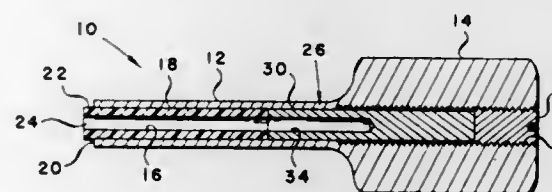
Gordon Winter, Burbank, and J. O. Adcock, Sun Valley, both of Calif., assignors to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Oct. 1, 1973, Ser. No. 402,183

Int. Cl. B21j 15/38

U.S. Cl. 72-465

9 Claims



1. A tool comprising an elongated rigid body member having ends and an axial bore extending therethrough, a tubular resilient insert mounted in said bore and being slidably secured by press fitting within said bore and having an end portion protruding from said one of said ends, and means mounted in said bore opposite said tubular insert for adjustably fixing the position of said insert relative to said one of said ends.

3,898,836

DIFFERENTIAL DILATOMETER

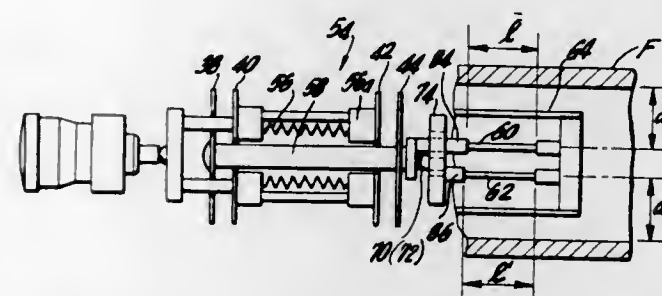
Gerhard R. Clusener, Port Washington, N.Y., assignor to Theta Industries, Inc., Port Washington, N.Y.

Filed Apr. 8, 1974, Ser. No. 458,592

Int. Cl. G01n 25/16

U.S. Cl. 73-16

10 Claims



1. A differential dilatometer for simultaneously measuring in a furnace the thermal properties of two samples, one with respect to the other, said dilatometer comprising:

- a linear variable differential transformer including coil means and a core freely floating therein;
- first and second cantilevered spring means for independently supporting said coil means and said core with respect to each other;
- first and second push rods of substantially equal length coupled to said coil means and said core, respectively, and symmetrically with respect to the wall of the furnace;

- feed means positioned in opposition to said core, for axially displacing said core with respect to said coil means to achieve electrical zero and thereby compensate for differences in length of said first and second push rods;
- gauge means adapted to be positioned between said feed means and the end of said coil that is in opposition thereto to provide a known separation between said feed means and said coil; and
- means for maintaining one of the samples in contact with each of said push rods.

3,898,837

METHOD OF AND DEVICE FOR THE IDENTIFICATION AND REDUCTION OF PEAKS IN CHROMATOGRAMS

Dietrich A. H. Boege, Santisblick 18, Daisendorf, 7758, Germany

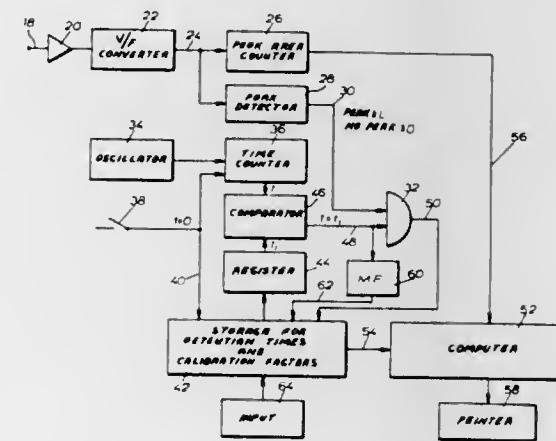
Filed Sept. 17, 1973, Ser. No. 397,907

Claims priority, application Germany, Sept. 19, 1972, 2245815

Int. Cl. G01n 31/08

U.S. Cl. 73-23.1

6 Claims



1. In a method for identifying and forming useful data from peaks in chromatograms, in which the peaks are integrated to form a peak area, the peaks are identified by means of their retention times and the peak areas are multiplied by stored detector sensitivity calibration factors, the improvement comprising the following method steps:

- storing predetermined nominal retention times and associated detector sensitivity calibration factors;
- interrogating the chromatogram of a sample under test at the nominal expected retention times to detect the existence of a peak; and
- multiplying the area of a peak detected at the instant of such interrogation by the calibration factor associated with the corresponding nominal retention time to form a product proportional to the amount of sample component causing the particular peak detected.

3,898,838

ULTRASONIC SCANNING SYSTEM

John J. Connelly, Chicago, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Nov. 1, 1973, Ser. No. 411,942

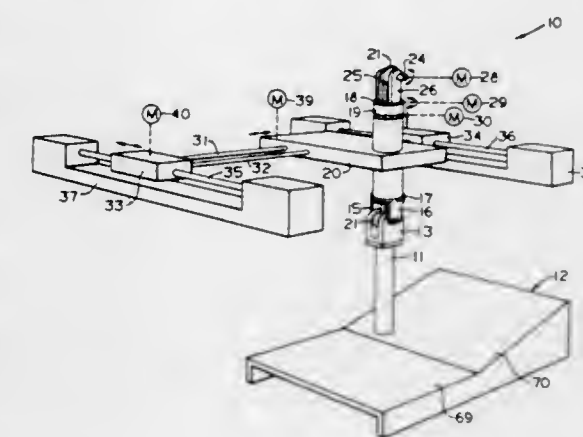
Int. Cl. G01N 29/04

U.S. Cl. 73-67.8 S

14 Claims

1. In an ultrasonic testing system including transducer means for periodically transmitting bursts of ultrasonic energy toward a front surface of a part and for developing a test signal including a front surface signal from reflection from said front surface and additional signals from reflections from inhomogeneities within the part, scanning means including reversible electric motor means for adjusting the angular position of said transducer means about a predetermined axis, means for supplying a clock signal in synchronized relation to the transmission of a burst from said transducer means, and angular adjustment means responsive to said front surface signal for

controlling said reversible electric motor means to rotate said transducer means about a predetermined axis to increase the amplitude of said front surface signal toward a maximum value, said angular adjustment means comprising gating



means, means responsive to said clock signal for operating said gating means for a time interval starting at a time before said front surface signal and ending at a time after said front surface signal, and means for applying said test signal to said gating means.

3,898,839

ULTRASONIC TESTING SYSTEM FOR A TEST PIECE

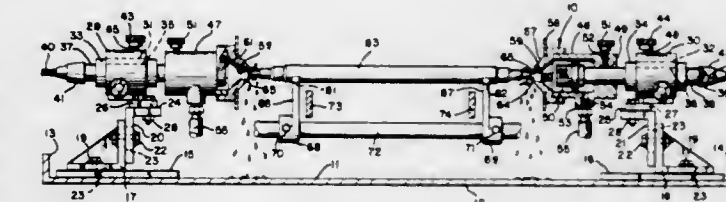
Allwyn M. White, Danbury, Conn., assignor to Automation Industries, Inc., Los Angeles, Calif.

Filed Nov. 8, 1973, Ser. No. 413,939

Int. Cl. G01N 29/00

U.S. Cl. 73-67.8 R

6 Claims



1. An ultrasonic testing system for nondestructive testing a plurality of test pieces having an elongated body for flaws or the like, said system comprising

at least one nozzle associated with said system having a cavity therein and an orifice in fluid communication with said cavity,

a source of liquid couplant in fluid communication with the interior of said cavity for supplying a liquid couplant under pressure in said nozzle,

transducer means fixed disposed in said cavity and in fluid engagement with said liquid couplant for directing a pulse out of said orifice,

aligning means associated with said system for aligning said test piece in a manner receiving both said pulse and said liquid couplant thereagainst, and

transporting means associated with said system for selectively transporting each of said test pieces into alignment with said aligning means.

3,898,840

MULTI-FREQUENCY ULTRASONIC SEARCH UNIT

Jerry T. McElroy, Danbury, Conn., assignor to Automation Industries, Inc., Los Angeles, Calif.

Filed Jan. 30, 1974, Ser. No. 437,793

Int. Cl. G01N 29/04

U.S. Cl. 73-67.9

11 Claims

1. In a nondestructive testing system for inspecting a work-piece with a dual transducer search unit in which a first frequency electrical channel is connected to one of the search

guided by guide means along the shield, a support linkage, means for pivotably connecting the linkage to the shield and to the floor-engaging member, at least one hydraulically operated telescopic prop disposed between the shield and the floor-engaging member and operable, during use of the installation, to bring the roof girder into contact with the roof of the mine working and shifting means for swinging the linkage in relation to the floor-engaging member to effect movement of the shield and the roof girder towards or away from the floor of the mine.

3,898,846

OFFSHORE STORAGE TANK

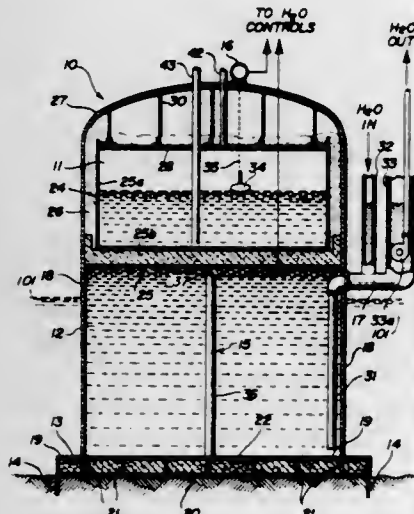
John Stanton McCabe, Naperville, Ill., assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed Feb. 19, 1974, Ser. No. 443,341

Int. Cl.² E02B 29/06; F17C 1/00

U.S. Cl. 61—46

13 Claims



1. An offshore tank for storage of a liquid comprising: a vertical shell, a bottom joined to a lower portion of the shell, and a roof supported by the vertical shell; a partition fixed in place inside of the shell dividing it into an upper receptacle suitable for storage of liquid and a lower fluid receptacle, said partition barring fluid flow to and from the lower and upper receptacles and providing vertical support for liquid stored in the upper receptacle; said lower receptacle being filled with fluid maintained therein under sufficient pressure to thereby provide support for the upper receptacle; and sensing and monitoring means associated with the upper receptacle to sense the deflection of said partition and including means to raise the fluid pressure inside the lower receptacle in response to loading on the partition.

3,898,847

FIXED PLATFORM FOR DEEP SEA DEPTHS ABLE TO HOUSE PLANTS, EQUIPMENTS STRUCTURES, MEN AND MEANS

Umberto Magnanini, San Donato Milanese, Italy, assignor to Tecnomare S.p.A., San Donato Milanese, Italy

Continuation of Ser. No. 270,733, July 11, 1972, abandoned.

This application May 22, 1974, Ser. No. 472,234

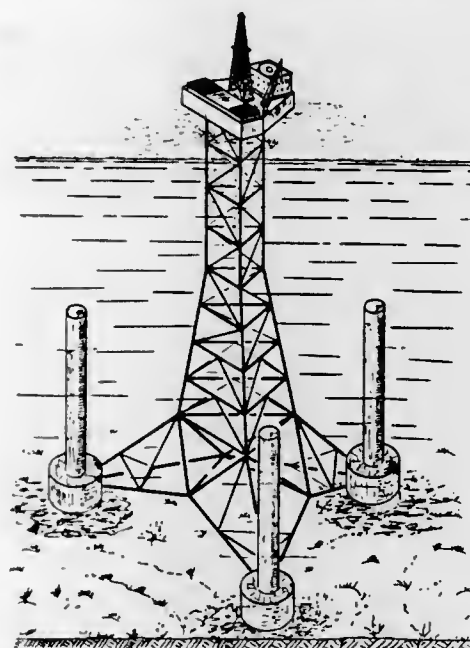
Int. Cl.² E02B 17/00

U.S. Cl. 61—46.5

3 Claims

1. A floatable deep sea platform comprising: a horizontal bridge member adapted to provide a working area above the surface of the sea; a rigid support structure attached to and extending downwardly from said bridge member, said structure including a first substructure directly below said bridge member, said substructure being triangular in horizontal cross-section and having a constant cross-sectional area, a second substructure attached to and extending downwardly from said first substructure, said second sub-

structure being triangular in horizontal cross-section and having a cross-sectional area which increases at increasing distance from said bridge member, and a base section composed of three outwardly extending opposed pyramidal members attached at their bases to said second substructure; support means attached at the outer end of each pyramidal member, each said support means including



a hollow caisson defining a support surface at its lower end, adapted to be positioned on the sea bed, and a hollow stabilization column extending upwardly from each said caisson and in communication therewith; and means for delivering fluid into said caissons and said stabilization columns to control the buoyancy of the platform, whereby said platform may be floated in an upright orientation for movement at sea and lowered vertically onto the sea bed.

3,898,848

METHOD OF GROUTING A PILE IN A HOLE INVOLVING THE OPTIMIZED FREQUENCY OF VIBRATION OF THE GROUTING MATERIAL

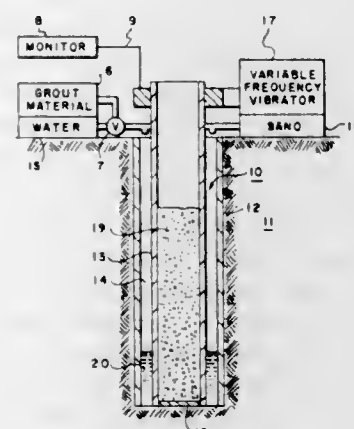
Reece E. Wyant, Houston, Tex.

Filed Mar. 28, 1974, Ser. No. 455,754

Int. Cl. E02d 5/00, 3/02

U.S. Cl. 61—53.52

10 Claims



1. A method of grouting a pile in a hole, comprising: placing a pile of a given external diameter in a hole having a diameter larger than said external diameter; adding a wet grouting material to said hole within the annulus external to said pile; vibrating said grouting material; and varying the frequency of said vibration to reinforce the amplitude of said vibration.

3,898,849

METHOD OF PACKING HEAT PIPES WITHIN A PIPE PILE INVOLVING THE OPTIMIZED FREQUENCY OF VIBRATION OF THE PACKING MATERIAL

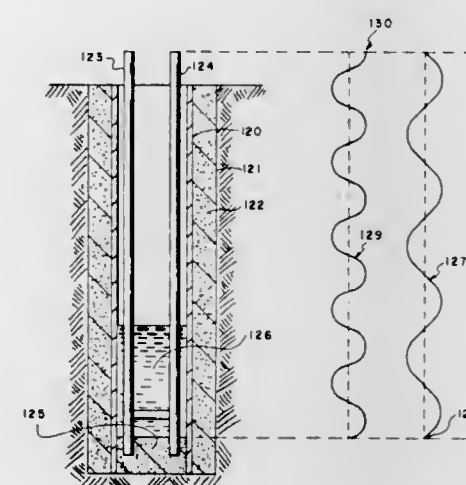
Reece E. Wyant, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Aug. 12, 1974, Ser. No. 496,411

Int. Cl.² E02D 5/00, 3/06; F28D 9/00

U.S. Cl. 61—53.52

5 Claims



1. A method of packing at least one heat pipe within a pipe pile, comprising: placing at least one heat pipe of a given external diameter within the interior of said pipe pile having an internal diameter larger than said external diameter; adding a wet grouting material to the interior of said pipe pile; vibrating said grouting material; and varying the frequency of said vibration to reinforce the amplitude of said vibration.

3,898,850

METHOD OF PACKING HEAT PIPES WITHIN A PIPE PILE INVOLVING THE OPTIMIZED VIBRATION OF THE PACKING MATERIAL

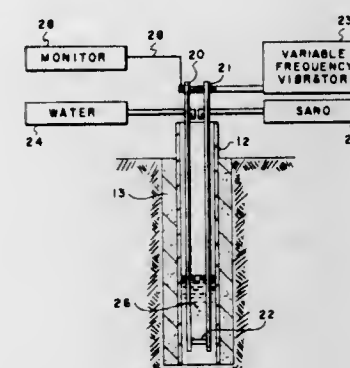
Reece E. Wyant, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Aug. 9, 1974, Ser. No. 496,221

Int. Cl. E02d 5/00, 3/02

U.S. Cl. 61—53.52

7 Claims



1. A method of packing at least one heat pipe within a pipe pile, comprising: placing at least one heat pipe within the interior of said pipe pile; metering a predetermined amount of water into the interior of said pipe pile; placing sand in said water to form a sand and water mixture after said water is in place in the bottom of said pipe pile; vibrating said sand and water mixture, said mixture having enough water to remain fluidized during said vibration; and

varying the frequency of said vibration to reinforce the amplitude of said vibration.

3,898,851

METHOD OF PACKING HEAT PIPES WITHIN A PIPE PILE INVOLVING THE VIBRATION OF THE PACKING MATERIAL

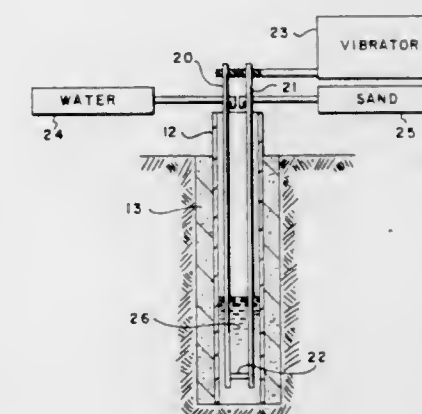
Reece E. Wyant, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Aug. 12, 1974, Ser. No. 496,412 The portion of the term of this patent subsequent to Oct. 8, 1991, has been disclaimed.

Int. Cl.² E02D 5/00, 3/06; F28D 9/00

U.S. Cl. 61—53.52

7 Claims



1. A method of packing at least one heat pipe within a pipe pile, comprising: placing at least one heat pipe within the interior of said pipe pile; metering a predetermined amount of water into the interior of said pipe pile; placing sand in said water to form a sand and water mixture after said water is in place in the bottom of said pipe pile; and vibrating said sand and water mixture, said mixture having enough water to remain fluidized during said vibration.

3,898,852

DITCHING MACHINES FOR SUBMARINE CABLE

Takuji Ezoe, and Kikuo Shilai, both of Tokyo, Japan, assignors to Kokusai Cable Ship Co., Ltd., Tokyo, Japan

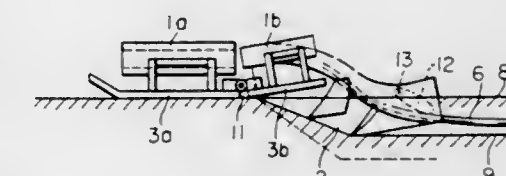
Filed June 7, 1973, Ser. No. 367,889

Claims priority, application Japan, June 7, 1972, 47-056103

Int. Cl.² E02F 5/02; F16L 1/00

U.S. Cl. 61—72.4

4 Claims



1. A ditching machine comprising a main body having front and rear portions, a cutting bit mounted on said rear portion, stabilizing means mounted on the sides of the front and rear portions of said main body, and pivotal joint means having a horizontal axis for joining the rear of the front portion and the front of the rear portion of said main body, such that said rear portion moves with respect to said front portion only about the horizontal axis of the pivotal joint means.

3,898,853

METHOD AND DEVICE FOR SUPPLYING GAS UNDER PRESSURE FROM A STORAGE TANK CONTAINING THE SAID GAS IN LIQUEFIED STATE

Jacques Iung, Pontarlier, France, assignor to Gurtner, S.A., France

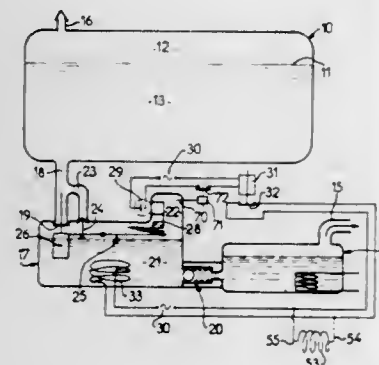
Filed May 29, 1973, Ser. No. 364,739

Claims priority, application France, June 1, 1972, 72.19733; Mar. 5, 1973, 73.07756

Int. Cl. F17c 17/02

U.S. Cl. 62—55

16 Claims



1. Method for supplying a combustible liquid, such as, liquefied petroleum gas, from a storage tank filled at least partially with said liquid to a point of distribution of the gas under pressure, the said method comprising the steps of: allowing the liquid contained in the tank to flow by gravity into a container lower than said tank and of a comparatively very reduced capacity as compared to said tank, while at the same time preventing the return of the liquid from the container towards the tank; providing for the liquid contained in the container a path of flow from the said container towards the said point of distribution and withdrawing from said point of distribution as required gas derived from the liquid reaching said point of distribution from said container; increasing the pressure in said container when the liquid therein rises to a given upper level; to expel the liquid therefrom towards the point of distribution, by effecting a partial gasification of the liquid in the said container; and, when the liquid level in said container lowers below a given lower level, withdrawing the gaseous phase contained in the said container to permit further introduction of liquid into the said container from said tank.

3,898,854

METHOD OF PROCESSING, TRANSPORTING AND STORING MEAT

Richard Y. McSheehy, Houston, Tex., and Harold G. Jones, Huntsville, Ala., assignors to Ecodyn Systems, Inc., Houston, Tex.

Filed Feb. 1, 1974, Ser. No. 438,746

Int. Cl. F25d 25/02

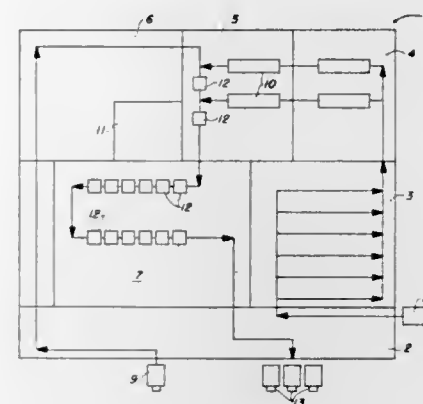
U.S. Cl. 62—62

6 Claims

1. A method of processing, transporting and storing meat comprising the steps of:

- cutting and packaging meat;
- placing packaged meat in portable sealably encloseable locker units having heat exchangers therein;
- reducing the temperature of said packaged meat within said locker units to temperatures between 30°F and 40°F;
- transporting said packaged meat and locker units to a point of distribution;
- connecting said locker unit heat exchangers to a refrigerant system, including a refrigerant compressor, located at said point of distribution; and
- maintaining said packaged meat and the interior of said locker units at temperatures between 30°F and 40°F;

g. said cutting, packaging and transporting of said meat being completely conducted in a substantially bacteria free environment of no more than 100,000 particulates, 0.5 microns or smaller, per cubic foot.



3,898,855

ICE RINK MOULD AND METHOD OF CONSTRUCTING AN ICE RINK UTILIZING THE MOULD

Charles P. Curfhey, 1405-40 Driveway N., Ottawa, Canada (K2P 1C9)

Filed Oct. 3, 1973, Ser. No. 403,082

Int. Cl. F25C 3/02

U.S. Cl. 62—75

7 Claims



1. A plastic mold for use in constructing an outdoor natural ice skating rink on a ground surface, comprising:

- a plurality of juxtaposed discrete cells defining a bottom surface, and an inner wall structure;
 - an outer wall structure enclosing the inner wall structure to form therewith a watertight container;
 - said bottom surface being formed of flexible thin plastic material that conforms generally to the ground surface on which it is to be placed;
 - said inner wall structure being formed of plastic material having sufficient rigidity to enable said cells to remain upright when filled with water, and having sufficient flexibility to enable said cells to be wound into a roll when the mold is not in use;
 - said outer wall structure being formed of plastic material having sufficient rigidity to enable said outer wall structure to stand upright;
 - whereby when the interior of the mold is flooded with water to fill said cells to substantially their tops and the water in said cells is frozen, a basic ice surface is formed while reducing the formation of shell ice and the flow of water from high ground to low ground surface levels, leaving only the tops of said inner wall structure bare of ice; and
 - whereby further floodings and freezings of the interior of the mold will produce a skatable ice surface over said cells.
- h. said mold being sufficiently large to permit a human being to ice skate thereon.

3,898,856

WATER CHILLING METHOD AND APPARATUS
Mieczyslaw Komedera, Orpington, England, assignor to MK Refrigeration Ltd., Kent, England

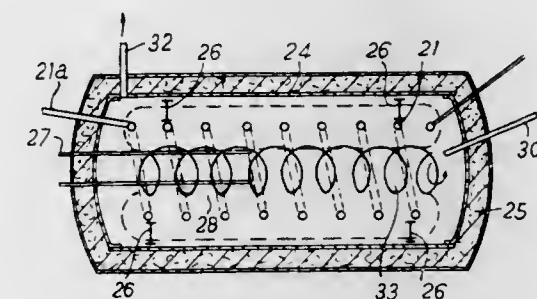
Filed Sept. 24, 1973, Ser. No. 400,118

Claims priority, application United Kingdom, Oct. 6, 1972, 46352/72

Int. Cl. B67d 5/62

U.S. Cl. 62—98

7 Claims



1. Chilling apparatus for chilling a flow of water comprising a tank for containing water, refrigeration means including a helical refrigerant evaporator coil disposed within the tank in spaced relation to the internal surface of the tank for forming a tube of ice in the tank, a water inlet means and a water outlet means in the tank, the water inlet means directing a flow of water from the inlet means in a helical path through the tube of ice and in direct contact with the ice thereby to chill the water, and a sensor disposed within the offset from the axis of the tube and coupled to said refrigeration means, said sensor being operative to stop operation of the refrigeration means in the event that the sensor detects ice in its immediate vicinity, and said sensor being disposed radially outwardly of the water inlet.

3,898,857

PROCESS FOR REGULATING THE QUANTITY OF COLD DELIVERED BY A REFRIGERATING INSTALLATION

Jean Bourguet, Les Vesinet, and Joseph Gaubertier, Paris, both of France, assignors to Teal, Societe des Procedes L'Air Liquide et Technip de Liquefaction des Gaz Naturels, Rueil-Malmaison, France

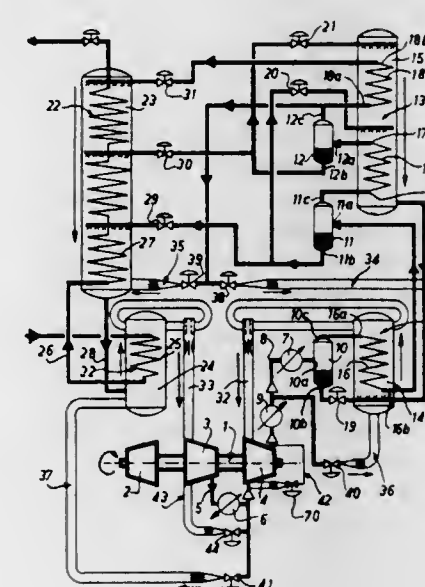
Filed Sept. 20, 1973, Ser. No. 399,279

Claims priority, application France, Sept. 22, 1972, 72.33672

Int. Cl. F25B 5/00

U.S. Cl. 62—117

16 Claims



1. In a process for regulating the frigorific power delivered by a refrigeration installation operating an incorporated cascade cycle wherein

- at least one cycle mixture is compressed in gaseous form from a lower pressure to a higher pressure, in at least one compression stage;
- the resulting compressed cycle mixture is partially condensed, by heat exchange with an external refrigerant, and a first liquid fraction (A) is separated therefrom;
- progressive condensation of at least the residual gaseous cycle mixture is affected at said higher pressure by heat exchange with, and while flowing counter-currently with respect to, a diphasic refrigerating stream comprised of at least a part of said cycle mixture, which stream is undergoing vaporization at a vaporization pressure at least equal to said lower pressure, whereby at least a last liquid fraction is obtained from the residual cycle mixture;
- at least a part of each of the liquid fractions of said cycle mixture is expanded from said higher pressure to said vaporization pressure, and the expanded liquids thus obtained are combined into said refrigerating stream, and
- at least said vaporized refrigerating stream formed in (d) and constituting at least a part of said cycle mixture is recompressed in gaseous form to said higher pressure, the improvement which comprises
- withdrawing at least a first gaseous recycle stream from said cycle mixture in gaseous form, under a pressure at most equal to said higher pressure and above said lower pressure;
- expanding to said vaporization pressure at least a gaseous portion of said withdrawn gaseous stream;
- combining said gaseous expanded portion with said refrigerating stream, before or when said at least a part of liquid fraction (A), after having been expanded to said vaporization pressure, is combined with said refrigerating stream;
- recompressing in gaseous form said combined portion formed in (iii) together with said refrigerating stream, when the latter has been vaporized, and
- controlling the flow-rate of said expanded gaseous portion of said first recycle stream.

3,898,858

SOFT ICE CREAM MACHINE

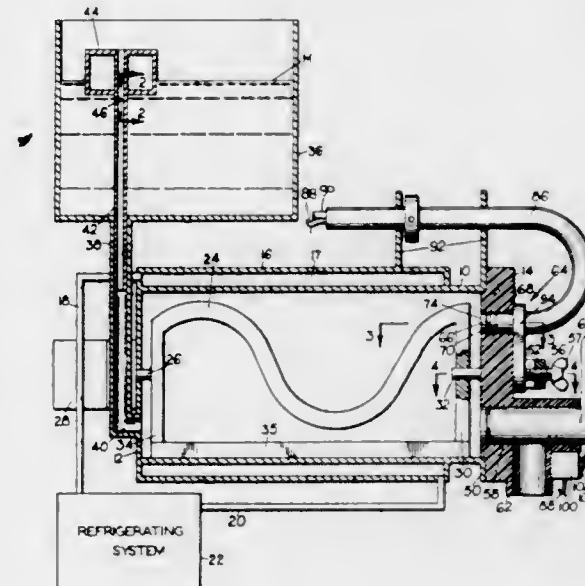
V. Robert Erickson, 8015 S.W. Oleson Rd., Portland, Oreg. 97223

Filed Sept. 14, 1973, Ser. No. 397,447

Int. Cl. F25c 7/10

U.S. Cl. 62—135

8 Claims



1. An ice cream machine of the continuous dispensing type for making and dispensing soft ice cream comprising

- a freezing barrel having opposite ends and enclosing side walls with an interior surface defining a freezing and mixing chamber,

- b. an inlet adjacent one end of said freezing barrel for admitting mix into said chamber;
- c. an outlet valve adjacent the other end of said freezing barrel for discharging ice cream;
- d. means in said chamber for mixing said ice cream and forcing it from said outlet valve;
- e. a cooling chamber surrounding at least a portion of said freezing barrel;
- f. refrigerating means associated with said cooling chamber for cooling the freezing barrel;
- g. thermostat means controlling the operation of said refrigerating means to cause operation of the latter at a selected sensing temperature;
- h. temperature sensing means for said thermostat means;
- i. and insulated support means supporting said temperature sensing means on said freezing barrel adjacent said other end in isolated relation from the temperature influence of the enclosing walls of said freezing chamber and said cooling chamber;
- j. said sensing means comprising a head portion of heat conductive material;
- k. said head portion being supported such that an end surface thereof is exposed interiorly to the freezing and mixing chamber for directly sensing the temperature of the ice cream adjacent the outlet.

3,898,859

APPARATUS AND METHOD FOR THE PREPARATION OF SOFT SERVE PRODUCTS

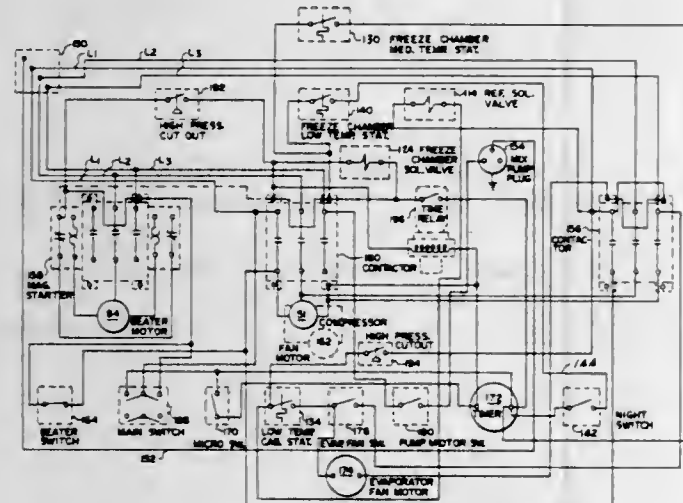
Gene S. Duke, Moline, Ill., assignor to H. C. Duke & Son, Inc., East Moline, Ill.

Filed Feb. 13, 1974, Ser. No. 442,219

Int. Cl.² F25D 29/00; A23F 9/02

U.S. Cl. 62—135

7 Claims



1. A soft serve confectionary machine comprising: a freezing chamber in association with a refrigeration chamber;
- said refrigeration chamber providing space for at least one container of mix composition to be processed in said freezing chamber;
- pump means within said refrigeration chamber and connectable with said container to convey mix composition to said freezing chamber for processing and dispensing;
- refrigeration means operably connected to said chambers including:
- compressor means having its high pressure discharge connected to a condenser and a receiver;
- a main control valve controlling liquified refrigerant from said receiver;
- a first branch conduit connected to a refrigeration coil in said freezing chamber;
- a return conduit connected to the intake of said compressor means;
- thermostatic control means for said branch conduit operable to maintain said freezing chamber at freezing temper-

- ature in one mode of operation and at refrigeration temperature in a second mode of operation;
- a second branch line connected to a refrigeration coil in said refrigeration chamber;
- a return conduit connected from said refrigeration coil to the said intake of said compressor; and
- independent thermostatic control means to maintain said refrigeration chamber at a refrigeration temperature.

3,898,860

AUTOMATIC DEFROSTING CONTROL SYSTEM

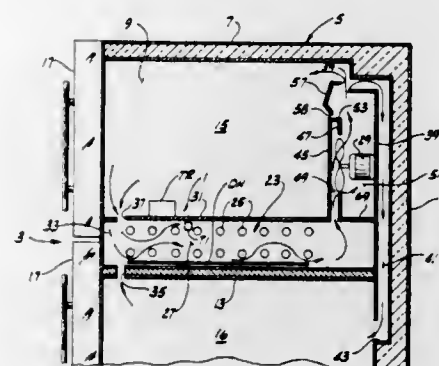
Glen C. Shepherd, Garland; James B. Allen, Richardson, both of Tex., and Samuel T. Bryant, Louisville, Ky., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 15, 1974, Ser. No. 514,347

Int. Cl. F25d 21/06

U.S. Cl. 62—155

5 Claims



1. An automatic defrosting control system for a refrigeration system having cooling means for absorbing heat from a zone to be cooled and thermostatic means for periodically energizing the cooling means to maintain the zone substantially at a preselected temperature, said cooling means being subject to the accretion of frost thereon which thereby increases the periods of energization of the cooling means in order to maintain the zone at the preselected temperature, said control system comprising:

means for causing defrosting of said cooling means;

- a thermostat adapted to be positioned in heat-exchange relation with both said cooling means and said defrosting means and adapted for connection in a control circuit, said thermostat having a first switching position for terminating energization of said defrosting means and a second switching position for enabling operation thereof, said thermostat switching from its first to its second position in response to its temperature falling to a lower predetermined level and switching to its first position in response to its temperature rising to a higher predetermined level;
- a thermal time-delay adapted to be positioned in heat-exchange relation with said cooling means and adapted for connection in said control circuit, said relay having a first switching position for permitting operation of said cooling means and a second switching position for energizing said defrosting means and preventing operation of said cooling means, said relay switching from its first position to its second position upon reaching a given temperature and switching from its second to its first position upon reaching a different preselected temperature;

said thermostatic means being responsive to the temperature in said zone to periodically energize said cooling means to cycle between an "on" mode and an "off" mode to maintain the zone substantially at said preselected temperature; and

means responsive to the duration of one of said modes to supply heat to said relay whereby upon a sufficient accretion of frost forming on the cooling means the increased duration of the "on" mode will cause the temperature of the relay to reach its given temperature and switch to its second position and will cool said thermostat to cause its

temperature to fall below its lower predetermined level and switch to its second position thereby energizing said defrosting means.

3,898,861

BEVERAGE DISPENSER

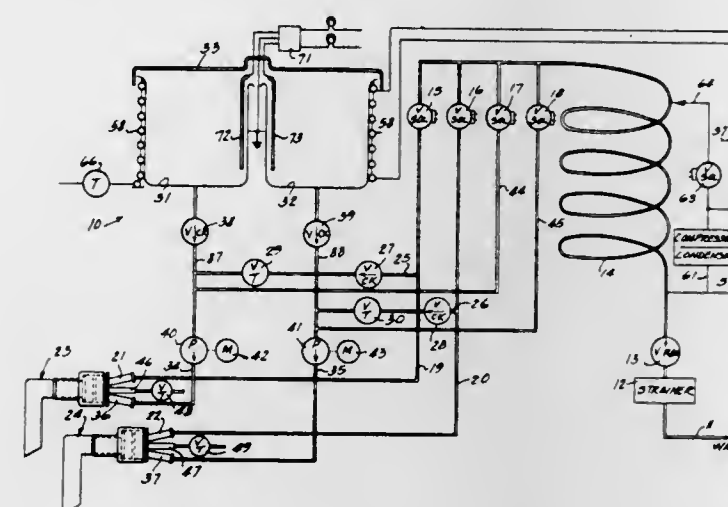
John R. McMillin, St. Paul, Minn., assignor to The Cornelius Company, Anoka, Minn.

Filed Aug. 20, 1973, Ser. No. 389,808

Int. Cl. F25d 17/00

U.S. Cl. 62—177

37 Claims



1. A beverage mixing and dispensing system comprising: a source of flavored beverage ingredient of the liquid concentrate type;
- a mixing and dispensing spout;
- a line connecting concentrate source to said spout;
- a selectively actuatable control member in said concentrate line for controlling flow of the beverage ingredient through said spout;
- a normally closed main valve for being connected to a supply of pressurized water and connected to said spout independently of said concentrate line so that the beverage ingredient is mixed with diluting water within said spout when said main valve and said control member are actuated; and
- a normally closed flushing valve for being connected to the same supply of water and connected to said concentrate line upstream of said control member, said flushing valve being sized to have a flow rate capacity which is greater than the flow rate capacity of said control member.

whereby beverage is mixed and dispensed when said control member and said main valve are jointly actuated, and whereby at least a portion of said concentrate line, said control member and said spout are flushed when said control member and said flushing valve are jointly actuated.

3,898,862

ECONOMIZER PRESSURE REGULATING SYSTEM

Hans Gerhard Kerschbaumer, and James W. Endress, both of Syracuse, N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Division of Ser. No. 381,811, July 23, 1973, Pat. No.

3,827,250. This application May 6, 1974, Ser. No. 467,415

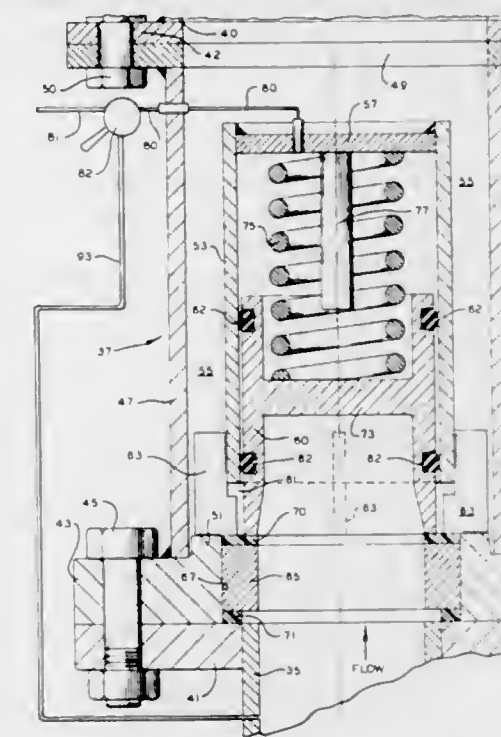
Int. Cl. F25b 41/04

U.S. Cl. 62—197

4 Claims

1. An economizer pressure regulating system for regulating the pressure in the economizer connected in a refrigerant passage extending from a condenser to a cooler, said regulator comprising a casing connected in a line extending from the economizer to a compressor and forming a portion of said line, a cylinder fixedly mounted in said casing, said cylinder extending in a direction lengthwise of the casing in spaced relation thereto, and forming, in conjunction therewith, a flow passage extending through said casing, said cylinder being

formed with an open end confronting the flow of fluid from said economizer, the opposite end of said cylinder being provided with a closure, a port adjacent the open end of the cylinder and serving to pass the flow from the economizer into said flow passage, a piston valve mounted in said cylinder and being movable into and out of position to open and close said port, the application of pressure in the flow from said economizer urging said piston valve to a port opening position, a



3,898,863

CRYOGENIC REFRIGERATION APPARATUS WITH AUTOMATIC TEMPERATURE CONTROL AND AUTOMATIC GAS BALANCE CONTROL

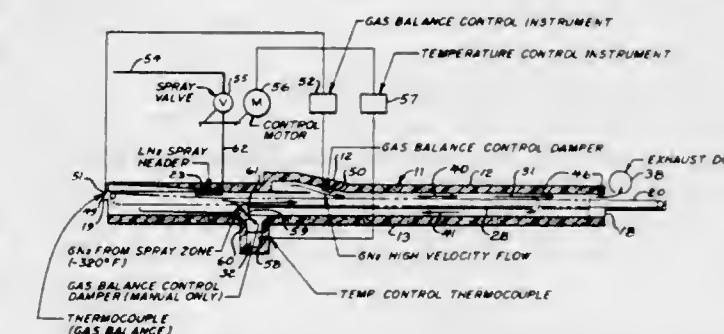
Richard C. Wagner, Darien, Ill., assignor to Hollymatic Corporation, Park Forest, Ill.

Continuation-in-part of Ser. Nos. 264,133, June 19, 1972, Pat. No. 3,824,806, and Ser. No. 390,755, Aug. 23, 1973, Pat. No. 3,871,186. This application Dec. 14, 1973, Ser. No. 424,768

Int. Cl. F25b 41/06

U.S. Cl. 62—208

16 Claims



1. Apparatus for refrigerating articles, comprising: means defining a thermally isolated chamber having boundary walls and an entrance and an exit for passage of said articles through said chamber; conveyor means in said chamber for said passage; introducing means for introducing a cryogen means into said chamber for providing cryogen gas in said chamber; circulating means for circulating said gas in a circulation loop including a first reach in direct heat exchange contact with said articles and a second reach out of said direct contact with said articles; gas outlet exhaust means from said chamber spaced from said loop on the side thereof adjacent

said chamber entrance; flow restriction means in said chamber between said loop and said exhaust for limiting volumetric gas flow from said loop to said exhaust and thereby maintaining a rapid gas flow rate in said loop; gas outlet vent means from said chamber located adjacent to said chamber exit; temperature responsive control means for automatically controlling the rate of said introducing of cryogen as a function of gas temperature in said loop; and temperature responsive gas balance control means for automatically proportioning gas flow between said loop and said vent means as a function of gas temperature at said vent means.

3,898,864

REFRIGERATION EVAPORATOR COIL

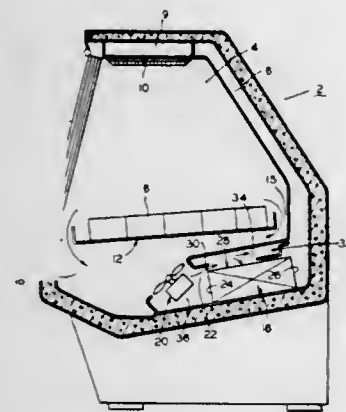
Melvin W. Steelman, Niles, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Filed May 17, 1974, Ser. No. 470,762

Int. Cl.² F25D 21/00

U.S. Cl. 62—272

6 Claims



1. Air refrigeration apparatus including:
an air conducting conduit,
an air propulsion means capable of circulating air through said conduit,
an air cooling means located in said conduit having a first air inlet area, a second air inlet area and an air outlet area,
said first inlet area being located in a plane normal to the direction of air flow through said conduit,
said second air inlet area being located in a plane normal to said first inlet area,
restriction means between said first and second air inlet areas,
a plenum chamber lying between said restriction means and said second air inlet area,
whereby in the absence of frosting conditions, the major volume of the air flows through said first inlet area and when,
said first inlet becomes clogged with frost the restriction means permits a greater volume of the air to flow through said second inlet area to said cooling element to thereby provide for entry of air into said cooling element when the first inlet area becomes clogged with frost.

3,898,865

CONDENSATE DISPOSAL APPARATUS FOR AN AIR CONDITIONER

Richard F. Stewart, West Jefferson, and Francis A. Gasparini, Columbus, both of Ohio, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 30, 1974, Ser. No. 465,636

Int. Cl. F25b 47/00

U.S. Cl. 62—280

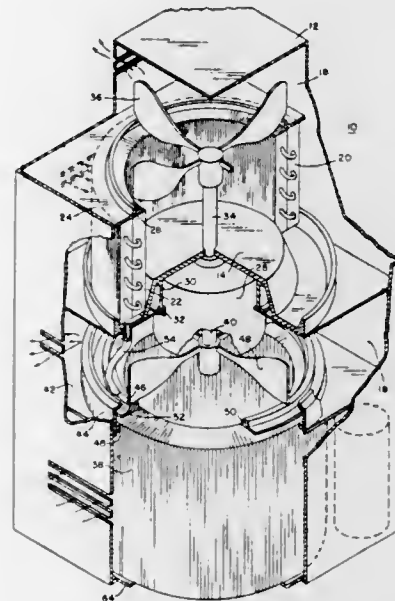
10 Claims

1. An improved air conditioning unit including a housing having a first compartment enclosing a condenser and a second compartment enclosing an evaporator, said second compartment being disposed generally above said first compartment and including means for collecting condensate from said

evaporator, a motor for rotating a shaft coupled to fan means disposed within said first compartment for moving air from one side of said condenser to the other side and wherein the improvement comprises means for depositing said collected condensate on said one side of said condenser including:

said condenser having a cylindrical configuration and disposed within said first compartment on a vertical axis generally common to the axis of rotation of said fan means;

means for draining said collected condensate, said drain means leading from said collecting means into said first compartment;



means drivingly coupled to said shaft and fan means within said first compartment for receiving said condensate from said drain means and centrifugally expelling said condensate therefrom as said shaft rotates; and,
means in the normal path of said centrifugally expelled condensate to intercept said condensate for deposition on the surface of said one side of said condenser whereupon, due to the airflow through said condenser said condensate is generally moved towards said other side of said condenser as it flows downwardly to traverse said condenser for vaporization therefrom.

3,898,866

SINGLE-STAGE PROPORTIONING PUMP

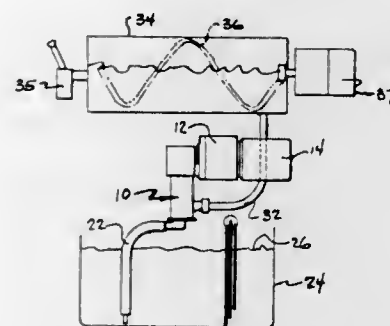
Richard M. Keyes, Rockford, and Bertel S. Nelson, Naperville, both of Ill., assignors to Beatrice Foods Co., Chicago, Ill.

Filed Sept. 9, 1974, Ser. No. 504,526

Int. Cl. B01f 3/04

U.S. Cl. 62—306

12 Claims



7. In a machine for dispensing an aerated semifrozen comestible, the machine having a reservoir for holding a liquid comestible to be pumped, a single-stage proportioning pump which pumps air and liquid simultaneously, a motor for driving the pump, a freezing compartment for receiving the liquid comestible and air, and means in the freezing compartment for scraping the frozen comestible off the surface thereof and

for entraining the air in the comestible; characterized by the pump including:

a hollow upright cylinder having top and bottom ends; a plug at the bottom of the cylinder; a reciprocable piston in the cylinder above the plug and therewith defining an expansible and contractable chamber; the cylinder having a side opening therethrough adjacent the piston; the piston having a socket at said opening; drive means between the motor and pump and including an arm extending through said opening and a ball in said socket; the drive means being operative to reciprocate the piston and alternately provide an intake stroke and an exhaust stroke; an air inlet passageway through the piston communicating the chamber with atmosphere; means including a liquid inlet passageway through the plug for communicating the chamber with the reservoir; means including an outlet passageway through the plug for flow of the liquid and air from the chamber to the freezing compartment; and valve means associated with each said passageway to allow flow of liquid and air into the chamber during the intake stroke while preventing flow through the outlet and vice versa during the exhaust stroke.

3,898,867

CONDENSER FOR CONDENSING A REFRIGERANT

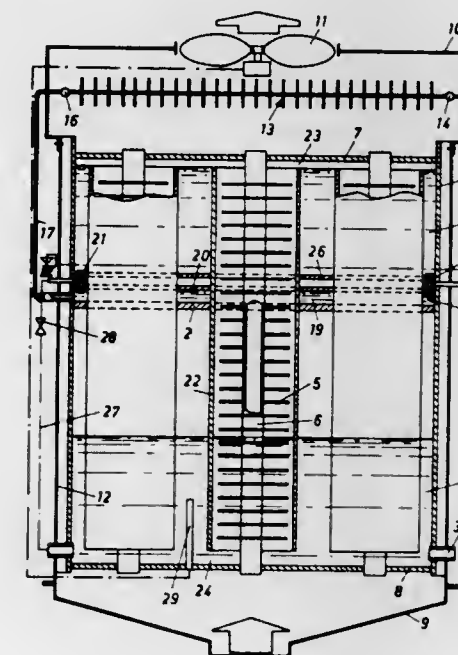
Bror Gustav Andersson, Sodergatan 31, and Benkt Reino Andersson, Rohdes vag, both of Varberg, Sweden

Filed Apr. 2, 1973, Ser. No. 346,882

Int. Cl. F25b 39/04

U.S. Cl. 62—507

6 Claims



1. A condenser for a compressor type refrigerating plant comprising:

a vessel having sidewalls and two end walls for holding a body of condensed refrigerant, said vessel having inlet means and outlet means for maintaining said vessel substantially filled with condensate;
at least one hollow member sealingly fitted into said end walls of said vessel to form a passage for cooling air through said vessel within its sidewalls;
said inlet means including at least one nozzle for injecting vapor state refrigerant opening a sufficient distance from the top portion of said vessel to provide a satisfactory path for the vapor to be transferred into liquid state by direct contact with the body of condensate; and
said vessel forming a part of a larger unit, which is divided into two compartments by means of an internal wall being disposed parallel to said end walls of said vessel, one of said two compartments forming said vessel, said at least one hollow member being enclosed in a guide tube, said member and said guide tube both extending through the internal wall, said guide tube adjacent to each end wall of

said vessel having at least one opening for communication with the surrounding compartment, said guide tube thus forming a communication between said two compartments.

3,898,868

COMBINED TIARA AND EARRINGS WITH DETACHABLE EARRING DEVICES

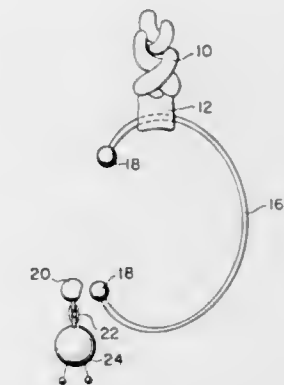
Frederica W. Tomlinson, 68 Harriman Ave., Hempstead, N.Y. 11550

Filed June 24, 1974, Ser. No. 482,008

Int. Cl.² A44C 15/00, 7/00

U.S. Cl. 63—2

1 Claim



1. An article of jewelry comprising:
first and second C shaped members;
four sphere shaped termination elements, each element being secured to a corresponding end of a corresponding one of said members;
first and second earring devices, each device being provided with a cup shaped element and an ornament secured by a flexible link to the cup element, each cup element detachably engaging one of said termination elements of a respective one of said members;
an elongated curved tiara; and
first and second loops, each loop being secured to a corresponding one of the ends of the tiara and also being secured to a corresponding one of said members intermediate the termination elements of said corresponding one member, each member being slidably and rotatably disposed in the corresponding loop.

3,898,869

RING WITH SEALED MOUNTING CONTAINING MIRROR SURFACE

George R. Reneer, Conroe, Tex., assignor to Star Engraving Company, Houston, Tex.

Filed Jan. 21, 1974, Ser. No. 434,994

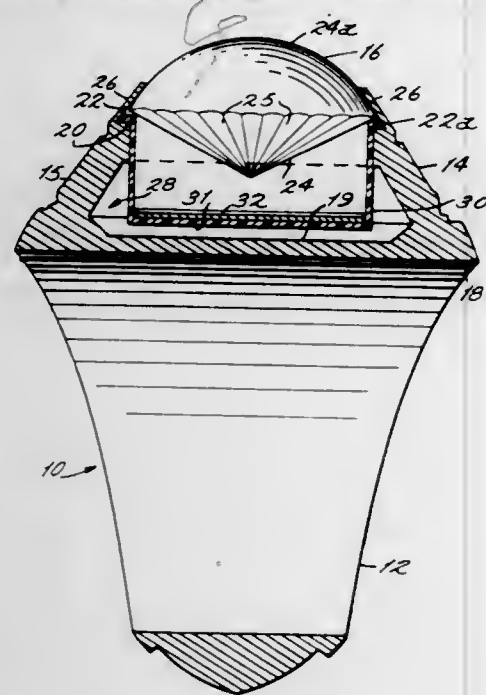
Int. Cl. A44c 17/02

U.S. Cl. 63—15

6 Claims

1. A finger ring comprising:
a rigid structure of a shape to at least partially encircle a finger, said structure having a cavity closed inwardly by a solid backing and opening outwardly within an outwardly facing annular area,
a generally cup-shaped member disposed within said cavity and having an annular lip engaging said annular area,
a decorative stone disposed in peripheral engagement with said annular lip and having upper surface means and bottom surface means, said stone being of a material permitting light to pass therethrough between said upper and bottom surface means,
means providing a mirror surface on said cupshaped member in a position to face the bottom surface means of said stone so that light passing through said stone from the upper surface means thereof through the bottom surface means thereof is reflected from said mirror surface to pass through said stone from the bottom surface means through the upper surface means thereof, and

means for fixedly securing said stone to said rigid structure
said securing means holding said stone in said peripheral



engagement with said lip thereby providing a moisture seal for the interior of said cup to protect the bottom surface means of said stone and said mirror surface.

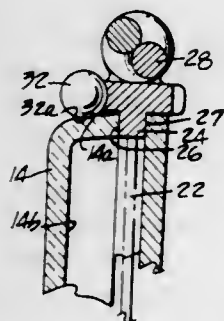
3,898,870
LOCKET HAVING COVER OF LOCALLY COMPRESSIBLE PLASTIC RETAINED BY MEANS WHICH MINIMIZES RETAINING CONTACT THEREWITH

Kent L. Jacobson, Moraga, Calif., assignor to Dick Tyrrell Jewelers, Inc., Walnut Creek, Calif.

Filed May 8, 1974, Ser. No. 468,186

Int. Cl.² A44C 25/00

U.S. Cl. 63-18



1. A jewelry locket of the kind in which a front crystal cover is removably retained in a frame to permit a photograph or other display image to be installed and removed or replaced beneath the crystal, said locket comprising,

a peripheral, cast metal frame having an integrally formed, inwardly projecting support providing a flat front surface which is recessed from the front surface of the frame,

a crystal cover molded from a plastic material that is clear and transparent and that also can be deformed by being compressed in a localized area without cracking,

said crystal cover having peripheral configuration to fit closely in the frame with a back surface of the cover engaged with said flat front support surface,

and means for releasably retaining said crystal cover in place when so fitted in the frame while minimizing retaining contact therewith, said means comprising a plurality of bead-shaped retainer members cast integrally on the frame and spaced about the periphery of the frame for engaging the crystal cover only at selected locations on the periphery thereof in localized areas of compression whereby the plastic crystal cover is securely held in place

in the frame during normal use of the locket but can readily be snapped out of and back into the frame when it is desired to replace the photograph or other image by the coaction between the bead-shaped retainer members and the compressible plastic crystal cover.

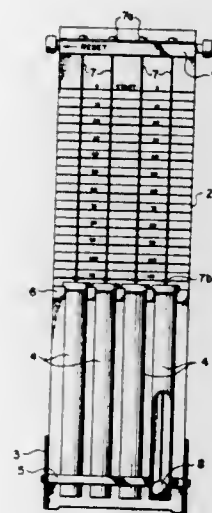
3,898,871
VISCOSITY COMPARATOR
Fernand L. Gerin, Red Bank, N.J., assignor to The Gerin Corporation, Avon, N.J.

Filed June 10, 1974, Ser. No. 477,606

Int. Cl.² G01N 11/12

U.S. Cl. 73-57

4 Claims



10 Claims

1. A viscosity comparator having a release bar which is pushed in one direction to flex a plurality of separate springs for the purpose of releasing a number of weighted rods so that they may drop by gravity and which bar, when released after being so pushed, is moved in the opposite direction by said springs returning to their original position, a second bar in the path of travel of the release bar arranged to be moved by the release bar when said release bar is pushed to flex said springs, and suddenly releasable restraining means for holding the second bar against movement by the release bar until pressure is applied to the release bar sufficient to effect the sudden release of said restraining means.

3,898,872
TENSIOMETER FOR SOIL MOISTURE MEASUREMENT
Percy E. Skaling, and Whitney Skaling, both of Santa Barbara, Calif., assignors to Soilmoisture Equipment Corporation, Goleta, Calif.

Filed Oct. 19, 1973, Ser. No. 408,174

Int. Cl.² G01N 19/10

U.S. Cl. 73-73

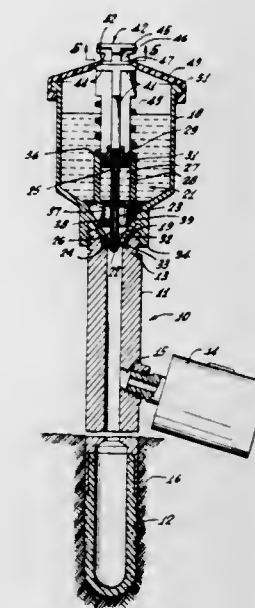
10 Claims

1. A tensiometer for measuring soil moisture content, comprising:

a sealable vessel normally filled with liquid and having walls with a porous section to be placed in the soil; means connectable to the liquid in said vessel for measuring the pressure therein and hence the moisture content of the soil;

liquid reservoir means having an exit to said vessel; and valve means selectively operable for sealing said exit and for opening said exit to allow liquid from said reservoir means to refill said vessel, said valve means including pump means for automatically purging gas bubbles from said vessel, said pump means including means defining a secondary passage from said reservoir means to said

vessel when said exit is open, and said pump means being responsive to opening of said valve means, for pumping



liquid into said vessel through said secondary passage to thereby sweep gas bubbles from its walls.

3,898,873
TESTING DEVICE AND METHOD FOR TESTING CONTAINERS

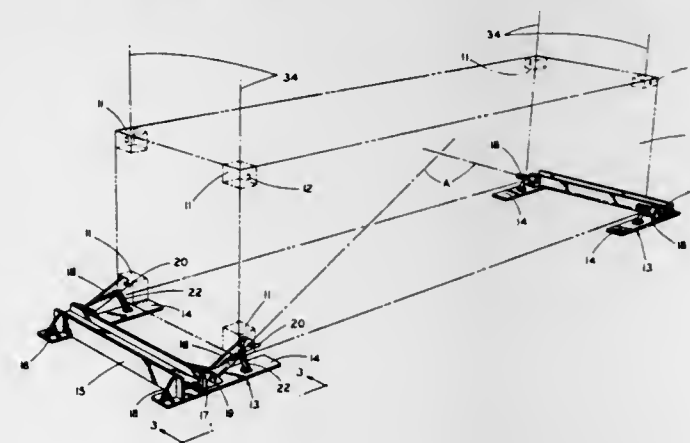
John J. Glassmeyer, Covington, Ky., assignor to Pullman Incorporated, Chicago, Ill.

Filed July 16, 1973, Ser. No. 379,697

Int. Cl.² G01N 3/08

U.S. Cl. 73-88 R

9 Claims



1. A testing device for a container having upper and lower connector elements located at the upper and lower corners of said container, each connector element including at least one horizontal extending recess, a lifting device connected to the upper connector elements for lifting the container and for effecting exertion of an upward reactive force on said upper connector elements, said testing device comprising

a horizontal support surface and a plurality of supports located on said surface, each of said supports including a base,

a support pedestal on said base extending upwardly relative thereto,

said pedestal of each support including an arm and strut means connected to said arm, said arm and said strut means being hingedly connected to said base in opposed and spaced relation to each other such that said strut means extends diagonally upwardly from said base,

said arm having an opening alignable with the recess of a lower connector element of the container, the opening being disposed above said support surface,

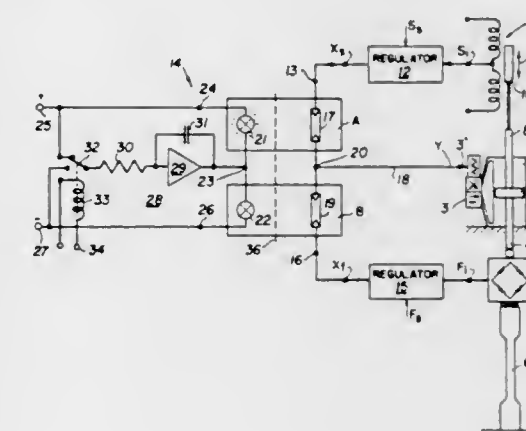
said strut means including longitudinally adjustable means for effecting hinged movement of said arm relative to said base and alignment of the opening of said arm with the recess of a lower connector element, and removable connecting means receivable in the opening of each arm and the aligned recess of each lower connector element for connecting the arms to the lower connector elements of the container in order that the lower connector elements of the container support the container above and in spaced relation to said surface so that testing of the lower connector elements of the container is effected as the lifting device is lowered relative to the container.

3,898,874
CONTROL INPUT SWITCHING APPARATUS
Carl Martin Wawra, Bensheim-Auerbach, Germany, assignor to Firma Carl Schenck AG, Darmstadt, Germany
Continuation of Ser. No. 232,851, March 8, 1972, abandoned.
This application Apr. 15, 1974, Ser. No. 460,788
Claims priority, application Germany, Dec. 23, 1971, 2164384

Int. Cl.² G01N 3/08

U.S. Cl. 73-90

20 Claims



1. An apparatus for switching a control input of an adjustment member in a material testing machine from an output of a first regulating means of said material testing machine to an output of a second regulating means of said material testing machine and vice versa, comprising first variable resistor means directly connected to said control input to continuously apply the output of said first regulating means to said control input independently of the voltage at said control input, second variable resistor means directly connected to said control input to continuously apply the output of said second regulating means to said control input independently of the voltage at said control input, whereby the proportion of the outputs of said regulating means at said control input of the adjustment member is dependent upon the resistance of said first and second resistor means respectively, varying means operatively coupled to said first and second variable resistor means for varying the resistance thereof, and means for controlling said varying means whereby the resistance of one of said first and second variable resistor means is increased while the resistance of the other of said first and second variable resistor means is simultaneously decreased and vice versa.

3,898,875
METHOD AND APPARATUS FOR TESTING ELECTRIC MOTORS

Donald E. Knoop, Benton Harbor; Marc C. Loessel, St. Joseph, and Arne M. Nystuen, Stevensville, all of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Oct. 9, 1973, Ser. No. 404,259

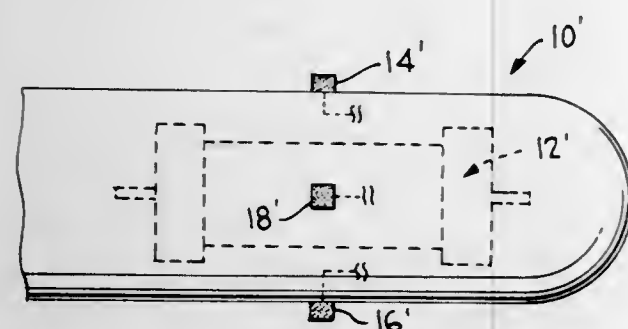
Int. Cl.² G01L 3/22

U.S. Cl. 73-116

10 Claims

1. A method of testing an electric motor having a motor

trodes mounted on the external circumferential surface of said probe, said electrodes lying in a plane normal to the axis of said probe, the electrodes of one electrode pair being disposed at the ends of a first diameter of said probe, respectively, the electrodes of the other electrode pair lying at the ends of a second probe diameter normal



to said first diameter, respectively, each of said electrodes projecting radially outwardly from the external circumferential surface of said probe, each of said electrodes projecting outwardly from the circumferential surface of said probe a distance of approximately 0.05 inch per inch of probe diameter.

3,898,882

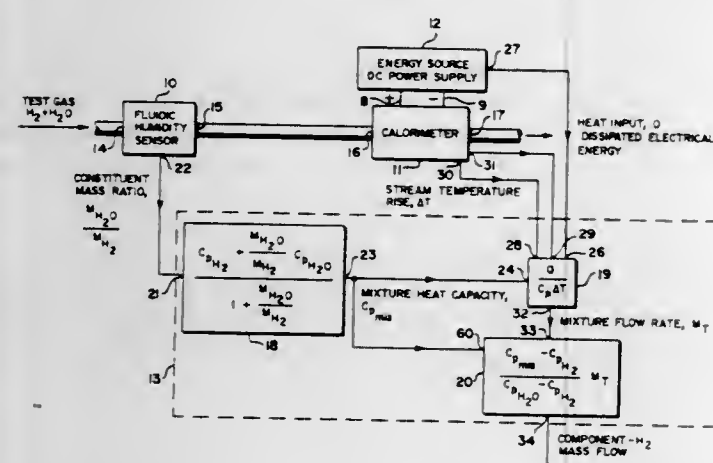
FLOW MEASURING APPARATUS

Paul R. Prokopius, Brecksville, Ohio, assignor to The United States of America as represented by the United States National Aeronautics and Space Administration, Washington, D.C.

Filed Feb. 28, 1974, Ser. No. 447,124
Int. Cl.² G01F 1/88

U.S. Cl. 73-194 M

10 Claims



1. Apparatus for measuring the instantaneous mass flow rate of a binary gas stream comprising:
means for generating a signal representative of the mass flow ratio of the binary gas;
means for increasing the temperature of the binary gas;
means for measuring the temperature increase of the binary gas caused by said second named means and generating a signal indicative thereof;
means for generating a signal representative of the energy required by said second named means to produce the temperature increase measured by said third named means; and
means for operating on the signals of said first, third and fourth named means to yield a signal indicative of the mass flow rate of one of the gases of said binary gas.

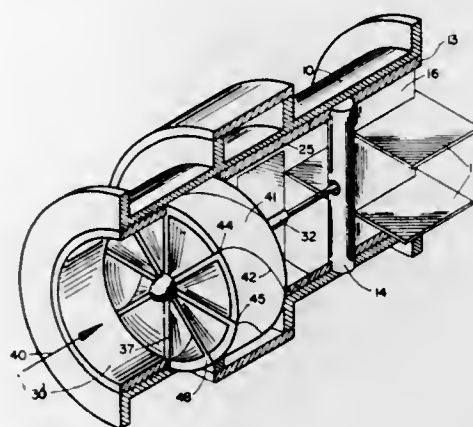
3,898,883 STATOR ASSEMBLY FOR FLOWMETERS AND THE LIKE

Zdenek Václav Kozak, and Joseph Jaromír Stupecký, both of North Hollywood, Calif., assignors to Zdenek Kozak, North Hollywood, Calif.

Division of Ser. No. 218,094, Jan. 17, 1972, Pat. No. 3,792,611. This application May 18, 1973, Ser. No. 361,539
Int. Cl. G01F 1/10

U.S. Cl. 73-231 R

5 Claims



1. An assembly for imparting a swirl to fluid past there-through comprising a plurality of substantially identical elements each including rim segment portion and vane portion; said rim segment portion including an outer surface constituting a portion of a circular tube with two edges defining inlet and outlet surfaces respectively and the remaining two edges defining surface configurations mating with the next segment edge to define an uninterrupted tubular rim;
wherein the surface configurations of said remaining two edges have portions that extend transverse to the axis of said tubular rim; and
the peripheral length of said rim segment being equal to the circumference of the assembly divided by the number of vanes;
said vane portion including the end joining said rim portion having a curve corresponding to the desired swirl deflection defining an axial hub opening;
said assembly including means axially biasing said assembly elements together to define a rigid assembly;
said biasing means comprising an encircling tubular housing, a fixed ring within said tubular housing and an axially tightenable ring embracing said stator assembly.

3,898,884

INDOOR/OUTDOOR THERMOMETER

Evan Lloyd Hopkins, and Ross Eugene Hopkins, both of Emporia, Kans., assignors to Hopkins Manufacturing Company, Emporia, Kans.

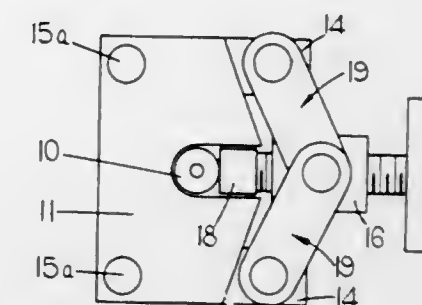
Filed Aug. 6, 1973, Ser. No. 385,813
Int. Cl.² G01K 1/06, 1/14, 5/62

U.S. Cl. 73-339 C

10 Claims

1. An indoor/outdoor thermometer apparatus comprising:
bisegmental temperature indicating means for simultaneously providing a relative temperature indication in connection with a first side of a sheet of transparent material and a relative temperature indication in connection with a second side of the sheet material, said bisegmental temperature indicating means comprising:
a first housing carrying:
first temperature sensing means attachable to a first side of a sheet of transparent material; and
first pointer means mounted for angular displacement in response to the sensing of a temperature change by said first sensing means for providing a relative indication of a temperature being sensed;
a second housing unattached relative to said first housing and carrying:

second temperature sensing means attachable to a second side of the sheet of transparent material; and
second pointer means mounted for angular displacement in response to the sensing of a temperature change by said second sensing means for providing a relative indication of a temperature being sensed;
said second pointer means being visible through said first and second housing means;
each housing including adhesive attachment means operable to attach said first and second housings to the sheet of transparent material independently of each other to permit said bisegmental temperature indicating means to be attached at any preselected position on the transparent sheet of transparent material;
said attachment means being disposed relative to said first and second pointer means such that said first and sec-



the pressure variations in the pipe and sensing elements mounted on said reduced portions of said members.

3,898,886

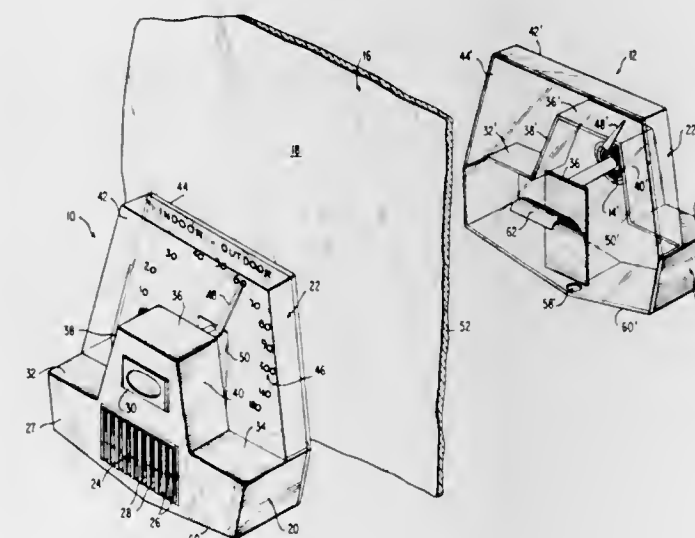
LEG MOUNTED DISTANCE MEASURING DEVICE AND GUIDANCE SYSTEM

Alton B. Hamm, Fort Worth, Tex., assignor to Hamm Systems, Inc., Fort Worth, Tex.

Continuation-in-part of Ser. No. 291,776, Sept. 25, 1972. This application Mar. 25, 1974, Ser. No. 454,478
Int. Cl. G01C 21/00

U.S. Cl. 73-432

28 Claims



ond pointer means are visible through transparent portions of said first housing when said first and second housings are attached to the sheet of transparent material;

one of said housings including graduated scale means cooperable with said first and second temperature sensing means for simultaneously providing on a single scale temperature readings for both sides of the sheet of transparent material; and

each of said housings including visual alignment means for aligning said first and second housings to orient said first and second pointers for substantially co-axial displacement in substantially superimposed paths along said graduated scale to permit a temperature reading of both sides of the sheet of transparent material to be taken simultaneously in connection with the single scale.

3,898,885

TRANSDUCERS

Michael Frederick Russell, Ickenham, England, assignor to C.A.V. Limited, Birmingham, England

Filed Oct. 15, 1973, Ser. No. 406,216

Claims priority, application United Kingdom, Oct. 13, 1972, 47335/72

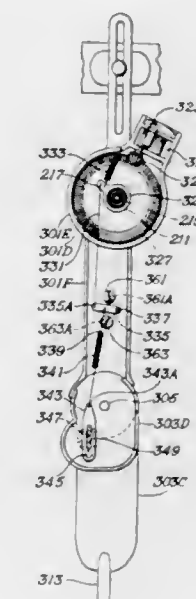
Int. Cl. G01I 9/04

U.S. Cl. 73-398 AR

10 Claims

1. A fluid pressure transducer comprising a body portion, at least a pair of members having surfaces engageable with the wall of a pipe, said pair of members being adjustably mounted so as to permit engagement of said surfaces with the wall of the pipe, said body portion including a pair of spaced side plates, said members being positioned intermediate said plates, said plates frictionally engaging said members and acting to damp movement thereof as the diameter of the pipe

1. A distance measuring device comprising: support means, means for coupling said support means to a person's leg, output producing means coupled to said support means for producing an output, and
following means for following movement of the foot relative to the leg as a person takes a step for actuating said output means to produce an output indicative of the distance covered by said step and which is a function of the change in the angular relationship occurring between the foot and the leg as a person takes a step
said following means being coupled to said output indicative of the distance covered by said step and producing means and including means adapted to be coupled to a person's foot for following movement of the foot relative to the leg as a person takes a step.



3,898,887

STROKE VARYING MECHANISM

Graham Cameron Grant, 16/49 Campbell Parade, Manly Vale, Sydney, New South Wales, Australia (2093)

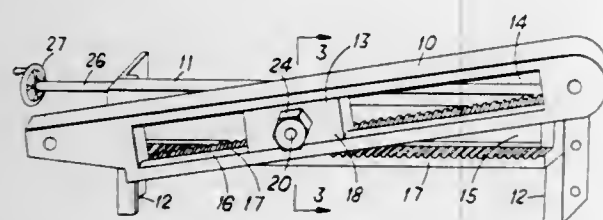
Filed Sept. 10, 1973, Ser. No. 396,031

Claims priority, application Australia, Sept. 13, 1972, 0429/72; Nov. 17, 1972, 1268/72

Int. Cl. F16h 19/04

U.S. Cl. 74—29

3 Claims



1. A lever mechanism comprising, a lever element having a rack portion, a fulcrum pivotally supporting the lever element and which is movable to permit selective positioning thereof intermediate the ends of the lever element, a stationary support member disposed adjacent and parallel to the lever element, said stationary member having a rack portion, and means associated with the fulcrum engaged in driving relationship with the lever element for preventing free translation of the lever element with respect to the fulcrum but being operative to permit the selective positioning of the fulcrum between the ends of the lever element whilst the pivotable support between the fulcrum and the lever element is preserved, said fulcrum associated means including, two slide blocks, one said slide block being slide mounted to the lever element and the other said slide block being slide mounted to the stationary support member, an axle extending between said slide blocks, and a pinion carried by said axle and engaged in said driving relationship with the respective rack portion of said lever element and said stationary member.

3,898,888

PULLEY CONSTRUCTION

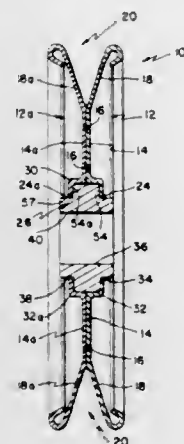
Charles C. Frost, Kentwood; Douglas J. Van Der Meulen, Martin, and Siegfried K. Weis, Grand Rapids, all of Mich., assignors to C. L. Frost & Son, Inc., Grand Rapids, Mich.

Filed Mar. 30, 1973, Ser. No. 346,329

Int. Cl. F16h 55/44

U.S. Cl. 74—230.8

11 Claims



1. A pulley wheel construction comprising in combination: a pair of identical discs and an annular hub member, said discs having a central opening in which said hub member is positioned; said hub member having a central bore for receiving a mounting shaft; each said discs having an inner flange means

formed about said disc opening, a web portion and an annular outer portion, each of said inner flange means including an annular surface of reference distinct from the remaining surface of said flange means and said web portion likewise including an annular surface of reference distinct from the remaining surface of said web portion, said discs being joined back-to-back whereby said outer portions form an outwardly opening belt-receiving groove and said flange means form an annular cup-shaped pocket for receiving, holding and indexing said hub member therein to prevent lateral and radial movement relative to said discs when said discs are joined together, said annular surfaces of reference on said flange means abutting said hub member and said annular surfaces of reference on said web portion abutting each other providing a positive and accurate relationship between said hub member and discs and said discs with each other and means for interconnecting said hub member to said discs and said discs to each other.

3,898,889

GAS-OPERATED UNCAGING MECHANISM

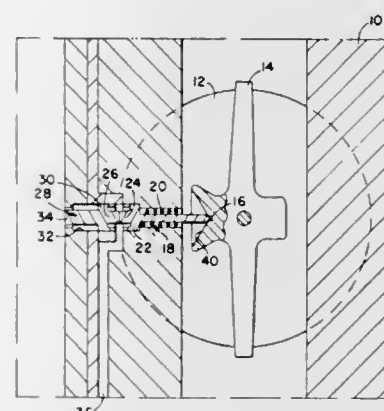
Bernard F. Bickman, New Brighton, Minn., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 21, 1974, Ser. No. 453,478

Int. Cl. G01c 19/24, 19/26

U.S. Cl. 74—5.12

1 Claim



1. In a gyro having a housing, a gimbal structure and a rotor mounted in the gimbal; a caging mechanism comprising: a funnel shaped notch in said gimbal, a caging pin slideably mounted in said housing and adapted to project inwardly into said notch, a spring surrounding said caging pin and normally urging said pin outwardly, a latching pin in alignment with said caging pin and slideably mounted with a friction fit in said housing, the inner end of said latching pin abutting the outer end of said caging pin, the outer end of said latching pin extending through said housing, both of said forementioned pins being provided with enlarged portions intermediate their ends slideably received in a tubular chamber in said housing thus providing an annular gas chamber between said enlarged portions, and a gas passageway in said housing communicating at one end with said annular gas chamber and at its other end with a source of spinup gas pressure, whereby admission of gas pressure to said annular gas chamber forces said latching pin outwardly while maintaining said caging pin in engagement with said notch, decline of said gas pressure permitting said caging pin to move outwardly under the influence of said spring to uncage the mechanism of said gyro.

3,898,890

SCREW-TYPE ACTUATORS

John Richard Simmons, and Trevor John Hammond, both of Wolverhampton, England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England

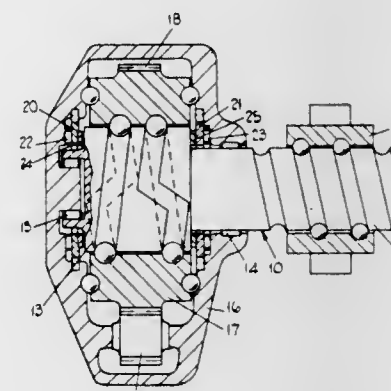
Filed Feb. 19, 1974, Ser. No. 443,793

Claims priority, application United Kingdom, Feb. 27, 1973, 9692/73

Int. Cl. F16h 27/02

U.S. Cl. 74—89.15

4 Claims



1. A screw-type actuator comprising a body, a screw journaled in said body, a first ball-type nut engaging said screw, a drive element having a thread of opposite hand to said screw and being connected to said screw for axial and rotary movement therewith, a second ball-type nut engaging said drive element thread, said first nut being freely movable axially and rotationally with respect to said second nut, means for applying an external drive to said second nut, and first and second brake members respectively operable to prevent rotation of said screw in opposite directions, said brake members being engageable by said drive element in response to axial movement of said drive element in respective opposite directions, whereby said screw is restrained by said brake members against rotation in response to axial loads applied in either direction to said first nut, and application of a drive to said second nut is operative to release whichever of said brake members is actuated.

3,898,891

FOOT AND HAND CONTROL FOR HYDROSTATIC TRANSMISSION

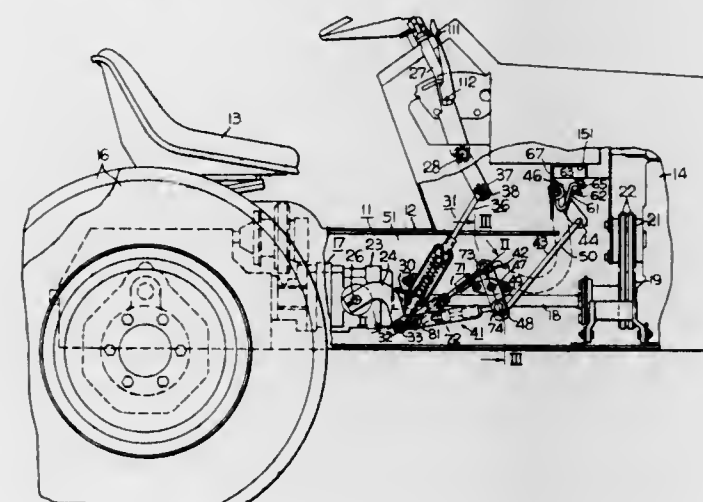
Marcus J. Colloton, Marshalltown, Iowa, assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Oct. 31, 1974, Ser. No. 519,571

Int. Cl. G05G 11/00; B60K 23/00

U.S. Cl. 74—474

6 Claims



1. In a vehicle having a hydrostatic forward/reverse transmission including a reversible variable displacement pump with a displacement control arm pivotable in opposite direc-

tions from a neutral position to forward and reverse positions, a control mechanism comprising:

- a manually operated forward/reverse control on said vehicle including
- a hand lever shiftable in opposite directions from a neutral position to forward and reverse positions,
- detent means releasably retaining said hand lever in its positions of adjustment and
- a linkage interconnecting said hand lever and said control arm whereby when said hand lever is in its neutral, forward and reverse positions said control arm will be in its neutral, forward and reverse positions, respectively, and an inching control including
- a foot pedal mounted on said vehicle movable by an operator's foot from a released position to an operated position,
- a pivot structure pivotally mounted on said vehicle on an axis parallel to the pivot axis of said control arm,
- first and second lost motion links pivotally interconnecting said control arm and said pivot structure at points on the latter at opposite sides of its pivot axis, said first lost motion link having relatively extensible and contractible parts and confronting abutments limiting contraction thereof and said second lost motion link having relatively extensible and contractible parts and confronting abutments limiting extension thereof, and
- motion transmitting means interconnecting said pedal and pivot structure whereby movement of said pedal to its operated position pivots said pivot structure in one direction thereby causing at least one of said lost motion links to force said control arm to its neutral position.

3,898,892

DIFFERENTIAL MOUNTED SINGLE STAGE DIAPHRAGM OPERATED PUMP

Manfred P. H. Schlanzky, Frankenmuth, Mich., assignor to General Motors Corporation, Detroit, Mich.

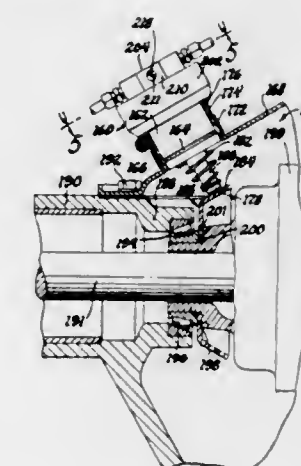
Division of Ser. No. 307,331, Nov. 16, 1972, Pat. No.

3,841,796. This application Nov. 7, 1973, Ser. No. 413,503

Int. Cl. F16H 1/38; B60S 9/00; F01D 5/18

U.S. Cl. 74—710

2 Claims



1. An air compressor and drive assembly for a vehicle leveling system comprising an outer housing for a vehicle drive differential, said outer housing having an inclined support surface with an enlarged opening therein, a flange projecting outwardly from said outer housing around the periphery of said opening, a differential drive pinion rotatably supported in said outer housing, a differential case operatively connected to said differential drive pinion rotatably mounted in said outer housing, a tubular axle housing secured to said differential case and extending outwardly therefrom, said differential case having a projecting cylindrical shoulder portion extending into one end of said axle housing for rotation therein, bearing means operatively mounted between said axle housing and said projecting cylindrical shoulder portion for rotatably

supporting said differential case in said outer housing, a cup shaped cam secured to said differential case adjacent to said shoulder portion for rotation therewith, said cam having an inclined peripheral surface with plurality of spaced camming lobes formed thereon, said peripheral surface of said cam being generally parallel to said inclined support surface of said outer housing, air compressor means for the vehicle leveling system, said compressor including a compressor housing externally mounted with respect to said outer housing, said compressor housing having projecting shell portion extending into said opening and secured to said support flange, a reciprocating drive shaft extending from said compressor housing interiorly of said outer housing, said drive shaft including an inner end thereon engageable with said inclined cam surface, spring means for biasing said reciprocating shaft against said inclined surface of said cam, said cam rotating in response to rotation of said differential casing to cause reciprocation of said shaft against the force of said spring means, said compressor means including means responsive to reciprocation of said shaft for continuously compressing air during operation of said differential drive pinion and rotation of said differential case.

3,898,893

SPEED CHANGE CONTROLLING DEVICE IN AN AUTOMATIC TRANSMISSION FOR AN ELECTRIC CAR
Masanao Hashimoto, and Kiyoshi Ohnuma, both of Toyota, Japan, assignors to Director-General of the Agency of Industrial Science and Technology, Tokyo, Japan

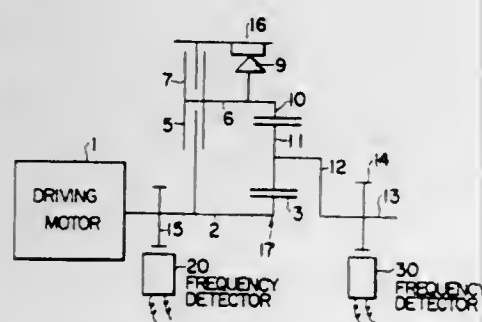
Filed Oct. 23, 1973, Ser. No. 408,559

Claims priority, application Japan, Oct. 23, 1972, 47-105327

Int. Cl.² B60K 41/08

U.S. Cl. 74-859

3 Claims



1. A speed change control device in an automatic transmission for electric automobiles having a speed change gear mechanism connected directly to a vehicle driving motor, comprising: a hydraulic engaging means for accomplishing speed change meshing of said gear mechanism; valve means actuated to make a change-over operation by a speed change signal to supply operating oil pressure to said hydraulic engaging means; a speed change signal producing means to produce and commute a speed change signal to said valve means in response to the vehicle running condition; a neutral setting means to temporarily release said hydraulic engaging means by said valve means at the time of speed change to bring said automatic transmission into a neutral position; a motor speed control means to vary the rotational frequency of said motor during the period of the neutral position and to synchronize the rotational frequency of the motor with the rotational frequency of an output shaft of said automatic transmission; and means for maintaining synchronization of the rotational frequencies of said motor and said output shaft until oil pressure, sufficient for full meshing of said gear mechanism, is supplied to said hydraulic engaging means; wherein said motor speed control means includes means for comparing the rotational speed of said motor with that of the output shaft of said automatic transmission and varying field current of said motor in accordance with the difference between the rotational speeds of said motor and output shaft in consideration of the speed change ratio of said speed change gear mechanism, and

chopper means for controlling the field current of said motor, said chopper means upon shift-down being kept turned-off so as to rapidly increase the rotational speed of said motor while said chopper means upon shift-up remains turned-on so as to rapidly decrease the rotational speed of said motor.

3,898,894

ENGINE IGNITION TIMING CONTROL

Shigeo Aono, Tokyo, and Norio Mizuguchi, Yokosuka, both of Japan, assignors to Nissan Motor Company Limited, Yokohama, Japan

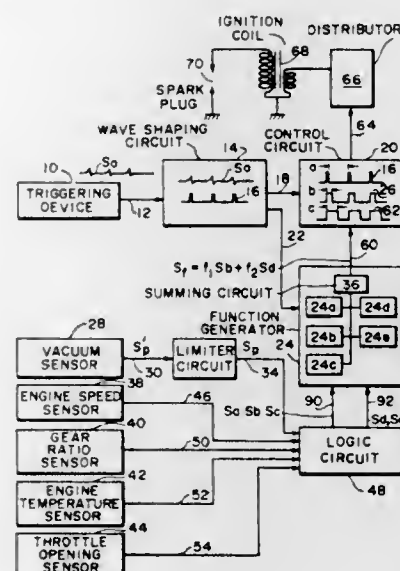
Filed Nov. 19, 1973, Ser. No. 416,835

Claims priority, application Japan, Nov. 20, 1972, 47-116327

Int. Cl. B60k 23/00; F02p 5/08

U.S. Cl. 74-866

2 Claims



1. An ignition spark timing control system for an internal combustion engine of a motor vehicle equipped with a power transmission comprising, in combination, an engine speed sensor to sense engine speed and to produce an analog signal dependent on said engine speed, a gear ratio sensor to sense a plurality of gear ratios of said power transmission and to produce a plurality of analog signals each representing one of said gear ratios of said power transmission, an engine temperature sensor to sense engine temperature and to produce an analog signal dependent on said engine temperature, a throttle opening sensor to sense throttle opening in an air induction system of said engine and to produce an analog signal dependent thereon, a vacuum sensor to sense vacuum in the engine intake manifold and to produce an analog signal dependent thereon, a logic circuit connected to said engine speed sensor, said gear ratio sensor, said engine temperature sensor, said throttle opening sensor and said vacuum sensor for producing logic output signals in dependence on said signals from said sensors, a function generating unit connected to said logic circuit and including a plurality of function generating circuits and a summing circuit connected thereto for generating signals as functions of said logic output signals, said function generating unit also including means for generating a function generating unit output signal, a triggering device for producing a pulse signal with a repetition rate proportional to said engine speed, a control circuit connected to said function generating unit and said triggering device, said control circuit comprising means for generating an output pulse signal having a pulse width less than the pulse spacing and a repetition rate of said pulse signal from said triggering device and means for modulating the pulse width of said output pulse signal from said control circuit in dependence on said function generating unit output signal, and ignition means connected to said control circuit for effecting ignition in said engine in response to the modulated output pulse signal.

2. An ignition spark timing control system for an internal combustion engine of a motor vehicle equipped with a power

transmission comprising, in combination, an engine speed sensor to sense engine speed and to produce an analog signal dependent on said engine speed, a gear ratio sensor to sense a plurality of gear ratios of said power transmission and to produce a plurality of analog signals each representing one of said gear ratios of said power transmissions, an engine temperature sensor to sense engine temperature and to produce an analog signal dependent on said engine temperature, a throttle opening sensor to sense throttle opening in an air induction system of said engine and to produce an analog signal dependent thereon, a vacuum sensor to sense vacuum in the engine intake manifold and to produce an analog signal dependent thereon, a logic circuit including a first AND gate having inputs connected to said throttle opening sensor and said engine speed sensor through first and second comparators, respectively, a second AND gate having inputs connected to said second comparator and said gear ratio sensor, said second AND gate receiving a gear ratio signal representing neutral condition of said power transmission, a third AND gate having inputs connected to said second comparator and said gear ratio sensor, said third AND gate receiving a gear ratio signal representing a first gear ratio in said power transmission, a first OR gate having inputs connected to said gear ratio sensor and receiving gear ratio signals representing a second gear ratio, third gear ratio and fourth gear ratio in said power transmission, a fourth AND gate having inputs connected to said second comparator and an output of said first OR gate, a fifth AND gate having inputs connected to said engine temperature sensor through a third comparator and to said gear ratio sensor through a third comparator and to said gear ratio sensor, said fifth AND gate receiving said gear ratio signal representing said neutral condition of said power transmission, a second OR gate having inputs connected to said gear ratio sensor and receiving one of said third and fourth gear ratio signals therefrom, a sixth AND gate having inputs connected to said second comparator through an inverter and an output of said second OR gate, a logical product circuit connected to outputs of said first, second, third, fourth and fifth AND gate to produce a first set of logic signals at its output which is connected to one input of a function generating circuit, a third OR gate having inputs connected to the outputs of said first AND gate and the output of said sixth AND gate, a seventh AND gate having inputs connected through an inverter to the output of said third OR gate and said vacuum sensor through a fourth comparator, and a fourth OR gate having inputs connected to the output of said third OR gate and the output of said seventh AND gate to produce a second set of logic signals at its output which is connected to another input of said function generating unit, said function generating unit connected to said logic circuit comprising means for generating signals as functions of said logic signals and means to generate a function generating output signal, a triggering device for producing a pulse signal with a repetition rate proportional to said engine speed, a control circuit connected to said function generating unit and said triggering device, said control circuit comprising means for generating an output pulse signal having a pulse width less than the pulse spacing and a repetition rate of said pulse signal from said triggering device and means for modulating the pulse width of said output pulse signal from said control circuit in dependence on said function generating unit output signal, and ignition means connected to said control circuit for effecting ignition in said engine in response to the modulated output pulse signal.

3,898,895

METHOD OF ATTACHING TEETH TO AN EARTH DRILLING TOOL

Thomas L. Taylor, 111 W. 10th St., Odessa, Tex. 79761

Filed Jan. 14, 1974, Ser. No. 433,285

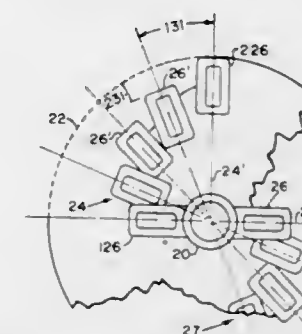
Int. Cl.² B21K 5/02; E21B 9/22; E21C 13/00

U.S. Cl. 76-102

6 Claims

1. Method of attaching teeth to an earth drilling tool, having

a flight integrally attached to a central hub and a pilot bit affixed at the lower end thereof comprising the steps of: attaching the flight to the hub so that a lower end thereof terminates adjacent the pilot bit; forming a leading edge onto the flight by welding a plurality of spaced teeth receiving pockets therein which are arranged respective to one another so that when a cutting tooth is placed therein, a radial dimension thereof is disposed along a line drawn radially of the axial centerline of said hub, and a circumferential dimension thereof is disposed normal to said radially drawn line;



placing a first of said pockets adjacent to said hub, a last of said pockets adjacent to the outer periphery of said flight, and the remaining of said pockets at different radii relative to each other and to said first and last pockets; and further arranging each of said pockets at different vertical elevations along said flight; forming said flight from a disk having a central aperture and a radial cut extending from said aperture to the outer peripheral edge thereof to form a leading edge and a trailing edge by forcing said edges apart, thereby forming at least a portion of said flight.

3,898,896

LIGHT BULB BASE EXTRACTOR

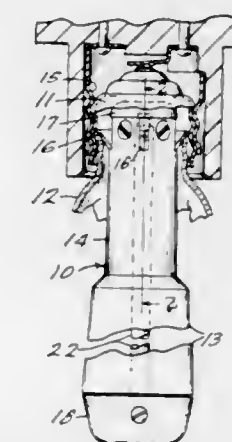
Laszlo Suhay, 1743 Payne, Findlay, Ohio 45840

Filed Sept. 16, 1974, Ser. No. 506,031

Int. Cl.² B25B 13/48

U.S. Cl. 81-72

4 Claims



1. A light bulb base extractor, comprising a handle, an upper stem connected to the handle, a plurality of lamp base engaging pointed blades annularly disposed within the upper stem, and means for pivoting said pointed blades outwardly and downwardly with respect to said upper stem into a radially expanded position in engagement with the inner surface of a light bulb base so that as said blades engage the interior of the light bulb base, the upper stem of the extractor is pushed upwardly against the core of the light bulb base, said means comprising a threaded rotatable shaft within the upper stem, a rotatable knob connected to the shaft adjacent the handle, an internal spool within the upper stem in threaded engagement with the threads of the shaft, said blades being pivotally connected to the spool with the pivot axes of the blades tangential to a circle concentric with the rotatable shaft, and

upper and lower guide means above and below each blade for causing the blades to pivotally retract into an upwardly inclined position when the spool is drawn downward by rotation of the knob and shaft in one direction and for causing the blades to pivot outwardly and downwardly toward a horizontal position when the spool is moved upward within the upper stem of the extractor during rotation of the knob and shaft in the opposite direction.

3,898,897

ADJUSTABLE SOCKET WRENCH

Toivo Untamo Jauhialnen, Hyvinkaa, Finland, assignor to SKF Industrial Trading and Development B.V., Jutphaas, Netherlands

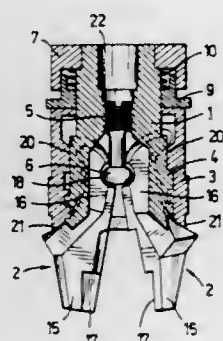
Filed Apr. 26, 1974, Ser. No. 464,999

Claims priority, application Finland, Apr. 26, 1973, 1329/73

Int. Cl. B25B 13/32

U.S. Cl. 81-114

5 Claims



1. In an adjustable socket wrench having a substantially vertical head which is substantially circular in cross section, at least two gripping jaws symmetrically disposed with regard to the vertical axis of the head, each jaw having a protruding gripping portion, and an adjusting portion extending into the head and through a notch provided in said head, and an adjusting socket surrounding the head and the adjusting portions of the gripping jaws, said socket being mounted on the head so as to be vertically movable thereon, an improvement comprising a guiding device mounted on the vertical axis of the head and pivotally supporting the adjusting portions of said gripping jaws, said adjusting portions of the jaws having outer surfaces which are substantially concave, said adjusting socket including means for contacting said concave surface of each jaw to adjust the size of the jaws of the socket wrench by relative vertical movement of said adjusting socket with respect to said head to cause the gripping jaws to pivot around said guiding device.

3,898,898

METHOD AND APPARATUS FOR OPENING BARRELS

Anthony R. Peres, Bristol, N.Y., assignor to Peres Electronic Machines, Inc., Bristol, N.Y.

Continuation-in-part of Ser. No. 364,055, May 25, 1973, abandoned. This application Dec. 17, 1973, Ser. No. 425,108

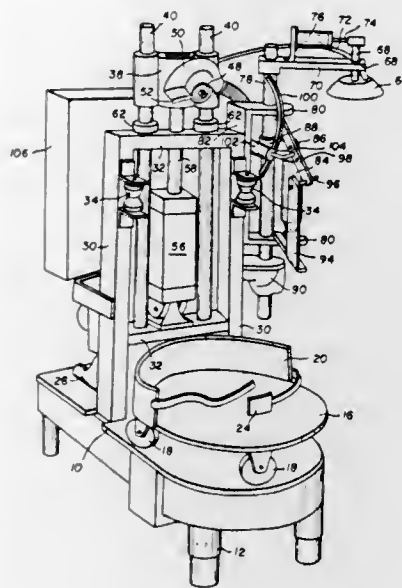
Int. Cl. B23b 1/00

U.S. Cl. 82-47

9 Claims

1. A barrel opening method comprising:
 - a. securing said barrel on a rotatable stand;
 - b. lowering a guide roller and cutter wheel assembly into engagement with the rim of the cover for said barrel;
 - c. using low pressure air to bring said cutter wheel into contact with the outer lip of said cover rim outside the wall of said barrel;
 - d. rotating said stand to rotate said barrel with said guide rollers riding on both the inside and outside said cover rim;
 - e. using high pressure air for driving said cutter wheel radi-

ally inward into said outer lip of said cover rim as said barrel is rotating to cut through said outer lip to the



outside of said barrel wall; and
f. removing said cover.

3,898,899

METHOD OF MAKING PACKAGE LINERS HAVING STARBURST PATTERNS CUT THERE THROUGH

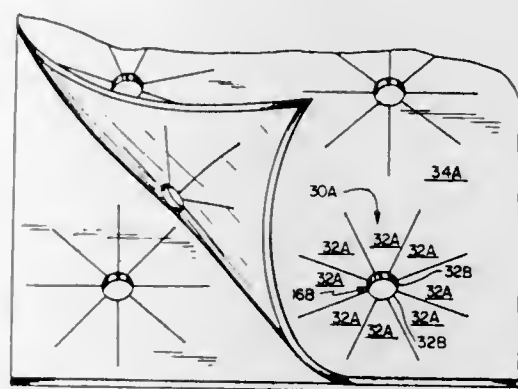
David Weinstein, Baltimore, Md., assignor to Maryland Cup Corporation, Owings Mills, Md.

Division of Ser. No. 389,619, Aug. 21, 1973, abandoned. This application Nov. 7, 1974, Ser. No. 521,799

Int. Cl. B26d 7/06

U.S. Cl. 83-29

1 Claim



1. A method of making package liners for fragile articles, said package liners having starburst patterns cut therethrough comprising the steps of:

- providing a cutting means including a substantially centrally located cutting edge having a closed arcuate shape and a plurality of additional straight cutting edges extending radially from said centrally located cutting edge;
- disposing a plurality of contiguous layers of sheet stock in alignment with said cutting means;
- actuating said cutting means to pass said cutting edges through all of said contiguous layers of sheet stock; and
- separating said contiguous layers of sheet stock to form package liners having starburst patterns cut therethrough.

3,898,900

WEB CUTTING DEVICE

Alfred Schmermund, 62 Kornerstrasse, 5820 Gevelsberg, Germany

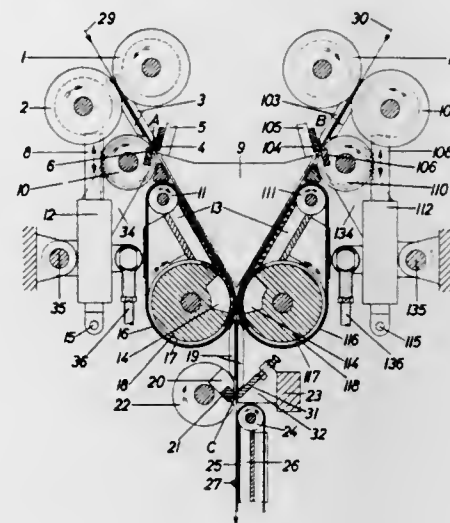
Filed Oct. 26, 1973, Ser. No. 410,156

Claims priority, application United Kingdom, Oct. 31, 1972, 50094/72

Int. Cl. B26d 7/06, 1/56

U.S. Cl. 83-152

7 Claims



1. A web feeding and cutting device comprising, in combination:

- first guide means to define a first web feed path;
- second guide means to define a second web feed path having a portion thereof in common with said first path;
- first web feeder means selectively operable to feed a first web along said first path;
- second web feeder means selectively operable to feed a second web along said second path, said first and said second feeder means being actuatable alternately one with another;
- main rotary cutter means disposed in said common feed path portion to sever blanks of predetermined length from a web fed along the respective one of said feed paths;
- first auxiliary cutter means disposed in said first feed path;
- second auxiliary cutter means disposed in said second feed path, said first and said second auxiliary cutter means each comprising a first member angularly displaceable relative to a second member to bring mutually co-operable knife elements of said first and second members into co-operative action, said first and said second auxiliary cutter means each being located at equal distances upstream of the main cutter means along the respective feed paths and each of said auxiliary cutter means being spaced apart from said main cutter means along the respective one of said feed paths by a distance less than said predetermined length, whereby on the web fed along one of said feed paths being severed by operation of the respective one of said auxiliary cutter means, the resulting cut blank is fed along said common portion without the trailing end portion of said blank being engaged by said main cutter means.

3,898,901

LOG SEPARATION SYSTEM

Donald D. Savage, 2883 Cobb St., Marietta, Ga. 30060

Filed July 27, 1973, Ser. No. 383,116

Int. Cl. B23d 25/12

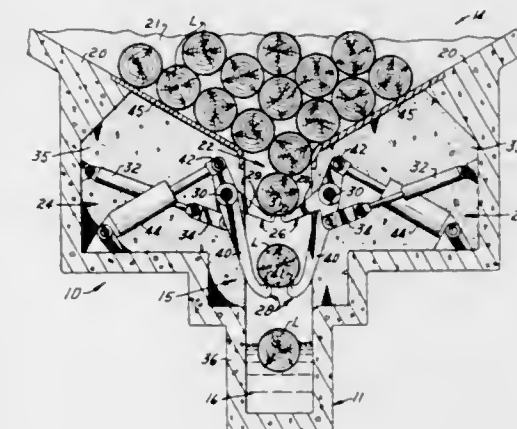
U.S. Cl. 83-343

2 Claims

1. A mechanism for individually separating logs including: a supply bin having an inclined floor in which the pile of logs is supported and along which the logs are moved under gravity, said floor having a discharge opening at its lower portion; and,

separation gate means for selectively closing said discharge opening and for individually releasing logs from the pile through said opening, said separation gate means comprising:

- a first pair of arms positioned on opposite sides of said opening and selectively movable toward and away from each other to a first position blocking said opening and to a second position not blocking said opening so that the logs may individually pass therebetween;
- a second pair of arms positioned on opposite sides of said opening below said first pair of arms selectively movable toward and away from each other to a third position blocking said opening to support a log thereon below said first pair of arms and to a fourth position not blocking said opening to release the log;
- first drive means for selectively positioning said first pair of arms in said first position and in said second position;
- a second drive means for selectively positioning said second pair of arms in said third position and in said fourth position; and
- control means operatively connected to said first and said second drive means for actuating said first and second drive means, said control means including sensing means for detecting movement of the major diameter of one of the logs carried by said second pair of arms past a prescribed point and for actuating



said first drive means to cause said first pair of arms to be moved from said second position to said first position upon passage of the major diameter of the log carried by said second pair of arms past said prescribed position;

- a water flume located under said discharge opening for receiving and floating logs received from said separation gate means and wherein said control means further includes trip gate means constructed and arranged to be operated by a log carried in said water flume under said separation gate means, said trip gate means operatively connected to said second drive means for preventing movement of said second pair of arms from said third position to said fourth position when the log carried by said water flume is located under said separation gate means;
- a conveyor operatively associated with said water flume for transporting a log from said water flume, said conveyor including means for locating the log in said flume at a prescribed position on said conveyor; and,
- a severing means operatively associated with said conveyor for transversely cutting each log on said conveyor into prescribed shorter equal lengths, said severing means synchronized with said conveyor.

3,898,902

ROCKING ACTION SHEARING APPARATUS WITH CLAMPING MEANS

Paul Cailloux, Le Perreux, France, assignor to Promecam Sisson-Lehmann, Saint-Denis, France

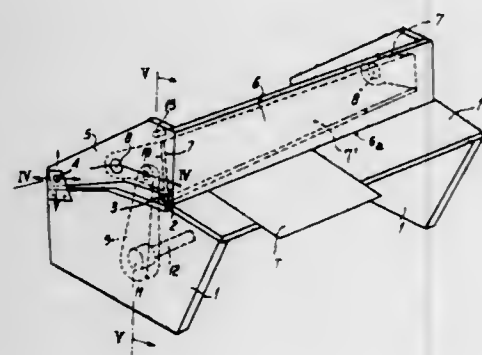
Filed Jan. 30, 1975, Ser. No. 545,592

Claims priority, application France, Feb. 7, 1974, 74.4062

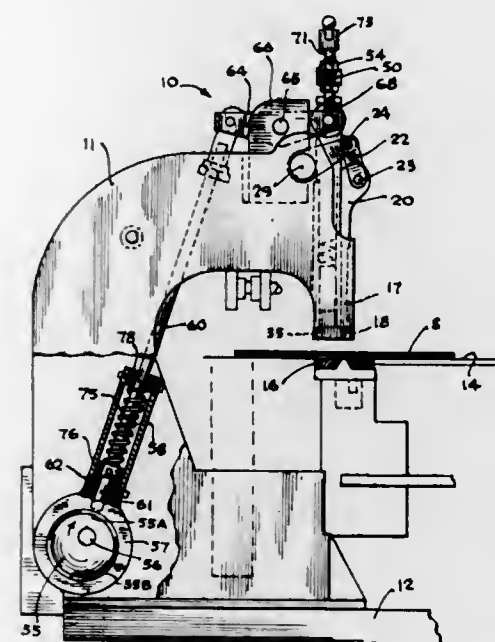
Int. Cl.² B23D 31/00, 33/02; B26D 7/04

U.S. Cl. 83—378

10 Claims



a strap on the eccentric to be reciprocated thereby, a rod connected to the strap, the connection between the rod and



strap including a lost motion spring, and means for imparting reciprocation of said rod to said clamp.

3,898,904

SHEARING APPARATUS AND SHEET TRANSFER MECHANISM

Dennis Daniels, Bellevue, Wash., assignor to U.S. Amada, Ltd., Seattle, Wash.

Filed Sept. 4, 1973, Ser. No. 393,891

Int. Cl. B26d 5/00, 7/20

U.S. Cl. 83—404.2

12 Claims

1. A rocking action shearing apparatus for shearing metal plates or the like, comprising support means adapted to support a plate to be sheared; a stationary blade fixed to said support means and arranged to be located on one side of a plate supported on said support means; clamping means mounted on said support means for rocking movement about a first fixed axis between an inactive position and a clamping position in which it clampingly engages the plate on the other side thereof; movable blade means comprising a second blade having a cutting edge which includes in a vertical plane an angle with the cutting edge of said stationary blade, said movable blade means being mounted on said clamping means for rocking movement about a second axis transversely spaced from said first axis between an inactive position and a shearing position in which said second blade engages a plate on said support means on the other side thereof and cooperates with said fixed blade to shear the plate; and means connected to said movable blade means for moving the latter between the positions thereof and said clamping means from said inactive to said clamping position.

3,898,903

TRIMMING MACHINES

Raymond I. Bulka, Oak Lawn, Ill., assignor to McCain Manufacturing Corporation, Chicago, Ill.

Filed Nov. 2, 1973, Ser. No. 412,490

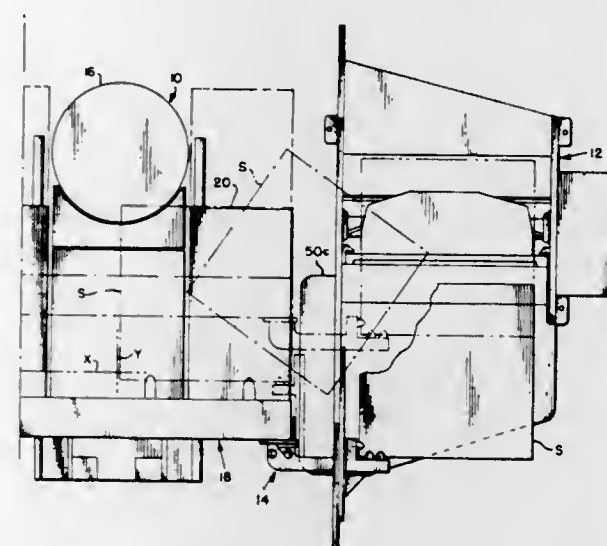
Int. Cl. B26d 7/02

U.S. Cl. 83—387

5 Claims

1. In a trimming machine for trimming paper sheets, signatures and like material, a reciprocal knife holder having a trimming knife mounted thereon, means to reciprocate the knife holder along a vertical axis to move the knife through a predetermined horizontal cutting plane, a reciprocal clamp disposed beneath the knife holder and guided by the knife holder for clamping the material to be trimmed, spring means for driving the clamp in one direction independently of the knife holder, cyclically operable means for driving said clamp independently of the knife holder in the opposite direction, said cyclically operable means including an eccentric which is adjustable to time operation of the clamp to the knife holder,

1. Shearing apparatus comprising a base, sheet supporting means on said base having a forward end, sheet cutting means including a shear punch and die, each having opposite ends, means for moving said shear punch past said sheet supporting means for shearing a sheet, an upper frame on said base, means for supporting said opposite ends of said shear punch and die between said upper frame and said base, said upper frame having opposite ends attached to said base, a side opening in one of said opposite ends of said upper frame partially aligned with said shear punch and die and exposed to said one of said ends of said shear punch and die so that a sheet can be moved laterally between the shear punch and die onto said sheet supporting means.



3,898,905

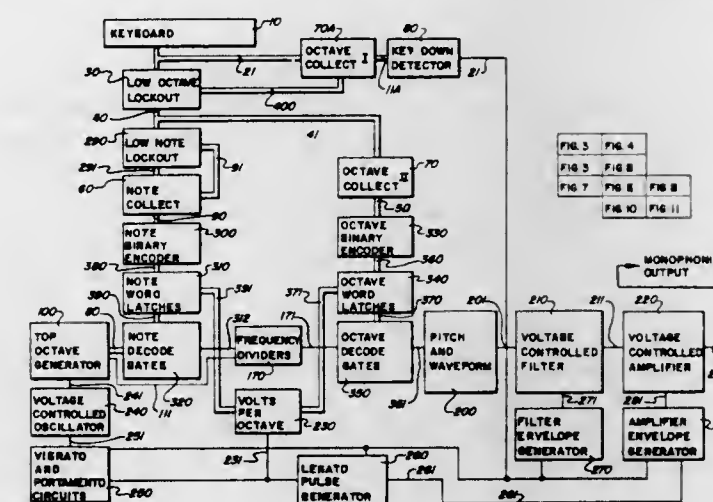
MONOPHONIC ELECTRONIC MUSICAL INSTRUMENT
Willford Rayburn Schreier, Bensenville, Ill., assignor to Hammond Corporation, Chicago, Ill.

Filed Mar. 4, 1974, Ser. No. 447,905

Int. Cl. G10h 1/00, 5/06

U.S. Cl. 84—1.01

15 Claims



1. In a monophonic electronic musical instrument:
a plurality of selectably actuatable control elements for producing control signals on note busses, each control signal element being associated with one note of the musical scale;
encoder circuit means for encoding control signals on said note busses into a binary word;
memory means for storing said binary word;
tone signal generating means for generating tone signals corresponding to notes of the musical scale; and
decoder circuit means for decoding said stored binary word to gate a tone signal corresponding to said stored binary word.

3,898,906

STRADDLE FASTENING DEVICE

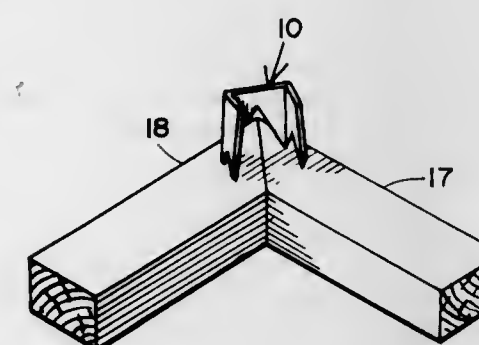
Gerald H. Greenberg, 8301 S.W. 27th Ter., Miami, Fla. 33155

Filed Jan. 16, 1974, Ser. No. 433,852

Int. Cl.² F16B 15/00

U.S. Cl. 85—11

2 Claims



1. A straddle fastening device for joining abutting wood members and the like comprising a substantially rectangularly shaped body member having side edge portions, leg members extending along said side edge portions, said body member and said leg members having a leading edge portion and a trailing edge portion, said leading edge portions extending at substantially right angle from said body member and said trailing edge portions extending at substantially an acute angle with said body member, substantially V-shaped notches formed in leading edges of said body member and said leg members, said notches having sharpened edge portions for cutting into said abutting wood members and forming a substantially U-shaped slot for receiving said fastening device, a free end of said trailing edge portions of said leg members being out of coplanar relation with said leading edge portions

and extending in a direction toward each other, said leg members being substantially equally spaced at their junction with said body member for providing a substantially vertical disposition for said juncture, whereby said fastening device is received in said slot formed in said wood member and said free ends of said trailing edge portions exert a yielding force in said slot directing the abutting members in a direction toward each other.

3,898,907

EXPANSION ANCHOR

Artur Fischer, Althelmer Strasse 219, D-7241 Tumlingen, Germany

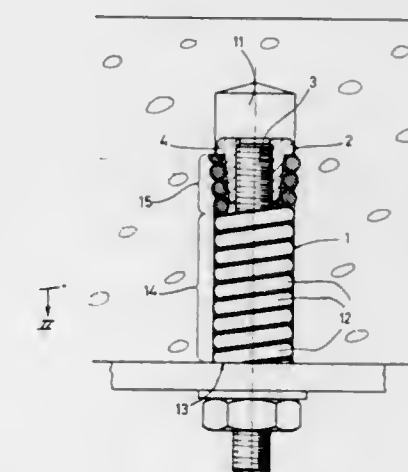
Filed Apr. 13, 1973, Ser. No. 350,892

Claims priority, application Germany, Apr. 26, 1972, 2220422

Int. Cl.² F16B 13/06

U.S. Cl. 85—64

5 Claims



1. An expansion anchor, particularly for use in a concrete support structure having an exposed surface and provided with a hole having an open end in the region of the exposed surface and extending beyond the same and into the support structure, comprising a partly expandable tubular element consisting of a helical wire spring having adjacent convolutions, and extending from one end of said partly expandable element to the other end thereof, said helical wire spring having a leading end portion and a trailing end portion and being adapted to be inserted into the hole of the support structure so that said leading end portion is remote from, and said trailing end portion is closer to, the open end of the hole; means for permanently interconnecting only the convolutions of said trailing end portion so as to prevent these convolutions from conducting any movement with respect to one another radially and circumferentially of said spring; an expander element adapted to be inserted into said leading end portion; and an actuating element for drawing said expander element into said leading end portion and in direction toward said trailing end portion, whereby said expander element exerts expansion forces on all convolutions of said spring so that the convolutions of said leading end portion expand and anchor said leading end portion in the hole, while the convolutions of said trailing end portion are prevented from expanding by said interconnecting means so that the support structure in the region of the hole adjacent the open end of the latter is unaffected by the expansion whereby damage to said support structure in said region is avoided.

3,898,908

INERTIA BULLET PULLER

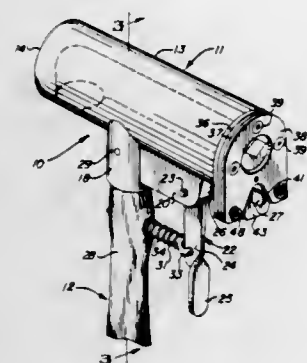
Robert H. Isenhower, deceased, late of Phoenix, Ariz., by Bonnie J. Isenhower, executrix, and David M. Garman, both of 4838 N. 29th St., Phoenix, Ariz. 85016

Filed Aug. 8, 1973, Ser. No. 386,771

Int. Cl.² F42B 33/10

U.S. Cl. 86—1 A

8 Claims



1. An inertia affected hammer like cartridge disassembling device comprising:

- a cylindrical body portion and a handle portion extending laterally from said body portion,
- said body portion having a hammer head at one end, a cartridge gripping means at the other end, and a bore, the axis of which extends along the longitudinal axis and through at least a part of said body portion from said gripping means to a point between its ends where said bore opens outwardly of said body portion,
- said cartridge gripping means comprising an apertured plate mounted on said other end of said body portion with its aperture in line with said bore,
- a slidable plate slidably mounted between said other end of said body portion and said apertured plate,
- and trigger means for biasing said slidable plate toward the axis of said bore for gripping the casing of a cartridge inserted with its bullet end into said bore,
- said trigger means connected to said slidable plate for biasing said plate toward the axis of said bore and when pressure is applied to it by the hand of a user biasing said slidable plate away from the longitudinal axis of the bore.

3,898,909

EJECTOR RELEASE UNIT FOR USE IN AIRCRAFT

Samuel W. Craigie, Maidenhead, England, assignor to M. L. Aviation Company Limited, Slough, England

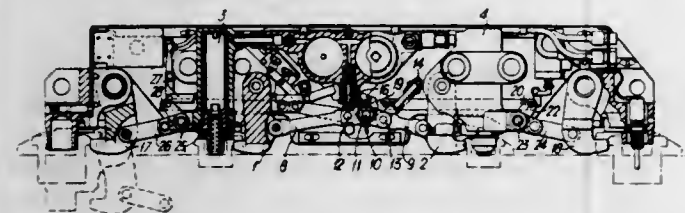
Filed Mar. 4, 1974, Ser. No. 447,812

Claims priority, application United Kingdom, Mar. 5, 1973, 10474/73

Int. Cl. B64d 1/12

U.S. Cl. 89—1.5 F

2 Claims



1. In an ejector release unit for releasing and projecting a store from an aircraft, a pair of telescopic ejection guns for projecting said store from said aircraft and a releasable latching mechanism for supporting said store, said latching mechanism including an inner pair of hooks mounted for pivotal movement and located between said ejection guns and first links connected to said inner hooks for swinging them from their operative positions, a central toggle mechanism controlling said first links, and an outer pair of hooks mounted for pivotal movement and located outside said ejection guns, a

second link connected to each said outer hook, each of said second links being connected to a separate toggle linkage to hold each of said outer hooks in its operative position, each of said separate toggle linkages being controlled by said central toggle mechanism and each of said second links being so located in a lateral direction so as to pass to one side of said respective ejection gun.

3,898,910

PADDLE WHEEL DIFFUSER

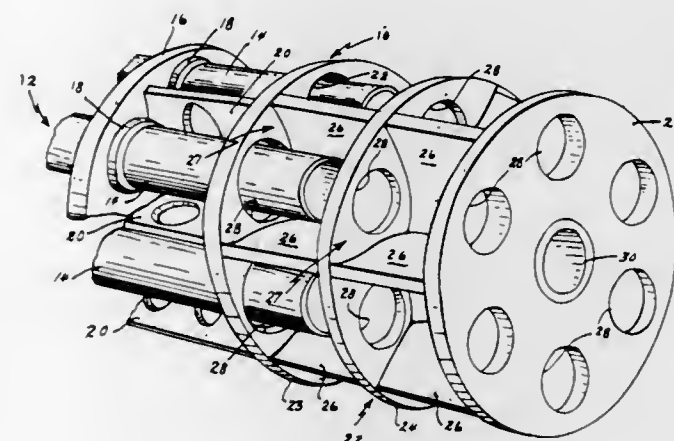
Richard T. Groff, Ladue, Mo., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 11, 1973, Ser. No. 423,856

Int. Cl. B64d 7/02; F41d 7/04

U.S. Cl. 89—14 C

6 Claims



1. A device for deflecting a gun blast from an aircraft mounted gun having a plurality of rotatable barrels comprising a supporting structure secured to said gun barrels, a plurality of plates fixedly secured to said supporting structure, each of said plates having a plurality of apertures therein to permit said barrels to pass therethrough and a plurality of curved separator baffles located perpendicular to and interposed between said plates forming a plurality of chambers within said device which allows said gun blast to escape therefrom, each of said chambers encompassing the gun blast from a single barrel and in addition permits said gun blast to impart an added torque to said rotatable gun barrels.

3,898,911

REMOTELY OPERATED DRAW BAR TOOL CHANGER

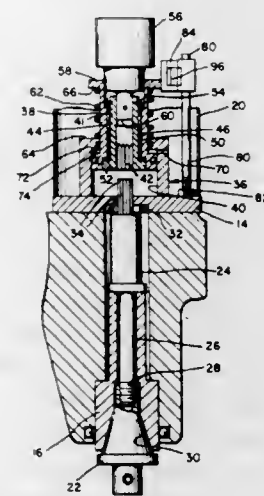
David Edward DeCaussin, Northridge, Calif., assignor to Fadel Engineering Co., North Hollywood, Calif.

Filed Aug. 26, 1974, Ser. No. 500,443

Int. Cl.² B23C 5/26

U.S. Cl. 90—11 D

8 Claims



1. A machine tool having a draw bar located in a machine head and adapted to be connected to a tool holder at one end

and to a remotely operated spindle at the other end for rotating said draw bar comprising:

- one end of said spindle and said other end of said draw bar having interengaging means,
- means for moving said spindle in an axial direction from a non-interengaging position with respect to said draw bar to an interengaging position,
- means for automatically and slightly rotating said spindle as said spindle is moved from said non-interengaging position and before reaching said interengaging position with said draw bar, and
- means for automatically and fully rotating said spindle upon said spindle being interengaged with said draw bar whereby said tool holder is tightened or loosened depending upon the direction of rotation of said spindle.

3,898,912

PNEUMATIC ACTUATORS

Peter Wills, 32 Beacon Hill, Lingfield, and Zygmunt Pudlo, 117 Three Bridges Rd., Crawley, both of England

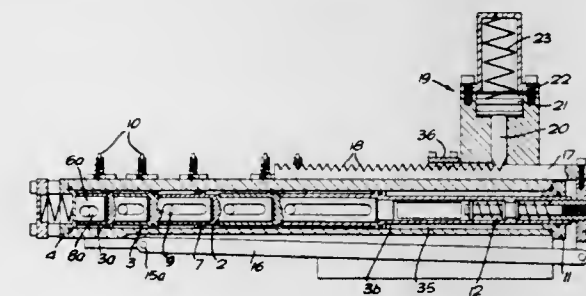
Filed Aug. 30, 1973, Ser. No. 392,997

Claims priority, application United Kingdom, Sept. 7, 1972, 41618/72

Int. Cl. F01b 25/26, 31/12

U.S. Cl. 91—1

2 Claims



1. In a pneumatic actuator having a double acting assembly of interconnected first pistons forming in a common chamber, a series of individually expansible chambers with independent, respective strokes and arranged to provide for an end connector a plurality of possible discrete positions differently spaced from a datum, a rack mounted for lengthwise movement with said end connector, said rack being provided with a plurality of teeth with recesses between said teeth, a plunger arranged to cooperate with the rack to secure the rack and end connector in at least some of the said positions, one end of the plunger being shaped for engagement with said recesses, a second piston for moving said plunger relative to the rack, to engage and disengage from the rack, and a plurality of valves for connecting selected ones of said chambers to an air supply, wherein the improvement comprises counter means including a first light source and a first photocell disposed adjacent said rack so that on opposite sides of the path of said teeth the illumination by the light source is interrupted by the passage of the teeth of the rack, thereby to cause said photocell to produce, when said rack is moved, an output having a number of successive interruptions, the number of interruptions providing an indication of the extent of movement of the rack.

3,898,913

SOLENOID CONTROL VALVE FOR HYDRAULIC BRAKE BOOSTER

Richard T. Hendrickson; Richard L. Lewis; Jerome T. Ewald; Lloyd G. Bach, and George B. Hickner, all of South Bend, Ind., assignors to The Bendix Corporation, South Bend, Ind.

Filed Sept. 24, 1973, Ser. No. 400,464

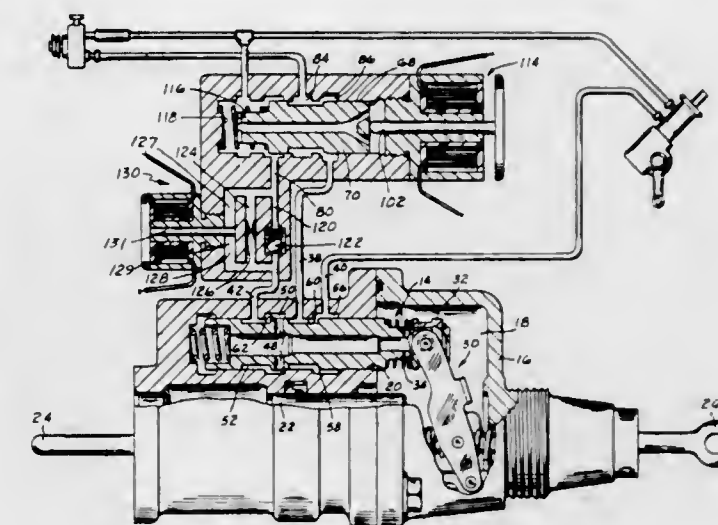
Int. Cl.² F15B 13/044, 13/04, 11/10

U.S. Cl. 91—31

5 Claims

1. A vehicle hydraulic system comprising a pump, a hydraulic booster including a housing having an inlet port, an outlet port, and a return port, said housing defining a pressure cham-

ber therewithin, operator-operated valve means shiftable from a first position communicating said pressure chamber with the return port and permitting substantially uninhibited fluid communication between the inlet port and the outlet port, said operator-operated valve means being shiftable to a second position when a booster actuation is effected wherein communication between the pressure chamber and said return port is terminated and the fluid pressure at the inlet port is communicated into the pressure chamber to actuate said booster, electrically operated valve means having a first port, first passage means communicating said first port to the low



pressure side of said pump, a second port, second passage means communicating said second port to said return port, a third port, third passage means communicating the third port to said inlet port, a fourth port, fourth passage means communicating said fourth port to the high pressure side of said pump, said electrically operated valve means being responsive to a signal to shift from a first position communicating said first port with said second port and said third port with with fourth port to a second position restricting communication between said third and fourth ports, blocking said first port, and communicating said second port with the fluid pressure level at said fourth port.

3,898,914

HYDRAULIC BRAKE BOOSTER ASSEMBLY

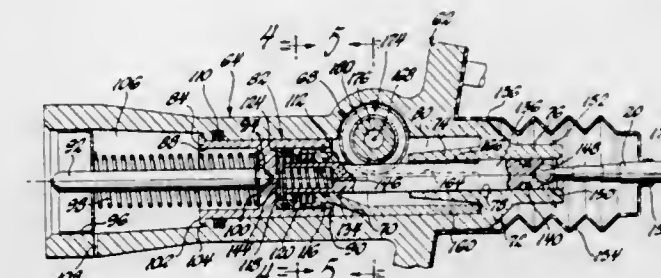
Ronald L. Shellhouse, Vandalia, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed July 18, 1974, Ser. No. 489,497

Int. Cl.² F15B 9/10

U.S. Cl. 91—375 R

4 Claims



1. A hydraulic booster comprising:

- a housing having an axially extending power section and a transversely extending valve section, and a bore in each of said sections, said bores having axes in skew relation and said bores intersecting each other;
- a power piston reciprocally received in said power section bore and dividing said power section bore into a variable pressure power chamber and an unpressurized chamber, said housing including an apertured power section bore end wall closing said power chamber with said valve section bore intersecting said power section bore in said power chamber, with power piston having a valve friction

drive extension in said power chamber and formed with first friction drive surface means extending in a plane axially parallel to said power section bore axis and transversely parallel to said valve section bore axis; an input control member extending reciprocally through said apertured end wall in sealing relation therewith and into said power chamber and having a friction drive section in said power chamber formed with second friction drive surface means extending axially parallel to said power section bore axis and transversely parallel to said valve section bore axis and in a plane parallel to and spaced from the plane of said first friction drive surface means; said housing valve section having parts connecting with said valve section bore in axially spaced relation and including ports adapted to be respectively connected with a source of hydraulic pressure and exhaust means; and rotary spool valve means in said valve section bore, said valve means having first circumferential friction surface means frictionally engaging said first friction drive surface means and second circumferential friction surface means coaxial with said first circumferential friction surface means and frictionally engaging said second friction drive surface means, a plurality of spaced lands cooperating with said valve section bore to define therewith chambers respectively communicating with said ports, a center passage in said valve means communicating with said power chamber, and variable orifices in said valve means fluidly between said ports and said center passage and controlled by rotary movements of said valve means caused by linear movements of said power piston extension and said input control member to control the introduction and containment and removal of fluid pressure in said power chamber to actuate and hold and release the booster in accordance with movements of said input control member.

3,898,915

PISTON CYLINDER ASSEMBLY

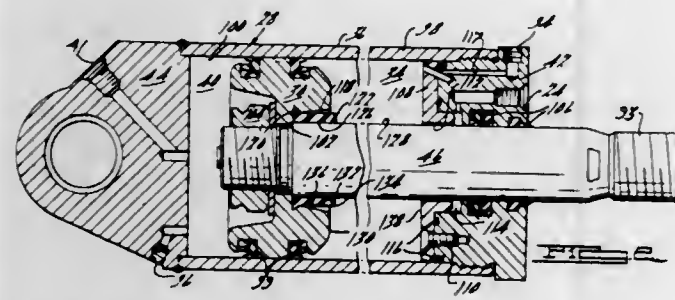
Richard Neuman, Farmington, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Mar. 28, 1973, Ser. No. 345,826

Int. Cl. F15b 15/22

U.S. Cl. 91—395

7 Claims



1. A fluid actuated piston cylinder assembly having a fluid supply passage and a fluid receiving passage, for use with a fluid circuit, comprising:

- a housing having a body portion intermediate first and second end portions, the body and end portions defining together a cavity;
- a piston within the cavity in sliding engagement with the body portion and dividing the cavity into first and second chambers, both chambers containing a fluid, the first chamber being partially defined by the first end portion; a rod connected to the piston and extending out of the cavity through the first end portion, the first end portion and the rod defining therebetween an annular passage adapted to be the sole communication between the first chamber and the fluid receiving passage; and
- a resilient member encircling the rod and having a first end engaging the piston and a second end projecting away from the piston towards the first end of the housing, the circumferential portion of the second end of the resilient

member being of a size to encompass the annular passage and having a surface area normal to the axis of said resilient member that varies along the axis of said resilient member from a relatively small surface cross-sectional area at said second end to the full cross-sectional area of said resilient member at an axial position intermediate said first and second ends thereby presenting a sealing surface when abutting the first end portion of the cylinder which is substantially smaller in cross-sectional area than the total cross-sectional area of said resilient member; whereby when the piston approaches a position proximate the first end the resilient member seals the annular passage entrapping a quantity of fluid between the piston and the fluid end, thereby ensuring that a fluid pressure is maintained within the first chamber.

3,898,916

SUPERVISION OF SEVERAL ELECTRO-HYDRAULIC ACTUATORS OPERATING ON A COMMON OUTPUT

Eckhart Renner, Achim, and Udo Linnenbecker, Bremen, both of Germany, assignors to Vereinigte Flugtechnische Werke-Fokker GmbH, Bremen, Germany

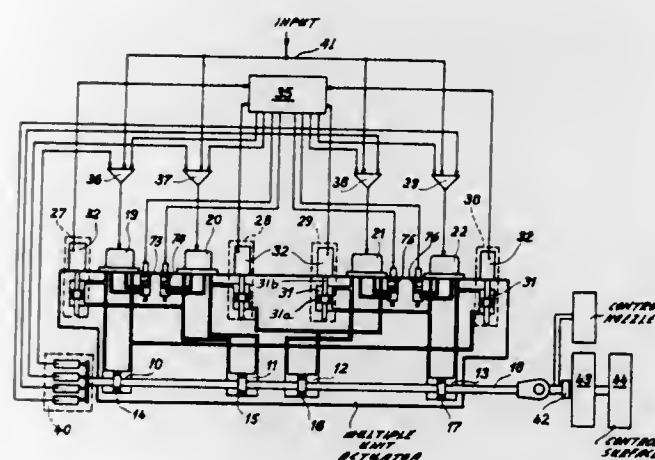
Filed Apr. 4, 1974, Ser. No. 457,704

Claims priority, application Germany, Apr. 9, 1973, 2317754

Int. Cl. F15B 11/22

U.S. Cl. 91—411 R

16 Claims



1. Apparatus for supervising an electro-hydraulic actuator system having a plurality of at least three individual piston-cylinder actuators, wherein the pistons are interconnected to operate on a common load, and each cylinder is pressure-controlled by a separate electro-hydraulic controller comprising: comparator means connected to each of the cylinders of the plurality to compare the pressure in each of the cylinders of the plurality respectively with the pressure of at least two other cylinders of the plurality for obtaining a closed loop of comparisons, each resulting in an output and wherein at least two output signals indicate in each instance when operations of a piston of a cylinder actuator differs from the operation of the pistons of the other piston-cylinder actuators of the plurality; and

means connected to be responsive to the output signals for obtaining control of the respective actuator to balance the operation of the respective cylinder or to shut it down in dependence upon the magnitude of the difference in operation as indicated by the output signals of the comparator means.

3,898,917

VARIABLE DISPLACEMENT FLUID TRANSLATING DEVICE

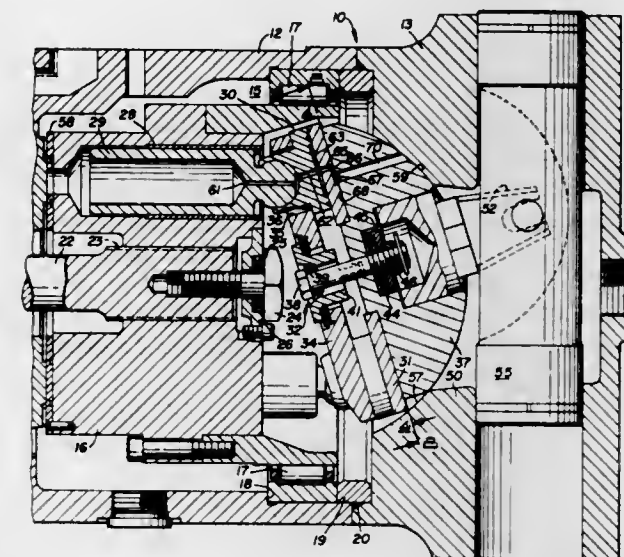
Cecil E. Adams; Ellis H. Born, and Gary C. Smith, Jr., all of Columbus, Ohio, assignors to Abex Corporation, New York, N.Y.

Filed Jan. 31, 1974, Ser. No. 438,311

Int. Cl. F04b 1/00

U.S. Cl. 91—488

4 Claims



1. A variable displacement fluid energy translating device comprising: a body; a barrel rotatably mounted within the body; a plurality of cylinders formed in the barrel; a piston within each cylinder; a cam support in the body; a cam member mounted on the cam support and pivotable relative to the support; a swash plate having a top surface and a bottom surface and mounted on the cam member; a shoe pivotably attached to each piston adapted to slide on the top surface of the swash plate and reciprocate the piston within a cylinder when the barrel is rotated; means for pivoting the cam member from a position causing maximum fluid flow in one direction through the translating device to a position causing maximum fluid flow in another direction; a bore in each piston for conducting fluid under pressure in the cylinder through each piston to its shoe; a second bore in each shoe which feeds fluid from the piston through the shoe to a space between the bottom of the shoe and the top surface of the swash plate to hydraulically balance the shoe; a plurality of apertures in the swash plate for conducting fluid from the bottom of each shoe through the swash plate; a first collector port for collecting fluid under pressure from some of the swash plate apertures when the device is causing fluid flow in one direction, a second collector port for collecting fluid under pressure from other of the swash plate apertures when the device is causing fluid flow in the other direction, the first and second collector ports being isolated from one another, a third bore in the cam member for conducting fluid from the first collector port through the cam member; a first pocket on the back of the cam member connected to the third bore for receiving the fluid from the first collector port; a fourth bore in the cam member for conducting fluid from the second collector port through the cam member; a second pocket on the back of the cam member connected to the fourth bore for receiving fluid from the second collector port; wherein the fluid under pressure in one of the first and second pockets substantially reduces the friction between the cam member and the cam support and applies a force on the cam member which resists the force applied by the pistons on the swash plate.

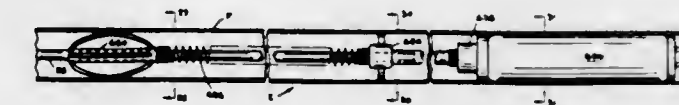
3,898,918

DEVICE FOR TEMPORARILY PROVIDING A SEAL WITHIN AN ADVANCING PIPE

J. Warne Carter, Wichita Falls, Tex.
Division of Ser. No. 243,991, April 14, 1972, which is a division of Ser. No. 824,153, May 13, 1969, Pat. No. 3,700,519, which is a continuation-in-part of Ser. No. 577,035, Sept. 2, 1966, Pat. No. 3,507,412, which is a continuation-in-part of Ser. No. 387,372, Aug. 4, 1964, abandoned. This application Oct. 23, 1973, Ser. No. 408,790
Int. Cl. F16j 3/00

U.S. Cl. 92—92

2 Claims



1. A device for temporarily providing an air seal within an advancing pipe comprising a first air conveying tube adapted to extend through the pipe, a rigid perforated sleeve connected to a second air conveying tube in communication with the interior of said sleeve, the second tube being in communication with and connected to the first tube to allow longitudinal movement of the second tube and the sleeve relative to the first tube, an inflatable container secured to surround the sleeve, said container when inflated gripping the inner surface of the pipe and movable therewith, and extensible means for returning said second tube, sleeve and associated inflatable container upon deflation of the container.

3,898,919

SHEET PERFORATOR HAVING MEANS FOR REINFORCING THE SHEET AT THE HOLES

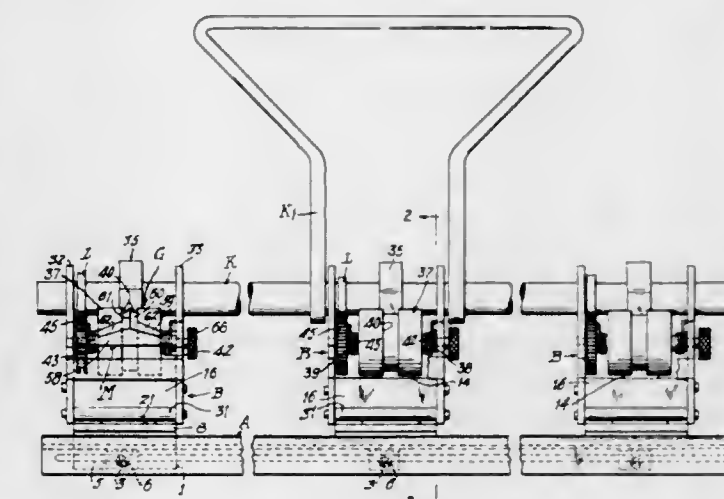
David Grimaldi, Jr., 458 George St., Ridgewood, N.J. 07450

Filed Dec. 28, 1973, Ser. No. 429,361

Int. Cl. B26f 1/02; B31f 5/08

U.S. Cl. 93—1 A

8 Claims



1. The combination of a support frame, means on said frame for rotatably supporting a supply roll of tape having pressure-sensitive adhesive on one side, means for feeding said tape step-by-step including a feed roller to which said tape separately adhesively adheres and having stub shafts at its end rotatably mounting said roller in said frame, means to rotate said roller step-by-step including a feed gear rotatable on one of said stub shafts, a drive shaft rotatably mounted in said frame, a gear quadrant keyed on said drive shaft and meshing with said feed gear so as to rotate said feed gear alternately in opposite directions upon oscillation of said drive shaft, and oppositely wound helical torsion springs each mounted on one stub shaft in frictional contact therewith, one spring having an offset end extension and said feed gear having an arcuate slot into which said offset end extends so that the feed gear has a limited degree of rotation in each direction without contact of the slot ends with said offset end extension, said springs being arranged to tighten on and grip the shaft and rotate said feed

roller in the direction to pull the tape from said roll upon engagement of one end of slot with said offset end extension and said spring being released from said shaft upon rotation of said gear in the opposite direction, and the other spring having an offset end extension secured in said frame and the spring being arranged to tighten on and grip its stub shaft upon rotation of said feed gear in said opposite direction and thereby hold the feed roller against backward rotation, said drive shaft and said gear quadrant being normally disposed in a neutral position and rotatable firstly in the direction to actuate the feed roller to feed a predetermined length of tape, and secondly in the opposite direction while the feed roller is held stationary against rotation and thirdly back to neutral while the feed roller remains stationary ready for the next feeding movement.

3,898,920

TAIL TIE SYSTEM

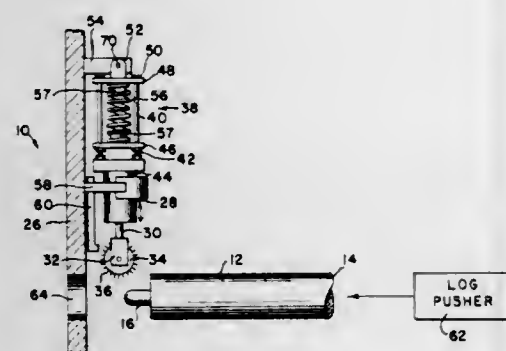
Jerry Zucker, Lake Como, Fla., assignor to Hudson Pulp & Paper Corporation, Palatka, Fla.

Filed Feb. 15, 1974, Ser. No. 442,830

Int. Cl.² B65H 75/28; B31F 5/02

U.S. Cl. 93-1.1

11 Claims



1. The method of securing the free tail end of paper on a roll comprising engaging a portion of the surface of said tail end of paper with a plurality of individual pins, urging said pins against said paper towards the center of the roll to depress individual areas of the paper roll beneath said pins for several layers of paper, thereby to spread the fibers of said paper in said areas; thereafter removing said pins from engagement with said paper, whereby said spread fibers interlock to hold said layers of paper together; and wherein said pins are mounted on a roller and said engaging step includes the step of moving said roller along the surface of said roll parallel to the central axis of said roll.

3,898,921

AIR NOZZLE FOR VENTING SYSTEMS

Hans Trube, Sindelfingen; Hermann Grimm, Ostelsheim, and Gernot Karioth, Sindelfingen, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Germany

Filed Oct. 27, 1972, Ser. No. 301,293

Claims priority, application Germany, Oct. 28, 1971, 2153743

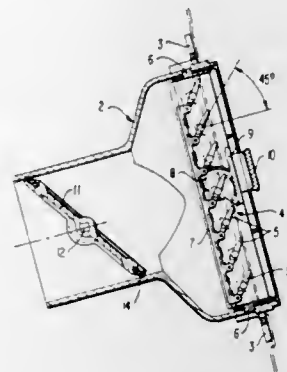
Int. Cl. F24f 13/06

U.S. Cl. 98-40 A

38 Claims

1. An air nozzle for a ventilating installation, which includes an adjustable shutter means, characterized in that a housing means having an inlet and discharge aperture is provided, adjustment means for adjusting the shutter means, the shutter means is accommodated in the discharge aperture of the housing means, the housing means includes an air valve means disposed in said housing between the inlet and the shutter means for regulating the air quantity discharged from the air nozzle, valve control means operatively connected with said air valve means for opening and closing the same, said valve

control means includes an actuating member disposed at the discharge aperture, and means for slidably mounting said



actuating member to be movable transversely to the air discharge aperture.

3,898,922

DEODORISATION UNIT

Jack Mark Charles Savage, Abingdon, England, assignor to Burger Boy Red Top Refreshment Kiosks Limited, Abingdon, England

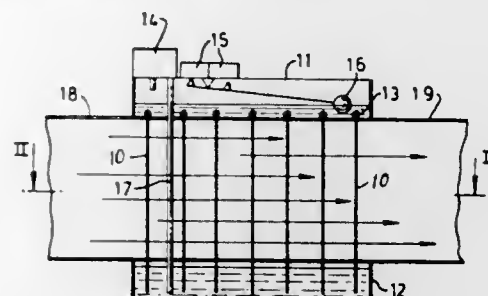
Filed Aug. 2, 1973, Ser. No. 385,063

Claims priority, application United Kingdom, Aug. 7, 1972, 36719/72

Int. Cl. F23j 11/08

U.S. Cl. 98-115 R

8 Claims



1. A deodorisation unit comprising ducting through which fumes to be deodorised are forced, an upper fluid reservoir for containing deodorising fluid mounted above the ducting, a lower fluid container for surplus deodorising fluid mounted oppositely below the ducting, a plurality of absorbent wicks extending from said reservoir across the ducting in the direct path of said fumes and into said container, said wicks being arranged in staggered rows to ensure good mixing of the fumes and the deodorising fluid vapour evaporating from the wicks, a pump having an inlet connected to said container and an outlet connected to said reservoir and means for periodically actuating said pump for transferring fluid from said container to said reservoir.

3,898,923

SAFETY TABLE FOR A SKINNING MACHINE

Charles Austin Greider, Des Moines, Iowa, assignor to Townsend Engineering Company, Des Moines, Iowa

Filed Nov. 29, 1973, Ser. No. 420,266

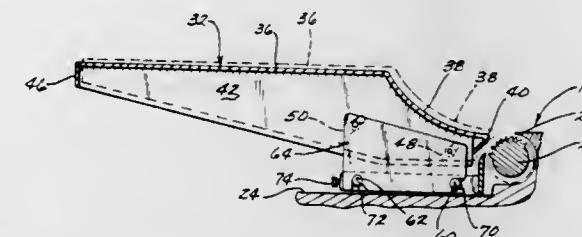
Int. Cl. A22b 5/16

U.S. Cl. 99-589

1 Claim

1. In combination, a skinning machine having a frame means with a top portion, and forward and rearward ends, opposite sides, and a skinning blade mounted on said frame means, a safety table means secured to said skinning machine adjacent the forward end of said skinning machine, said safety table means comprising a forward table portion disposed in a plane above said skinning blade and a rearward table portion extending downwardly and rearwardly from the rearward end of said forward table portion

towards said skinning blade, said rearward table portion being arcuate, said safety table having opposite sides, mounting means securing said safety table means to said skinning machine, said skinning machine having first and second pairs of spaced apart pins extending horizontally inwardly from opposite sides thereof towards said safety table means,



said mounting means comprising a first mounting bracket secured to one side of said safety table means and a second mounting bracket secured to the other side of said safety table means,

said first mounting bracket being selectively detachably secured to said first pair of pins,

said second mounting bracket being selectively detachably secured to said second pair of pins.

3,898,924

TYING MACHINE

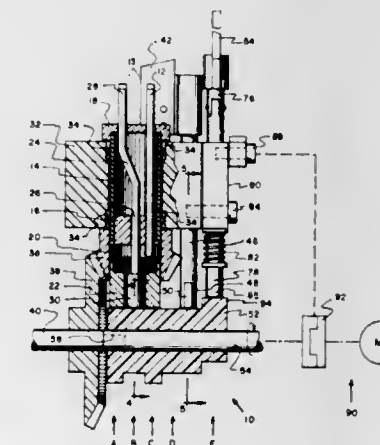
Stanley L. Mead, and Gerald G. Dilley, both of Portland, Oreg., assignors to Stanley L. Mead, Portland, Oreg.

Filed Aug. 12, 1974, Ser. No. 496,719

Int. Cl. B65b 13/28

U.S. Cl. 100-12

7 Claims



1. An improved tying machine having selectively openable and closeable loop-forming means for forming a length of tying tape into a loop around an article to be tied, tape-feeding means for feeding said tape into said loop-forming means whereby a loop of tape is formed around said article, a first clamp means for clamping the leading end of said loop, means for tightening said loop around an article to be tied, a second clamp means for clamping a trailing portion of said tape forming said loop, knife means for severing said loop from the remainder of said tape, and twister means for twisting the ends of said loop together to secure said article, wherein the improvement comprises three push-member assemblies mounted in said machine, each engaging at one end thereof said first clamp means, said second clamp means and said knife means respectively, for independently actuating said respective clamp and knife means, and a cam means rotatably mounted in said machine adjacent the opposite ends of said respective push-member assemblies for actuating said clamp means and knife means, said cam means having three respective lobes distributed axially and peripherally over its exterior surface for sequentially displacing each of said push-member assemblies solely by the direct application of compressive force thereto in response to the rotation of said cam means.

3,898,925

DIE EMBOSING APPARATUS

Donald R. Alexander, R.R. 3 Box 291, Conway, Ark. 72032

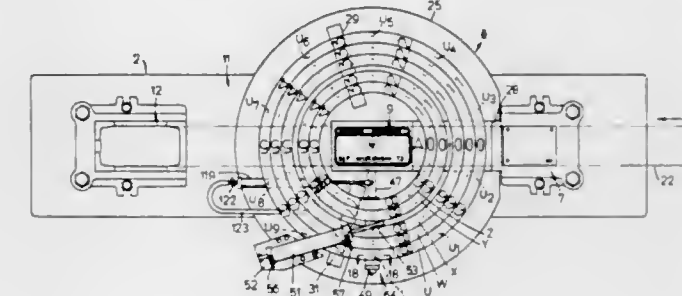
Division of Ser. No. 296,602, Oct. 11, 1972, Pat. No.

3,824,921. This application Jan. 16, 1974, Ser. No. 433,819

Int. Cl. B44b 5/02; B41f 47/44

U.S. Cl. 101-18

4 Claims



1. A progressive die for working strip stock continuously into perforated, and serially numbered plate members, said die comprising an elongated base member, a perforating section at one end of said base member, a blanking section at the other end of said base member, and numeral embossing and inscription embossing sections intermediate said perforating and blanking sections; and said numeral embossing section including a flat concentric assembly of relatively rotatable decimal rings each having a circular series of consecutive digit embossing elements at the obverse side of the ring assembly; and an indexing mechanism at the converse side of said ring assembly operable to rotate said rings step by step in predetermined order so as to present said digit embossing elements thereof in successive serial number configurations.

3,898,926

AUTOMATIC RANDOM CASE CODER

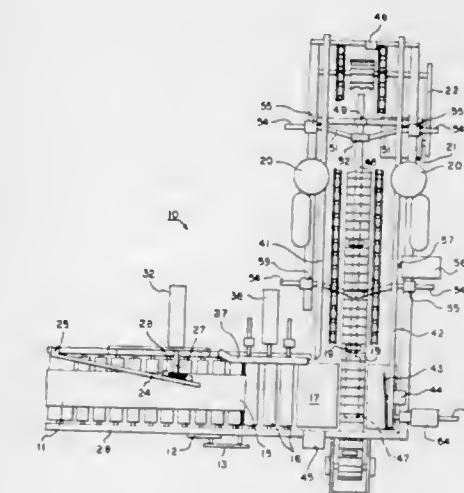
Anthony R. Peres, Bristol, N.Y., assignor to Peres Electronic Machines, Inc., Bristol, N.Y.

Filed June 17, 1974, Ser. No. 480,115

Int. Cl. B41f 17/26

U.S. Cl. 101-37

10 Claims



1. An automatic random case coder comprising:
a. infeed means for advancing said cases into an input region of said coder, said infeed means having an output end;
b. switch means for sensing the size of each of said cases advanced by said infeed means;
c. a brake in the region of said output end of said infeed means for successively holding each of said cases delivered by said infeed means;
d. an intermittently driven conveyor for advancing said cases through said coder;

- e. sensing means for sensing the initial movement of each of said cases on said conveyor;
- f. said brake being responsive to said movement sensing means for releasing a held one of said cases to be pushed onto said conveyor by another one of said cases following said held case and advanced by said infeed means;
- g. a pair of laterally adjustable side rails along opposite sides of said conveyor;
- h. printing devices on said side rails for printing on said cases advanced by said conveyor;
- i. means responsive to said size sensing means for applying said brake to hold any one of said cases differing in size from a preceding one of said cases and for operating said coder to clear said coder of all of said cases preceding said different size case;
- j. means for sensing that said coder is cleared of all of said cases preceding said different size case;
- k. an axially movable adjusting shaft;
- l. means responsive to said clearing sensing means for positioning said shaft;
- m. means controlled by the position of said shaft for laterally adjusting said side rails; and
- n. means responsive to said adjustment of said side rails for releasing said brake to allow said different size case to be pushed onto said conveyor to advance through said coder.

3,898,927

ROLLING-TYPE MARKING MACHINE

Yuuji Murata, Tokai; Kunlaki Sato, Miyazu, and Sigeru Yonejima, Tokai, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

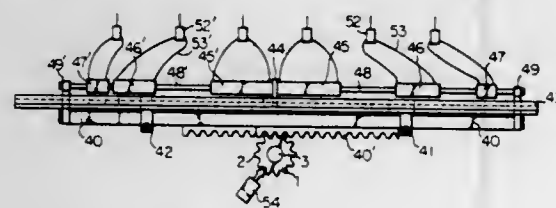
Filed June 26, 1973, Ser. No. 373,784

Claims priority, application Japan, July 3, 1972, 47-66461; July 13, 1972, 47-70219; Dec. 22, 1972, 47-147555

Int. Cl.² B41J 1/32

U.S. Cl. 101-110

6 Claims



1. Apparatus for marking indicia on a plate moving along a fixed path which comprises
 - a marking roll including an elongated central shaft having opposed ends, a plurality of toothed rings loosely mounted on said central shaft, the teeth on each of said rings carrying indicia punch means projecting from the outer periphery of said rings,
 - rotatable shaft means fixed to said central shaft and extending longitudinally from the opposite ends of said central shaft,
 - means for supporting said rotatable shaft means for rotation about a fixed axis,
 - means selectively engageable with the teeth on each of said rings for rotating each of said rings upon said central shaft to preset positions to align a selected tooth on each ring with selected ones on the others of said rings and thus present a desired line of punch indicia to be marked on said plate,
 - means for selectively locking said rings and a preset line of punch indicia carried thereby to said central shaft for rotative movement therewith, and
 - a pair of pinch rolls mounted concentrically on said rotatable shaft means for rotation therewith, the diameter of said pinch rolls being greater than that of said rings, the axis of said central shaft being disposed eccentrically of the axis of said fixed axis by a distance equal to one-half of the difference between the diameter of said pinch rolls

and said rings whereby when said rings are locked to said central shaft and said rotatable shaft means is rotated only the preset line of punch indicia carried on said rings projects radially beyond the peripheral expanse of said pinch rolls for effecting marking on a plate moving in rolling contact with said pinch rolls,

the means for locking said rings to said central shaft comprising a locking member received in a groove in the outer surface of said central shaft, the inner circumferential surface of each of said rings being provided with notches, said locking member and said groove being provided with companion oblique surfaces, sliding of said member longitudinally of said groove in one direction being operative to urge at least a part of said locking member into locking engagement with the notches in each of said rings, sliding of said locking member in an opposite direction being effective to retract said locking member wholly within said groove.

3,898,928

MASTER SWITCH TO ACTUATE DAMPENER IN AUTOMATIC DUPLICATOR

Tamaki Kaneko, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

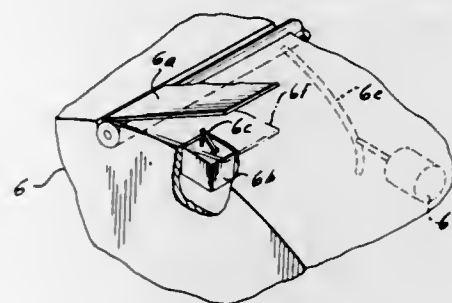
Continuation of Ser. No. 105,926, Jan. 12, 1971, abandoned.

This application Aug. 31, 1973, Ser. No. 393,667

Int. Cl. B411 25/16

U.S. Cl. 101-132.5

2 Claims



1. In a lithographic offset printing machine for use with a plurality of discrete master sheets each having marking indicia thereon indicating the number of prints to be made from each of the discrete master sheets, the combination comprising:
 - a main cylinder for carrying said each of the discrete master sheets;
 - a transfer cylinder disposed in contiguous relation with said main cylinder for receiving an offset image from said each of the discrete master sheets;
 - a pressure cylinder disposed on contiguous relation with said transfer cylinder for pressing copy sheets against said transfer cylinder;
 - a master sheet feeding device to feed said each of the discrete master sheets to said main cylinder;
 - a clamp mounted on said main cylinder for retaining said each of the discrete master sheets thereon;
 - a switch on said main cylinder positioned to be engaged by a leading edge of each said master sheet fed to said main cylinder to thereby actuate said switch;
 - drive means on said main cylinder coupled to said clamp and responsive to actuation of said switch by said master sheet to close said clamp to thereby retain said master sheet on said main cylinder;
 - a moistening device for moistening said each of the discrete master sheets;
 - control means responsive to said actuation of said switch by said master sheet for producing a control signal when said master sheet is retained by said clamp;
 - means responsive to said control signal for operating said moistening device for moistening said master sheet retained in said main cylinder;
 - reading means disposed between said master sheet feeding device and said main cylinder to scan the marking indicia

- on said each of the discrete master sheets and generating a first electrical pulse signal representing the number of prints to be made therefrom;
- a memory device electrically connected to said reading means to store said first electrical pulse signal indicative of the number of prints to be made from said each of the discrete master sheets;
- means for actuating an ink supply device to cause the application of ink and water to said each of the discrete master sheets after moistening;
- copy sheet feeding means to feed the copy sheets to said pressure cylinder and including means for generating a second electrical pulse signal indicative of the number of copy sheets being fed to said pressure cylinder;
- comparing means electrically connected to said memory device and said means for generating said second electrical pulse signal, said comparing means comparing said first and second electrical pulse signals and generating a completion signal when the value of said first electrical pulse signal equals that of said second electrical pulse signal;
- means for actuating an image erasing device to remove the image from said transfer cylinder in response to the stopping of said copy sheet feeding means;
- means for removing said each of the discrete master sheets from said main cylinder upon completion of printing; and control means operable by said completion signal to terminate operation of said copy sheet feeding means and to operate said removal means to remove said each of the discrete master sheets from said main cylinder, said control means being further operable to actuate said master sheet feeding means to feed a following individual master sheet to said main cylinder.

3,898,929

HICKEY PICKING DEVICE FOR LETTER PRESS OR OFFSET PRINTING PRESSES

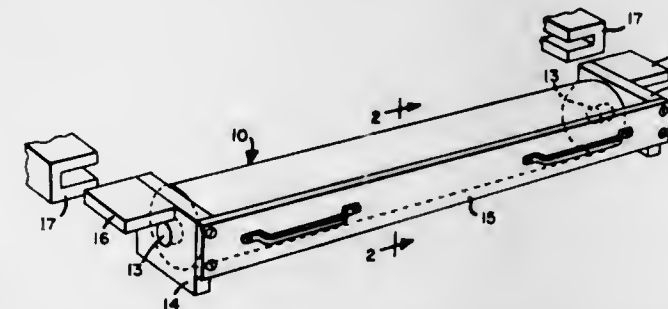
Tor Arild, P.O. Box 4063, Woodside, Calif. 94062, and Thomas Gehres, 53 Mark Dr., San Rafael, Calif. 94903

Continuation of Ser. No. 418,097, Nov. 21, 1973, abandoned, which is a continuation of Ser. No. 262,647, June 14, 1972, abandoned. This application June 24, 1974, Ser. No. 481,992

Int. Cl. B41f 35/02, 41/02

U.S. Cl. 101-147

2 Claims



1. The method of removing foreign particles which cause hickies from the ink train of a conventional offset printing press or letter press which is provided with bracket members for supporting a wash-up tray adjacent to a hard surface roller of the ink train, said bracket members being accessible while the press is running, comprising the steps of:
 - removing the wash-up tray from the bracket members;
 - providing a hickey picking cylinder having a resilient surface and being rotatably supported in bracket means adapted to interfit with the bracket members of the press in a manner to hold the cylinder surface tightly against a hard surface roller of the ink train of the press, said hickey picking roller also being of a length at least equal to that of said hard surface roller and being adapted to rotate with the hard surface roller thereby allowing the resilient surface cylinder to remove foreign particles from

said hard surface during running of said press in a normal printing operation, inserting the hickey picking cylinder bracket means in the bracket members of the press.

3,898,930

PRINTER FOR EMBOSSED CARD

Yoshizo Ikegami, and Susumu Fukeda, both of Hyogo, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-Ashigara-shi, Japan

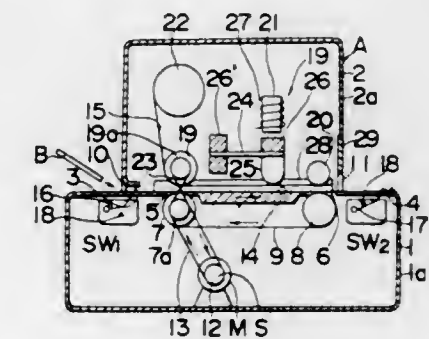
Filed Nov. 8, 1973, Ser. No. 414,023

Claims priority, application Japan, Nov. 17, 1972, 47-115967

Int. Cl. B41f 1/28

U.S. Cl. 101-316

2 Claims



1. In combination, a printer for a card having an embossed portion thereon, said printer comprising a housing structure including a horizontal top surface extending from one side to the other and forming a horizontal embossed card travel path, said housing structure including an inlet and an outlet opening in alignment with said top surface on respective sides of said housing structure, an endless conveyor belt rotatably trained over said top surface and extending from said inlet to said outlet opening, an electric motor operatively associated with said conveyor belt and energizable to transport an embossed card inserted within said inlet opening along said embossed card travel path for discharge at said outlet opening, a roll of paper mounted above said endless conveyor belt, a paper drive roller mounted below said roll of paper for rotation about an axis parallel to the axis of rotation of said endless belt, means operatively coupling said motor to said paper drive roller for unwinding said paper from said roll and for feeding said paper along said card travel path and overlying said card such that said card is conveyed to said outlet while sandwiched between the web of paper and the endless conveyor, a vibrating printer mounted within said housing structure above said paper web and downstream of said roll of paper, intermediate of said inlet and outlet, said vibrating printer including a stationary magnetic hammer coil and a vibrating hammer for contact with said paper web, a source of electrical current, a first normally open switch mounted adjacent to said inlet opening and responsive to card insertion for momentary closure, a second normally closed switch mounted adjacent to said outlet opening and responsive to card discharge for momentarily opening the switch contacts thereof, and a third normally open relay switch including normally open contacts and a relay coil for operating the same, and circuit means for electrically connecting said relay coil, said motor and said hammer coil in series with the source of electrical current and in parallel with each other, and parallel paths including said first switch, and said second and third switches respectively connecting said source to said relay coil, said motor and said hammer coil; whereby, insertion of said embossed card into said inlet opening causes said motor to be energized, said hammer coil to be energized, and said relay coil to be energized, effecting transport of said embossed card from said inlet opening to said outlet opening during which time said paper web is continuously fed, said vibrating hammer is continuously vibrating and whereupon, discharge of said embossed card automatically opens the holding circuit between the source of electrical energy, said relay coil, said

vibrating hammer coil, and said drive motor, terminating operation of said printer.

3,898,931

DOCTOR BLADE MULTIPLE-POINT CONTROL

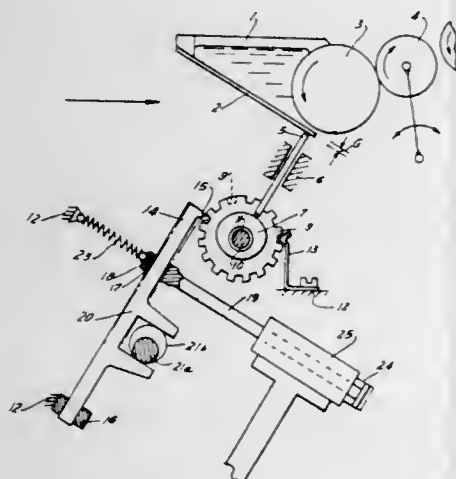
Heinz Posselt, Leipzig, Germany, assignor to VEB Polygraph Leipzig Kombinat für Polygraphische Maschinen und Ausrüstungen, Leipzig, Germany

Filed Feb. 20, 1974, Ser. No. 444,246

Int. Cl. B41f 31/04

U.S. Cl. 101—365

8 Claims



1. In a printing machine, a combination comprising a printing-ink receptacle having an elongated outlet; dispensing means, including an elongated flexible doctor blade extending along said outlet and defining a gap of predetermined maximum width which is elongated longitudinally of said doctor blade and through which printing ink is dispensed; and adjusting means for adjusting the width of said gap to thereby vary the amount of printing ink dispensed through the same, said adjusting means comprising a rotatable eccentric shaft extending along said doctor blade, a plurality of pressure-transmitting bars engaging said doctor blade at respective locations which are spaced therealong and each being individually shiftable transversely of said gap to flex the doctor blade and decrease the width of said gap, a plurality of turnable eccentric cams each associated with one of said bars for shifting the same transversely of said gap, drive means for rotating said eccentric shaft, and motion-transmitting means for transmitting motion from said shaft to selected ones of said cams so as to effect shifting of the bar which is associated with the same, so as to increase the width of said gap at some of said locations while at the same time decreasing its width at other locations if required and at the will of an operator.

3,898,932

NON-HAZARDOUS RING AIRFOIL PROJECTILE FOR DELIVERY OF NON-LETHAL MATERIAL

Abraham Flatau, 2003 Stockton Rd., Joppa, Md. 21085; Donald N. Olson, Atherton Rd., Lutherville, Md. 21093, and Miles C. Miller, 504 Haverhill Rd., Joppa, Md. 21085

Filed Nov. 29, 1972, Ser. No. 310,626

Int. Cl. F42b 13/46, 11/32

U.S. Cl. 102—66

9 Claims

1. In a projectile having an annular ring shape with a substantial tear drop airfoil cross-section defining a hollow interior and being defined by major annular inner and outer substantially curvilinear surfaces defining the diametric extent of said shape and being terminated by leading and trailing edges which define the longitudinal extent of said shape, the improvement comprising a non-lethal incapacitating payload

disposed within the hollow interior of said projectile and being confined by an outer resilient structure forming said shape



further including rupturable means which ruptures upon impact with the target for disseminating said payload.

3,898,933

TRAINING BULLET FOR FIRE ARMS

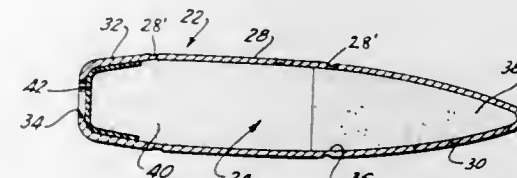
Andre Castera, Creuzier-le-Vieux, and Pierre Lucaire, Vichy, both of France, assignors to Manufacture de Machines du Haut-Rhin S.A., Mulhouse-Cedex, France

Filed Mar. 21, 1973, Ser. No. 343,249

Int. Cl. F42B 11/18

U.S. Cl. 102—92.7

9 Claims



1. A training projectile for a firearm having a main body portion and a nose, comprising a metallic casing in one piece made of the same material and in the same form as the casing of the combat projectile, for such firearm, said training projectile casing having at least one annular thinned zone means which permits said casing to break into fragments upon impact with a target, and a mass of an inert composition in flowing powder form in the casing, the projectile being fractured into fragments having a relatively short range trajectory.

3,898,934

MULTISTRAND POWDER CHARGE

Jacques Mercier, Satory, and Bernard Lancon, St. Etienne, both of France, assignors to Republic of France, Paris, France

Filed May 10, 1973, Ser. No. 358,954

Claims priority, application France, May 12, 1972, 72.016943

Int. Cl. F42B 1/00

U.S. Cl. 102—100

13 Claims

1. Multistrand powder charge comprising a bundle of elongate rod-like individual powder strands fixed by one of their ends on a support so as to extend therefrom to their oppositely located free ends; internal bracing means in the heart of the bundle and in at least one region between the support and the free end of the powder strands, extending crosswise relative to and between the powder strands, for separating and holding the said powder strands fixedly relative to each other and such that each strand is separated from at least one adjacent strand by said internal bracing means, to allow a gaseous flow be-

tween the said powder strands during the combustion of the charge and maintain the bundle as an integral unit, the separa-



tions between adjacent strands constituting open gas flow paths over at least the major part of the lengths of said strands.

3,898,935

CAR TURNER

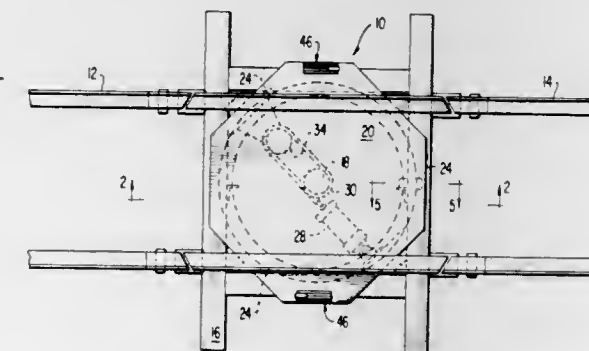
Bruce Norlie, Durham, and Bernard G. Bradbury, Chico, both of Calif., assignors to Rexnord Inc., Milwaukee, Wis.

Filed Jan. 28, 1974, Ser. No. 437,082

Int. Cl. B60s 13/02

U.S. Cl. 104—37

10 Claims



1. A car turner for the cars of a unit transportation system, said car turner comprising:

1. a stationary frame;
 2. a rotatable pivot shaft mounted on said stationary frame;
 3. a turntable mounted on said rotatable pivot shaft;
 4. a first sprocket integrally mounted on said rotatable pivot shaft;
 5. a second sprocket rotatably mounted on said stationary frame;
 6. a first chain passing around said first and second sprockets so that, when one rotates, the other will also rotate;
 7. a drive transmission block mounted on said first chain; and
 8. a dual-action fluid cylinder mounted on said stationary frame, the rod of said dual-action fluid cylinder being connected to said drive transmission block,
- whereby the linear motion of the rod of said dual-action fluid cylinder can be transmitted through said first chain and said rotatable pivot shaft to said turntable, causing said turntable to rotate back and forth.

3,898,936

SKI TRAM LOADING SYSTEM AND CARRIERS THEREFOR

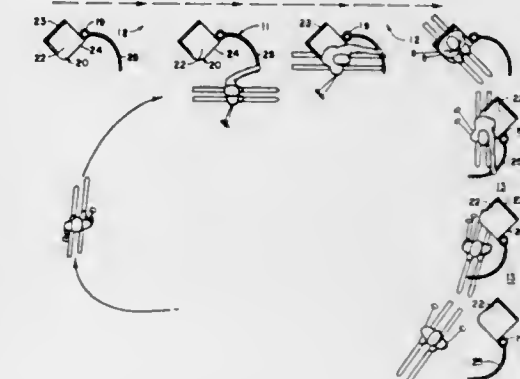
Harvey G. Spencer, 1505 Birch, Richland, Wash. 99352

Filed Apr. 19, 1971, Ser. No. 135,242

Int. Cl. B61b 11/00

U.S. Cl. 104—173

8 Claims



1. A loading system for ski trams having an overhead traction cable transiting about a course defined by plural sheaves supported upon plural spaced towers, comprising: a linear loading course wherein carriers are supported at boarding elevation a spaced distance above a skier supportative surface therebeneath for a distance sufficient to allow simultaneous, plural loading of skiers; and a loading area having a continuous conformably sloping skier supportative surface on at least one side of the loading course with the surface having a downward slope to the carrier course to allow each of a plurality of skiers to transport himself by skiing on the supporting surface to one of plural, spaced moving passenger carriers and move with the one carrier while entering it simultaneously with other skiers entering other carriers, with depending passenger carriers, comprising, in combination:

- a passenger carrier arm fixedly communicating for support with the overhead transit cable and depending therefrom; and
- at least one carrier seat to support a passenger fixedly positioned on the lowermost part of the carrier arm and angularly disposed laterally outwardly to the course of passenger carrier travel.

3,898,937

WHEEL SLIP SENSING AND CONTROL SYSTEM

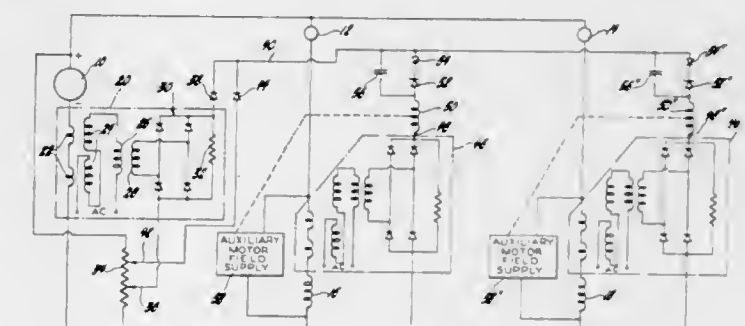
Lauren L. Johnson, Westchester, Ill., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 19, 1973, Ser. No. 417,213

Int. Cl. B61c 15/12

U.S. Cl. 105—61

6 Claims



1. A wheel slip detection apparatus for a vehicle having a plurality of traction motors adapted to drive separate traction wheels and having an electrical source for supplying an electrical output for operating the traction motors, the motors being electrically arranged in a plurality of parallel branches, and each branch containing a single motor or a plurality of motors in series, the apparatus including

means responsive to the electrical output for providing a source signal varying as a function of source current, each branch having associated therewith means responsive to the motor current for providing a motor signal varying as a function of the motor current, the source signal having a predetermined normal relationship with each motor signal during normal wheel operation, and means associated with each branch and responsive to a function of the source signal and the respective motor signal for detecting an abnormal relationship between the source signal and the motor signal indicative of slipping of a wheel.

3,898,938 DUAL MODE ELECTRIC VEHICLE FOR ROAD OR RAIL TRACK OPERATION

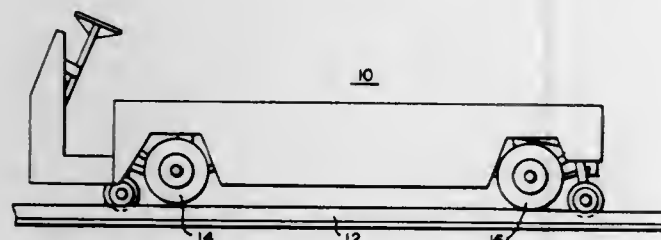
Charles W. Poole, Redlands, Calif., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 20, 1973, Ser. No. 417,644

Int. Cl.² B61F 13/00

U.S. Cl. 105—215 C

3 Claims



1. An electric vehicle operable on roadbeds and on rail tracks comprising:

- a front pair of road wheels disposed toward the front of the electric vehicle;
- a rear pair of road wheels disposed toward the rear of the electric vehicle;
- a front axle supporting said front pair of road wheels;
- a rear axle supporting said rear pair of road wheels;
- a frame for supporting the body of the electric vehicle;
- front suspension means for resiliently supporting a portion of said frame from said front axle;
- a front set of rail wheels, disposed in close proximity to and longitudinally aligned with said front pair of road wheels, movable between a raised position and a lowered position and being connected to said front axle;
- front operation means for raising and lowering said front set of rail wheels;
- said front rail wheels being connected to said front axle so that when operating on rails with said front set of rail wheels lowered in contact with the rails said front set of road wheels are raised slightly above and out of engagement with the rails and a portion of the weight of the electric vehicle is supported by said front set of rail wheels through said front suspension means;
- a rear pair of rail wheels, disposed in close proximity to and longitudinally aligned with said rear pair of road wheels, movable between a raised position and a lowered position and being connected to said rear axle;
- rear suspension means for resiliently supporting a portion of said frame from said rear axle;
- rear operation means for raising and lowering said rear set of rail wheels;
- said rear set of rail wheels being connected to said rear axle so that when operating on rails with said rear set of rail wheels lowered and in contact with the rails said rear set of road wheels also contact said rails;
- drive motor means connected to said rear pair of road wheels for moving the electric vehicle on roadbeds and on railway tracks;

a rigid front subassembly lifting frame pivotally mounted to said front axle and having said front pair of rail wheels attached thereto;

a rigid rear sublifting frame pivotally attached to said rear axle and having said rear pair of rail wheels attached thereto;

said front operating means for raising and lowering said first set of rail wheels comprises a single front linear operator connected to said front subassembly lifting frame to pivot said front subassembly lifting frame around the pivotal connection to said front axle thereby raising and lowering said front pair of rail wheels along an arcuate path;

said second operating means comprises a single rear linear actuator connected to said rear subassembly lifting frame for pivoting said rear subassembly lifting frame about the pivotal connection to said rear axle to raise and lower said rear set of rail wheels along an arcuate path;

said front suspension means comprises leaf springs with both ends connected to said frame and intermediate the ends connected to said front axle; and,

said rear suspension means comprises leaf springs; and including a radial arm pivotally connected at one end to said front axle and connected at the respective opposite end to said frame in approximate alignment with one end of the leaf springs.

3,898,939 SHELF ASSEMBLY

Erich Grachten, Detmold, Germany, assignor to Burris Industries, Inc., Lincolnton, N.C.

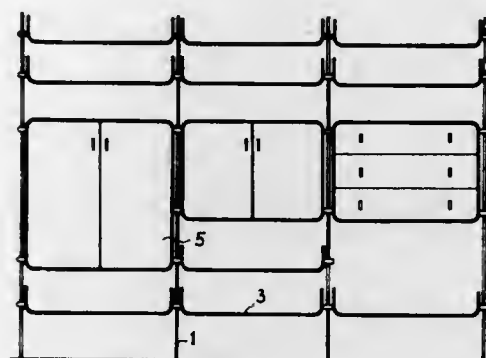
Filed Mar. 13, 1973, Ser. No. 340,855

Claims priority, application Germany, Nov. 21, 1972, 7242791[U]

Int. Cl. A47b 3/06

U.S. Cl. 108—109

7 Claims



1. An assembly comprising:

- a plurality of spaced apart, vertically extending, smooth surfaced tubular support members,
- a plurality of retainers each encircling a corresponding one of said tubular members for sliding movement longitudinally therealong and for movement to selected rotational positions thereabout, each of said retainers having a vertically extending lip portion defining a horizontal surface and a vertically opening circular recess surrounding said one tubular member and a vertical outer surface extending parallel to said one tubular member,
- a plurality of releasable clamping means each engaging a corresponding one of said retainers for clamping said one retainer to said one tubular member at a desired vertical position therealong and a desired rotational position thereabout,
- a shelving component positioned between said tubular members, said component having a horizontal portion extending between said spaced apart tubular members and integral end wall portions at opposing ends of said horizontal portion and extending vertically adjacent said tubular members, and
- a plurality of bracket means each mounted on the outer surface of a corresponding end wall portion of said shelv-

ing component in vertically spaced relation from said horizontal portion, each of said bracket means having a first leg extending horizontally from said corresponding end wall portion and engaging said lip horizontal surface of a corresponding one of said retainers and a second leg extending vertically from said first leg and engaging said recess,

said bracket means, said shelving component and said retainers cooperating for supporting and stabilizing the assembly, by the engagement of said lip horizontal surface with said first leg simultaneously with the engagement of said retainer outer surface with the outer surface of said end wall portions of said shelving component.

3,898,940 GROUND DRAINAGE SYSTEMS, AND METHOD AND APPARATUS THEREFOR

Ainsley Neville Ede, 36 Thornton Way, Cambridge, England

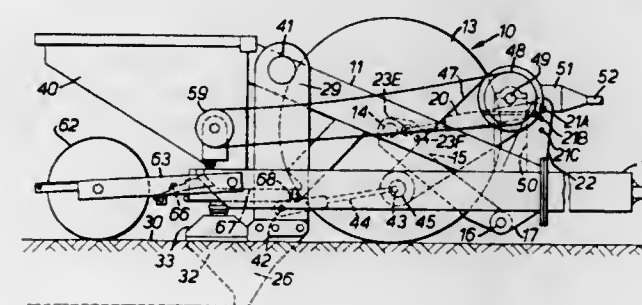
Filed Apr. 19, 1973, Ser. No. 352,704

Claims priority, application United Kingdom, Apr. 20, 1972, 18258/72

Int. Cl. A01c 5/00

U.S. Cl. 111—1

30 Claims



1. Apparatus for making water-permeable channels in the ground, which comprises a slitter blade mounted on a carriage and extending downwardly from the carriage to below ground level for drawing edgewise through the ground by the forward movement of the carriage so as to form a slit-like channel in the soil, a hollow blade-like sand-dispensing chute whose width and depth below ground level are approximately the same as those of the slitter blade, the chute being secured to the slitter blade with its leading edge abutted against the trailing edge of the slitter blade so that the chute follows the blade in the newly-formed soil channel, and there being an elongated rearwardly-facing dispensing aperture formed in and extending substantially over the full below-ground depth of the chute, means secured to the carriage for movement therewith for introducing sand into the interior of the chute from above ground level so as to fill the chute for dispensing sand through the whole length of the elongated dispensing slot into the soil channel, and means mechanically coupled to the slitter blade for imposing vibration simultaneously both on the slitter blade and on the chute throughout the forward movement of the carriage.

3,898,941 APPARATUS FOR MANUFACTURING AND STACKING HEMMED FABRIC PIECES

Douglas J. Crawford, Troy; Roger LeMere, Petersburg, and Francis H. Hughes, Troy, all of N.Y., assignors to Cluett, Peabody & Co., Inc., New York, N.Y.

Filed Mar. 23, 1973, Ser. No. 344,227

Int. Cl. D05b 23/00

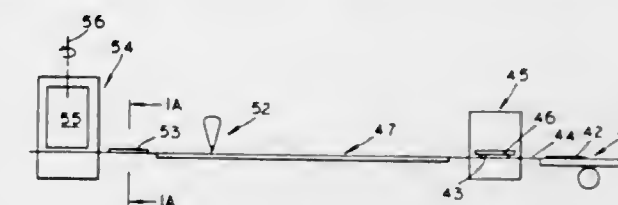
U.S. Cl. 112—121.29

11 Claims

11. Apparatus for manufacturing and stacking hemmed fabric pieces and comprising in combination:

- a. positioner means located along a path of travel through the apparatus for accepting and advancing the fabric pieces,
- b. folder means located along said path of travel for forming a hem out of a margin of the fabric piece,

- c. sew means located along said path of travel for sewing the hem along said margin,
- d. stacker means located along said path of travel, and



- e. said stacker means including a cartridge for receiving the hemmed fabric pieces and for stacking the pieces into said cartridge vertically and means for revolving the cartridge as successive of the hemmed fabric pieces are inserted therein whereby uneven height resulting from the hems is distributed peripherally thereabout.

3,898,942 EJECTOR FOR A WINDING DEVICE

Hannes Giesselmann, Huskvarna, Sweden, assignor to Huskvarna AB, Huskvarna, Sweden

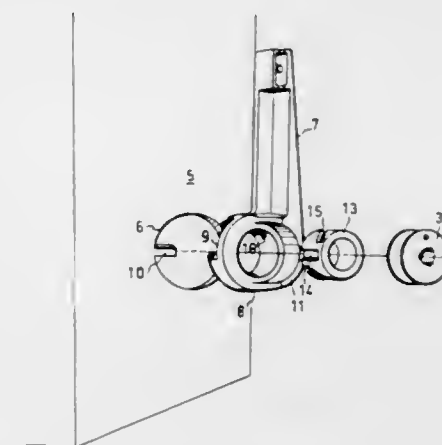
Filed Mar. 15, 1974, Ser. No. 451,705

Claims priority, application Sweden, Mar. 16, 1973, 73036931

Int. Cl.² D05B 59/04

U.S. Cl. 112—218 A

3 Claims



1. An ejector for a winding device on a sewing machine having a body including a wall; the device including a bobbin spindle on said sewing machine protruding through a hole in the body and a bushing encircling the spindle; a hub including an arm extending outwardly therefrom journaled over said bushing in said hole in the wall of the machine body concentrically with the bobbin spindle and rotatable by means of said arm; said wall and bushing including cooperating means for locking said bushing against rotation but permitting axial displacement of said bushing; said bushing and said hub including cooperating thread means for axially displacing said bushing with respect to said hub upon rotation of said hub, whereby to effect an axial, ejecting motion against a bobbin inserted on the bobbin spindle when the hub is rotated by said arm in a predetermined direction.

3,898,943 METHOD OF MAKING A QUILT

Lorraine W. Braden, 562 Ray's Road, and Etrulia A. Broome, both of Stone Mountain, Ga., assignors to said Lorraine W. Braden, by said Etrulia A. Broome, Stone Mountain, Ga.

Filed Sept. 30, 1974, Ser. No. 510,231

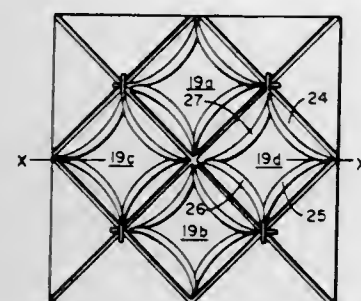
Int. Cl.² D05F 95/00

U.S. Cl. 112—262

7 Claims

1. A method of making a quilt component from a pair of fabric fragments and a window fabric comprising the steps of folding four edge portions of each of said fragments along fold lines inwardly to form an initial square, folding each corner of

said initial square to the centerpoint of said initial square to form an intermediate square, folding each resulting corner of said intermediate square to said centerpoint to form a final square, interconnecting the oppositely disposed inwardly folded corners of said final squares, adjoining said final squares along corresponding side edges to form a rectangular



structure, placing a piece of window fabric having a configuration generally complementary to one of said final squares over the adjacent edges of said final squares in such a manner that opposite corners of said window fabric coincide with the ends of said corresponding side edges, and interconnecting the outer edges of said window fabric and said final squares.

3,898,944

SCORE AND TOOL FOR FORMING THE SCORE

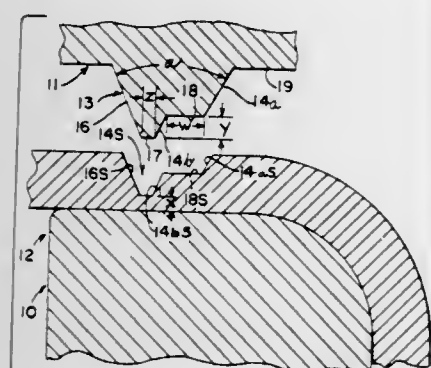
Albert J. Holk, Jr., Frankfort, and Jerry D. Hawkins, Country Club Hills, both of Ill., assignors to Continental Can Company, Inc., New York, N.Y.

Filed June 18, 1973, Ser. No. 370,903

Int. Cl. B21d 51/00

U.S. Cl. 113-1 F

8 Claims



1. A score formed in sheet of metal comprising a bottom wall, a pair of inclined side walls extending from said bottom wall, and a ledge disposed intermediate the length of at least one of said side walls and interrupting the same.

3,898,945

METHOD FOR MAKING A LAP SIDE SEAM ON A METAL TUBULAR BODY

Stanley Edward Rohowetz, Barrington, Ill., assignor to American Can Company, Greenwich, Conn.

Division of Ser. No. 238,840, March 28, 1972, Pat. No. 3,819,085. This application Feb. 15, 1974, Ser. No. 442,906

Int. Cl. B65d 7/34

U.S. Cl. 113-120 A

5 Claims

5. A method of fabricating an adhesively bonded, lap side seam of a primed metal tubular body having a protected raw metal edge on the inside lap comprising the steps of:

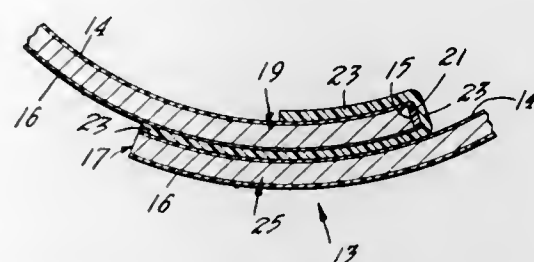
providing metal sheet, both surfaces having applied thereto an epoxy-phenolic primer coating;

forming said primed sheet into a tubular can body blank, said blank having a raw metal edge along at least one of its marginal portions;

applying a protective thermoplastic polyamide resin in the form of a hot melt to at least the raw metal edge of the

marginal portion of said primed body blank that is to form the inside lap;

applying a thermoplastic polyamide adhesive in the form of a ribbon which wraps around the protective resin and the interior and exterior surfaces of the inside lap; and



forming said body blank into a tubular can body, arranged to have a lap side seam wherein the primed interior metal surface within the seam is adjacent to and overlaps the primed opposed exterior surface within the seam and is bonded thereto by said thermoplastic adhesive.

3,898,946

SEA-GOING HIGH-COMMERCIAL-SPEED DISPLACEMENT VESSEL

Jan Zadrożny, ul. Chrzanowskiego 27 m. 7, Gdansk-Wrzeszcz; Lech Kobylński, ul. Piastowska 70d m. 6, Gdansk-Oliwa, and Stefan Jaworski, ul. Bolesława Chrobrego 8, Szcztyno, all of Poland

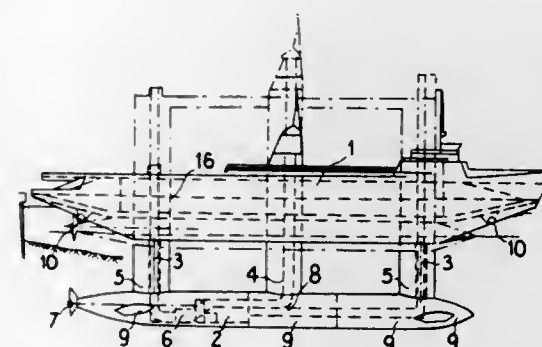
Filed Sept. 20, 1973, Ser. No. 399,117

Claims priority, application Poland, Sept. 29, 1972, 158014

Int. Cl. B63B 1/22

U.S. Cl. 114-61

1 Claim



1. A sea-going high speed displacement vessel comprising, in combination, a surface hull of displacement equal to displacement of the vessel, the form of said hull being substantially similar to a rectangular pontoon having several decks; stabilizing elements at the bilge for stabilizing the vessel; at least one midwater hull having full buoyancy in form of streamlined floats with small wetted surface, said midwater hull having light ballast containers and being positioned at variable height under said surface hull; brackets mounted slidably in said surface hull and having catches for joining said surface hull and said midwater hull after water has been removed from them by means of compressed gas; active rudders positioned in said surface hull, said stabilizing elements in the form of floats having chambers at least at the side of the surface hull's symmetry plane, the width of said chambers being adjusted by means of compressed gas, at least one midwater hull has adjustable stabilizing fins, said fins being also deepwater rudders; and power plant and screw propellers situated at the height approaching the height of the frontal resistance center at the commercial speed of said vessel, said fins, power plant and propellers being situated for permitting balancing longitudinally the vessel with respect to the resistance forces, said resistance center lying substantially at the level of the propeller shaft axis when said vessel moves forward at said commercial speed, said brackets joining said hulls having directional rudders rotated with said stabilizing elements by means of rudder engines.

3,898,947

BOAT TOP

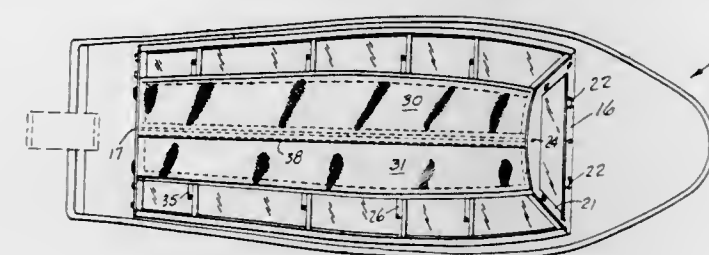
John Paul Moore, 4320 Ryan St., Lake Charles, La. 70601

Filed May 31, 1974, Ser. No. 474,918

Int. Cl. B63B 29/02

U.S. Cl. 114-71

10 Claims



1. A boat top comprising first and second pairs of opposed, upwardly disposed walls defining an enclosure for passengers having a generally rectangular opening at the top, a pair of flexible canopy segments secured along one edge to the top edges of said first pair of walls and being inwardly extensible to overlie and cover the opening of said enclosure, respective rigid roller bars secured to the opposite edges of the canopy segments, said second pair of walls being formed with retaining recesses at the mid-portions of their top edges, said recesses being open at their tops, the opposite end portions of the roller bars being seated in said recesses when the canopy segments are extended to overlie the enclosure and being held in said recesses by gravity but being free to fall out of the recesses if the boat should overturn, said roller bars being liftable out of said recesses and the canopy segments being rollable around the respective rigid roller bars for securement to the top edges of said first pair of walls so as to uncover the opening of the enclosure.

3,898,948

MAST HANDLING

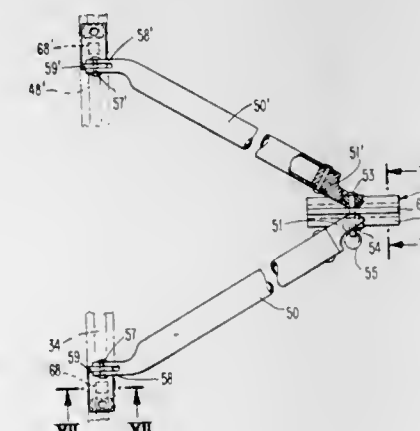
Thomas R. Huff, 60 Paoli Pk., Paoli, Pa. 19301

Filed June 24, 1974, Ser. No. 482,080

Int. Cl. B63B 15/00

U.S. Cl. 114-91

3 Claims



1. In a mast-handling arrangement for a sailboat with a dismountable mast having a longitudinal rope groove therein erupting to the exterior therealong, a laterally steadying rigid brace assembly pivotally and detachably attachable at a first end to the deck athwart the foot of the mast and also slidably and disengageably engageable at a second end to the mast and including at the second end a slider fitting within the rope groove.

3,898,949

AMPHIBIOUS VEHICLES

John Antony Kearsey, 19 Bramble Rise, Westdene, Brighton, Essex BN1, 5GE, England

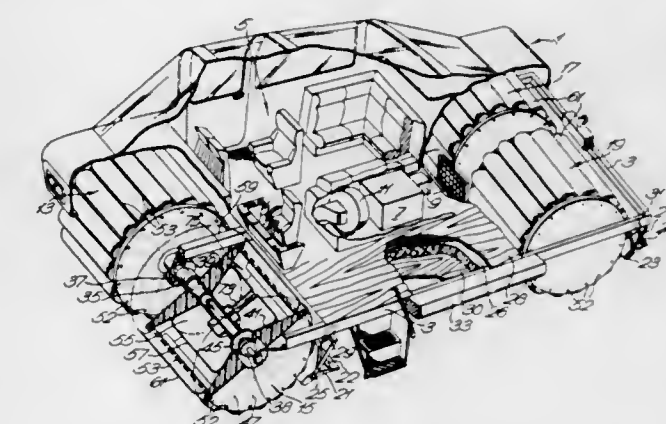
Continuation of Ser. No. 240,351, April 3, 1972, abandoned.

This application Apr. 24, 1974, Ser. No. 463,598

Int. Cl. B63f 3/00

U.S. Cl. 115-1 R

4 Claims



1. An amphibious vehicle comprising a body, at least one rotor carried by said body for contributing to the support and for propelling said vehicle over land and water, and drive means for rotating said rotor, said rotor including a pair of laterally spaced end members, restraining means located between said end members adjacent to the periphery of said end members, a fluid impermeable flexible membrane extending between said end members, and means for securing said membrane to said end members in fluid-tight relation thereto, said membrane between said end members being secured to said restraining means at circumferentially spaced locations, whereby said membrane is radially deformable between said locations, means for internally pressurising said membrane to a pressure such that portions of said membrane between said locations when in contact with water will present a concave driving surface, a centrally located buoyancy chamber within the rotor, and wherein each end member has a peripheral surface for land travel.

3,898,950

ROWING APPARATUS

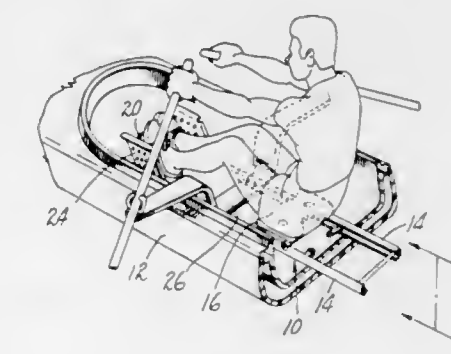
Arthur E. Martin, Box 251 Pepperrell Pt., Kittery Point, Maine 03905

Filed Feb. 12, 1974, Ser. No. 441,735

Int. Cl. B63h 16/06

U.S. Cl. 115-24.1

5 Claims



1. A rowing apparatus comprising a seat and longitudinally extending means supporting the seat and allowing fore and aft movement thereof, a continuous rigid support beam extending transversely of said longitudinal means and having upturned ends at opposite sides thereof, and a pair of riggers for assembly onto said upturned ends, said riggers having an outer end portion which when assembled with the support beam ends, extends from said support beam outwardly over the gunwale of the boat, the inner end of said riggers and the ends of said

support beam having connecting means permitting limited pivotal adjustment of said rigger in relation thereto only in a vertical plane to permit adjustment of the height of the outermost end of the rigger without impairing the strength in torsion of the connection between the rigger and the support beam.

3,898,951

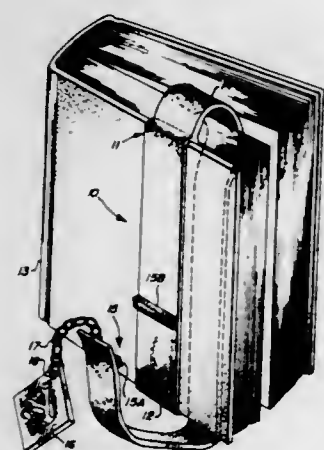
BOOKMARKS

Geraldine M. Clare, 8349 E. Stella Ln., Scottsdale, Ariz. 85253

Filed Oct. 11, 1974, Ser. No. 495,399
Int. Cl.² B42D 9/00

U.S. Cl. 116—119

4 Claims



1. A bookmark comprising:
an elongated elastic ribbon like member having one end turned back on itself and fastened thereto to form a closed loop portion,
the other end of said ribbon like member forming an appendage extending from the loop portion,
said loop portion provided for extending around one of the covers of a book with the appendage arranged to extend from the loop portion at one edge of the book between the pages of a book being marked and out the other edge of the book, and
means provided at one end of said appendage for detachably fastening said end to said loop portion at a point thereon arranged on the outside of the book being marked.

3,898,952

APPARATUS FOR PRODUCTION OF MAGNETIC RECORDING MEDIUM

Ryuji Shirahata; Tatsuji Kitamoto; Mahito Shimizu, and Masaaki Suzuki, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed July 25, 1974, Ser. No. 491,900

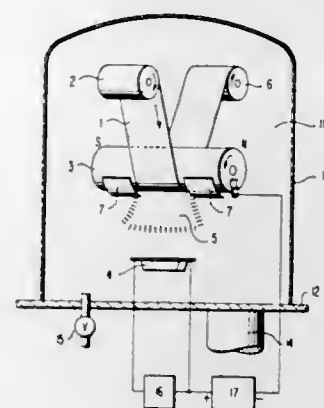
Claims priority, application Japan, July 25, 1973, 48-83837
Int. Cl. C23c 13/12

U.S. Cl. 118—49.1

7 Claims

1. An apparatus for the continuous production of a magnetic recording tape comprising
a vacuum chamber containing means including an anode and a cathode for generating a plasma of the glow discharge of a gas therebetween,
a rotatable cylindrical permanent magnet as the cathode of the plasma generating means,
a tape substrate supply roll and a tape substrate take up roll for passing a tape substrate in contact with the rotatable cylindrical permanent magnet as the cathode of the plasma generating means and positioned such that the tape contacts the cylindrical permanent magnet whereby the rotatable magnet rotates as the tape is passed by the supply roll and the take up roll and such that the tape

passes through a plasma zone concentrated by the cylindrical permanent magnet, and



means for evaporating a ferromagnetic substance as the anode of the plasma generating means.

3,898,953

MOLDED FILAMENT COATING DIE

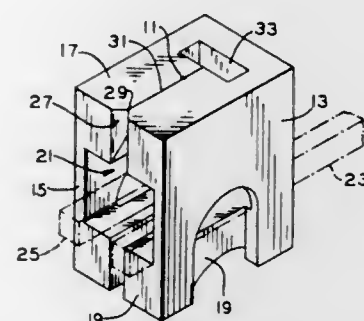
Warren A. Couture, 4916 So. Wayne Ave., Fort Wayne, Ind. 46807

Filed June 21, 1974, Ser. No. 481,511

Int. Cl.² B05C 11/02

U.S. Cl. 118—125

6 Claims



1. A one-piece molded wire coating die for removing excess fluid insulating material from a conductive wire passing along a generally vertical wire axis through the die comprising:
upstanding side wall portions;
and a floor and a roof each lying generally transverse to the wire axis and interconnected by the side wall portions, the floor and roof each having a wire passing fluid wiping aperture therein, the floor aperture adapted to provide a first gross fluid wiping and the roof aperture adapted to provide a later fine fluid wiping, the underside of the floor remote from the roof being concave opening downwardly for improved gross wiping action and the underside of the roof configured as an inverted V-shaped slot having an apex near the wire axis.

3,898,954

COMPOUND APPLYING MACHINE

Raymond F. Galitz, La Grange Park, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Division of Ser. No. 107,643, Jan. 19, 1971, Pat. No.

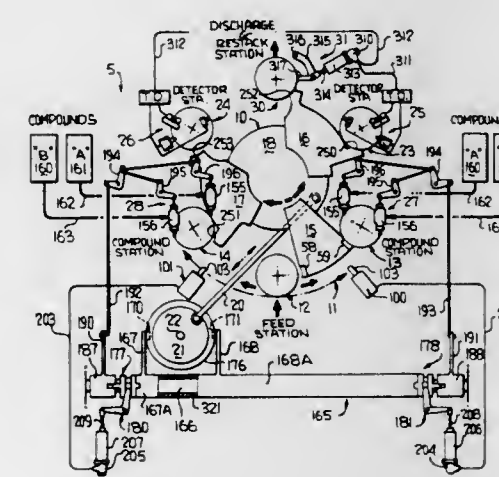
3,760,928. This application Sept. 13, 1973, Ser. No. 396,858
Int. Cl.² B05C 7/02

U.S. Cl. 118—315

8 Claims

1. An article conveying apparatus comprising means defining a generally circular path of article travel, means for serially feeding individual articles to said article path at a feed station thereof, means oscillating along said article path across said feed station for directing successive articles at said feed station in opposite directions along said article path, means for serially removing individual articles from said article path at a discharge station thereof, means defining a first article work station between said feed and discharge stations in both direc-

tions of article travel along said article path to which individual articles are delivered by said oscillating means, means for elevating individual articles from and lowering individual articles to said article path at said work stations, means for rotating each article at each work station when at its elevated position, means defining a second article work station between each first article work station and said discharge station, additional means oscillating along said article path across



each of said first and second article work stations for delivering an article from each first work station to the second work station downstream therefrom while directing an article away from each second work station toward said discharge station, means for applying a coating to each article and each first article work station during the rotation of each article thereat, and means at each second article work station for inspecting the coatings so applied.

3,898,955

ADHESIVE BINDING APPARATUS

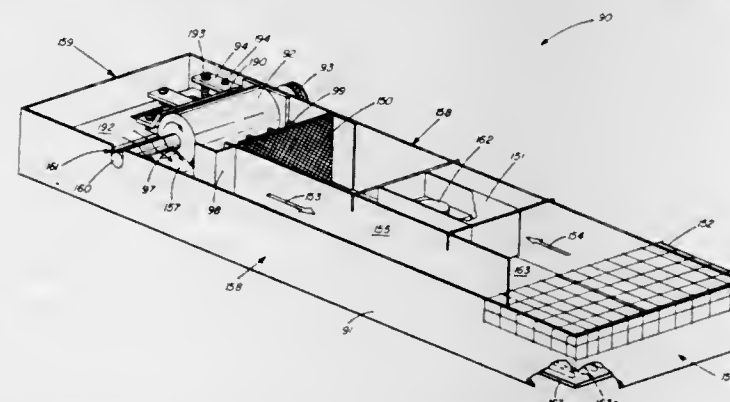
Alan S. Rosette, Fairport, and Barry J. Tepper, Rochester, both of N.Y., assignors to Armarco Marketing Company Inc., Rochester, N.Y.

Filed Feb. 22, 1973, Ser. No. 334,865

Int. Cl.² B05C 1/02, 11/11

U.S. Cl. 118—603

8 Claims



1. An adhesive reservoir and applicator assembly including,
a. a reservoir having a bottom, a pair of elongate sides and a pair of transverse ends extending between said elongate sides;
b. a pumping compartment situated in one end of said reservoir containing a cylindrical adhesive applicator rotatably mounted on an axle supported by said elongate sides, the length of said applicator being less than the width of said reservoir;
c. a screen extending inwardly from an elongate side of said reservoir situated immediately in front of and upstream from said adhesive applicator thereby separating said pumping compartment from an intake compartment, the length of said screen being less than the width of said reservoir;
d. a baffle extending from said screen toward an end of said reservoir away from said pumping compartment, said

baffle separating said intake compartment from a discharge compartment;
e. heating means associated with said reservoir to heat adhesive material to flow temperature; and
f. adhesive temperature control means;
whereby a first portion of said adhesive material is readily circulated by rotation of said applicator axle from the pumping compartment through said discharge and intake compartments and returned to said pumping compartment upon passing through said screen which thereby reduces internal air ebullition in said adhesive material, and whereby a second portion of said hot adhesive material is applied to the edge of pages by said adhesive applicator.

3,898,956

TONER REPLENISHER

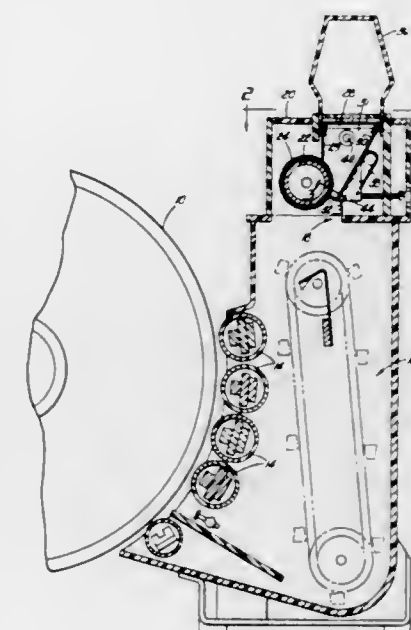
Thomas E. Andrako, Maple Heights, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio

Filed Nov. 16, 1973, Ser. No. 416,610

Int. Cl.² G03G 15/08

U.S. Cl. 118—637

2 Claims



1. In a toner system for electrostatic image development employing a mix of non-consumable carrier members and consumable toner particles, the system including a mixing chamber wherein spent mix is deposited and caused to be resupplied with toner particles clinging thereto, said chamber having a supply entrance opening above the mixing area;
the improvement in toner particle supply, comprising:
a housing seated on said chamber over said supply entrance opening;
a brush of circular cross-section mounted in said housing adjacent said entrance opening, said brush having a bristle mat surface, and means for rotating said brush about its central axis;
a supply hopper located to expel toner from said hopper through said opening by gravity, said hopper mounted adjacent said brush with said brush as the sole closure blocking the opening;
the hopper opening is rectangular, defined by a vertical front hopper wall and a sloping rear hopper wall terminating at a location substantially directly below said front wall, and end walls;
a doctor blade formed by a serrated edge formation of said rear wall termination on the side of said opening from which the mat of said brush exits, said blade extending partially into said mat to cause the bristles to bend and then snap back after passing the blades; and

a vibrator means for vibrating said rear wall to shake toner down to said brush and to actuate the particle dispensing action of said brush;
whereby, the bristles pick up toner particles from a hopper supply, and flick the particles free in a descending cloud to said mixing chamber.

3,898,957

DEVELOPING UNIT FOR ELECTROSTATIC LATENT IMAGE

Masao Masumura, Tokyo, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

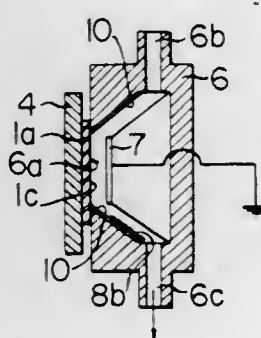
Filed Dec. 21, 1973, Ser. No. 427,212

Claims priority, application Japan, Dec. 28, 1972, 47-3473

Int. Cl. G03g 13/10

U.S. Cl. 118—637

8 Claims



1. A developing unit for electrostatic latent images of the type in which a recording member having an electrostatic latent image formed thereon is held in an upright position and in abutment with an opening in a developing box to thereby form a liquid-tight developing chamber, into which a liquid developer is supplied to develop the latent image on the recording member and is then displaced from the interior of the developing chamber upon completion of the developing process, including the improvement wherein the developing box comprises:

- an interior access area at least the bottom portion of which inclines downwardly from the lower edge of said opening; and
- a liquid-developer-repellent resin material forming the surface of said bottom portion and the lower edge of said opening to facilitate the displacement of the developer therefrom.

3,898,958

OPEN WATER FISH FARMING APPARATUS

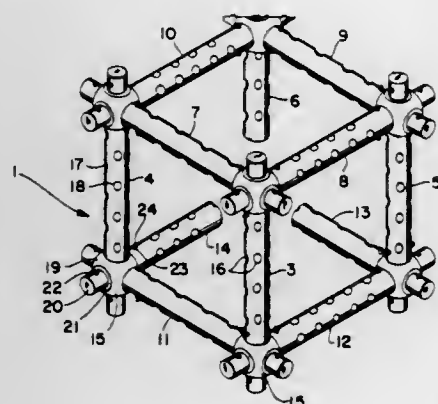
Peter P. Pranis, Jr., 4108 W. 217th St., Fairview Park, Ohio 44126

Filed June 13, 1974, Ser. No. 478,980

Int. Cl. A01k 61/00

U.S. Cl. 119—3

37 Claims



1. Apparatus for fish farming, comprising:
a plurality of elongated means for providing surface areas for the anchoring, growth and accumulation of micro-

organisms and the like, said elongated means having a substantially large exterior surface area and each including shelter means providing restricted areas within said elongated means for sheltering relatively small fish from their natural predators including relatively larger fish; and means for permanently connecting said elongated means in a rigid three dimensional lattice framework, said lattice framework having relatively large open volumes within which relatively large fish may freely swim about, and said means for sheltering providing said restricted areas for such relatively small fish as a place of refuge from such relatively large fish;
said apparatus thus providing for fish cultivation being attractive to small fish as a supply of food and shelter, whereby larger fish remain proximate said apparatus by attraction to small fish as a food supply.

3,898,959

PROCESS FOR THE GROWTH OF

HYDROCARBON-CONSUMING MICROORGANISMS

Nai Yuen Chen, Titusville, and Sundaresa Srinivasan, Princeton Junction, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. Nos. 58,324, July 27, 1970, abandoned, and Ser. No. 58,736, July 27, 1970, abandoned.

This application Jan. 15, 1973, Ser. No. 323,580

Int. Cl. C12b 1/00

U.S. Cl. 195—28 R

13 Claims

1. A process for the growth of an aerobic, hydrocarbon-consuming microorganism comprising:

- a. maintaining in a fermentation vessel for a predetermined residence time a liquid fermentation broth containing a culture of said hydrocarbon-consuming microorganism and, for the growth of said hydrocarbon-consuming microorganism, a hydrocarbon as a source of carbon, mineral nutrients, and water,
- b. injecting air into said fermentation broth at a rate of 1 to 50 volumes per volume of said fermentation broth per minute, at a dilution ratio of 1.2 to 5, and at a superficial velocity of 200 to 500 meters per hour,
- c. maintaining said fermentation broth at a temperature conducive to the growth of said microorganism solely by injection of said air into said fermentation broth, and
- d. during growth of said microorganism circulating said fermentation broth through a bed of charcoal at a rate such that the entire amount of said fermentation broth passes through said bed of charcoal within said residence time, said bed of charcoal being in the form of particles of charcoal sufficiently large to avoid filtration of the cells of said microorganism from said fermentation broth.

3,898,960

APPARATUS FOR FEEDING ANIMALS

Timothy Michael Gilchrist, Marvis Bank, Newrath, Waterford, Waterford County, Ireland

Filed Nov. 19, 1973, Ser. No. 417,093

Claims priority, application Ireland, Nov. 18, 1972, 1406/72

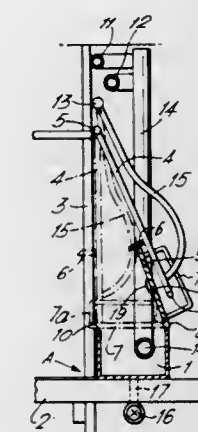
Int. Cl. A01k 5/00

U.S. Cl. 119—51 R

5 Claims

1. An animal feeding device comprising of an open-topped trough, means for introducing under pressure a feed slurry

into the trough, means for introducing a liquid under pressure into the trough, and a lid movable to a position for closing and



sealing the trough in a pressure type manner when feed slurry or liquid under pressure is introduced into the trough.

3,898,961

STEAM GENERATOR

Hans Mayer, Bubenreuth, and Heinz-Jürgen Schröder, Erlangen, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

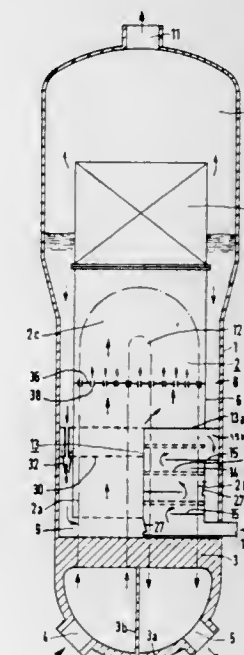
Filed June 12, 1973, Ser. No. 369,229

Claims priority, application Germany, June 26, 1972, 2231182

Int. Cl. F22b 1/06

U.S. Cl. 122—32

4 Claims



1. A pressurized-water coolant nuclear reactor steam generator including a vertical housing containing an inverted U-shaped nest of heat-exchanging tubes having coolant inlet and outlet ends and radially enclosed by a vertical guide jacket and having a feed water inlet adjacent to said nest's outlet end, steam-generating water in said housing flowing downwardly in said down-draft space and upward through said guide jacket and radially outwardly and inwardly around the top and bottom of the guide jacket respectively, thus establishing a recirculating flow path, and a feed water preheater having walls forming a chamber surrounding a substantial portion of said tube nest's outlet end and connected with said feed water inlet, said preheater chamber having an outlet for the preheater's output; wherein the improvement comprises means connected with said outlet of said preheater chamber for forming at least one jet of the preheated feed water output of said preheater, directed in the direction of said flow to add circulating force thereto.

3,898,962

CONTROL SYSTEM AND DEVICES FOR INTERNAL COMBUSTION ENGINES

Gunther Honig, Braunschweig, and Uwe Kiencke, Moglingen, both of Germany, assignors to Robert Bosch G.m.b.H., Gerlingen-Schillerhöhe, Germany

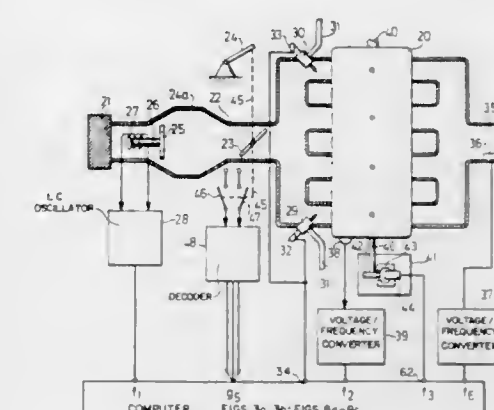
Filed May 31, 1973, Ser. No. 365,729

Claims priority, application Germany, June 2, 1972, 2226949

Int. Cl. F02D 5/00

U.S. Cl. 123—32 EA

115 Claims



1. In combination with an internal combustion engine having an induction pipe, a control device for controlling at least one solenoid (32, 33) operated fuel injection valve (29, 30) in dependence upon the rate of air flow to the engine through the induction pipe, comprising
an air flow meter (25, 26) to be arranged in the induction pipe of the engine;
an oscillator (28), the frequency of which is controlled by the air flow meter (25, 26) to provide an oscillator output signal whose frequency is a function of the rate of air flow;
a frequency digital converter connected to receive the oscillator output signals and providing digital signals representative of the frequency of the oscillator, and hence of the rate of air flow;
and a digital computing circuit having an input connected to receive the digital signals and having an output connected to and controlling the solenoid (32, 33) of the fuel injection valve (29, 30), said computing circuit comprising
a digital differential analyzer whose input is responsive to said digital signals derived as a function of frequency of the oscillator.
and at least one interpolator (58, 61) having stored therein simulated operating characteristics of the internal combustion engine over its operating range to modify the digital signals passing through said computing circuit in accordance with said simulated operating characteristics of the combustion engine.

3,898,963

ELECTRONICALLY CONTROLLED FUEL INJECTION SYSTEM FOR ROTARY INTERNAL COMBUSTION ENGINES

Hiroyoshi Iwata, Koichi Sekiguchi, and Yoshikazu Ishikawa, all of Tokyo, Japan, assignors to Nissan Motor Company Limited, Yokohama, Japan

Filed July 5, 1973, Ser. No. 376,389

Claims priority, application Japan, July 6, 1972, 47-79166

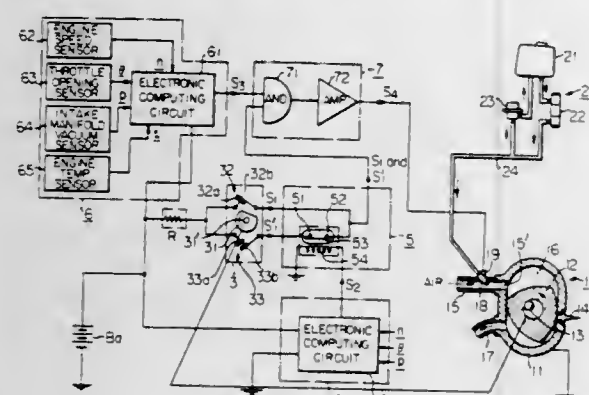
Int. Cl. F02B 3/00

U.S. Cl. 123—32 EA

3 Claims

1. In combination, a rotary internal combustion engine and an electronically controlled fuel injection system for said rotary internal combustion engine comprising:
a fuel injection control valve for controlling fuel injection into said engine;

actuating means for opening said fuel injection control valve when said actuating means is energized;
 a triggering pulse signal generator operatively connected to a crank shaft of said engine and responsive to the angular position of said crank shaft to produce two alternating triggering pulse signals each representing fuel injection commencement time;
 first electronic computing means responsive to at least one of electric signals representing prevailing values of engine deceleration operation including engine speed, throttle opening and intake manifold vacuum to produce an electric engine deceleration operation signal;
 electronic control means;
 cut-off means for cutting off one of said alternating triggering pulse signals in response to said engine deceleration operation signal, said cut-off means comprising an electromagnetic relay including a pair of relay contacts which are opened by the movement of a relay armature when a relay coil is energized by said engine deceleration operation signal



form said first electronic computing means, said relay contacts being closed by said relay armature when said engine deceleration operation signal is absent, said cut-off means being connected between output terminals of said triggering pulse signal generator and said electronic control means and being operative to prevent transmission therethrough of one of said alternating triggering pulse signals when said relay coil is energized;
 second electronic computing means responsive to at least one of electric signals representing prevailing values of engine speed, throttle opening, engine temperature and intake manifold vacuum to produce an electric output pulse signal having a pulse width representing the proper duration of fuel injection under prevailing engine operating conditions; and
 said electronic control means being responsive to said output pulse signal from said second electronic computing means and said alternating triggering pulse signals to produce an electric command pulse signal which is fed into said actuating means energizing said actuating means to open said fuel injection control valve.

3,898,964

FUEL-INJECTION ARRANGEMENT CONTROLLED IN DEPENDENCE UPON THE AIR INFLOW RATE

Peter Werner, Schwieberdingen; Ulrich Drews, Stuttgart; Norbert Rittmannsberger, Schwieberdingen; Wolfgang Busse, Stuttgart; Helmut Moder, and Karl-Heinz Ohr, both of Schwieberdingen, all of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Sept. 21, 1973, Ser. No. 392,811

Claims priority, application Germany, Aug. 31, 1972, 2242795

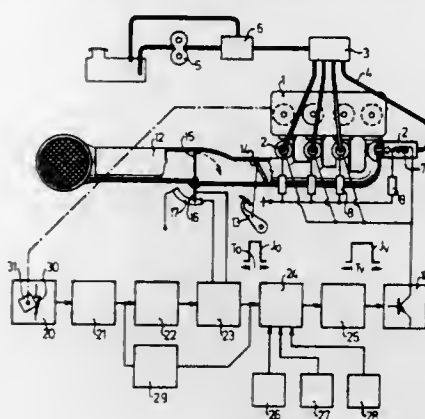
Int. Cl. F02M 51/02

U.S. Cl. 123—32 EA

53 Claims

1. In an internal combustion engine having at least one engine cylinder, an air-intake passage communicating with the interior of such cylinder, a piston movable in such cylinder, an

engine crankshaft connected to such piston, an ignition arrangement for igniting fuel-air mixture in such cylinder and including electromechanical ignition-signal generating means coupled to the engine crankshaft and operative for generating a train of electrical crankshaft-positionsynchronized ignition signals, and an electrically actuatable fuel-injection valve having an electrical input for receipt of a valve-opening pulse and operative for injecting fuel into such cylinder for a time interval corresponding to the duration of such valve-opening pulse, for use therewith, a fuel-injection control system comprising airflows sensing means for determining the rate of airflow through the air-intake passage of the engine; triggering means including electronic frequency divider means for receiving the train of electrical ignition signals and converting



the same into a lower-frequency train of electrical fuel-injection triggering pulses; first pulse-generating means connected to said triggering means and to said airflow sensing means and operative for generating a first control pulse having a pulse duration dependent upon the airflow rate detected by said airflow sensing means; second pulse-generating means connected to said triggering means and to said first pulse-generating means and operative upon generation of a triggering pulse for generating a second control pulse having a pulse duration dependent upon at least one other variable engine operating condition; and third means for generating a composite valve-opening pulse comprised of said first and second control pulses for application to the electrical input of the fuel-injection valve.

3,898,965

AUXILIARY FLUID INJECTION SYSTEM FOR INTERNAL COMBUSTION ENGINE

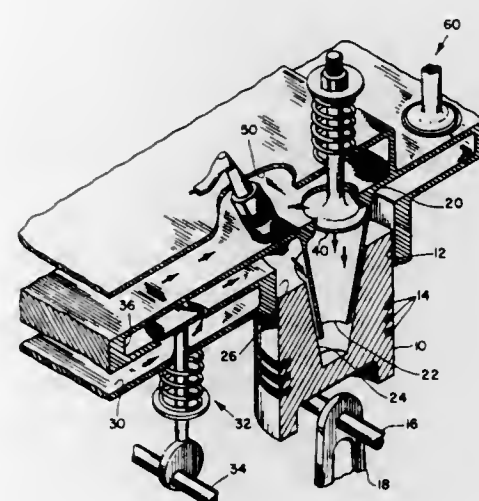
Francis A. Fischer, 464 Park Rd., West Hartford, Conn. 06607

Filed Aug. 20, 1973, Ser. No. 390,074

Int. Cl. F02b 75/02; F02d 39/02

U.S. Cl. 123—75 B

5 Claims



1. An internal combustion engine comprising:

- at least one cylinder,
- a cylinder head for said cylinder including an annular baffle extending downwardly from the remainder of said head into said cylinder,
- a piston slidably received in said cylinder and having a recess in its upper portion to receive said baffle when said piston is in its top dead center position; said cylinder, cylinder head, baffle and piston, when said piston is in its top dead center position defining an annular combustion chamber surrounding the outside of said baffle; and said baffle and said piston, when said piston is in its top dead center position, defining an auxiliary chamber surrounded by said baffle and generally isolated from said combustion chamber; the length of that portion of said baffle which is received in said piston recess when said piston is in its top dead center position being greater than one-half of the stroke of said piston,
- an intake valve means communicating directly with said combustion chamber for introducing a fuel and air charge to said combustion chamber,
- an exhaust valve means communicating directly with said combustion chamber for carrying away spent gases of combustion from said combustion chamber,
- a passageway for delivering an auxiliary fluid to said auxiliary chamber, and
- an auxiliary valve means in said cylinder head between said passageway and said auxiliary chamber for controlling the flow of auxiliary fluid from said passageway to said auxiliary chamber.

3,898,966

CYLINDER-HEAD OF AN INTERNAL COMBUSTION ENGINE WITH TWO INTAKE VALVES FOR EACH CYLINDER

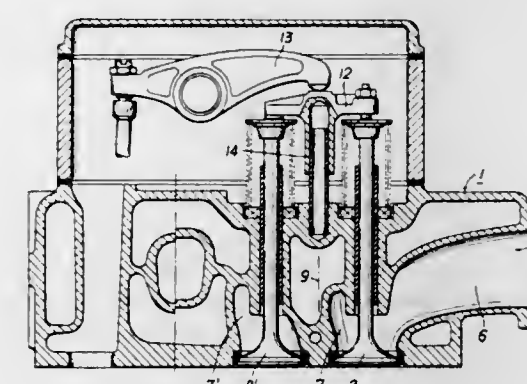
Hans List, 126 Heinrichstrasse, Graz, Austria

Filed Mar. 30, 1971, Ser. No. 129,344

Int. Cl. F02b 75/00

U.S. Cl. 123—75 B

2 Claims



1. A cylinder head of an internal combustion engine having two intake valves for each cylinder adjoining each other and arranged eccentrically in relation to the cylinder axis, the first of the two intake valves being arranged at least approximately in a longitudinal median plane of the internal combustion engine, the second intake valve being offset by approximately 90° towards the suction-end sidewall of the cylinder head in relation to the first intake valve, a first inlet duct extending from said cylinder head sidewall in transverse relation thereto to the first intake valve, a second inlet duct extending from said cylinder head sidewall to the second intake valve and having a convex curvature in relation to the cylinder axis, each said inlet duct comprising a spiral-like section wound around the axis of the associated intake valve and inclined towards the valve, whose sense of winding is identical for both inlet ducts, each inlet duct extending at the point of transition to the spiral-like section laterally outside the associated intake valve in relation to the cylinder axis and extending at the latter point in an approximately tangential relation to the inner wall of the associated cylinder.

3,898,967

AUTOMATIC CHOKE ASSEMBLY

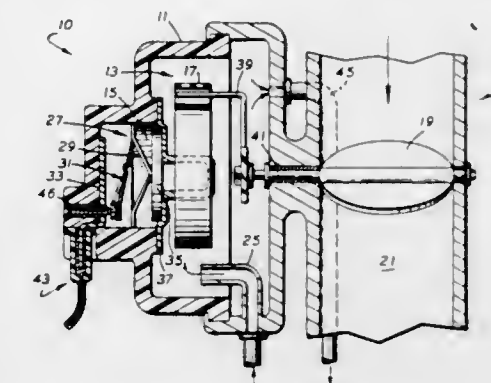
John E. Bennett, Sheffield; Max L. Jayne, North Warren, and Robert S. Orbanic, E. Warren, all of Pa., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed June 4, 1973, Ser. No. 366,347

Int. Cl. F02d 11/08; F02m 1/10, 23/04

U.S. Cl. 123—119 F

7 Claims



1. In an automatic choke assembly for an internal combustion engine having intake and exhaust manifolds, at least one carburetor having a conduit therein adapted for supplying air and fuel to said engine, a valving means for controlling the ratio of said air and fuel within said conduit, and an alternator for supplying electrical energy to said engine, wherein said choke assembly comprises a housing member defining first and second chambers, means for supplying heat indicative of the temperature of said engine to said first chamber, a bimetallic spring member positioned within said first chamber and operatively connected to said valving means, a heating means thermally connected to said bimetallic spring member, and a terminal-contact member electrically connected to said alternator, the improvement comprising:

a thermally responsive and electrically conductive member positioned within said second chamber, said thermally responsive and electrically conductive member having at least one arm portion thermally and electrically connected to said heating means and at least one tongue portion adapted for moving in a snap-action manner to engage said terminal contact member when the temperature surrounding said thermally responsive and electrically conductive member exceeds a predetermined level whereby said heating means is energized during operation of said engine, said tongue portion comprising a pair of spacedly positioned lateral strip members and a contact strip member positioned substantially therebetween, said central strip member separated from each of said lateral strip members by a longitudinal slot.

3,898,968

THERMO INSULATED HYDRAULIC RESTRICTORS

Isidoro N. Markus, 65-36 99th St., Rego Park, N.Y. 11374

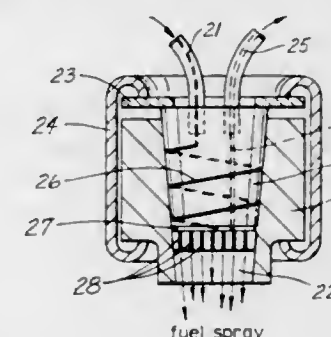
Continuation of Ser. No. 383,067, July 27, 1973. This

application Nov. 2, 1973, Ser. No. 412,285

Int. Cl. F22b 9/06

U.S. Cl. 123—122 E

12 Claims



1. In an internal combustion engine having at least a combustion chamber,

a supply of fuel,
a fuel injector for injecting fuel from said supply into said engine combustion chamber at a preheated temperature,
a fuel pump between said supply and fuel injector to pressurize the flow of fuel from the supply to the combustion chamber through said injector,
said fuel injector comprising a ceramic thermoinsulated hydraulic restrictor block having cold fuel inlet means and hot fuel outlet means,
a constricted passageway defined in said ceramic block hydraulically connecting said fuel inlet means to said fuel outlet means,
a sleeve coupled about a peripheral portion of said ceramic block to connect the same to the engine combustion chamber,
said fuel pumped under pressure along said constricted passageway by said fuel pump frictionally increasing its temperature to preheat the same prior to its injection into said engine combustion chamber,
and said fuel outlet means having fuel injection holes located to inject the increased temperature fuel directly into the engine combustion chamber.

3,898,969

FUEL SUPPLY SYSTEMS FOR ENGINES

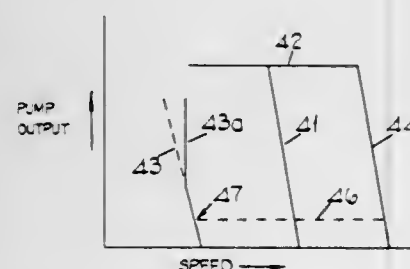
Malcolm Williams, Solihull; Christopher Robin Jones, Alcester, and Richard William Crookes, Solihull, all of England, assignors to C.A.V. Limited, Birmingham, England
Filed Dec. 28, 1973, Ser. No. 429,373

Claims priority, application United Kingdom, Jan. 6, 1973, 890/73

Int. Cl. F02b 3/00; F02m 39/00

U.S. Cl. 123-139 E

3 Claims



1. A fuel supply system for an engine, including control means for determining the rate of fuel supply by the system, a demand transducer for providing a signal to the control means representing a demanded engine operating parameter thereby defining engine operating curves having a first predetermined slope, means for limiting the minimum speed of the engine in accordance with the rate of supply of fuel to produce an engine idling curve of a second predetermined slope less steep than said first predetermined slope, and means operable when the engine speed falls below a predetermined value for supplementing the input applied to the control means by the demand transducer so as to simulate an increased demand and produce an engine idling curve having a third predetermined slope steeper than said first predetermined slope.

3,898,970

FUEL INJECTOR ASSEMBLY

Alexander Malpass, Sr., 5131 Carolina Beach Rd., Wilmington, N.C. 28401

Filed May 24, 1973, Ser. No. 363,423

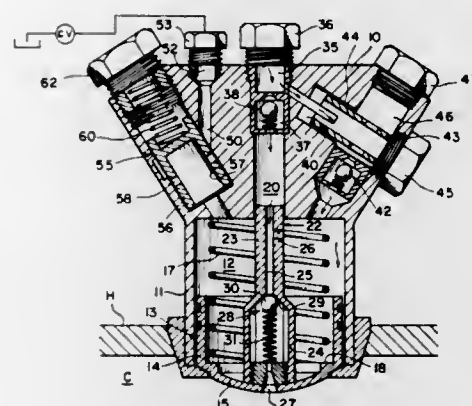
Int. Cl. F02m 49/02

U.S. Cl. 123-139 AJ

2 Claims

1. A fuel injector assembly for injecting liquid fuel into a combustion zone comprising: means defining a variable volume control chamber including a movable working member movable in one direction to diminish the volume of said control chamber and movable in an opposite direction to increase

the volume of said control chamber and mountable during use of the fuel injector assembly such that said working member is in direct communication with the combustion zone; fuel injecting means connected to said working member and movable therewith for injecting liquid fuel into the combustion zone in an amount and at a rate proportional to the extent and rate of movement of said working member in said one direction; biasing means for continuously biasing said working member in said opposite direction; means for supplying liquid fuel into the interior of said control chamber thereby preventing movement of said working member in said one direction due to the incompressible nature of the liquid fuel; and modulator valve means responsive to the fuel pressure in said control chamber for modulating the exhausting of fuel from said working member from the combustion zone to thereby control the rate and extent of movement of said working member in said one direction to accordingly control the timing and amount of fuel injected into the combustion zone; said fuel injecting means comprising means defining a variable volume pumping chamber including a pump plunger connected to said



working member and movable therewith to vary the volume of said pumping chamber, means for supplying liquid fuel into said pumping chamber during movement of said working member in said opposite direction, means defining a pump outlet passageway extending longitudinally through said pump plunger from said pumping chamber into the combustion zone, and check valve means mounted in said pump outlet passageway operable to permit fuel flow therethrough in a direction from said pumping chamber into the combustion zone but not in the reverse direction; said means for supplying liquid fuel into said pumping chamber includes means defining a bore extending transversely through a portion of said pump plunger providing communication between said outlet passageway and the interior of said control chamber when said pump plunger is at the end of its stroke after moving in the opposite direction to admit fuel into said pumping chamber from said control chamber, and wherein said pumping chamber has a wall portion which covers said bore to prevent further fuel admission therethrough after said pump plunger has moved a predetermined distance from the end of said stroke in said one direction.

3,898,971

MULTIPLE PULSE CAPACITOR DISCHARGE IGNITION CIRCUIT

Robert P. Lefevre, 800 Ocean Blvd., Rye, N.H. 03870
Filed Jan. 30, 1973, Ser. No. 327,939

Int. Cl. F02p 1/00

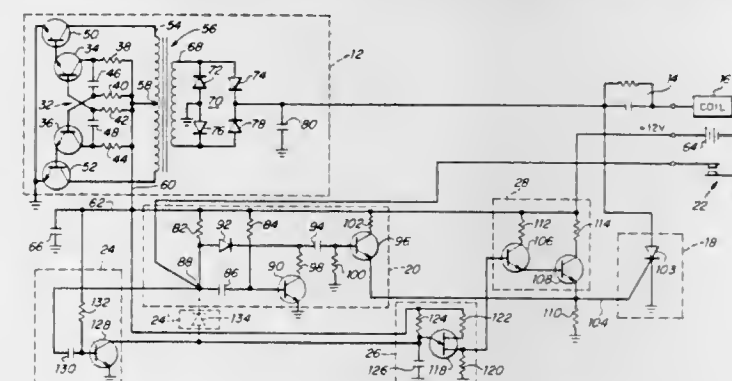
U.S. Cl. 123-148 CB

14 Claims

1. A multiple pulse capacitor discharge ignition circuit adapted for use with an engine ignition system having an ignition coil and ignition synchronizing means for defining ignition periods comprising:

- an ignition capacitor;
- a continuously operating, high speed charging circuit connected directly to the ignition capacitor for rapidly charging

ing said ignition capacitor and continuously supplying power for charging the ignition capacitor;
a switching circuit for closing a circuit through said ignition capacitor and said ignition coil;
a free running clock circuit for producing discrete, high speed switching signals independently of the charging circuit for operating said switching circuit; and
a clock control circuit connected between the synchronizing means and the clock circuit so as to isolate the clock



circuit from the synchronizing means, the clock control circuit being responsive to said ignition synchronizing means to enable delivery of said switching signals to said switching circuit during ignition periods to provide a plurality of current discharges from said ignition capacitor through said ignition coil, the control circuit being further responsive to termination of each ignition period by the ignition synchronizing means to disenable delivery of switching signals from the clock circuit to the switching circuit.

3,898,972

IGNITION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE WITH AUTOMATIC TIMING SHIFT

Georg Haubner, Berg, Germany, assignor to Robert Bosch G.m.b.H., Stuttgart, Germany

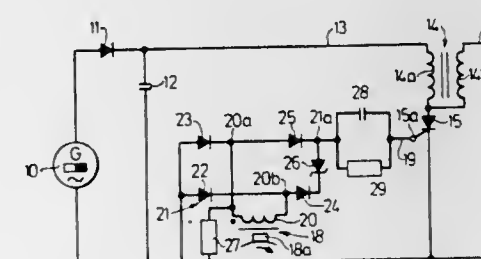
Filed Nov. 15, 1973, Ser. No. 416,225

Claims priority, application Germany, Nov. 16, 1972, 2256174

Int. Cl. F02p 3/06

U.S. Cl. 123-148 E

8 Claims



1. An ignition system for an internal combustion engine, comprising:

- an ignition coil having a primary winding and a secondary winding;
- a semiconductor switching element having a control electrode leading to a control path therein and having a switched path in circuit with said primary winding of said ignition coil;
- at least one spark plug in circuit with said secondary winding of said ignition coil;
- a mechanically driven ignition timing pulse generator of the kind producing two electrical pulses of opposite polarity in quick succession for each spark cycle, arranged so that the first of said two pulses has the greater amplitude;
- a full wave rectifier in circuit with said timing pulse generator and said control path of said semiconductor switching element, so as to apply both of said pulses to said control path of said semiconductor switching element in the

polarity required for switching said semiconductor switching element on;
a voltage threshold diode means interposed in the path of said full wave rectifier for unbalancing the output thereof in such a way that when said timing pulse generator is driven at low speed, the first of said two pulses is effectively suppressed and the second is applied to said semiconductor switching element for ignition timing, and
capacitor means bridged by a resistor in series with said control path of said semiconductor switching element of such electrical magnitudes that at higher driven speeds of said timing pulse generator, the second of said two pulses is counteracted and thereby effectively suppressed by the voltage across said capacitor.

3,898,973

DEVICE FOR CONTROLLING THE FEEDING OF FUEL TO AN INTERNAL COMBUSTION ENGINE

Marcel Vidberg, Montbeliard, France, assignor to Automobiles Peugeot, Paris and Regie Nationale des Usines Renault, Boulogne-Billancourt, both of, France

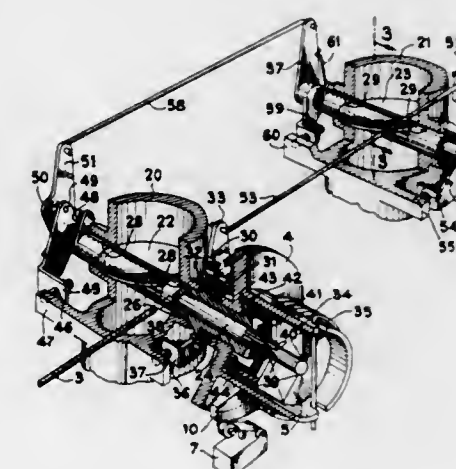
Filed Apr. 12, 1973, Ser. No. 350,651

Claims priority, application France, May 25, 1972, 72.18713

Int. Cl. F02b 77/00

U.S. Cl. 123-198 DB

10 Claims



1. A device for controlling the feeding of fuel to an internal combustion engine, comprising a body defining a passageway, a fuel feed flow regulating means movable between a first position for opening the passageway and a second position for substantially closing the passageway, a control element for actuation by the user, connecting means operatively connecting the control element to the regulating means, the connecting means comprising a first member carrying the regulating means, a second member integral with the control element, bearing means within said body, the second member having a tubular portion rotatably mounted in said bearing means and extending transversely through said passageway the first member having a generally cylindrical shape and being rotatably mounted in said second member, aperture means being defined by the cylindrical portion of the second member for allowing passage of the regulating means therethrough, a releasable coupling interposed between the first member and the second member for normally engaging the second member with the first member to drive the first member, electromagnetic means for releasing the coupling, first resiliently yieldable return means associated with the first member, and second resiliently yieldable return means associated with the second member, the first and second resiliently yieldable means being independently operative to bias their respective associated members in a direction to normally bring the regulating means to said second position.

3,898,974

ARCHERY BOWSTRING RELEASE

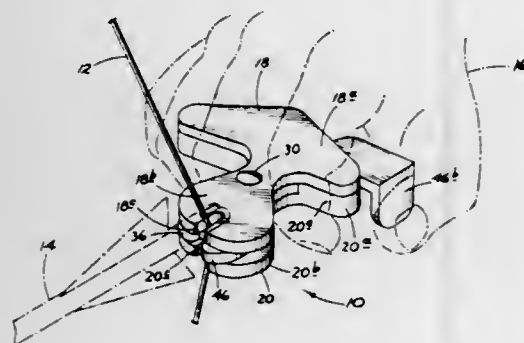
Elmer L. Keck, 1705 S.E. 136th Ave., Vancouver, Wash. 98664

Filed Aug. 21, 1974, Ser. No. 499,175

Int. Cl.² F41C 19/00

U.S. Cl. 124—35 A

13 Claims



11. A device for aid in drawing and releasing an archery bowstring comprising

a top body plate and a bottom body plate of substantially similar configuration, each body plate having an elongate handle portion and a string receiving portion secured to and projecting outwardly from said handle portion intermediate the ends of the handle portion and occupying a common plane with said handle portion, said string receiving portion having a notch formed therein which extends substantially normal to said plane and opens to the forward end thereof,

spacer means maintaining a laterally spaced relationship between said string receiving portions of said top and bottom plates,

means securing said body plates in registry with each other with said notches defining a common string receiving channel open to the forward end of the body plates,

a string holding means including an elongate arm pivotally connected to a body plate for swinging in a plane intermediate said string receiving portions of said body plates and said holding means being movable between a cocked position extending across said common string receiving channel for holding a bowstring therein and a release position swung laterally of said channel forwardly of its cocked position, and

catch means for holding said string holding means in its cocked position and for releasing

holding means to permit pivoting of the holding means and release of a bowstring

3,898,975

HEATING APPLIANCE WITH PROTECTIVE GUARD

Wayne T. Kemp, Kutztown, Pa., assignor to Raytheon Company, Lexington, Mass.

Filed Sept. 3, 1974, Ser. No. 503,006

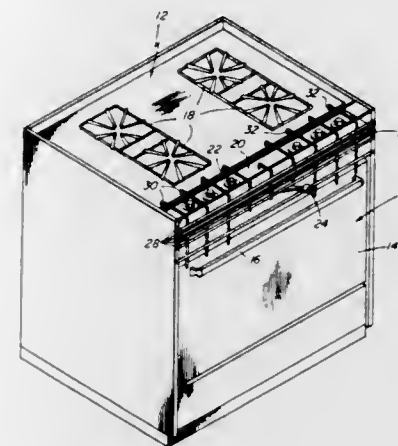
Int. Cl.² A43B 21/36

U.S. Cl. 126—42

10 Claims

1. A heat-producing appliance comprising a housing having a panel subject to high temperatures during operation of the appliance, electrical switch means within the housing, switch-actuating means operatively associated with said switch, and

a guard removably mounted in covering relation to said panel and having projecting means extending through said panel for



effecting operation of said switch when the guard is in position of use over the panel.

3,898,976

HUMIDIFIER MOUNTING FOR WARM AIR HEATING SYSTEM

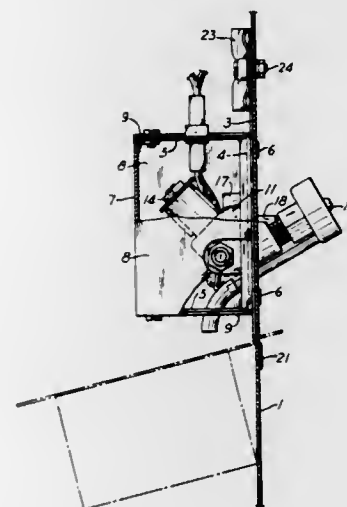
William H. Coffman, Jr., Mt. Pleasant, Pa., assignor to Lewbill Industries Inc., Scottsdale, Pa.

Filed Oct. 21, 1974, Ser. No. 516,145

Int. Cl.² F24F 3/14; F24H 3/00

U.S. Cl. 126—113

7 Claims



1. In a warm air heating system, the combination with a warm air passage having a sheet metal wall with an opening therein, of a humidifying unit comprising a metal plate normally closing said opening and having a marginal area inside said passage extending along one side of the opening, the rest of the plate being outside the passage and overlapping said wall around the rest of the opening, releasable securing means holding the plate flat against the outer surface of said wall, and humidifier means mounted on the plate and exposed to the inside of said passage, the plate at opposite ends of said marginal area being provided with slots extending inwardly toward each other at the junction of said marginal area and the rest of the plate, and said slots receiving the adjoining overlapped portions of said wall to form a hinge connection between the wall and plate, whereby when said securing means is released, said plate and humidifier means can be swung outwardly away from said wall without becoming disconnected from it.

3,898,977

LIQUID CRYSTAL DOOR WINDOW SHUTTER ARRANGEMENT FOR SELF-CLEANING COOKING OVEN

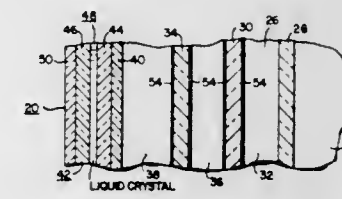
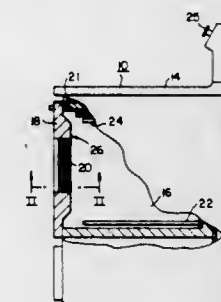
Robert Draper, Penn Hills, Pa., assignor to White-Westinghouse Corporation, Cleveland, Ohio

Filed Jan. 28, 1974, Ser. No. 437,433

Int. Cl.² F24D 15/04

U.S. Cl. 126—200

7 Claims



1. In a pyrolytic self-cleaning cooking oven, said oven having an opening thereto;

a door for closing said opening, said door having a window therein;

means including a liquid crystal material associated with said window for providing an optical shutter operative at elevated temperatures in said oven corresponding to a heat-cleaning temperature range; and

said means permitting transmission of light sufficient for viewing through said window when the temperature of said oven is below the heat cleaning range and excluding transmission of light sufficient for viewing through said window when the temperature of said oven is in a heat-cleaning range.

3,898,978

BREATHING GAS HEATER

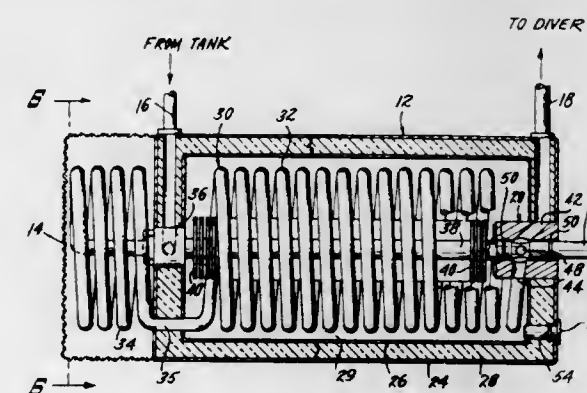
Douglas Larry Marcus, Baltimore, Md., assignor to Joseph M. Schwartz, Lutherville, Md., a part interest

Continuation-in-part of Ser. No. 314,373, Dec. 12, 1972, Pat. No. 3,815,573. This application Apr. 2, 1974, Ser. No. 457,204

Int. Cl. A62b 7/02

U.S. Cl. 126—204

5 Claims



1. A portable gas heating system for attachment to a pressurized gas source to provide heated breathing gas to a diver's mouth and head and to reduce the body's thermal heat loss in a cold aqueous environment by utilizing a small heat input where thermal loss is the greatest comprising:

a Vortex tube which separates high pressure gas from a diver's tank into cold and hot streams;

metal tubing connected to said Vortex tube which carries the cold stream of separated gas to an outer section for exposure to the aqueous environment and for heat absorption and to an inner section into a heat exchanger for further thermal energy addition before being mixed with the hot stream and breathed by the diver;

a double walled insulated chamber containing said Vortex tube and the inner section of said metal tubing which maintains a heated fluid so that all thermal energy therein is conducted to the gas passing through it in the metal tubing;

a heated fluid which is contained in the double walled insulated chamber for heating the cold stream of gas prior to breathing selected from the group consisting of fresh water, sea water and ethylene glycol;

fins surrounding said Vortex tube for heat transfer which dissipate heat of the hot stream of gas passing through the Vortex tube prior to mixing with the heated cold stream; a valve means connected to the outlet of said Vortex tube and the outlet of said inner section to control gas flow and temperature which allows optimum setting of cold stream volume and hot stream volume and mixes the two streams prior to breathing;

tube means to supply gas to the heater and carry gas for breathing that are adaptable to standard diving equipment to make the unit a plug-in system; and,

a protective housing to improve continuity of the heater's design and protect the exposed coiled tubing from damage while allowing ambient water to pass through for heat transfer with the cold stream inside the tubing.

3,898,979

SOLAR HEAT COLLECTOR

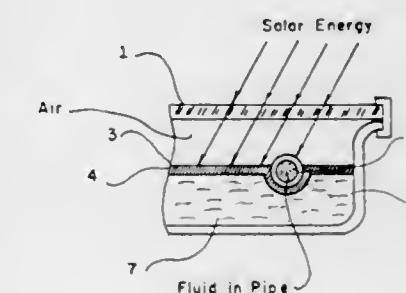
John J. Medico, Jr., 5331 Cape Leyte Dr., Siesta Key, Sarasota, Fla. 33581

Filed Mar. 20, 1974, Ser. No. 452,732

Int. Cl.² F24J 3/02

U.S. Cl. 126—271

5 Claims



1. A solar heat collector for heating a fluid embodying a container, a layer of flexible insulating material in said container, a thin flexible sheet of metal resting upon said flexible insulating material, a fluid conducting coil of metal having a high thermal conductivity resting upon said thin sheet of metal deforming portions of said thin sheet of metal and forcing said deformed portions into said flexible layer of insulating material to cause intimate contact between the coil and said thin sheet of metal to allow heat transfer from the thin sheet of metal to the coil, and a transparent cover over the top of said container constructed of material which passes the maximum band width of solar spectrum to the coil.

3,898,980

OUTDOOR COOKING APPARATUS

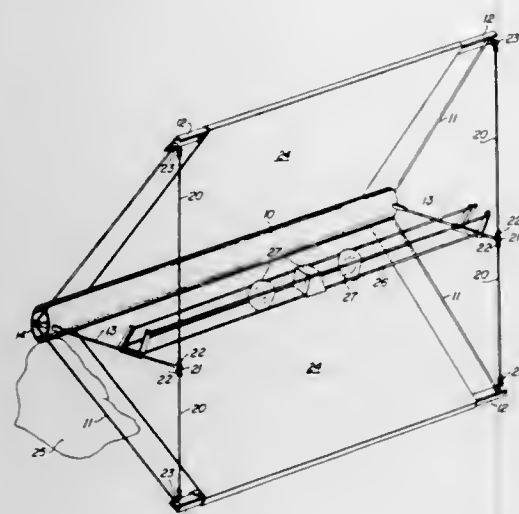
Paul Eldren Reimann, 1014 E. Center St., Bountiful, Utah 84010

Filed Oct. 23, 1973, Ser. No. 408,325

Int. Cl. A21b 1/04, 1/52

U.S. Cl. 126-274

9 Claims



1. Collapsible, outdoor cooking apparatus, which can be used as a reflector oven for baking food and can also be used for grilling, frying and boiling, comprising an elongate, tubular member; two sets of three transversely extending radial members adapted for removable attachment, respectively, to opposite ends of the tubular member with the members of one set of radial members being parallel with the corresponding members of the other set of radial members; longitudinal rods connecting respectively, the free end portions of the outer members of one set of radial members to the outer members of the other set of radial members; and support members which connect the end portions of the outer members of each set of radial members to the end portion of the intermediate member of that set, said apparatus being used as a reflector oven by stretching a flexible, reflective material from one longitudinal rod, around the elongate tubular member, to attachment to the other longitudinal rod thereby providing reflective surfaces that diverge outwardly from the tubular member and, when faced towards a source of heat, concentrate baking or broiling heat in the area between said surfaces, and suspending a grill between the intermediate members to support food to be baked, and said apparatus being used as a stove for grilling, frying or boiling foods by suspending a grill or stretching a flexible material directly between the longitudinal rods as a cooking surface for horizontal positioning over a campfire or other heat source.

3,898,981

RESPIRATION MONITORING APPARATUS

Raymond B. Basham, Fort Worth, Tex., assignor to Electronic Monitors, Inc., Fort Worth, Tex.

Continuation-in-part of Ser. No. 176,983, Sept. 1, 1971, Pat. No. 3,760,794, which is a continuation-in-part of Ser. No. 97,737, Dec. 14, 1970, abandoned. This application Aug. 17, 1973, Ser. No. 389,268. The portion of the term of this patent subsequent to Sept. 18, 1990, has been disclaimed.

Int. Cl. A61B 5/08

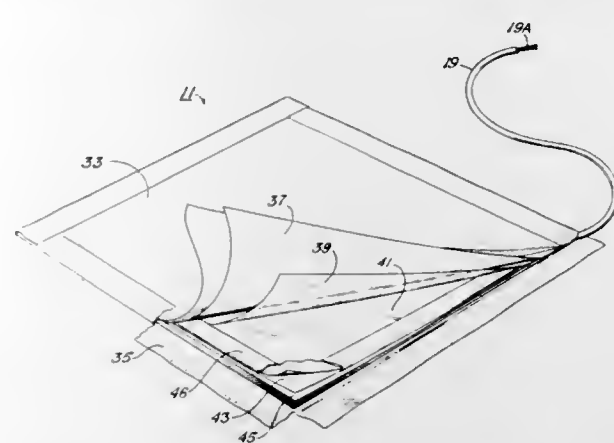
U.S. Cl. 128-2 R

6 Claims

1. A system for monitoring a respiration rate of a patient, comprising in combination:

- transducer means comprising: two electrically conductive plate electrodes, a center electrode positioned between two said plate electrodes, and
- a single synthetic resin polymer sheet having a volume resistivity to maintain an electrostatic charge thereon covering the center electrode between the plate electrodes to thereby develop a current flow in said plate

electrode and said center electrode varying with the patient's respiration rate, circuit means responsive to the varying current flow in the two plate electrodes and the center electrode and gener-



ating an output voltage when the current flow is constant, and alarm means actuated by said output voltage of said circuit means.

3,898,982

CAPILLARY TUBE FOR BLOOD EXAMINATION

Itsuro Katsuda, Tokyo, Japan, assignor to Jintan Terumo Co., Ltd., Tokyo, Japan

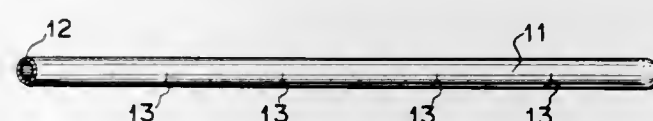
Filed Sept. 27, 1973, Ser. No. 401,175

Claims priority, application Japan, Sept. 29, 1972, 47-113033

Int. Cl. A61B 5/14

U.S. Cl. 128-2 F

9 Claims



1. A tube for blood examination which comprises a double open-ended capillary tube having an inner diameter which allows the introduction of blood by capillary action through the inlet end of the tube, at least one reagent coating layer coated on a portion of the inner wall surface thereof and spaced apart from said inlet end, and an uncoated inner wall area for the introduction of blood, which runs from said inlet end to an edge of the reagent coating layer.

3,898,983

DEVICE AND METHOD FOR DETECTING THE DEGREE OF MUSCLE RELAXATION OF A MEDICAL PATIENT

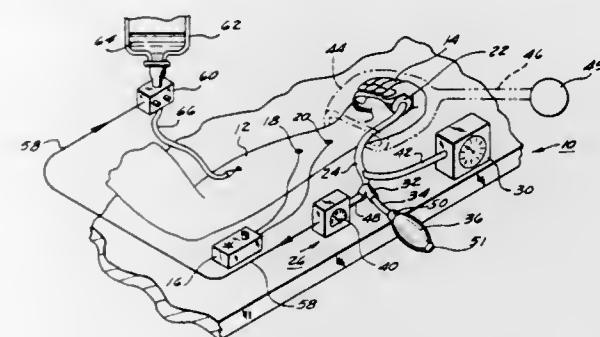
James O. Elam, 6723 S. Euclid Ave., Chicago, Ill. 60649

Filed Oct. 3, 1973, Ser. No. 403,017

Int. Cl. A61B 5/05

U.S. Cl. 128-2 N

13 Claims



1. A relaxation detector device comprising a stimulator means for electrically stimulating selected muscles of a living being and causing said muscles to flex, transducer means

3,898,985

BODY MOTION SYSTEM

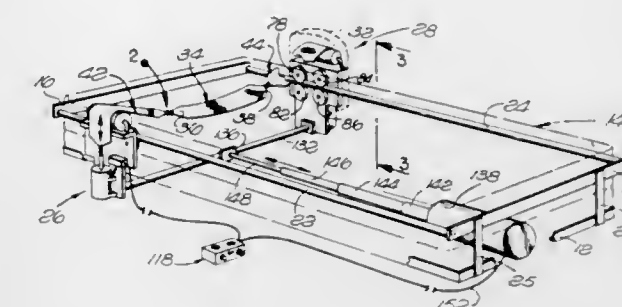
Julia A. Butcher, 1035 N. Glendale Ave., Glendale, Calif. 91206, and Daniel E. McLean, 7047 W. Franklin 102, Los Angeles, Calif. 90028

Filed Apr. 22, 1974, Ser. No. 462,910

Int. Cl. A61h 7/00

U.S. Cl. 128-63

5 Claims



1. A body motion system comprising:
a movable support positioned in a generally horizontal plane along the axis of said support and having a central section which can subside in a plane perpendicular to said horizontal plane when a body or portion thereof is placed in said support;
means for coupling at least a first end of said support to a first motive force; and
means for actuating said motive force to move said support in a lateral direction perpendicular to the axis of said support.

3,898,986

BIOTRANSFORMABLE INTRAUTERINE DEVICE

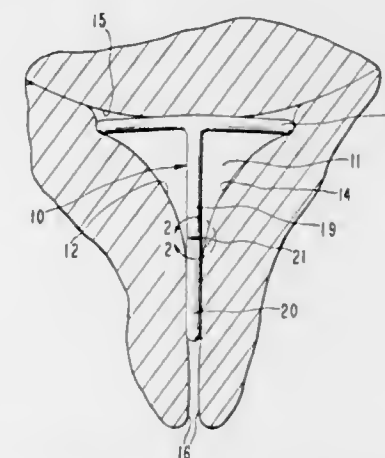
Alejandro Zaffaroni, Atherton, Calif., assignor to Alza Corporation, Palo Alto, Calif.

Filed Dec. 27, 1972, Ser. No. 319,014

Int. Cl. A61F 5/46; A61M 31/00

U.S. Cl. 128-130

16 Claims



1. A system for automatically monitoring critical body functions of one or more ambulatory patients, the combination of:

- a. an interrogating and monitoring station operating on a fixed frequency having means for generating and transmitting a plurality of digital coded interrogating signals and having means for receiving and displaying critical body function information received in response to said transmitted signal,
- b. at least one patient transponder operating at said fixed frequency and having sensing means coupled to the patient for sensing at least one critical body function and being responsive to at least one of said digital coded interrogation signals for transmitting a signal containing said sensed critical body function, said patient transponder including;
- c. a set reset flip-flop circuit having high and low voltage output terminals, set and reset input terminals,
- d. a delay circuit coupled between said high voltage output terminal and said reset input terminal for providing a reset signal to said reset input after a predetermined time delay,
- e. means coupled to said set input terminal for causing a high output from said high voltage output terminal,
- f. means coupled to said sensing means and to said high voltage output terminal for causing the vital body information to be transmitted for the duration of the high output from said high voltage output terminal,
- g. means coupled to said low voltage output terminal and being responsive to a high output from said low voltage output terminal when said reset signal causes the high output to go low and the low output to go high for generating a trigger signal that will initiate the next sequentially coded signal by said interrogating and monitoring station to be transmitted.

1. A drug dispensing intrauterine device, shaped and adapted for insertion into the uterine cavity, with the device comprising in combination:

- a. a drug
- b. a delivery means adapted for insertion into the uterine cavity and for dispensing a therapeutically effective amount of drug to the uterine cavity over a defined period of time, and
- c. retention means for retaining the delivery means within the uterine cavity throughout the defined period of drug dispensing time, said retention means having an initial unit structural configuration shaped and adapted for insertion and positioning in the uterine cavity including means for undergoing biotransformation in the uterine cavity to a different and non-uterine retentive configuration and shaped whereby at the completion of said defined period of drug dispensing time, said drug dispensing

device is facily removed or spontaneously eliminated from the uterine cavity.

3,898,987

BREATHING RESPONSIVE DEVICE AND METHOD

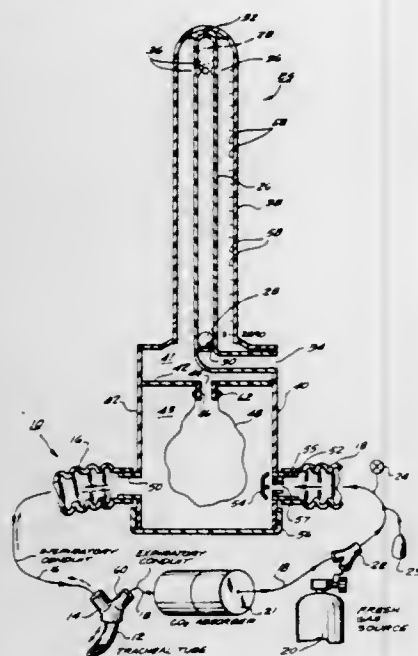
James O. Elam, 6723 S. Euclid Ave., Chicago, Ill. 60649

Filed Oct. 9, 1973, Ser. No. 404,728

Int. Cl.² A61M 16/00

U.S. Cl. 128-145.8

13 Claims



1. A breathing volume indicating device comprising gas conduit means for providing a substantially unimpeded guideway for a movable member, said conduit means having an elongated smooth internal surface, a movable gas-impervious lightweight member in said conduit means with a smooth outer surface and external dimensions slightly less than those of the interior of the conduit within relatively close tolerances so as to form a substantially gas-tight seal with said internal surface, means for communicating the pressure of breathing gases between a patient and said gas conduit means including means for isolating said internal surface and movable member from direct contact with said breathing gases, said isolating means further including a flexible membrane forming a chamber having a predetermined maximum volume, one side of said membrane communicating with said internal surface and said member, and the other side communicating with said gases, wherein said maximum volume is substantially equal to V, and V is given by the following equation: $V = T$ where T is the trachial-bronchial dead-space volume of the patient.

3,898,988

EXTRA CORPOREAL BLOOD ACCESS SITE

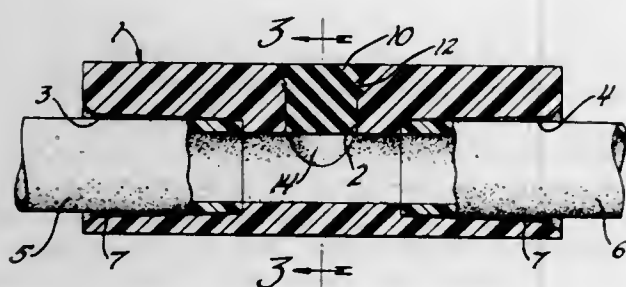
Brian E. Morgan, Wheatridge, Colo., assignor to Cobe Laboratories, Inc., Lakewood, Colo.

Filed Apr. 22, 1974, Ser. No. 462,894

Int. Cl. A61M 05/00, 01/03; F16I 11/12

U.S. Cl. 128-214 R

8 Claims



1. An extra-corporeal blood access site comprising a blood-passage tube of relatively rigid material having a cylindrical

opening through a wall thereof and a cylindrical body of a relatively soft resilient needle-penetrable material in and sealing the opening in said tube, said body being under radially inward compression from substantially the entire cylindrical periphery thereof, said body having a compressive stress value (CSV) of from 8 to 10 calculated on the basis of the formula $CSV = R \times [(D_1 - D_2)/D_1]$ where R is the durometer resiliency on the Shore A scale of the material of said body, D_1 is the diameter of said body prior to insertion into said opening and D_2 is the diameter of said body after insertion into said opening.

3,898,989

HYGENIC SYRINGE UNIT

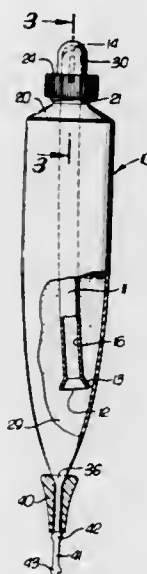
Robert J. Cox, 1653 W. 219th St., Torrance, Calif. 90251

Filed Apr. 29, 1974, Ser. No. 465,373

Int. Cl. A61M 1/00

U.S. Cl. 128-232

10 Claims



1. A self-contained syringe unit for personal hygienic use comprising an elongated flexible walled container sealed at one end and provided at the other end with an annular neck member defining a restricted opening, the container being adapted to contain liquid, an elongated nozzle with an intake end and a major portion of its length disposed within the container and having a forward discharge end portion protruding through the annular neck member, the nozzle being adapted to be slidably extendible from the container and when extended forming with the annular member a substantially liquid tight joint, a cap adapted to enclose the protruding end portion of the nozzle, said cap being removably securable to the annular neck member and for cooperation therewith to form a liquid seal for retaining the contents of the container prior to use, said nozzle having discharge orifices opening radially outwardly, and means within the cap for resiliently engaging the orifices, whereby the nozzle may be extended from the container by pulling on the cap, and when the nozzle is fully extended an additional pull will release the cap from the nozzle, and whereby upon compression of the container liquid contents therein will be conducted through the nozzle for discharge therefrom.

3,898,990

OSTOMY SEAL AND METHOD OF MAKING THE SAME

John L. Nolan, Glenview, Ill., assignor to Hollister Incorporated, Chicago, Ill.

Filed Jan. 31, 1973, Ser. No. 328,324

Int. Cl. A61F 5/44

U.S. Cl. 128-283

2 Claims

1. A seal adapted to be used in combination with an ostomy bag secured to a retainer with said retainer having an opening therein to surround the stoma of an ostomy patient, there being an annular contoured locating element formed around the periphery of said opening, said seal comprising a ring of

gelatinous material, said ring having an annular portion on one face thereof shaped complementary to said annular contoured locating element, a sheet of flexible substantially non-stretchable material covering said face of said ring, a second sheet of flexible substantially non-stretchable material covering the



other face of said ring, said sheets being heat sealed together around the inner and outer peripheries of said ring, and a pull tab having one end free and having its other end heat sealed to said second sheet whereby said second sheet may be removed from the ring by pulling on said tab.

3,898,991

ELECTROSURGICAL APPARATUS AND METHOD OF OPERATING SAME

Yuji Ikuno, and Yutaka Kato, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

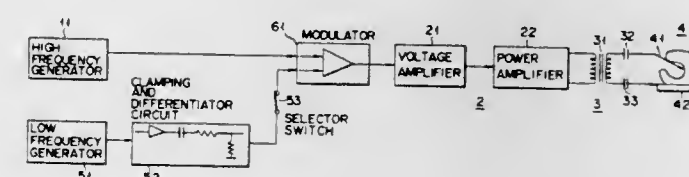
Filed Dec. 13, 1973, Ser. No. 424,433

Claims priority, application Japan, Dec. 20, 1972, 47-127805

Int. Cl. A61B 17/36

U.S. Cl. 128-303.14

11 Claims



1. An electrosurgical apparatus comprising: an electrosurgical knife which includes an active electrode and a fixed electrode; a first oscillator means for generating a high frequency signal to control the knife; a second oscillator means for producing a damped low-frequency signal of lower frequency than said high frequency signal, said second oscillator means comprising a low frequency generator and a clamping and differentiator circuit means coupled to the output thereof to clamp the output signal of the low frequency signal generator at a given value and to differentiate it to produce said damped low frequency signal; a modulator coupled to the output of said first and second oscillator means, the output of said modulator being coupled to said electrosurgical knife; and a selector means having a first condition to cause said modulator to amplitude-modulate said high frequency signal by said damped low frequency signal and having a second condition to cause said modulator to couple said high frequency signal, unmodulated, to said knife.

3,898,992

ULTRASONIC SURGICAL METHODS

Lewis Balamuth, Southampton, N.Y., assignor to Ultrasonic Systems, Inc., Farmingdale, N.Y.

Division of Ser. No. 423,061, Dec. 10, 1973, Pat. No.

3,862,630, which is a division of Ser. No. 179,459, Sept. 10, 1971, Pat. No. 3,794,040, which is a division of Ser. No.

678,649, Oct. 27, 1967, Pat. No. 3,636,943. This application July 8, 1974, Ser. No. 486,401

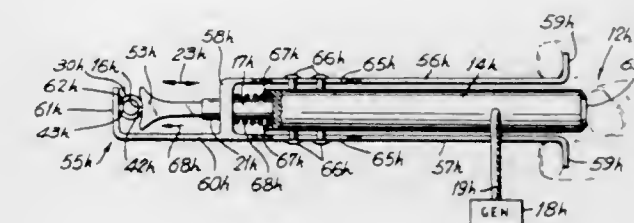
Int. Cl.² A61B 17/04

U.S. Cl. 128-334

8 Claims

3. A hand held instrument for joining together overlapping layers of tissue in vivo, comprising

A. a tool member having a working surface for contact with the surface of one of the layers of tissue to be joined,
B. transducer means operative to vibrate said working surface of the tool member at a high frequency of at least 5,000 cycles per second and low amplitude in directions perpendicular to said working surface,
C. support means having a support surface for contact with the surface of the opposite layer of tissue to be joined, and



D. means for mounting said support means with respect to said transducer means in a manner to permit relative displacement of said working and support surfaces towards and away from each other for engagement with the opposite sides of the overlapped layers of tissue for applying a compressive force thereto, wherein the layers of tissue are joined together by the combined action of the applied compressive force and ultrasonic vibrations.

3,898,993

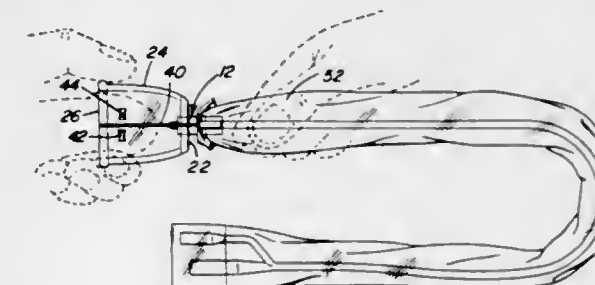
LUBRICATED CATHETERTokuso Taniguchi, 277 Kaiulani St., Hilo, Hawaii 96720
Continuation-in-part of Ser. No. 400,694, Sept. 25, 1973, Pat. No. 3,861,395. This application Sept. 17, 1974, Ser. No.

506,896

Int. Cl.² A61M 25/00, 7/02

U.S. Cl. 128-349 R

10 Claims



1. A catheter assembly for packaging in sterile condition within a removable protective envelope, said assembly including an elongated separable body having a longitudinal passageway formed therethrough open at its opposite ends, a catheter having its distal end telescoped into said passageway from one end thereof at one end of said body for subsequent projection of said catheter from the other end of said passageway, said body being provided with, on one side thereof, a longitudinally extending weakened zone and on the opposite side thereof longitudinally spaced and aligned slots, the connecting portions of said opposite side of said body disposed between adjacent ends of adjacent slots and the latter defining a second weakened zone extending longitudinally of said body, whereby said body may be parted along said weakened zones from about said body, and a tubular lubricant reservoir open at one end and having said one end removably telescoped over said distal end of said catheter and within said other end of said passageway, the other end of said tubular reservoir defining a lubricant receiving area and including means operative to cause displacement of said lubricant from said area toward said one end of said distal end of said catheter.

3,898,994

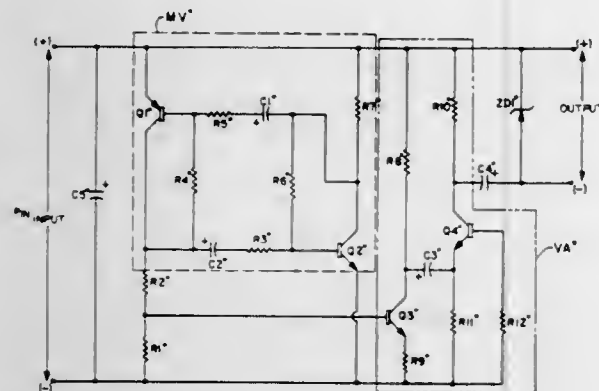
FIXED-RATE PACER CIRCUIT WITH SELF-STARTING CAPABILITY

Steve A. Kolenik, Leechburg, and William L. Johnson, Kittanning, both of Pa., assignors to Arco Nuclear Company, Leechburg, Pa.

Continuation-in-part of Ser. No. 109,857, Jan. 26, 1971, abandoned. This application Jan. 24, 1973, Ser. No. 326,473 Int. Cl. A61n 1/36

U.S. Cl. 128—419 PG

4 Claims



1. A heartpacer apparatus for generating electrical pulses from a constant voltage source for delivery to a pair of electrodes at least one of which is adapted to be connected to a heart to stimulate the heartbeat thereof, comprising:

a pair of transistors of opposite conductivity type, each having an emitter, base, and collector, the emitter of one transistor and the collector of the other transistor being connected to one terminal of said constant voltage source, and the collector of said one transistor and the emitter of said other transistor being connected to another terminal of said constant voltage source.

a pair of first resistance means, each having the same value, each connected between the base and collector of a respective one of said transistors, the value of each of said first resistance means being selected to normally bias the respective transistor to which said first resistance means is connected to a state out of saturation, and

a pair of second resistance means, each having the same value, and a pair of capacitance means, each having the same value, one of said second resistance means and one of said capacitance means being connected in series between the base of one of said transistors and the collector of the other transistor, and another of said second resistance means and another of said capacitance means being connected in series between the base of said other transistor and the collector of said one transistor,

whereby said first and second resistor means and said capacitance means define a multivibrator with said transistors for generating electrical pulses, said first resistance means assuring that the transistors are quiescently unsaturated and that the multivibrator is self-starting, and said second resistor means and said capacitance means controlling the duration of each pulse generated, and, in cooperation with said first resistance means, controlling the period between pulses.

3,898,995

NONCOMPETITIVE PACEMAKER WITH PROGRAMMABLE UNIJUNCTION TRANSISTORS

James Bernard Dresbach, 16885 Muirland, Detroit, Mich. 48221

Filed Mar. 25, 1974, Ser. No. 454,608

Int. Cl. A61n 1/36

U.S. Cl. 128—419 PG

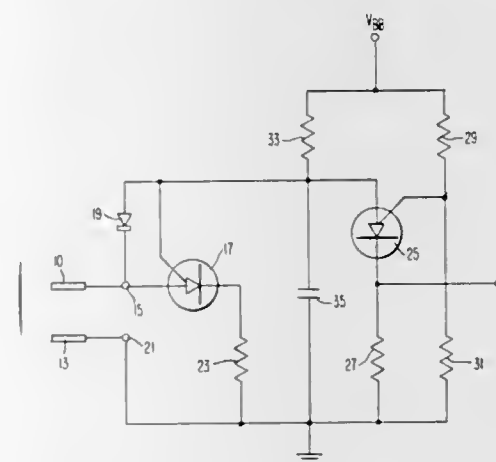
1 Claim

1. A noncompetitive pacemaker including a capacitor for providing stimulation pulses to the heart comprising:

means for charging said capacitor to a potential V; means for receiving signals corresponding to intracardiac activity; said receiving means including a first and second electrode; said first and second electrode being suitable for connection to the heart;

a first

path for discharging said capacitor before said capacitor is charged by said charging means to said potential V; said first path including a first programmable unijunction transistor and a first resistor; said first programmable unijunction transistor having an anode, a cathode and a gate; said anode of said first programmable unijunction transistor being connected to said first electrode; said first resistor and said capacitor forming a series circuit connected between said gate and said cathode of said first programmable transistor; and



a second path for discharging said capacitor when said capacitor is charged by said charging means to said potential V; said second path including a second programmable unijunction transistor and a second resistor, said second programmable unijunction transistor having an anode, a cathode and a gate; said cathode of said second programmable unijunction transistor being connected to said first electrode; said second resistor and said capacitor forming a series circuit connected between said anode and said cathode of said second programmable unijunction transistor; said gate of said second programmable unijunction transistor being coupled to said potential V; said second electrode and said first and second paths having a common connection.

3,898,996

TOBACCO MOISTENING METHOD OPEN CORES

Richard Ernest Gartside Neville, Salisbury, and John Austln Garrett, Andover, both of England, assignors to AMF Incorporated, White Plains, N.Y.

Filed Feb. 1, 1974, Ser. No. 438,922

Claims priority, application United Kingdom, Feb. 8, 1973, 6357/73

Int. Cl. A24B 1/02

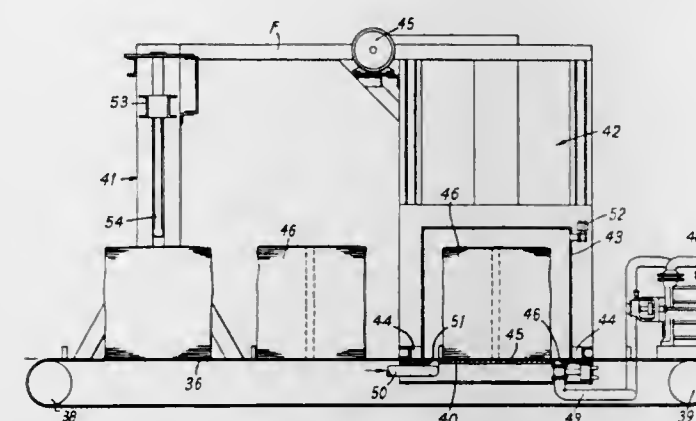
U.S. Cl. 131—136

6 Claims

1. A process for moistening a body of tobacco, comprising the steps of:

- placing the body of tobacco having at least one elongate cavity formed therein by cutting and removing the core, within an enclosed chamber;
- evacuating the chamber;
- thereafter introducing steam into the chamber; and

d. allowing the steam to pass into the tobacco, said tobacco being unsupported at the elongate surface of said cavity,



until the tobacco has received a predetermined quantity of moisture.

3,898,997

CONTROL ARRANGEMENT FOR A DAMPER

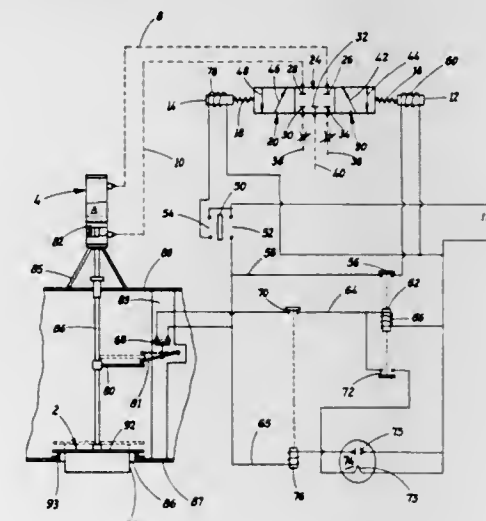
Wilson E. Kelley, Jr., Pleasure Ridge Park, Ky., and Robert Wright, Houston, Tex., assignors to American Air Filter Company, Inc., Louisville, Ky.

Filed Mar. 18, 1974, Ser. No. 452,068

Int. Cl. F16K 31/02

U.S. Cl. 137—624.18

5 Claims



1. A damper control arrangement comprising:

- a housing wall having an orifice therein;
- a damper blade movably positioned selectively between at least one open position and a closed position in relation to said orifice;
- damper blade moving means in communication with said damper blade for moving said damper blade relative to said housing wall;
- actuating means operable to actuate said damper blade moving means for movement of said damper blade from one position to another, said actuating means including control means for said damper blade moving means actuated in response to a first control circuit and a second control circuit wherein (1) said first control circuit includes a normally open switch means closed to a first position, said switch means in said first closed position being in series with two branch circuits in parallel, the first of said branch circuits including a normally closed first contact switch and a first contactor actuating means whereby said first contactor actuating means actuates said actuating means to a first position upon closing said normally open switch, the second of said branches including a normally open limit switch and a first contact relay which operates said normally closed first contact switch, said normally open limit switch being operable in response to selected movement of said damper blade

whereby when said damper blade moves a preselected distance said limit switch is actuated to a closed position thereby energizing said contact relay which opens said normally closed first contact switch, de-actuating said first contactor actuating means which in turn de-actuates said actuating means to its original position; and, (2) said second control circuit includes said normally open switch means closed to a second position and a second contactor actuating means whereby said second contactor actuating means actuates said actuating means to a second position upon closing said normally open switch means.

3,898,998

DEVICE TO COMPENSATE PRESSURE AND LOSSES OF INERT GAS

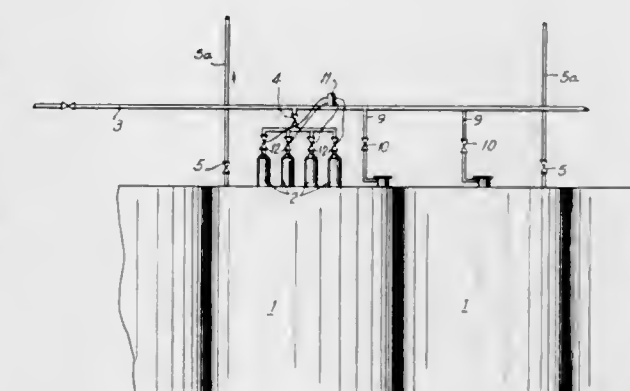
Alfred Billberg, Stockholm, Sweden, assignor to Lisnave-Estaleiros Navais de Lisboa, S.A.R.L., Lisbon, Portugal

Filed June 11, 1974, Ser. No. 478,356

Int. Cl. B65d 87/52

U.S. Cl. 137—113

10 Claims



1. In a system for automatically compensating for losses of inert gas in a tank which contains a combustible liquid beneath the gas, supply pipe means communicating with said tank for supplying an inert gas thereto from a normal source of inert gas, discharge pipe means also communicating with said tank and carrying a vacuum valve means which automatically opens at a given pressure to admit air into said tank during discharge of the liquid contents thereof, an emergency source of inert gas under pressure, pressure detecting means communicating with the interior of said tank for providing a signal when the pressure of the inert gas therein drops to a value just above said given pressure, emergency valve means operatively connected with said emergency source of inert gas under pressure and with said pressure detecting means for responding to said signal to assume an open position releasing inert gas from said emergency source, and pressure regulating valve means situated between said emergency valve means and said tank for controlling the pressure of the gas flowing from said emergency source into said tank in response to said signal from said pressure detecting means, said pressure regulating valve means automatically closing at a pressure slightly below said given pressure while remaining open at a pressure above said given pressure.

3,898,999

VALVE HAVING AXIALLY SEPARABLE MEMBERS

Jordan D. Haller, 2701 W. Alameda Ave., Burbank, Calif. 91505

Division of Ser. No. 307,351, Nov. 17, 1972, Pat. No. 3,839,741. This application July 25, 1974, Ser. No. 491,792

Int. Cl. F16K 15/08; A61F 1/22

U.S. Cl. 137—512.1

11 Claims

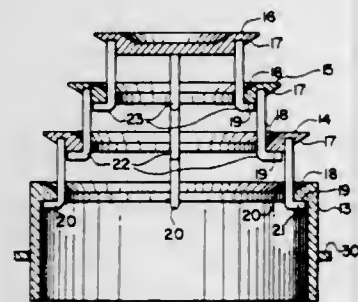
3. A valve comprising:

- an outer ring member adapted to be secured within a passageway,
- a central member and concentric ring members of progressively larger diameter surrounding the central member,

the outermost concentric ring member being surrounded by the said outer ring member, all said members interfitting with each other to close off the passageway in a first end position of axial movement of said members,

said central member and concentric ring members being movable to a second end position with the central member farthest, in an axial direction of fluid flow from the outer ring member and with the concentric ring member staggered axially, largest to smallest, respectively, from the outer ring member to the central member, to open the valve,

thin struts connected to each of the central member and concentric ring members and extending axially upstream from its respective member and operatively engaging the upstream side of a larger diameter member to limit axial



movement of its respective member at the second end position, said struts being of sufficiently small cross-section that they offer minimal resistance to the flow of fluid through the open valve, and said struts being long enough in the axial direction to permit its respective member to be spaced axially in the direction of fluid flow from the downstream end of the next larger member, thus providing between adjacent members an annular, substantially unobstructed opening for fluid flow,

wherein, at said open position, the interior of the valve within the staggered central member and concentric ring members defines a generally frusto-conical space in open communication at its larger base with the upstream side of the valve and in open communication with the downstream side of the valve through substantially unobstructed annular openings between the adjacent, spaced apart members.

3,899,000

LIQUID-VAPOR DISTRIBUTOR

Stanley Ohlswager; Robert R. Edison, both of Olympia Fields, and Thorpe Dresser, Markham, all of Ill., assignors to Atlantic Richfield Company, Philadelphia, Pa.

Filed Sept. 20, 1973, Ser. No. 399,204

Int. Cl. F16I 41/00; F17d 1/00

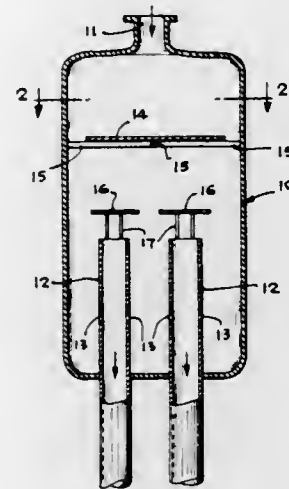
U.S. Cl. 137-561 A

11 Claims

1. A distribution apparatus for distributing a mass of fluid comprising a liquid-vapor mixture into at least two separate streams which comprises:

1. a hollow vessel having at least one fluid inlet means;
2. at least two hollow distributor pipe means each having a top opening located at a first end of said pipe means which extends into said vessel, each of said pipe means providing outlet means from said vessel for a different portion of said fluid, provided that said fluid inlet means is located at a level above said top openings of said pipe means;
3. at least one aperture located in that part of each said pipe means extending to said vessel below said first end of said pipe means to provide fluid communication between the interior of said vessel and the hollow space of said pipe means; and
4. restrictive means located within said hollow vessel at a

level above the top openings of said pipe means to restrict the flow of fluid from said fluid inlet means directly into



the hollow space of said pipe means through the top openings of said pipe means.

3,899,001

MULTI-PATH VALVE STRUCTURE

Myrl E. Orme, Canoga Park, Calif., assignor to The Bendix Corporation, North Hollywood, Calif.

Filed June 6, 1974, Ser. No. 476,969

Int. Cl.² F16K 47/08; F15B 21/04; F15D 1/02

U.S. Cl. 137-625.3

14 Claims



1. A valve comprising a flow path including an opening to said flow path; means for closing said opening in variable degree; and means for dividing the flow through said opening into a plurality of streams comprising a stack of members across said opening having abutting faces including a first group of said members having passageways therethrough arranged in a series of patterns across the width of said members, said patterns including slots admitting flow into said stack only at certain intervals around the edges of said members, a second group of said members wherein a single member of said second group is interposed between two members of said first group, members of said second group having a series of orifices therethrough substantially smaller than said passageways and registering with said passageways, and including a pattern of slots admitting flow to said stack, said slots being radially displaced from the slots in said first group of members, each of said two members having its passageways in registry with the orifices in said single member but offset with respect to each other, and

a third group of said members which are imperforate and which abut against opposite faces of at least some of said first group of members to confine flow to a plurality of generally serpentine paths across said stack, said passageways defining chambers of cross-sectional area substantially exceeding the area of said orifices.

3,899,002

OPEN CENTER, PRESSURE DEMAND FLOW CONTROL VALVE

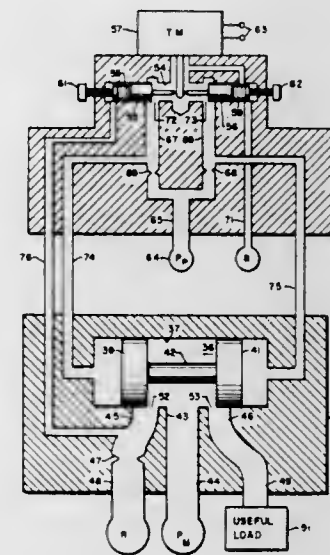
Paul F. Hayner, Gifford, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Oct. 18, 1973, Ser. No. 407,746

Int. Cl. F16k 31/363

U.S. Cl. 137-625.62

24 Claims



1. A valve system comprising, a fluid inlet connection, a fluid outlet connection, a fluid return connection, and apparatus for controlling the flow of fluid among said connections, characterized in that said apparatus comprises means for dividing the flow of fluid through said inlet connection so that one part flows through said return connection while the remainder flows through said outlet connection, said means comprising first and second fluid paths, said first path being connected between said inlet connection and said return connection, said second path being connected between said inlet connection and said outlet connection, said paths being independent of each other except for their common connection to said inlet connection, said first path including a first variable orifice and a flow sensing restrictor serially connected so that fluid may flow from said inlet connection, through said first variable orifice then through said restrictor to said return connection, whereby the pressure drop across said restrictor is the difference between the pressure of said return connection and the pressure upstream of said restrictor, said second path including a second variable orifice, a control system jointly responsive to an input signal and the pressure drop across said flow sensing restrictor for generating a control signal, and means responsive to said control signal for varying the sizes of said first and second variable orifice simultaneously in opposite directions.

3,899,003

FLUID DYNAMIC VALVE WITH DIRECT ELECTROMAGNETIC CONTROL WITH SLIDER-LATCHING DEVICE

Paolo Tirelli, Cinisello Balsamo (Milan), Italy, assignor to Atos Oleodinamica S.p.A., Milan, Italy

Filed May 10, 1974, Ser. No. 468,888

Claims priority, application Italy, Jan. 2, 1974, 19001/74

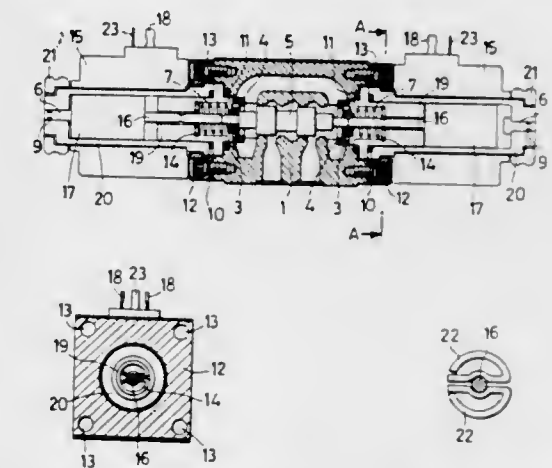
Int. Cl. F16k 31/06

U.S. Cl. 137-625.65

6 Claims

1. An electromagnetic actuated hydraulic valve comprising a valve body having a plurality of channels for the flow of a hydraulic fluid, a slider mounted for sliding movement within said valve body to control the flow of fluid within said channels, electromagnet means mounted on said valve body and including an electric coiling, a cylinder fixedly secured to said body within said coiling, a fixed magnetic counter armature having a coaxial throughbore, a movable magnetic armature slidably guided within said cylinder, a pusher freely extending through said counter armature coaxial with said cylinder

between said movable armature and said slider for transferring motion of said movable armature to said slider, said pusher having the shape of a cylindrical rod with at least one annular groove and being carried by said movable magnetic armature, said magnetic counter armature having in that end thereof remote from said movable armature a cylindrical axial cavity terminating at an inner end in a plane wall disposed normal to said pusher, resilient mechanical latching means at least partially seated in said cavity for permitting the sliding of said slider by said pusher in the axial direction under the action of said movable armature while ensuring the stoppage of said



3,899,004

CYLINDRICAL TUBULAR UNION PROVIDED WITH AN INTEGRAL PRESSING FORMED THREAD FOR THE ENGAGEMENT WITH A SCREW CAP

Mario Farelli, C.50 Giulio Cesare 298, Turin, Italy

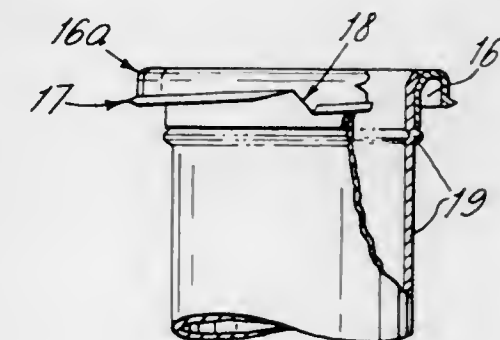
Filed July 16, 1973, Ser. No. 379,797

Claims priority, application Italy, July 26, 1972, 69431/72

Int. Cl.² F16L 55/10

U.S. Cl. 138-89

1 Claim



1. A tubular type union for automotive radiators comprising, a duct branch having one end connected to a radiator, a collar fixedly secured to the other end of said duct branch and adapted to engage a gasketed screw cap having a threaded inner surface, a U-shaped crown formed on said collar for sealingly engaging the gasket of said screw cap, an outwardly extending helicoidal flange disposed on the periphery of the end of the outer leg of said U-shaped crown,

and an interrupted section formed in said helicoidal flange which forms a screw thread adapted for engagement with said threaded inner surface of said cap.

3,899,005

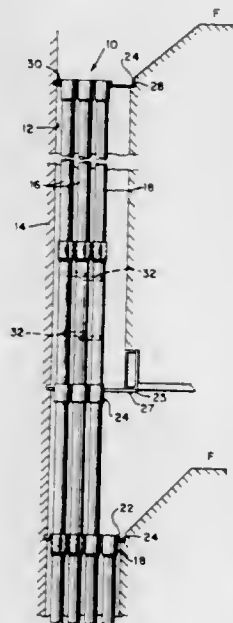
MODULAR DUCT SYSTEM FOR ELONGATED FLEXIBLE MEMBERS SUCH AS TELEPHONE CABLE OR THE LIKE
Fred Kilml, West Orange, N.J., assignor to Fiberglass Resources Corporation, Farmingdale, N.Y.

Filed Aug. 6, 1973, Ser. No. 386,212

Int. Cl.² F16L 3/22

U.S. Cl. 138—106

5 Claims



1. A modular duct system for feeding elongated articles such as telephone cables or the like within a vertical wall and between floors of a multi-story building, said duct system comprising:

- a. a plurality of groups of resin bonded, filament wound glass fiber, tubular conduits with the conduits in each said group being arranged in a side-by-side array that defines a rectangular pattern in a plane transverse the longitudinal axes of said conduits and with said groups of conduits being arranged in a generally end-to-end relationship;
- b. clip means for retaining said conduits of each said group in said array to thereby define a rigid bundle, said clip means comprising a first central plate having two pluralities of back-to-back and side-by-side arcuate segments integral therewith, each of said segments being arranged to engage a portion of the outside surface of one of said conduits;
- c. means for coupling selected ones of said conduits in each said group in end-to-end, colinear relationship whereby the articles may be passed through a plurality of said selected conduits;
- d. external, ring-shaped support means integral with said conduits for supporting said rigid bundles within the vertical wall of the building; and
- e. second plate means having a plurality of apertures there-through for receiving said conduits, said apertures being arranged in the same pattern as said array of conduits, said ring-shaped support means being in engagement with said second plate means whereby, when said second plate means is mounted on an abutment that is part of a building and is supported thereby, said conduits will be disposed along substantially vertical axes.

3,899,006

TUBES PROVIDED WITH CONNECTING FLANGES
Jacques Champlébourg, and Robert Delaux, both of Clermont-Ferrand, France, assignors to Pneumatiques, Caoutchouc Manufacture et Plastiques Kleber-Colombes, France

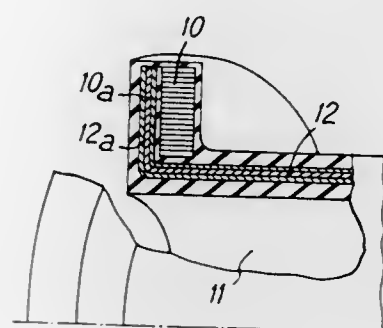
Filed Mar. 29, 1972, Ser. No. 239,193

Claims priority, application France, Mar. 29, 1971, 71.11034

Int. Cl. G01H 1/12

U.S. Cl. 138—109

22 Claims



1. A pipe of rubber or analogous material having a reinforcement means provided therein and coupling flange means constituted by at least one ring means connected to the reinforcement means of the pipe, characterized in that the ring means is constituted by at least one series of concentric windings of a ribbon-like element wound along spirals superposed one upon the other and firmly joined with one another.

3,899,007

INSULATED PIPE ANCHOR ASSEMBLY

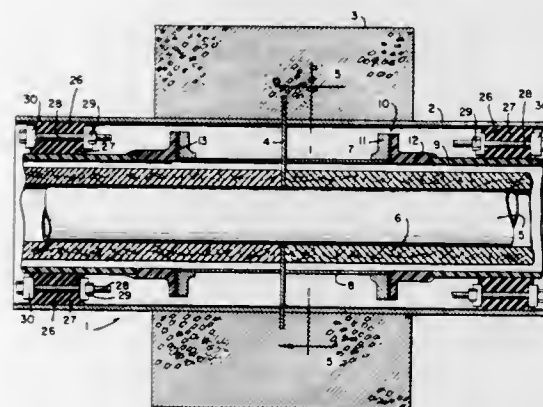
Randall J. Miller, 1051 Woodside Dr., West, Mobile, Ala. 36608

Filed Jan. 30, 1973, Ser. No. 327,906

Int. Cl.² F16L 9/14, 59/16

U.S. Cl. 138—114

3 Claims



1. A pipe anchor assembly comprising:
- a. a central conduit for high temperature fluid;
 - b. an insulating layer surrounding said central conduit;
 - c. radially extending anchor plates emanating from said central conduit and terminating in an outer anchor means at an anchor station;
 - d. a metallic sleeve affixed to said anchor plates surrounding said insulating layer and spaced therefrom to define an annular air space, the terminal ends of said metallic sleeve abutting an insulating gasket;
 - e. an outer metallic conduit;
 - f. metallic flanges connecting said terminal ends of said metallic sleeve and said insulating gasket;
 - g. a discontinuous non-metallic casing adjacent said insulating layer having terminal ends spaced from said insulating gasket; and
 - h. insulating flanges connecting said terminal ends of said non-metallic casing and said insulating gasket.

3,899,008

WEFT CUTTER CONTROL APPARATUS

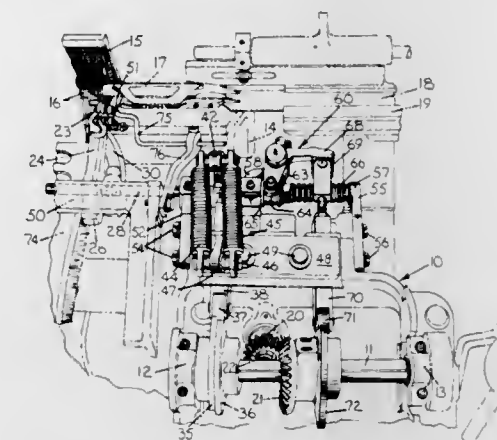
Edward S. Budzyna, E. Douglas, Mass., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed July 10, 1974, Ser. No. 487,005

Int. Cl.² D03D 47/36

U.S. Cl. 139—302

3 Claims



1. In a shuttleless loom in which weft yarn is inserted into the shed formed by warp yarns from a stationary source located outside of the shed and in which after insertion the weft is beat into the fabric fell by the loom reed and then trimmed by a cutter, the combination of improved cutter support means comprising:

- a. movable mounting means defining a longitudinal and rotary movable spring biased rod member for supporting the cutter for movement between an inoperative position outside of the path of travel of the loom reed and an operative position for cutting the weft yarn; and
- b. drive means operably connected to said spring biased rod member and to a source of motive power for moving said spring biased rod member through longitudinal and rotary movements to affect positioning the cutter in said inoperative and in said operative positions alternately.

3,899,009

FUEL NOZZLE VAPOR RETURN ADAPTOR

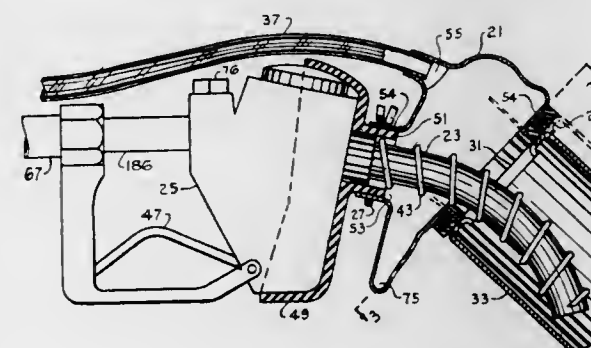
John C. Taylor, 16 Cinnamon Ln., Portuguese Bend, Calif. 90274

Continuation-in-part of Ser. No. 269,826, July 7, 1972, abandoned, which is a continuation-in-part of Ser. No. 256,534, May 24, 1972, abandoned. This application Feb. 1, 1973, Ser. No. 328,885

Int. Cl. B65b 31/06

U.S. Cl. 141—59

10 Claims



1. A vapor return system for collecting vapors associated with a filling operation comprising:
- a fuel delivery system including a holding tank, fuel pumping means connected at one end thereof to said holding tank, and nozzle means connected to the other end of said pumping means adapted for connecting with the inlet of a mobile storage apparatus;

boot means disposed around said nozzle means for sealably abutting said storage apparatus and containing the vapors therein, said boot means including an eccentrically annular magnet, an eccentrically annular ferromagnetic ring attached contiguously to one side of said annular magnet having an opening greater than the opening in said annular magnet, the respective openings in said magnet and ring cooperating to receive the free end of said boot, and a resilient sealing cover attached to the other side of said magnet;

vapor return means connected between said boot means and said holding tank for conducting vapors from said boot means to said tank;

independently powered vapor pumping means included in said vapor return means for providing suction in said vapor return means at said boot means; and

a liquid seal connected between the suction side of said vapor pumping means and said holding tank for providing means for conduction of condensed vapors to said tank while maintaining a pressure differential thereacross substantially corresponding to the pressure differential across said vapor pumping means.

3,899,010

VOLUME CONTROL SYSTEM FOR LIQUID PACKAGING APPARATUS

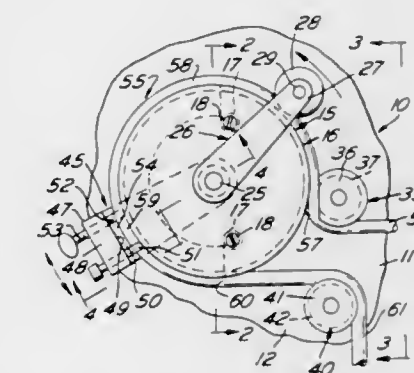
Marvin S. Samson, 3 Locust Grove Rd., and Frederick W. Pfleger, 1152 Barbara Dr., both of Cherry Hill, N.J. 08003

Continuation-in-part of Ser. No. 287,988, Sept. 11, 1972, Pat. No. 3,807,131. This application Dec. 7, 1973, Ser. No. 422,678

Int. Cl.² B65B 3/26; F04B 43/08, 43/12

U.S. Cl. 141—250

8 Claims



1. Liquid packaging apparatus comprising support means, a tubing carrier on said support means, generally planar track means extending along said carrier, resilient flexible tubing having an intermediate region extending along and in the plane of said track means, the remainder of said tubing being out of said track means plane, tubing guide means for varying the length of said intermediate tubing region in said plane along said track means, one end of said tubing extending to fluid communication with a source of fluid to be packaged and the other end of said tubing extending to fluid communication with a packaging container, and roller means mounted for movement in the plane of and along said track means in rolling engagement with said intermediate region of tubing to displace a quantity of liquid to the container.

3,899,011

DISC DISPENSER

Alan C. Curtiss, Old Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 281,946, Aug. 18, 1972, Pat. No. 3,832,532. This application Aug. 9, 1974, Ser. No. 496,287

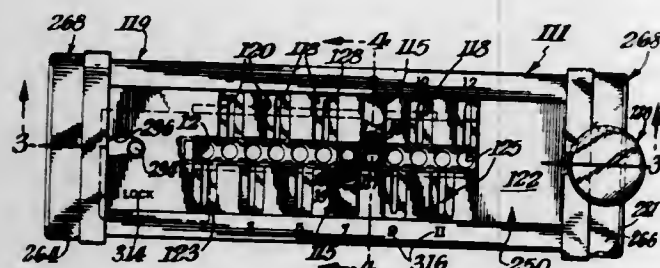
Int. Cl. B65b 1/04, 3/04

U.S. Cl. 141—325

21 Claims

1. A disc dispenser for dispensing discs from cartridges to a compartmented container having an array of compartments

having top openings for insertion of said discs, said dispenser comprising a base fixture, a dispensing table mechanism mounted upon said base fixture, said dispensing table mechanism having an array of upper and lower holes offset a predetermined distance from each other, cartridge-supporting means disposed on said dispensing table mechanism for holding said cartridges above said upper holes for successively dispensing discs into them, an apertured dispensing plate means mounted in said dispensing table mechanism for sliding movement from alignment with said upper holes to alignment with said lower holes, drive means connected to said dispens-



ing table mechanism for moving said dispensing plate means from one said alignment to the other whereby discs received from said upper holes are carried and dropped into said lower holes, a compartmented container-receiving chamber disposed under said dispensing table mechanism and within said base fixture for holding said compartmented container with its apertures aligned with said lower holes to cause said discs dispensed through said lower holes to drop into said compartments in said container, and auxiliary apertures in said dispensing table mechanism substantially aligned with said lower holes to permit visual verification of dispensed discs and to facilitate clearing discs which may jam in said lower holes.

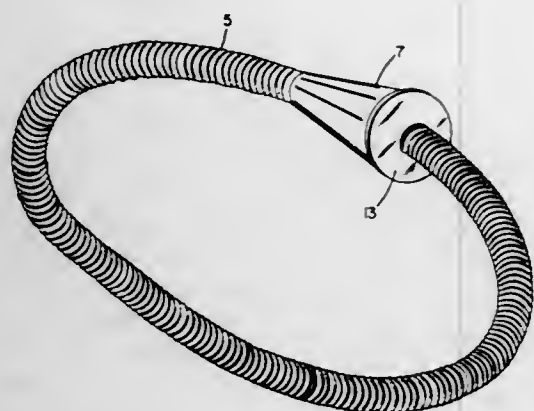
3,899,012

STAY CLEAN FUNNEL

Kenneth E. Sather, 3325 Trevis Way, Carmel, Calif. 93921
Continuation-in-part of Ser. No. 396,876, Sept. 13, 1973,
abandoned. This application Jan. 21, 1974, Ser. No. 435,250
Int. Cl. B65b 39/00

U.S. Cl. 141—331

6 Claims



1. A stay clean, no drip funnel comprising in combination:
A. an enlarged mouth end portion and a smaller tail end portion;

- B. an elongated flexible tubular member forming a continuation of the tail end portion, said elongated member having a terminal end suitable for insertion in an orifice;
C. a cap having a central opening therein to permit mounting on the elongated flexible tubular member;
D. said cap adapted to snap over the large mouth end portion of the funnel;
E. said cap being mounted on said flexible member near said terminal end whereby said terminal end is free and extends beyond said cap for a sufficient distance to permit the same to be inserted in said orifice; and,
F. said terminal end can be inserted in the enlarged mouth end portion to provide a closed structure.

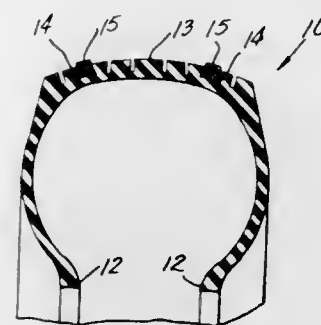
3,899,013

SAFETY TIRE TREAD INSERT

Henry E. Kruse, 23 Powder Horn Dr., Wayne, N.J. 07470
Filed June 8, 1973, Ser. No. 368,179
Int. Cl.² B60C 11/02, 11/14

U.S. Cl. 152—208

2 Claims



1. A combination pneumatic tire and insert tread element comprising a pneumatic tire casing having a tire tread formed thereon, a circumferential groove formed in said tire tread and having a transverse cross-section with the inner portion of said groove wider than the outer portion thereof, a rubber tread ring seated in said groove and having a crosssectional shape to lockingly fit said groove with the outer surface of the ring protruding outwardly from the tire, said ring being formed of tread rubber having a mineral abrasive material uniformly distributed therethrough, so as to present its outer surface as a continuous, ring-like, ground engaging, abrasive friction surface having substantial breadth, said rubber ring being split with the opposite ends thereof provided with enlarged heads, and the groove in said tire being provided with complementary shaped recesses locking with said enlarged heads.

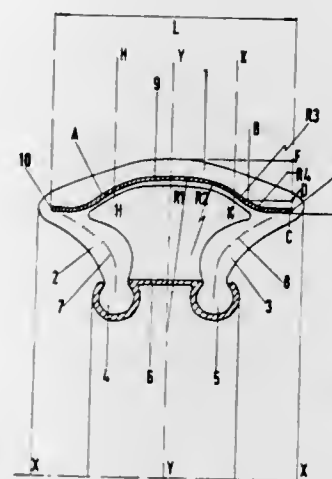
3,899,014

PNEUMATIC TIRE

Edoardo Robecchi, and Giuseppe Tavazza, both of Milan, Italy, assignors to Industrie Pirelli S.p.A., Milan, Italy
Filed Feb. 12, 1974, Ser. No. 441,769
Claims priority, application Italy, Feb. 22, 1973, 20684/73
Int. Cl. B60c 13/00, 9/18, 17/00

U.S. Cl. 152—353 C

6 Claims



1. A pneumatic tire for vehicles comprising a tread, an annular reinforcing structure incorporated in said tread, two sidewalls comprising elastomeric material and terminating into beads intended to be encased in appropriate seats in the wheel rim, said sidewalls having in those sections of each plane containing the axis of rotation of the tire, a section midline whose convexity is directed towards the tire inside, said convexity being unchanged in sense under the thrust of tire inflation pressure, said annular reinforcing structure being substantially inextensible and defining contours, in proximity of the lateral edges of said tread, whose points are at a substantially

invariable distance, with respect to pressure variations, from the points defined by said beads in the same section planes, characterized in that said annular reinforcing structure, in the sections of each plane containing said axis of rotation, when the tire is inflated at its service pressure, has a profile whose curvature has its own concavity, at the structure's central portion, directed radially inwardly of the tire, while the concavity of the profile at the structure's lateral portions is directed radially outwardly of the tire.

3,899,015

PNEUMATIC TIRES

Karl Gebert, Klein-Auheim, and Otto Schmitt, Niedergrundau, both of Germany, assignors to Dunlop Limited, London, England

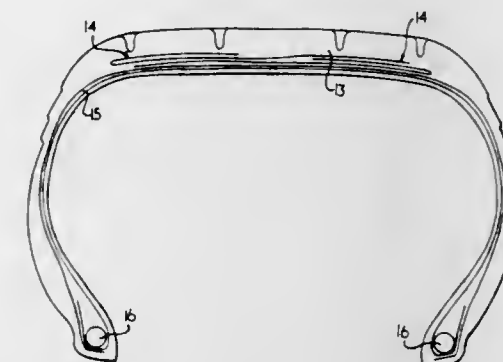
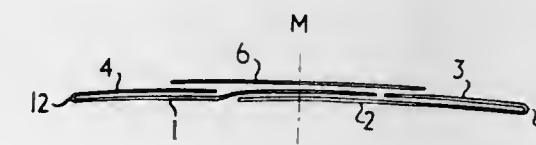
Filed June 12, 1973, Ser. No. 369,278

Claims priority, application Germany, June 19, 1972, 2229888

Int. Cl.² B60C 9/18

U.S. Cl. 152—361 FP

8 Claims



1. A pneumatic tire comprising a tread and carcass and, beneath the tread, a belt of substantially inextensible threads consisting of several at least partially superimposed plies, two of which are folded over to form folded edges one on either side of the center of the belt in which the first ply extends from a predetermined first outer peripheral line of the tire over the tire center to the opposite shoulder region, is there folded radially outwardly back upon itself and is conducted as far as a first inner peripheral line of the tire and the second ply has the same width as the first ply and extends from a second outer tire peripheral line, which lies symmetrically with the first outer peripheral line relative to the tire center, over the tire center to the opposite shoulder region, is there folded radially outwardly back upon itself and is conducted as far as a second inner peripheral line of the tire, which lies symmetrically with the first inner peripheral line of the tire relative to the tire center, the width of said two plies of the belt being selected so that on each side of the center of the belt the outer and inner peripheral lines substantially coincide, and the width of each of the folded-over portions of said two plies of the belt is greater than the width of the overlapping region between said inner peripheral lines.

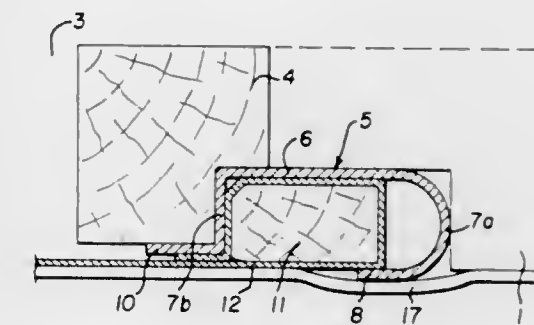
3,899,016

DOORWAY SEALING DEVICE

Maynard Martin Bakken, 14-Chisholm Cres. N.W., Calgary 48, Alberta, Canada
Continuation of Ser. No. 223,230, Feb. 3, 1972, abandoned.
This application Dec. 11, 1973, Ser. No. 423,776
Int. Cl.² E06B 5/00; B61D 45/00

U.S. Cl. 160—368 G

1 Claim



1. In a bulk transporting container for particulate commodities having a wall with a doorway therein, a disposable, interior sealing means for the doorway comprising:

- an elongated channel disposed coextensively adjacent said doorway and inside said container, said channel opening toward the interior of said container and including an end wall connected to the wall of said container, a first side wall displaced from said doorway, rigidly and coextensively connected to said end wall, a second side wall intermediate said doorway and said first side wall, rigidly, coextensively, and orthogonally connected to said end wall, and a lateral flange rigidly connected to said first side wall and extending toward said second side wall to restrict the width of the opening of said channel;
- at least one locking member snappingly and removably held within said channel by said end wall, said second side wall, and the interior surface of said lateral flange, said locking member being removable from within said channel without damaging said channel and said locking member further remaining out of contact with said first end wall;
- a plurality of flexible tension members extending across said doorway and rigidly secured to said at least one locking member, each tension member being of a length and composition which prevents deflection of a tension member sufficient for said tension member to contact the outer doors of said container if said tension member is subjected to pressure from within said container by said commodity; and
- a diaphragm extending over the inside of said at least one locking member and said flexible tension members and covering said doorway to seal said doorway.

3,899,017

APPARATUS AND METHOD FOR ELECTROSLAG REMELTING

Edward Francis Beverley Croft, Sutton Coldfield, England, assignor to Associated Electrical Industries Limited, London, England

Filed Aug. 24, 1973, Ser. No. 391,318

Claims priority, application United Kingdom, Aug. 25, 1972, 39717/72

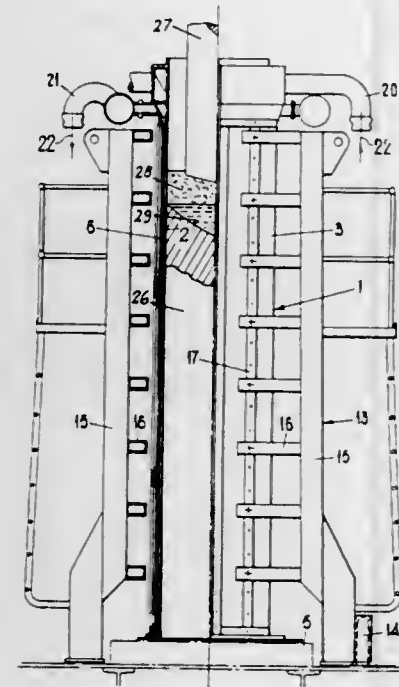
Int. Cl. B22d 27/02

U.S. Cl. 164—52

28 Claims

1. A method of producing an ingot comprising the steps of:
a. providing an electroslag mould having a horizontal cross-section bounded by substantially straight side walls or side walls curved to a radius of not less than 600 mm., the said walls being relatively thin and reinforced by a multiplicity of vertically extending ribs disposed at spaced positions around the mould walls, each rib being secured to the outer surface of a mould wall throughout the length of the rib, and the

mould walls being surrounded by a rigid support structure which is spaced from the mould walls and secured to the ribs at spaced positions along their lengths such that thermal expansion of the mould walls is constrained to take place in local bowing between adjacent ribs;



- b. forming the ingot in the mould by the electrosag melting of at least one consumable electrode depending into a slag pool contained in the mould;
- c. cooling the outer surfaces of the mould walls while the ingot is being formed; and
- d. thereafter removing the ingot from the mould.

3,899,018

METHOD OF CASTING STEEL INTO A CONTINUOUS CASTING MOLD AND POURING TUBE FOR THE PERFORMANCE OF THE AFORESAID METHOD

Peter J. Koenig, Zumikon, Switzerland, assignor to Concast AG, Zurich, Switzerland

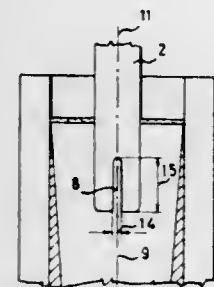
Filed Apr. 6, 1973, Ser. No. 348,850

Claims priority, application Switzerland, Apr. 14, 1972, 5554/72

Int. Cl.² B22D 11/10

U.S. Cl. 164—82

6 Claims



1. A pouring tube for pouring steel into a continuous casting mold to form a cast strand, said pouring tube having at least one outlet means capable of opening into the liquid metal pool of the mold for introducing liquid metal into the mold in the form of a thin, coherent pattern, said outlet means having the shape of a downwardly and laterally opening slot of constant width, the width of the slot not exceeding 25 millimeters and the length of the slot being about seven to nine times the slot width.

3,899,019

THREE-POSITION MOLDING MACHINE

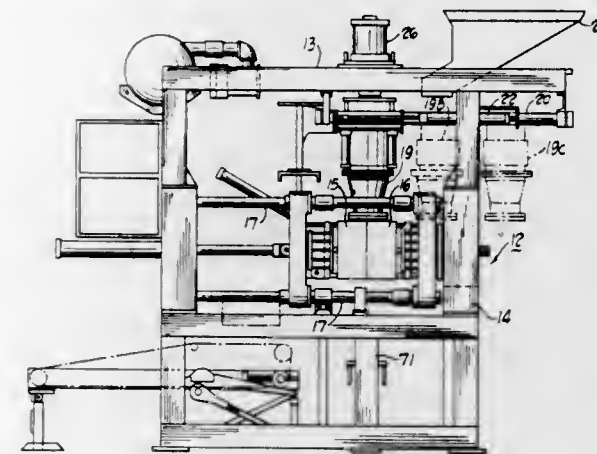
Bengt I. Langne, Kewanee, Ill., assignor to Acme-Cleveland Corporation, Cleveland, Ohio

Filed June 9, 1972, Ser. No. 261,434

Int. Cl. B22c 15/24

U.S. Cl. 164—201

12 Claims



1. A molding machine, comprising in combination, a frame, mold box means having a fill position, guide means on said frame having a horizontal component, a chamber mounted on said guide means for movement between first, second and third positions, means to supply mold material into said chamber with the chamber in said second position thereof, means to transfer a charge of mold material from said chamber into said mold box means at said fill position with said chamber in said first position thereof, and means to move said chamber among said three positions including fluid piston and cylinder means having extended and retracted relative conditions with one being a first condition and the other being a second condition, means to secure one end of said piston and cylinder means to act on the frame of the machine, means to fasten the other end of said piston and cylinder means to act on said chamber, fluid pressure means, control means controlling application of fluid pressure to said piston and cylinder means to relatively move same from the first to the second condition to move said chamber from the first to the second position, means to change the securing of said one end of the piston and cylinder means to a different position relative to said machine frame, and said control means being actuatable to relatively move the piston and cylinder means to move said chamber from said second to said third position.

3,899,020

METAL CASTING MOLD FOR CENTRIFUGAL CASTING MACHINE

Yasuhiro Sekimoto, and Yoshitada Miura, both of Kitakyushu, Japan, assignors to Hitachi Metals, Ltd., Japan

Filed Aug. 9, 1972, Ser. No. 279,654

Claims priority, application Japan, Aug. 11, 1971, 46-60321

Int. Cl. B22d 13/00

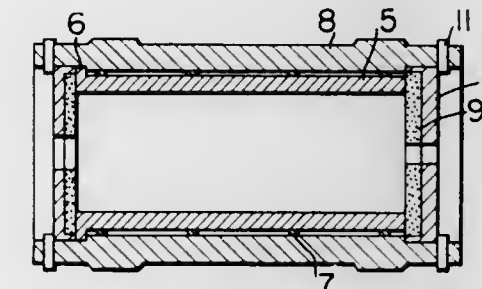
U.S. Cl. 164—286

5 Claims

1. A metal mold assembly of double wall construction adapted to be used for centrifugal casting comprising: an inner metal mold member, an outer metal mold member concentrically provided around said inner metal mold member, said outer and inner metal mold members being concentrically spaced from one another at a dimension for minimizing the total tensile and thermal stresses in said inner and outer metal mold members, wherein said dimension is not less than about 0.13 percent of the outer diameter of said inner

metal mold member, and said outer and inner metal mold members being mounted with respect to each other for rotation about an axis concentric to said outer and inner members,

- a plurality of plastically deformable spacing members spaced apart from each other and inserted between said inner metal mold member and said outer metal mold member for reducing vibration of said metal mold during casting operations and simultaneously for permitting



radial thermal expansion of said inner metal mold member free of distortion, and

- a pair of end covers provided in contact only at opposite axial ends of said outer metal mold member, each of said end covers having on the inner face thereof a sand mold in direct contact with the opposing axial end of said inner metal mold member, said inner metal mold member being entirely prevented at one axial end from direct contact with said end covers so that axial expansion of said inner metal mold member is absorbed only by said sand mold.

3,899,021

MACHINE FOR CASTING METALS UNDER GAS PRESSURE

Alexander Damyanov Alexandrov; Todor Kostov Trifonov; Stefan Ivanov Stefanov; Paskal Spasov Apostolov, and Mincho Borislavov Deshev, all of Plaven, Bulgaria, assignors to Nipki "Leyarska Technika", Pleven, Bulgaria

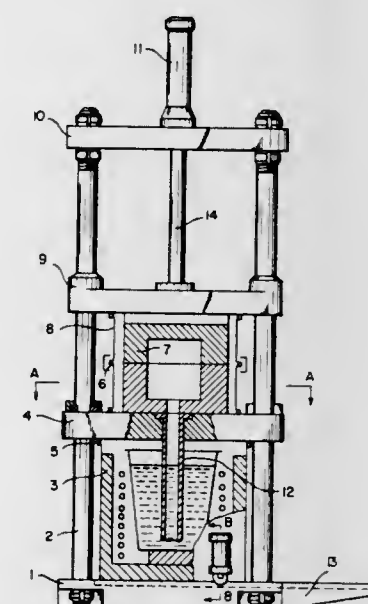
Filed Sept. 1, 1972, Ser. No. 285,661

Claims priority, application Bulgaria, Sept. 2, 1971, 18483

Int. Cl. B22d 17/06

U.S. Cl. 164—306

3 Claims



1. An apparatus for casting metal comprising:
 - a. pressurized reservoir means for a melt;
 - b. intermediate plate means positioned above said reservoir means, said intermediate plate means including a metal duct means extending into said reservoir means;
 - c. mould means positioned above said intermediate plate means, wherein said metal in said reservoir means passes into said mould means through said metal duct means;

- d. column means having slot means therein;
- e. movable plate means positioned above said mould means in a mould sealing relationship with said intermediate plate means, and locking means comprising guides fixed to said intermediate plate means and wedge means mounted on said column means, said wedge means being forced between said intermediate plate means, said slot means and said guides;
- f. transfer cylinder means for holding said reservoir means, intermediate plate means, mould means, and movable plate means in the sealing relationship against the pressure in said reservoir means such that the pressure forces said melt into said mould means; and,
- g. column means for supporting said intermediate plate means, said movable plate means, and said transfer cylinder means, said transfer cylinder means comprising a top plate fixed to said column means, a cylinder fixed to said top plate, and piston means extending from said cylinder and coupled to said movable plate means, said intermediate plate means and said movable plate means being movable on said column means.

3,899,022

METHOD AND PLANT FOR REGULATING TEMPERATURE BY MEANS OF A SUBTEMPERED AIR FLOW

Sixten Ismael Persson, Stockholm, Sweden, assignor to Luft-konditionering AB, Stockholm, Sweden

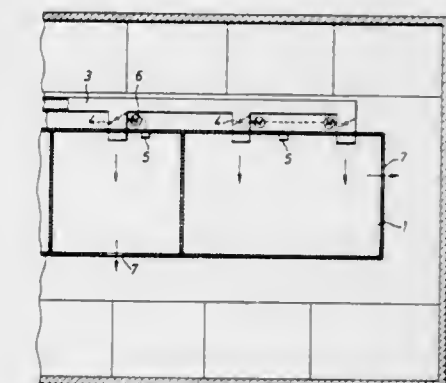
Filed May 7, 1973, Ser. No. 357,741

Claims priority, application Sweden, May 9, 1972, 6092/72; Jan. 26, 1973, 7301146

Int. Cl. F24f 3/00

U.S. Cl. 165—22

2 Claims



1. In the known combination of a system for regulating the temperature in a room that has at least one inlet duct for the introduction of tempered air, a damper in at least one inlet duct, said damper being designed to regulate the quantity of tempered air introduced into said room, the improvement which comprises:

- a. each damper being mounted in the air duct with which it is associated so that the damper can only be disposed in two positions, said two positions consisting of a maximum air flow position and a minimum air flow position,
- b. motor means operatively associated with each damper for moving said damper back and forth between said maximum air flow position and said minimum air flow position, and
- c. temperature sensing means operatively connected to said motor means in such a way that a predetermined change in temperature of the air at a point downstream of the point where the air inlet duct enters the room will cause said motor means to move said damper to the other of its only two positions, and thus changing the flow rate of tempered air into the room.

3,899,023

EQUIPMENT FOR DRYING GAS, IN PARTICULAR AIR, BY REFRIGERATION

Bernd Zander, Kettwig; Bernd Borggräfe, Hemsbach, and Horst Wortmann, Frondenberg-Ardey, all of Germany, assignors to VIA Gesellschaft für Verfahrenstechnik, Düsseldorf, Germany

Filed June 21, 1973, Ser. No. 372,333

Claims priority, application Germany, July 1, 1972, 2232386

Int. Cl. F28b 1/00; F28f 9/26

U.S. Cl. 165—111

4 Claims



1. In an apparatus for drying gas, in particular air, by refrigeration, including a gas/gas heat exchange and a gas/refrigerant heat exchanger, said exchangers extending with their longitudinal axes in a vertical direction, a heat exchanger insert for at least said gas/refrigerant exchanger, said heat exchanger insert comprising a plurality of cooling coil elements being connected in parallel and combined into a closed package and having a plurality of cooling coil sections being bent in their longitudinal direction backwards and forwards in an S-like configuration and extending in a horizontal direction substantially in parallel, said sections further alternating with regard to the cross-section of a cooling coil element in a zig-zag manner between a first and a second plane, adjacent cooling coil elements meshing with each other so that immediately neighboring sections of adjacent cooling coil elements provide for a mutual support.

3,899,024

AUXILIARY OIL WELL TUBING SHUT-OFF ASSEMBLY

Gerald J. Tonnelli, Long Beach; Karol E. Epiling, Fountain Valley, and James R. Ahrens, Long Beach, all of Calif., assignors to Production Data Inc., Long Beach, Calif.

Filed Jan. 10, 1975, Ser. No. 539,941

Int. Cl. E21B 33/03, 33/12

U.S. Cl. 166—72

8 Claims

1. In combination with a pressurized oil well tubing string that extends upwardly through a bore hole to communicate with a valve having a first fluid discharge end, an auxiliary tubing string shut-off device that permits said valve to be removed from said tubing string for repair or replacement, or repaired while in communication with said tubing string free of fluid pressure, said device including:

- a. a fluid shut off assembly that includes a tubular body having an engageable upper portion, an intermediate portion that defines a body shoulder, a tube depending from said intermediate portion; a resilient ring shaped packer that encircles the part of said dependent tube most adjacent said body shoulder; a finger defining cylindrical shell having first and second ends, said first end of said shell in contact with said packer; a nut secured to said second end of said shell; a rod that extends longitudinally through said body and shell, said rod having threads defined thereon that engage said nut; a head secured to the end of said rod most adjacent said engageable upper portion; first means for maintaining said head at a fixed longitudinal position relative to said body as said head and rod are rotated; and second means that prevent rota-

tion of said shell relative to said body but permits longitudinal movement of said shell towards and away from said body as said rod is rotated by said head in opposite directions, said fluid shut-off assembly of such transverse cross section as to be movable into and out of said tubing string through said valve when the latter is in an open position;

- b. a first tube having first and second end portions, said second end portion removably securable to said fluid discharge end of said valve;
- c. a second tube longitudinally slidable and rotatable in said first tube said second tube having first, and second ends;
- d. a socket supporting rod rotatably disposed in said second tube, said rod having a first end portion that projects from said first end of said second tube;
- e. third means for rotating said first end of said socket supporting rod;



- f. engaging means on said second end of said second tube that removably engage said engageable upper portion to removably support said fluid shut off assembly from said second tube; and
- g. power means for forcing said fluid shut off assembly, second tube, socket supporting rod downwardly through said valve into said tubing string against the fluid pressure in the latter, with said socket supporting rod being rotated when said shut-off assembly is disposed in said tubing string and said socket is in engagement with said head in a direction to so rotate said rod connected to said head relative to said nut that said finger defining shell moves towards said body shoulder to radially expand said packer with the interior surface of said tubing string, said second tube thereafter being rotated in a direction to separate said engaging means from said engageable portion of said body to permit said second tube and socket supporting rod to be drawn upwardly into said second tube, said second tube thereafter being separated from said valve to permit the latter to be replaced or repaired, said valve after being replaced or repaired having said first tube connected thereto, said second tube and socket supporting rod thereafter being lowered relative to said tubing string to a position where said engaging means engage said engageable portion of said body and said socket engages said head, said socket supporting rod then being rotated in a direction that said nut engaging rod rotates and longitudinally separates said shell and body to the extent that said resilient packer contracts out of sealing engagement with the interior of said tubing string, said second tube, socket supporting rod and shut-off assembly being moved upwardly to dispose said shut-off assembly in said second tube, said valve now placed in a closed position, and said second tube and the balance of the elements comprising said shut-off device separated from said valve.

3,899,025

PUMP DOWN SYSTEM FOR PLACING AND RETRIEVING SUBSURFACE WELL EQUIPMENT

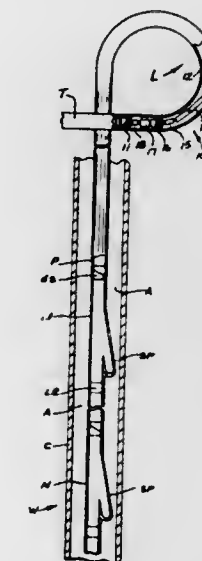
Robert W. Dinning, Houston, Tex., assignor to Macco Oil Tool Company, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 243,380, April 4, 1972, Pat. No. 3,799,259. This application Oct. 6, 1972, Ser. No. 295,684

Int. Cl. E21b 7/06

U.S. Cl. 166—117.5

22 Claims



1. A segmented assembly for handling well equipment of the type which is movable through a tubing string for longitudinal engagement with a side pocket recess of a side pocket mandrel comprising:

- a. pressure actuated drive means connected with said assembly for driving said assembly through said tubing string in response to pressure applied to said drive means;
- b. well equipment handling means connected in said assembly for handling and holding said well equipment;
- c. position responsive stopping means in said assembly for automatically stopping said assembly at a predetermined location relative to a selected side pocket recess;
- d. orienting means in said assembly for circumferentially orienting said assembly at a predetermined position relative to said side pocket recess; and
- e. flexible joint means connecting one end of said handling means to said stopping means and the other end of said handling means to said orienting means whereby said assembly may flex to move through curved sections of said tubing string.

3,899,026

USE OF THERMAL INSULATING FLUIDS IN WELLS

John D. Culter, Asheville, N.C., assignor to Continental Oil Company, Ponca City, Okla.

Filed Mar. 27, 1974, Ser. No. 455,446

Int. Cl. E21B 43/00, 43/24

U.S. Cl. 166—302

3 Claims

1. A method of thermally insulating an annular space between the borehole of a well and a conduit therein comprising providing in said annular space a suspension comprised of ultra finely divided silica having a particle size of less than 0.1 micron in an oil having low thermal conductivity, said silica being present in an amount of from 0.15 to 1.0 pounds per gallon.

3,899,027

METHOD OF CLEANING AND STIMULATING A WATER WELL

Jerold D. Jenkins, 404 Mills, Dumas, Tex. 79029

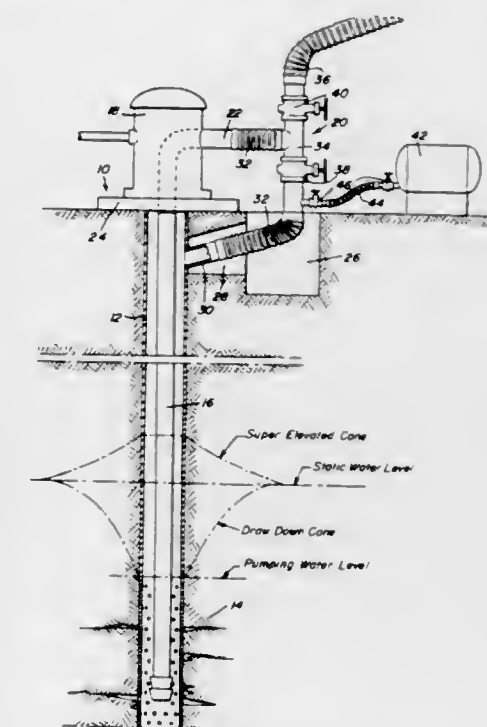
Continuation of Ser. No. 47,832, June 19, 1970, abandoned.

This application Apr. 19, 1974, Ser. No. 463,044

Int. Cl. E21b 43/00, 43/27

U.S. Cl. 166—302

6 Claims



1. The method of cleaning and stimulating a water well of the type including an outer casing extending downwardly into an aquifer and perforated at the level of the aquifer and with the well casing being closed at its upper end by a support pad and having a central discharge tubing extending downwardly through the pad and the casing to at least the perforated area of the casing with the outer surface of the tubing spaced from the inner surfaces of the casing, said method including the steps of digging a pit downwardly alongside the pad to a level therebelow and tunneling inwardly to the casing at a point adjacent but below said pad, forming an opening in said casing at the inner end of the tunnel formed, establishing a recycling line extending from the upper discharge end of said tubing above said pad to said opening and with the recycling line in sealed communication at its opposite ends with said tubing and the portions of said casing disposed about said opening, causing water to be pumped upwardly through said tubing from the lower end thereof, through said recycling line and to be freely discharged into said casing through said opening for free falling downwardly through said casing exteriorly of said tubing and impact with the water standing in said casing in said aquifer about said tubing and thereby generate energy waves in the water within the casing and aquifer to greatly enhance the cleaning action and selectively introducing cleaning chemicals into the recycling water.

3,899,028

ANGULAR POSITION SENSING AND CONTROL SYSTEM, APPARATUS AND METHOD

Harold D. Morris, and Frederick J. Sigworth, both of Orinda, Calif., assignors to Systron Donner Corporation, Concord, Calif.

Continuation-in-part of Ser. No. 239,660, March 30, 1972, abandoned. This application Aug. 28, 1973, Ser. No. 392,257

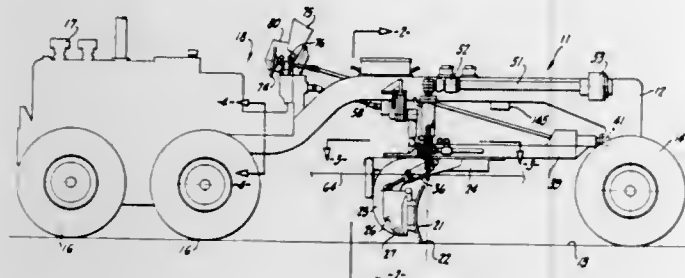
Int. Cl. E02f 3/76

U.S. Cl. 172—4.5

50 Claims

1. In an angular position sensor and attitude control system for controlling the tilting movement relative to a local horizontal reference of one part of a machine having a framework when the framework of the machine shifts its position relative to the reference as the machine moves relative to a surface,

means carried on the machine for supplying an input reference command for control of movement of said one part, means mounted on the machine for receiving the input command, sensing means carried by said one part to sense the tilting movement of said part, said sensing means including a linear accelerometer having its sensitive axis at right angles to the axis of the tilting movement and an angular accelerometer with its sensitive axis parallel to the axis for tilting movement,



means mounted on the machine for combining the outputs from the linear and angular accelerometers and comparing the combined outputs with the input command at said means for receiving the input command to supply an error signal therefrom, means mounted on the machine for receiving the error signal for and means carried on the framework driven by said mechanical force which causes tilting movement of said one part in accordance with the error signal.

3,899,029

ROTARY HARROWS

Ary Van Der Lely, 10, Weverskade, Maasland, and Cornelis Johannes Gerardus Bom, 36, Esdoornlaan, Rozenburg, both of Netherlands

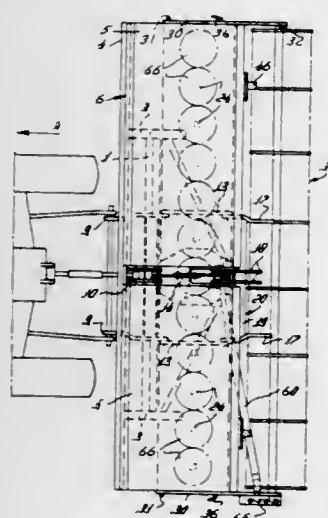
Filed May 3, 1973, Ser. No. 356,840

Claims priority, application Netherlands, May 8, 1972, 7206172

Int. Cl. A01b 33/00

U.S. Cl. 172-50

17 Claims



1. A rotary harrow comprising frame means including a forward coupling frame and a transverse frame portion supporting a plurality of tines soil working members, drive means connected to said soil working members to rotate same about upwardly extending axes, said transverse frame portion being interconnected to linkage means and the latter including said forward coupling frame, said frame portion being pivotally coupled to said forward coupling frame and vertically displaceable relative to said coupling frame, the rear of said linkage means being affixed to said frame portion, a soil contacting supporting member located to the rear of said frame portion and said supporting member being adjustably fastened to said frame portion, said frame portion together with said supporting member being vertically displaceable to match

ground undulations independently of said forward coupling frame.

3,899,030

SOIL COMPRESSING MEMBERS

Ary van der Lely, 10, Weverskade, Maasland, and Cornelis Johannes Gerardus Bom, 36, Esdoornlaan, Rozenburg, both of Netherlands

Continuation of Ser. No. 208,698, Dec. 16, 1971, abandoned.

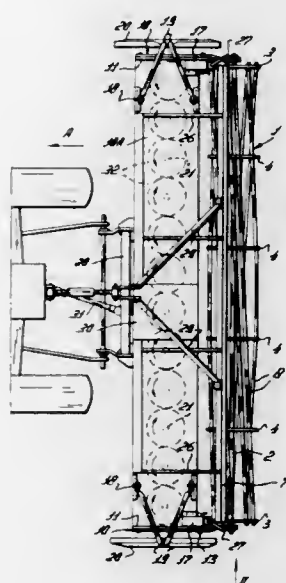
This application Sept. 4, 1973, Ser. No. 394,279

Claims priority, application Netherlands, Dec. 18, 1970, 7018468

Int. Cl. A01b 9/00, 33/16

U.S. Cl. 172-68

11 Claims



1. An agricultural implement comprising a rotary harrow with a frame supporting a plurality of side-by-side rotatable soil-working members, said soil-working members being rotatable about upwardly extending axes and having downwardly extending tines, a supporting roller connected to said frame, said roller being rotatable about a substantially horizontal axis that extends transverse to the direction of travel at the rear of said soil-working members, said roller including spaced apart supports and a plurality of elongated elements helically wound around said supports and said axis of rotation, the lengths of said elements extending at substantially equal distances from said axis, said supports having aperture means around their outer peripheries that receive said elements and said elements comprising the outer soil contacting surface of said roller, the diameter of said roller being substantially equal to the distance between the upwardly extending axes of adjacent soil-working members, said supports including an outer support at each end of the roller and a plurality of further intermediate supports, each elongated element having opposite ends connected to the outer supports and said ends being positionable to subtend an angle that is substantially twice the angle subtended by the ends of successive elements on each outer support, said angle being measured with respect to said axis of rotation of the roller when said roller is seen in side elevation, said roller being connected to the harrow through arm means to support same and control the working depths of said soil-working members, said arm means and roller being vertically adjustable with respect to said frame.

3,899,031

VAPOR GENERATOR

Rudolf R. Laessig, West Chester, Pa., assignor to General Electric Company, New York, N.Y.

Filed June 17, 1974, Ser. No. 479,886

Int. Cl. F22B 27/08

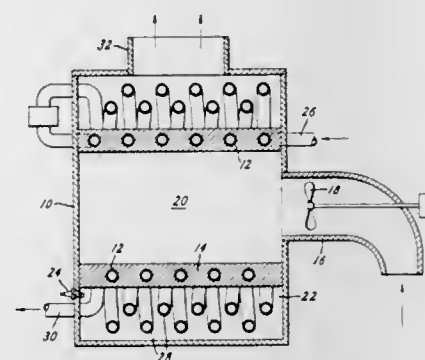
U.S. Cl. 122-250 R

4 Claims

1. A vapor generator for vaporizing a liquid by burning a combustible mixture while minimizing the production of car-

bon monoxide, unburned hydrocarbons and nitrogen oxides comprising:

a housing having a central inlet for receiving the combustible mixture and an exhaust port in the housing wall;
a first coil of tubing for carrying the liquid contained in a porous wall;
said porous wall dividing the interior of said housing into a central plenum and a combustion chamber;



a second coil of tubing in said combustion chamber spaced from said porous wall wherein said liquid is vaporized; the outlet of said first tube being connected to the inlet of said second tube;
means for introducing a combustible mixture into said plenum at a pressure higher than atmospheric; and
means for igniting said combustible mixture in said combustion chamber.

3,899,032

METHOD AND APPARATUS FOR DEVIATING CONDUCTOR CASING

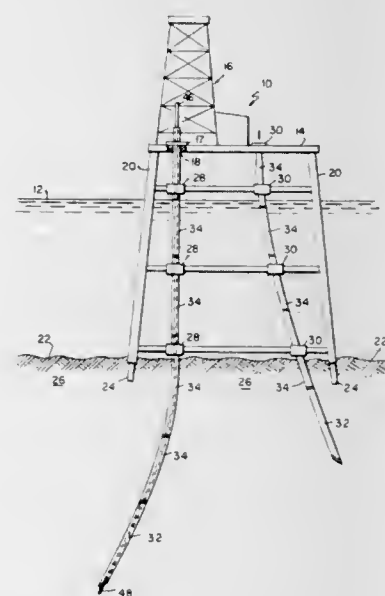
Thomas E. Rees, Tulsa, Okla., and Frank D. Priebe, Houston, Tex., assignors to Cities Service Oil Company, Tulsa, Okla.

Filed Mar. 15, 1974, Ser. No. 451,614

Int. Cl. E21B 15/02

U.S. Cl. 175-9

24 Claims



1. A marine structure anchored in an offshore body of water for deviating conductor casing, or the like, comprising a drilling deck having at least one drilling aperture and situated above said body of water, at least one leg supportably attached to said drilling deck and extending downwardly to the bottom of said body of water, a pile means slideably guided by said at least one leg and connected to said structure for in bedding in the substratum of said body of water to rigidly secure said structure in place, and at least one first conductor casing slideably situated within said drilling aperture for insertion and bending beneath said bottom and in said substratum, said

first conductor casing including a structure defining a conduit having a beveled end and a shoe member attaching to said beveled end and entirely covering the opening thereof, said beveled end of said first conductor casing bends in said substratum when driven into said same.

3,899,033

PNEUMATIC-KINETIC DRILLING SYSTEM

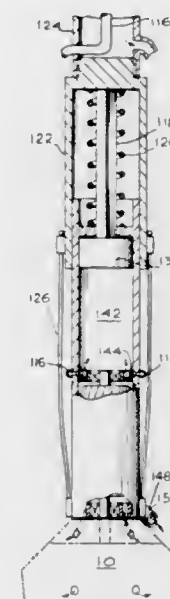
Allen T. Van Huisen, 29456 Indian Valley Rd., Rolling Hills Estates, Calif. 09274

Filed Jan. 3, 1974, Ser. No. 430,643

Int. Cl. E21B 3/12, 5/00

U.S. Cl. 175-97

19 Claims



1. A fluidic-kinetic drilling system comprising in combination:

a downhole assembly comprising:
a rotatable drilling bit;
fluidic means for rotating the drilling bit;
a fluidic power source means responsive to kinetic reciprocation for actuating the fluidic means;
suspending means extending from the surface for suspending the downhole assembly adjacent the bottom of a bore hole; and
means connected to the suspending means for reciprocating the fluidic power source means.

3,899,034

WEIGHING SYSTEM

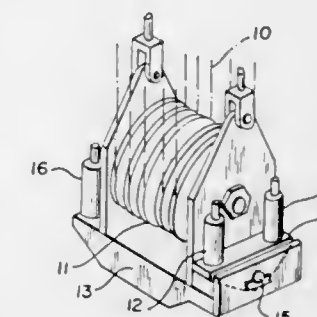
Karl Polen, and J. C. Otte, both of Alliance, Ohio, assignors to The Alliance Machine Company, Alliance, Ohio

Filed Dec. 6, 1973, Ser. No. 422,551

Int. Cl. G01g 23/02

U.S. Cl. 177-151

5 Claims



1. A weighing system for material handling apparatus comprising a plurality of fixed load cells and a plurality of movable load cells, said fixed cells and said movable cells being opera-

bly connected to form a three-point system, each of said fixed cells being one of two legs of the system and one or more of the movable cells being said third leg, said cells being in operable contact with the load bearing surfaces of said material handling apparatus, means connecting said cells to an averaging device, and means for recording said average.

3,899,035

FACSIMILE TRANSMITTING RECEIVING SYSTEM WITH FIBRES HAVING A CONDUCTIVE COATING
Ulf Rothgordt, Bargkoppel, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

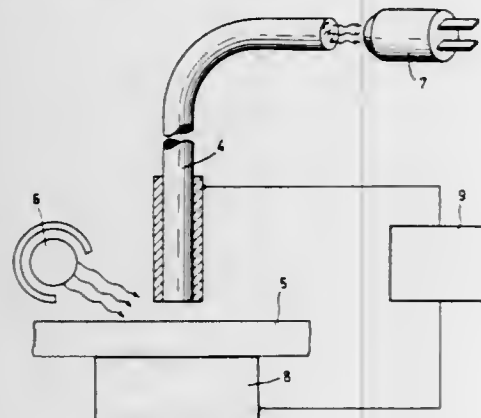
Filed Jan. 7, 1974, Ser. No. 431,440

Claims priority, application Germany, Jan. 12, 1973, 2301335

Int. Cl. H04n 1/24

U.S. Cl. 178—6.6 A

7 Claims



1. In a facsimile transmitting and receiving system of the type having electrostatic printing means for recording facsimile signals on a record sheet and optical scanning means for reading a subject copy, the improvement wherein the same styli used during electrostatic printing are also used during optical reading, each of said styli comprising: an optically conducting glass fibre for optically transmitting luminance values of elemental areas of a subject copy adjacent one end thereof to an optoelectronic transducer; and an electrically conductive coating surrounding said fibre at least at said one end thereof for conducting electrical pulses to said one end in order to electrostatically charge elemental areas of a record sheet adjacent thereto.

3,899,036

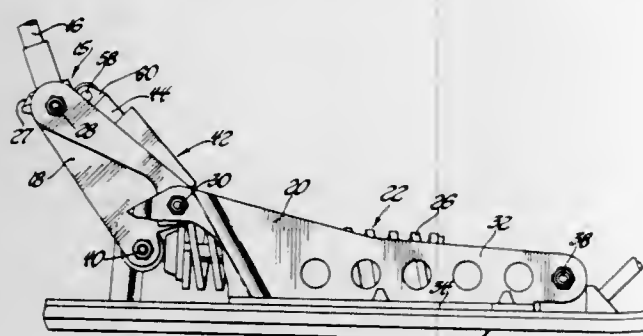
SNOWMOBILE SKI SUSPENSION ASSEMBLY
Harold E. Hollnagel, 10229 N. River Rd. 43W, Mequon, Wis. 53092

Filed Nov. 12, 1973, Ser. No. 414,900

Int. Cl. B62M 27/00

U.S. Cl. 180—5 R

29 Claims



1. A suspension assembly adapted for attachment between the vehicle ski and the vehicle body of a skisupported vehicle comprising: support means, lever arm means pivotally attached to said support means, resilient means operably connected between said lever arm means and said support means for resisting the pivotal motion of said lever arm means, pivotal attachment means for providing pivotal attachment of

said lever arm means to the vehicle body, lost motion connection means bridging said pivotal attachment means for limiting the pivotal motion between said pivotal attachment means and said assembly, and mounting means for attaching said support means to the ski.

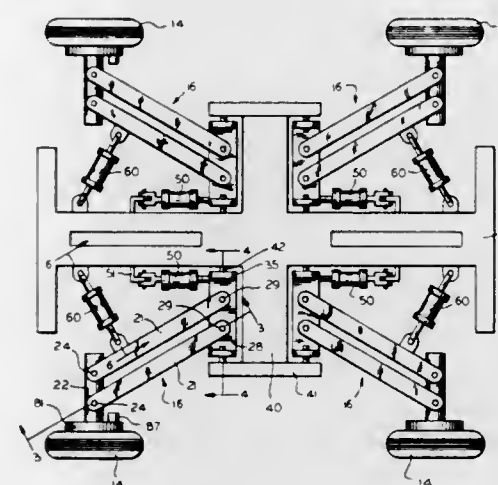
3,899,037

CHASSIS APPARATUS FOR ALL TERRAIN VEHICLES
Paul A. Yaker, 1408 Josephine St., Waukesha, Wis. 53186
Filed July 16, 1973, Ser. No. 379,250

Int. Cl. B62D 11/02; B60S 9/12

U.S. Cl. 180—6.48

13 Claims



1. A vehicle comprising: longitudinally extending frame means, at least three movable linkage means connected respectively to said frame means and extending from opposite sides of the longitudinal direction of said frame means, ground engaging means affixed to each of said linkage means remote from said frame means for supporting said chassis, first operating means comprising first extensible cylinder means articulatingly coupled with each of said linkage means for independently moving said linkage means horizontally relative to said frame means, and second operating means comprising second extensible cylinder means operatively coupled with each of said linkage means for independently moving said linkage means vertically relative to said frame means, said second cylinder means each having one end pivotally connected to said frame means and their opposite end coupled to said linkage means rocking means associated with each of said linkage means, said rocking means being pivotally supported on said frame means about a generally horizontally extending axis which is perpendicular to the longitudinal direction of said frame means, said linkage means each being pivotally connected to their respective rocking means about axes generally perpendicular to the pivot axis of said rocking means.

3,899,038

GAUGE WIDTH ADJUSTMENT MEANS FOR TRACK-TYPE VEHICLES

Bobby D. Griffith, and August H. Bertram, both of Aurora, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed May 31, 1974, Ser. No. 474,976

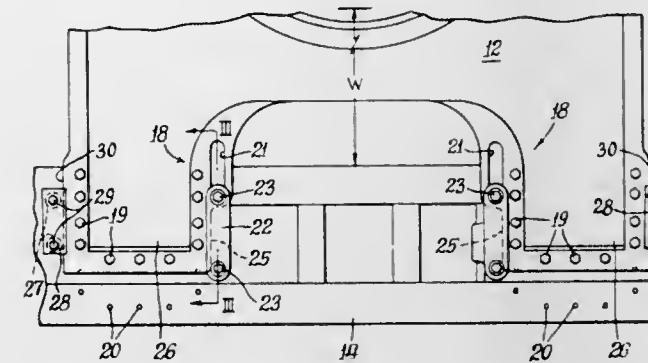
Int. Cl. B62d 55/00

U.S. Cl. 180—9.48

9 Claims

1. In a track-type vehicle comprising a main frame, a pair of laterally spaced track roller frames mounted beneath said main frame and releasable fastening means normally securing said track roller frames to said main frame at a maximum gauge width between said track roller frames, the invention comprising adjustment means, including first and second alignment means disposed in parallel relationship and trans-

versely relative to a longitudinal axis of each of said track roller frames, operatively connected between overlying portions of said main frame and at least one of said track roller



frames for permitting selective narrowing of the gauge width between said track roller frames upon release of said fastening means.

3,899,039

BUS HAVING A SEPARATE WHEELED MOTIVE POWER UNIT

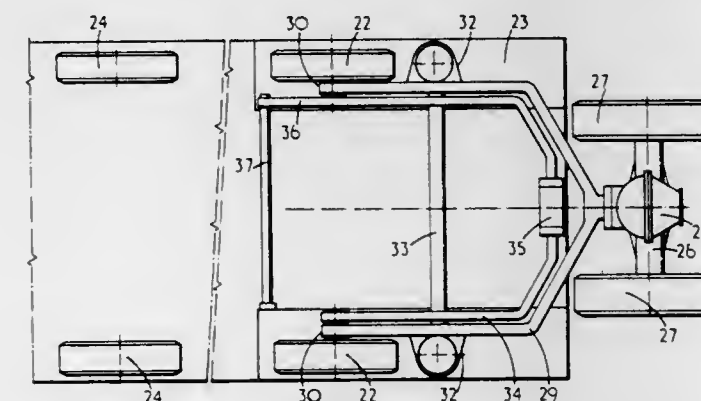
John McHugh, 15 Cobbs Brow, Newburgh, England

Filed Feb. 22, 1973, Ser. No. 334,547

Int. Cl. B60d 3/00

U.S. Cl. 180—11

2 Claims



1. A bus having a wheeled steerable body for accommodating a driver and passengers, a steerable wheeled motive power unit, and coupling means coupling the power unit to the rear of the body whereby the power unit may move relative to the body only in a substantially vertical direction the coupling means comprising first and second U-shaped suspension arms the ends of each limb of each of which are pivotal about the axis of rotation of the rear wheels of the steerable body, a pair of spring means arranged between the steerable body and respective ones of the limbs of the first suspension arm, an extension arm extending from the end of one of the limbs of the second suspension arm, and a transverse rod connected at one end to the free end of the extension and at the other to the steerable body, the second suspension arm being pivotally connected intermediate its ends to the underside of the steerable body.

3,899,040

VEHICLE FRAME AND DRIVE TRAIN

William L. Figura, Bruce, Wis., assignor to Jacobsen Manufacturing Company, Racine, Wis.

Filed Sept. 18, 1974, Ser. No. 507,004

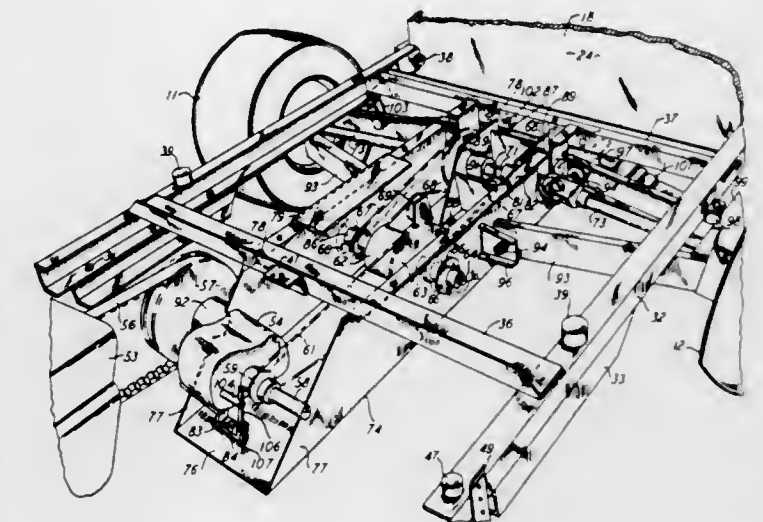
Int. Cl. B62D 61/08; B60K 17/16

U.S. Cl. 180—27

10 Claims

1. A vehicle frame and drive train assembly for a vehicle, comprising a vehicle frame, an engine supported by said frame, a transmission supported by said frame and being in driven relation with said engine, a U-shaped pan member attached to said frame and being elongated in the fore-and-aft

direction of the vehicle, two rotation bearings mounted on said pan member in axially aligned positions with each other and on respective opposite sides of said U-shaped pan member, a differential having a shaft rotationally supported in said bearings, two additional rotation bearings supported by said pan member in axially aligned positions with each other and disposed relative to respective opposite sides of said U-shaped



pan member and rearwardly of said differential with respect to the fore-and-aft direction of the vehicle, a wheel axle rotatably supported by each of said additional rotation bearings and extending therefrom to respective opposite sides of the vehicle, a ground-engaging wheel connected with the extending end of each of said axles, and drive connections extending from said transmission to said differential and from said differential to said axles, for driving said wheels.

3,899,041

ELECTRIC VEHICLE

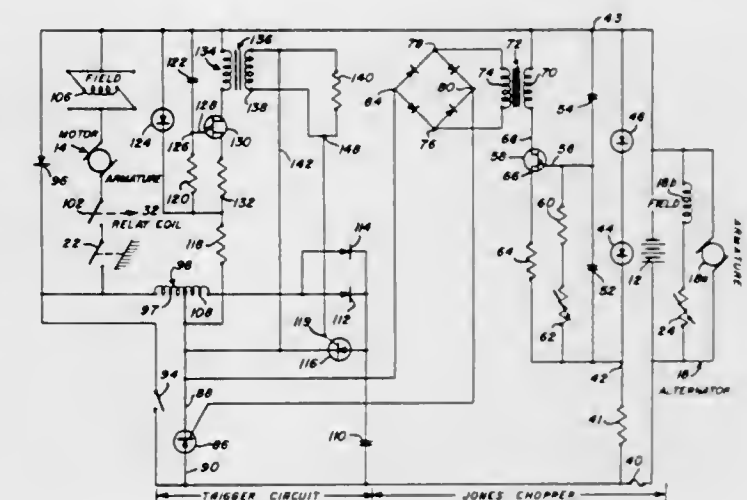
Charles J. Mager, Box 353 A, R. D. 4, Quakertown, Pa. 18951

Filed Oct. 23, 1970, Ser. No. 83,448

Int. Cl. B60l 11/18, 7/12, 15/08

U.S. Cl. 180—65 R

7 Claims



1. In an electric vehicle having at least one driving motor, a control system for the motor comprising a source of DC voltage, means inverting the DC voltage to pulsating voltage for energizing the motor, switch means connecting the inverting means to the motor for energizing the motor, generator means physically connected to the motor, the generator means usually being in a no-load free-wheeling state, and braking means connecting the source and the input of the generator means for causing the energization thereof which results in the dynamic braking of the motor.

3,899,042

AUTOMOBILE SEAT AUTOMATIC PASSENGER-SECURING DEVICE

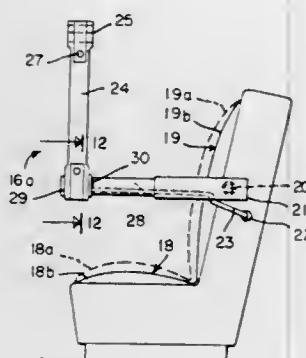
George D. Bonar, 160 Bleecker St., New York, N.Y. 10012

Filed Apr. 29, 1974, Ser. No. 464,791

Int. Cl. B60r 21/10

U.S. Cl. 180—82 C

13 Claims



1. An automotive vehicle-seat passenger-securing device comprising in combination: a mounting structure for pivotably mounting thereon an elongated arm; first pivotable mounting means mounted on the mounting structure and providing for controlled intermittent pivoting to and fro on the mounting means, of an elongated arm means between withdrawn and extended locked states and positions; said arm means including a first elongated arm means pivotably and controllably mounted by the mounting means on the mounting structure; a second elongated arm means mounted at about a distal end of the first elongated arm means and pivotably along a plane substantially transverse and normal to an axial longitudinal axis of the first elongated arm means, the second elongated arm means including lock-release structure such that a distal end of the second elongated arm means is pivotable downwardly to a substantially horizontal state from an upright position whenever the first elongated arm means is positioned in an extended state and position extending substantially horizontally in a horizontal state.

3,899,043

MACHINE COVER

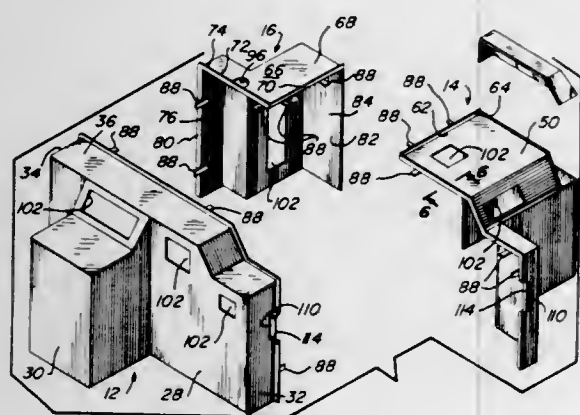
Guy E. Hall, Denver, Colo., assignor to Steadley Company, Inc., Carthage, Mo.

Filed July 29, 1974, Ser. No. 492,537

Int. Cl. E04B 1/82

U.S. Cl. 181—33 K

17 Claims



1. A noise-reducing and pollution-controlling machine cover comprising:

a plurality of free standing shells adapted to be secured together to enclose a processing machine; each shell being formed of substantially rigid translucent material with the major portion of its internal and external surface areas free of opaque attachments or coatings; the lower margin of each shell lying generally in a horizontal plane for supporting contact with a floor, with the

upstanding side margins and upper margins lying in vertical planes and sized and shaped to register with the opposed margins of adjacent shells; means to detachably secure the shells together with their opposed corresponding margins in registry into a unitary noise-reducing enclosure encompassing the machine and standing in self-supporting contact with the machine-supporting floor; apertures through the wall of at least one shell to provide access to the machine; and shields for each of said apertures to complete the enclosure; at least one of said shields having a transparent area for visual inspection of the machine; the translucent material of the shells serving to transmit exterior light to the interior of the enclosure to facilitate such visual inspection.

3,899,044

MUSIC STETHOSCOPE

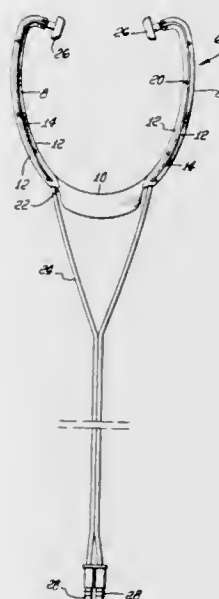
Elmer J. Stumpf, Los Angeles, and Allan D. Mockabee, Palm-dale, both of Calif., assignors to Michaud, Inc., Los Angeles, Calif.

Filed Mar. 27, 1974, Ser. No. 455,402

Int. Cl. A61B 7/02

U.S. Cl. 181—135

5 Claims



1. A stethoscope comprising a generally U-shaped body having spaced legs and a connecting bridge, each leg comprising a resilient element V-shaped in cross section to provide a sound tube trough, each leg being composed of two acutely angled wall elements joined at their inner side edges and having free outer side edges, a series of lugs disposed at spaced points along the outer side edges and extending laterally inwardly therefrom so as to extend partially over the V-shaped trough, said bridge being flat in plane substantially the same as the plane defined by the longitudinal axis of said legs, the bridge constituting a stiffening element between the flexible legs, and sound tubes lying in the V-shaped trough and partially beneath said lugs.

3,899,045

LADDER PLATFORM

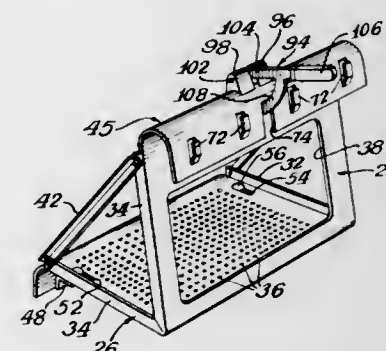
Anthony Geisel, 5219 N. Spaulding Ave., Chicago, Ill. 60625, and Bohdan Rohowsky, 5238 W. Potomac Ave., Chicago, Ill. 60651

Filed May 3, 1974, Ser. No. 466,788

Int. Cl. E06C 5/32, 7/00

U.S. Cl. 182—121

4 Claims



1. An improved safety platform adapted to be used with a generally vertically disposed ladder having side rails and a plurality of rungs, including a first rung and a second rung positioned immediately above the first rung comprising: a base member having a forward edge and a rearward edge and having a width substantially equal to the distance between the side rails of the ladder; a back member having a lower edge and an upper edge and having a width substantially equal to the distance between the side rails of the ladder, with the lower edge of the back member being connected with the rearward edge of base member;

first means for supporting the base member on the first rung of the ladder so that the base member is positioned in a generally horizontal plane and to the rear of a plane defined by the rungs and side rails of the ladder and for preventing generally horizontal relative movement between the forward edge of the base member and the first rung of the ladder, the first means including a first portion integral with and depending from the forward edge of the base member, a second member depending from the undersurface of the base member at a position spaced to the rear of the first portion, means for permitting the position of the second member to be adjusted, vis-a-vis the first member, so that rungs of varying dimensions may be positioned between the first portion and the first member, and means for selectively securing the second member to the base member so that when secured, the second member cannot be moved relative to the first portion;

second means, adjacent to the upper edge of the back member, for supporting the back member on the second rung of the ladder so that the back member is positioned in a generally vertical plane and for preventing generally horizontal relative movement between the upper edge of the back member and the second rung of the ladder, the second means including a second, curved portion integral with and extending to the rear from the upper edge of the back member, with the distal end of the second portion being straightened so as to lie in a plane substantially parallel to and to the rear of the plane of the back member, with the radius of curvature of the second portion being greater than one-half of the maximum cross-sectional dimension of the second rung and with the second portion being adapted to fit about the second rung so that the second rung is disposed between the rearward surface of the back member and the distal end of the second portion; and

means for selectively and releasably latching the upper edge of the back member to the upper rung so as to prevent generally vertical relative movement between the upper edge of the back member and the second rung of the ladder; the latch means including a curved latching arm having a first end pivotally mounted on the radially outwardly facing

surface of the second, curved portion and having a second end which is movable between a latched position wherein the second end abuts the rearward surface of the back member at a point spaced below the second rung and an unlatched position wherein the second end is positioned adjacent to the distal end of the second portion, the second end of the latching arm being biased by gravity to its latched position.

3,899,046

COUPLING ELECTRIC LINE INSIDE OF FLUID CONDUIT

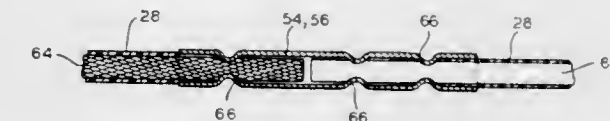
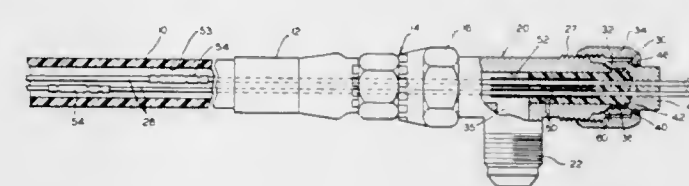
Howard C. Hansen, Battle Creek, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Filed July 3, 1974, Ser. No. 485,394

Int. Cl. B66F 9/20; B66B 9/20; F16L 11/12

U.S. Cl. 187—9 E

20 Claims



1. An electric line and fluid conduit assembly comprising, in combination, a fluid conduit containing a pressure fluid, a fitting forming a portion of the conduit, and electric line means extending through an element of the fitting from a location outside the conduit to the interior thereof, means securing the electric line means in said fitting element and preventing leakage of fluid from said conduit through said fitting element, said electric line means including a conductor and insulation around the conductor, and means permitting the fluid in the conduit to flow into the interior of the insulation into contact with the conductor.

16. In an upright assembly for lift trucks and the like having a plurality of telescopically related mast sections, a load carriage means mounted for elevation on one of the mast sections and pressure fluid operated hoist motor means mounted in the upright assembly and operatively connected to the mast sections and carriage means for elevating the latter, flexible fluid pressure conduit means reeved in the upright assembly for connecting the carriage means with a source of fluid pressure during elevation thereof, flexible electric line means for connecting the carriage means with a source of electricity during elevation thereof and being reeved inside of the fluid conduit means for flexure therewith during operation of the upright assembly, said electric line means including a conductor and insulation around the conductor, and means permitting the fluid in the conduit to flow into the interior of the insulation into contact with the conductor to tend to equalize the fluid pressure interior and exterior of the electric line means.

3,899,047

IMPACT ABSORBING DEVICE AND MOTOR VEHICLE BODY STRUCTURE INCORPORATING THE SAME

Teruo Maeda; Hideo Shimoe; Yasuhiko Fujiwara, all of Yokohama; Norimoto Aya, Tokyo; Nagayuki Marumo, Yokohama; Heigo Tsuji, Fujisawa, and Yuzo Sakamoto, Yokohama, all of Japan, assignors to Nissan Motor Company Limited, Yokohama, Japan

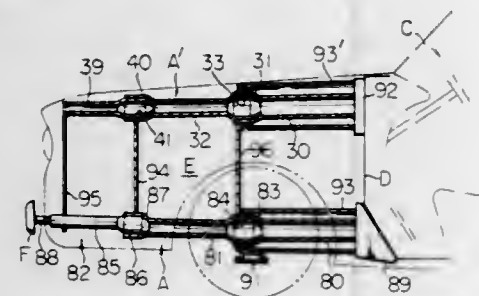
Filed Apr. 18, 1973, Ser. No. 352,229

Claims priority, application Japan, Apr. 19, 1972, 47-39394; Apr. 19, 1972, 47-39396; Apr. 19, 1972, 47-39397; Apr. 19, 1972, 47-39398; Apr. 22, 1972, 47-40712; Apr. 22, 1972, 47-47916; Aug. 29, 1972, 47-100825

Int. Cl. B60r 19/02

U.S. Cl. 188-1 C

13 Claims



12. In a motor vehicle having a rigid member stationarily fixed relative to a passenger compartment when there is a collision of the motor vehicle: a plurality of elongated hollow members connected at one end with said rigid member and extending in fore-and-aft direction therefrom; a corresponding number of first elongated deformable tubular members positioned within said fixed elongated hollow members respectively, said first elongated deformable tubular members connected at one end thereof with said rigid member and having free ends; a corresponding number of second elongated deformable tubular members; a corresponding number of first means for deforming said first elongated deformable tubular means upon motion of said second elongated deformable tubular members relative to said first elongated deformable tubular members, said second elongated deformable tubular members being telescopically connected with said first elongated tubular members by said first deforming means respectively; a first cross panel interconnecting said fixed elongated hollow members and said free ends; a corresponding number of third elongated members; a corresponding number of second means for deforming said second elongated deformable tubular members upon motion of said third elongated members relative to said second elongated deformable tubular members, said third elongated members being telescopically connected with said second elongated deformable tubular members by said second deforming means respectively; and a second cross panel interconnecting said second elongated deformable tubular members.

3,899,048

SELECTIVE BRAKING ASSEMBLY

Marius E. Huvers, 480 Carre du Gue, Sainte Therese, Quebec, Canada

Filed Sept. 17, 1973, Ser. No. 398,005

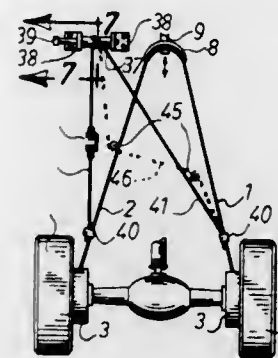
Int. Cl. B60T 1/00

U.S. Cl. 188-16

7 Claims

1. A vehicle comprising a floor, a differential gear drive, a pair of traction wheels drivingly connected to said differential gear drive on opposite sides thereof, a pair of braking mechanisms connected to said pair of traction wheels respectively, a common braking assembly, a selective braking assembly separately addable to said common braking assembly, the latter including a pair of brake actuating links connected to said pair of braking mechanisms respectively, and a common actuation mechanism operatively connected to said pair of brake actuating links and constructed and arranged to produce simultaneous actuation of the latter and of said braking mechanisms, said selective braking assembly being entirely secured under said floor and including a reciprocally rotatable member, a hand lever, and a pair of differential braking links extending entirely under said floor and operatively connected to said brake actuating links respectively and to said reciprocally rotatable member for opposite reciprocating

duce simultaneous actuation of the latter and of said braking mechanisms, said selective braking assembly being entirely secured under said floor and including a reciprocally rotatable member, a hand lever, and a pair of differential braking links extending entirely under said floor and operatively connected to said brake actuating links respectively and to said reciprocally rotatable member for opposite reciprocating



movement and differentially actuating said brake actuating links in response to rotation of said reciprocally rotatable member, the latter being secured under said floor and having an axis of rotation projecting transversely of the vehicle, and said hand lever projecting upright through said floor, engaging said operatively rotatable member, and producing fore and aft pivotal reciprocation of the latter about said axis of rotation thereof.

3,899,049

COMBINATION BRAKE AND VEHICLE ASSEMBLY

Thomas C. Martin, 185 Devonshire St., Boston, Mass. 02110

Continuation of Ser. No. 233,962, March 13, 1972,

abandoned, which is a continuation-in-part of Ser. Nos. 61,258,

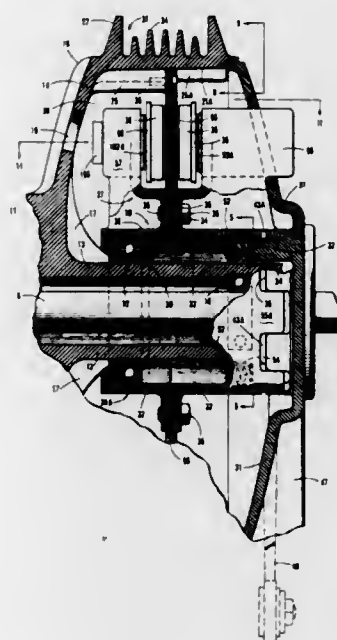
Aug. 5, 1970, and Ser. No. 849,312, Aug. 12, 1969,

abandoned. This application Nov. 27, 1973, Ser. No. 419,336

Int. Cl. B60t 1/06

U.S. Cl. 188-18 A

14 Claims



1. A combination brake and vehicle assembly including a fork with legs interconnected at the free end by an axle comprising:

a wheel including a hub having a center core defining an aperture receiving the axle and positioning the hub intermediate the legs of the fork;
means intermediate said core and axle for rotatably supporting said hub relative to said axle;

said hub including tire support means;
an annular disc having bearing surfaces on opposite sides of said disc;
means securing said disc to said hub for rotation therewith;
a pair of brake shoes each having brake pads with each of said pads aligned with one of said bearing surfaces;
calipers for holding each of said brake shoes arranged one on each side of said disc;
caliper support means for commonly supporting said calipers extending at least partially over and coaxial with said core;
bearing means disposed intermediate the overlapping portions of said core and caliper support means for supporting and permitting relative rotational movement of said core and caliper support means; and
means maintaining said caliper support means in fixed rotational relation to said axle.

3,899,050

LINING FOR BRAKE SHOES

Wolf Savary, Leverkusen, and Hartmut Soennecken, Halver, both of Germany, assignors to Textar GmbH, Leverkusen-Schlebusch, Germany

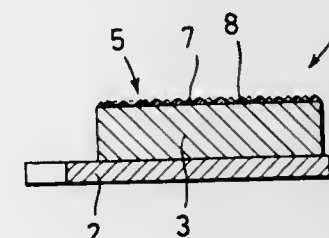
Continuation-in-part of Ser. No. 267,725, June 29, 1972, abandoned. This application Feb. 22, 1974, Ser. No. 445,030

Claims priority, application Germany, July 6, 1971, 2133455; Dec. 14, 1973, 2362190

Int. Cl. F16D 69/02

U.S. Cl. 188-73.1

12 Claims



1. A lining for brake shoes comprising
a. a base layer comprising a filler and a binder for said filler for frictionally engaging an opposing relatively moving surface to brake said movement, and
b. a coating on a surface of said base layer, said coating comprising a particulate abrasive material and a binder for said particulate abrasive material for initial grinding of said opposing relatively moving surface,
c. said coating having a non-uniform thickness and the surface of said coating, for contacting said opposing relatively moving surface having an undulating configuration with rib-like projections when viewed in cross section, said rib-like projections being substantially parallel and discontinuous, each of said rib-like projections including a plurality of unequally spaced interruptions of varying length separated by unequally spaced humps, the humps of said plurality of rib-like projections being arranged such that there is at least one hump along any imaginary line extending in a direction transverse to said parallel rib-like projections, to permit abrasive particles loosened from said coating to be discharged, preventing said loosened particles from scratching said relatively moving surface.

3,899,051

DISC BRAKES ESPECIALLY FOR AUTOMOBILES

Albert Grosseau, Chaville, France, assignor to Societe Anonyme Automobiles Citroen, Paris, France

Continuation of Ser. No. 263,689, June 16, 1972, abandoned.

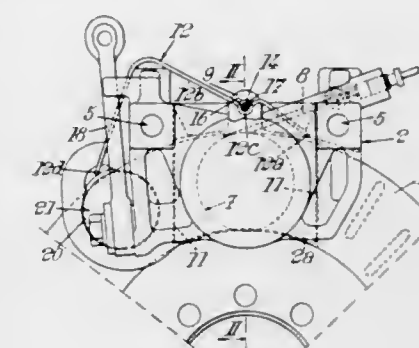
This application Apr. 22, 1974, Ser. No. 462,923

Claims priority, application France, June 17, 1971, 71.22043

Int. Cl. F16d 55/228

U.S. Cl. 188-73.5

1 Claim



1. Disc brake, comprising:
a disc fast to a brake shaft,
a fixed brake frame arranged straddling a portion only of the periphery of the disc,
two friction element supports held one at each side of the disc on said frame by means of rigid and removable fixing means comprising at least one spindle whose axis is in a plane parallel to the disc shaft and engaged through at least one hole in the frame so that these two supports can slide on guide surfaces of this frame in a direction substantially parallel to said shaft, said spindle having two recess grooves therein,
control means adapted to displace, with respect to the frame, each movable friction element support in the direction which tends to grip the disc between the two friction elements,
an auxiliary brake having friction element supports cooperating with said disc, and
an antivibration spring steel elastic wire having a branch passing through the plane of the disc and supported on the friction element supports and two lateral branches arranged approximately in two planes practically equidistant from the plane of the disc with the respective ends of said lateral branches in contact with the friction element supports of said auxiliary brake, said two lateral branches each possessing an intermediate portion, each adapted to be elastically engaged in one of the recess grooves of said spindle, whereby said friction elements are prevented from vibrating and ensuring the support of the lateral branches of said spring while immobilizing said spindle with respect to the frame in an axial direction.

3,899,052

DISC BRAKE

Richard T. Burnett, and James J. Colpaert, both of South Bend, Ind., assignors to The Bendix Corporation, South Bend, Ind.

Filed May 20, 1974, Ser. No. 471,265

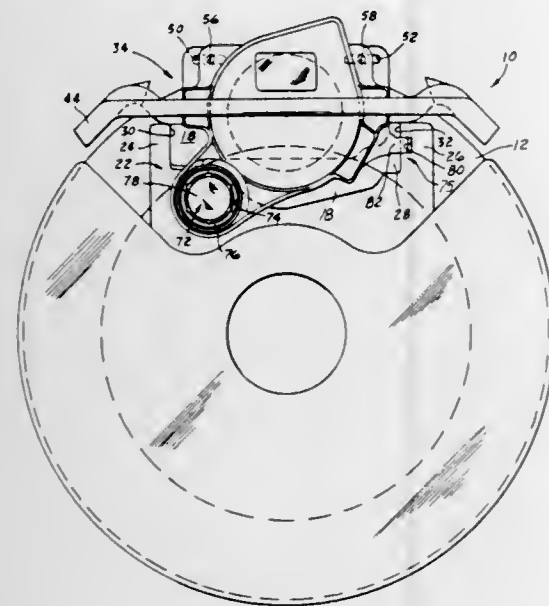
Int. Cl. F16d 65/20

U.S. Cl. 188-73.6

5 Claims

1. In a disc brake, a rotor having a pair of friction faces, a pair of friction elements, one of said elements being disposed adjacent each of said friction faces, a member straddling said rotor and engaging each of said friction elements for urging each of the latter into braking engagement with their corresponding friction faces when a brake application is effected, a fixed support member, means slidably mounting said straddling member on the support member for transverse relative movement with respect to the rotor, said straddling member

having an opening exposing the edge of each of said friction elements whereby the latter may be removed from the straddling member in a direction radially outwardly with respect to the rotor, releasable means engaging each of said friction elements to retain them on the straddling member, said support member defining a recess, one of said friction elements being received within said recess, and a lost motion connection between said one friction element and said releasable means so that relative movement is permitted between the one



friction element and the straddling member without release of the releasable means;

- said slidably mounting means including a groove in one of said members and a tongue projecting from the other member and received in said groove;
- said releasable means including first pin means, said lost motion connection including an elongated opening in said one friction element receiving said pin means, the width of said opening being wider than the length of said tongue received within said groove.

3,899,053

AUTOMATIC BRAKE-WEAR RESETTNG DEVICE

Gyula Nadas, Eching, Germany, assignor to Knorr-Bremse GmbH, Munich, Germany

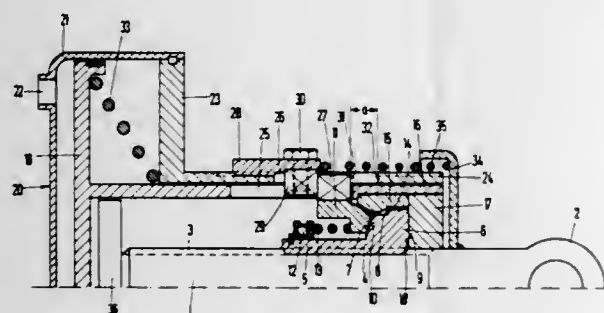
Filed Apr. 4, 1974, Ser. No. 457,966

Claims priority, application Germany, Apr. 4, 1973, 2316822

Int. Cl.² F16D 65/66

U.S. Cl. 188—203

8 Claims



1. In an automatic resetting device for brakes particularly for railway vehicles, the combination of a non-rotatable first sleeve axially displaceable in the braking direction in response to a braking force, a non-rotatable threaded shaft coaxially disposed within said first sleeve and axially displaceable in the braking direction, a coupling nut threaded upon said shaft and capable of rotary and axial movement thereon, a non-rotatable control sleeve resiliently urged in the braking direction against said coupling nut and capable of limited axial displacement, the contacting surfaces of said nut and control sleeve defining a first rotary coupling, said nut having a second sur-

face engageable with a first surface on said first sleeve upon relative axial displacement between said first sleeve and said nut to define a second rotary coupling, said nut having a third surface contacting a second surface on said first sleeve to define a stop limiting the opening of said second rotary coupling, and spring means acting upon said first sleeve in a direction opposite the direction of braking to return the first sleeve to its release position upon removal of the braking force.

3,899,054

DISC BRAKES WITH COOLING RODS

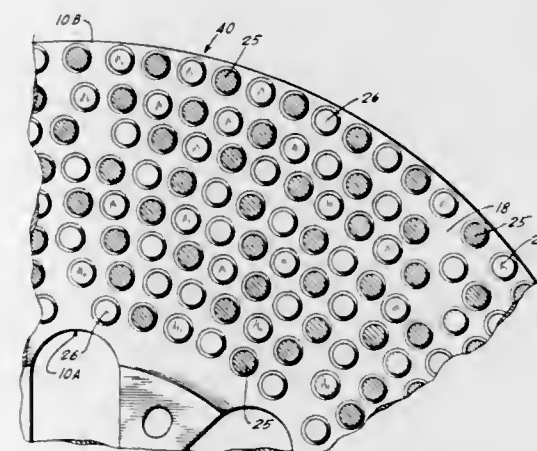
Howard B. Huntress, Suffern, N.Y., and Raymond J. Novotny, Sparta, N.J., assignors to Abex Corporation, New York, N.Y.

Filed Feb. 8, 1974, Ser. No. 440,854

Int. Cl. F16d 65/10

U.S. Cl. 188—218 XL

3 Claims



1. In a cast disc brake rotor for dissipating heat incidental to braking comprising a pair of spaced walls, each presenting an exterior braking surface and an opposite interior surface, and a plurality of connecting rods rigidly connecting said interior surfaces and maintaining the fixed positional relationship therebetween, the improvement comprising:

- a plurality of separated truncated rods cast integral with the rotor and protruding from each of the interior surfaces, said connecting rods and truncated rods being interspersed generally uniformly between the inner circumference and outer circumference of said interior surfaces and staggered relative to one another to constrain fluid passing outwardly between said walls to follow a tortuous path.

3,899,055

BRAKE ACTUATING MECHANISM

Russell L. Shreve, 915 W. Wattles Rd., Troy, Mich. 48084

Filed Feb. 8, 1974, Ser. No. 440,673

Int. Cl. B62 1/04; B60t 11/02

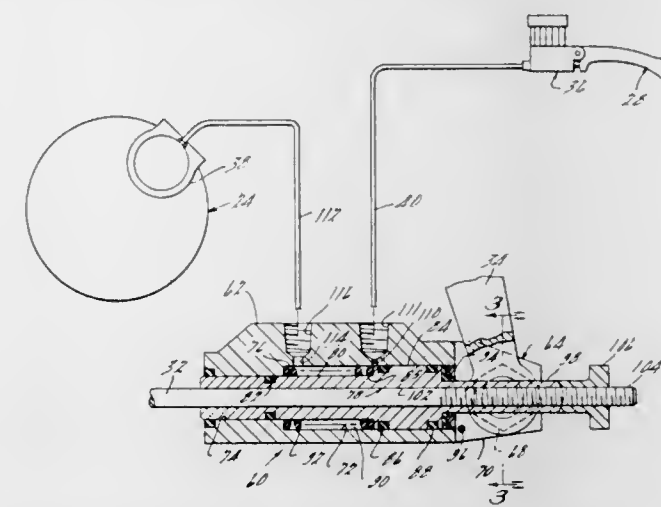
U.S. Cl. 188—344

4 Claims

1. A braking system for a two wheeled vehicle including a caliper associated with a front disc brake and operable in response to pressurizing a hydraulic fluid, a lever arm associated with a rear mechanical brake and operable in response to selective displacement of a linkage and a reservoir providing a source of pressurized fluid media, the improvement comprising a mechanism for actuating said front brake subsequent to said rear brake, said mechanism including a housing defining a fluid cylinder having first and second ports and an end portion pivotally connected to said lever arm, first means for communicating said reservoir with one of said first and second

ports, second means for communicating said caliper with the other of said ports, and third means located in said cylinder for

body by gripping the same with increased pressure by said hand in contact therewith.



initially blocking said first port and subsequently pressurizing said caliper in response to displacing said linkage.

3,899,056

HYDRAULIC BICYCLE BRAKE ASSEMBLY

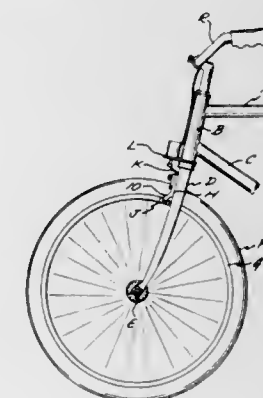
Carl L. Doerr, 2850 Ladoga, Long Beach, Calif. 90815

Filed Apr. 30, 1973, Ser. No. 355,555

Int. Cl. B60t 11/16

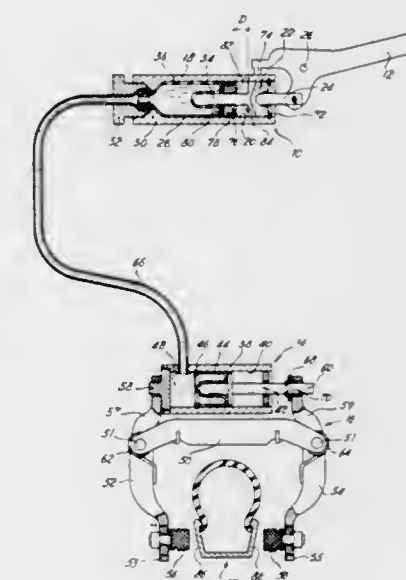
U.S. Cl. 188—344

3 Claims



1. In combination with a bicycle having a handle bar and a brake assembly of the type in which a pair of pivotally connected arms having first and second ends are transversely positioned relative to a wheel of said bicycle, said arms supporting a pair of brake pads on said first ends thereof that are brought into frictional pressure contact with a rotating portion of said wheel when said arms are pivoted from a first to a second position; hydraulically operated, spring loaded means that are operatively associated with said second ends of said arms to move the latter from said first towards said second position when a quantity of hydraulic fluid in said spring loaded means has additional hydraulic fluid added thereto; a tube that is at all times in communication with said hydraulic fluid in said spring loaded means, with said brake assembly being characterized by including:

- a. at least one resilient pressure-deformable elongate hollow body formed from an elastomeric material that defines a confined space in communication with said tube, said body longitudinally and adjacently disposed relative to said handle bar, and said tube and confined space filled with hydraulic fluid, and said body having a longitudinal cavity therein that slidably engages an end portion of said handle bar to support said hollow body thereon, with said body serving the dual function of acting as a grip to be grasped by a hand of a user in guiding said bicycle with said handle bar and as a means for discharging additional hydraulic fluid under pressure to said spring loaded means when the confined space in said hollow body is decreased by said user transversely deforming said hollow



1. A hydraulic control circuit comprising at least one pressure generating assembly of the piston and cylinder type whose pressure chamber is connected to the pressure chamber of at least one pressure receiving assembly of the piston and cylinder type to define a sealed compartment; at least one compensating assembly of the piston and cylinder type whose compensating chamber is connected to the sealed compartment to define a fluid-tight enclosure filled with a predetermined quantity of incompressible fluid, said compensating assembly comprising a compensating piston capable of being displaced towards the interior of the compensating chamber to reduce the volume thereof when the forward stroke of one of the pistons in the generating and receiving assemblies exceeds a predetermined value, the compensating piston cooperating by way of anti-return means with the cylinder of the compensating assembly so as to remain stationary relative to the latter cylinder during the return stroke of the said one of the pistons in the generating and receiving assemblies, said compensating assembly being situated in one of the generating or receiving assemblies, the compensating piston being coaxial with said one of the pistons in the generating and receiving assemblies and cooperating with the latter by way of a one-way thrust coupling with lost motion, said generating assembly comprising a casing, an assembly of concentric pistons mounted in the bore of said casing in a fluid-tight manner, said assembly of concentric pistons comprising an annular compensating piston defining a central orifice slidably mounting an actuator piston connected to an intake controlling member, said intake controlling member belonging to the generating assembly and having a shoulder capable of abutting on the annular piston when the stroke of the actuator piston towards the interior of the pressure chamber of the generating assembly exceeds a predetermined value.

3,899,058

COMBINED TRACTOR STEERING CLUTCH AND BRAKE CONTROL SYSTEM

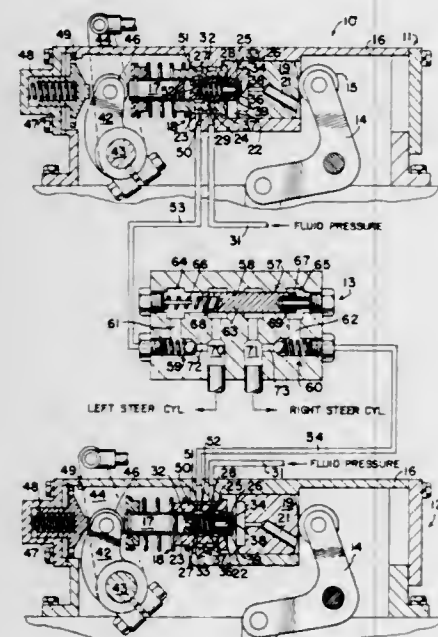
Daniel Pasquini, Bartonville, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Feb. 1, 1974, Ser. No. 438,596

Int. Cl.² F16D 67/04

U.S. Cl. 192-13 R

9 Claims



1. In a track-type vehicle having first and second clutch and brake controlled tracks, a combined control system for sequential control of the steering clutch and brake functions of said tracks, said control system including, a source of fluid under pressure, first and second booster valve means for respectively controlling the clutch and brake means of said first and second track, first fluid communication means between said source and said first booster valve means, second fluid communication means between said source and said second booster valve means, flow control valve means for controlling the flow of fluid under pressure from said first and second booster valve means to respectively said clutches for said first and second tracks, third and fourth fluid communication means respectively between said first booster valve means and said flow control valve means and between said second booster valve means and said flow control valve means, first and second actuation means for respectively mechanically actuating said first and second booster valve means for controlling the flow of fluid through said third and fourth fluid communication means and for selectively causing the engagement of said first and second brakes of said tracks, said flow control valve means including first and second inlet ports connected respectively to said third and fourth fluid communication means, said control valve means further including first and second outlet ports connected by means of fifth and sixth fluid communication means to said respective clutches of said first and second tracks for selective engagement and disengagement of said clutches said flow control valve means including means for blocking fluid flow from said third and fourth communication means to said fifth and sixth communication means when fluid pressure in said third communication means is substantially the same as that in said fourth communication means.

3,899,059

FLUID COUPLING ASSEMBLY

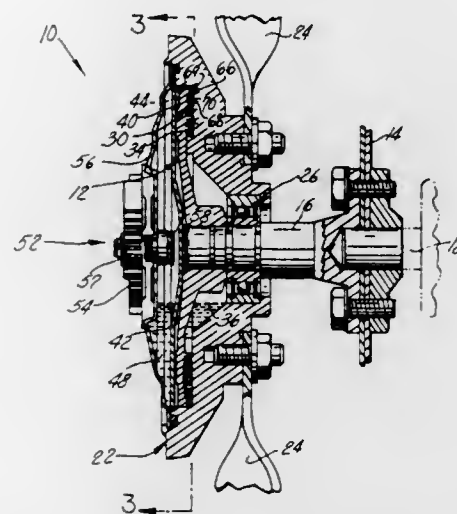
Wayne K. Leichter, Marshall, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Oct. 23, 1973, Ser. No. 408,888

Int. Cl.² F16D 35/00, 67/00

U.S. Cl. 192-57

24 Claims



1. A fluid coupling comprising an input coupling member capable of being rotated at relatively high and low speeds, a rotatable output coupling member disposed adjacent to said input coupling member, means for supporting said coupling members for relative rotation, said input and output coupling members having spaced apart opposed surface portions defining a fluid shear space therebetween and cooperating with a fluid shear medium during relative rotation between said coupling members to provide a fluid drive between said coupling members, and resiliently deflectable spring means spaced from said shear space for preventing relative rotation between said coupling members during low speed rotation of said input coupling member and for assisting said fluid drive in transmitting forces from said input coupling member to said output coupling member during relative rotation between said coupling members.

3,899,060

PAWL AND RATCHET MECHANISM

Herbert Arthur Clements, Weybridge, England, assignor to S.S.S. Patents Limited, London, England

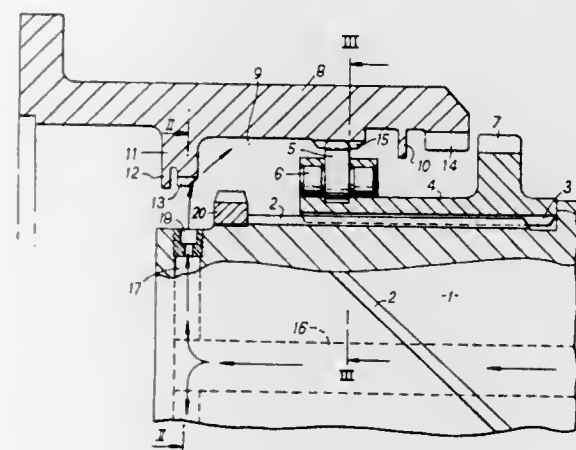
Filed Feb. 4, 1974, Ser. No. 439,163

Claims priority, application United Kingdom, Feb. 5, 1973, 5615/73

Int. Cl.² F16D 23/02

U.S. Cl. 192-67 A

3 Claims



1. In a rotary pawl and ratchet mechanism comprising first and second rotary elements, means mounting said elements for rotation about a common axis, a ring of ratchet teeth carried by said first rotary element and at least one pawl carried by said second rotary element, one of said elements

being formed to provide an annular rotary liquid-receiving chamber in which there can form a pawl-damping rotating ring of liquid having a free surface that faces towards the said axis, and at least one liquid supply duct for supplying damping liquid to said chamber, the improvement comprising means for imparting pre-rotation to liquid supplied to said chamber via said duct, said means including surfaces rotatable with said chamber and located nearer to said axis than said free surface, said duct having an opening located relative to said surfaces such that liquid supplied via said duct impinges on said surfaces prior to entry into said chamber.

3,899,061

EXCITATION CONTROL FOR NORMALLY ENGAGED, ELECTRICALLY RELEASED MAGNETIC COUPLING

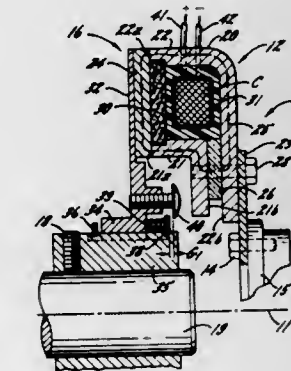
William H. Krug, Janesville, Wis., assignor to Warner Electric Brake & Clutch Company, Beloit, Wis.

Filed Apr. 29, 1974, Ser. No. 464,741

Int. Cl. F16d 27/01

U.S. Cl. 192-84 PM

6 Claims



1. In combination with
 - a. a magnetic coupling having
 - two relatively movable parts forming a magnetic flux path and attracted into physical coupling with one another when magnetic flux of a predetermined density is established in said path,
 - a permanent magnet included in said path and presenting a first mmf normally establishing at least said predetermined flux density,
 - a coil electromagnetically associated with said path to produce a second mmf which opposes the first, the second mmf being generally proportional to excitation current through the coil and acting, when sufficiently great, to reduce the flux density in said path enough to physically decouple said parts,
- the improvement of an excitation control having input terminals adapted for connection to an unregulated dc. voltage source and output terminals connected to said coil, and wherein said control comprises
 1. control means interposed between said input and output terminals and responsive to a control signal for varying the magnitude of current transmitted through said coil,
 2. means for sensing the voltage across said coil,
 3. means for sensing the current through said coil, and
 4. means responsive to said means (2) and (3) for applying to said control means a control signal which varies according to changes in the weighted sum of the voltage across and the current through said coil.

3,899,062

FAIL-SAFE DISENGAGEMENT MECHANISM

Raymond L. Ward, 2 Monadnock Rd., Worcester, Mass. 01609

Filed Oct. 31, 1974, Ser. No. 519,431

Int. Cl.² F16P 7/00; F16D 9/00

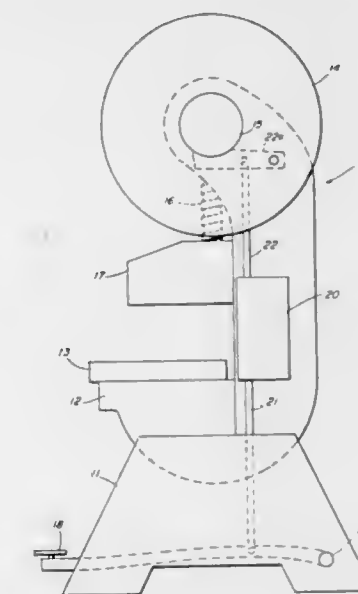
U.S. Cl. 192-129 R

4 Claims

1. A safety device for a mechanical tool of the punchpress type having machine operating means, actuating means

adapted to initiate operation of the machine operating means for a cycle of operation, and a safety means connecting said actuating means and said operating means adapted to transmit an actuating signal mechanically from said actuating means to said operating means for a single cycle of operation and to interrupt said operating means after completion of one and only one cycle of machine operation, said safety means comprising:

- a pivotally mounted drive member connected and mounted to rotate between a first rest position and a second actuated position
- means connecting said actuating means to drive said member to rotate said drive member to said actuated position in response to an actuating signal;
- a pivotally mounted driven member rotatable between a rest position and an actuated position;
- a force loaded cam follower positioned and adapted to bear against both of said drive member and said driven member in said rest positions and to drive said driven member rotationally when said drive member is rotated;
- a cam path member positioned adjacent to said cam follower and positioned to receive said cam follower when the drive member and driven member are moved from said rest positions toward said actuated positions, said



cam path member being disposed to disengage said force loaded cam follower from said driven member in its actuated position;

- a cam surface on said drive member shaped to receive and hold said cam follower in a rest position disengaged from said cam path member and shaped to form a cam path out of engagement with said driven member when said drive member is in the actuated position;
- a cam surface on said driven member shaped to receive said cam follower in said rest position;
- force loading means connected with the driven member to force said driven member to its rest position when said actuating means is released;
- and means mechanically connected to said driven member to transmit mechanical motion to said machine operating means to cause engagement of said machine operating means when said cam follower bears on and rotates said driven member;

whereby actuation of said actuating means releases said cam follower from said drive member to drive said driven member and to operate said machine, and whereby the cam surface of said driving plate holds said cam follower out of engagement with the driven member during machine operation and until said drive member is returned to its rest position.

3,899,063

ROLLER MECHANISM FOR CONVEYING SYSTEMS

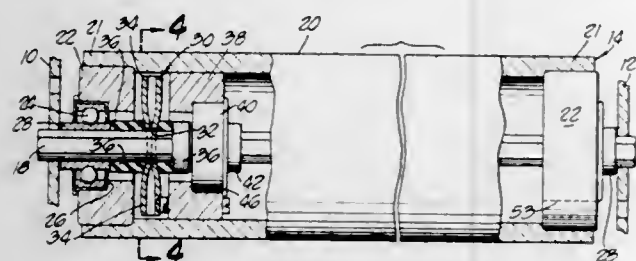
Orrey R. Pollard, 31297 Granado, Palos Verdes, Calif. 92274

Filed Apr. 8, 1974, Ser. No. 459,055

Int. Cl. B65g 13/00

U.S. Cl. 193—35 A

10 Claims



1. A roller braking mechanism comprising: a roller; an axle defining a first axis, said roller being rotatably mounted on said axle to rotate about said first axis; a hammer; hammer mounting means for mounting said hammer on said axle to prevent rotation of said hammer about said first axis; anvil means mounted on said roller and fixed to rotate with said roller, said anvil means extending to at least one position where said hammer and said anvil means will engage as said roller rotates; and resilient constraining means for resisting relative movement between said hammer and said anvil means in a direction along said first axis tending to disengage said anvil means and said hammer.

3,899,064

TIMED COIN CONTROL DEVICE

Ernest Newell Martin, Escondido, Calif., assignor to Arrow-

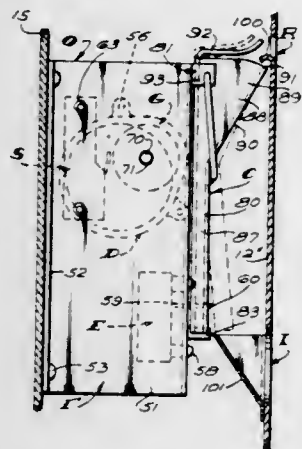
head Puritas Waters, Inc., Los Angeles, Calif.

Filed June 28, 1974, Ser. No. 484,242

Int. Cl. G07f 5/10

U.S. Cl. 194—9 T

10 Claims



1. A coin actuated control means for vending machines including coin handling means comprising a front wall with a coin receiving slot and a coin return opening spaced below the slot and accessible at the front of the wall, an elongate vertical coin conducting chute rearward of the wall with a coin inlet opening at its top communicating with the slot and a coin outlet opening at its bottom normally spaced rearward and above the return opening, hinge means pivotally supporting the upper end portion of the chute on an axis in fixed spaced relationship rearward of the wall, a coin receptacle below the chute, mechanical drive means rearward of and engageable with the chute to move the lower end of the chute forwardly from a normal position to an actuated position where the outlet opening occurs above and communicates with the return opening and thence to its normal position, an electric powered prime mover for the drive means, a power supply, a normally open switch means connected with and between the prime mover and power supply and including an operating

element engageable by a coin in the lower portion of the chute when the chute is in its normal position to close the switch means, energize the prime mover and initiate operation of the drive means, a rotary cam means driven by the drive means and engaging the switch means to maintain the switch means closed through a predetermined extent of one revolution of the cam means and control means for a related vending machine and operable in response to closing of said switch means.

3,899,065

RIBBON CASSETTES FOR SINGLE ELEMENT TYPEWRITERS

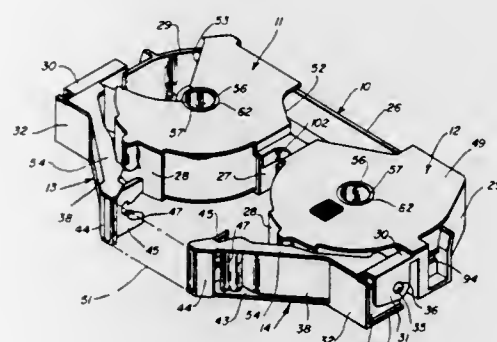
Frederick A. Brignole, Granby, Conn., assignor to Litton Business Systems, Inc., New York, N.Y.

Filed July 22, 1974, Ser. No. 490,860

Int. Cl. B41J 33/14

U.S. Cl. 197—151

4 Claims



1. A ribbon cassette comprising a container having upper and lower walls, and discontinuous side walls forming ribbon openings, wound ribbon spools, means in said upper and lower walls for rotatably supporting said ribbon spools in spaced apart relationship, vibrator arms, means pivotally securing said vibrator arms to said side walls, said vibrator arms extending outwardly from said pivotal securing means and toward one another defining a ribbon gap between said vibrator arms, ribbon extending from one spool to the other spool and across the gap between said vibrator arms, and means on the vibrator arms for coupling said vibrator arms to ribbon elevating means.

3,899,066

LIQUID MANURE LOADING APPARATUS

Thomas A. Bedwell, Providence, and Bruce L. Call, Logan, both of Utah, assignors to Hesston Corporation, Heston, Kans.

Filed Dec. 12, 1973, Ser. No. 426,632

Int. Cl. B65b 65/02

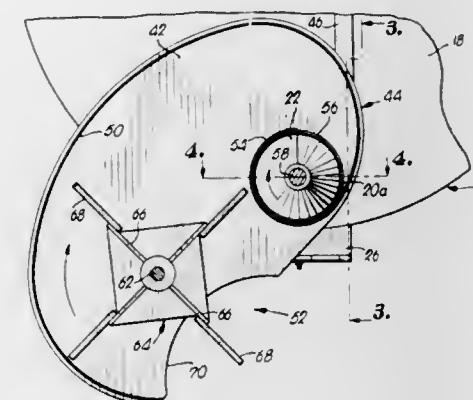
U.S. Cl. 198—7 R

24 Claims

1. In an implement having a holding tank for liquid manure obtained from a pool thereof, loading apparatus associated with said tank including:

a pickup housing mounted on said tank exteriorly thereof and adapted for insertion into said pool, said housing having an intake for manure from the pool and said tank having means defining an inlet for picked-up manure from the housing; a conveyor disposed adjacent said inlet and leading into the tank for delivering manure from the housing into the tank during operation of the conveyor; and an agitator-loader device on said housing adjacent said intake for aggressively churning the pool to thoroughly

admix all levels thereof and for concurrently drawing the agitated manure through the housing toward said



inlet and the conveyor when the device is actuated, said housing being retractable from a lowered, loading position to a raised, transport position.

3,899,067

HANDRAILS FOR CONVEYORS

Kyozo Kondo, Mihara, and Takeyoshi Okimoto, Takehara, both of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

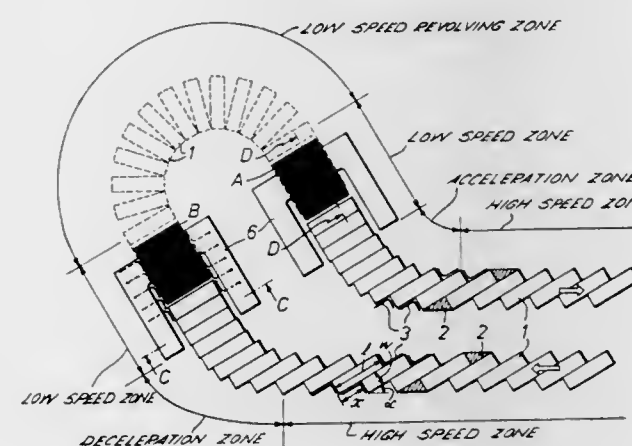
Filed Mar. 20, 1974, Ser. No. 453,158

Claims priority, application Japan, Mar. 23, 1973, 48-32722

Int. Cl. B66b 9/12

U.S. Cl. 198—16 MS

6 Claims



1. A variable speed conveyor which comprises a plurality of movable elongate platforms whose relative displacement varies as the conveyor advances and a handrail mounted at each end of each platform, each handrail comprising a lateral portion which, when the relative displacement of the platforms is zero, extends in the direction of advance of the conveyor, and a longitudinal portion at an angle to the lateral portion, the arrangement of the handrails being such that when the relative displacement of the platforms is zero the lateral portions of adjacent handrails cooperate to form safety barriers extending along the conveyor and when the relative displacement of the platforms is greater than zero the lateral and longitudinal portions of adjacent handrails cooperate to form safety barriers extending along the conveyor.

3,899,068

FEEDING APPARATUS

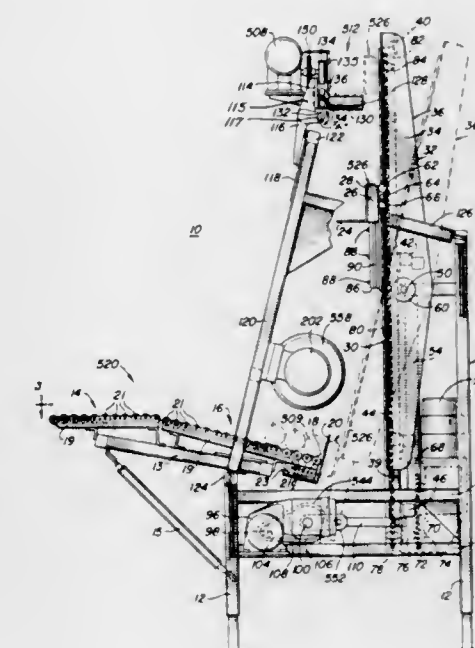
Gary Leonard Wallace, Oak Lawn; John J. Linehan, Arlington Heights, and Robert Howard Marshall, Hinsdale, all of Ill., assignors to Chemetron Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 293,145, Sept. 28, 1972, abandoned. This application Mar. 25, 1974, Ser. No. 454,262

Int. Cl. B65g 47/00

U.S. Cl. 198—27

12 Claims



1. Apparatus for handling elongated masses of material, each mass having a longitudinal axis, said apparatus comprising queuing table means for holding a plurality of masses side by side with their longitudinal axes parallel, said table means having a discharge side parallel to the longitudinal axis of a mass supported in a discharge position adjacent said discharge side, means adjacent said discharge side for elevating said masses sequentially from said discharge position to an elevated position said elevating means comprising an elongated carriage mounted for pivotal movement about a horizontally disposed axis and pivotal between a first upright position and a second inclined position, means for pivoting said structure between said positions, elevator means mounted on said carriage for reciprocal movement along said carriage upwardly toward an upper discharge position and downwardly toward a lower receiving position, means for driving said elevator upwardly and downwardly along said carriage, said elevator means including means for lifting an elongated mass positioned on the discharge side of said table means as said elevator is driven upwardly from said lower receiving position with said carriage in said second inclined position and to discharge said lifted mass onto said conveying means as said elevator means is driven downwardly along said carriage with said carriage in said first upright position after said carriage has been pivoted to said first upright position with said elevator means in said upper discharge position, and conveyor means for receiving the masses from said elevating means adjacent said elevated position and conveying said masses in end-to-end relation in a direction parallel to the longitudinal axes of the masses.

3,899,069

ROTARY TRANSFER APPARATUS FOR GROUPING ARTICLES

Hans Heinzer, Beringen, Switzerland, assignor to Sig Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

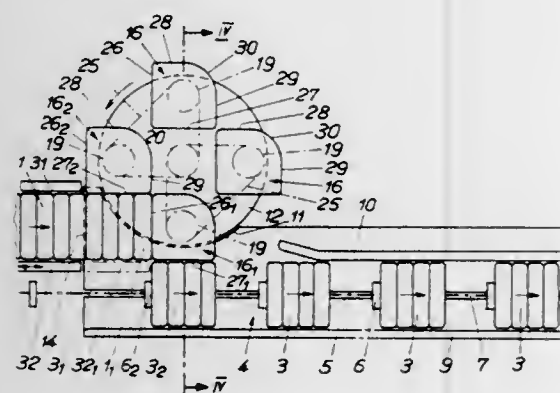
Filed July 18, 1974, Ser. No. 489,719

Claims priority, application Switzerland, July 18, 1973, 10494/73

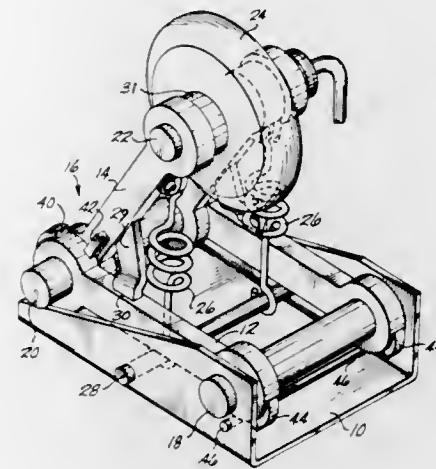
Int. Cl.² B65G 47/00

U.S. Cl. 198—25

10 Claims



respect to said base to move said roller in a direction opposite to the direction of movement of said container



and into position of more forceful load engagement with said container.

3,899,071

CONVEYOR BELT PROTECTIVE SYSTEM

Walter Roy Duffy, 1914 Howard St., Butte, Mont. 59701

Filed June 29, 1973, Ser. No. 374,944

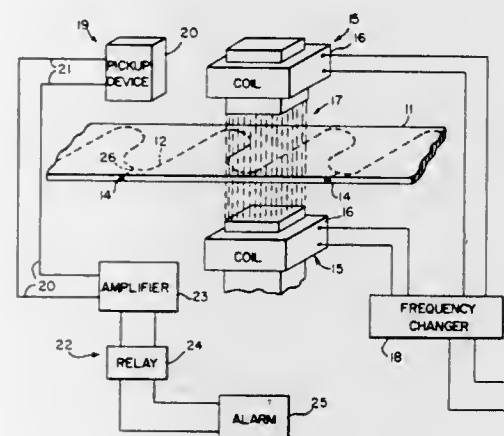
Int. Cl. B65g 43/02

U.S. Cl. 198—232

1 Claim

1. An apparatus for grouping articles, the apparatus including an inlet conveyor for carrying non-grouped articles, the inlet conveyor having a feed direction and a discharge end; and an outlet conveyor for carrying the grouped articles, comprising in combination:

- a plurality of spacedly supported collector pushers each having a pushing edge and a retaining edge normal to said pushing edge;
- means for successively bringing said collector pushers into a work position at the beginning of a work stroke in alignment with the feed direction of said inlet conveyor at the discharge end thereof;
- means for moving each collector pusher with an increasing speed in the feed direction during the work stroke of the collector pusher for forming a first group of articles of predetermined number backed up behind said retaining edge; and
- means for moving each collector pusher, during its work stroke, in a direction transverse to the feed direction for displacing, with said pushing edge, a second, previously formed group of articles onto a conveying path of said outlet conveyor.



1. A system for monitoring the condition of conveyor belts comprising a conveyor belt adapted to be supported by a pair of spaced roller means and driven in endless path, an elongated conductor in said belt, said conductor disposed in said belt in substantially a sinusoidal pattern laterally of and extending along the length of the belt to form a closed current path, a pair of magnetically coupled coils positioned adjacent said conveyor belt for providing a magnetic field through which said conveyor belt passes to induce an electric current in said closed current path, detecting means disposed adjacent said conveyor belt, said detecting means responsive to the condition of said conveyor belt and capable of producing an output when said condition changes, circuit means including amplifier means for amplifying an output from said detecting means, relay means and an alarm, said circuit means connected to said detecting means for signalling the occurrence of said output, and a plurality of taps disposed in the edge of said conveyor belt, each said tap including a conductor in electrical contact with said elongated conductor to monitor continuity along said electrical path.

3,899,070

TRACTION-DEMAND POWER DRIVE UNIT

John M. Lang, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed June 27, 1973, Ser. No. 374,196

Int. Cl.² B65G 13/02

U.S. Cl. 198—127 R

7 Claims

1. A powered drive roller mechanism for moving a cargo container or the like comprising:

- a base;
- a linkage means including a lower link pivotally attached to said base, and an upper link pivotally attached to said lower link;
- a powered roller mounted for rotation on said upper link, said roller having a first position for engagement with a lightly loaded container;
- biasing means for urging said roller away from said container and for holding said roller in said first position; wherein said linkage means is responsive to a predetermined traction force between said roller and said container to overcome said biasing means and pivot with

3,899,072

NEST FOR A CADDY

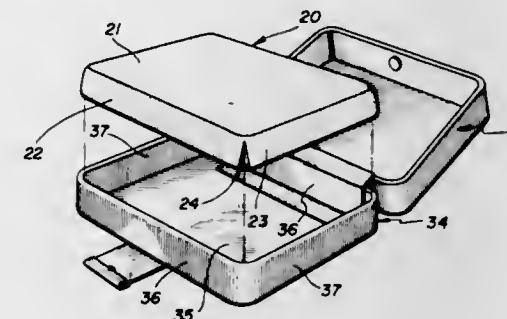
Douglass M. Reinhart, Lititz, Pa., assignor to Schick Incorporated, Lancaster, Pa.

Filed Aug. 6, 1973, Ser. No. 386,013

Int. Cl.² B65D 5/50

U.S. Cl. 206—45.19

2 Claims



1. In a package for an article including a caddy box and a nest assembly, said caddy box including a rectangular bottom wall and side walls vertically extending upwardly from the periphery of the bottom wall, the improvement being in said nest which is thermoformed of plastic and which telescopically fits within said caddy box, said nest including a rectangular article receiving panel having cavity means formed to matingly receive an article, side walls extending downwardly and slightly outwardly from the periphery of said panel, and inwardly-collapsible bellows means interconnecting between the ends of adjacent side walls of said nest assembly, each of said bellows means comprising a pair of triangular-shaped panels joined directly to each other by a common fold line and to respective ones of said adjacent side walls along fold lines extending from a respective corner of said article receiving panel for urging said side walls outwardly when forced to a vertical position in the caddy box thereby providing an intimate and frictional engagement with the caddy side walls.

3,899,073

SOAP CONTAINER

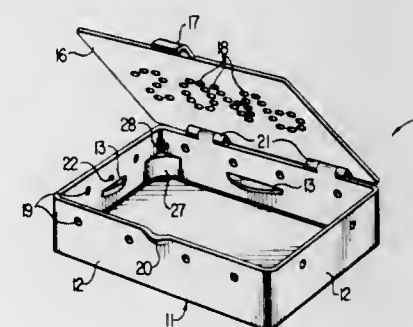
Katie H. Barr, 7121 Bull Run Post Office Rd., Centreville, Va. 22020

Filed June 13, 1974, Ser. No. 478,854

Int. Cl. A47k 5/04

U.S. Cl. 206—77.1

7 Claims



1. A container for a bar of soap, comprising: a base member and a plurality of side walls attached to said base member; a flange mounted on the inner surface of each side wall, each of said flanges being located equidistant from said base member; a removable support plate for supporting the bar of soap, said support plate being perforated with a series of holes and being of a size which allows said support plate to rest on said flanges within the interior of said container, said support plate being provided with recessed indentations in opposite sides thereof to allow access for the fingers of a person removing the support plate from the container, and wherein a series of raised studs are provided on the upper surface of said support plate to elevate the bar of soap above the holes in said support plate; a detent stud for holding down an edge of said support plate located directly above the flanges on at least two of the side walls; and a hinged lid mounted on the upper edge of one of

said side walls and having means for securing said lid to the side wall opposite to that upon which said lid is mounted.

3,899,074

BRAZING WASHER CHAIN

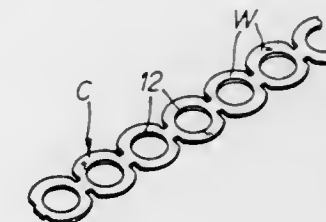
William F. Lucas, Oak Creek, Wis., assignor to Lucas-Milhaupt, Inc., Cudahy, Wis.

Filed July 1, 1974, Ser. No. 484,548

Int. Cl.² B65D 73/02; F16B 39/28

U.S. Cl. 206—343

2 Claims



1. A flat brazing washer chain comprising a plurality of flat washers integrally formed from a flat stock of brazing material and joined together adjacent their peripheries, each adjacent pair of said washers having adjacent peripheral portions which, if projected, would merge together to define an overlap area, a series of pairs of opposed notches formed in said chain, one notch of each pair being formed in one side of said chain, each of said notches extending into said overlap area, each pair of opposed notches defining therebetween an interconnecting portion between adjacent washers, which interconnecting portion extends through an overlap area to define a cutting zone wherein the overlap area and interconnecting portion coincide, whereby said washers are separable by cutting said interconnecting portion within said cutting zone to thereby prevent any protrusion of a washer beyond its projected periphery.

3,899,075

ADHESIVE TAPE

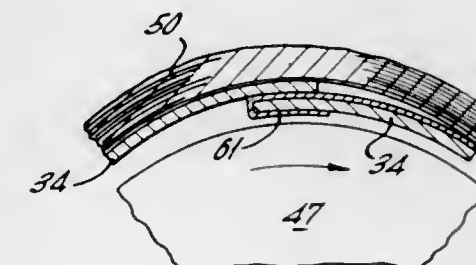
Joseph J. Hall, Somerville, and Leo M. Lamb, Freehold, both of N.J., assignors to Johnson & Johnson, New Brunswick, N.J.

Division of Ser. No. 174,747, Aug. 25, 1971, Pat. No. 3,770,542. This application May 16, 1973, Ser. No. 360,890

Int. Cl. B65d 85/672, 85/68

U.S. Cl. 206—411

2 Claims



1. A roll of normally tacky and pressure-sensitive adhesive tape, said tape having one of its major surfaces tacky and adhesive and being wound spirally upon itself in successive axially aligned overlapping convolutions with its adhesive surface facing inwardly toward the axis of the roll to form a hollow annular cylinder, and a liner sheet adhering to the adhesive surface of the innermost convolution of said tape in overlapping relation therewith and having a nonadhesive surface facing the hollow of said roll, said liner being long enough to effectively cover the inwardly facing adhesive surface of the said innermost convolution of said tape and being unattached to itself except through adherence to the said innermost convolution, whereby said liner is unwound with

said tape as the innermost convolution of the tape is unwound from said roll.

3,899,076

BOTTLE CARRIER

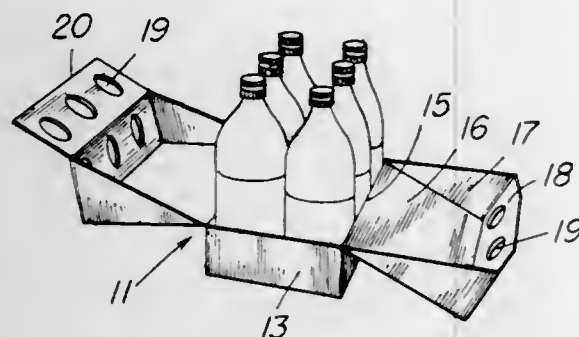
John Florian, Bakersfield, Calif., assignor to Mobil Oil Corporation, New York, N.Y.

Filed July 16, 1973, Ser. No. 379,861

Int. Cl. B65d 1/22, 81/00, 85/00

U.S. Cl. 206-427

2 Claims



1. An integral, one-piece, thermoformed, polystyrene foam bottle carrier comprising a bottom support member, said member comprising a substantially rectangular base surrounded by four up-standing side and end wall members integrally joined to said base, each of said side wall members having integrally hinged along their upper edges an upper side-wall member; said upper wall members having triangular shaped end panels joined, at an angle of about 90°, along their opposite longitudinal edges, said triangular end panels having their apex portions adjacent the lower hinged edge of said upper side wall members and their base portion adjacent the opposed upper edge of said upper sidewall member, the base edges of said triangular end panels and the upper edge of said side-wall member being connected by a transversely extending rectangular top retaining panel, said retaining panel having apertures therein to receive the upper neck portion of bottles positioned in said support member, whereby said bottle carrier is adapted for closure by the upward rotation of said upper side-wall members about their hinged edges whereby the apertures in said retaining panel engage the upper neck portions of bottles positioned in said carrier and said triangularly shaped end panels permit a partial view of the contents of said carrier.

3,899,077

STRIP PACKAGE

Hans Spiegelberg, Taby, Sweden, assignor to Salve S.A., Fri-bourg, Switzerland

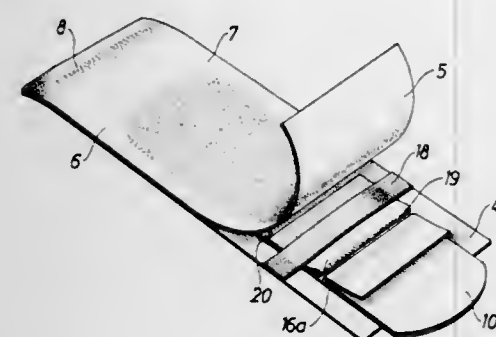
Filed Feb. 26, 1973, Ser. No. 335,719

Claims priority, application Sweden, Oct. 9, 1972, 012997/72

Int. Cl. A61f 13/02; A61f 15/06

U.S. Cl. 206-441

6 Claims



1. An individual package for a single flat adhesive bandage provided with a central pad and adhesive zones on each side thereof, said adhesive zones being covered by removable

protective foils at least one of which covers said pad, said package comprising an outer casing open at one end for receiving and enveloping said flat bandage with one end of the bandage projecting therefrom, at least said one protective foil covering the pad and the adjacent adhesive zone being located within the outer casing, the end of said one protective foil nearest to the open end of said casing being folded back 180° over said pad and secured to the inner surface of said casing adjacent the open end, whereby said one protective foil may be forcibly removed from said pad and said adhesive zone when the bandage is withdrawn by its projecting end from the outer casing.

3,899,078

MERCHANDISE PACKAGING AND DISPLAY DEVICE

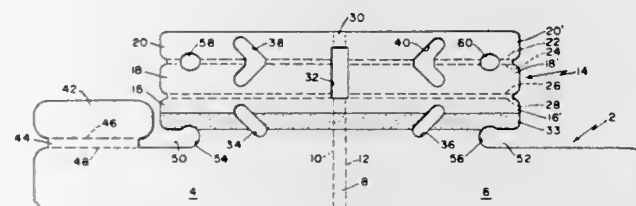
James P. Ambrozets, Phoenixville, and Homer R. Diehl, Roslyn, both of Pa., assignors to American Biltrite Inc., Cambridge, Mass.

Filed Oct. 18, 1974, Ser. No. 515,902

Int. Cl. B65D 33/14

U.S. Cl. 206-491

9 Claims



1. A display hanger for automobile floor mats, comprising two complementary elongated front and back main panels of relatively stiff material joined at one end of each by a common vertical rigid fold portion integral with each main panel; each of the main panels having extending along its upper edges plural-layered, elongated upper sub-panels of said material integral with and shorter than said main panels, each of said sub-panels being folded along a horizontal fold line defining a rigid, horizontal fold portion integral with the respective panel, a hand-hole provided in each of said sub-panels, the hand-hole in one sub-panel being aligned with the hand-hole in the other sub-panel when the main panels are folded against each other to provide a single hand-hole extending through all of said plural layers; a flap member connected to a portion of the upper edge of one of the main panels integral therewith and folded inwardly along a rigid horizontal fold portion, said flap member when folded inwardly acting to reinforce said upper edge and also to space the main panels apart; horizontal elongated notches provided in adjacent vertical edge portions of said sub-panels at one end thereof, the inner ends of said notches terminating in enlarged circular holes thereby to provide means for hanging the hanger on horizontal racks; and the main panels when folded toward each other lying adjacent to but spaced apart from each other to provide a space therebetween for the introduction of the material to be displayed on the hanger, said flap portion being within said space.

3,899,079

EASY OPENING DISPENSER FOR BARRIER CARTON OR CONTAINER

George M. Seiter, Minneapolis, Minn., assignor to Hoerner-Waldorf Corporation, Saint Paul, Minn.

Filed Feb. 23, 1973, Ser. No. 334,998

Int. Cl. B65D 5/54, 17/24, 65/28

U.S. Cl. 206-498

1 Claim

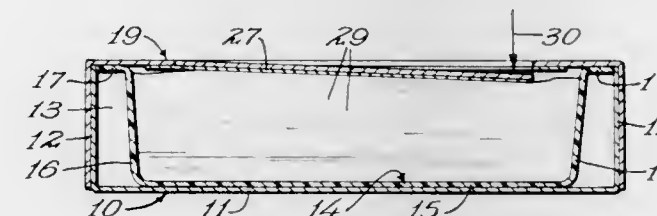
1. An easy opening container containing a product, the container including:

an open topped tray having connected side and end walls, an outwardly extending continuous flange on the upper edges of said side and end walls, a cover panel sealed about its periphery to said flange,

said cover panel having a coating of heat sealable material over its entire under surface,

a potentially removable area in said cover panel spaced inwardly from said peripherally sealed portions of said cover panel,

said removable area being defined by an endless weakened line of separation,



a patch of imperforate easily frangible metal foil secured to the under surface of said cover panel completely underlying said weakened line of separation and secured to portions of said cover panel completely encircling said weakened line,

means adhering said patch of metal foil to said cover panel on either side of said weakened line of separation, whereby downward pressure on said potentially removable area will tear said metal foil along said weakened line of separation.

3,899,080

PILL PACKAGE

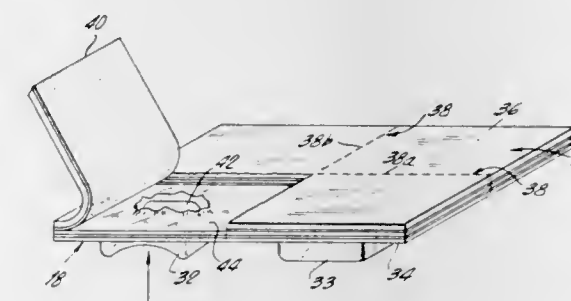
Michael J. Brunda, Clifton, N.J., assignor to Standard Packaging Corporation, New York, N.Y.

Filed Feb. 8, 1973, Ser. No. 330,482

Int. Cl. B65D 75/42, 75/46, 83/04

U.S. Cl. 206-531

5 Claims



1. A package comprising a product container including at least one recess for housing a product and a composite lid, said lid comprising an inner rupturable layer, an outer, non-rupturable protective layer and an intermediate adhesive layer joining said protective and rupturable layers, said protective layer being removable from said composite lid without causing the rupture of said rupturable layer, said lid being heat sealed to said container to form an air-tight compartment for said product.

3,899,081

CLOSURE SORTING METHOD AND APPARATUS

Keith Shotbolt, Gerrards Cross; Alan Eastwood, Langley, and John Henry Gait, Ruislip, all of England, assignors to W. R. Gwace & Co., Cambridge, Mass.

Filed Feb. 5, 1974, Ser. No. 439,808

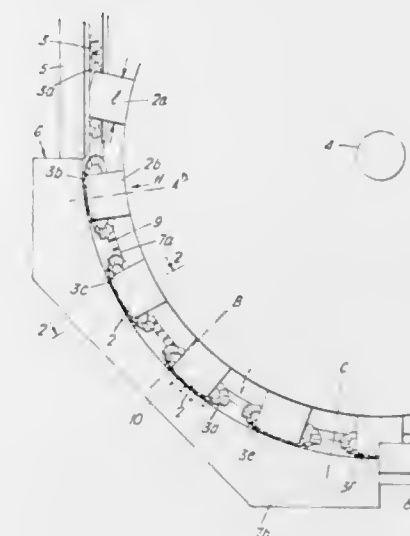
Int. Cl. B07C 9/00

U.S. Cl. 209-73

11 Claims

1. A method of sorting skirted closures which comprises passing skirted closures along a sorting track having a rejecting slot dimensioned so as to receive undersized closures but to block correctly sized closures, rotating each closure about

its axis of symmetry as it passes along the sorting track, collecting the closures which successfully pass along the sorting



3,899,082

BINDER STORAGE ARRANGEMENT INCLUDING REMOVABLE FLEXIBLE HANGERS

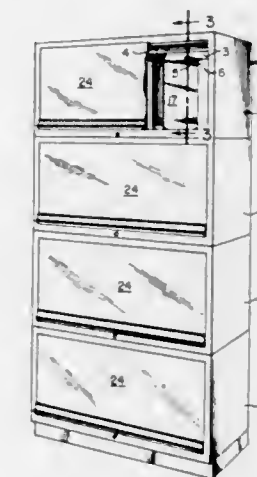
Raymond R. Young, Des Plaines, and Frank J. Malcik, Berwyn, both of Ill., assignors to Swingline, Inc., Long Island City, N.Y.

Filed Sept. 4, 1973, Ser. No. 393,999

Int. Cl. H47F 7/16; A47B 63/00

U.S. Cl. 211-46

9 Claims



1. A binder storage support arrangement comprising
a. a storage housing;
b. a frame hanger including parallel flexible elongated frame elements spaced-apart a distance such that a flanged-back binder positioned between the elements is supported by them and including hanger support end portions positioned at the ends of the elongated frame elements; and
c. a pair of oppositely spaced first and second housing frame engaging and supporting means adapted to respectively engage each of said hanger support end portions and associated with the storage housing and being shaped, configured and spaced apart to receive the hanger when flexed and to hold the hanger through said hanger support end portions in its non-flexed condition.

3,899,083

DEVICE FOR DAMPING PENDULUM MOVEMENTS

Henrich Flessner, and Bernhard Hoffmeister, both of Wilhelmshaven, Germany, assignors to Fried. Krupp Gesellschaft mit beschränkter Haftung, Essen, Germany

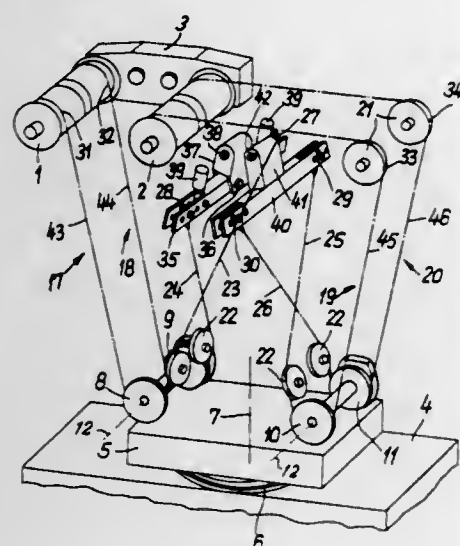
Filed Mar. 22, 1973, Ser. No. 343,886

Claims priority, application Germany, Mar. 24, 1972, 2214348

Int. Cl. B66c 19/00

U.S. Cl. 212-14

7 Claims



1. A hoist structure including:

- a first frame,
- a load supporting second frame which is suspended from said first frame,
- by means of two pairs of lifting cables of a hoisting drum means mounted on said first frame,
- and by means of two pairs of pulleys independently rotatable journaled upon said second frame,
- the pulleys of each said pair having a common axis of rotation and being arranged with a distance from one another, the two axes of rotation of said two pairs of pulleys being arranged horizontal and parallel to one another,
- each pair of said cables leading from said first frame downwards to the pulleys of one of said pairs in such arrangement,
- so that each of the cables of each said pair of cables is passed around a pulley of one of said pairs of pulleys,
- the cables of each pair ascending from its pair of pulleys in two strands to a fastening means of said first frame in two spaced points,
- said strands of each said pair of cables lying nearly within a plane parallel to said axes of rotation of said pairs of pulleys and inclined with respect to said axes,
- said two strands of each pair crossing between said first and second frames in such a manner; that in response to swinging movement of said second frame parallel to said axes, the pulleys of each of said pairs of pulleys are rotated in opposite directions,
- a damping means being operatively interposed between the pulleys of each said pair of pulleys
- and comprising a fluid displacement means including at least one pair of displacing members one of which is hollow and connected to one pulley of the same pair of pulleys, the other displacing member of the same pair of displacing members being guided within said first displacing member and connected to the other pulley of the same pair of pulleys,
- said fluid displacement means including at least two volumes each being enclosed by at least one said pair of displacing members and filled with fluid,
- a conduit means interconnecting said two volumes and including choke means
- in such an arrangement that rotation of said pulleys of the same pair of pulleys in opposite directions will cause relative movement of said two displacing members so that

a portion of said fluid will flow from one of said volumes through said conduit means and through said choke means to the other said volume.

3,899,084

CAR COUPLER

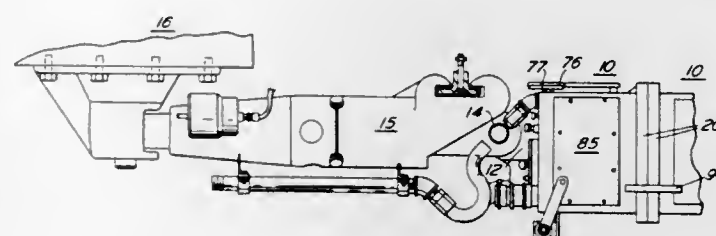
George W. Gobrecht, Broomall, Pa., and Robert T. Reed, Moorestown, N.J., assignors to Walton Products, Inc., Broomall, Pa.

Filed July 19, 1974, Ser. No. 490,036

Int. Cl. B61g 3/10

U.S. Cl. 213-100 R

12 Claims



1. Apparatus for controlling the uncoupling of railway vehicles which comprises for each of the vehicles to be coupled a housing at an end of the vehicle to be coupled to another vehicle,
- said housing having a resiliently biased coupling hook carried therein having a position for coupling engagement and an out of engagement position,
- said coupling hook having a vertically disposed pulling face and vertically disposed control face,
- a cam carried in said housing engageable with said control face for moving said coupling hook to an out of engagement position,
- a pawl in engagement with said cam for actuating said cam, and
- means for moving said pawl for operating said cam.

3,899,085

INTEGRATED CIRCUIT HANDLING SYSTEM

John J. Chaparro; Lowell V. Ellis, both of San Diego; Doyle W. Meanor, Lakeside; William D. Morton, Jr.; Bernd H. Richelmann, both of San Diego; George B. Ross, Mill Valley, and John E. Toth, San Diego, all of Calif., assignors to Delta Design, Inc., La Mesa, Calif.

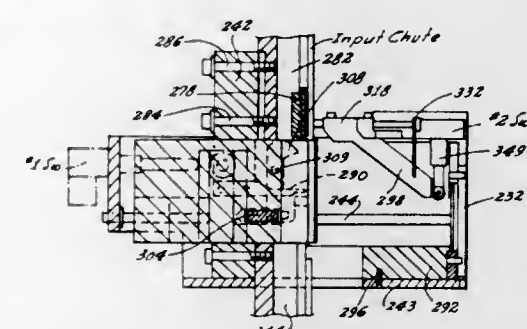
Division of Ser. No. 44,401, June 8, 1970, Pat. No. 3,677,401.

This application Mar. 2, 1972, Ser. No. 231,421

Int. Cl. B23q 7/06

U.S. Cl. 214-1 BB

10 Claims



1. A handling device for component carriers comprising:
 - a. a housing;
 - b. a handling mechanism disposed within said housing including means comprising a vertical chute and a stop in fixed position in said chute for receiving carriers and positioning said carriers at a first level at an initial station, a horizontally reciprocating transporter in horizontal alignment with said initial station for moving said carriers horizontally from said stop to a second station at a second level wherein carriers are in position for making contact with a test contactor, said transporter being movable in

the opposite horizontal direction away from said test contactor to a third station in vertical alignment with said initial station; and a quick releasable connector assembly on said housing having a passage therethrough for said carriers in vertical alignment with said chute, said assembly comprising a stationary part attached to the housing and a movable part, one of said parts having an elongated opening therein and a post on the other of the parts having a sliding engagement with said opening, a yieldable cam follower on the part which has the opening therein at a location overlying said opening, a cam surface on the post in a position for engagement with said cam follower, and complementary interlocking elements respectively on said cam follower and said post having a yieldable locked relationship when said movable part is in engagement with said stationary part.

3,899,086

APPARATUS FOR REMOVING CHEESES FROM CHEESE MOULDS

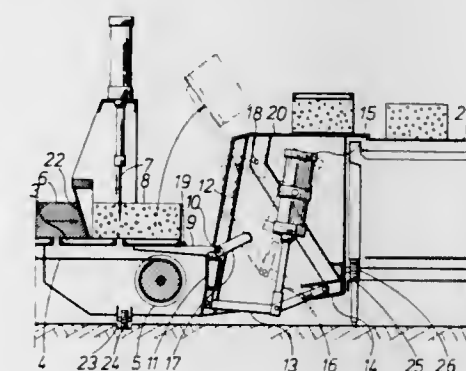
Olavi Reljonen, and Lauri Kostainen, both of Helsinki, Finland, assignors to MKT-Techtaat OY, Helsinki, Finland

Filed June 5, 1973, Ser. No. 367,223

Int. Cl. B65g 65/04

U.S. Cl. 214-1 Q

4 Claims



1. Improvement in an apparatus for removing cheeses from rectangular, large cheese molds lying side by side, in which moulds the bottom is composed of rectangular plates and one end of the mould has been constructed to constitute a door through which the bottom plates of the mould and the cheese bolster resting thereupon can be extracted from the mould by the aid of a traction member such as a rope or chain, said traction member being attached at one end to the plate furthest from said door and at the other end to a winch constructed to be a carriage transportable from one cheese mould to another and having a tray for receiving one cheese at a time, wherein the improvement comprises a track for the winch carriage located in front of the cheese moulds, a conveyor for the cheeses beside said track and running parallel therewith, said tray mounted on said carriage and comprising a lever and a shaft turnably mounting said lever which upends the cheese together with the accompanying bottom plate and drops them onto a supporting surface on the winch carriage or directly onto the cheese conveyor.

3,899,087

ARTICLE POSITIONING MECHANISM INCORPORATING VACUUM HOLDING AND PRESSURE EJECTION

George D. Tumble, San Pedro, and Frederick C. Olsen, Huntington Beach, both of Calif., assignors to Standun, Inc., Compton, Calif.

Filed Jan. 28, 1974, Ser. No. 437,382

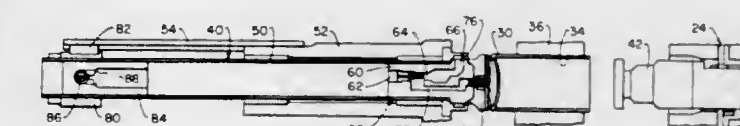
Int. Cl. B21D 43/28

U.S. Cl. 214-1 BT

6 Claims

5. In a vacuum supplied gripping device for selectively vacuum retaining workpieces; the combination of: vacuum pad means for contacting and vacuum gripping a workpiece

upon vacuum being supplied thereto; a venturi normally having a full main fluid flow therethrough and exhausting therefrom; vacuum line means communicating intermediate said venturi normally creating a vacuum flow in said vacuum line means during said full main fluid flow through said venturi, said vacuum line means communicating with said vacuum pad means normally supplying said vacuum for said pad means vacuum gripping; said vacuum pad means, said venturi and said vacuum line means being mounted as a unit on movable frame means movable forwardly and rearwardly in a defined reciprocal path, said movable frame means including a side surface at said unit; said venturi including a fluid exhaust line operably connected thereto receiving said exhaust of said



main fluid flow, said fluid exhaust line opening through said side surface of said movable frame means spaced from said venturi; diverting means operable for closing off a portion of said exhaust of said full main fluid flow from said venturi sufficient to divert at least a portion of said full main fluid flow through said vacuum line means to said vacuum pad means changing said vacuum flow to a reverse positive pressure fluid flow to said vacuum pad means, said diverting means being mounted stationary at a determined location of said unit reciprocal path for registering with said side surface of said movable frame means and over said fluid exhaust line opening to close off at least a portion of said fluid exhaust line opening at said determined location.

3,899,088

FURNACE CHARGING APPARATUS

Shoji Furuya, Tokyo; Masaaki Takahashi, and Masatoshi Matsushima, both of Yokohama, all of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan

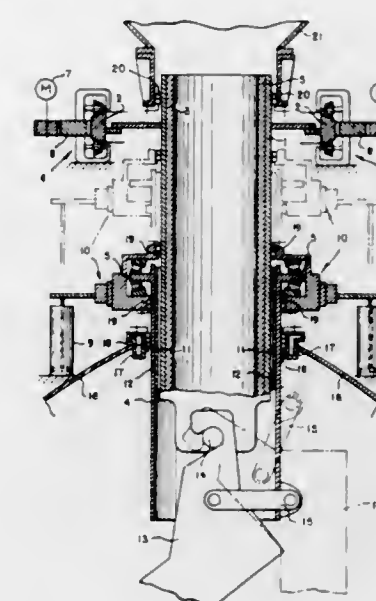
Filed Jan. 30, 1974, Ser. No. 437,809

Claims priority, application Japan, Jan. 31, 1973, 48-12649

Int. Cl. F27b 1/20

U.S. Cl. 214-35 R

3 Claims



1. Mechanism for charging a furnace with raw materials through a top opening comprising a distribution chute positioned in the upper portion of the furnace adjacent the opening, means for mounting said chute for rotation about the vertical axis of the furnace and for independent angular adjustment with respect to said axis, a pair of concentrically arranged cylinders positioned exteriorly of said furnace and

aligned with said vertical axis, said cylinders being connected for rotation together and slideable movement with respect to each other, first power means for rotating said cylinders, second power means for slideably moving one cylinder with respect to the other, means connecting one of the cylinders with the chute to rotate the latter upon operation of said first power means, and means connecting the other cylinder with the chute for angular adjustment of the latter upon operation of said second power means.

3,899,089

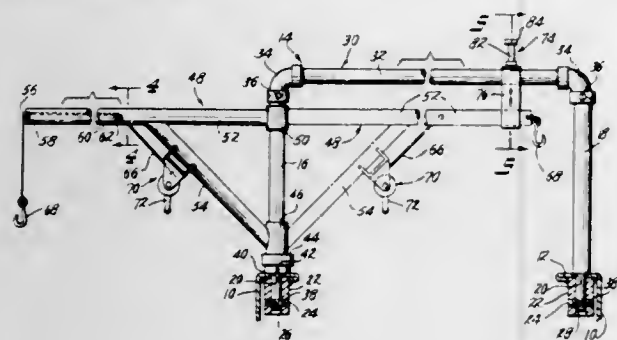
REMOVABLE MOUNTED HOIST FOR PICK-UP TRUCK

N. J. Wardlaw, 3100 Pine Ave., Waco, Tex. 76708

Continuation-in-part of Ser. No. 439,953, Feb. 5, 1974, abandoned. This application June 28, 1974, Ser. No. 484,258
Int. Cl. B60p 1/46

U.S. Cl. 214-75 H

12 Claims



1. A hoist assembly for removably mounting on the sideboards of a pick-up truck box, said sideboards having upwardly opening socket means mounted thereon, and said hoist assembly comprising: a pair of vertical standards, the lower ends of said standards being receivable within said upwardly opening socket means; a bridging member connecting the upper ends of said vertical standards; a boom assembly mounted for rotation about one of said vertical standards, and including a horizontally extending boom, said boom assembly being swingable between a position wherein said horizontal boom extends outwardly from said truck box to a position wherein it lies beneath said bridging member; and cable and winch means carried by said boom assembly for lifting objects to be loaded into or unloaded from said truck box.

3,899,090

PACKER PLATE GUIDE FOR REFUSE COLLECTION VEHICLES

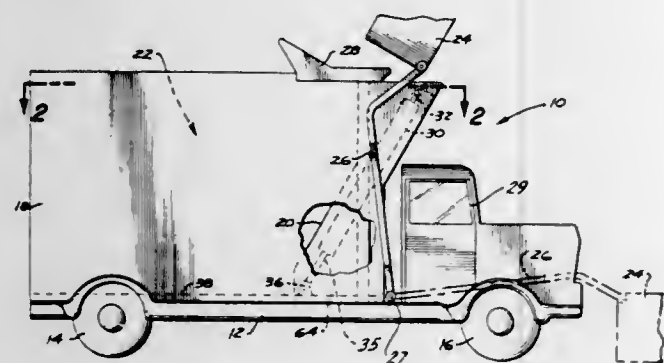
George O. Telesio, 7709 S. Milna Ave., Whittier, Calif. 90601

Filed Oct. 29, 1973, Ser. No. 410,766

Int. Cl. B30b 15/06

U.S. Cl. 214-82

10 Claims



1. A refuse collection vehicle including a storage bin, a packer plate in the interior of the storage bin, and means for slidably mounting the packer plate for essentially translatable movement lengthwise of the storage bin, the mounting means including at least one elongated fixed guide member located in the bin to be exposed to contact with contents of the bin, a guide member support disposed in the storage bin as an

element of the structure thereof for positioning the guide member along the length of the bin, the fixed guide member being disposed principally between the interior of the bin and the support and being releasably secured to the guide member support to be removable therefrom without disturbing the structural integrity of the bin, shoe means affixed to the packer plate and slidably engaged with the guide member to guide movement of the packer plate along the guide member, a first galvanized interface between the guide member support and the fixed guide member, and a second galvanized interface between the shoe means and the fixed guide member.

3,899,091

REFUSE COLLECTION APPARATUS

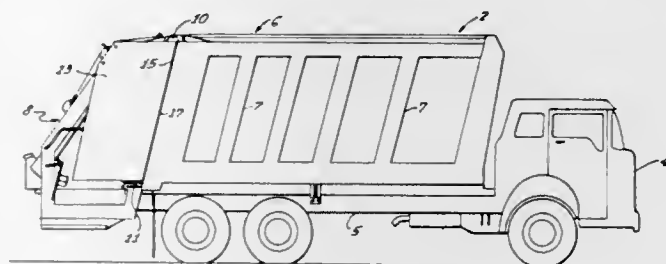
Fred T. Smith, Dearborn Heights, Mich., assignor to Sargent Industries, Inc., Los Angeles, Calif.

Filed June 19, 1972, Ser. No. 264,021

Int. Cl. B65f 3/00

U.S. Cl. 214-83.3

79 Claims



1. In a refuse collector including a storage body, and a tailgate structure providing a relatively short loading hopper having a bottom surface continuous through an arc symmetrical about a substantially vertical radius with the hopper positioned rearwardly of and adjacent to an opening into said storage body;

apparatus for moving refuse from said hopper into said body comprising:

an upper panel extending across the width of said hopper and movably mounted above and longitudinally of said hopper for movement as a unit in the longitudinal and vertical directions relative to said hopper;

mounting means operatively coupled to said tailgate structure and said upper panel in a particular relationship for providing a movement of the upper panel as a unit in a rearwardly and downwardly convexly curved path from an upward and forward position to a lowered and rearward position;

a lower panel having an upper edge pivotally connected to the lower edge of said upper panel;

pivotal mounting means operatively coupled to the lower panel for providing a rotary motion of the lower panel about the pivotal connection between the lower and upper panels as a fulcrum through a continuous arc symmetrical about a substantially vertical radius; and

means to actuate said upper and lower panels in the sequence of rotating said lower panel rearwardly, through the continuous arc symmetrical about the substantially vertical radius, with said upper panel positioned in the upward and forward position, moving said upper panel as a unit in a rearwardly and downwardly convexly curved path to the lowered and rearward position, rotating said lower panel forwardly, through the continuous arc symmetrical about the substantially vertical radius, with respect to said upper panel with the lower edge of said lower panel in close proximity to the bottom curved surface of said hopper and with the upper panel in the lowered and rearward position, and moving said upper panel in a forwardly and upwardly curved path to move refuse through said opening into said truck body.

3,899,092

CARGO-CARRYING STRUCTURAL MODULES

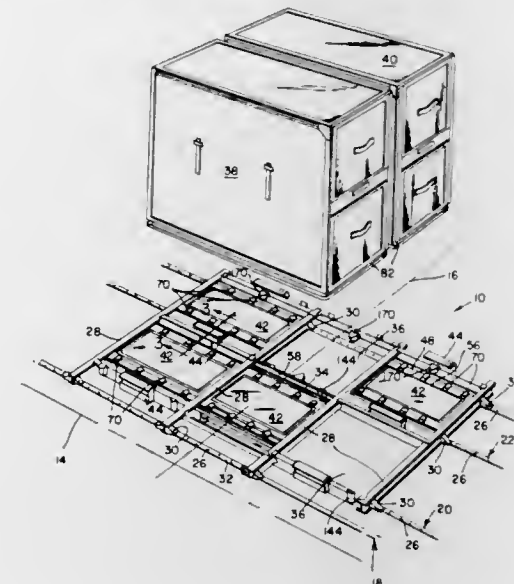
Arnold B. Nordstrom, 3855 Paseo de las Tortugas, Torrance, Calif. 90505

Filed July 3, 1973, Ser. No. 376,122

Int. Cl. B60p 1/00

U.S. Cl. 214-84

9 Claims



1. A load-carrying system for vehicles carrying cargo containers and having floor structure including a major axis, a minor axis and a plurality of spaced-apart rails secured to said floor structure substantially parallel to said major axis, said rails being spaced apart by a distance greater than the width dimension of the cargo containers measured along said minor axis, said load-carrying system comprising:

at least two transverse beams;

first fastening means connecting said transverse beams to said rails substantially normal thereto, said first fastening means maintaining said transverse beams in spaced-apart relationship and above said floor structure;

at least two longitudinal beams;

second fastening means connecting said longitudinal beams to said transverse beams substantially normal thereto, said second fastening means maintaining said longitudinal beams in spaced-apart relationship and above said floor structure, said longitudinal beams being spaced to coincide with the width dimensions of the cargo containers; stop means provided on at least some of said longitudinal beams for maintaining a cargo container in position thereon; and

means normally supporting said container in spaced relationship above said longitudinal beams, said supporting means including resilient means which carry a predetermined load imposed by said container, said resilient means transferring loads exceeding said predetermined load directly to said longitudinal beams.

3,899,093

ANTI-TIPPING LOG SKIDDER

Jan K. Allen, Chillicothe, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 18, 1973, Ser. No. 352,360

Int. Cl. B60P 1/00

U.S. Cl. 214-85.5

7 Claims

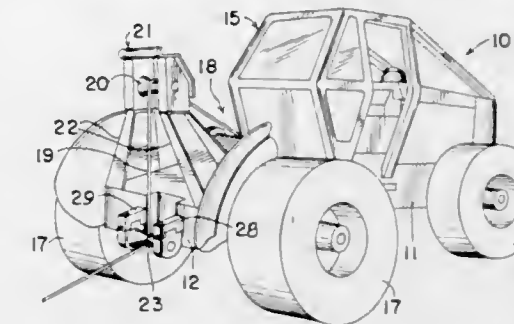
1. A log skidder disposed on a longitudinal axis thereof comprising

a frame,

a towing winch mounted on said frame and having a cable wrapped thereon,

first cable guide means mounted on and vertically above said frame and positioned rearwardly of said towing winch, said cable received and guided over said first cable guide means, and

second cable guide means fixedly mounted on said frame substantially below said first guide means and constructed to define an opening for selectively permitting said cable to be placed thereunder from said first guide means to substantially shorten the tipping moment arm of said log skidder during selected phases of operation thereof, said second cable guide means comprising a roller rotatably



mounted on and between a pair of first and second support brackets and wherein said first bracket is attached to said frame by releasable fastening means and said second bracket is pivotally mounted on said frame by pivot means whereby release of said releasable fastening means will permit said roller to be pivoted along with said second bracket about said pivot means on said frame to allow insertion of said cable under said roller.

3,899,094

MATERIAL HANDLING APPARATUS

John Charles Youl, Symmons Plains, Perth, Tasmania, Australia

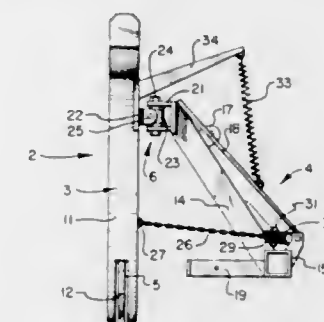
Filed Dec. 5, 1973, Ser. No. 422,079

Claims priority, application Australia, Dec. 6, 1972, 1509/72

Int. Cl. B66c 1/62

U.S. Cl. 214-147 G

8 Claims



1. Material handling apparatus including: a support frame attachable to a vehicle or prime-mover; a jaw assembly comprising two gripping jaws which are pivotally connected for relative movement towards and away from each other; each said jaw having a blade section which is curved so as to define an inner concave surface arranged in opposed relationship to the corresponding surface of the other said blade section, and an arm rigidly secured to said blade section and extending away therefrom, each said arm and associated blade section being located on the opposite sides respectively of said jaw pivot; actuating means connected between said jaw arms and being operable to cause relative pivotal movement of said jaws; mounting means connecting said jaw assembly to said frame to permit movement of said assembly relative to said frame about at least two axes, one of which extends substantially upright and is transverse to the other of said axes; and flexible restraining means interconnecting said blade sections and mounted to freely move around a portion of said frame so as to limit movement of said jaw assembly to said frame in one direction about the other of said axes of said mounting means while allowing free movement of the jaw assembly about the one axis in both directions.

3,899,095

DOOR CLOSING ASSEMBLY FOR MATERIAL HANDLING SYSTEMS

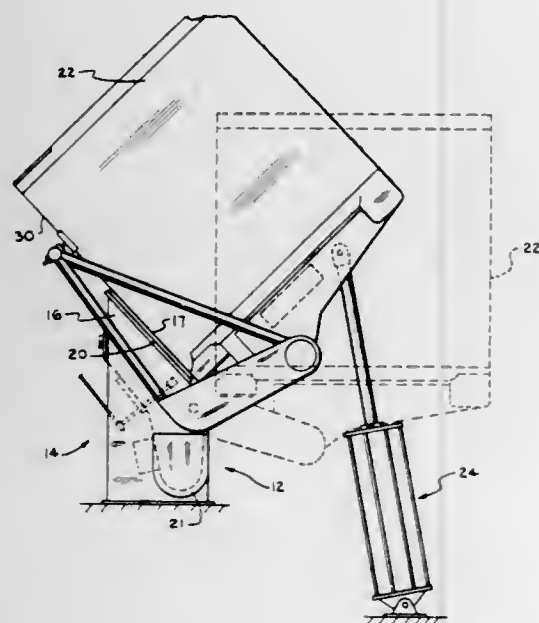
Delmar R. Wiese, Blue Springs, Nebr., assignor to Hoover Ball and Bearing Company, Saline, Mich.

Filed Dec. 17, 1973, Ser. No. 425,110

Int. Cl. B67d 5/06

U.S. Cl. 214—302

3 Claims



1. In a material handling system which includes a material receiving hopper having a rear wall and a front wall formed with an inlet opening, a bin having a discharge opening and a door hinged at the upper end thereof so that it is pivotally movable between closed and open positions with respect to said discharge opening, said bin being positioned against said hopper front wall so that said bin discharge opening is in registry with said hopper inlet opening and said bin door can pivot to open positions in which said door extends into said hopper, extensible means mounted on said hopper back wall and engaged with said bin door below said hinged upper end thereof when said door is in said closed position, said extensible means being retractable away from said hopper front wall while continuously engaged with said bin door to thus enable said door to pivot from said closed position to a plurality of open positions in which said door is moved varying distances away from said discharge opening so that the extent of opening of said door can be used to control the rate of flow of material from said bin into said hopper, said extensible means being extendable toward said hopper front wall while engaged with said bin door to thereby move said door toward said closed position thereof said hopper front wall being inclined downwardly and forwardly and said bin door being similarly inclined downwardly and forwardly in the closed position thereof so that the weight of the bin contents will constitute a force tending to move the door to its open position, and the portion of said hopper back wall on which said extensible means is mounted being substantially parallel to said front wall, said extensible means being substantially perpendicular to said bin door in the closed position thereof so that the closing force applied to said door by said extensible means is likewise substantially perpendicular to said door in the closed position thereof.

3,899,096

REFORMED PLASTIC ARTICLE AND METHOD OF MANUFACTURE

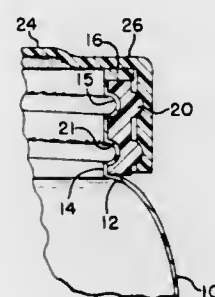
Leslie Stephan Marco, Oakland, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Division of Ser. No. 232,456, March 7, 1972, Pat. No. 3,787,547. This application Aug. 22, 1973, Ser. No. 390,649

Int. Cl. B65d 41/08

U.S. Cl. 215—31

1 Claim



1. A composite container assembly comprising a container portion and an annular relatively rigid ring portion, said container portion being formed from a thin-walled plastics material with insufficient rigidity to be formed with properly functioning cap attaching formations for a closure cap, said container portion comprising a body section, a neck section integrally formed on the upper end of said body section, and a flange section integrally formed on the upper end of said neck section, said body section immediately below said neck section having a shoulder extending substantially radially outwardly of said neck section, the outer diameter of said ring portion being less than the outer diameter of said shoulder of said body section, said ring portion disposed circumferentially about said neck section with the lower end of said ring portion vertically abutting said shoulder, said ring section having external cap attaching formations extending outwardly thereof, said flange section immediately overlying and positioned against the upper end of said ring portion, the outer diameter of said flange section being substantially less than the radially outward extension of said external cap attaching formations, said flange section being sufficiently flexible to provide a seal between an applied closure cap and the interior of said container portion, indentations formed in the inner surface of said ring portion, and portions of said neck section indented into said indentations to lock said ring portion against rotation relative to said neck section.

3,899,097

PLASTIC CLOSURE CAP FOR A CONTAINER

Dietmar Aichinger, Arlesheim, Switzerland, assignor to Albert Obrist & Co., Reinach, Switzerland

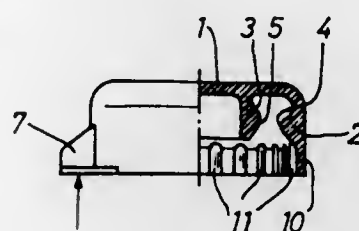
Filed May 2, 1974, Ser. No. 466,194

Claims priority, application Switzerland, May 9, 1973, 6556/73

Int. Cl.² B65D 41/32

U.S. Cl. 215—253

3 Claims



1. A closure cap formed of plastic for use with a container, especially a flask or bottle, comprising a closure cap having a cap body, a cap lift-off nose extending away from the outer periphery of the body of the closure cap, at least one reference rupture location provided for said closure cap, said reference

rupture location tearing upon removal of the closure cap from the container, the region of the closure cap containing said reference rupture location forming a part of the closure cap which can be removed as a unit together with the cap lift-off nose, said closure cap including at least one lateral connection surface extending between the cap lift-off nose and the outer periphery of the body of the closure cap, said at least one reference rupture location comprising at least one reference rupture line provided at said lateral connection surface.

3,899,098

PORTABLE INSULATED CARRIER FOR CONTAINERS

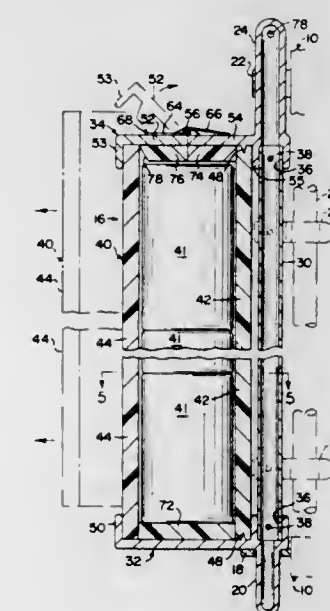
Walter J. Hutchins, 42 Bishop Rd., West Hartford, Conn. 06119

Filed Jan. 2, 1973, Ser. No. 320,443

Int. Cl. B65d 7/00, 25/00

U.S. Cl. 220—4 B

4 Claims



1. A carrier for one or more container, the carrier comprising a hollow casing having separable sections each extending between opposite end portions of the casing, for encasing the containers when the sections are operatively assembled and for facilitating loading and unloading of the containers when the sections are separated, end pieces, one for each of said end portions of the casing, said end pieces being operatively fixedly secured to a first of said sections, a first of said end pieces having means in the form of a hinged portion releasably holding a second of said sections in operative assembly with the first section and for releasing the second section from the first section with the end pieces retained in said operative assembly, to facilitate loading and unloading of the containers.

3,899,099

INERT GAS SYSTEM AND METHOD FOR TANKERS
Andrew Oiestad, Staten Island, N.Y., assignor to Tank Sapp (UK) Ltd., Croydon, England

Filed June 21, 1973, Ser. No. 372,077

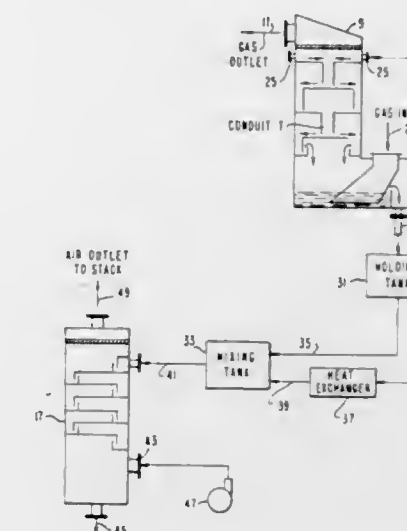
Int. Cl.² A62C 3/10; B01D 47/02; C01B 17/60

U.S. Cl. 220—88 B

5 Claims

3. In a process for providing an inert gas blanket to reduce the oxygen concentration in fuel oil storage tanks aboard ship to an amount not greater than about 12% by volume, wherein a flue gas containing sulfur dioxide is treated with sea water to reduce the sulfur dioxide concentration of said flue gas sufficiently to prevent the gas from causing corrosion of the storage tanks, the treated gas is distributed to the storage tanks aboard ship to provide an inert gas blanket, and the sea water used to remove the sulfur dioxide from the flue gas is discharged into the water surrounding the ship, the improvement comprising reducing the concentration of sulfur compounds in said water to a non-polluting level by contacting said water with a countercurrent stream of air in an amount

and at a temperature sufficient to reduce the level of concentration of sulfur compounds to the desired level prior to dis-



charging the sea water effluent to the water surrounding the ship.

3,899,100

CONTAINER FOR PACKAGING AN OBJECT

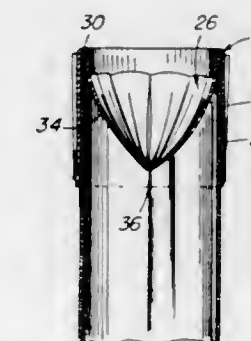
Raymond L. Rigaud, Shrub Oak, N.Y., assignor to Tiros Plastics Corporation, White Plains, N.Y.

Filed July 20, 1973, Ser. No. 381,247

Int. Cl. B65d 51/12, 85/70, 85/58

U.S. Cl. 220—229

4 Claims



1. A container for packaging an object, comprising: a tube having at least one open end; an end cap mounted on the open end of said tube, said end cap having an end wall in the shape of a cup extending inwardly of said tube and a sidewall skirt depending from said end wall, said skirt being shaped to slip over the tube, an annular groove located between said skirt and said end wall for frictionally receiving the end of said tube, said end wall being divided into a plurality of resilient triangular segments separated by radial slits which meet in the center of said end wall, said triangular segments tapering in thickness toward the center of the end wall and being deflectable inwardly of the container to allow an object to be inserted through the end wall into the container, said triangular segments being biased to resiliently return to their original position after an object has passed into the container through said cap to prevent escape of the object from the container said triangular segments including a central radial rib which increases in height from the surface of the tapered segments in direct proportion to the reduction in thickness of the segments to maintain a constant thickness of material along the radial center portion of said segments.

3,899,101

PLASTIC FILLER WITH INTEGRAL BIAS MEANS

John H. Keating, Berlin, and Alfred E. Chase, Jr., Blackwood, both of N.J., assignors to I-T-E Imperial Corporation, Spring House, Pa.

Filed July 11, 1974, Ser. No. 487,468

Int. Cl. H02g 3/14

U.S. Cl. 220-241

10 Claims



1. A filler for an opening in a trim plate, said filler including an elongated rectangular plate-like portion having first and second relatively short edges at opposite ends of said portion, first retaining formation means at said first edge defining a relatively shallow plate receiving first recess means at one of said ends and having an opening facing said first edge, second retaining formation means at said second edge defining a relatively deep plate receiving second recess means at the other of said ends and having an opening facing said second edge, an element mounted to said portion and positioned to engage a trim plate edge entered into said second recess means, biasing means acting on said element to create a reaction force which urges said filler away from a trim plate edge entered into said second recess means whereby another trim plate edge becomes more deeply positioned in said first recess means.

3,899,102

CUP DISPENSER WITH RECIPROCATING ACTUATOR

Bryan E. C. Lack, and Alec T. Newman, both of Banbury, England, assignors to General Foods Corporation, White Plains, N.Y.

Filed Jan. 26, 1973, Ser. No. 327,040

Int. Cl. B65g 59/10

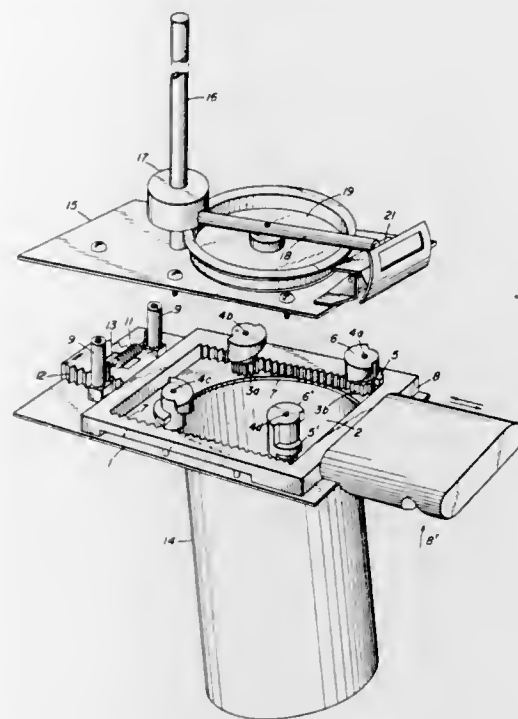
U.S. Cl. 221-6

1 Claim

1. A mechanism for dispensing individual cups which comprises:

- a base plate, said base plate having a delivery aperture therein, said delivery aperture being of circular cross-section just slightly larger than the cups to be dispensed;
- four pinions mounted symmetrically on the base plate around the periphery of the aperture, each of said pinions having first and second axially spaced and circumferentially staggered detents, the first detent cooperating to retain a cup and the second detent cooperating to retain a cup;
- a frame member mounted on said base plate for rectilinear sliding movement, said frame member having a pair of racks flanking opposite sides of the aperture, each of said racks engaged with two of the pinions for rotation thereof during rectilinear sliding movement of the frame member;
- means for providing rectilinear sliding movement to the frame member, said means comprising:
 - an extension of the frame member in the form of a handle with a grippable indentation; and
 - a non-return pawl and ratchet mechanism attached to an outer side of the frame member;
- a top plate mounted above the slidable frame member; said top plate having an indicator plate hinge mounted thereon;
- a cup stack support mounted on said top plate, said cup stack support comprising:

- a vertically disposed elongated rod;



- an arm slidably mounted on said elongated rod, said arm having an extension adapted to operate the hinged indicator plate; and
- a weighted disc mounted on said arm.

3,899,103

MONEY CONTAINER SETTING CIRCUIT IN AN AUTOMATIC MONEY DISPENSER

Hidetoshi Shigemori, Akio Ueba, and Hisashi Kitagami, all of Himeji, Japan, assignors to Glory Kogyo Kabushiki Kaisha, Japan

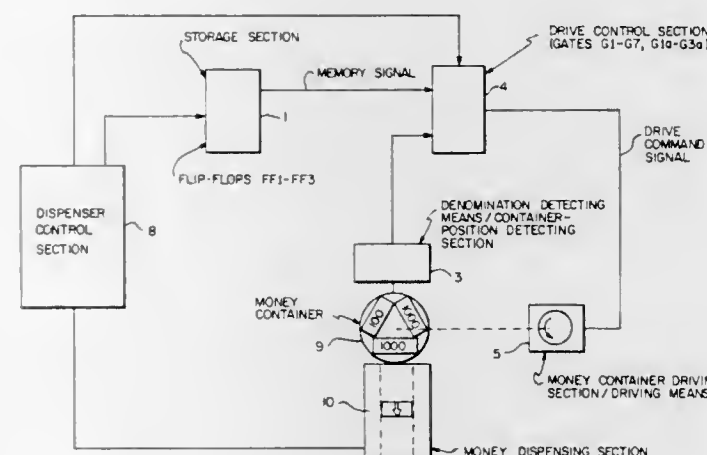
Continuation-in-part of Ser. No. 299,402, Oct. 20, 1972, abandoned. This application July 3, 1974, Ser. No. 485,433

Claims priority, application Japan, Oct. 20, 1971, 46-82424

Int. Cl. G07d 1/00

U.S. Cl. 221-10

4 Claims



- A money container setting system in an automatic money dispenser having a dispenser control section to control the dispensation of money, said system comprising:
 - a money container having a plurality of money containing frames each containing money of a particular monetary denomination;
 - driving means for setting each one of said money containing frames containing money of a predetermined monetary denomination to be dispensed at a money dispensing position of said automatic money dispenser;
 - a money dispensing section for dispensing money out of each one of said money containing frames when set at said money dispensing position;

3,899,105

CHEMICAL IRRITANT SPRAY DEVICE

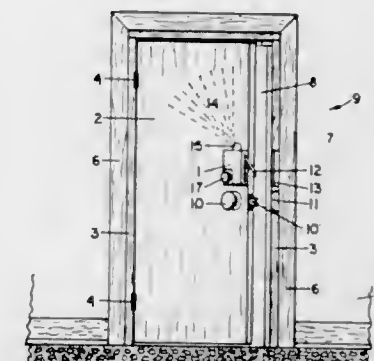
Charles R. Fegley, 1606 Frush Valley Rd., Laureldale, Pa. 19605, and Werner F. Esseluhn, 12 Larchwood Rd., Wyomissing, Pa. 19601

Filed Feb. 20, 1974, Ser. No. 443,981

Int. Cl. B65D 83/14

U.S. Cl. 222-5

8 Claims



storage means for storing the monetary denominations of money designated to be dispensed and providing respective denomination storing signals representative thereof; monetary denomination detecting means operatively responsive to said denomination storing signals for detecting the denomination of money contained in each one of said money containing frames when set at said money dispensing position; and drive control means for applying a driving command signal to said driving means until the denomination of money to be dispensed, which is selected in a predetermined order of priority determined by the denominations stored in said storage means, is detected by said monetary denomination detecting means in response to respective ones of said denomination storage signals, whereby money to be dispensed is successively selected and set at said money dispensing position.

3,899,104

SHEET STORAGE AND DISPENSING CONTAINER

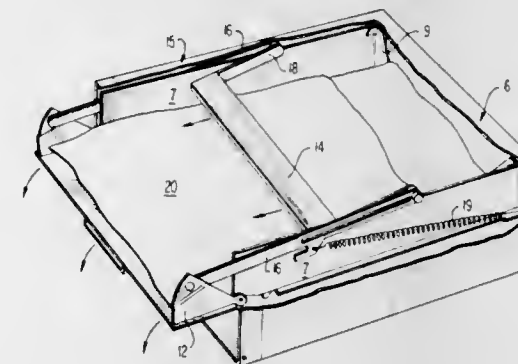
Gabriel Kohner, Hevel Korazim, Israel, assignor to Amiad, Mutzaref Yitl-1972, Hevel Korazim, Israel

Filed Apr. 24, 1973, Ser. No. 353,971

Int. Cl. B65H 3/02

U.S. Cl. 221-197

7 Claims



- A sheet storage and dispensing unit comprising: an enclosure frame, including enclosure frame walls; guides associated with said enclosure frame walls; a tray slidably displaceable in said guides and being adapted to contain sheets to be dispensed, said tray comprising a floor portion and side wall portions; a tray closure member pivotally mounted with respect to the enclosure frame and adapted, together with the enclosure frame to enclose the tray completely; sheet pusher means biased towards said floor portion; articulated coupling means for coupling the closure member to the sheet pusher means so that pivotal movement of the closure member results in a translational movement of the pusher means; spring biasing means for coupling the tray to the articulated coupling means so as to spring load the tray in the direction of the closure member upon pivotal opening movement of the closure member; and abutment means associated with said guides against which said tray is normally biased and with respect to which said tray is manually displaceable so as to clear the abutment means thereby allowing for outward displacement of the tray under its spring loading.

1. A chemical dispensing anti-burglar device comprising: a body member, a pressurized container, means for slidably supporting said container in said body member, a fluid passageway in said body member having an open entry section, means for discharging fluid from said container into said open entry section, a spring biasing said container toward said open entry section, means for releasably retaining said container in a cocked position away from said open entry section, said retaining means including a trigger element mounted for movement within said body member between an actuation position and a release position, said trigger element in the actuation position being in engagement with a surface of the container to retain the container in a cocked position, said trigger element in the release position allowing the container to be forced against the open entry section by the spring, whereby the means for discharging fluid causes discharge; means for locking said trigger element in engagement with said container, said locking means being mounted for movement within said body member between a locked position and a release position, said locking means in said locked position securing said trigger element in engagement with said surface of the container, and said locking means in its release position permitting the trigger element to move to its release position; and means external to the body member for releasably retaining the trigger element in its actuation position, said external retaining means including a latching plate mounted separate from the body member, the body member being movable between a first position in which the external retaining means retains the trigger element in its actuation position, and a second position in which the external retaining means allows the trigger element to move to its release position.

3,899,106

LIQUID METERING DEVICE

Edmond Danquechin Dorval, 4, avenue des Arts, Versailles (78) Yvelines, France

Filed Feb. 3, 1971, Ser. No. 112,261

Claims priority, application France, Feb. 16, 1970, 70.05353

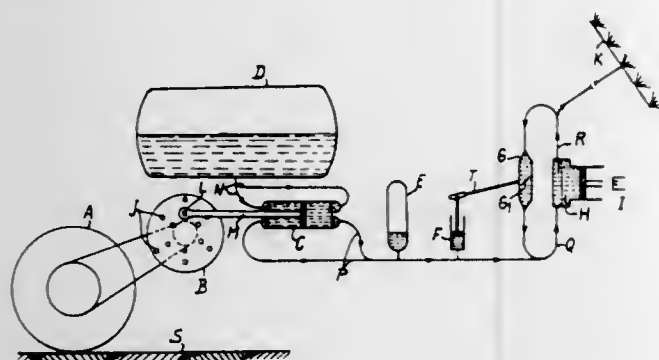
Int. Cl. A01c 23/00

U.S. Cl. 222-177

7 Claims

1. A device for the controlled metering of a liquid from a reservoir and for discharging the liquid onto a surface relative to which the device moves, comprising a distributor outlet member for discharging the liquid onto the surface, a flow circuit connecting said reservoir to said distributor outlet member, a first metering pump positioned in said circuit for withdrawing liquid from said reservoir and for discharging the liquid into the circuit downstream of said metering pump, said metering pump operating at a first pressure, first driving means adjustably connected to said metering pump for vary-

ing the amount of liquid discharged by said pump, said first driving means arranged to cooperate with the surface onto which the liquid is discharged and relative to which the device moves for establishing the delivery rate of said metering pump proportional to the relative speed between the device and the surface relative to which it travels, a second pump positioned in said circuit between said first pump and said distributor outlet member, said second pump operating at a second pressure higher than the operating pressure of said first pump, second driving means for said second pump, said second driving means operated independently of and by a different source from said first driving means, a regulating return valve



connected to said circuit in parallel with said second pump, and a pressure sensitive device connected to said circuit downstream from said first pump and upstream from the parallel connection of said second pump and regulating return valve, said pressure sensitive device is coupled to said regulating return valve for controlling said return valve so that the portion of flow through said second pump which passes through said return valve increases or decreases in response to a decrease or increase in the pressure in said circuit, the pressure in said circuit is dependent on the quantity of liquid supplied into said circuit from said first pump and the actual quantity of liquid distributed through said distributor outlet member.

3,899,107

PAINT CAN ADAPTOR

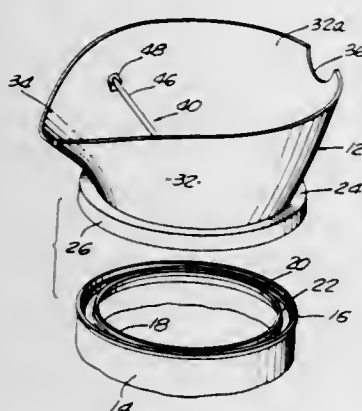
Denes Gaal, 15409 S. Benfield, Norwalk, Calif. 90650

Filed Aug. 12, 1974, Ser. No. 496,401

Int. Cl. B65d 25/48

U.S. Cl. 222-570

5 Claims



1. An attachment for paint cans and the like of the type comprising cylindrical side walls, a bottom and a top having an outer peripheral side wall connecting bead which marginally encompasses the outer periphery of the can, an inner peripheral bead which defines a circular opening in the can and a groove intermediate the inner and outer beads adapted to receive the friction member of a pry-off type lid, said attachment comprising:

- a connecting web which is generally circular in plan and of a width sufficient to bridge the groove in the top of the can, said connecting web including:

- an outer peripheral edge provided with a resilient snap fit retainer section which is channel-shaped in cross-section and adapted to snap over the outer peripheral bead of the can;
 - a depending locating rib which is generally V shaped in cross-section and is adapted to extend into the groove in the top of the can; and
 - an inner peripheral edge which is channel-shaped in cross-section and is adapted to closely fit over the inner peripheral bead of the can;
- a continuous wall extending upwardly and outwardly from the top surface of said connecting web and terminating in an upper rim, said wall having on one side a marginally projecting pouring spout portion and on the opposite side a first paint brush supporting means in the form of an interruption in the wall adapted to support a paint brush handle; and
 - a second paint brush supporting means carried by said continuous wall intermediate said pouring spout portion and said first brush supporting means for supporting a paint brush at a point adjacent the bristles thereof.

3,899,108

APPARATUS FOR STEAMING AND SMOOTHING OF ARTICLES OF CLOTHING IN A CLOSED CHAMBER

Manfred Frauendorf, Stein, near Nurnberg, Germany, assignor to Normbau GmbH Maschinen-Papaparte-Werkzeuge & Co., Stein, near Nurnberg, Germany

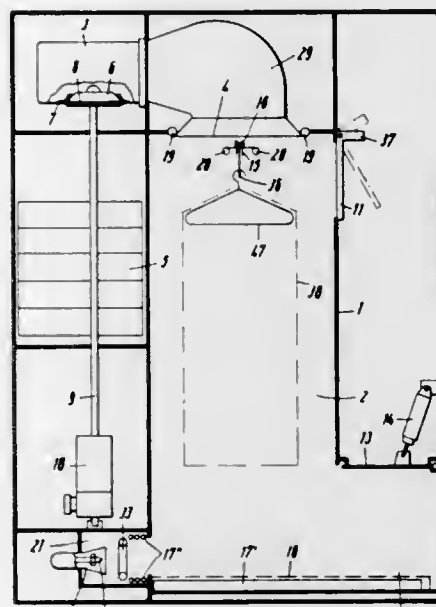
Division of Ser. No. 305,253, Nov. 10, 1972, Pat. No. 3,849,815. This application Aug. 12, 1974, Ser. No. 496,886

Claims priority, application Germany, Nov. 12, 1971, 2156405

Int. Cl.² A41H 43/00

U.S. Cl. 223-51

17 Claims



1. In a device for steaming and smoothing clothing in a closed chamber with a lockable processing space and means to supply steam and hot air, the improvement wherein said processing space comprises an hermetically sealed pressure chamber; said device further comprising an excess pressure valve for said pressure chamber, a nozzle arrangement for separate feed of large volume of abruptly decompressed steam, an intermediate steam storage means upstream from said nozzle arrangement, and means for the separate feed of hot or saturated steam at constant pressure.

3,899,109

BACKPACK FRAME WITH HANDLES

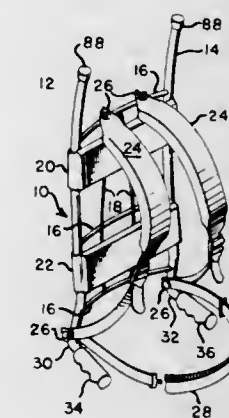
Frank M. Noice, 414 E. Mercer, Apt. 3, Seattle, Wash. 98102

Filed Aug. 10, 1972, Ser. No. 279,432

Int. Cl. A45f 3/10

U.S. Cl. 224-25 A

18 Claims



1. In a backpack frame of the type having a pair of generally vertical main support bars each having upper and lower ends and being interconnected by transverse rods, said frame having an upper mounting means for fastening one end of a pair of shoulder straps, said straps extending forwardly from said frame to mount the frame on the back of a wearer and a mounting means secured to said lower ends of said main support bars, for mounting a lower, body engaging flexible support means, the improvement comprising a pair of handles extending forwardly and outwardly from said lower ends of said vertical main support bars adjacent the hips of the wearer, said handles extending forwardly of the point of connection of said lower body engaging support means to said lower end portions of each of said main support bars and being rigidly connected to said main support bars, said handles functioning structurally only as handles, whereby said handles are accessible to and may be gripped by the wearer and raised to lift the pack upwardly off the wearer's shoulders to temporarily redistribute the pack load.

3,899,110

FOLDABLE CAR TOP CARRIER

Kenneth W. Binding, Woburn, and George A. Laberis, Wakefield, both of Mass., assignors to Beatrice Foods Co., Chicago, Ill.

Filed Sept. 10, 1973, Ser. No. 395,948

Int. Cl. B60m 9/04

U.S. Cl. 224-42.1 F

8 Claims



1. A foldable car top carrier comprising two elongate rigid bars arranged end to end, said bars having top and bottom sides, said top sides being adapted to support a load, legs mounted to the bottom sides of the bars for supporting the bars above the car top, and hinge means connecting the adjacent ends of the bars in abutting relationship; characterized in that the adjacent ends of the bars are oppositely inclined downwardly and toward their respective outer ends and the hinge means connects the bars with the adjacent ends of the inclined ends in abutting engagement and comprises a rigid channel member which receives the lower sides of said adjacent ends of the bars, and pins pivotally connecting said adjacent ends of the bars to said channel member on centers located below the center lines of the bars and equidistant from the ends, wherein said carrier may be folded for compact storage yet does not sag at the hinge when unfolded and loaded.

3,899,111

CAR TOP CARRIER FOR GUTTERLESS CAR TOPS

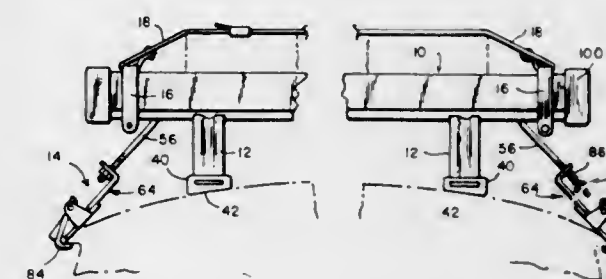
Kenneth W. Binding, Woburn, and George A. Laberis, Wakefield, both of Mass., assignors to Beatrice Foods Co., Chicago, Ill.

Filed Sept. 10, 1973, Ser. No. 395,949

Int. Cl. B60m 9/04

U.S. Cl. 224-42.1 F

12 Claims



1. A car top carrier for a gutterless car top having ledges at opposite sides thereof, comprising an elongate rigid bar, supports connected to the opposite ends of said rigid bar, retractable hooks and means at the ends of the bar connecting the hooks thereto for adjustment longitudinally of the bar to accommodate to the width of the top, each of said means comprising a rod connected at one end to the bar, a part mounting the retractable hook on the rod for movement therealong, and a nut threaded onto the rod for limiting movement of the part and hook toward the distal end thereof, eccentric means mounting the hooks on the parts, means for actuating the eccentric means whereby the hooks may be extended and retracted at their limiting position on the rods to disengage the hooks from the top in one position and to engage the hooks with the top in the other position, and a distensible spring mounted on one of the rods between the nut and the part connecting the hook thereon such that the eccentric means for effecting retraction of the hooks simultaneously completely compresses said spring, whereby the clamping means rigidly attaches the carrier to the vehicle top.

3,899,112

APPARATUS FOR TREATING WEBS OF MATERIAL

Sven Olof Soren Stark, Sodra Sandby, and Per Allan Ljungberg, Lund, both of Sweden, assignors to Tetra Pak Development S.A., Lausanne, Switzerland

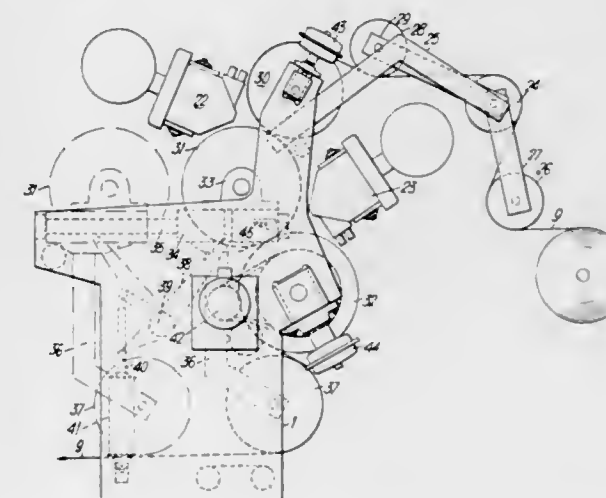
Filed Oct. 27, 1972, Ser. No. 301,320

Claims priority, application United Kingdom, Dec. 22, 1971, 59641/71

Int. Cl.² B65H 17/20

U.S. Cl. 226-90

8 Claims



1. Apparatus for advancing a wide web of fragile material under tension by passing the web at substantially constant speed in serpentine manner partially around and between at least three working rollers each extending across, and being in

contact with, the full width of the web, wherein two of said working rollers are located in spaced fixed positions substantially vertically, one above the other, and a third, intermediate, working roller is located, when in operation, adjacent to, and extending partially inwards between said two spaced working rollers, said third, intermediate, working roller being movable, in a substantially horizontal direction, away from its position extending partially inwards between said spaced working rollers, to an open position leaving a free vertical gap between itself and said two spaced rollers, through which the end of the web of material can be lowered under gravitational force, when being fitted into the apparatus, whereafter said intermediate roller is returnable to its working position adjacent to said two rollers in order to guide the web along a serpentine path partially around each of said three working rollers in sequence, and infeed guide rollers on the opposite side of said working rollers from said third roller when said third roller is in said open position, said infeed guide rollers training said web about the upper of said working rollers in all positions of said third roller, the web running over said infeed guide rollers in serpentine manner in passing to the first working roller, the guide rollers being relatively movable to provide a substantially unobstructed path between them for insertion of the web.

3,899,113

EXPLOSIVELY ACTUATED FASTENER DRIVING POWER TOOLS

Jacques Brack, Nyon, Switzerland, assignor to Olin Ski AG, Zug, Switzerland

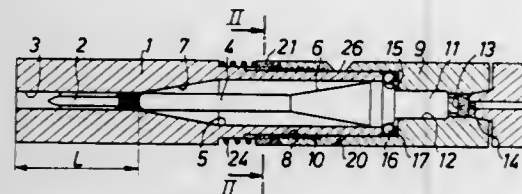
Filed Aug. 3, 1973, Ser. No. 385,557

Claims priority, application Switzerland, Aug. 7, 1972, 11645/72

Int. Cl. B25c 1/14

U.S. Cl. 227-10

7 Claims



1. An explosively actuated fastener driving tool of the type comprising, in combination: a front part and a rear part, means removably connecting said front and rear parts to each other, said front part including an axial bore; a piston rod slidably mounted in said bore; and stop means including portions projected into said bore in the vicinity of said rear part for cooperating with the rear end of the piston rod to limit its motion toward the rear when said rear part is connected to said front part, said portions of said stop means being slidable out of said bore when said rear part is removed from said front part, said rear part providing between a propelling charge and said rear end of the piston rod a gas expansion chamber, said means removably connecting said front and rear parts to each other permitting axial adjustment between said front and rear parts in order to cause variations in the volume of said expansion chamber.

3,899,114

SOLDERING IRON TIP AND METHOD OF FABRICATION

Gunther K. E. Kleeberg, Lexington, Mass., assignor to M. M. Newman Corporation, Marblehead, Mass.

Filed Nov. 4, 1974, Ser. No. 520,677

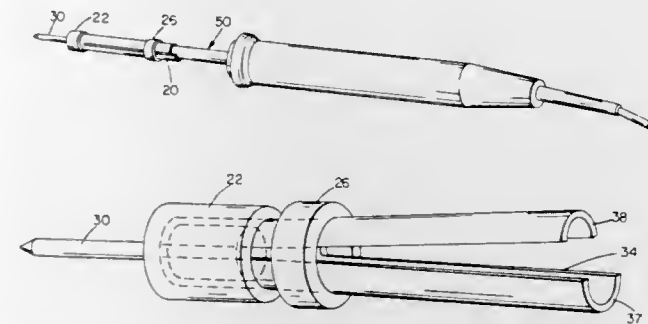
Int. Cl. B23K 3/02

U.S. Cl. 228-55

4 Claims

1. A soldering iron tip comprising a headed working element a split hollow sleeve, and

an apertured cup-shaped coupling connecting said working element and said hollow sleeve together, the bottom end of said sleeve being seated against the side wall of said coupling and



the working element being seated in said coupling inside of said sleeve with its shank extending through the bottom of said coupling and with the end of said sleeve locked between the head of the working element and the side wall of said coupling.

3,899,115

EXERCISE AND MASSAGING APPARATUS

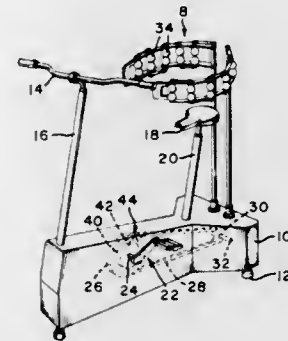
Luther G. Simjian, 7 Laurel Ln., Greenwich, Conn. 06830

Filed July 10, 1974, Ser. No. 487,050

Int. Cl. A61H 1/00

U.S. Cl. 128-58

9 Claims



1. An exercise and massaging apparatus for use by a person comprising: a support structure; motive means coupled to said structure for being operated by the person; a massaging belt for being worn by the person and said belt including a plurality of massaging elements mounted upon rotatable shafts supported by said belt, and means coupling said motive means to said shafts for causing said massaging elements to rotate in substantially stationary position responsive to the operation of said motive means.

3,899,116

METHOD OF VIBRATORY WELDING

Bruce L. Mims, Redding, Conn., assignor to Branson Ultrasonics Corporation, New Canaan, Conn.

Filed Nov. 29, 1974, Ser. No. 528,271

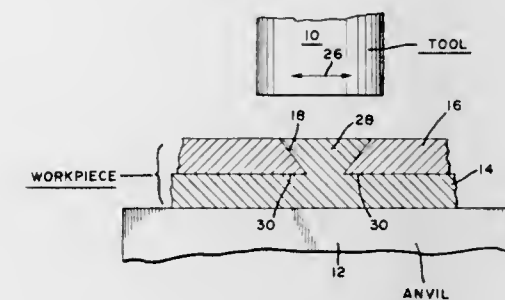
Int. Cl. B23K 1/06

U.S. Cl. 228-110

10 Claims

1. The method of producing a welded connection by high frequency vibratory welding comprising the steps of: superposing an apertured termination upon a non-apertured termination; disposing said terminations between an anvil and a tool adapted to vibrate at a high frequency; applying a static clamping force between said terminations for causing the abutting surfaces of said terminations to be in intimate contact with one another, and while said static force is applied causing said tool to undergo high frequency vibrations in a direction normal to said static force whereby to cause material from said non-

apertured termination to penetrate into the aperture of said apertured termination, and terminating said vibra-



tions and said force when said material has penetrated into said aperture.

3,899,117

PLASTIC END CAP AND PAPER BODY ATTACHMENT

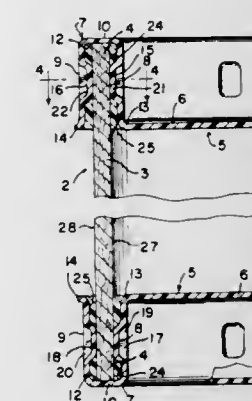
Harry A. Peyser, Olympia Fields, and Robert D. Heavside, Winnetka, both of Ill., assignors to Continental Can Company, Inc., New York, N.Y.

Filed Mar. 14, 1974, Ser. No. 451,334

Int. Cl. B65d 3/12

U.S. Cl. 229-5.5

9 Claims



1. An end closure for a can body having a peripheral end edge portion, said closure being formed of plastic material and having a peripheral edging for axially telescoping over said edge portion, said edging comprising a pair of opposed walls and an intervening web defining an edgeportion admitting groove, a plurality of aligned opposing small nibs projecting from said walls into the groove and spaced lengthwise of the groove adapted for grasping engagement with the edge portion of an associated can body and operative to hold said walls apart in spacial relation to provide passage means between the walls and sides of the can body for reception of sealing compound therein on both sides of said edge portion.

3,899,118

SELF-DISPENSING DISPENSER

Paul Hollinger, Randallstown, Md., assignor to Maryland Cup Corporation, Owings Mills, Md.

Filed July 24, 1974, Ser. No. 491,525

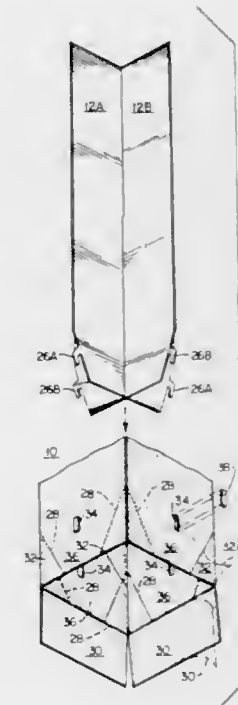
Int. Cl. B65d 5/72

U.S. Cl. 229-17 B

9 Claims

1. A compartmented carton for stacked nested articles convertible to a dispenser for said articles at a desired point of use, comprising: an elongated container having substantially rectangular sidewalls; one end of said container having closure flaps and the end corner portions of said sidewalls defined by aligned perforations permitting removal of said flaps and said end corner portions to provide substantially symmetrically tapered flaps at the said one end of each of said sidewalls; said tapered flaps being so tapered as to readily converge

one with the other to form a constricted end opening in said carton; insertable means in said carton defining a plurality of compartments therein with said sidewalls for holding a like plurality of stacks of said nested articles and having con-



vergent surface portions adjacent said tapered flaps on said sidewalls conforming to the degree of convergence of said flaps; and retaining means engaging said tapered flaps and retaining said flaps against said convergent edge portions to provide a restricted dispensing opening for each of said compartments in said carton.

3,899,119

SNACK TRAY CARTON

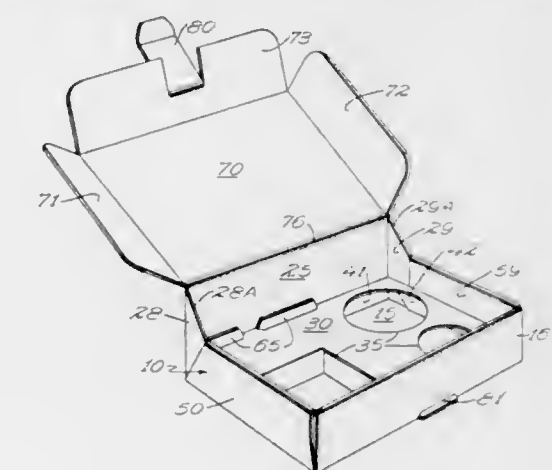
Harry I. Roccaforte, Western Springs, Ill., assignor to Hoerner Waldorf Corporation, Saint Paul, Minn.

Filed Oct. 17, 1974, Ser. No. 515,588

Int. Cl. B65D 5/50, 5/66

U.S. Cl. 229-29 F

4 Claims



1. A compartmented snack tray adapted to be folded from a substantially flat piece of foldable paperboard or similar sheet-like material, said snack tray comprising: a substantially rectangular bottom panel having parallel front and back edges, and parallel side edges arranged perpendicular to said front and back edges; a front wall panel, rectangular in shape, hingedly connected to said bottom panel and oriented perpendicular to said bottom panel in an upright position, said front panel having a predetermined height;

front panel tuck flaps hingedly connected to the lateral sides of said front panel and folded inwardly to a position parallel with said side edges of said bottom panel; a rectangular back panel formed in height greater than said front panel and hingedly connected to said back edge of said bottom panel and oriented in an upright position perpendicular to said bottom panel; back panel tuck flaps hingedly connected to each lateral edge of said back panel, said back panel tuck flaps having an angled portion on the top edge thereof terminating in a rectangular area of said back panel tuck flaps formed in height substantially equal to the height of said front panel, said back panel tuck flaps folded inwardly to lie parallel with said side edges of said bottom panel; a compartmented snack tray platform, substantially rectangular in shape, hingedly connected to said front panel along that edge parallel and opposite to said bottom panel, said platform having formed on the remaining three sides thereof spacer support flaps which are folded down to space said platform a predetermined distance away from said bottom panel; locking flaps hingedly connected to said side edges of said bottom panel having a first side wall section folded upwardly on the outside of said front and back panel tuck flaps and an inwardly folding locking section foldable over and into overlapping relationship with the inside of said front and back panel tuck flaps to lock the tray in the erected position and retain said snack tray platform in parallel position spaced from said bottom panel; said side panel locking flaps having an angled portion in said first section to space said second locking section away from said angled portion in said back panel tuck flap; and a snack tray cover including a top panel formed in size substantially equal to said bottom panel; said top panel having front and side tuck-in flaps adapted to be folded inwardly and be tucked in when said top panel is folded over said carton, said top panel flaps resting inwardly of said front panel and said bottom panel side flaps.

3,899,120

PAPERBOARD BLANK WITH CRUSHED OFFSET FLAP EDGES AND METHOD FOR FORMING SAME

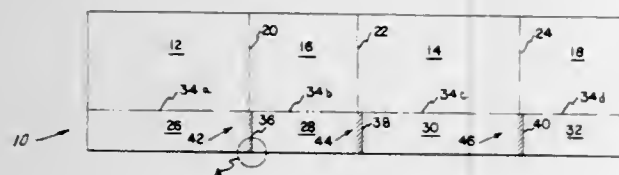
Eli H. Fradkin, Lambertville, Mich., assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed June 3, 1974, Ser. No. 475,790

Int. Cl. B31b 1/14; B65d 5/20

U.S. Cl. 229-32

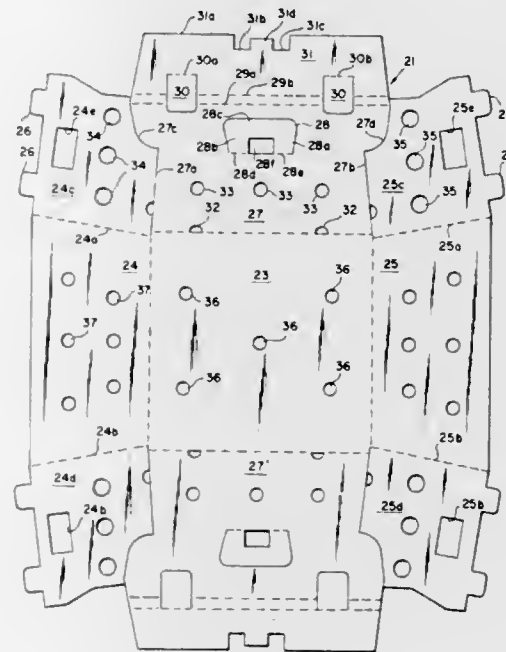
10 Claims



1. In a paperboard blank particularly adapted for use with an automatic erection machine and foldable into a tubular configuration of the type wherein flaps are connected to at least one main panel along fold lines and wherein said flaps are separated from one another by offset slit lines extending from the fold line connecting said flaps to said main panel to the outer marginal edge of said flaps, the improvement in said blank which comprises:

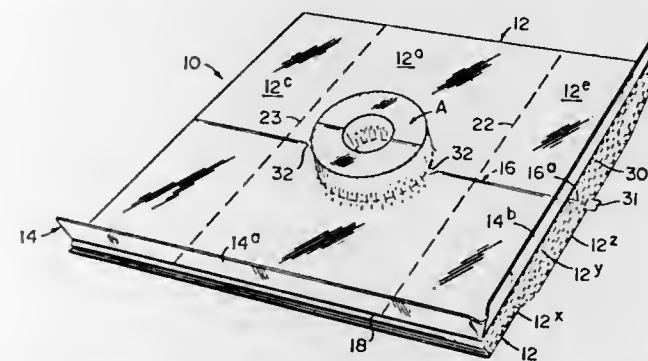
a crush line, substantially coextensive with said offset slit lines, said crush line defining an area of said paperboard blank that is substantially thinner than the original thickness of said paperboard blank and at least twice as wide as the amount of offset of said offset slit lines.

3,899,121
INTERLOCKING CONTAINER
Stephen A. Herbetko, Philadelphia, Pa., assignor to Connelly Containers, Inc., Bala Cynwyd, Pa.
Filed Oct. 11, 1973, Ser. No. 405,729
Int. Cl. B65D 5/30, 21/04
U.S. Cl. 229-34 R 18 Claims



1. A container comprising a bottom and side walls and end walls upstanding therefrom,
a side wall flap connected with a side wall and disposed inwardly of said end wall, said end wall and flap being in adjacent parallel relationship,
an opening in said side wall flap,
a locking member having first leg means extending from said end wall and through said opening in said side wall flap and having a second leg transverse thereto, said second leg lying inwardly of said side wall flap and spaced therefrom to provide an opening between said second leg and said side wall flap,
said end wall having a flap connected to the upper margin thereof and depending interiorly of said side wall flap,
said end wall flap having a tab extending into said last mentioned opening and captured by said second leg of said locking member.

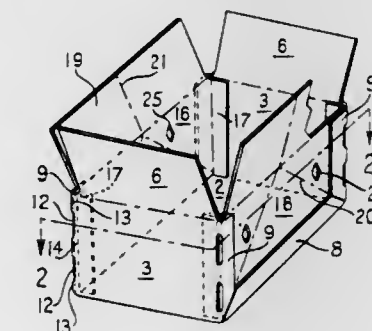
3,899,122
PACKAGE WITH TEAR ELEMENT
Ridley Watts, Jr., Cleveland, Ohio, assignor to American Packaging Corporation, Hudson, Ohio
Division of Ser. No. 52,782, July 6, 1970, abandoned, which is a continuation-in-part of Ser. No. 17,575, March 9, 1970, abandoned. This application Sept. 18, 1972, Ser. No. 289,868
Int. Cl. B65d 5/36, 65/16, 75/58
U.S. Cl. 229-41 B 2 Claims



1. A blank for forming a box adapted to contain a product adhered against a single flat surface portion of the blank by a

thermoplastic film, said blank being comprised of corrugated cardboard shaped and scored to facilitate being folded to form a box and including a portion defined by score lines and under which all other portions of the blank can be folded, and a thermoplastic adhesive coating adhered directly to said surface portion and covering only said surface portion, said adhesive coating containing throughout its mass a visible infrared-radiation-absorbing substance capable of absorbing a substantial portion of infrared radiation directed toward said coating, whereby said surface portion is shielded from radiant heat and said coating can be efficiently heated and softened by infrared radiation.

3,899,123
COLLAPSIBLE BLISS-TYPE CONTAINER
Ray H. Stollberg, Concord, and Joseph W. Leaky, Danville, both of Calif., assignors to Crown Zellerbach Corporation, San Francisco, Calif.
Continuation-in-part of Ser. No. 297,413, Oct. 13, 1972. This application Sept. 23, 1974, Ser. No. 508,238
Int. Cl. B65d 5/36 4 Claims



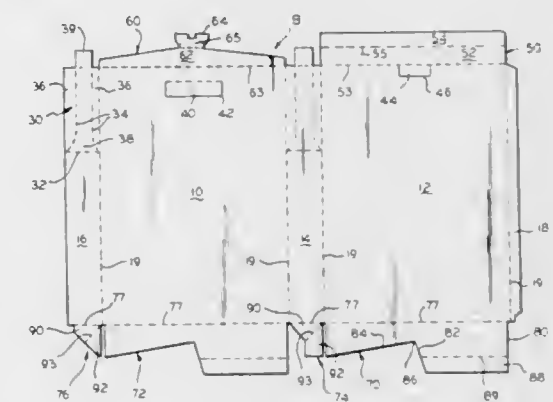
1. A blank construction for a collapsible container of flexible sheet material having score lines arranged for folding of the container to collapsed condition when empty comprising three blanks securable together; a first of said blanks comprising a central substantially rectangular bottom wall panel, a substantially rectangular side wall panel hingedly connected to each of a pair of opposite edges of the bottom wall panel, a securing flange hingedly connected to each of the remaining edges of said bottom wall panel, and a securing flange hingedly connected to each edge of each side wall panel; a second and third of said blanks, each comprising a substantially rectangular side wall panel and a securing flange hingedly connected to each of opposite edges of each of the latter side wall panels; the securing flanges on said bottom wall panel being securable to the side wall panels of said second and third blanks and the remaining securing flanges of said blanks being at the upright corners of the container when set up with a pair of flanges at each corner, one of such corner flanges being an inside flange for adhesive bonding to the inside surface of the adjacent side wall panel, and the other of said flanges at each corner being an outside flange for adhesive bonding to the outside surface of the adjacent side wall panel; each of the hinge connections of said outside securing flanges including spaced apart relief slots coincident with said hinge connection to allow at least partial closing of the slots and thus relieve stress at the corner when stress is placed on the corner as the container is collapsed from set-up condition.

3,899,124
REINFORCED AUTOMATIC BOTTOM CLOSURE
John D. Desmond, and Joseph J. Hart, both of Philadelphia, Pa., assignors to Container Corporation of America, Chicago, Ill.
Filed Nov. 8, 1974, Ser. No. 522,020
Int. Cl. B65D 5/36 4 Claims

1. In a heavy-duty, collapsible carrying carton adapted to be brought from a collapsed condition to an erected condition by

the application of pressure against two diagonally opposed corners thereof and being formed from a unitary blank of foldable paperboard, the combination of:

- opposed pairs of major and minor side walls hingedly interconnected to form a tubular structure open at the top and bottom;
- at least one of said major side walls including handle means for grasping and carrying the carton;
- top and bottom closure means for closing the top and bottom of the carton;
- said bottom closure means including opposed first and second pairs of closure flaps associated with said pairs of major and minor side walls, respectively;
- said closure flaps of said first pair each including:
 - a flat, unscored, bottom panel hingedly attached at one edge to a lower edge of a related major side wall and presenting in a medial area thereof a recess adapted to interlock with a corresponding recess in the bottom



panel of the other closure flap of said first pair when the carton is in erected condition;

- a reinforcing side panel hingedly attached to said bottom panel, at an edge parallel to and opposite from the edge of the bottom panel which is hinged to a major side wall, and disposed to lie against the inner surface of the opposed major side wall when the carton is in an erected condition;

- said closure flaps of said second pair each including:
 - a first panel section hingedly attached at one edge to a lower edge of a related minor side wall;
 - a second panel section hingedly attached to said first panel section and in fold-back relation therewith, when said carton is in a collapsed condition;
 - said second panel section being secured to an adjacent bottom panel and interposed between said first panel section and said bottom panel when the carton is in a collapsed condition.

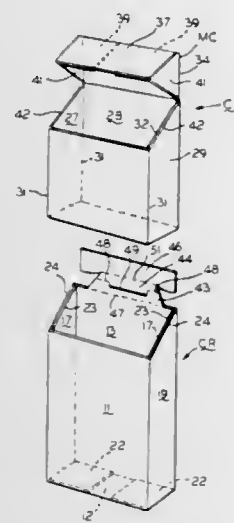
3,899,125
FLIP TOP CARTON
Richard E. Andrews, Whitestone, N.Y.; John D. Desmond, and Joseph J. Hart, both of Philadelphia, Pa., assignors to Container Corporation of America, Chicago, Ill.
Filed Sept. 5, 1974, Ser. No. 503,381
Int. Cl. B65D 5/38, 5/66 7 Claims

1. A flip top carton formed from a cut and scored blank of paperboard or the like of the type where a cover member is moved with respect to a carton receptacle from a closed position to an open position, comprising:

- an open top carton receptacle having front, back, bottom and side receptacle panels;
- a cover for said open top carton receptacle having front, back, top and side cover panels in outer telescoping relationship with respect to said open top carton receptacle and movable with respect thereto between an open position and a closed position;
- means for effecting a connection between said open top receptacle and said cover whereby sliding movement of

said cover with respect to said receptacle will cause said cover to move from open to closed position and vice versa, said means comprising:

- i. first, second and third operator members foldably connected to each other and extending from the back receptacle panel of said open top receptacle;



- ii. said first operator member being foldably connected to said back receptacle panel;
- iii. at least one of said second and third operator members being secured to the inside of said cover.

3,899,126

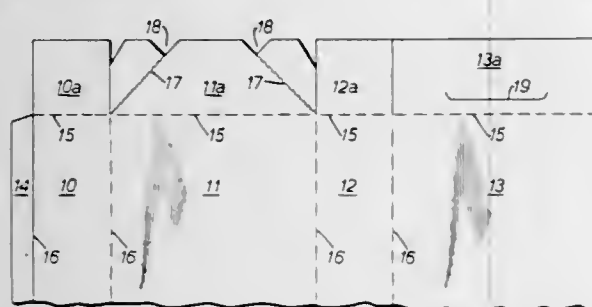
CARTONS AND BLANKS FOR FORMING CARTONS
William Edward Palmer, Bredon, England, assignor to Vibixa Limited, Cheltenham, England

Filed Jan. 23, 1974, Ser. No. 435,684

Int. Cl.² B65D 5/54

U.S. Cl. 229-51 TC

8 Claims



1. A carton having side walls, respective end flaps attached to each end of each side wall to provide the top and bottom of the carton and a preformed lining sleeve fastened into the carton for protrusion beyond the ends of the side walls thereof, a pair of opposed end flaps at one end of the carton being disposed in face-to-face relation in the closed condition of the carton, the upper of said pair of end flaps being formed with a pair of lines of weakness whereby, to open the carton, a user may effect a separation operation along said lines of weakness, thereby providing a tab for engagement in a slot in the lower end of said pair of end flaps for effecting reclosure of the carton, and the lower of said pair of opposed end flaps extending between and being hingedly connected to a pair of opposed end flaps which are so shaped and have fold lines so arranged that each can be folded inwardly in such way that a triangular part based on the fold line between the flap and the adjoining side wall of the carton is overlapped by a pair of parts of the flap which are doubled back on a fold line, said lower end flap and the pair of end flaps hingedly connected thereto serving, on closure of the carton, to shape the end of the lining sleeve with a pleat in each side and to fold it over to nip a pleated end extremity of the lining sleeve against the upper end flap at its hinged connection with the adjoining side wall of the carton and wherein the pair of lines of weakness each extend from a corner of the side wall adjoining said

upper end flap at an inclination to the line of juncture between the end flap and the side wall, that portion of the end flap between the lines of weakness constituting a tab-defining portion.

3,899,127

ARTICLE FOR POSTAL CONVEYANCE, ESPECIALLY ONE ALLOWING FOR A REPLY

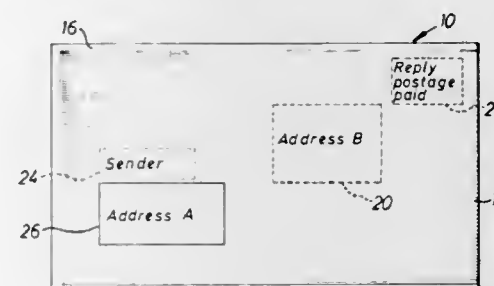
Lars Paul Melander, Kryssarvagen 13, S-183 52 Taby, Sweden
Filed Apr. 15, 1974, Ser. No. 460,701

Claims priority, application Sweden, Apr. 19, 1973, 7305661

Int. Cl. B65d 27/06

U.S. Cl. 229-73

14 Claims



1. A postal article for postal conveyance, especially a so-called "return or reply" article comprising, firstly, a casing or wrapper consisting of a non-transparent base or bottom portion which at least on one side is covered by a transparent cover and, secondly, an insert introduced between the cover and the base portion, substantially covering the latter, wherein

- a. a first address or forwarding address is provided on the cover of the casing in the form of a label or by printing;
- b. a second or return address is provided inside the casing, hidden by the insert, so that the destination of the postal article is determined by the first address;
- c. which addresses are so placed and located in relation to each other that when they appear simultaneously due to the removal of the curtaining effect of the insert, the first address will denote the sender, while the second address will denote the addressee; and
- d. a notation is provided inside the casing, the notation being normally hidden by the insert but becoming visible when the curtaining effect of the insert is removed, the notation being so placed in relation to one of the addresses that it appears adjacent said one address for the purpose of indicating the function of said one address when the curtaining effect of the insert is removed.

3,899,128

ZONAL CENTRIFUGE ROTORS

John E. Joyce, Weymouth, Mass., assignor to International Equipment Company, Needham Heights, Mass.

Continuation-in-part of Ser. No. 755,003, Aug. 23, 1968, abandoned. This application Mar. 24, 1970, Ser. No. 22,358

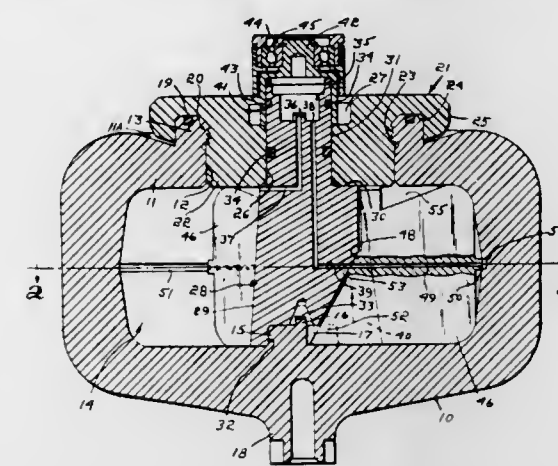
Int. Cl. B04b 1/04, 5/04

U.S. Cl. 233-32

16 Claims

1. A zonal centrifuge rotor including a bowl having a chamber and an integral top wall having an axial port in communication with said chamber and of a diameter substantially smaller than that of the chamber, a cap for said port and detachably secured thereto, and a removable core within said chamber, said core and said bowl including portions detachably interengaged to ensure they rotate together, said core including an axial first part in the form of a hub and a plurality of second parts, each in the form of a fin having upper, lower, inner and outer edges, said inner edges extending into the space directly below the port and at least a part of the other edges about the inner surfaces of the bowl to establish compartments, means in the bottom of said chamber receiving and slidably holding each second part in a predetermined radial

position, said hub and fins including detachably engaged sets of connecting portions disengageable by upward movement of the hub relative to the fins, said hub and each of said fins



dimensioned for passage through said port, said connecting portions reengageable on downward movement of the hub with the fins in said radial position.

3,899,129

APPARATUS FOR GENERATING ICE NUCLEI SMOKE PARTICLES FOR WEATHER MODIFICATION

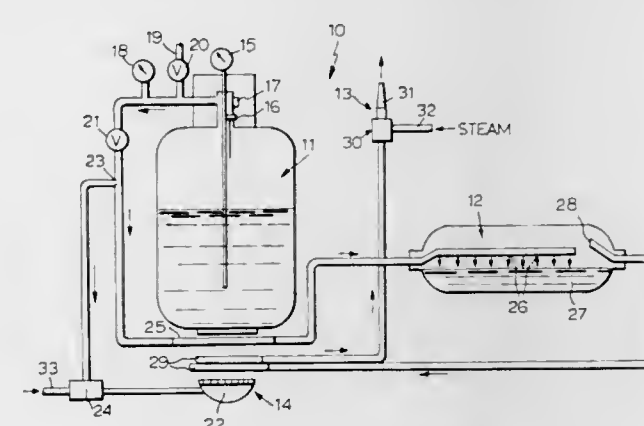
Norikiko Fukuta, Seoul, South Korea, and Young H. Paik, Englewood, Colo., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Division of Ser. No. 285,995, Sept. 5, 1972, Pat. No. 3,835,059. This application Apr. 16, 1974, Ser. No. 461,339

Int. Cl.² A01G 15/00; E01H 13/00

U.S. Cl. 239-14

4 Claims



1. In an apparatus for generating ice-nuclei smoke particles comprising:

- means for generating superheated steam,
- an enclosed containing means holding therein an ice nuclei compound,
- a multi-opening fluid discharge means maintained within said containing means where multi-openings of said discharge means are disposed to direct fluid discharged therefrom at the surface of said compound,
- a conduit means connected to an outlet of said generating means and to an inlet of said discharge means whereby said conduit means carries therein said superheated steam from said generator to said discharge means wherefrom steam discharged at said compound surface evaporates compound into said steam,
- a converging-diverging nozzle means,
- a further conduit means having connections to an outlet of said containing means and to an inlet of said nozzle means and constituting a passage for steam laden with vapors of said compound leaving said containing means and entering said nozzle, wherein said vapor laden steam is quenched substantially by adiabatic and isentropic expansion at supersonic velocities.

3,899,130

ATOMIZER WITH GRADUATED LIQUID FEED AND MANUFACTURING METHOD

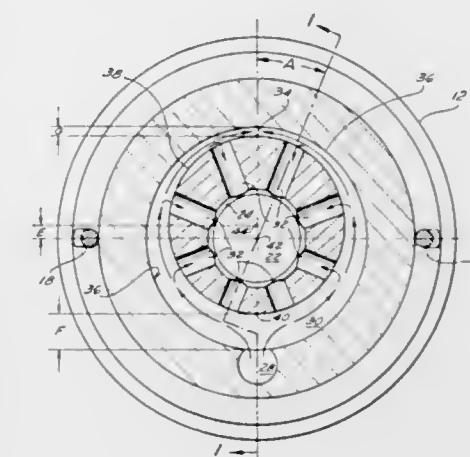
Frank S. Bell, Jr., Tuxedo Park, N.Y., assignor to Sonic Development Corporation, Upper Saddle River, N.J.

Filed Feb. 28, 1974, Ser. No. 446,909

Int. Cl.² B05B 17/06

U.S. Cl. 239-102

10 Claims



5. A sonic pressure wave-actuated atomizer including a converging-diverging gas nozzle and a cavity resonator opposite the exit of said nozzle, a plurality of feed holes spaced around the perimeter of said nozzle and positioned to deliver a liquid into the gas flowing through the nozzle, liquid inlet conduit means, and manifold means forming a distribution conduit of generally circular configuration interconnecting said feed holes with said inlet conduit, said distribution conduit having a cross-sectional area which decreases at increasing distances from said inlet conduit.

3,899,131

METHOD AND APPARATUS FOR SPRAYING AGGLOMERATING POWDERS

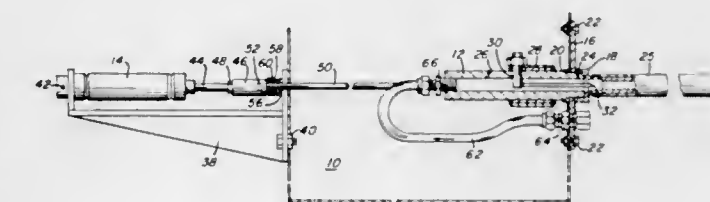
Michael L. Mester, Lower Burrell, and Frank L. Whiteman, Elizabeth Twp., Allegheny County, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Sept. 23, 1974, Ser. No. 508,495

Int. Cl. B05b 15/02

U.S. Cl. 239-123

9 Claims



1. An apparatus for pneumatically spraying dry powders through a delivery tube comprising a fluidized bed powder reservoir, a powder chamber housing attached within said reservoir having an elongated chamber therein communicating with said delivery tube and an opening in a wall thereof communicating with the interior of said reservoir through which fluidized powders may be admitted, a valve means for closing said opening, wiper means attached to said valve means for wiping the edges of said opening whenever said valve means is activated to thereby keep said opening clear, means for blowing gas through said powder chamber housing and delivery tube with a low-velocity purging blow when said valve means is in a closed position and with a high-velocity powder spraying blow when said valve means is in the open position.

3,899,132

IRRIGATION APPARATUS

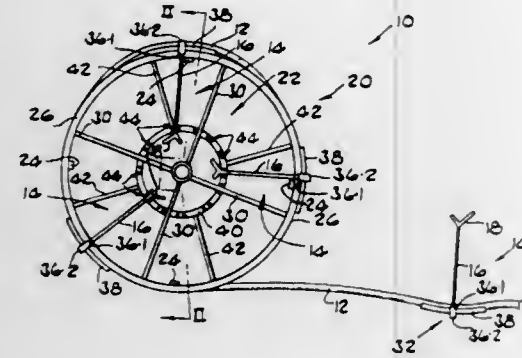
Christian Grobbelaar, 461 Queen's Crescent., Pretoria, Transvaal Province, South Africa

Filed July 10, 1974, Ser. No. 487,021

Int. Cl.² B65H 75/34

U.S. Cl. 239-199

10 Claims



1. Storage means for storing an elongated flexible irrigation conduit having sprinkler means in the form of sprinkler pipes with nozzles at their free ends, at spaced intervals along its length, and comprising a storage reel having a peripheral zone for receiving the conduit in a rolled up condition, having an internal receiving zone for receiving the sprinkler means extending radially inwardly from the conduit when rolled up on the reel, and having locating means within the receiving zone for locating the sprinkler means in position therein.

3,899,133

NOZZLES HAVING A VARIABLE CROSS-SECTION

Andre Alphonse Mederic Leon Camboulives, Savigny-sur-Orge; Theophile Francois Le Maout, Cesson, and Bernard Arthur Zibette, Vitry-sur-Seine, all of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation de France, France

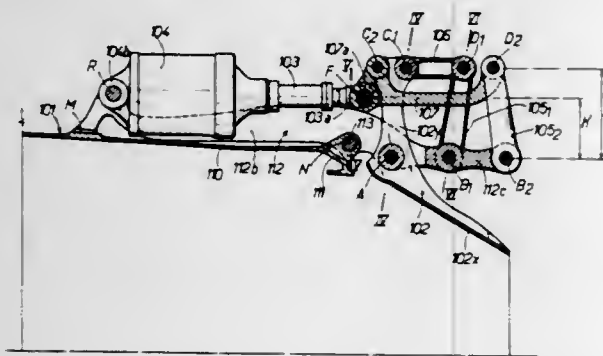
Filed Sept. 17, 1974, Ser. No. 506,869

Claims priority, application France, Sept. 21, 1973, 73/33962

Int. Cl.² B64C 15/06

U.S. Cl. 239-265.39

5 Claims



1. In a variable-section nozzle of the type comprising a fixed structure embodying a fixed nozzle casing; a plurality of controlled flaps distributed around and in extension of the downstream portion of said fixed nozzle casing, each of which flaps extends to either side of a central plane containing the longitudinal axis of the nozzle, and is articulated about a first geometric axis disposed substantially tangential in relation to the nozzle, to said fixed structure; a plurality of intermediate levers disposed in alternation with said controlled flaps, each articulated, about a second geometric axis substantially tangential in relation to the nozzle, to said fixed structure; a plurality of connecting links each of which is articulated on the one hand about a third geometric axis substantially tangential in relation to the nozzle, to a controlled flap, and, on the other hand, about a fourth geometric axis substantially tangential in relation to the nozzle, to an intermediate lever adjacent said flap in order that each control flap is respec-

tively attached to two successive intermediate levers, the assembly formed by said controlled flaps, said intermediate levers and said connecting links, constituting a kinematic chain which is closed around the nozzle; and a plurality of mobile control elements each of which corresponds with a controlled flap and makes it possible to pivot said flap about said first geometric axis in order to vary the transverse cross-section of the nozzle, the improvement wherein each intermediate lever extends up to the neighbourhood of the respective central planes of two successive controlled flaps; and wherein for each controlled flap, the two associated connecting links are disposed substantially in the central plane of said flap.

3,899,134

SPRAY GUN

Josef Wagner, Markdorfer Strasse 185, 799 Friedrichshafen 2, Germany

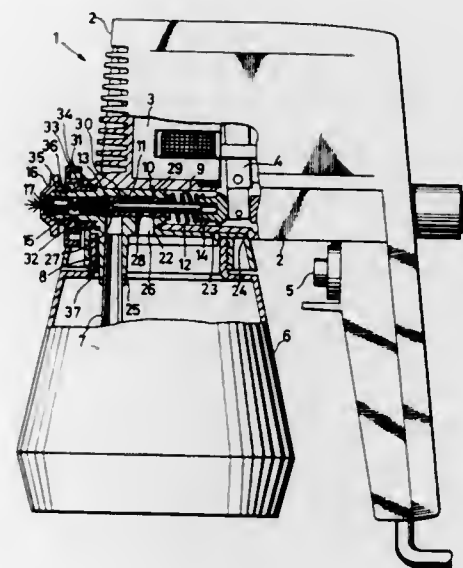
Filed June 13, 1974, Ser. No. 478,856

Claims priority, application Germany, July 20, 1973, 2337039

Int. Cl.² B05B 9/043

U.S. Cl. 239-332

10 Claims



1. A piston pump spray gun which comprises a housing having a depending handle, an electromagnetic motor with an oscillating armature in said housing, a switch in said handle controlling current flow to said motor, said housing having a bore communicating with said armature and with the front of the housing, a one-piece part having a pump housing sleeve fitting said bore with a hard metal cylinder sleeve therein, a piston slidable in said cylinder sleeve, a spring in said bore of the gun housing biasing said piston against said oscillating armature of said motor, an outlet valve in said pump housing sleeve portion bottomed against said cylinder sleeve, a spray nozzle on the outer end of said pump housing sleeve receiving fluid from said outlet valve, a locking ring rotatable on said pump housing sleeve threaded in said gun housing bore against said pump housing sleeve for securing the sleeve in the bore, said sleeve having a depending neck and a container cover suspended on said neck, said gun housing having a recess receiving said neck and a bottom wall receiving said cover, a removable liquids container suspended from said cover, said neck and cover having passages therethrough connecting the interior of the container with the interior of said cylinder sleeve, a suction tube extending from one of said passages to the bottom of said container and a collection chamber in said cylinder sleeve communicating with the other of said passages whereby said spring and said armature will reciprocate said piston to suck liquid from said container through said tube into said cylinder sleeve and will discharge the liquid in the sleeve past said outlet valve to said spray nozzle and said part is easily mounted in and removed from the bore and recess of said gun housing by manipulation of said locking ring.

3,899,135

WATER EMITTER

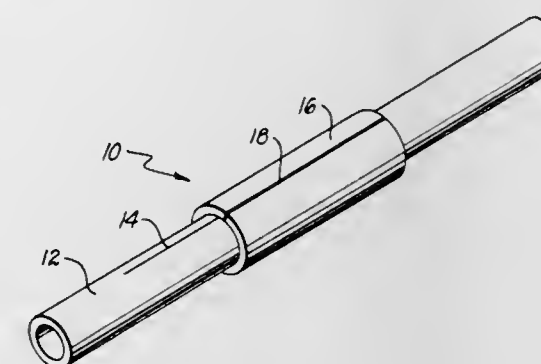
Edward D. O'Brian, 1695 Crescent Ave., Anaheim, Calif. 92801

Filed Sept. 24, 1973, Ser. No. 400,019

Int. Cl. A01g 27/00

U.S. Cl. 239-534

6 Claims



1. A water emitter having an elongated, resilient, imporous tube, the tube having a slit extending along the length thereof, the resiliency of the tube permitting the slit to open in response to internal pressure within the tube and automatically closing off the slit upon the cessation of such internal pressure in which the improvement comprises:

a sleeve located around the tube adjacent to the slit, said sleeve being moveable on the tube and fitting closely around the tube so as to be capable of being moved to a position relative to said slit to control the amount that said slit will open in response to internal pressure.

3,899,136

EMITTER FOR IRRIGATION SYSTEMS

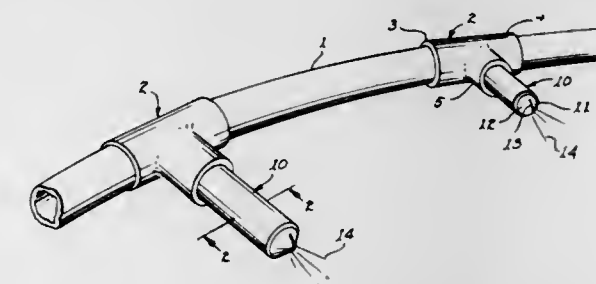
Richard C. Harmony, Tucson, Ariz., assignor to Harmony Emitter Company, Inc., Tucson, Ariz.

Filed Apr. 1, 1974, Ser. No. 456,617

Int. Cl. B05b 1/32

U.S. Cl. 239-534

10 Claims



1. An emitter having a water discharge outlet and connected to a source of water under pressure for irrigating soil, said emitter comprising:

a. a pair of imperforate flexible sheets coterminous with one another and defining both the water discharge passageway for a flow of water through said emitter and the water discharge outlet of said emitter, said passageway extending from the pressurized water source to the discharge outlet of said emitter;

b. transverse rib means disposed within the central part of adjacent surfaces of each of said pair of flexible sheets for establishing a water pressure gradient through said passageway;

c. pressure means for biasing said pair of sheets toward one another to regulate the lateral expansion of said passageway, said pressure means being responsive to the water pressure at the source and variable in proportion to the water pressure at the source; whereby, the flow of water through said emitter is regulated at a constant rate by said rib means and said pressure means despite variations in the water pressure at the source.

3,899,137

CLEANING DEVICE FOR PHOTO-SLIDES

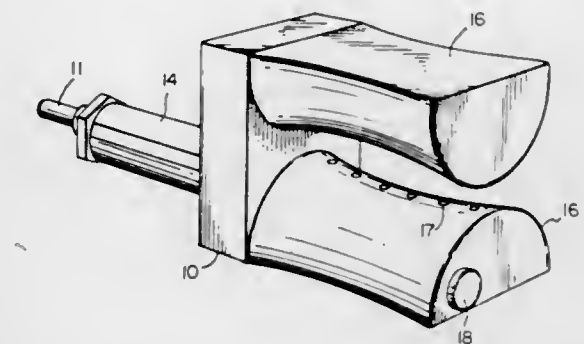
Martin Shenker, 7700 Cindy Ln., Bethesda, Md. 20034

Filed Dec. 17, 1974, Ser. No. 533,636

Int. Cl.² B05B 1/26, 1/20; F26B 13/02; B08B 5/02

U.S. Cl. 239-545

6 Claims



1. A device for cleaning dust from a miniaturized flat article comprising two allochirally shaped and juxtaposed members providing a space therebetween for insertion of the work piece, said members having a compound curvature of semi-circular cross-section with opposed surfaces that are concave, with each said face having openings for providing opposed air jets.

3,899,138

SPREADING IMPLEMENTS

Ary van der Lely, 10, Weverskade, Maasland, and Cornelis Johannes Gerardus Bom, 36, Esdoornlaan, Rozenburg, both of Netherlands

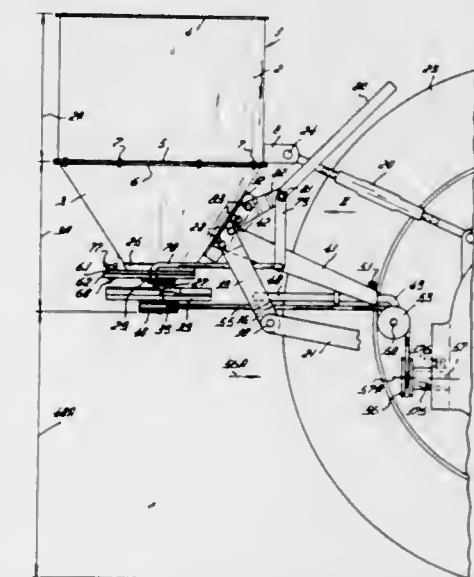
Filed Jan. 7, 1970, Ser. No. 1,199

Claims priority, application Netherlands, Jan. 17, 1969, 6900782; Jan. 17, 1969, 6900783

Int. Cl. A01c 19/00

U.S. Cl. 239-661

6 Claims



1. A spreading implement comprising a hopper with supporting frame parts and at least one rotatable spreading member mounted beneath an outlet in said hopper, said hopper having an upper part and a lower part detachably connected to each other, said upper part having coupling means with which the implement is connectable to an upper arm of a three-point lifting device of a tractor, said rotatable spreading member being mounted on a vertical shaft rotatably and entirely supported in said lower part with a dosing mechanism positioned between said hopper and said spreading member, at least two supporting members being detachably connected to said lower part to connect the implement to the lower arms of a three-point lifting device of a tractor, a transmission for driving said spreading member, said transmission including connecting means to connect the transmission to the power take-off of a tractor, and comprising flexible endless means

connecting said spreading member to said connecting means and the power take-off, said connecting means comprising guide means for said flexible endless means and being supported by said hopper on frame members detachably connected to said lower part of said hopper whereby said hopper parts and said frame members can be separated and the implement conveniently stored.

3,899,139

CRUSHING APPARATUS

Nobuhiko Okada, Nara, and Teruaki Suzuki, Kadoma, both of Japan, assignors to Osaka Gas Kabushiki Kaisha and Kabushiki Kaisha Hosokawa Funtai Kogaku Kenkyusho, both of Osaka, Japan

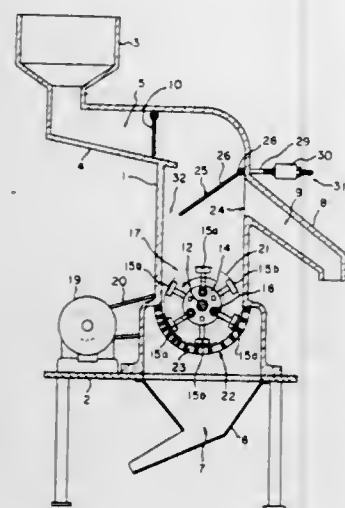
Filed Sept. 4, 1973, Ser. No. 393,902

Claims priority, application Japan, Sept. 4, 1972, 47-88991

Int. Cl. B02c 13/282

U.S. Cl. 241-68

10 Claims



1. A crushing apparatus for an admixture of materials which are crushable by impact force comprising, in combination: a housing having a hopper which communicates with a throat means for feeding the mixture into the interior of said housing; an outlet for exhausting the crushed materials from the interior of said housing; a conduit for exhausting secondary materials from the interior of said housing, said conduit being located to communicate with the interior of said housing beneath and in opposition to said throat means; crushing means having a terminal extent rotatable on a substantially horizontal first axis located within said housing between said outlet and said conduit; driving means for rotating said crushing means; selection means positioned adjacent to the path of rotation of said terminal extent of said crushing means, said selection means having a plurality of openings of a predetermined diameter to permit entry of the material crushed into said outlet; and guiding means supported on said housing above said conduit to direct floatable material toward said conduit while simultaneously serving to deflect heavy material back toward said crushing means.

3,899,140

TEXTILE MACHINE WITH DEVICE FOR FORMING A YARN RESERVE ON A BOBBIN TUBE DURING THE WINDING OPERATION AND A YARN TENSION SENSOR COOPERATING WITH THE DEVICE

Jean Gleyze, St. Pierre de Colombar, France, assignor to Societe Civile Textile dite Socitex, Lyon, France

Continuation-in-part of Ser. No. 471,974, May 21, 1974. This application June 24, 1974, Ser. No. 482,288

Claims priority, application France, June 25, 1973, 73.23177; Feb. 28, 1974, 74.06962

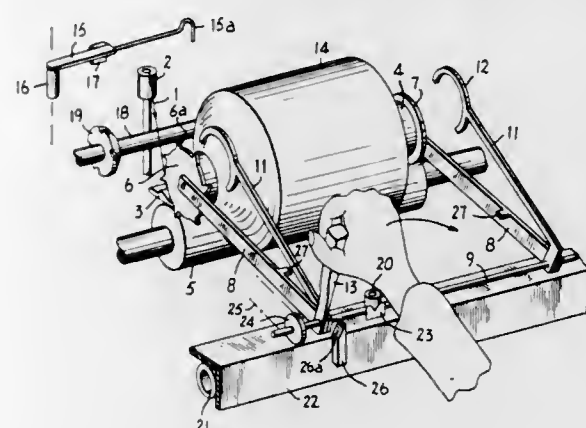
Int. Cl. B65h 54/34

U.S. Cl. 242-18 PW

11 Claims

1. In a textile machine, a combination, including a device for forming a yarn reserve at one end of a bobbin tube and

comprising support means supporting a bobbin tube rotatable about its axis and tiltable about a pivot axis substantially parallel to the bobbin tube axis between a winding position and a release position; drive means cooperating with said bobbin tube for rotating the same, when in said winding position, about its axis; a first shaft substantially parallel to said pivot axis and rotated at a substantially slower speed than said bobbin tube is rotated by the drive means; a disc freely turnable mounted on said first shaft movable in axial direction thereof and having an engaging face including an obtuse angle with the axis of said first shaft and a notch extending inwardly from the periphery thereof; means biasing said disc along the axis of said first shaft in a first direction to a disengaged position; coupling means comprising cooperating portions on said disc and said first shaft for coupling said disc for rotation with said first shaft upon moving of the disc against said biasing means in a second direction opposite to said first direction to an engaged position; a second shaft extending transverse to said pivot axis and having a reserve arm fixed at one end to and projecting substantially normal from said second shaft, said second shaft and said arm thereon being turnable between a rest position and a turned position, said arm having at



the free end thereof a hooked yarn guide adapted to engage a yarn during turning of said arm from said turned to said rest position for winding the yarn on one end of said bobbin tube and to form a yarn reserve thereon; transmission means between said bobbin tube support means and said second shaft for turning the latter and said arm thereon from said rest to said turn position during tilting of said support means from said winding to said release position; yieldable locking means for locking said arm in said turn position and for releasing said arm when said support means is moved back to said winding position; biasing means biasing said second shaft and said arm thereon to return from said turned to said rest position after said locking means has released said arm; and engaging means carried by said arm intermediate the ends of the latter and arranged to engage said engaging face of said disc during movement of said arm from said turned to said rest position to move said disc to said engaged position so that the disc is rotated to thereby move said arm in a direction toward its turned position until said engaging means passes through said notch in said disc, whereby successive portions of said yarn reserve are wound in opposite directions and cover each other.

3,899,141

SPINDLE ADAPTER

John Padgett, Jr., 102 W. May St., Calhoun, Ga. 30701

Filed Mar. 11, 1974, Ser. No. 449,860

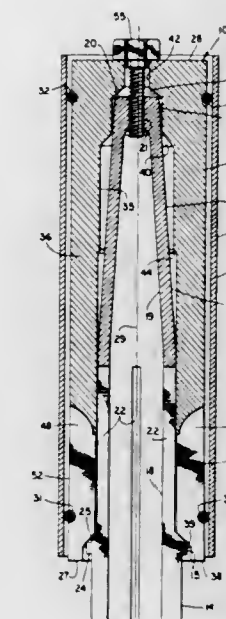
Int. Cl. B65h 75/30, 79/00

U.S. Cl. 242-46.4

5 Claims

1. A spindle adapter for converting a spindle for rotating cone-shaped spools to a spindle for rotating cylindrically shaped spools, said adapter being approximately cylindrically shaped about its exterior surface with a lower end and an upper end and with its exterior surface defining an external approximately annular groove adjacent each end, an O-ring positioned in each annular groove, an approximately circular

passage extending longitudinally through said adapter from said lower end to said upper end so that the adapter has an approximately annular side wall, said passage including an approximately cylindrical large diameter flange at said lower end and then converging inwardly to a first sloped annular shoulder of smaller diameter than said flange as the passage extends away from said lower end of the adapter, said passage extending toward the upper end of said adapter and converging inwardly to a second sloped annular shoulder of smaller diameter than said first sloped shoulder and then forming an approximately cylindrical bore adjacent said upper end, and said passage terminating in an aperture of smaller diameter than said bore, said aperture intersecting said bore and the



upper end of said adapter, said flange, said first and second sloped annular shoulders, said bore and said aperture being concentric with the longitudinal centerline of said adapter, and a plurality of slots formed through the side wall of said adapter and extending from the lower end of said adapter axially toward the upper end of said adapter beyond said flange, said first sloped annular shoulder and the external annular groove adjacent said lower end and its O-ring, said slots being circumferentially spaced about said adapter whereby tines are formed in said side wall at the lower end of said adapter with the O-ring in the external annular groove adjacent the lower end of said adapter extending across said slots and tines.

3,899,142

ROLL TIGHTENER

James T. Hodges, Jr., Tallmadge; John B. Braddock, Cuyahoga Falls, and George C. Dishman, Stow, all of Ohio, assignors to Sonoco Products Company, Hartsville, S.C.

Filed Aug. 27, 1973, Ser. No. 391,726

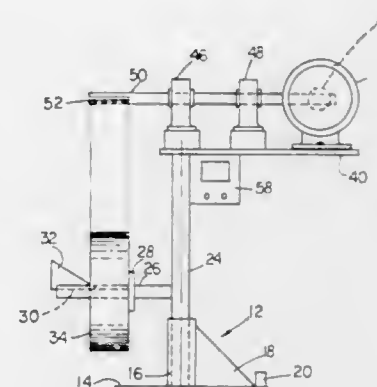
Int. Cl. B65H 23/06, 77/00

U.S. Cl. 242-67.1 R

3 Claims

1. Apparatus for tightening the convolutions of a loosely wound roll of web material comprising, a base member, frame means extending vertically from said base member, a stationary roll support shaft fixed on and extending horizontally from, one side of said frame means for supporting said loosely wound roll, means for securing said roll to said support shaft in a nonrotatable manner, a rotatable tightening shaft having

a web-receiving slot therein mounted above said roll support shaft, electrical motor means mounted on said frame means



on the side opposite said support shaft, said motor means being in driving engagement with said tightening shaft.

3,899,143

TENSION CONTROL DEVICE

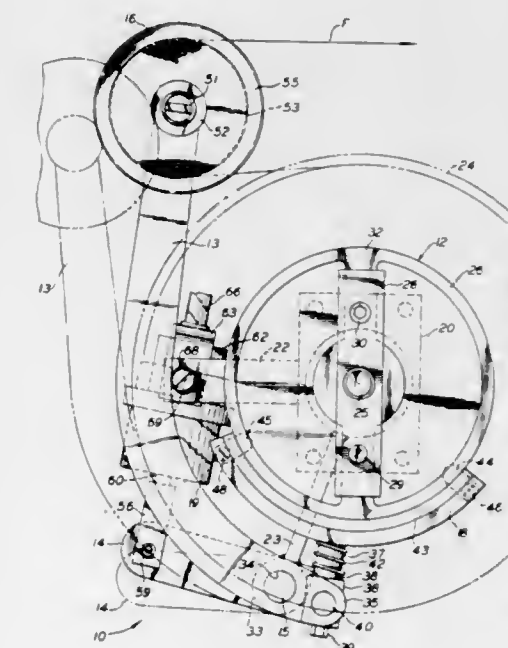
Raymond J. Slezak, 558 Princeton St., Barberton, Ohio 44203

Filed Jan. 10, 1974, Ser. No. 432,133

Int. Cl. B65h 59/38

U.S. Cl. 242-156.2

6 Claims



1. A tension control device for spooled filamentary material comprising: a support structure, means rotatably supporting a spool in said support structure, means having a friction brake surface associated with said means rotatably supporting a spool, a shaft journaled in said support structure, a first lever fixed on said shaft, filament guide means mounted on one end of said first lever for engaging the filamentary material payed out from said spool, brake means mounted on the other end of said first lever for engagement with said brake surface, means for resiliently biasing said brake means against said brake surface interposed between said brake means and said first lever, a second lever fixed on said shaft, and an air cylinder having a fixedly mounted portion and a portion connected to said second lever for loading of said first lever in order to balance the force acting on said first lever, exerted by the filamentary material against the filament guide means, and the friction between the brake means and brake surface and to maintain a selected tension in said filament.

3,899,144

POWDER CONTRAIL GENERATION

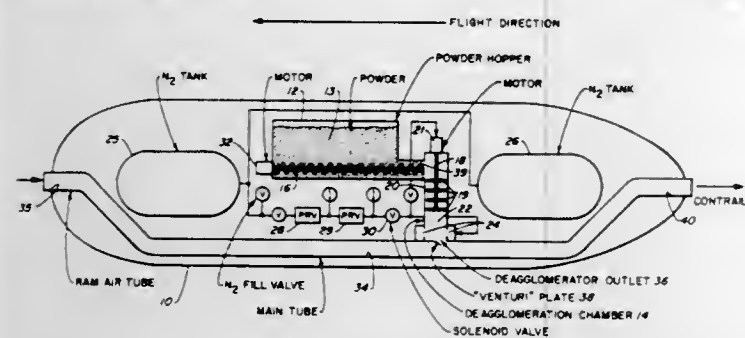
Donald K. Werle, Hillside; Romas Kasparas, Riverside, and Sidney Katz, Chicago, all of Ill., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 22, 1974, Ser. No. 490,610

Int. Cl.² B64D 1/16

U.S. Cl. 244-136

12 Claims



1. Contrail generation apparatus for producing a powder contrail having maximum radiation scattering ability for a given weight material, comprising:

- a. an aerodynamic housing;
 - b. a jet tube means passing through said housing, said tube means having an inlet at a forward end of said housing and an exhaust at a rearward end thereof;
 - c. a powder storage means in said housing;
 - d. a deagglomeration means also in said housing;
 - e. means connecting said powder storage means with said deagglomeration means for feeding radiation scattering powder from said powder storage means to said deagglomeration means;
 - f. the output of said deagglomeration means dispensing directly into said jet tube means for exhausting deagglomerated powder particles into the atmosphere to form a contrail; and
 - h. means for controlling the flow of said powder from said storage means to said deagglomeration means.
9. The method of producing a light radiation scattering contrail, comprising:
- a. surface treating light scattering powder particles to minimize interparticle cohesive forces;
 - b. deagglomerating said powder particles in two stages prior to dispensing into a jet tube by subjecting said powder particles to a hammering action in the first stage to aerate and precondition the powder, and by passing said powder through a jet mill in the second stage to further deagglomerate the powder;
 - c. dispensing the deagglomerated powder from the jet mill directly into a jet tube for exhausting said powder into the atmosphere, thus forming a contrail.

3,899,145

LASER TRANSMITTING AND RECEIVING LENS OPTICS

Andrew N. Stephenson, Camarillo, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 20, 1973, Ser. No. 381,193

Int. Cl. F42b 15/02

U.S. Cl. 244-3.13

7 Claims

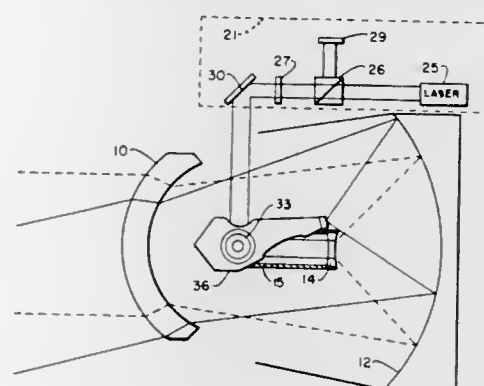
1. A single optical lens system for both transmitting and receiving laser and other type parallel light beams comprising:

- a. a convex meniscus lens element and a concave mirror forming a Bouwers lens arrangement;
- b. a negative lens element immediately ahead of the focal surface of said Bouwers lens assembly, forming a Galilean concentric Bouwers lens assembly;
- c. said negative element being used to afocalize an incoming converging laser beam so that the Bouwers lens arrangement collimates and directs the laser beam entering the system via said convex lens element and concave mirror to the concentric point of the Bouwers lens arrangement;

d. a single mirror surface at said concentric point of the Bouwers lens arrangement for directing said incoming laser beam to one side of the lens assembly;

e. a laser beam entering said lens system from said one side of said assembly being directed by said concentric point mirror surface to the negative element which then acts as an expanding element for directing the laser beam to said concave mirror where it is reflected to said convex lens element and passed therethrough to emerge therefrom as a parallel light beam;

f. said lenses and mirrors assembly and the relationship thereof being mounted for operating to scan the focal



surface of the Bouwers lens arrangement at high angular acceleration and high rates of motion;

- g. a laser generating means at said one side of the lens assembly for generating a laser beam to be directed through said lens assembly toward a target;
- h. a laser detector means also at said one side of the lens assembly for detecting incoming and reflected laser signals from a target;
- i. said laser generating means and said laser detecting means employing a common aperture and a common polarization means at said one side of the lens system to both transmit and receive laser signals.

3,899,146

WIND-LAUNCHED SAILPLANE

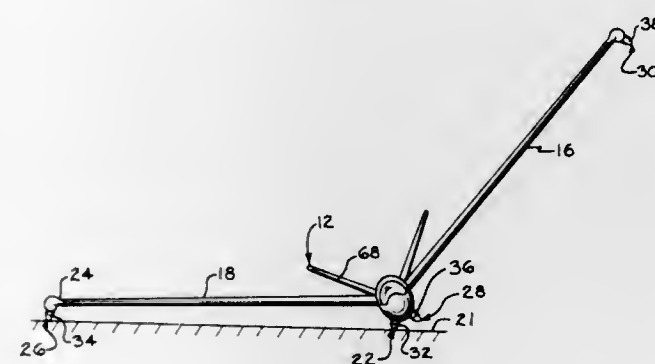
James L. Amick, 1464 Cedar Bend Dr., Ann Arbor, Mich. 48105

Filed Mar. 27, 1974, Ser. No. 455,043

Int. Cl. B64c 31/02

U.S. Cl. 244-16

6 Claims



1. A sailplane comprising a fuselage with wings mounted thereon, said wings having a dihedral angle within the range of 15° to 45°, running gear means connected to said fuselage, and other running gear means connected adjacent to the tips of said wings so that one of said wings can assume a horizontal attitude for support of the sailplane on a flat surface on the running gear means of said one wing and said fuselage and the other wing will then extend upward at an angle to the horizontal within the range of 30° to 90° to function as a sail for movement of the sailplane on said flat surface, said fuselage and wing tip running gear means being rotatable about generally vertical axes for steering purposes when the running gear

3,899,147

TRAILING-WHEEL UNDERCARRIAGE TRAIN

Jean Masclet, Paris, and Andre Turiot, Morsang S/Orge, both of France, assignors to Messier-Hispano, Paris, France

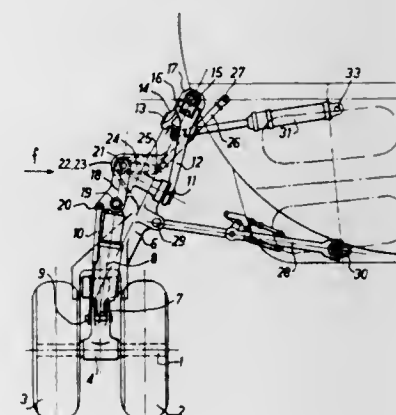
Filed Mar. 1, 1974, Ser. No. 447,245

Claims priority, application France, Mar. 5, 1973, 73.07790

Int. Cl.² B64C 25/12

U.S. Cl. 244-102 R

9 Claims



1. A trailing-wheel undercarriage train for an aircraft including a fuselage, comprising: two laterally retractable undercarriages, pivotally mounted symmetrically on either side of the fuselage, each including a rigid leg casing on which a pivot arm is pivotally mounted; said arm carrying at least one wheel with which it constitutes an assembly, and also carrying a lower pivot of a damper disposed rearwardly of said casing, and whose upper end is pivotally connected to a lever which is pivotable during the undercarriage-train lifting movement, relative to said casing; said lever being connected, on the one hand, to a strut assembly directly pivoted on the aircraft and, on the other hand, to said arm by way of a telescopic strut which, upon landing and taxiing of the aircraft, is reduced in length by the reaction of the ground, without opposing any resistance, but which, during said lifting movement of the undercarriage train, under the action of an operating jack, causes retracting of said arm - wheel assembly along said casing, thereby compressing said damper.

3,899,148

ANTENNA MOUNTING BRACKET FOR A TRUCK CAB

Alva H. Fleming, 5844 Adelaide Dr., Toledo, Ohio 43613

Filed Sept. 6, 1974, Ser. No. 503,670

Int. Cl.² H01Q 1/32

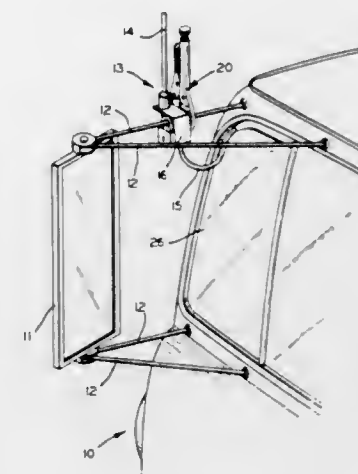
U.S. Cl. 248-43

2 Claims

1. An antenna mounting bracket for a highway vehicle having a support rod attached to the exterior of the vehicle, said bracket consisting of

- an adjustable two-part clamp adapted to be removably tightened on said support rod and adjustable to tightly close the jaws thereof on such rods of varying sizes and cross sections,
- an antenna support element having at least two legs and being integrally connected to one jaw of said clamp, and a pad lock having a case and a generally U-shaped hasp defining a loop surrounding said rod when closed and

aligned with the gripping portions of said jaws, said pad lock being openable for removal from said rods, one part



of said lock being integrally connected to one arm of said support element.

3,899,149

BED DRAINAGE TUBE HOLDER

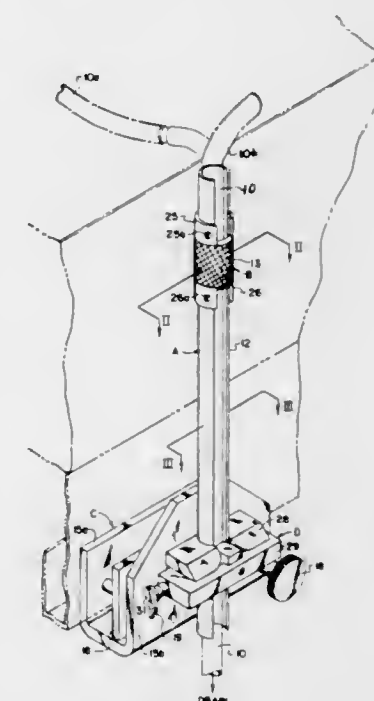
William H. Schneider, 3217 Mt. Troy Rd., Pittsburgh, Pa. 15212

Filed July 12, 1974, Ser. No. 487,858

Int. Cl.² A61G 7/06

U.S. Cl. 248-75

19 Claims



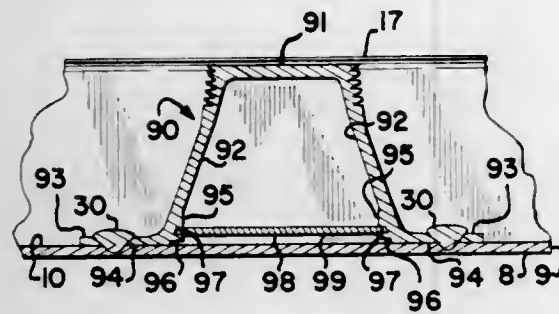
1. In a bedside holder for a length of flexible tubing that is to be positioned to extend from an upper side of a mattress downwardly therefrom past a side rail of a bed frame to empty into an under-positioned receptacle, a longitudinally extending support arm having a channel portion therealong that is open along one side and at opposite end portions thereof to removably sidewise-receive an upper portion of a length of flexible tubing therein, ring-like retention means rotatably carried on said arm for alternately exposing and closing-off at least a portion of the open side of said channel portion to enable a sidewise insertion of the tubing therewithin and a subsequent retention of it in a through-extending relation therealong, and rail clamping means carried by said arm for removably securing it to the side rail of the bed frame.

3,899,155

CONCRETE FORM PANELS WITH HOLLOW REINFORCING RIBSEdward B. Ward, 824 Winchester, Kansas City, Mo. 64125
Filed Oct. 23, 1973, Ser. No. 408,440Int. Cl.² E04G 9/06

U.S. Cl. 249—189

3 Claims

**1. A panel for forming a concrete wall comprising:**

- a. a plate having a pair of opposed planar side faces, said plate having opposed side edges and opposed end edges with the end edges substantially transverse to said side edges, one of said opposed side faces presenting a planar surface for forming one surface of a concrete wall;
- b. said plate having side strips adjacent to and spaced from a respective side edge forming side flanges, said side strips extending from and being substantially normal to the other opposed side face and having opposite ends adjacent said end edges;
- c. said plate having end strips adjacent to respective end edges, said end strips extending from and being substantially normal to said other opposed side face and having opposite ends adjacent respective ends of said side strips;
- d. a plurality of hollow reinforcing ribs secured to the other opposed side face, said hollow ribs being generally channel shaped with a web and side legs extending from opposite longitudinal edges thereof terminating in outwardly extending flanges having free edges spaced from a respective leg and having surfaces which lie on portions of said other opposed side face, and gun welds securing said rib flanges to said plate with portions of the engaging flange surfaces and other opposed side face joined together, said flanges being greater in width than the width of the gun welds, said welds being positioned generally centrally between a leg and said flange free edge;
- e. a plurality of said ribs extending transversely of the longitudinal dimension of said plate in spaced apart parallel relation with said ribs having opposite ends abutting said side strips and being secured thereto;
- f. the gun welds securing said rib flanges to the plate being in mutually spaced apart relation in lines extending both transversely and longitudinally of said plate and characterized by an absence of warpage in said plate and disfigurement of said one opposed side face;
- g. said rib legs having inwardly facing longitudinal grooves therein adjacent said other opposed side face, an elongate flat strip member positioned in the interior of said ribs and having opposed side edges seated in said grooves, said flat strip members extending the length of the respective rib for preventing entry of foreign material into a major portion of the space defined by said ribs and said plate.

3,899,156

SINGLE BLADE FIRE DAMPER

Francis J. McCabe, Apt. A-4, North & East Sts., Doylestown, Pa. 18901

Filed Jan. 23, 1974, Ser. No. 435,762

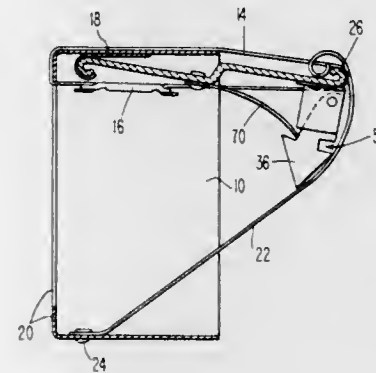
Int. Cl.² F16K 17/38; E05C 3/00

U.S. Cl. 251—303

5 Claims

1. A fire damper, comprising:

- a. a frame, said frame defining a flow passage therethrough and having a flange thereon inwardly depending from the walls thereof;
- b. a blade mounted within said frame to articulate about one edge of said blade so as to be movable between open and closed positions with respect to said frame;
- c. spring means mounted to said frame and engaging the free swinging portion of said blade to exert a force thereon to move said blade from said open to said closed position;



- d. lock means for securely engaging the frame and the blade in the closed position to retain the blade in that position, said lock means comprising a pivotally mounted latch member and a spring, said latch member having a free end with a beveled surface thereon and having a slot defined therein, said beveled surface positioned to engage the inwardly depending flange of the frame on movement of said blade from an open position to a closed position, continued movement thereof to cam said latch about its pivot to allow said slot to matably engage said flange in the closed position, thereby producing positive retention of the blade in the closed position.

3,899,157

TACK FASTENER AND STRIPPER

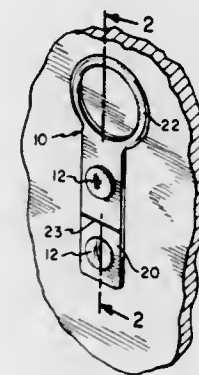
Robert Thomas, 30 W. Chicago Ave., Chicago, Ill. 60610

Filed June 17, 1974, Ser. No. 480,048

Int. Cl.² B25C 11/00; B66F 15/00

U.S. Cl. 254—18

1 Claim



1. A tack and tape remover for lifting a conventional tack, having a head, or adhesive tape from a surface to which it has been affixed comprising:

- a flat elongated strip with a distal end having an aperture with a diameter less than the diameter of said head, and a proximal end, and
- a rigid integrally formed ring, connected to said strip at said proximal end, normally coplanar with said strip and of thickness substantially equal to or less than the combined thickness of said strip and said tack head, said ring being large enough to be manually grasped by inserting a human adult finger therethrough and said strip being made of a flexible substantially inelastic material so that said ring, when grasped, is movable from said normal position coplanar with said strip to a position substantially

transverse to the plane of said strip for pulling said tack or tape in a direction substantially normal to said surface.

3,899,158

HANDLINE SNATCH BLOCK

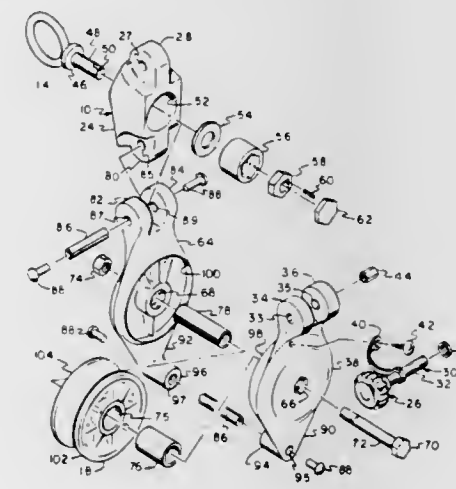
Gordon W. Johnson, 6163 N.E. 185th, Seattle, Wash. 98007

Filed Sept. 25, 1973, Ser. No. 400,638

Int. Cl.² B66D 3/02

U.S. Cl. 254—194

1 Claim



1. A handline snatch block having many components made of fiberglass and arranged for the excellent distribution of otherwise deflecting and distorting loads, and also arranged for two possible modes of operation, and at all times being quickly adjustable to insert and to withdraw a portion of a rope line with respect to its passage over the sheave, comprising:

- a. a load receiving and transmitting body having a centrally located vertical formed cavity to position and hold a load receiving means, and having integral opposite transversely extending body portions serving as integral pivot rod receiving supports with a horizontal formed cavity to receive respective pivot rod subassemblies, and having additional integral opposite transversely extending body portions spaced in pairs on respective sides of the said integral opposite transversely extending body portions which serve as the integral pivot rod receiving supports, each said pair of additional integral opposite transversely extending body portion terminating outwardly in a concave reinforcing abutment to come into play when the handline is subjected to high loading;
- b. a load receiving means having a head portion to be secured to a load line, having a threaded shank to be positioned through the centrally located vertical formed cavity of the said load receiving and transmitting body, and having a subassembly of a bushing, washer, nut, locking pin, and lock nut, for securing the said threaded shank in the said centrally located cavity;
- c. two spaced depending side housings having at their top integral paired and spaced convex pivot rod receiving supports, to complementary fit in the said concave reinforcing abutments of the said load receiving and transmitting body, with horizontal formed cavities to receive respective pivot rod subassemblies, which also are received in the said integral opposite transverse extending body portions of the said load receiving and transmitting body, to be thereby rotatably secured to the load receiving and transmitting body, having at their bottom integral extended receiving transverse supports having transverse cavities to receive a bottom securement subassembly of rivets and a sleeve, having at their integral mid portions on their insides a recessed structure to accommodate portions of a sheave, having at their integral mid portions on their outsides, a formed recess to non rotatably position end portions of an axle subassembly, at least one said outside recess having a circular crushable rib to be deformed during the initial rotative assembly of the said

depending side housings, and also having at their integral mid portions a transverse hole to accommodate portions of an axle subassembly;

- d. an axle subassembly of a bolt, sleeve, and nut, inserted through the transverse holes of the said respective integral mid portions of the said two spaced depending side housings, the final tightening of this axle subassembly, after installation of a sheave, occurring as the two said spaced depending side housings are rotated relative to one another until firmly contacting the ends of the said sleeve of this axle subassembly, the complete tightening being assured as the said circular crushable rib is deformed to the extent necessary as the said formed recesses non rotatably position the said end portions of the axle subassembly;
- e. a sheave for placement on the said axle subassembly and positioned between said two spaced depending side housings for partial interfitting within their said inside recesses;
- f. a bottom securement subassembly of rivets and a sleeve to secure together the said bottom integral extended receiving transverse supports of the said two spaced depending side housings; and
- g. pivot rod securement subassemblies to rotatably secure the said two spaced depending side housings at their respective said spaced convex pivot rod receiving supports to the load receiving and transmitting body at its said integral opposite transversely extending body portions, one of these said pivot rod securement subassemblies having two rivets and a sleeve for riveted securement, and the other of these said pivot rod securement subassemblies having a sleeve, a pull out pin, and a secured tether to keep the pull out pin from falling away from the adjacent said depending side housing, the said pull out pin upon its withdrawal, clearing the respective said depending side housing at its top for outwardly pivoting to gain access to the sheave for removal or insertion of a pulley line.

3,899,159

DEVICE FOR TREATING SUBSTANCES CONSISTING OF AT LEAST ONE VESSEL AND ONE OR MORE STIRRING MEMBERS IN EACH VESSEL

Constant Johan Nauta, Overveen, Netherlands, assignor to Nautamix Patent A.G., Zug, Switzerland

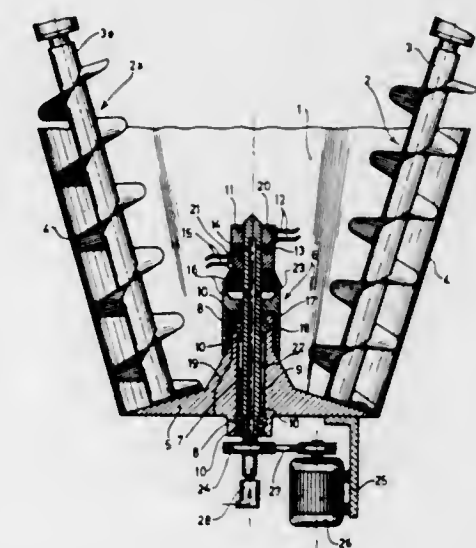
Filed June 10, 1974, Ser. No. 478,166

Claims priority, application Netherlands, June 15, 1973, 7308397

Int. Cl.² B01F 7/00

U.S. Cl. 259—21

9 Claims



1. Device for treating substances e.g. mixing granular, pulverulent or pasty substances and/or liquids, comprising a vessel with a vertical axis of symmetry, at least one stirring member in said vessel, said member being situated at its upper

and bottom end eccentrically in said vessel, at least said upper end being supported in the free end of a member with opposite end rotatably supported in the vertical axis of symmetry of said vessel, means for rotating each stirring member about its own axis and simultaneously about the vertical axis of symmetry of said vessel, at least one combined system for locally producing a vortex motion in the surrounding substances to be treated and injecting at the same time a substance into said surrounding substances, arranged in that portion of the bottom of the vessel beyond the reach of said stirring member, said combined system comprising an injection pipe rotatably supported in the bottom of the vessel and provided with at least one longitudinal channel closed at its upper end, at least one spray member opening into said vessel, and at least one pair of stirring members provided on said injection pipe.

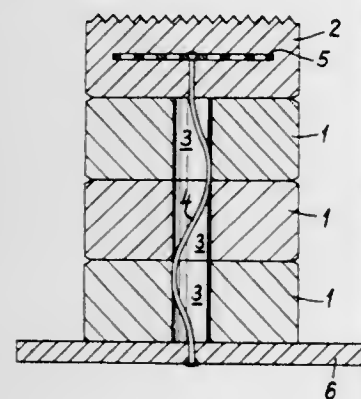
3,899,160 BUFFER

Wilhelm Schwarz, Wilhelmshaven, Germany, assignor to Fried. Krupp Gesellschaft mit beschränkter Haftung, Essen, Germany

Filed Mar. 21, 1974, Ser. No. 453,560
Claims priority, application Germany, Mar. 22, 1973, 2314275

Int. Cl. F16f 3/08

U.S. Cl. 267—152



1. A buffer which includes: a first end plate, a second end plate arranged in substantially spaced relationship to said first end plate, a plurality of discs of cellular elastic material interposed between and bonded to said first and second end plates and also bonded to each other, said discs respectively being provided with axial passages substantially axially aligned with each other, and a holding member extending through said passages and interconnecting said end plates, the width of said passages being a multiple of the thickness of said holding member, said holding member in fully assembled condition of said end plates and of said discs and in the normal condition of said discs having an undulated contour with at least one undulation.

3,899,161 EGG CUTTING BOARD

John J. McGann, Jr., 1204 Tarball St., New Smyrna Beach, Fla. 32069

Filed May 13, 1974, Ser. No. 469,340

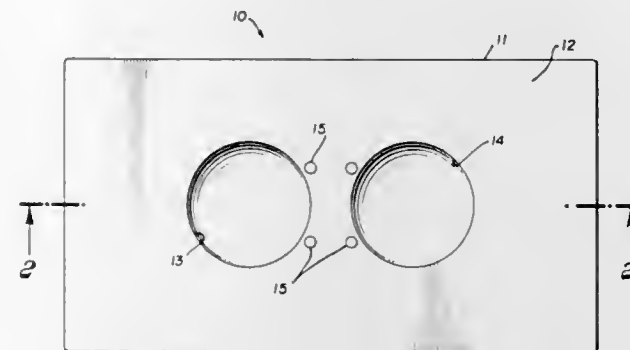
Int. Cl. B25B 11/00

U.S. Cl. 269—13

6 Claims

1. A kitchen utensil for cutting hard or soft boiled eggs and the like, comprises a base having a substantially flat upper surface, said surface has at least one pair of spaced apart depressions therein each having a size and shape to receive therein one end half of an egg and the like, and a plurality of projections extend upwardly from the surface between the

pair of depressions to support an egg and the like thereon, so that when the egg and the like is cut substantially in the middle



thereof, one end half thereof falls into each depression of the pair.

3,899,162

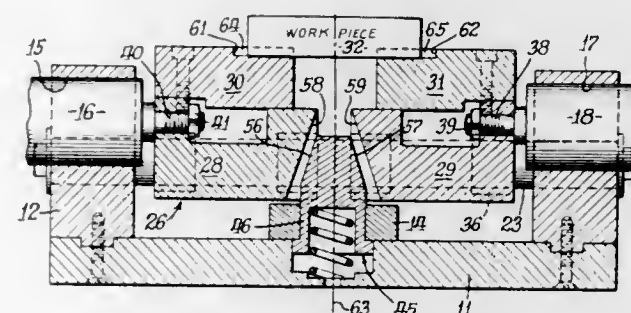
MULTI-LOAD SELF-CENTERING WORK HOLDING VISE
Hugo J. Fischer, 106 Sherwood Dr., Cary, Ill. 60013

Filed Sept. 27, 1974, Ser. No. 509,810

Int. Cl. B23q 3/06

U.S. Cl. 269—25

11 Claims



1. In a self-centering vise for gripping a workpiece and comprising a frame, a pair of jaws mounted on the frame for movement along a path toward and away from each other, power means connected to the jaws for moving the jaws individually along said path toward and away from each other, and centering means for positioning said jaws, when they grip the workpiece, so that the workpiece is at a specific location along said path, the improvement wherein said centering means comprises:

said jaws having end faces adjacent each other and forming a first pair of faces;

a centering device normally positioned between said end faces and being mounted in said frame for movement only along a line at right angles to said path from said normal position to a displaced position, said centering device having side faces in juxtaposition to said end faces respectively, said side faces forming a second pair of faces;

one of said pair of faces being positioned generally in the form of a V centered with respect to said line, whereby as said jaws move toward each other said end faces contact said side faces and apply a force to said device in a direction tending to move said device along said line toward said displaced position; and

means engaging said device and resiliently resisting movement of said device in said direction.

3,899,163

WELDING JIG FOR DECK LONGITUDINALS

Sakebu Minagi, Ichiharashi, Japan, assignor to Mitsui Shipbuilding and Engineering Co., Ltd., Tokyo, Japan

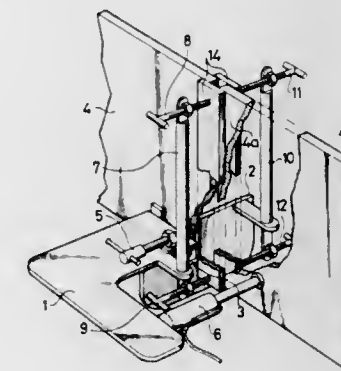
Filed Aug. 20, 1974, Ser. No. 499,063

Claims priority, application Japan, Aug. 27, 1973, 48-00556

Int. Cl. B23k 37/04

U.S. Cl. 269—37

1 Claim



1. A welding jig for deck longitudinals comprising a horizontal support plate which is to be positioned adjacent the side of the deck longitudinals, a vertical support plate secured to said horizontal support plate having a recess with which a lower portion of one of the longitudinals may be engaged, a screw secured to said horizontal support plate for securing the support plates to said one longitudinal, a hydraulic cylinder, attached to said horizontal support plate for aligning the other longitudinal with said one longitudinal, and electroslag welding copper plate holding screws secured to said horizontal and vertical support plates.

3,899,164

ADJUSTABLE FLOOR SUPPORT FOR NEEDLECRAFT AND ART FRAMES

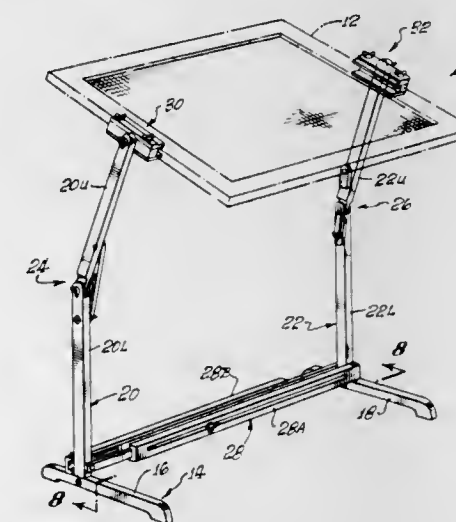
Raymond Newman, 1829 E. Edgcomb St., Covina, Calif. 91724

Filed Nov. 5, 1973, Ser. No. 412,646

Int. Cl. B23Q 1/04

U.S. Cl. 269—71

7 Claims



1. An adjustable floor support for needlecraft and art frames comprising:

a pair of floor engaging feet;
a pair of legs extending vertically from said feet and each including a knee joint for swinging an upper portion of each leg in a plane thereof to an inclined angle relative to a lower vertical portion of said leg;
a longitudinally expandable and contractible cross member extending between said legs to laterally support said legs on said feet;
variable mouth clamp means at an upper end of each leg for

receiving and releasably gripping needlecraft and art frames of different thickness; and selectively operable means for releasably locking said knee joints in different positions to regulate the angulation between said upper and lower portions of said legs; and said feet each including floor engaging portions extending forward of said legs in the direction of swinging of said upper leg portions to balance and support said legs and frame against tipping upon a swinging of said upper leg portions to an inclined position.

3,899,165

SIGNATURE COLLATING AND BINDING SYSTEM

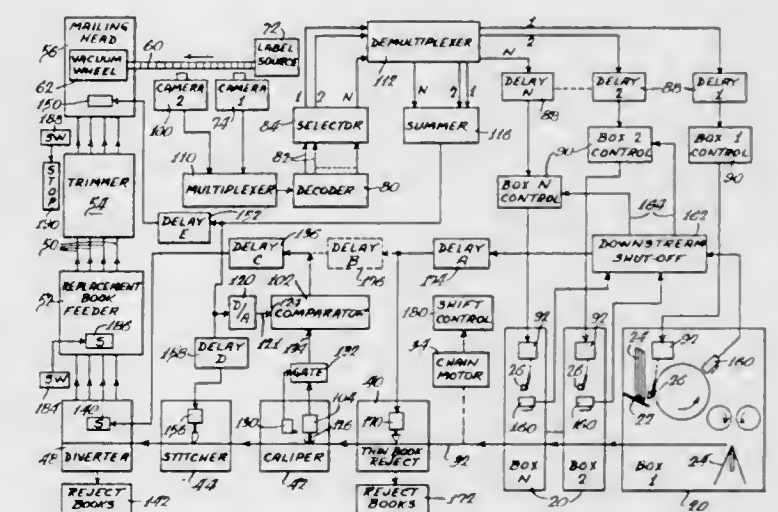
Stewart J. Abram, Elmhurst; David R. Denis, Winnetka; Alex E. Heinze, Glenview; Leonard M. Johnson, Downers, and Edward Taylor, Chicago, all of Ill., assignors to R. R. Donnelley & Sons Co., Chicago, Ill.

Filed Oct. 2, 1972, Ser. No. 297,993

Int. Cl. B65h 39/02

U.S. Cl. 270—54

29 Claims



1. In a collating and binding system having a plurality of feeder means each responsive to actuation of an associated delivery means for delivering a signature to an adjacent station spaced along a conveyor, and processing means adjacent said conveyor for processing the books of signatures which have been progressively built by the feeder means to provide output books of signatures, the improvement comprising:

source means having a plurality of outputs each corresponding to a different one of the plurality of feeder means, the source means generating a series of different combinations of signals at the plurality of outputs to form different books of signatures;

a plurality of delay means each coupled between a different one of the outputs and a different one of the feeder means for selectively actuating the associated delivery means when signals are present at the associated outputs to progressively build said plurality of different books at the spaced stations;

said processing means includes adjustable means having different positions for processing different thicknesses of books of signatures built by said feeder means;

movable shaft means responsive to a total thickness signal for moving a shaft by a corresponding amount, the shaft driving said adjustable means to alternatively assume different positions corresponding to the total thickness signal; and

summer means coupled to the plurality of outputs for summing each series of different combinations of signals to generate the total thickness signal coupled to the movable shaft means.

18. In a collating and binding system having a plurality of feeder means for delivering signatures to a plurality of stations along conveyor means and processing means adjacent said conveyor means for processing books of signatures progressively built by the feeder means, the improvement comprising: diverter means responsive to a predetermined condition for

diverting a single book of signatures from said conveyor means to create an open station;

book hopper means for storing a plurality of replacement books of signatures, including an active storage section with delivery means actuable to feed a single replacement book of signatures to said conveyor means and a buffer storage section for storing replacement books for the active storage section, detector means associated with said active storage section for determining when additional replacement books are required from said buffer storage means, and controller means responsive to said detector means for transferring a predetermined number of replacement books from said buffer storage means to said active storage means; and

control means for actuating said delivery means to fill the open station with the replacement book of signatures.

3,899,166

LAUNDRY FOLDING MACHINE

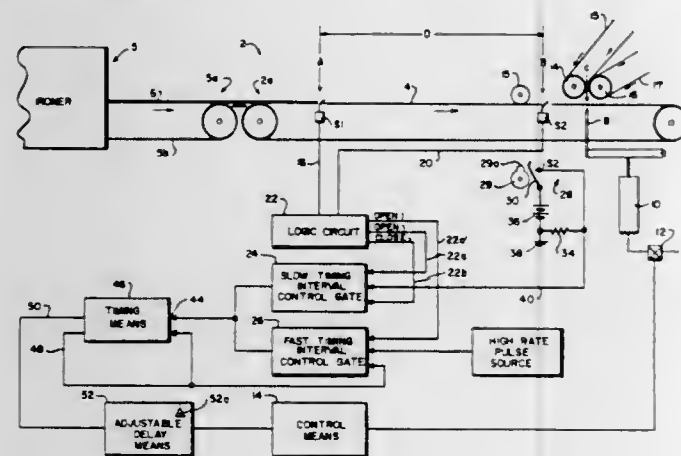
Sheldon P. Behn, Highland Park, Ill., assignor to Super Laundry Machinery Company, Inc., Chicago, Ill.

Filed Dec. 7, 1973, Ser. No. 422,702

Int. Cl. B65h 45/18

U.S. Cl. 270—83

3 Claims



1. In flatwork piece folding apparatus for folding a flatwork piece at a given point behind the leading edge thereof a given proportion of the length of the flatwork piece carried by conveyor means moving the same past a folding station in a direction parallel to the length thereof, said folding station having folding means for forming a lateral fold in a portion of the flatwork piece located opposite thereto at the folding station, the conveyor means moving the flatwork piece through a length measuring area where the flatwork piece is moved first past a first position sensing point in advance of said folding station at a speed which initially at least may differ from the speed of said conveyor means, and then past a second point beyond said first point, there being first article position sensing means for providing a first signal when the leading edge of the article has reached said first position sensing point and a second signal when the trailing edge of the flatwork piece leaves said first position sensing point, and signalling means for providing a third signal when the leading edge of said article reaches said second point; and control means for controlling the point in time when said folding machine is operated, said control means including resettable timing means which when operated has a characteristic which progressively varies in value at a controlled variable rate, means responsive to said characteristic value reaching a given control value by effecting operation of said folding means, timer operating means initially responsive to respectively different combinations of said signals indicating the movement into said measuring area of a flatwork piece having a length greater or equal to the spacing between said first and second points, on the one hand, and a flatwork piece of a length less than the spacing between said first and second points, on the other hand, for initially operating said timing means at a given rate related to the actual speed of movement

of said folding piece in said measuring area, and then responsive to signals generated by the passage of the trailing edge of a flatwork piece having a length equal to or greater than the spacing between said first and second points past said first point, on the one hand, and the movement of the leading edge of a flatwork piece to said second point, on the other hand, by operating said timing means at a substantially different rate also related to the actual speed of movement of said flatwork piece in said measuring area, and means for resetting said timing means after said characteristic has reached said control value, the improvement wherein said timer operating means includes rotatable means for controlling at least initially the speed of operation of said timing means so said characteristic of said timing means progressively varies in proportion to the speed of rotation imparted to said rotatable means by the passage of a flatwork piece therebeneath, the rotatable means being positioned to be rotated by the movement of a flatwork piece in said measuring area independently of the actual speed of movement of said conveyor means, the rotatable means being located between said first position sensing point and said second point so as to be located closer to said second point than to said first point.

3,899,167

AQUATIC SPEEDWAY

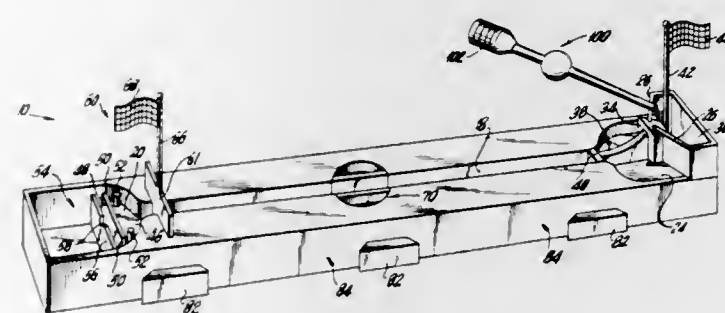
Harold N. Braunhut, 200 Fifth Ave., New York, N.Y. 10010

Filed Aug. 14, 1973, Ser. No. 388,240

Int. Cl. A63K 1/00

U.S. Cl. 272—4

27 Claims



1. An aquatic speedway for racing aquatic animals that tend to swim against the direction of flow of a current of water, comprising a raceway in the form of an elongate open channel; water discharging means communicating with one end of said channel for discharging water into the latter; water receiving means communicating with the other end of said channel for receiving water from the latter; and water transfer means for transferring water from said water receiving means to said water discharging means to raise the level of the water above said channel in said water discharging means and lower the level of the water below said channel in said receiving means, said water transfer means comprising a tubular member provided at one end with a resilient bulb and at the other end with an opening and in the general form of an eyedropper device, whereby transfer of water may be manually effected, and whereby continued transfer of water from said water receiving means to said water discharging means causes a current of water to flow therebetween suitable for racing the aquatic animals from the region of said water receiving means to said water discharging means.

3,899,168

UMBRELLA PUPPET STAGE

Stella Beshorse, Rt. 1, Box 82, Othello, Wash. 99344

Filed July 18, 1974, Ser. No. 489,706

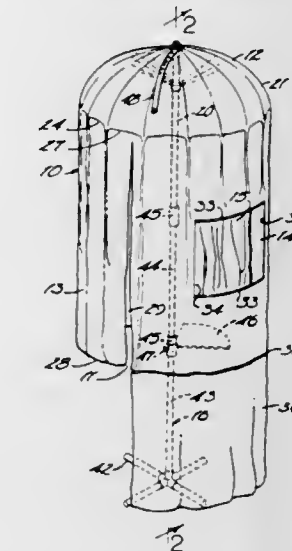
Int. Cl. A63J 19/00

U.S. Cl. 272—21

6 Claims

1. A portable puppet stage for concealing a puppeteer and for providing a performing area for a puppet, comprising:

a central upright support;
a collapsible umbrella roof on said support having a circular peripheral roof edge;
a circumferential skirt of flexible fabric depending from the peripheral roof edge to form an enclosure with the roof for concealing the puppeteer;
a stage opening extending through said skirt at a location thereon between top and bottom skirt edges; and
a backdrop within the enclosure, depending from a portion of said umbrella roof spaced inwardly from said periph-



eral roof edge, said backdrop depending to a lower edge terminating below said stage opening and above the bottom skirt edge and spaced inwardly from the stage opening a sufficient distance to define a performing area between the backdrop and the stage opening in which the puppet may be manipulated by the puppeteer with the backdrop further concealing the puppeteer and said backdrop also being sufficiently close to said stage opening to provide a background setting for the performing area.

3,899,169

BUILDING GAME

Timothy L. Rhodes, 250 Curtis St., and John L. Wagner, 2389

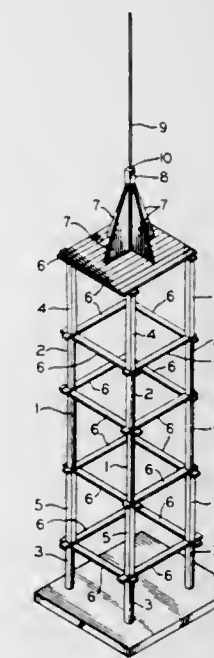
Medina Rd., both of Medina, Ohio 44256

Filed Sept. 12, 1973, Ser. No. 396,607

Int. Cl. A63F 9/00; A63H 33/06

U.S. Cl. 273—1 R

7 Claims



1. A game apparatus comprising:
groups of like game pieces for constructing a representation of a skyscraper type framework;

the game pieces of each group being readily distinguishable from those of other groups and being adapted for, and having, predetermined permitted positions in which they can be assembled in the framework; the permitted positions for the pieces of some groups being different from the permitted positions of pieces of other groups;

each of the pieces of one group being an elongated pillar which has planar parallel ends normal to its longitudinal axis, and each of said ends of each pillar being of such size and cross section and so related to the length of the pillar that when the pillar is disposed on one end on a horizontal planar surface with its axis upright and is free from laterally imposed extraneous forces, it is capable of remaining in upright position against the forces of gravity, but with a low degree of stability against toppling;

each of the pieces of another group being a cross beam which is relatively long and narrow and which has on one face a pair of parallel coplanar face portions and on its opposite face a pair of coplanar face portions parallel to those on said one face;

the face portions of the pair disposed at one face of the cross beam being related in length and breadth to the ends of the pillars, respectively, so that the face portions can be juxtaposed on the upper ends of two laterally spaced upright pillars, respectively, when their upper ends are coplanar and the faces are horizontal and when so juxtaposed, can support the cross beam in horizontal position, and so that the lower ends of two such spaced pillars can be supported in upright position on the face portions, respectively, opposite those supporting the cross beam on the pillars, and each face portion of each beam extending from a location inwardly from its associated end of the beam a greater distance than the greatest cross sectional dimension of said ends, respectively, entirely to said associated end;

said pillars and cross beams and the game as a whole being free from accessory connectors and connecting portions, other than frictional engagement between the pillar ends and the said faces, which can mechanically hold the beams and pillars together in assembled relations and which can constrain them from movement relative to each other; and so that the pillars and cross beams are held in said assembled relations solely by friction between said juxtaposed ends of the pillars and the associated face portions of the cross beams under gravitational forces acting on said groups of game pieces, and said groups being the only pillars and only cross beams, respectively, of said game so related to each other; and the ratio of the length of each pillar to the maximum transverse dimension of its ends, respectively, falls within a range from about 3.6 to about 7.7.

3,899,170

GAME APPARATUS WITH SPINNABLE TARGET

Lloyd Parks, deceased, late of Arlington, Va., and Dwight C.

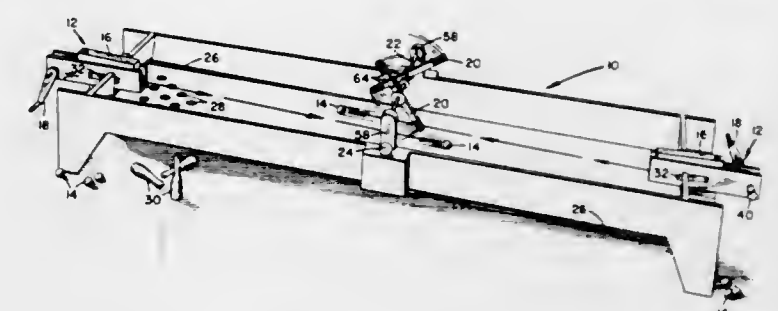
Brown, 5712 N. 20th St., Arlington, Va. 22206

Filed May 8, 1973, Ser. No. 358,367

Int. Cl. A63b 63/06; A63f 7/10, 7/14

U.S. Cl. 273—38

7 Claims



1. A game apparatus comprising an elongated housing having upstanding side walls, end walls and a generally planar

deck defining a playing surface, chute means defined in said deck and being inclined and extending toward at least one of said end walls, said playing surface being inclined toward said chute means, a threaded shaft extending over said deck in spaced relation thereto and removably mounted in said side walls, at least two spinner means rotatably mounted on said shaft in loosely threaded engagement therewith and adapted to move longitudinally relative to said shaft when rotated, pivotably mounted propelling means extending through each of said end walls and adapted to propel projectiles over said deck for striking said spinner means and causing rotation thereof, said chute means including a chute extending adjacent each of said side walls, each said chute being inclined toward an opposite one of said end walls, and wherein said playing surface is sloped from the longitudinal centerline thereof toward each of said chutes, respectively.

3,899,171

BOWLING BALL DECELERATOR

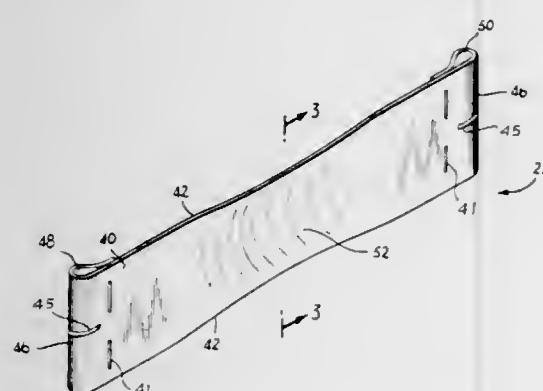
Herbert C. Haller, Newtonville, N.Y., assignor to Albany International Corporation, Albany, N.Y.

Filed June 17, 1974, Ser. No. 479,790

Int. Cl. A63d 5/02

U.S. Cl. 273—47

7 Claims



7. An article for snubbing round, moving articles which comprises:

a hard surfaced, resilient textile fabric body which comprises:

- a base layer of woven synthetic material comprised of at least one filament;
- a web of synthetic fiber needled to said base layer;
- a polymeric resin saturant; and
- means for attaching said article at the ends thereof to a mount; said article having a generally rectangular shape, a thickness less than its width and a portion which follows an arcuate path from edge to edge across its width; the base layer being on the outside of the arced portion.

3,899,172

TENNIS RACKET HAVING IMPROVED STRENGTH FACTOR

George A. Vaughn, and Richard D. Hargrave, both of Princeton, N.J., assignors to Maark Corporation, Plainsboro, N.J.

Division of Ser. No. 853,676, Aug. 28, 1969, Pat. No. 3,702,701. This application June 9, 1972, Ser. No. 261,344

Int. Cl. A63b 49/12

U.S. Cl. 273—73 C

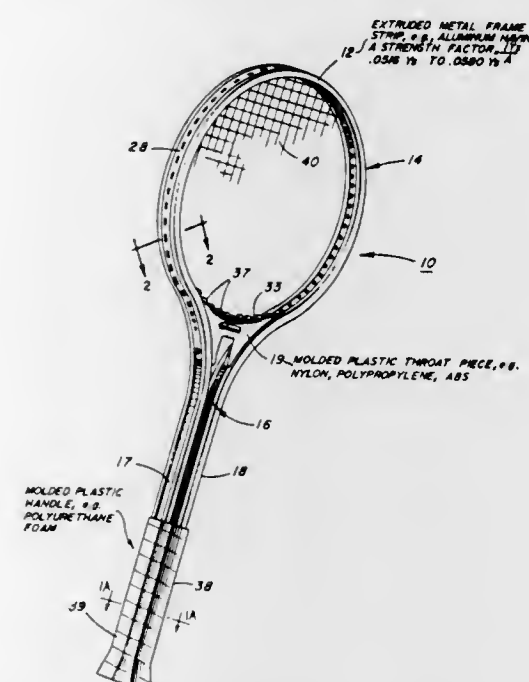
1 Claim

1. A tennis racket structure comprising: a frame strip for defining a stringing section and a handle section;

said frame strip comprising an extruded metal frame strip having a pair of opposed outer tubular sections connected by a web and being shaped to partially define a generally oval section and a pair of spaced apart generally parallel handle end sections and said web cooperating with said pair of tubular sections to define on one side thereof a

generally rectangular channel and on the other side thereof a generally trapezoidal channel;

said frame strip having a cross-sectional configuration for defining a strength factor (IY_s/A) in the range of $0.0516(\text{in}^2) Y_s$ to $0.0580(\text{in}^2) Y_s$, wherein the strength factor is the ratio of the moment of inertia $I(\text{in}^4)$ of the frame strip around the longitudinal axis thereof to the transverse cross-sectional area $A(\text{in}^2)$ of the strip material, and Y_s is the yield stress of the strip material;



a throat piece consisting solely of plastic and including a pair of opposed surfaces shaped complementarily to conform to the shape of said generally trapezoidal channel of said frame strip and wherein said plastic throat piece possesses such flexibility and resiliency as to prevent deformation in torsion in the throat area of the tennis racket frame in normal play; and handle means.

3,899,173

SIMULATED BASKETBALL GAME

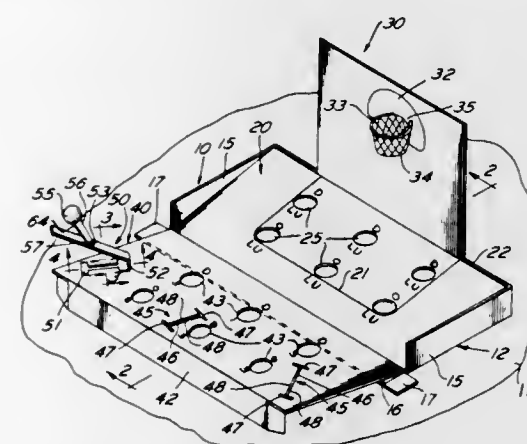
Louis Zaris, 43 N. Tallahassee Ave., Atlantic City, N.J. 08401

Filed Dec. 5, 1973, Ser. No. 421,976

Int. Cl. A63F 7/10

U.S. Cl. 273—85 E

5 Claims



1. A simulated basketball game comprising a board having an inclined upper surface providing a playing field with one edge uppermost, said board having ball-receiving openings, "offensive" and "defensive" markings on said surface associated with respective ball-receiving openings, an upright support removably positioned at said one edge of said board upstanding therefrom, a base tray having side walls and removably receiving said board, said support having its lower region removably inserted between said board and one tray

side wall, a basket carried by said support spaced over said playing field for receiving a projected ball, a separate ball projector freely selectively positionable for aerially projecting a ball toward said basket, and an extension on said board extending out of and beyond said tray opposite to said one tray side wall, said extension inclining away from said board and combining therewith to define a gully for receiving rolling balls.

3,899,174

FOOTBALL GAME

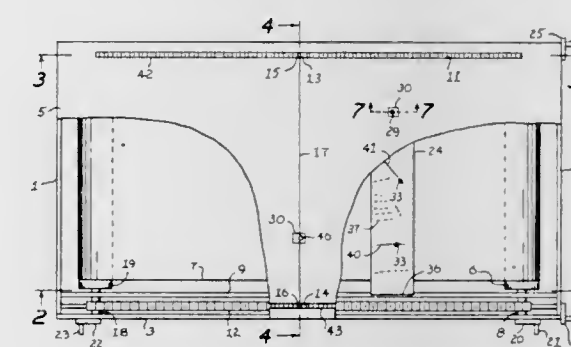
James P. Berarducci, 1769 W. 26th St., Erie, Pa. 16508

Filed May 4, 1973, Ser. No. 357,223

Int. Cl. A63f 7/06

U.S. Cl. 273—94 R

15 Claims



1. A simulated game including a first playing piece representing a first player.

a second playing piece representing a second player.

a playing field made up of a sheet of relatively rigid material having a slot extending along each side thereof and supporting said players.

a belt made of magnetic material having a part movable in a plane parallel to said playing field, means supporting said belt on said game.

a template supported between said belt and said playing field.

means mounting said template to provide relative movement between said template and said belt.

a transfer member supported on said template.

means on said transfer member for exerting a force on said belt whereby said belt moves said transfer member relative to said template.

means on the upper end of said transfer member for exerting a force on said playing pieces whereby said playing pieces move over said playing surface in accordance with the movement of said transfer member along said template.

3,899,175

INDICATING TARGET EMPLOYING FOIL SHEET

James M. Loe, Scottsdale, Ariz., assignor to D. R. Pressman, San Francisco, Calif.

Filed Aug. 22, 1973, Ser. No. 390,590

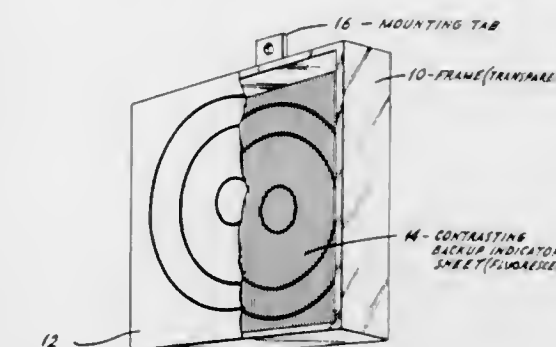
Int. Cl. F41J 3/00

U.S. Cl. 273—102.1 C

9 Claims

1. An indicating target for producing a point of impact indication of substantially increased visibility comprising a sheet of metal foil having a target pattern on the front surface thereof and means for mounting said sheet in a flat upright position, the part of said sheet having said target pattern thereon being free from all other elements of said target so that substantially any portion of said sheet may be torn and

freely displaced from the rest of said sheet by the impact of a projectile, a backup sheet having a color contrasting to the



coloring on the front of said foil sheet, and means for mounting said backup sheet in spaced relation behind said foil sheet.

3,899,176

GAME APPARATUS

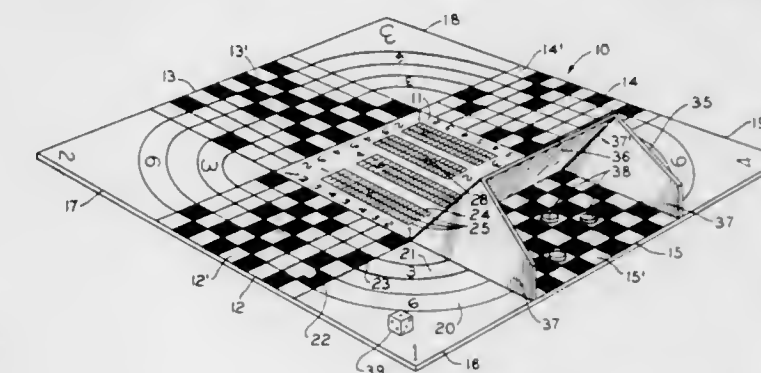
Daniel P. Gegan, 4773 Wolff Dr., Brunswick, Ohio 44212

Filed Oct. 15, 1974, Ser. No. 514,431

Int. Cl. A63f 3/00

U.S. Cl. 273—130 R

10 Claims



1. A game apparatus comprising a game board having a plurality of like grids disposed around the board and oppositely paired across the board; each said grid having right angularly intersecting rows of grid spaces, said grid spaces defining certain rows aligned across the board with like rows in the opposite grid, and transverse rows disposed perpendicularly with respect to said certain rows; said game board having means defining connecting bands connecting at least one transverse row of grid spaces in each grid with the corresponding transverse row in the next adjacent grid around said game board; said certain rows of grid spaces and said connecting bands being assigned arbitrary scoring values; a plurality of playing pieces adapted to be positioned on said grid spaces; and a blinder for each said grid for shielding the disposition of playing pieces until all playing pieces are in place whereby upon removal of said blinders, scoring is determined by the number of playing pieces in the corresponding one transverse row of a next adjacent grid around said board and by the number of playing pieces in any said certain row of a grid as compared with the playing pieces in the certain row aligned therewith in the opposite grid.

3,899,177

AUTOMOBILE RACING BOARD GAME APPARATUS

Bertram C. Sells, Box 90, Conover, Wis. 54519

Filed June 6, 1974, Ser. No. 476,910

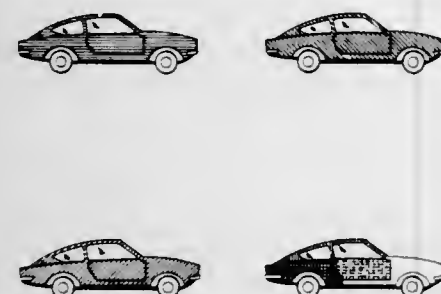
Int. Cl. A63F 3/00

U.S. Cl. 273—134 AD

4 Claims

1. Automobile racing game apparatus comprised of a game board having thereon a pictorial representation of an automobile racing track, said track including a starting line, and a finish line, and being divided into a quantity of spaces; a plurality of playing pieces, each assignable to a different player, and each of said playing pieces being of a single different color each different color representing a body color of

frequently observed vehicles; each of said playing pieces manually advanced from said starting line to said finish line, said advance being one space for each vehicle observed of the same color as the playing piece by a single player during a predetermined time period; and an additional playing piece of a plurality of colors all different than those of said plurality of playing pieces, each of the colors of said additional playing



piece representing a vehicle body color observed substantially less frequently than the vehicle body colors represented by the colors of said plurality of playing pieces, said additional playing piece manually advanced from starting line to finish line one space for each vehicle observed of any of the colors included in said playing piece by a single player during a predetermined time period.

3,899,178

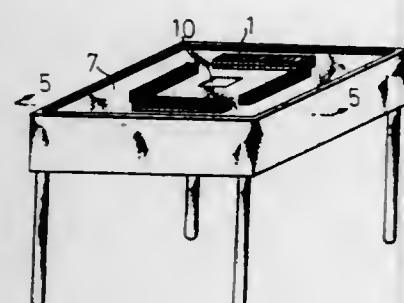
AUTOMATIC GAME BLOCK SHUFFLING, ALIGNING AND TABLE TOP ARRAYING MACHINE

Hideo Watanabe, 3-2-17, Daiei-cho, Shibata-shi, Niigata-ken, Japan

Filed Apr. 22, 1974, Ser. No. 463,043
Int. Cl. A63f 1/14

U.S. Cl. 273-136 A

27 Claims



1. An automatic shuffling and table-top-arraying machine for Mah-Jongg blocks, card game blocks, and blocks for other indoor games characterized as a game block arraying machine utilizing two sets of Mah-Jongg game blocks and other game blocks having the same shape as Mah-Jongg game blocks, which comprises:

- game blocks that allow their head side and tail side to be automatically discriminated;
- a throw-in mechanism for throwing said game blocks into an orientation mechanism after a game is over;
- the orientation mechanism for receiving said game blocks, shuffling them, arranging them in uniform orientation as to their longitudinal, lateral as well as head-tail attitudes, and guiding them out towards the next mechanism;
- an aligning mechanism for aligning said guided-out game blocks into such an attitude that is determined by the mounting mechanism, and aligning them in units of such numbers that are determined by the nature of the game for which the game blocks are intended;
- an arraying mechanism for arraying said aligned game blocks into a formation identical with or similar to the

formation in which the game using these game blocks is to be started, underneath the table; and
f. a mounting mechanism for lifting said arrayed game blocks and mounting them on the table top in the formation suited for starting the game.

3,899,179

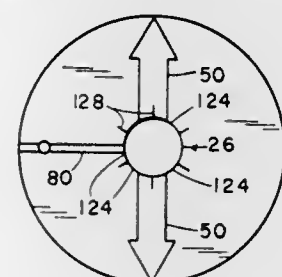
GOLFER'S TRAINING AID

Anthony R. Vlach, 3205 S. 48th, Omaha, Nebr. 68106
Filed Aug. 20, 1973, Ser. No. 390,076

Int. Cl. A63b 69/36

U.S. Cl. 273-183 A

6 Claims



1. A golf assembly comprising a golf ball and a ball-top golf-swing guide, said assembly being for use at a golf course tee, in the rough, on fairways, and on putting greens, said guide comprising an indicator support, said support being rested on top of said ball, said guide being for the purpose of assisting a golfer to position himself for his golf-swing to hit said ball in an intended flight direction extending in an intended flight line to one side of said support, first indicator means on said support and visible from the top of said support, said first indicator means being substantially alignable with said flight line, said first indicator means being parallel to a radius line extending horizontally outward from the center of said ball, said first indicator means as seen from above being substantially aligned with a horizontally extending radius line of said ball, said support being balanced sufficiently so that it rests with stability on top of said golf ball.

3,899,180

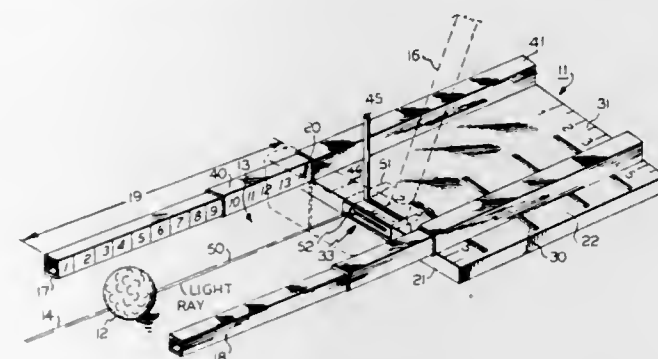
PUTTING PRACTICE GAGE

John J. Rodman, 950 Main St., S. Williamsport, Pa. 17701
Continuation of Ser. No. 337,642, March 2, 1973, abandoned.
This application Feb. 19, 1974, Ser. No. 443,322

Int. Cl. A63B 69/36

U.S. Cl. 273-183 R

7 Claims



1. A putting practice gage for relatively positioning a golf ball and putter on an external green putting surface adjacent a hole for judging variable stroke lengths and for guiding the direction of the stroke to improve skills in putting stroke and touch, comprising in combination, a backstop member to be placed on said green putting surface with structure enclosing an unobstructed portion of the green surface upon which the ball is to be placed near the hole for a full putting stroke into contact with the ball, the backstop being positioned for arresting movement of the putter stroke adjacent said green putting surface at the back end of a stroke, said structure including

gage structure including a pair of parallel guides extending from the backstop member which constitutes the sole connection member therebetween in contact with the green and the guides located on opposite sides of the putter thereby to receive the ball therebetween in contact with the green for impact by a stroke from the putter adjacent the green surface being confined only to a normal position between the two guides to gage the putter stroke through a straight putting stroke of predetermined length with unrestricted view along the green in front of the putter while stroking and impacting the ball in the putter path along and substantially parallel to said green putting surface, and indexing means on said guides to mark the position of the ball to be placed on the putting surface intermediate the ends of said guides at a predetermined distance from the backstop member thereby to establish a stroke length gage, whereby the ball is placed on said green putting surface, said gage structure establishing the putter placement position at said backstop and confining the putter movement only at the backstop and sides along said guides to establish the direction of the stroke and gaging the length of the stroke along the green surface from the backstop to the ball placement impact position by said indexing means at a marked position whereby a person can use the gage to establish and repeat proper putting stroke lengths and impact positions with the putter and ball normally positioned on the actual green surface.

3,899,181

PLAYBACK METHOD AND SYSTEM

Dietmar Dannert; Rainer Ihlenburg; Dietrich Nackmayr; Rudolf Goetze; Wolfgang Kruger; Hartmut Peter; Klaus Westphal, and Hans-Joachim Thuy, all of Berlin, Germany, assignors to TED Bildplatten Aktiengesellschaft, Zug, Switzerland

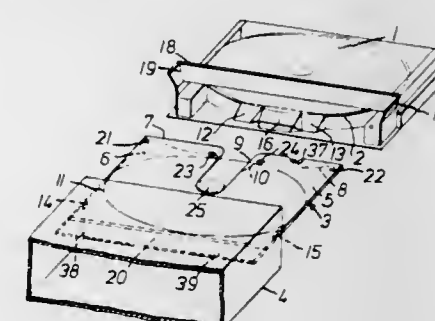
Division of Ser. No. 284,173, Aug. 28, 1972, abandoned. This application May 28, 1974, Ser. No. 474,448

Claims priority, application Germany, Aug. 26, 1971, 2143382

Int. Cl. G11b 17/04, 17/26

U.S. Cl. 274-1 R

20 Claims



1. A playback device for a disc-shaped record carrier which is inserted into and removed from the playback device while contained within a protective cover, comprising: a drive apparatus; means defining a playback surface; means defining an insert opening to said playback surface; transporting means for sequentially inserting such a protective cover through said insert opening and onto said playback surface, and removing such cover, through said insert opening, from said playback surface; holding means disposed for holding a record carrier on said playback surface after the first such insertion and during the first such removal, for permitting the cover to be withdrawn from the carrier, and for releasing such carrier at least after the second such insertion for permitting the record carrier to be removed from the playback surface together with its associated cover during the second such removal; means for centering the record carrier with respect to the playback surface; and mechanical means disposed in the vicinity of said insert opening for effecting a spreading of the protective cover opening for reinserting the record carrier into the protective cover.

3,899,182

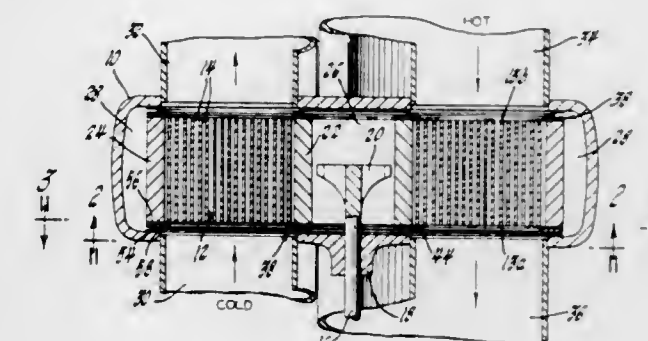
HIGH TEMPERATURE SEAL

John N. Johnson, Utica, Mich., assignor to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 414,748, Nov. 12, 1973, abandoned. This application Mar. 28, 1974, Ser. No. 455,675
Int. Cl. F28d 19/00

U.S. Cl. 277-96 R

3 Claims



1. A rubbing contact fluid sealing member comprising a base member and a porous layer formed of a metal having temperature resistance and oxidation and sulfidation resistance at temperatures in excess of 1,200°F adapted for rubbing contact bonded to at least a portion of said base member with a seal material filling the pores of said layer and bonded therein, said layer having a pore density in the range of about 10 to 100 pores/inch, and said seal material consisting essentially of a potassium silicate-bound mixture of copper chromite and chromic oxide in which the mixture contains about 47 to about 88 percent copper chromite and comprises about 88 to 92 percent by weight of the seal material.

3,899,183

SLIDE-PROOF BELL AND SPIGOT JOINT FOR PIPES AND TUBULAR ELEMENTS

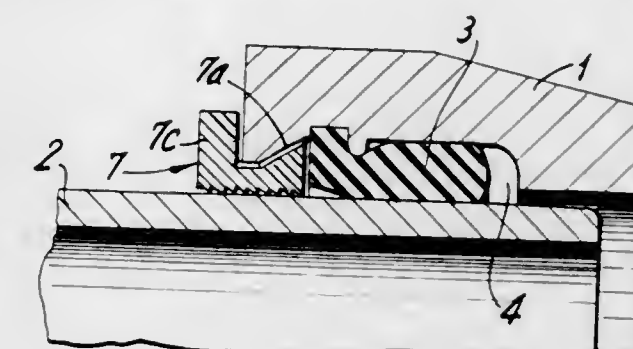
Max Wild, Gelsenkirchen; Wolf-Dieter Schneider, Essen; Friedel Sennlaub, Gelsenkirchen, and Rudolf Winter, Watten-scheid, all of Germany, assignors to Rhein Stahl AG, Germany

Filed Nov. 26, 1973, Ser. No. 419,143
Claims priority, application Germany, Nov. 25, 1972, 2257821

Int. Cl. F16j 15/04

U.S. Cl. 277-101

9 Claims



1. In a slide-proof bell and spigot joint, for pipes and tubular elements, of the type having a seal ring between the bell and the spigot and securing elements located axially outwardly of the seal ring and pressed against the spigot end portion, the improvement comprising, in combination, the outer end portion of the bell being formed with angularly spaced radial recesses in its inner surface which decrease in radial depth axially toward the outer end surface of the bell and circumferentially of the bell; and respective wedge shape pieces inserted axially into said recesses and firmly seated therein by relative movement circumferentially of the bell; said wedge shape pieces having a nose projecting from the associated recess and

teeth engaging the spigot end portion and extending substantially circumferentially of the joint.

3,899,184

BRAKE FOR A SNOW SKI

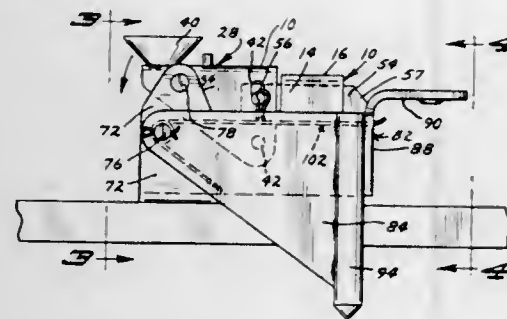
George S. Haddad, 515 E. Fourth St., Duluth, Minn. 55803

Filed May 24, 1973, Ser. No. 363,388

Int. Cl. A63c 7/10, 11/00

U.S. Cl. 280—11.13 B

10 Claims



1. A brake for a snow ski comprising:
 - a. a central mount including means for securing the central mount to the snow ski,
 - b. a latch,
 - c. means for mounting said latch within said central mount allowing horizontal reciprocation thereof,
 - d. means located adjacent said central mount for horizontally reciprocating said slidable latch,
 - e. a yoke,
 - f. means pivotally mounting said yoke on a ski and adjacent said central mount,
 - g. said yoke having ground engaging means,
 - h. said yoke having an aperture for receiving said latch when said latch is moved by said latch moving means whereby said ground engaging means of said yoke is held in ground engaging position below the surface of the ski,
 - i. means for urging said yoke in a raised, nonground engaging position relative to the means for pivotally mounting the yoke when said latch is withdrawn from said aperture of said yoke, and
 - j. said means for moving said latch includes a saddle pivotally mounted on said central mount and connected to said latch.

3,899,185

SKI BRAKE MECHANISM

Hans Martin, Wildenstrasse 25, Oberwil, Switzerland

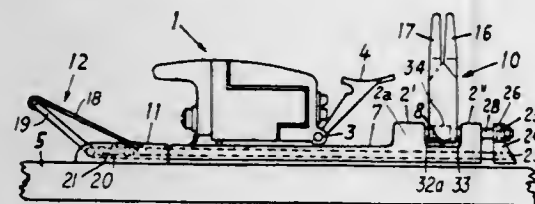
Filed Mar. 5, 1973, Ser. No. 338,224

Claims priority, application Switzerland, Mar. 8, 1972, 3386/72; Feb. 13, 1973, 2030/73

Int. Cl. A63c 7/10

U.S. Cl. 280—11.13 B

5 Claims



1. A brake mechanism adapted to be secured to a ski having a safety ski binding for braking the ski, comprising at least one braking element which upon release of the ski boot from the ski binding is automatically movable from a preparatory braking position, disposed above the running surface of the ski, downwardly into a ski braking position, to thereby engage the snow for the purpose of exerting a braking force upon the ski, a control element actuable upon inserting the ski boot into the ski binding for retaining said braking element in a preparatory braking position constituting a non-braking position, so that upon release of said control element said braking element

moves from said preparatory braking position into said ski braking position, said braking element assuming an arrested position for convenient transport and storage during non-use of the ski, a locking element-pawl arrangement having components for holding said braking element in the arrested and preparatory braking positions, the improvement comprising: a bearing body including transverse web means extending upwardly from the ski for mounting said braking element, said braking element having an arm including a transversely extending base region,

means for pivotally mounting the braking element about a longitudinal axis on said web means such that said base region of said arm extends adjacent the web means, said means for pivotally mounting including torsion spring means for biasing said braking element to pivot outwardly of the ski;

said components comprising a bolt mounted for longitudinal movement along its axis within a bore in said web means,

means interconnecting said control element and said bolt for simultaneous movement,

said bolt including a stepped end of reduced diameter,

said components further comprising a sleeve mounted for axial and non-rotatable longitudinal movement within said base region of said braking element, a compressed spring within said base region biasing the sleeve to extend from the brake element into said bore in the web means, a second bore in said sleeve sized to receive only said stepped end of the bolt, said stepped bolt end having a diameter less than the diameter of said second bore, said sleeve further having a beveled end sloping downwardly away from the web means;

said sleeve when engaging with the first said bore holding the braking element in the arrested position, said control element upon insertion of the ski boot into the ski binding moving said bolt so as to displace the sleeve out of said bore to release the brake from the arrested position of the braking element and to permit the braking element to assume the preparatory position, said sleeve bore in cooperative action with the stepped end of said bolt holding the braking element in the preparatory position, the braking element being pivoted into the braking position upon release of the control element upon departure of the ski boot from the binding and corresponding movement of the stepped end out of said second bore.

3,899,186

SKI HAVING BASE BLOCKS FOR SECURING BINDINGS

Hideki Matsuda, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan

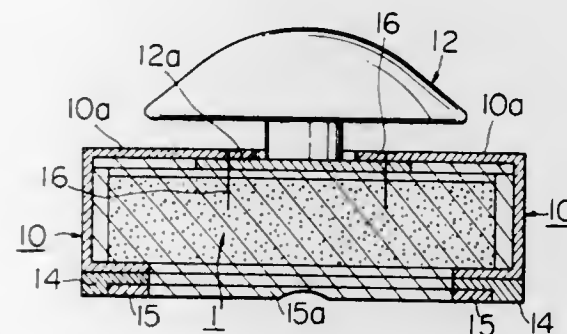
Filed July 26, 1973, Ser. No. 382,663

Claims priority, application Japan, Aug. 1, 1972, 47-77106

Int. Cl. A63c 9/22

U.S. Cl. 280—11.13 W

5 Claims



1. An improved ski comprising, in combination, an elongated main body having a substantially rectangular cross-section and being provided with surface cut-outs, said cut-outs forming walls substantially perpendicular to major surface areas of said main body, a pair of base blocks having J-shaped cross-sections in said surface cut-outs, said base blocks com-

prising upper plates and lower plates interconnected by side plates substantially perpendicular to said upper and lower plates, said upper plates being provided with substantially parallel confronting edges, said confronting edges of said upper plates forming a longitudinally elongated gap therebetween, said base blocks being further provided with end edges adjacent said confronting edges and confronting said cut-out walls, said base blocks each abutting at least three surfaces of said main body, and a base plate of a ski binding affixed to said upper plates of said base block.

3,899,187

PNEUMATIC LIFTING MECHANISM

Bradburne L. Millett, Mansfield, Ohio, assignor to White-Westinghouse Corporation, Cleveland, Ohio

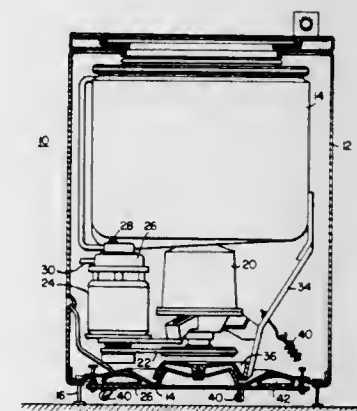
Continuation of Ser. No. 303,580, Nov. 3, 1972, abandoned.

This application May 22, 1974, Ser. No. 472,340

Int. Cl. B62D 21/18

U.S. Cl. 280—43.24

6 Claims



1. A mechanism for transferring the support of an appliance from a generally stationary relationship on a surface to a generally easily movable relationship on the surface; said appliance having a bottom structural member generally adjacent said support surface, and means attached to said structural member providing frictional contact with said support surface for normally stationarily supporting said article wherein said transferring mechanism comprises:

a support plate interposed between said structural member and said support surface, said plate defining a first surface facing said structural member and an opposite surface facing said support surface;

means for attaching said support plate to said structural member for guided relative movement of one with respect to the other said attaching means including means for positively limiting said movement to a predetermined maximum amount;

a plurality of casters attached to said opposite surface of said plate; and,

inflatable means interposed between said structural member and said first surface of said plate for resiliently urging one away from the other to said predetermined amount which is sufficient to cause the casters to contact the support surface in an appliance weight bearing relationship whereby,

the weight of the appliance is transferred from said frictional support members to be supported on said casters for easy portability by said casters rolling on said support surface and said appliance is generally rigidly maintained in said caster supported position by abutment of said movement limiting means.

3,899,188

SELF-STEERING BOGIES FOR TRAILERS

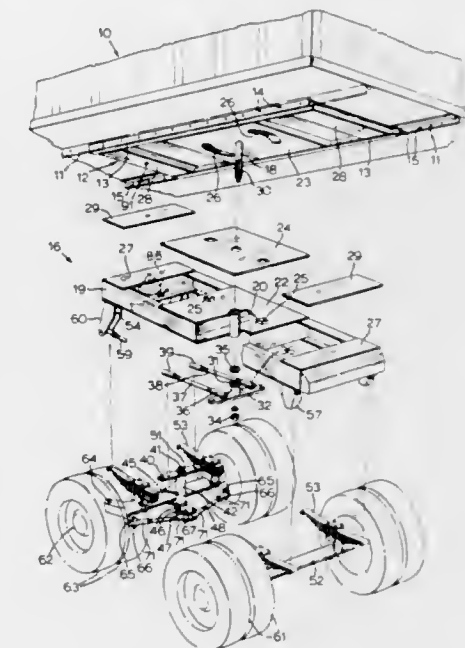
Norman Royce Curry, Mississauga, Canada, assignor to Auto Steering Trailers Limited, Mississauga, Canada

Filed Feb. 11, 1974, Ser. No. 441,119

Int. Cl. B62d 7/16, 13/00

U.S. Cl. 280—81 A

13 Claims



1. A self-steering bogie for a trailer, comprising a member rigidly securable at the underside of the trailer to move therewith as the trailer rounds a curve, a bogie frame that can turn at the underside of the frame about a swivel axis, a shaft on said swivel axis, said shaft being fixed against rotation relatively to said rigidly securable member and extending downwardly therefrom through said bogie frame, first crank means rigidly connected to said downwardly extending shaft, a rear axle beneath the rear of the bogie frame, a front axle parallel to said rear axle and beneath the front of the bogie frame, an equalizing suspension system connecting the front and rear axles to the bogie frame, rear wheels supporting said rear axle, front wheels, a steerable assembly supporting said front axle on said front wheels, said steerable assembly including stub axles carrying said front wheels, king pins connecting said stub axles to the ends of said front axle for steering movements relative thereto, track rod means interconnecting the stub axles to maintain a predetermined relationship between their steering movements about the king pins, and drag link means connecting said first crank means and said steerable assembly, and second crank means pivotally connected to the front axle and operatively connected to the track rod means and drag link means to transmit steering movements from said first crank means to said steerable assembly.

3,899,189

UNIVERSAL MANUAL DRIVE FOR A WHEELED VEHICLE

Mervyn M. Watkins, 30241 Via Borica, Rancho Palos Verdes, Calif. 90274

Filed Oct. 25, 1974, Ser. No. 518,079

Int. Cl. B62M 1/14

U.S. Cl. 280—211

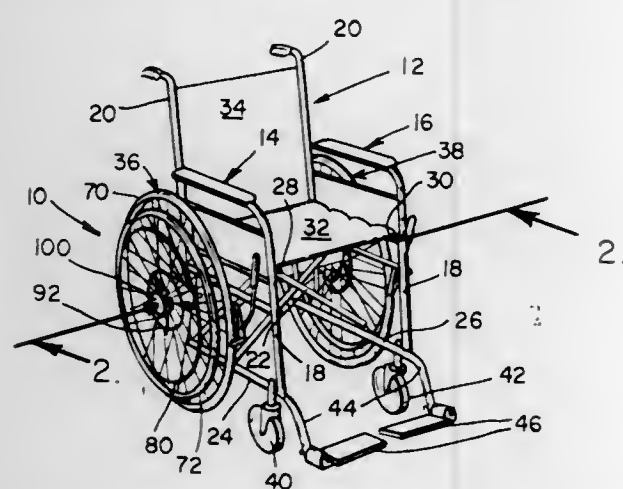
7 Claims

1. A universal manual drive for a vehicle having a pair of manually driven wheels, comprising:

first and second pairs of inner and outer hand rims; first means mounting said first pair of hand rims on said vehicle in such a position that said first pair of hand rims will be accessible to the left hand and arm of an occupant of said vehicle;

second means mounting said second pair of hand rims on said vehicle in such a position that said second pair of hand rims will be accessible to the right hand and arm of said occupant;

first means connecting said outer hand rims together whereby manual rotation of one outer hand rim will rotate the other outer hand rim;
second means connecting one of said inner hand rims to one of said manually driven wheels and the other of said inner



hand rims to the other of said manually driven wheels for rotation by an associated one of said inner hand rims;
first coupling means for selectively, releasably coupling said first inner hand rim to said first outer hand rim; and
second coupling means for selectively, releasably coupling said second inner hand rim to said second outer hand rim.

3,899,190

SKI BOOT HAVING INTERNAL BINDING COMPONENTS
Gottfried Schweizer, Vienna, and Thomas Gordon Smolka, Wien-Mauer, both of Austria, assignors to Gertsch AG, Zug, Switzerland

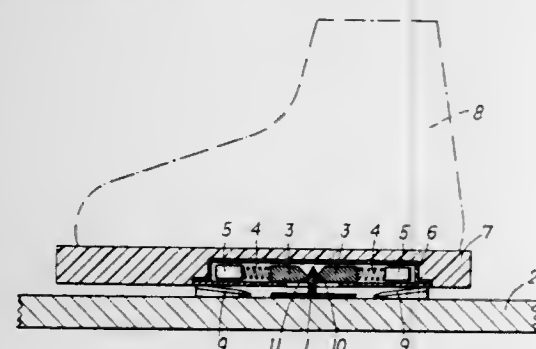
Filed Feb. 7, 1972, Ser. No. 223,867

Claims priority, application Austria, Mar. 12, 1971, 2138/71 The portion of the term of this patent subsequent to Nov. 20, 1990, has been disclaimed.

Int. Cl. A63c 9/08

U.S. Cl. 280—11.35 R

8 Claims



1. A releasable ski binding for releasably securing the sole of a ski boot to a ski, comprising:
post means fixedly secured to said ski and extending upwardly therefrom and having means defining a pair of locking recesses thereon each facing in opposite longitudinal directions relative to said ski;
housing means mounted on the sole of said ski boot;
first locking means mounted on said housing means;
second locking means mounted on said housing means and adapted to move longitudinally parallel to the longitudinal axis of said ski boot toward and away from said first locking means, an opening being defined between said first locking means and said second locking means when said first and second locking means are moved away from each other for receiving said post means therein, said first and second locking means both being adapted to engage said post means, while in said opening, in one of said locking recesses; and
resilient means for effecting and urging together of said first and second locking means into engagement with said post

means, said first and second locking means being movable out of engagement with said recesses against the force of said resilient means to effect a release of the ski binding whenever said longitudinal axis of said sole of said ski boot is twisted out of parallel relationship with the longitudinal axis of the ski beyond a predetermined angular displacement, said resilient means effecting a restoration of said boot to a normal operating position whenever the twisted angular displacement of said ski boot relative to the ski is less than said predetermined angular displacement.

3,899,191

VEHICLE-MOUNTED SEAT BELT ASSEMBLY

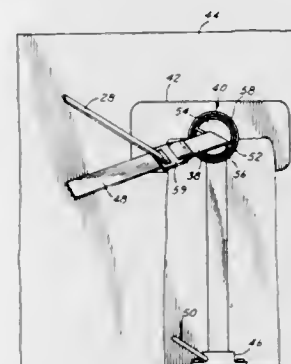
Robert E. Royce, 4345 S. Santa Fe Dr., Englewood, Colo. 80110

Filed Nov. 30, 1972, Ser. No. 310,895

Int. Cl. B60r 21/02

U.S. Cl. 280—150 SB

18 Claims



1. A vehicle-mounted, passive seat belt assembly comprising:

- a. a vehicle seat having
 1. a generally horizontally disposed seat portion,
 2. a backrest portion, and
 3. an inboard seat belt positioning means disposed adjacent one side of said seat portion forwardly of said backrest portion and having a part disposed above said seat portion, said part lying generally in a horizontal plane disposed approximately adjacent the upper surfaces of the legs of a person when seated in said vehicle seat, and
- b. a vehicle door disposed adjacent the other side of said seat portion;
- c. a first seat belt securing means intercoupled with said vehicle door and lying generally in a horizontal plane disposed immediately adjacent the upper surfaces of the legs of a person when seated in said vehicle seat;
- d. a second seat belt securing means disposed inboard of said vehicle seat;
- e. a seat belt having
 1. a first portion disposed in supporting engagement with said part of said inboard seat belt positioning means,
 2. a second portion intercoupled with said first seat belt securing means,
 3. a third portion extending between said first and second portions and being disposed uninterrupted in extent and spaced above said seat portion to overlie same continuously for any open and closed position of said vehicle door,
 4. a fourth portion disposed in supporting engagement with said second seat belt securing means whereby a part of said fourth portion is disposed adjacent the upper part of the backrest portion of said vehicle seat and in positioning of one shoulder of a person seated in said vehicle seat, and
 5. a fifth portion extending between said third portion and the part of said fourth portion and being disposed uninterrupted in extent and spaced generally forwardly of said backrest portion for any open or closed position of said vehicle door;

- f. said inboard seat belt positioning means, said first portion of said seat belt and said horizontally disposed seat portion cooperating to provide a generally rectangularly spaced sufficient to receive therein the legs of a person using the seat;
- g. means for retracting at least a part of said seat belt upon closing of said vehicle door thereby maintaining a predetermined tautness therealong; and
- h. means for preventing movement of said seat belt relative to at least one of said inboard seat positioning means and said first seat belt securing means in response to the application of a predetermined accelerative force applied to a vehicle in which said seat belt assembly is mounted.

3,899,192

SPLASH AND SPRAY REDUCING DEVICE FOR A VEHICLE

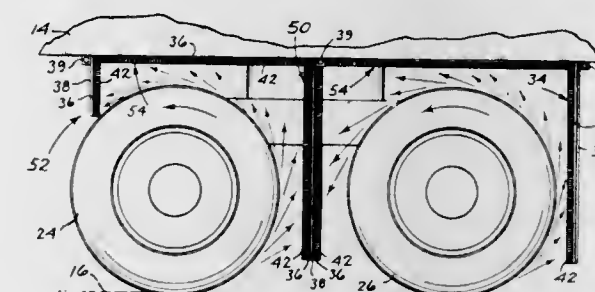
Walter W. Reddaway, 405 Ogden Dr., Oregon City, Oreg. 97045

Filed Apr. 19, 1974, Ser. No. 462,370

Int. Cl. B62D 25/16

U.S. Cl. 280—154.5 R

16 Claims



1. A device for reducing splash and spray of fluid thrown from the wheels of a vehicle comprising
a backing section mounted on such vehicle having a surface expanse facing the periphery of the wheel and
a plurality of elongate elements distributed over a major portion of said expanse and secured at an inner set of their ends to said backing with said inner ends of the elements disposed in laterally spaced rows and remainder portions of said elements projecting outwardly generally in the direction of said wheel in random angular relations to each other and to said surface expanse, with portions of said elements spaced outwardly from said backing disposed in a random tangled mass.

3,899,193

MUD FLAP MOUNTING ASSEMBLY

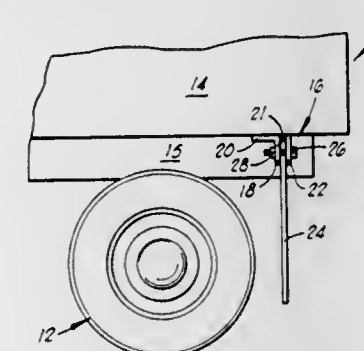
James P. Evans, 3233 S.W. 23 St., Oklahoma City, Okla. 73128

Filed June 7, 1973, Ser. No. 367,979

Int. Cl. B62d 25/16

U.S. Cl. 280—154.5 R

2 Claims



1. An improved mud flap mounting assembly secured to the underside of trucks, truck trailers or the like and suspended behind the vehicle wheels and constructed for the quick change of mud flaps, the said assembly comprising:
an elongated angular shaped front plate with first side of said front plate secured to said vehicle;

an elongated back plate for lesser width than said front plate;
a hinge structure rotatably connecting one end of said back plate to one end of the second side of said front plate such that said back plate defines an elongated aperture between the upper side of said vehicle and the upper edge of said back plate;
a flexible mud flap having the upper edge of the planar surface of said mud flap extending between said front and back plates frictionally engaged thereby said flexible mud flap having a transverse angularly shaped lip disposed along the upper edge of the planar surface of said flap whereby said lip is disposed in said aperture; and
a securing device connecting the opposite end of the second side of said front plate to the opposite end of said back plate and drawing said front and back plates toward each other and against said mud flap.

3,899,194

ADJUSTABLE LIST PIN BOX

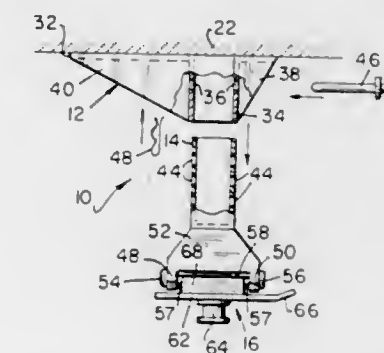
Glenn H. Breford, Holyrood, Kans., assignor to Midway Industries, Inc., Holyrood, Kans.

Filed Mar. 28, 1974, Ser. No. 455,862

Int. Cl. B62d 53/08

U.S. Cl. 280—438 R

16 Claims



1. An adjustable list pin box for interconnecting a tractor and a trailer, or the like, comprising:

- a. an upper member rigidly secured on the tongue portion of a trailer and having a conduit member with an essentially rectangular cross section extending downward therefrom,
- b. a stanchion member having a cross-sectionally rectangular portion slidably mounted in said conduit member, said stanchion member has means to mount a shaft on the lower end portion thereof such that a shaft when mounted will be in position substantially aligning with the longitudinal axis of said trailer, and
- c. a hitch engaging member having a shaft mounting means on an upper portion thereof and mounting a shaft, said shaft being mounted with said means to mount a shaft on said stanchion member, said hitch engaging member being constructed and adapted to in use pivot on an axis substantially aligned with the longitudinal axis of said trailer.

3,899,195

FRONT MOUNTED VEHICLE HITCH

Robert C. Rudder, Jr., 2136 McKinley Rd. N.W., Atlanta, Ga. 30318

Filed Sept. 10, 1973, Ser. No. 396,079

Int. Cl. B60D 3/00, 1/06

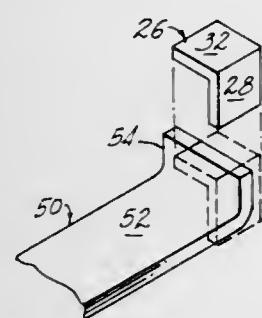
U.S. Cl. 280—481

4 Claims

1. In a front mounted vehicle hitch for an occupant-driven vehicle:

- a. an occupant-driven vehicle having a front and having a vehicle frame member extending from said front rearwardly on said vehicle,
- b. an elongated hitch bar having a retainer member attached thereto and spaced therefrom defining a space

between said retainer member and hitch bar for receiving said frame member therein whereby said hitch bar is mounted on said vehicle frame member at a position spaced from the front of said vehicle.



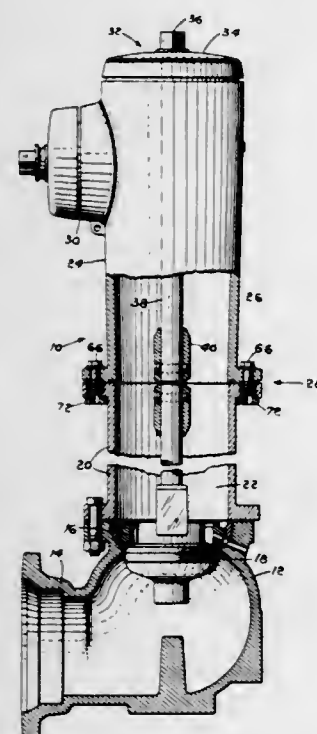
c. a mounting plate attached to and projecting away from said bar intermediate the length thereof and spaced from said retainer member thereon, said mounting plate being attached to said frame at another location thereon from said retainer and forwardly of said vehicle therefrom.

3,899,196 FIRE HYDRANT

James W. Dashner, Elmira, N.Y., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.
Filed June 6, 1973, Ser. No. 367,622

Int. Cl.² F16L 35/00

U.S. Cl. 285—2



1. A fire hydrant comprising:
a lower standpipe having an outwardly extending flange on an upper end thereof;
an upper standpipe having an outwardly extending flange on a lower end thereof, said flanges having juxtaposed annular surfaces;
connecting means engaging both of said flanges and connecting said standpipes, at least a portion of said connecting means being formed of a frangible material having a tensile strength controlled within a selected range considerably less than that of the standpipes; and
pivot forming means formed on one of said juxtaposed annular surfaces and disposed inwardly of said connecting means for providing a pivot point on an inner portion of the juxtaposed surfaces, whereby said connecting means fractures if the hydrant is struck by a vehicle and the upper standpipe pivots about said pivot forming means at a point on the inner portion of juxtaposed sur-

faces so that the flanges are not damaged when the upper standpipe breaks away.

3,899,197 CONNECTING ARRANGEMENT FOR CONNECTING TWO VESSELS

Willi Coenders, and Franz Trockel, both of Essen, Germany, assignors to Heinrich Koppers Gesellschaft mit beschränkter Haftung, Essen, Germany

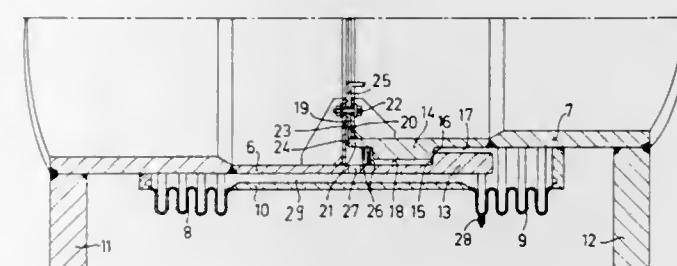
Filed Oct. 25, 1972, Ser. No. 300,623

Claims priority, application Germany, Oct. 26, 1971, 2153225; Feb. 23, 1972, 2208479

Int. Cl. F16L 27/02

U.S. Cl. 285—14

4 Claims



1. An arrangement of the character described for connecting two vessels, comprising a first tubular socket having an axis and two axially spaced ends one of which is connected to and communicates with one vessel; a second tubular socket also having an axis and two axially spaced ends one of which is connected to and communicates with the other vessel; and means for connecting said sockets so as to establish communication between the same, prevent axial displacement thereof away from one another, and compensate for a radial displacement of one of said sockets with respect to the other socket due to differential thermal expansions of the vessels and of the connecting arrangement and due to pressure variations therein, said means including a first tubular member rigidly connected to the free end of one of said sockets and forming a coaxial extension thereof and formed with an external annular projection having a radially extending first shoulder, a second tubular member rigidly connected to the free end of the other socket forming a coaxial extension thereof at least partially surrounding and defining an annular gap with said first tubular member and being formed with an internal annular projection having a radially extending second shoulder cooperating with said first shoulder so as to prevent displacement of said tubular members away from one another while permitting radial displacement thereof with respect to one another, a first bellows member sealingly connected to said first socket, a second bellows member sealingly connected to said second socket, and a connecting sleeve sealingly connected to said first and second bellows members and surrounding with clearance at least said second tubular member and operative for compensating for said radial displacement of said tubular members with respect to one another by tilting relative to said axes, said shoulders subdividing said gap into two gap portions one communicating with the interior of said tubular members and sockets and the other communicating with said clearance, sealing lamellae arranged between said first and second tubular members and operative for shielding said shoulders at least one of said sockets and tubular members being provided with at least one aperture communicating said interior with said clearance whereby a low-resistance flow path is formed for equalizing the pressure in said clearance and in said other gap portion on the one hand with the varying pressure in said interior and said one gap portion on the other hand, at any given instant whereby contamination of said shoulders by the fluid passing through said interior is minimized.

3,899,198 COUPLING FOR INTERCONNECTING CORRUGATED PLASTIC TUBES

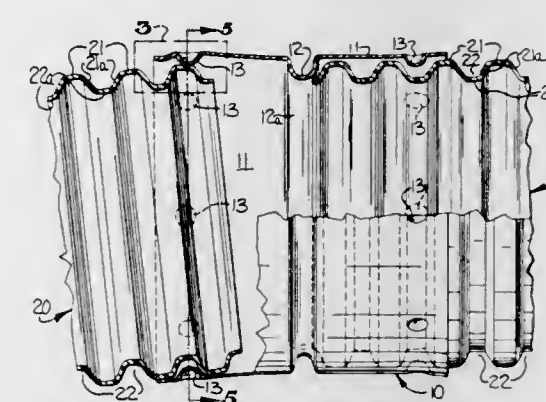
Ernest J. Maroschak, P.O. Box 878, Roseboro, N.C. 28382

Filed Apr. 18, 1973, Ser. No. 352,245

Int. Cl.² F16L 47/00

U.S. Cl. 285—27

1 Claim



1. A plastic tube having spaced apart successive annular ribs with annular valley portions therebetween extending along the length thereof and defining annular corrugations on the periphery of the tube and a plastic coupling connected to an end of said plastic tube and in fluid communication therewith, said coupling comprising a generally tubular plastic body including an annular sleeve portion receiving an end of said plastic tube therein, said sleeve portion being tapered outwardly over its entire length to facilitate insertion of said tube therein with the diameter of the sleeve at the outermost end being about 0.001 inch greater than the diameter at the innermost end, said sleeve portion having integrally formed therewith a series of eight spaced apart latching projections circularly arranged in opposing pairs in a single row around the inner circumference of said sleeve portion and extending inwardly into a common valley portion on said tube for engaging the tube and effecting the connection between the coupling and the tube, said latching projections being of hollow construction and substantially hemispherical in shape and having a diameter of no more than about 1/4 inch as measured across the base interiorly of the sleeve portion and equal to about one-half the distance between corresponding points on successive ribs of said tube and extending inwardly from said sleeve portion for a distance equal to about one-half the depth of the valley portions between adjacent ribs on said tube, said hollow latching projections also having a wall thickness of less than about one-half of said inwardly projecting distance and being rigid so as to effect displacement of the surrounding adjacent sleeve portion when the tube is inserted in said sleeve portion for facilitating effecting the connection therebetween and to avoid deforming the latching projections, relatively small annular ridges formed integrally with said sleeve portion and located closely adjacent to and on opposite sides of said circularly arranged latching projections, said annular ridges serving to provide additional stability to said sleeve portion and to assist in maintaining the sleeve fully opened for readily receiving the end of said plastic tube therein, and inwardly extending stop means adjacent the innermost end of said sleeve portion for limiting the extent to which the plastic tube may be received in said coupling.

3,899,199 SELF-ALIGNING COUPLING

Robert B. Garey, San Jose, Calif., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 23, 1974, Ser. No. 517,116

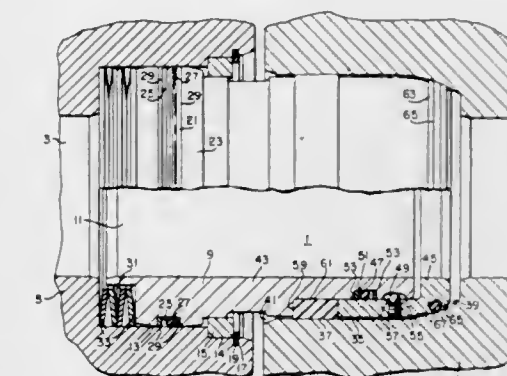
Int. Cl.² F16L 35/00

U.S. Cl. 285—27

10 Claims

1. A coupling joining openings of a first and second conduit in fluid communication, said coupling comprising:

a sleeve having a central bore which registers with said opening in said conduits;
said first conduit having a generally cylindrical counter bore receiving one end of said sleeve,
means for retaining said sleeve in said counter bore in said first conduit,
means for forming a seal between said sleeve and said first counter bore;
said second conduit having a counter bore, which has a generally cylindrical portion and a spherical portion in-board of said cylindrical portion;



said sleeve having a body portion and a nose portion slidably disposed over a portion of said body portion,
means for forming a seal between said body portion and said nose portion,
said nose portion having a spherical portion, which seats on said spherical portion in said counter bore in said second conduit, and
means for forming a seal between said nose portion, body portion and said counter bore in said second conduit and for biasing said nose portion towards said spherical portion in the second counter bore.

3,899,200 FLUID CONDUITS

Kenneth H. Gamble, Rugeley, England, assignor to Scovill Manufacturing Company, Waterbury, Conn.

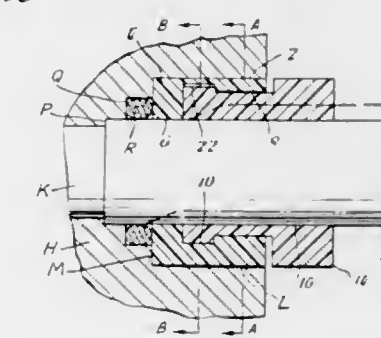
Filed Jan. 3, 1974, Ser. No. 430,588

Claims priority, application United Kingdom, Jan. 5, 1973, 792/73

Int. Cl.² F16L 35/00

U.S. Cl. 285—93

2 Claims



1. For use with a tubular conduit, an assembly including a coupling comprising longitudinally aligned inner and outer members having apertures providing engaging surfaces for the conduit, the aperture in the inner member being a cylindrical, smooth, inwardly-facing surface, the members being both generally cylindrical and relatively rotatable and having interengagement regions eccentric to the axis of the members whereby the tubular conduit received into the apertures can be gripped between the members by relative rotation of the members to cause relative lateral displacement of the apertures of the respective members, at least one radially projecting retaining element on the inner member received into a recess in the outer member inhibiting relative axial movement between the members, the outer member being axially split and dowels and cooperative openings being provided in the

split faces thereof to facilitate assembly; and housing means snugly and peripherally enclosing the outer member in press fit.

3,899,201

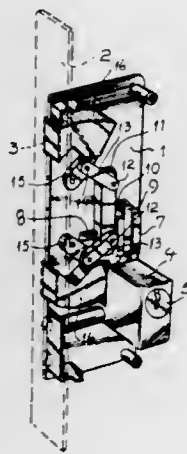
LOCK-STRUCTURES

Jose Paoletti, Rua Alagoas No. 270-8° andar, Sao Paulo, Brazil
Filed Dec. 10, 1973, Ser. No. 423,520

Int. Cl. E05b 65/08

U.S. Cl. 292-25

5 Claims



1. A door lock comprising a casing having a pair of spaced substantially parallel sidewalls having longitudinal front edges; a pair of hook-shaped locking members each pivotally mounted in the region of one end thereof on said sidewalls for movement between a retracted position within said casing and a locking position in which said locking members project with portions thereof beyond said longitudinal front edges; means for moving said locking members between the positions thereof and including slide block means and a pair of links pivotally connected to said slide block means and said locking members, said slide block means being provided with a slot extending substantially parallel to said front edges of said sidewalls; cooperating guide means on said slide block means and one of said sidewalls for guiding said slide block means movable toward and away from said front edges; spring biased latch means comprising an elongated latching bar movably guided in said slot between a latching and a releasing position, said latching bar having inwardly extending opposite ends substantially normal to the portion of the bar which is guided in said slot; a single projection protruding from one of said sidewalls arranged to laterally engage one side of one of said inwardly extending ends of said bar when the latter is in said latching position, to prevent said slide block to move toward said longitudinal edges and movement of said locking members from said retracted to said locking position; and rotatable cylinder means mounted in said casing and having a radially extending projection arranged to engage upon rotation of said cylinder means in one direction first the other of said inwardly turned ends of the locking bar to move the latter against the spring bias to said releasing position in which said one inwardly turned end is moved out of lateral engagement with said projection on said sidewall and to subsequently engage the thus freed slide block means to move the latter laterally towards said longitudinal edges and the locking members from said retracted to said locking position, said spring biased means moving back to its latching position after said slide block means has moved laterally so that said one inwardly turned end of said latching bar engages said projection on the sidewall on the other side of the latter to prevent movement of said slide block means in a direction away from said longitudinal edges to thus hold said locking members in said locking position.

3,899,202

AUTOMOTIVE SIDE DOOR LATCH

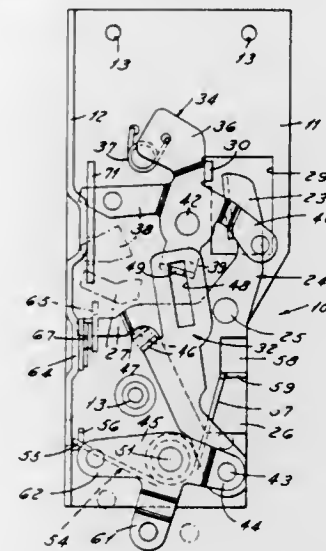
Joseph Pickles, Birmingham, Mich., assignor to Ferro Manufacturing Corporation, Detroit, Mich.

Filed Apr. 25, 1973, Ser. No. 354,223

Int. Cl. E05C 3/28

U.S. Cl. 292-216

14 Claims



1. In an automotive door lock, a fixed mounting plate, a pawl having a fixed pivotal mount to operate on said plate, said pawl having an operating arm, an operating lever similarly mounted by a fixed pivot on said plate, an intermittent operating slide having a fixed pivotal connection to said operating lever to be operated by the latter, a locking lever having a fixed pivot on said mounting plate, said slide having an actuator element engageable with the pawl operating arm to swing the pawl in a latch-releasing direction, the slide having a lost motion overrunning connection with a part of the locking lever and being engaged at said last-named connection by said locking lever part to shift the slide to a position in which its actuator element fails to engage said pawl operator arm, and spring means acting directly on and between a fixed part of said mounting plate and a part fixed on said pawl, said spring means strongly biasing said pawl about its pivotal plate mount in a latch-releasing direction.

3,899,203

DOOR LOCK

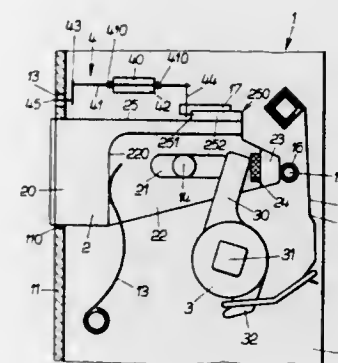
Walter Helmut Heitz, Hoher Holzweg 22, Arnim, Germany
Filed May 9, 1973, Ser. No. 358,739

Claims priority, application Germany, May 19, 1972, 2224521

Int. Cl. E05C 1/06

U.S. Cl. 292-335

22 Claims



1. A door lock, for a door having a door frame, comprising in combination, a spring-loaded retractable latch, a bolt movable to and from a locking position for arresting said latch in retracted position, a release member carried by the door and movable between active and inactive positions and operative to engage the bolt to move the bolt to its locking position when the

release member is moved to its inactive position and, respectively, to release the bolt for movement from its locking position when the release member is moved to its active position, a contact piece positioned on said door frame for engaging said release member to move it to its active position when said door is being shut, and means operable for adjusting the position of said release member with relation to the door, thereby adjusting the relative position of said release member and said contact piece when the door is shut.

3,899,204

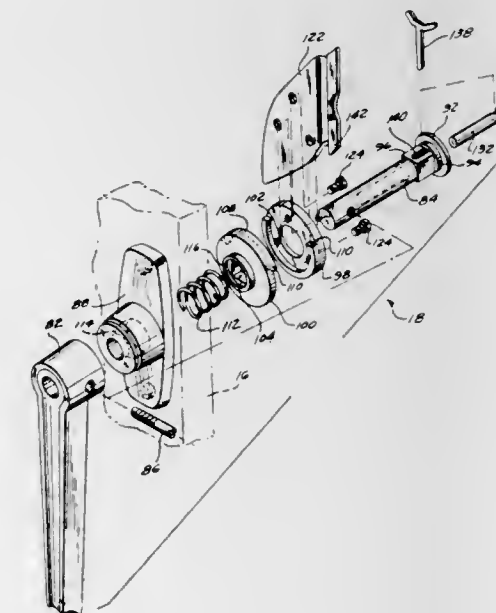
WASHING MACHINE AND DOOR LATCH

Carl Ulrich, 244 Whitehall St., Lynbrook, N.Y. 11563
Filed Sept. 26, 1973, Ser. No. 400,799

Int. Cl. E05c 3/04

U.S. Cl. 292-336.3

18 Claims



1. A safety door latch for selectively maintaining a door in a closed position with respect to a fixed frame comprising, a handle rotatably mounted on said door, a first latch member mounted on said frame adjacent said handle, a second latch member adapted to engage and cooperate with said first latch member, selectively operable and normally engaged clutch means for operatively connecting said second latch member to said handle for rotation with said handle when said clutch is engaged, whereby when said door is closed rotation of said handle places said second latch member in latching engagement with said first latch member; and means for selectively disengaging said clutch when said first and second latch members are in latching engagement whereby further rotation of said handle is ineffective to rotate said second latch member and said door is held in its closed position; said handle including a shaft rigidly connected thereto for rotation therewith; and said clutch means including a pair of clutch plates, one of said clutch plates being mounted on said shaft for rotation therewith and the other of said clutch plates being freely rotatably mounted on said shaft, said second latch member being secured to said other clutch plate whereby when said clutch plates are in operative engagement, rotation of said handle rotates said second latch member and when said clutch plates are disengaged, said handle and shaft rotate freely with respect to said second latch member.

3,899,205

CONTAINER RETRIEVAL SYSTEM

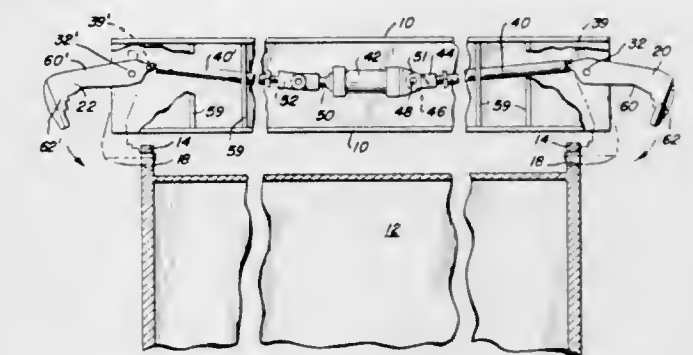
John J. Lanigan, Tinley Park; Myron Glickman, Des Plaines, and Anthony H. Hehn, Skokie, all of Ill., assignors to Mi-Jack Products, Inc., Hazel Crest, Ill.

Filed Aug. 13, 1973, Ser. No. 387,734

Int. Cl. B66c 1/66

U.S. Cl. 294-81 R

2 Claims



1. In a device for lifting large containers for placement upon and from a railroad car wherein the containers have coaxial openings on opposite sides of the container adjacent a top corner thereof, the improvement comprising, in combination: an elongated frame having a length that is at least as long as the distance between said opposite sides of the container to be lifted; a first lifting arm comprising a shank portion and a shoe portion extending at an angle from said shank portion, a second lifting arm comprising a shank portion and a shoe portion extending at an angle from said last mentioned shank portion; said shoe portions being stepped with the steps rising toward said shank portions and with the tops of the steps being planar to provide load bearing surfaces; means pivotally connecting said first and second lifting arms to said frame with the shoe portion of said first and second lifting arm being directed toward the shoe portion of said second lifting arm and with the pivotal axes of said lifting arms being generally parallel to each other and generally perpendicular to the longitudinal axis of said frame; means carried by said frame for pivoting said lifting arms from (a) an unlatched position wherein said shoe portions are spaced apart a distance that is greater than the distance between said opposite sides of the container to be lifted and (b) a latched position wherein said shoe portions are spaced apart a distance that is less than the distance between said opposite sides of the container to be lifted; and remote control means coupled to said lifting arms' pivoting means.

3,899,206

ENDLESS ROPE SLING

Kitie Miura, No. 51 Higashi-Oyashiki, Katahari-machi, Gamagori, Japan

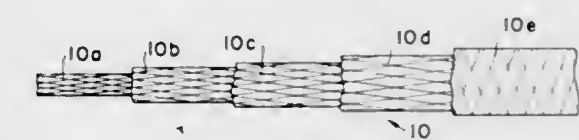
Filed Nov. 12, 1973, Ser. No. 414,719

Claims priority, application Japan, Nov. 14, 1972, 47-114524; Nov. 14, 1972, 47-114525; Nov. 14, 1972, 47-114526; Nov. 14, 1972, 47-114527

Int. Cl. B66C 1/12

U.S. Cl. 294-74

7 Claims



1. An endless rope sling comprising: a core including a plurality of substantially concentric layers which are consecutively braided from continuous filament yarns in a manner to cover one with another; and a sheath including at least one substantially concentric layer which is consecutively braided from said continuous filament yarns in a manner to cover the outermost layer of said core.

3,899,207 CHAIRS

Falk Müller, Tauberbischofsheim, Germany, assignor to VS-Schulmoebel Verwaltungs-GmbH, Germany

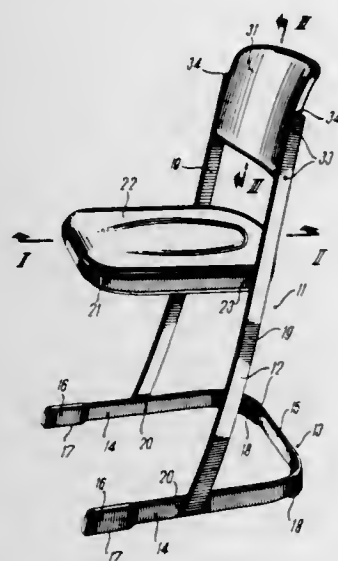
Filed Dec. 28, 1973, Ser. No. 429,626

Claims priority, application Germany, Dec. 20, 1972, 465033[U]

Int. Cl.² A47C 3/04

U.S. Cl. 297—239

23 Claims



1. A stackable chair comprising:
 - a. a continuous U-shaped metal base having a pair of substantially parallel runners, said U-shaped base being open toward the front of the chair;
 - b. a pair of lateral supports attached to the outer sides of the central portions of said runners and sloping upwardly towards the rear of the chair;
 - c. a U-shaped metal seat support attached to said lateral supports, said seat support being open toward the rear of the chair;
 - d. a seat attached to and peripherally surrounded by said seat support; and
 - e. a back rest attached to said lateral supports above said seat support.

3,899,208

CHAIR AND METHOD OF MAKING A CHAIR

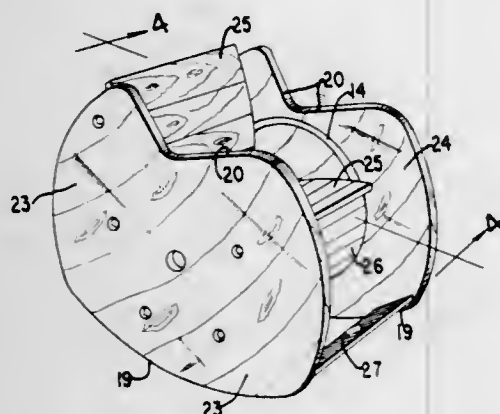
Charles F. Cirigliano, RFD, Cornwall Bridge, Conn. 06754

Filed June 13, 1974, Ser. No. 478,946

Int. Cl.² A47C 3/02

U.S. Cl. 297—258

5 Claims



1. A chair including a planar, right-hand side member having apertures therethrough and channel means comprising a circularly arcuate hub channel and a seat channel in a surface thereof, a planar left-hand side member comprising the mirror image of said right-hand side member wherein said side members are disposed in parallel, facing relationship, a seat portion for forming a seating surface comprising a first plurality of

slats, each having ends disposed in said seat channels, a support portion for further supporting said side members comprising a second plurality of slats, each having ends disposed in said hub channels wherein access to said seating surface is unobstructed, and a plurality of tension bolt means for urging said side members together, each spanning said side members and extending through corresponding apertures and wherein access to said seating surface is unobstructed by said tension bolt means.

3,899,209

ADJUSTABLE MOTORCYCLE BACKREST

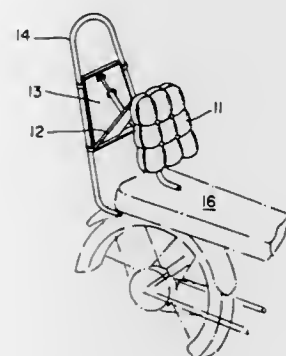
Richard H. Schulz, 845 N. L St., Livermore, Calif. 94550

Filed May 17, 1974, Ser. No. 471,037

Int. Cl.² B60N 1/02

U.S. Cl. 297—383

8 Claims



1. An adjustable backrest apparatus comprising a base plate, a back support plate spaced apart and opposed to said base plate, a support member hingeably secured between said base plate and said back support plate and extending obliquely therebetween with one edge portion of said member being pivotally connected to one edge portion of one of said plates and the other edge portion of said member being pivotally connected to an opposite edge portion of the other of said plates, and extension means pivotally secured to a medial portion of said support member and extending from opposite sides thereof to said base plate and to said back support plate and hingeably connected to each of said plates to the opposite edge portions from their connections to said member for selectively varying the spacing and angular orientation between.

3,899,210

BEAN-BAG CHAIR

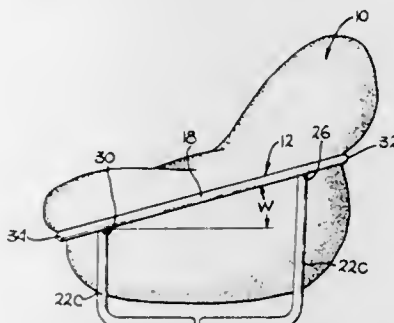
Clair A. Samhammer, Orange, and Steven N. Lederman, Los Angeles, both of Calif., assignors to Lederman's Incorporated, Los Angeles, Calif.

Filed June 1, 1973, Ser. No. 366,067

Int. Cl.² A47C 07/02, 01/12

U.S. Cl. 297—445

7 Claims



1. A bean-bag chair comprised of:
 - a. a bean-bag assembly comprising a fully enclosed bag having a unitary interior volume, each portion of said volume freely communicating with every other portion thereof, and a plurality of resilient flowable pellets con-

tained within and partially filling said bag, said pellets being made of expandable polystyrene foam;

b. a supporting structure comprising a circumferential rim affixed to at least one base member disposed beneath it, said rim defining an interior space whose dimensions are sufficiently less than the corresponding dimensions of said bean-bag assembly, such that said rim supports said bean-bag assembly and substantially constrains the outward expansion thereof,

whereby said bean-bag assembly is elevated above the floor at a level which is normal for sitting in a chair, and said pellets are displaced in a generally upward direction within said interior volume of said bag when said bag is subjected to the weight of a person sitting thereon.

3,899,211

CANTILEVERED SEAT FOR MOTORCOACH VEHICLES OR THE LIKE

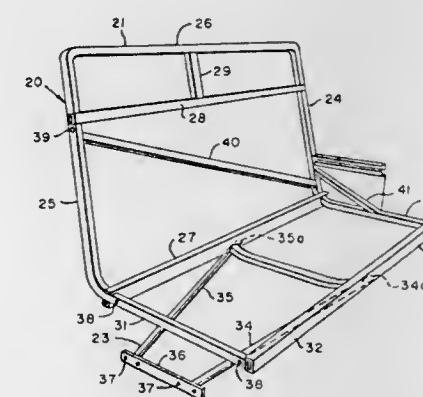
Chester J. Barecki, Grand Rapids, Mich., assignor to American Seating Company, Grand Rapids, Mich.

Continuation-in-part of Ser. No. 211,423, Dec. 23, 1971, Pat. No. 3,747,979. This application July 19, 1973, Ser. No. 380,699

Int. Cl. A47c 7/02, 7/00; B60n 1/00

U.S. Cl. 297—451

13 Claims



1. In a multi-passenger seat for a vehicle, said seat having at least three sections, the combination comprising a generally vertical back frame and a generally horizontal seat frame said back and seat frames having at least three sections including wall, middle and aisle seating sections, said seat frame having at least two elongated horizontal stretcher members and cross frame means interconnecting said stretcher members at laterally spaced locations to form a rigid structure; an inclined truss frame located beneath said horizontal stretcher members and including forward and rear inclined truss frame members attached at their upper ends to said stretcher members respectively and inclined downwardly from said attachments in generally the same direction as said stretcher members; means for mounting the wall ends of said stretcher members and the lower ends of said inclined truss frame members to the wall of said vehicle at a location above the floor; means for mounting said back frame to the wall of said vehicle; and diagonal strut means across at least a portion of said back frame at said wall and middle sections and across at least a portion of the back frame at said aisle seating section, said seat being characterized in their being no connection between said seat and the floor of the vehicle.

3,899,212

DIVIDING CUTTING MACHINE HAVING MEANS FOR ROTATING THE JIB ARM

Siegfried Sigott, and Hubert Schwellberger, both of Zeltweg, Austria, assignors to Vereinigte Österreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft

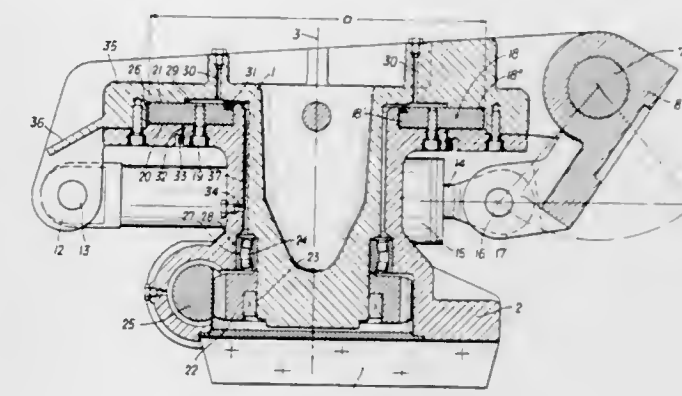
Filed June 28, 1973, Ser. No. 374,387

Claims priority, application Austria, June 30, 1972, 5642/72

Int. Cl.² E21C 27/00

U.S. Cl. 299—75

10 Claims



1. A dividing cutting machine which comprises:
 - a. a frame,
 - b. a bracket rigidly connected to said frame,
 - c. a swivel head,
 - d. separate radial and thrust bearing means by which said swivel head is mounted in said bracket for rotation about an approximately vertical axis of rotation, said thrust bearing means for taking up only axial loads in opposite directions and having an effective diameter which exceeds the diameter of the radial bearing means, and said radial bearing means being spaced from said thrust bearing means in an axial direction,
 - e. said thrust bearing means including (i) a plane annular bearing disc having inner and outer annular zones, said bearing disc being rigidly connected on one side in said inner annular zone with one of the parts consisting of said bracket and swivel head, and (ii) two axially spaced apart confronting parallel plane sliding surfaces formed on the other of said parts consisting of said bracket and swivel head, said outer annular zone of said disc being disposed between and guided by said sliding surfaces, and
 - f. a jib arm which is mounted in said swivel head for rotation about a swivel axis which crosses said axis of rotation approximately at right angles.

3,899,213

AIRBORNE LASER REMOTE SENSING SYSTEM FOR THE DETECTION AND IDENTIFICATION OF OIL SPILLS

John F. Fantasia, Newton, and Hector C. Ingrao, Wellesley, both of Mass., assignors to The United States of America as represented by the Secretary of the Department of Transportation, Washington, D.C.

Filed Mar. 8, 1974, Ser. No. 449,327

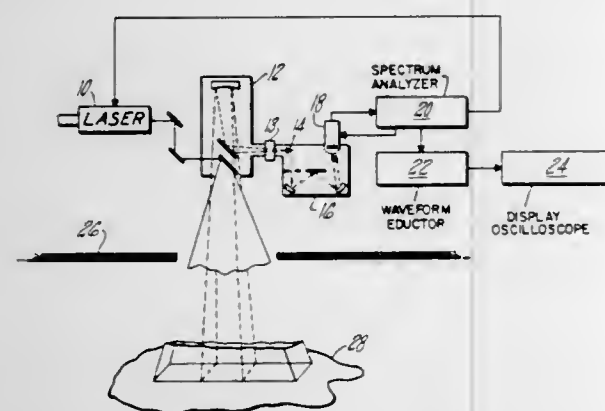
Int. Cl.² G01T 1/169; G01N 21/38

U.S. Cl. 250—301

8 Claims

1. A method for the classification of materials from a remote location comprising the steps of:
 - directing high energy pulses of artificial light onto the material to be classified to cause the material to fluoresce;
 - separating the resulting fluorescent energy into its electromagnetic frequency spectrum;
 - incrementally scanning at least a portion of the fluorescence spectrum to provide signals commensurate with the magnitude of the energy comprising frequency bands of pre-selected width; and

combining the results of the incremental scanning of the fluorescence spectrum to provide an output waveform



commensurate with the distinct spectral signature of the material.

3,899,214

ANTI-DUSTING BAFFLE FOR FEEDER

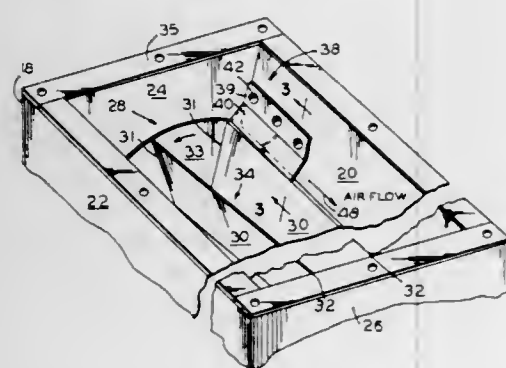
Clifford L. Stupfel, Portland, Oreg., assignor to Rader Companies, Inc., Portland, Oreg.

Filed Apr. 27, 1973, Ser. No. 354,993

Int. Cl. B65g 53/40

U.S. Cl. 302-49

6 Claims



1. A rotary feeder for feeding material from a supply bin into a pressurized gas pipeline comprising:

a rotor housing communicating with said bin and said pipeline;

a rotor cylinder mounted in said housing and having a plurality of helical blades mounted thereon, each of said blades having a leading and trailing edge, said blades defining rotor pockets which carry material from said bin to said pipeline during rotation of said blades;

and baffle means provided on said housing adjacent to and along a relatively short distance of the leading edges only of said helical blades for diverting gas trapped in said pockets, said baffle means directing said trapped gas substantially horizontally toward said trailing edges and then releasing said gas for upward motion as said pockets open into said bin thereby preventing interference with the filling of said pockets with the material in said bin.

3,899,215

ROAD VEHICLE BRAKING SYSTEM INCORPORATING WHEEL SLIDE PROTECTION

Christopher John Sutton, Belgrave, England, assignor to The Lucas Electrical Company Limited, Birmingham, England

Filed July 10, 1973, Ser. No. 377,966

Claims priority, application United Kingdom, July 14, 1972, 32985/72

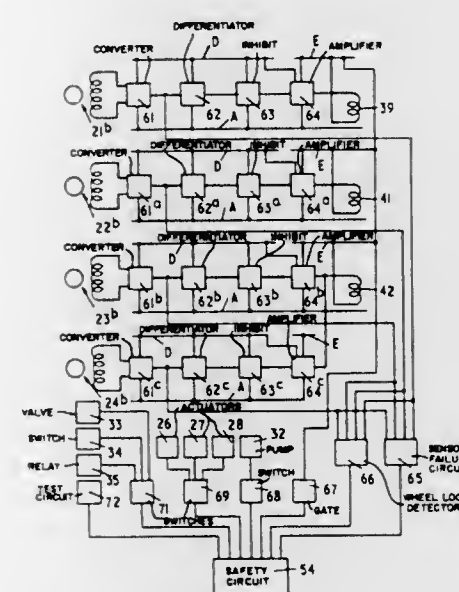
Int. Cl. B60T 8/08

U.S. Cl. 303-21 AF

3 Claims

1. A road vehicle braking system incorporating wheel slide protection, comprising in combination first and second sensors associated respectively with first and second wheels of the

vehicle and producing first and second a.c. signals at frequencies dependent on the rotational speeds of the first and second vehicle wheels respectively, first and second frequency to voltage converters for producing from said first and second a.c. signals first and second d.c. signals dependent on said rotational speeds of the first and second vehicle wheels respectively, first and second differentiating circuits to which the first and second d.c. signals are fed respectively, the differentiating circuits producing output signals dependent on the rotational decelerations of the first and second wheels, means operable by way of the output signals from the first and second differentiating circuits for releasing the brakes applied to the



3,899,216

BRAKING SYSTEM FOR A MULTI-CAR VEHICLE

Thomas H. Putman, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 28, 1974, Ser. No. 437,449

Int. Cl. B60T 8/14

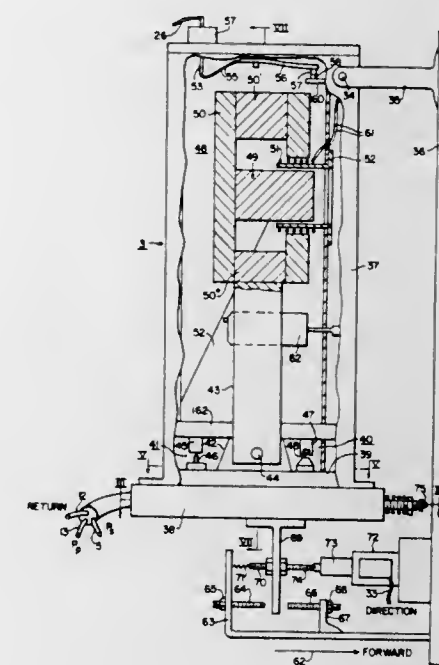
U.S. Cl. 303-21 A

8 Claims

1. In apparatus for controlling the application of brakes on one car of a coupled multi-car vehicle, the combination comprising:

valve means, including first and second valves; means for causing said second and first valves to move towards one valve condition and the opposite valve condition respectively in response to a sensed deceleration when said vehicle is moving in one direction, and for causing said second and first valves to move towards said opposite valve condition and one valve condition respectively in response to a sensed deceleration when said vehicle is moving in the opposite direction; means for applying the brakes on said one car in response to said first valve being in said one condition when said vehicle moves in said one direction and in response to said second valve being in said one condition when said vehicle moves in said opposite direction; means for sensing the coupling forces acting on at least one end of said one car; and

means for releasing the brakes on said one car if the sensed coupling forces tend to accelerate said one car, and for



applying the brakes on said one car if the sensed coupling forces tend to decelerate said one car.

3,899,217

HYDRAULIC BRAKE PRESSURE CONTROL VALVE UNIT

Yoshimoto Ohta, Kawasaki, Japan, assignor to Tokico Limited, Japan

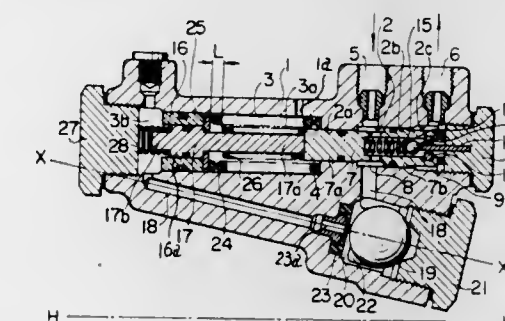
Filed Oct. 9, 1973, Ser. No. 404,740

Claims priority, application Japan, Oct. 9, 1972, 47-101286; July 6, 1973, 48-76337

Int. Cl. B60T 8/14

U.S. Cl. 303-24 C

4 Claims



1. A pressure control valve unit for insertion in a brake system extending from a hydraulic pressure source, comprising in combination:

- a main valve housing having a liquid flow passage formed therein, one end of said flow passage being connected through part of said brake system to said pressure source and the other end of said flow passage being connected to said rear wheel cylinders;
- a control chamber formed in said main valve housing and being fluidally separated from said flow passage;
- a piston, one end thereof being fitted with a valve member adapted for on-off control of said fluid passage, one end of said piston being exposed to said liquid flow passage and the other end of said piston being exposed to said control chamber;
- a tightly movable separating wall fitted in said control chamber;
- a liquid pressure conveying means adapted for conveying liquid pressure prevailing in said liquid flow passage to one side of said movable separating wall and to said piston end exposed to said liquid flow passage;

- an inertia valve adapted for interruption of said liquid pressure conveying means upon establishment of a predetermined deceleration of said vehicle;
- a first spring arranged between said valve housing and said movable separating wall, said spring becoming effective upon movement of said separating wall; and
- a second spring arranged between said movable separating wall and said piston which becomes effective only after lapse of a predetermined time period upon initiation of the movement of either said separating wall or said piston or both.

3,899,218

COMBINED INTEGRAL COMPONENT ENCLOSURE AND TRACK ROLLER FRAME

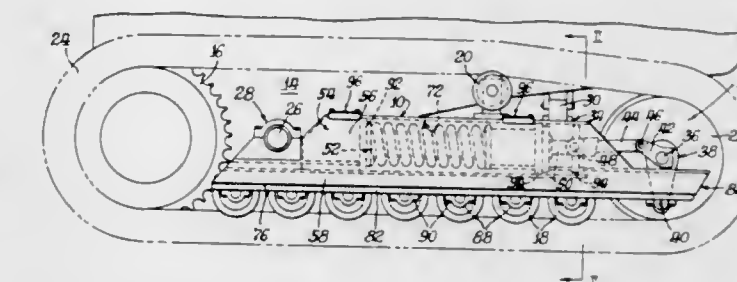
Gary D. Blomstrom, Metamora; Lindell L. Miller, Plano, and Lyle E. York, Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 26, 1973, Ser. No. 428,092

Int. Cl. B62d 55/30

U.S. Cl. 305-9

5 Claims



1. A combined integral component enclosure and track roller frame, for a track-type vehicle supported thereon by a plurality of rollers mounted on the frame, with an endless track chain peripherally engaged with the rollers, and with a recoil mechanism applying tension to the track chain, comprising:

- an elongated inverted U-shaped housing having a tunnel forming bight portion and a pair of spaced leg portions; elongated roller mounting means including a pair of symmetrically oppositely outwardly facing L-shaped angle members and additional connector wall members individually secured to their respectively adjacent angled members in outwardly extended channel forming relationship therewith for attachment to said leg portions of the housing forming therewith a pair of substantially parallel fully enclosed box beams; and
- an elongated cross-plate disposed within said housing substantially horizontally between said box beams to form a tunnel-like enclosure which contains and protects such recoil mechanism while also providing a track roller frame having maximum strength and resistance to distortion.

3,899,219

SELF-CLEANING SPROCKET MEANS

Roger L. Boggs, East Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed May 28, 1974, Ser. No. 474,002

Int. Cl. B60S 1/62

U.S. Cl. 305-13

5 Claims

1. A tractor having a sprocket member and an endless traction chain cooperatively engaged with said sprocket member, said sprocket member comprising a sprocket hub; sprocket tooth defining means defining a plurality of spaced-apart first flanges defining a plurality of first open portions; the sprocket hub defining a plurality of spaced-apart second flanges defining a plurality of second open portions, said sprocket tooth defining means being positionable relative to said sprocket hub so that said second open portions are

3,899,226 BEARING ASSEMBLY

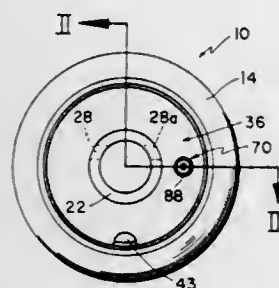
Ruben E. Frost, Grand Rapids, and Douglas J. Van Der Meulen, Martin, both of Mich., assignors to C. L. Frost & Son, Inc., Grand Rapids, Mich.

Filed May 29, 1973, Ser. No. 364,889

Int. Cl. F16c 1/24

U.S. Cl. 308—187.1

15 Claims



1. A roller bearing assembly comprising, in combination: an inner and outer race; bearing means between said races; sealing means to retain lubrication at said bearing means, said sealing means having an outer sealing ring fixed to one of said races, said outer sealing ring having a radial edge thereof extending to or in close proximity to the other of said races, an inner sealing ring fixed to said other race and having a radial edge thereof extending toward said one race, said radially extending portions of said sealing rings being spaced axially from each other said sealing rings forming at least one trough for collecting particles or the like and drain means to drain such particles or the like from said trough; and lubricating injection means comprising an adapter having a lubricating passageway formed axially therethrough, said adapter being positioned axially through said outer sealing ring whereby lubricating fluid is introduced through said adapter directly into said bearing means intermediate said outer and inner race through said axial sealing means.

3,899,227 METAL LINING

Friedrich Harig, Willich, Germany, assignor to Firma Pampus KG, Willich, Germany

Filed Jan. 16, 1973, Ser. No. 324,184

Claims priority, application Germany, Feb. 3, 1972, 2205008

Int. Cl. F16c 33/28

U.S. Cl. 308—237 R

5 Claims



1. In a lining, for use in bearing bushings, having a woven fabric of metal wires and a synthetic plastic layer sintered thereon, the improvement comprising at least a portion of at least some of the intersecting areas of said wires having been welded together and the fabric having been flattened by rolling after the welding.

3,899,228 STORAGE UNITS

Victor M. Schreiber, 63 Prospect St., Westmount, Montreal, Canada

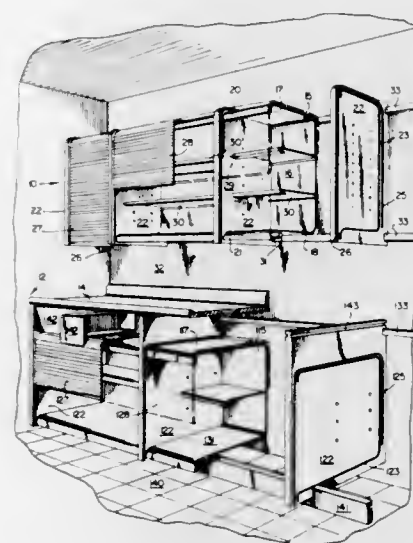
Filed Sept. 24, 1973, Ser. No. 399,896

Claims priority, application United Kingdom, Sept. 23, 1972, 44121/72

Int. Cl. A47B 47/04

U.S. Cl. 312—257 R

4 Claims



1. An article of furniture comprising:
a. at least two rigid vertical wall members;
b. means defining a substantially U-shaped slot extending through the entire thickness of each of said wall members;
c. a channel-shaped member formed from one piece of sheet material, said channel-shaped member having a substantially U-shaped cross-section corresponding to the shapes of said slots so as to extend through said slots and having an open side vertical and facing forwardly from said article of furniture; and
d. closure means secured to said article, said closure means being movable between a closed position, in which said closure means closes the open side of said channel-shaped member, and an open position, in which said closure means leaves said open side of said channel-shaped member open.

3,899,229 CONTAINER FOR TAPE CASSETTES

Peter Akeret, Kusnacht, Switzerland, assignor to IDN Inventions and Development of Novelties AG, Lenzerheide, Switzerland

Filed Aug. 27, 1973, Ser. No. 391,962

Claims priority, application Switzerland, Sept. 6, 1972, 013065/72

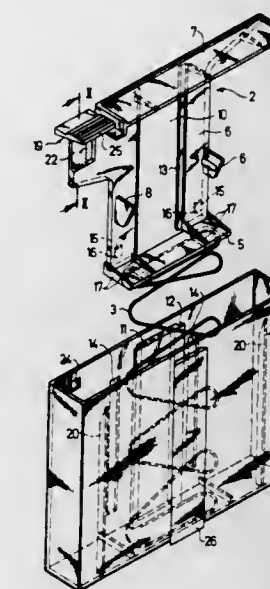
Int. Cl. A47b 88/00

U.S. Cl. 312—319

42 Claims

1. A container for a tape cassette, the container comprising a case with an open front, a cassette-carrying slide mounted in the case for sliding movement between an outer, open position in which a cassette can be placed upon or withdrawn from the slide and an inner closed position, the slide being open sided and including a base plate having an upper, cassette-supporting surface and having front portions adjacent the open front of the case, means retaining a tape cassette on the base plate, a spring continuously biasing the slide towards the open position, stop means defining the open position and restraining further movement of the slide out of the case, and releasable catch means movable between a locking position for holding the slide in the closed position and a release position permitting the slide to move outwardly through the open end of the case into the open position under the influence of the spring; the slide having open and unobstructed space at the open sides thereof and adjacent the front portion of the

base plate to entirely expose edges of a cassette supported on the base plate so that a cassette supported on the base plate



can be securely grasped by its exposed side edges and removed therefrom.

3,899,230 LOCK ASSEMBLY

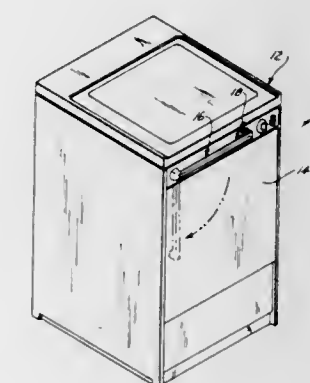
Richard L. Conrath, and Robert B. Beare, both of Herrin, Ill., assignors to Fedders Corporation, Edison, N.J.

Filed July 11, 1974, Ser. No. 487,465

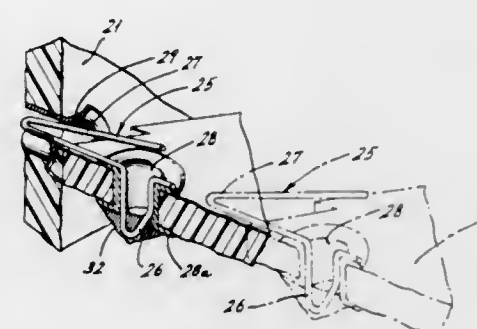
Int. Cl. E05B 15/02; A47B 88/00

U.S. Cl. 312—319

14 Claims



1. A lock assembly for retaining in a preselected orientation a handle rotatable in a plane substantially parallel to a wall of a cabinet and having a free end movable toward and away from the cabinet, said lock assembly comprising: first locking means adapted to be mounted on one of the cabinet and the free end of the handle, and mating second locking means adapted to be mounted on the other of the cabinet and the free end of the handle, said first locking means comprising a first retaining element, said second locking means comprising a second retaining element engageable with said first retaining element to prevent movement of the free end of the handle away from the cabinet and to retain the handle in said preselected orientation, and latch means adapted to be mounted on the free end of the handle and the cabinet and being operable when said first and second retaining elements are in engagement for arresting rotation of the handle to prevent separation of said first and second retaining elements.



3,899,231
ELECTRICAL CONNECTOR
Ralph Bray, Philadelphia, Pa., assignor to Aeronutronic Ford Corporation, Blue Bell, Pa.

Filed Dec. 21, 1973, Ser. No. 427,080

Int. Cl. H05K 1/02

U.S. Cl. 339—17 LC

4 Claims

1. The combination of an electrical connector with at least a pair of adjacently disposed substantially perpendicular electrical circuit-breaking panel structures, comprising: a resilient wire formed with a reversely bent first portion disposed in a first plane, and a reversely bent second end portion disposed in a second plane extending substantially at right angles to the first plane; the reversely bent first end portion projecting into an aperture provided in a first circuit bearing panel with said second plane adjacent and substantially parallel to said first panel, said first end portion being both electrically and mechanically affixed to an adjacent circuit on the panel; and the reversely bent second end portion extending through and residing in resilient engagement with electrically conductive side walls of an aperture provided on said second wiring circuit panel, said electrically conductive side walls comprising electrical terminal means for a circuit on said second panel.

3,899,232 CIRCUIT BOARD SOCKET

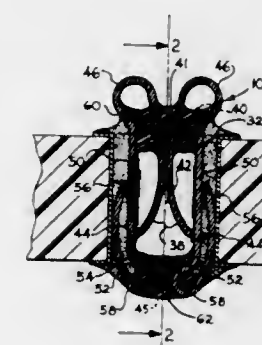
Quentin Berg, deceased, late of New Cumberland, Pa.; by Francis H. Berg, co-executor, and Dauphin Deposit Trust Co., co-executor, both of New Cumberland, Pa., assignors to E. I. du Pont de Nemours & Company, Wilmington, Del.

Filed Feb. 4, 1974, Ser. No. 439,622

Int. Cl. H01r 11/22; H05k 1/02

U.S. Cl. 339—17 C

8 Claims



7. A circuit board socket comprising an elongate generally cylindrical hollow metal body open at both ends; at least a pair of lead contact fingers extending into the body from one end thereof for forming an electrical connection with the lead inserted into the interior of the body through one end of the body; means for mounting the body in a circuit board hole; and penetrable sealing means completely closing each end of the body to prevent flux or molten solder from flowing into the interior of the body.

3,899,233

CONTACT HEAD FOR ELECTRICALLY MONITORING A PLURALITY OF POINTS IN A CIRCUIT

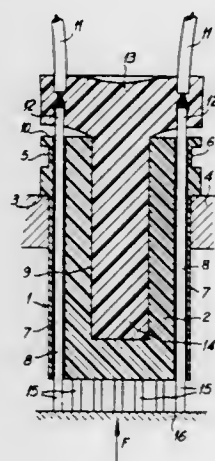
Pierre Louis Sigel, Villeneuve-le-Roi, and Henri Grosjean, Le-Plessis-Trevisse, both of France, assignors to Compagnie Honeywell Bull, Paris, France

Filed Mar. 8, 1974, Ser. No. 449,567

Claims priority, application France, Mar. 16, 1973, 73.09560

Int. Cl.² G01R 31/02; H01R 11/02, 9/08
U.S. Cl. 339—59 M

3 Claims



1. A contact head for simultaneously contacting a plurality of points in an electrical circuit, said head comprising:

- a central hole and a rigid insulating support in the form of a parallelepiped and provided with a plurality of holes passing entirely through said support in a direction parallel to the length of said parallelepiped, and opening on two opposite surfaces of said support, said holes being distributed around the periphery of said support,
- a plurality of pins each adapted for sliding in one respective of said holes, each pin having one of its two ends projecting from said support at one of said opposite surfaces, and its other end projecting from said support at the other surface and soldered to a connecting lead,
- and a block of elastic material disposed against said other surface of the support, said block having a protuberance positioned within said central hole of said support, said block embedding said soldered ends of the pins and exerting an elastic action on said pins when the pins have their free ends pressed against said circuit.

3,899,234

LOW INSERTION FORCE CAM ACTUATED PRINTED CIRCUIT BOARD CONNECTOR

Marvin Leo Yeager; Homer Ernst Henschen, both of Carlisle, and Robert George Harwood, Mechanicsburg, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 20, 1974, Ser. No. 453,116

Int. Cl.² H01R 13/62

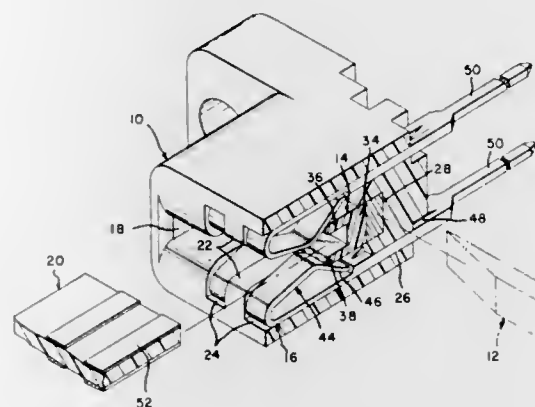
U.S. Cl. 339—74 R

9 Claims

1. A low insertion force edge board connector comprising: a housing having a longitudinally extending, elongated circuit board receiving aperture, a plurality of contact passageways in parallel spaced apart relationship in rows on each longitudinal side of the bottom of said aperture extending through a base portion of said housing, and a cam receiving groove extending longitudinally and centrally of the bottom of said aperture and opening therein, the sides of said cam receiving groove being inwardly spaced from said passageways;

a single cam means mounted for movement in said groove; contact driving means mounted in said circuit board receiving aperture lying between said passageways and at least partially within said cam receiving groove and adapted to be driven by said cam means in a direction normal to said cam receiving groove, and

a plurality of contacts each having a resilient board engaging portion, an integral terminal portion and at least one locking lance, each of said contacts being fixedly mounted in two parallel, spaced apart rows with said terminal portions thereof extending through said passageways and with free end portions of said resilient board



engaging portions positioned to be engaged by opposite sides of said contact driving means whereby all of said contacts are driven between a first position in engagement with a circuit board positioned in said circuit board receiving recess and a second position disengaged from said circuit board by a single movement of said cam means.

3,899,235

SLAB-COUPLED OPTICAL WAVEGUIDE

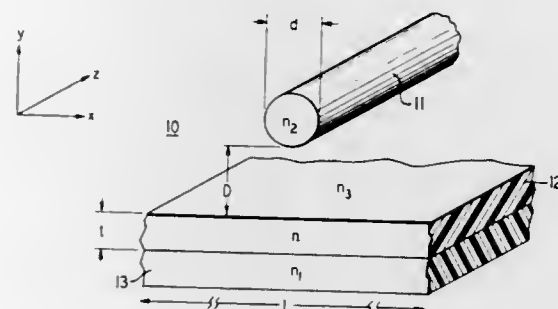
Jacques Alexis Arnaud, Colts Neck, and Enrique Alfredo Jose Marcattili, Rumson, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 11, 1974, Ser. No. 449,903

Int. Cl.² G02B 5/14

U.S. Cl. 350—96 WG

9 Claims



1. A slab-coupled optical waveguide for guiding optical wave energy having a prescribed modal spectrum comprising: a slab of low-loss dielectric material of refractive index n_1 ;

a low-loss dielectric fiber having a refractive index n_2 spaced a distance D away from said film, where D is greater than zero;

and a third low-loss dielectric material of refractive index n_3 disposed between and in contact with said slab and said fiber, where $n > n_3$ and $n_2 > n_3$;

CHARACTERIZED IN THAT:

said fiber alone is capable of guiding optical wave energy having said prescribed modal spectrum and other unwanted modes;

and in that said slab alone is capable of guiding said unwanted modes but is incapable of guiding optical wave energy having said prescribed modal spectrum.

3,899,236

ELECTRICAL CONNECTOR

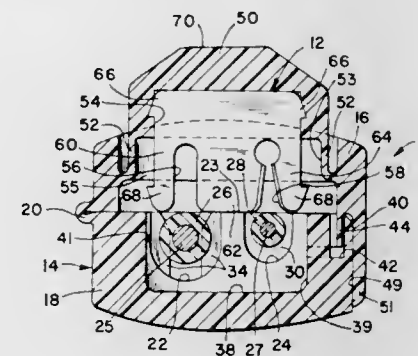
Anthony J. Santos, Edison, N.J., assignor to Amerace Corporation, New York, N.Y.

Filed June 24, 1974, Ser. No. 482,149

Int. Cl. H01r 9/08

U.S. Cl. 339—98

13 Claims



1. Electrical connector apparatus comprising:

- a. an insulating body member including a first portion and a second portion, said first portion including means for receiving a plurality of insulated electrically conductive wires therein; and
- b. a contact element in said second portion movable between a first position and a second position relative to said second portion for providing common electrically conductive engagement with said plurality of insulated electrically conductive wires positioned within said receiving means, said contact element including means for fixedly engaging said first portion upon movement thereof to said second position thereby providing means for locking said first portion and said second portion together upon said movement of said contact element to said second position.

3,899,237

CONNECTING BLOCK STRUCTURES FOR MODULAR MAIN DISTRIBUTION FRAMES

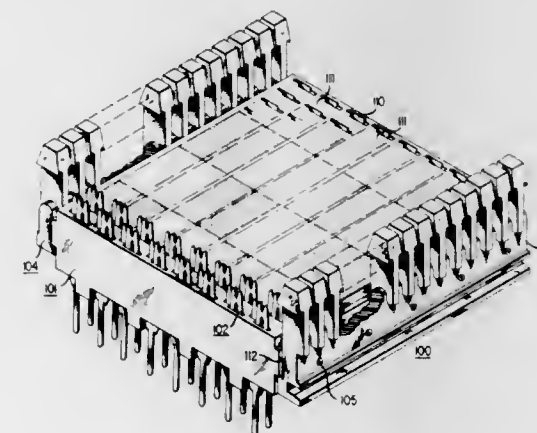
Paul Raymond Briggs, Jr., Andover, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sept. 10, 1973, Ser. No. 395,632

Int. Cl.² H01R 9/06

U.S. Cl. 339—99

9 Claims



1. A connector block for modular main distribution frames comprised of

- an insulating block body having a plurality of apertures therein,
- a plurality of clip-type electrical terminals inserted in said apertures,
- a wire fanning strip having at least one one-way gate wire retaining aperture comprising

a strip body,

first and second beam members affixed to said strip body, first and second head members affixed to said first and second beam members, respectively, each of said head members having a generally truncated tetrahedron shape,

a progressively tapered wire insertion slot, said slot narrowing in width to slightly less than the diameter of a jumper wire at said retaining aperture, said slot being formed by said first and second head members, and first and second wire deflection lips on either side of said insertion slot, said lips being affixed to said first and second head members, for extending said slot into said retaining aperture, and means for attaching said fanning strip to said insulating block body.

3,899,238

CABLE LOCK CONNECTOR

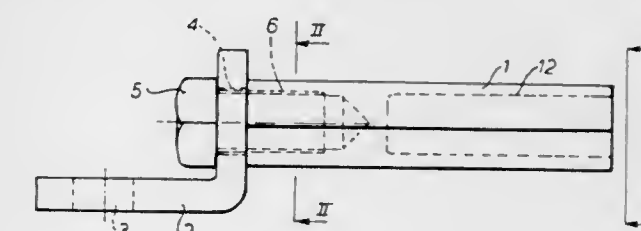
Gunnar Vinje, Vilbergveien 2, Oslo, Norway

Filed Apr. 4, 1974, Ser. No. 457,845

Int. Cl.² H01R 11/08

U.S. Cl. 339—245

3 Claims



1. A cable connector comprising:

- an elongated sleeve having a sector-shaped cross section for receiving a cable in a first end of the sleeve;
- an angular lug having a first leg rotatably mounted to a second end of the sleeve, a second leg of the lug having means formed therein for securing the lug to a stationary support; and
- fastener means disposed between the sleeve and the first leg of the lug for permitting preselected angular displacement of the lug with respect to the sleeve as well as subsequent securement therebetween.

3,899,239

INTEGRATED CIRCUIT TEST CLAMP

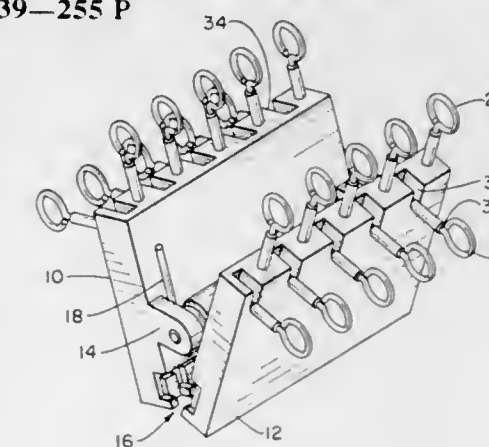
Frank L. Allard, Camarillo, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 24, 1974, Ser. No. 482,285

Int. Cl.² H01R 13/24

U.S. Cl. 339—255 P

3 Claims



1. An integrated circuit test clamp comprising:

- a first solid body member;
- a second solid body member hingedly connected to the first solid body member to form a clamping jaw;

a spring between said first and second body members biasing said jaw toward a closed position;
 a plurality of contact pads along the edge of said first and second body members forming the clamping jaws;
 a wire lead connected to each contact pad extending through said solid body members and out of the upper surface; and means providing maximum separation between adjacent leads;
 said means for providing maximum separation comprising alternately extending leads out the top and side of said solid body members, respectively; the leads extending out of the sides being substantially perpendicular to the plane of the contact pads whereby shorting of leads is minimized by the physical separation and the solid body material between adjacent leads.

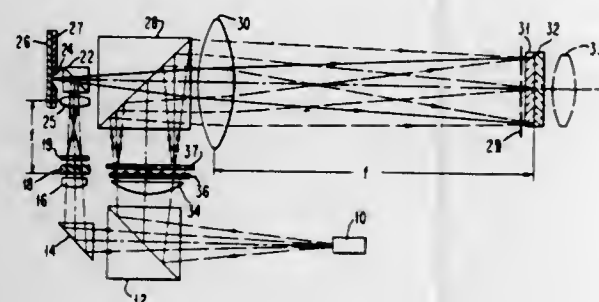
3,899,240

METHOD FOR DISTINGUISHING SIMILAR SUBJECTS USING DISCRIMINATING HOLOGRAMS

Dennis Gabor, London, England, assignor to International Business Machines Corporation, Armonk, N.Y.
 Division of Ser. No. 48,842, June 11, 1970, Pat. No. 3,600,054, which is a continuation of Ser. No. 565,519, July 15, 1966, abandoned. This application Dec. 9, 1970, Ser. No. 96,376
 Int. Cl.² G06G 9/00; G03H 1/26

U.S. Cl. 350—3.5

14 Claims



1. In a process for forming a reference hologram of a pattern having both an element in common with any other pattern and a distinctive element that comprises the steps of:
 interfering on a recording medium two beams of light for a suitable exposure one of which beams is modulated by the pattern to be recorded, thereby forming on the recording medium a set of interference fringes, a first part of which is related to the common element in the pattern to be recorded and a second part of which is related to the distinctive element;
 the fringes having a location on the recording medium that is dependent on the phase relation between the two beams;
 the improvement characterized by:
 forming the first part of the set of interference fringes by projecting onto the recording medium a first and a reference beam of light, the first beam being modulated by the common element of the pattern to be recorded;
 and forming a different second part of the set of interference fringes by projecting onto the medium a third and a reference beam of light, the third beam being modulated by the distinctive element of the pattern to be recorded;
 and
 the phase relation between the third and reference beams being different from the phase relation between the first and reference beams.

3,899,241

VISUAL DISPLAY WINDSHIELD

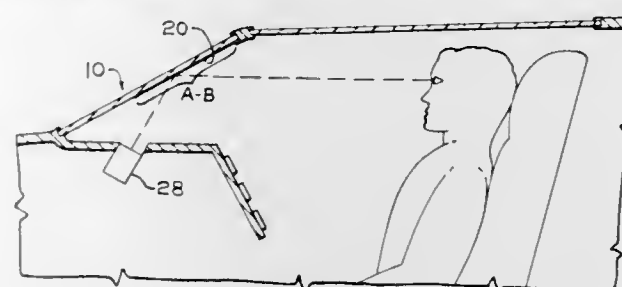
Rudolph L. Malobicky, Jr., New Kensington, Pa.; James B. Perkins, Huntsville, and Robert H. Taylor, New Market, both of Ala., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 11, 1973, Ser. No. 423,840

Int. Cl. G02b 27/14

U.S. Cl. 350—174

4 Claims



1. An aircraft forward vision area windshield comprising:
 a flat lamination of a plurality of transparent plies having a central vision area provided with a high degree of optical regularity which is surrounded by marginal areas for which optical regularity is less critical; and
 a visual image receiving area on said lamination consisting of a transparent, reflective, cathodically sputtered, metal oxide coating having an index of refraction of at least about 2.0 on a substantial portion of the inboard surface of said central area, said visual image receiving area being at least 60% visible light transmissive normal to the plane of the windshield and having a reflectivity to visible light of less than about 25% from the inboard side at an angle of 60° from normal to the plane of the windshield.

3,899,242

REPRODUCTION LENS SYSTEM

Miloslav Paukert, and Libuse Schwarzova, both of Prerov, Czechoslovakia, assignors to Meopta, narodni podnik, Prerov, Czechoslovakia

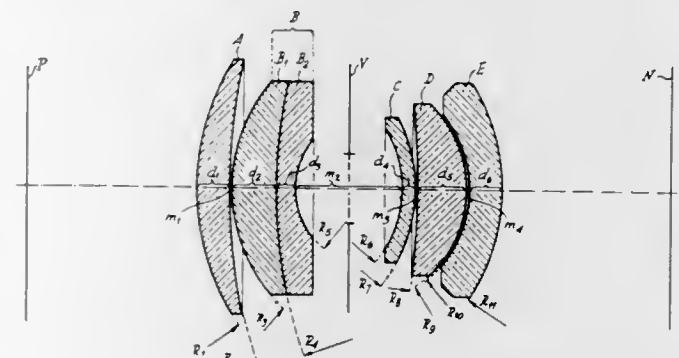
Filed Jan. 21, 1974, Ser. No. 434,943

Claims priority, application Czechoslovakia, Feb. 28, 1973, 1431-73

Int. Cl. G02b 9/60

U.S. Cl. 350—216

4 Claims



1. An objective lens system comprising five optical components separated by airspaces wherein the first optical component, placed next to the image plane, is a positive meniscus, the second optical component adjacent to it is a negative meniscus composed of two cemented elements, both said first and second components representing the front portion of the objective, the third, fourth and fifth components comprise the rear portion of the objective and consist of three menisci the two extreme ones having a negative refractivity, the middle one having a positive refractivity, said front and rear portions being separated by a large space in which a mechanical diaphragm is located, and wherein the design parameters conform substantially to:

$R_1 = +43.87$	$d_1 = 6.15$	n_d	v
$R_2 = +114.88$	$m_1 = 0.18$	1.70154	41.1
$R_3 = +29.93$	$d_2 = 8.45$	air	
$R_4 = +92.51$	$d_3 = 3.40$	1.70154	41.1
$R_5 = +19.15$	$m_2 = 19.25$	1.76182	26.5
$R_6 = -20.9$	$d_4 = 2.48$	air	
$R_7 = -28.06$	$m_3 = 0.18$	1.57501	41.3
$R_8 = -144.2$	$d_5 = 9.28$	air	
$R_9 = -21.29$	$m_4 = 0.37$	1.65844	50.8
$R_{10} = -21.39$	$d_6 = 5.97$	air	
$R_{11} = -36.63$		1.62536	35.6

wherein

$$f_A = +97.68$$

$$f_B = -107.62$$

$$f_C = -163.06$$

$$f_D = +36.83$$

$$f_E = -96.80$$

where

$R_1 - R_{11}$ are the radii of curvature of individual refracting surfaces;

$d_1 - d_6$ are the axial thicknesses of individual elements;

$m_1 - m_4$ are axial airspaces between individual optical components;

n_d is the refractive index for the spectral D-line;

v is the Abbe number

and

f_A, f_B, f_C, f_D, f_E are the focal lengths of individual optical components.

3,899,243

ARRANGEMENT FOR VIEWING THE INTERIOR OF A PRESSURE VESSEL

Wilhelm Haverkamp, Essen, Germany, assignor to Heinrich Koppers Gesellschaft mit beschränkter Haftung, Essen, Germany

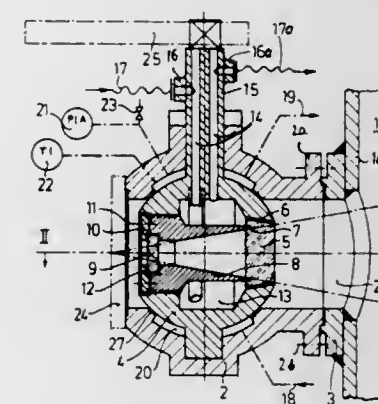
Filed Dec. 19, 1973, Ser. No. 426,361

Claims priority, application Germany, Dec. 20, 1972, 2262351

Int. Cl.² G02B 27/00

U.S. Cl. 350—319

10 Claims



1. An arrangement for viewing the interior of a pressure vessel which has a wall provided with a viewing port, comprising a housing having an interior provided with two axially spaced and aligned openings; connecting means for sealingly connecting said housing to said wall so that one of said openings registers with said viewing port; a body of revolution having a bore provided with two axially spaced open ends and being sealingly accommodated in said interior of said housing for turning to and from a position in which said bore registers with said openings; optical means sealingly mounted in said bore for permitting viewing of the interior of said pressure vessel when said body is in said position thereof, said optical means comprising a first optical element sealingly mounted in said bore in the region of one of said open ends, and a second optical element sealingly accommodated in said bore in the region of the other of said open ends; and retaining means retaining said second optical element in said bore.

3,899,244

DEVICE FOR VIEWING UNDER WATER

Hendrik Mulder, Delft, Netherlands, assignor to N. V. Optische Industrie de Oude Delft, Delft, Netherlands

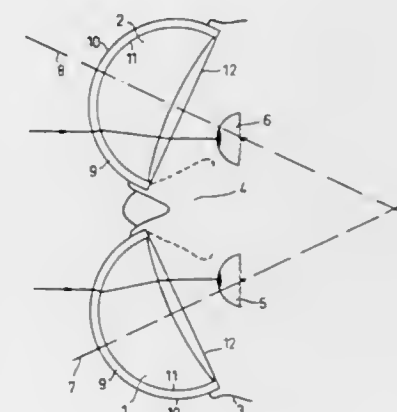
Filed Aug. 26, 1974, Ser. No. 500,588

Claims priority, application Netherlands, Sept. 7, 1973, 7312361

Int. Cl.² G02C 1/00; G02B 3/04

U.S. Cl. 351—43

3 Claims



1. Device for viewing under water comprising two identical optical lens systems, each of the systems as seen from the object side to the image side consisting of a first component with a concave image-sided surface, an air space and a second component in the form of a lens of positive power, the image-sided nodal point of the first component substantially coinciding with the object-sided nodal point of the second component, the total dioptric power of each of the systems being substantially zero under water characterized in that the optical axes of the optical lens system converge towards the image side and include an angle between 40° and 60° and in that one of the two components of each of the optical lens systems comprises an aspherical surface.

3,899,245

TESTING DEVICE FOR CINEMATOGRAPHIC CAMERAS

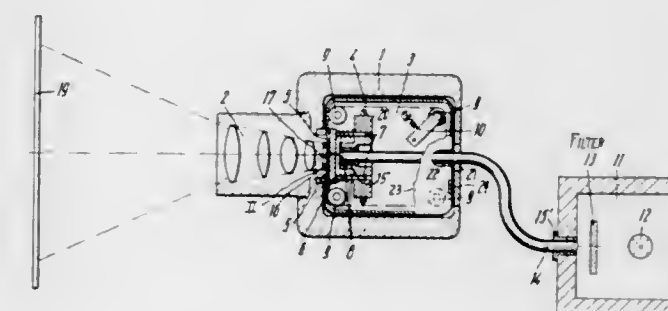
Helmuth Bernhardt, Bad Kreuznach, Germany, assignor to Jos. Schneider & Co. Optische Werke Kreuznach, Bad Kreuznach, Germany

Filed Dec. 3, 1973, Ser. No. 421,481

Int. Cl. G03b 23/02

U.S. Cl. 352—72

7 Claims



1. A device for testing the performance of a camera provided with an objective and with film-transport means for aligning successive film frames with said objective, comprising a light box, a cartridge insertable into said camera and provided with a front wall having a window, a set of rollers in said cartridge, an endless test film in said cartridge led around said rollers past said window for entrainment by said film-transport means, and a fiber-optical cable extending from said light box into said cartridge to a location in line with said window behind said film for transilluminating same.

3,899,246

COMBINED MICROFICHE READER AND PROJECTOR
Arthur Edelstein, Jamaica, N.Y., assignor to Bell & Howell Company, Chicago, Ill.

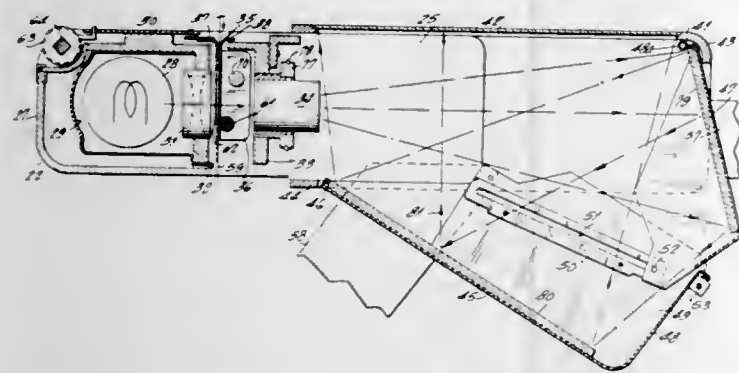
Continuation of Ser. No. 133,294, April 12, 1971, abandoned.

This application June 18, 1973, Ser. No. 371,218

Int. Cl. G03b 23/08, 21/30

U.S. Cl. 353-27

8 Claims



1. A combined microfiche reader and projector system, book-like in size and handling characteristics comprising a first fixed hollow housing, and a second movable housing slidably and telescopically coupled therewith and being telescopically movable between a first inoperative position, and a second operative position, said second housing being selectively disengageable from said first housing to permit use of said system as a projector adapted to form images on a remote surface, a projection lamp compartment within the first housing, a projection lamp in said compartment for connection to a power source, a reflector carried within the projection lamp compartment to direct the light from the projection lamp through the housings, a projection lens assembly carried by the first housing to receive the light from the projection lamp, a first mirror within the second housing adapted to receive light coming from the projection lens assembly when said first and second housing are in engagement with each other, means to hold the said first mirror at an angle with respect to the optical axis of the projection lens assembly, a second mirror swingably carried by the second housing to receive light reflected by the first mirror only when said second housing is in its second operative position, means to hold the said second mirror at an angle with respect to the plane of the first mirror, a rear projection screen stationarily mounted within and carried by the second housing to receive light reflected by the second mirror, means to hold a microfiche card between the lamp and the projection lens assembly and means adjacent the periphery of the fixed housing to move the microfiche card within the housing to bring selected areas of the said card into register with the projection lens assembly, wherein the first mirror is carried upon a first mirror mount swingably secured to the side of the second movable housing adjacent the side wall thereof, the second mirror is carried upon a second mirror mount swingably secured to the side walls of the second movable housing adjacent the rear thereof, said mirror mounts being operatively coupled together adjacent their free ends and being movable responsive to telescoping movement of said second housing between its first and second positions.

3,899,247

OPTICAL POSITION INDICATOR

Werner Faller, Bad Kreuznach, Germany, assignor to Jos. Schneider & Co. Optische Werke Kreuznach, Bad Kreuznach, Germany

Filed Dec. 3, 1973, Ser. No. 421,480

Claims priority, application Germany, Dec. 4, 1972, 2259318

Int. Cl. G01b 9/08, 9/00

U.S. Cl. 353-40

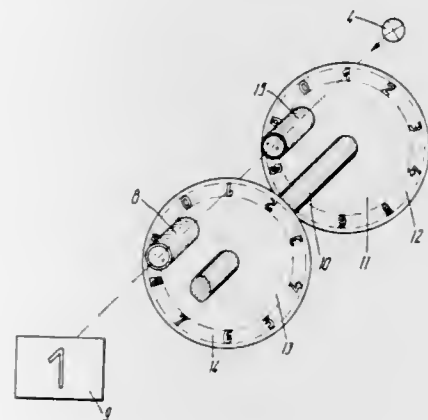
10 Claims

1. A position indicator comprising:
a scale carrier displaceable in at least one dimension into a succession of discrete operating positions, said carrier

being provided with correlated first and second sets of light-transmissive areas on a contrasting background, the areas of each set following one another in a direction of displacement of said carrier;

optical means forming a light path with an incoming branch and an outgoing branch respectively aligned in any of said operating positions with an individual area of said first set and with an associated area of said second set respectively correlated therewith, at least one of the two areas simultaneously disposed in said light path forming an alphanumerical symbol characterizing the particular operating position defined by the coincidence of said two areas in said light path;

image-receiving means forming a display surface in line with said outgoing branch of said light path; and



a source of light in line with said incoming branch of said light path for illuminating an area of said first set in each of said operating positions;

said optical means including projection means for superposing the image of an illuminated area of said first set upon the associated area of said second set in any operating position to focus the superposed images of said illuminated area and said associated area upon said display surface, and ray-transposing means for shifting said superposed images in opposite directions on said display surfaces upon displacement of said scale carrier whereby said images register with each other only in the corresponding operating position.

3,899,248

MICROFICHE READER-PRINTER

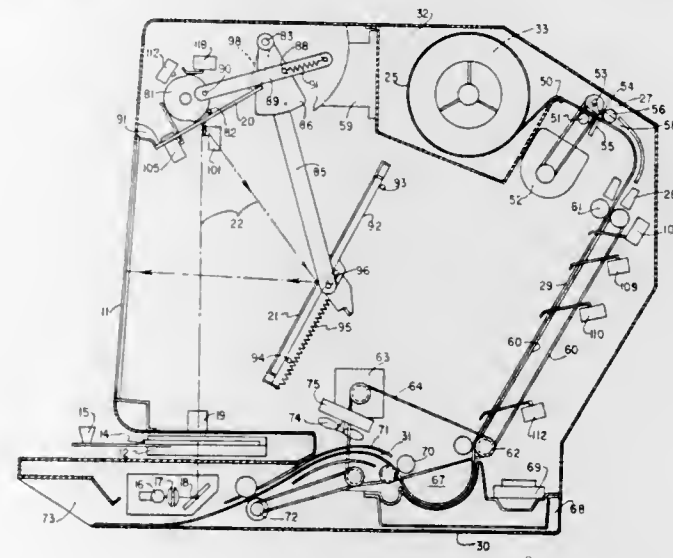
Emil Tiger, Highland Park, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed Nov. 8, 1973, Ser. No. 414,064

Int. Cl. G03g 15/00; G03b 13/28

U.S. Cl. 355-5

5 Claims



1. A microfiche reader-printer comprising:

a housing;
a control panel on the front of said housing;
a microfiche carrier operably disposed on the front of said housing to receive a microfiche therein;
a viewing screen disposed across the front of said housing;
an image projector disposed to project a light beam through said fiche and magnify said light beam, including a fiche image;
a pair of reflecting mirrors movable to one position for reflecting the projected image to the back side of said screen to permit viewing thereof;
a positioner mechanism mechanically operative to shift the positions of said mirrors to a second position;
a motorized timing cam mechanically linked to effect the selective operation of the mirror positioning mechanism;
a continuous paper supply source within the housing;
a drive mechanism to feed said paper from said source;
a paper measuring means;
a rotary paper cutter for cutting a piece of said paper from said paper source comprising:
a frame comprising a pair of end vertical sidewalls and a horizontal support member therebetween, a rotary cutting blade having first and second ends and a traveler cam at each said end, one said cam being smaller in radius than the other and said blade mounted between said sidewalls for cutting engagement with the paper sheet above the paper sheet, a cutting bar having a cutting edge on the near end thereof, said cutting edge being disposed beneath said cutting blade for cooperative engagement with said blade to cut a paper sheet therebetween, said bar having first and second ends, said first end being mounted to one said sidewall about a pivot at the far end of said bar and arranged for arcuate movement about said pivot, and said second end being mounted at the other said sidewall and arranged for horizontal movement only, and means at each said bar end for urging said bar ends against said blade cams, said different cam radii causing said blade to overlap said bar by a desired amount;
a paper corona unit to place an electrostatic charge on the surface of said paper;
a conveyor to receive and move said severed piece of paper to an exposure position where the paper is exposed to the light beam from one of said mirrors;

a toner developing means disposed to receive said paper after exposure;
a squeeze and dryer operative to dry the paper;
a discharge chute to convey said sheet of paper to an outlet on the front of said housing; and
a control circuit selectively operative to initiate a reading cycle and a succeeding printing cycle whereby any selected microfiche image may be readily read and a printed copy thereof obtained.

3,899,249

ELECTROPHOTOGRAPHIC APPARATUS

Toru Takahashi, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 179,073, Sept. 9, 1971, abandoned, which is a division of Ser. No. 729,567, May 16, 1968, Pat. No. 3,663,219. This application May 11, 1973, Ser. No. 359,221

Claims priority, application Japan, May 23, 1967, 42-32962; June 29, 1967, 42-56049[U]

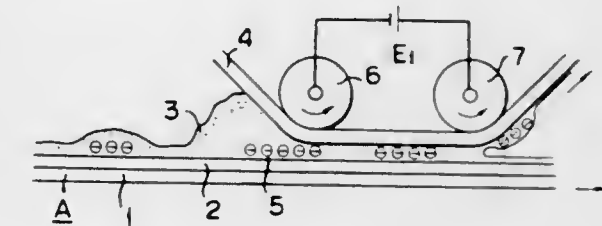
Int. Cl. G03g 15/10

U.S. Cl. 355-10

2 Claims

1. An electrophotographic apparatus for reproducing an original image on copy material comprising: means for forming an electrostatic latent image of said original image on an electrophotographic photosensitive member; means for developing said electrostatic latent image with a liquid developer containing a liquid carrier and charged toner particles to form a toner image on said photosensitive member; means for contacting said toner image with said copy material and squeezing said photosensitive member and said copy material

to remove excessive amounts of liquid carrier; means for applying an electric field in a direction and having an amplitude to maintain said charged toner particles on the surface of said photosensitive member during said squeezing of said photosensitive member and said copy material; means for



thereafter transferring said toner image onto said copy material by contacting said copy material with said photosensitive member and means for applying an electric field which attracts the transferred toner image to the surface of said copy material.

3,899,250

ACTIVE-GATED TELEVISION AUTOMATIC RANGE SWEEP TECHNIQUE

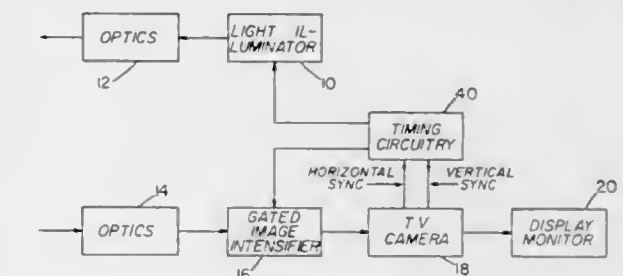
Jack A. Bamberg; Hans R. Bucher, and John G. Bultena, all of Boulder, Colo., assignors to Ball Brothers Research Corporation, Boulder, Colo.

Filed Feb. 4, 1974, Ser. No. 439,182

Int. Cl. G01c 3/08; H04n 3/00

U.S. Cl. 356-5

27 Claims



20. An active-gated television automatic range sweep device comprising:
illumination means for illuminating targets at different range intervals;
receiving means including a television camera for receiving illumination reflected by said targets; and
timing means for controlling said illumination means and said receiving means such that discrete ranges are sequentially viewed during a television line time to thereby sweep out an entire depth of range within a television frame.

3,899,251

APPARATUS AND METHOD FOR MEASURING THE RELATIVE DISTANCE AND OPTIONALLY THE RELATIVE VELOCITY OF AN OBJECT

Helmuth Frenk, and Ludwig Leitz, both of Wetzlar, Germany, assignors to Ernst Leitz GmbH, Wetzlar, Germany

Filed Feb. 25, 1974, Ser. No. 445,808

Claims priority, application Germany, Feb. 26, 1973, 2309462

Int. Cl. G01C 3/08; G01P 3/36

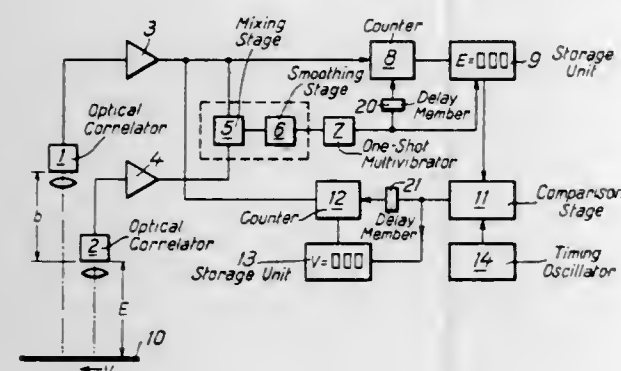
U.S. Cl. 356-28

12 Claims

1. An apparatus for measuring the distance and velocity of an object relative to a reference system, comprising:
a. an object;
b. two optical correlator systems each of which has a different distance from said object and an optical axis thereon,

said correlator systems generating electrical output signals having a given frequency;

c. means connected to said electrical output signals for mixing said electrical output signals and generating an auxiliary signal having a given auxiliary frequency comprising the difference in frequency of said electrical output signals; and



d. means for counting the number of signal cycles of one of said electrical output signals during the period of time necessary for one cycle of said auxiliary frequency and indicating the number of signal cycles as a value proportional to the distance.

3,899,252

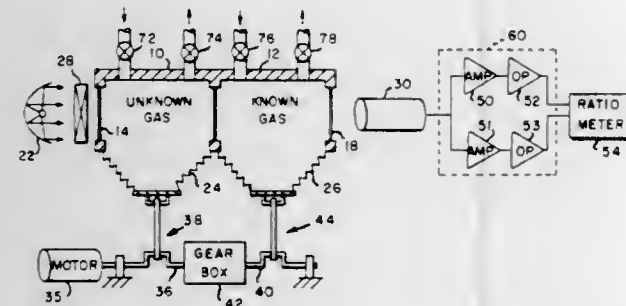
NDIR GAS ANALYZER BASED ON ABSORPTION MODULATION RATIOS FOR KNOWN AND UNKNOWN SAMPLES

John Dimeff, San Jose, Calif., assignor to The United States of America as represented by the United States National Aeronautics and Space Administration Office of General Counsel-Code GP, Washington, D.C.

Filed June 28, 1974, Ser. No. 484,208
Int. Cl. G01n 21/26

U.S. Cl. 356-51

15 Claims



1. A nondispersive gas analyzing apparatus comprising:

a first means for containing a first gas sample including a reference gas;

a second means for containing a second gas sample including an unknown amount of said reference gas;

a means for passing radiant energy through said first and said second gas samples for permitting at least partial absorption of said energy by said gas samples;

a means for modulating the amount of said energy absorbed by said gas samples at a first and a second frequency;

a means responsive to the unabsorbed energy passing through said gas samples for generating a first signal at said first frequency and a second signal at said second frequency; and

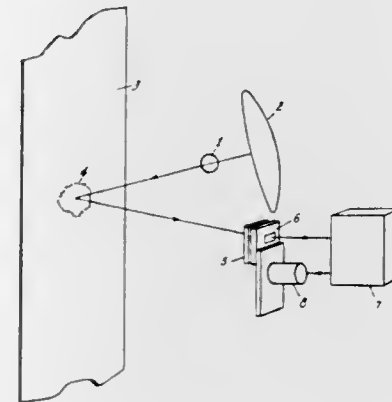
a means responsive to said first and said second signals for generating a third signal proportional to the density of said reference gas in said second gas sample.

3,899,253 APPARATUS AND METHOD FOR AUTOMATIC CROSS CORRELATION INTERFEROMETRY

Mario W. Overhoff, P.O. Box 8091, Cincinnati, Ohio 45208
Filed Sept. 10, 1973, Ser. No. 395,649
Int. Cl. G01B 9/02

U.S. Cl. 356-108

11 Claims



1. Interferometric apparatus for determining a physical parameter of a product comprising

a source of broadband radiation emitting within a predetermined spectrum,

a broadband radiation detector responsive to propagated radiation emitted by said source and forming a signal proportional to the radiation detected,

a multiple reflection interferometer interposed with the product in the path of the propagated radiation detected by said detector and modifying such radiation, said interferometer having two relatively opposed optical surfaces, one of which surfaces being partially transmissive and the other being at least partially reflective of the radiation and including means coupled therewith for varying the physical spacing between said surfaces, and

electrical circuit means interconnected with said radiation detector and said interferometer responsive to the detector signal for varying the spacing of said optical surfaces by a periodic signal superimposed on a variable steady state signal to provide an output proportional to the cross correlation between interferometric properties of the product and said interferometer and indicative of the product parameter.

3,899,254 CHEMICAL LIGHT METER AND METHOD OF MEASURING LIGHT THEREWITH

George D. Dixon, Monroeville; David H. Davies, and John D. Voytko, both of Pittsburgh, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 31, 1973, Ser. No. 384,323
Int. Cl. G01J 1/48

U.S. Cl. 356-234

24 Claims



1. A chemical light meter comprising a sealed tube containing

A. a composition which comprises:

1. a solvent;
2. about 0.1 to about 10% of a polymer having a molecular weight of at least 50,000 entirely dissolved in said solvent, which polymer degrades in the presence of light of a first wavelength; and
3. about 10 ppm to about 2% of a photodegrading compound entirely dissolved in said solvent which degrades said polymer when exposed to light of a second wavelength; and

B. means for measuring the viscosity of said composition.

3,899,255

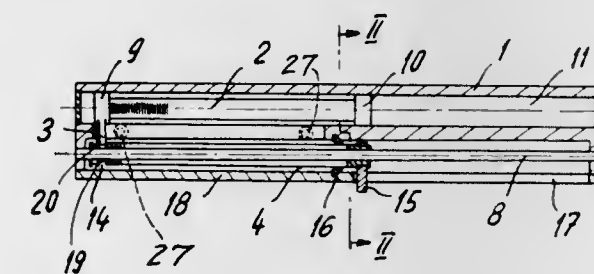
MEASURING DEVICE

Johann Meler, Brione sopra Minusio, Switzerland, assignor to Premisure AG, Instrumente fur Prazisions-Messung, Solothurn, Switzerland

Filed May 18, 1973, Ser. No. 361,587
Int. Cl. G01b 11/02

U.S. Cl. 356-169

7 Claims



7. A measuring device as set forth in claim 1, wherein said seal is formed by a lip seal.

3,899,256

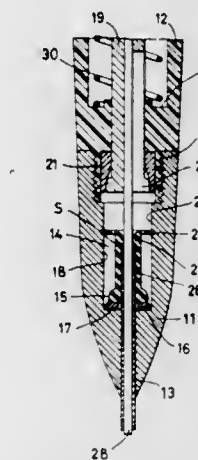
MECHANICAL PENCIL

Yoshihide Mitsuya, 1-3-chome, Higashi Nagata, Jhoto-ku, Osaka, Japan

Filed Apr. 10, 1974, Ser. No. 459,854
Int. Cl. B43k 21/16

U.S. Cl. 401-65

1 Claim



1. In a mechanical lead pencil having a forward tip with a cavity therein for containing a movable cylinder portion comprised of a lead-protecting tube extending through and beyond said tip and an outside tube covering within said cavity for surrounding a portion of the end of said lead-protecting tube within said cavity, and a push button controlled chuck located above said movable cylinder when said forward tip is pointed downward for holding and controlling the movement of lead in said pencil through said lead-protecting tube in response to depressing the push button, the improvement comprising:

a ring located around said lead-protecting tube immediately below said outside tube covering within said cavity when the forward tip is pointed downward, said ring having an inside radius sufficiently large that the difference between

the inside radius of said ring and the radius of said lead-protecting tube is greater than the difference between the outside radius of the ring and the radius of the cavity in which said ring is located, thereby preventing said ring from contacting said lead-protecting tube at any point; and

an enlarged portion at the bottom of said outside tube covering immediately above said ring when said forward tip is pointed downward for preventing said ring from sliding over said outside tube covering when said forward tip is pointed upward, whereby pointing the forward tip upward and releasing said chuck surrounding the lead causes the lead and the lead-protecting tube to fall into the tip of the pencil under their own weight and under the force of the weight of the ring exerted against the enlarged portion of the outside tube.

3,899,257

DEVICE FOR FIXING A ROTOR ON A ROTATABLE SHAFT

Andre Gladieux, 97, Avenue de la Republique, Paris (11°), France

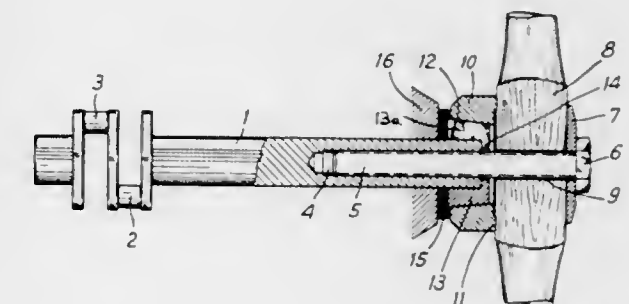
Filed Mar. 13, 1973, Ser. No. 340,651

Claims priority, application France, Mar. 17, 1972, 72.09541

Int. Cl. F16D 1/06

U.S. Cl. 403-259

1 Claim



1. In a model internal combustion engine having a crankcase and a crankshaft which protrudes from said crankcase, the improvement which comprises a tapped bore in the end of the crankshaft protruding from the crankcase, a sleeve surrounding said protruding end of the crankshaft, means defining a stepped bore in said sleeve with a larger diameter portion receiving said crankshaft and a smaller diameter portion, a shoulder between said larger and smaller diameter portions of the stepped bore abutting the end face of the crankshaft at the protruding end thereof, means defining a conical outer surface on said sleeve, means defining a slit extending longitudinally through said sleeve and extending between the stepped bore and conical outer surface thereof, a ring carried on said sleeve and having a conical bore conforming to and engaging the conical outer surface of said sleeve, a washer, a propeller received between said ring and washer, a screw extending through said washer, propeller, ring, smaller diameter portion of said sleeve and received in threaded engagement with said tapped bore to compress the propeller between said ring and washer and to thereby apply to the ring axial forces compressing and securing same against said sleeve whereby said sleeve, ring, propeller, washer, screw and crankshaft are rotatable in unison, and spacer means disposed in a clearance space between said sleeve and the crankcase to limit the bending deflection of the crankshaft portion that protrudes from the crankcase.

3,899,258

CORNER STRUCTURE FOR DOOR FRAMES AND THE LIKE

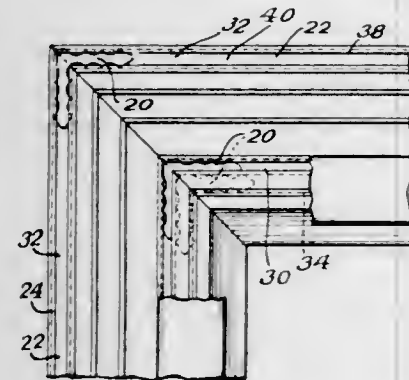
David G. Matthews, 5439 W. Lawrence Ave., Glenview, Ill. 60630

Filed Mar. 26, 1973, Ser. No. 345,007

Int. Cl. F16b 13/04, 12/32

U.S. Cl. 403-292

1 Claim



1. A frame comprising a plurality of metallic elongated frame members, said frame members having mitered ends and having channel means defined therein, said channel means having a first pair of channel defining walls spaced a first distance apart, and a second pair of channel defining walls spaced a second distance apart, said mitered ends being in abutting relationship, a corner key for securing two elongated frame members together at said abutting ends to define corners, said corner key being of unitary, completely solid construction and being devoid of apertures therein, each corner key having a pair of legs at right angles to each other, each leg being rectangular in cross section and having a pair of opposite sides and a pair of opposite edges, said sides being spaced apart a distance which is substantially equal to said first distance and being received in said channel means in close sliding proximity to said first pair of channel defining walls, and a plurality of unitary sets of barbs on each of said edges of said legs, each of said barb sets including an outermost barb set with the spaced apart dimension of said outermost set being at least slightly greater than said second distance so as to provide for positive biting interengagement of said outermost set with the metal defining said second walls of said channel means, and also including an innermost set of barbs with the spaced apart dimension of said innermost barb set being greater than said spaced apart distance of said first barb set to assure positive biting interengagement of said innermost barb set with the metal defining said second spaced walls, the biting interengagement of said barbs with the metal of said walls defining the sole means for securing said frame members together.

3,899,259

CONNECTOR ELEMENT FOR USE IN MODULAR WALL CONSTRUCTION

G. Newton Boice, McKeesport, Pa., assignor to Structural Systems, Inc., McKeesport, Pa.

Division of Ser. No. 214,539, Jan. 3, 1972, Pat. No. 3,800,489.

This application Aug. 6, 1973, Ser. No. 385,710

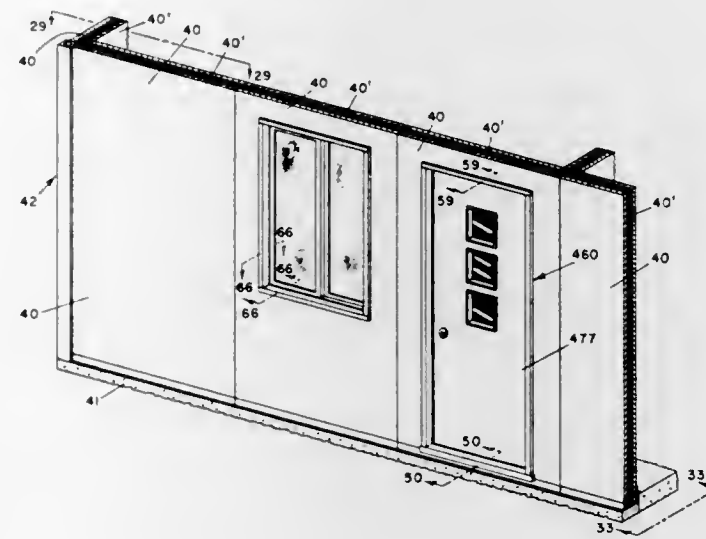
Int. Cl. E04b 1/40

U.S. Cl. 403-405

8 Claims

8. A support element for mounting angularly related structural members thereon comprising: a web portion and at least one extension forming a continuation of said web and formed integral therewith; a plurality of openings provided in said web portion and said extension; tubular spacer elements rigidly secured to one side of said web portion and said extension and having openings therethrough in registry with certain openings in said web and said extension for receiving fastening means therethrough wherein each of said spacer elements

comprises a plurality of tabs formed integral with said support element and bent outwardly therefrom to project generally



normal thereto; and a sleeve slip fitted over said projecting tabs.

3,899,260

SEALING MEMBER

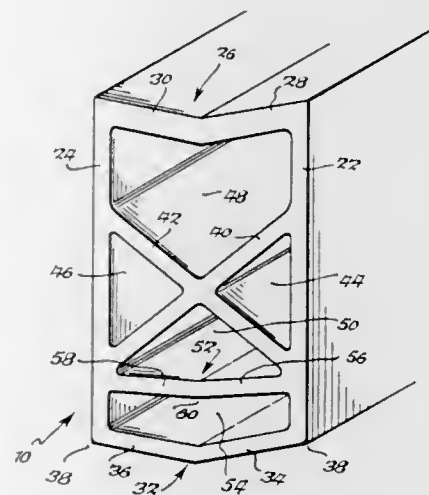
James J. Kerschner, Kenmore, N.Y., assignor to Acme Highway Products Corporation, Buffalo, N.Y.

Filed Apr. 6, 1973, Ser. No. 348,494

Int. Cl. E01C 11/10

U.S. Cl. 404-64

9 Claims



1. A sealing member comprising: a resiliently yieldable tubular body having a top wall, a bottom wall and opposite side walls, an internal supporting truss structure within said body and formed integral therewith, said internal truss structure including a pair of cross bars extending downwardly at an angle from said side walls at points spaced below the upper ends thereof to the opposite side walls at points spaced above the lower ends thereof, said cross bars intersecting intermediate their opposite ends, a generally horizontally extending compression bar extending transversely from one of said side walls to the other of said side walls below the intersection of the lower ends of said cross bars with said side walls in spaced relation to said bottom wall for preventing buckling of said side walls upon compression and facilitating the controlled collapse of said body.

3,899,261

EXPANSION JOINT BATTEN OR PACKING OF DILATION JOINT

Andre Mieville, Lausanne, Switzerland, assignor to Helka S.A., Switzerland

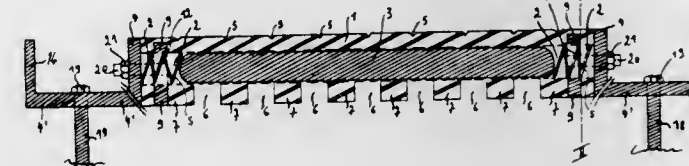
Filed Mar. 23, 1973, Ser. No. 344,437

Claims priority, application Switzerland, Mar. 27, 1972, 4506/72

Int. Cl. E01c 11/02

U.S. Cl. 404-68

9 Claims



1. An expansion joint for a roadway, comprising:
 - a. an elastic member insertable between first and second roadway sections spaced apart widely in a direction along the roadway, the member having first and second portions, adjacent respectively said first and second roadway sections when in use, extending therebetween and being expandable and contractible in response to contraction and expansion, respectively of the roadway to reach from one of said roadway sections to the other, in said direction;
 - b. said member having a plurality of cavities, also extending substantially from one road section to the other, in said direction, and laterally spaced in said member, said elastic member and said cavities having a greater dimension in said direction along the roadway than said member is thick;
 - c. for each cavity a rigid bar positioned therein, each extending over a major portion of the length of the corresponding cavity and longitudinally movable relative thereto; and
 - d. a plurality of metal plates imbedded in said elastic member adjacent said end portions thereof, said plates including means, adjacent respective ends of said bars, for anchoring said elastic member to the roadway; whereby said elastic member is elastically expandable and contractible over a considerable distance and is at the same time enabled by said bars to support considerable loads bearing down on said member.

3,899,262

EARTH TAMPER

Shinzo Yamamoto, Kawasaki, Japan, assignor to Nihon Kensei Kikai Sangyo Kabushiki Kaisha, Kawasaki, Japan

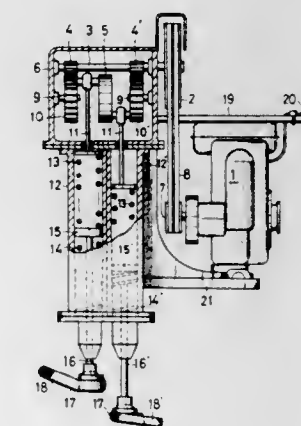
Filed Aug. 17, 1973, Ser. No. 389,258

Claims priority, application Japan, Feb. 21, 1973, 48-21607

Int. Cl. E01C 19/30

U.S. Cl. 404-133

1 Claim



1. A hand-guided earth tamper adapted to be moved in a forward direction and having two alternately actuatable tamp-

ing foot plates comprising a frame means, a crankshaft rotatably mounted on said frame means and having two 180° offset arms, a prime mover mounted on said frame means, a transmission operably disposed between said prime mover and said crankshaft and through which said prime mover drives said crankshaft, a pair of upper driving rods with respective upper ends pivotally connected to said two arms of the crankshaft, two guide cylinders disposed below said crankshaft, said upper driving rods extending into said two guide cylinders respectively, piston plates slidably disposed within said cylinders, a pair of lower driving rods having upper ends secured to the piston plates so as to follow the movement of the latter, compression springs arranged between the lower ends of the upper driving rods and the piston plates, compression springs arranged between the piston plates and the lower ends of the cylinders, a leading foot plate and a trailing foot plate secured to the lower ends of each of the lower driving rods, whereby the two 180° offset arms effect upward movement of one foot plate while the other foot plate is moving downwardly to thereby provide a stable posture to the tamper, both of said foot plates being disposed at an acute angle relative to the longitudinal axes of said guide cylinders to provide for automatic forward movement of the tamper, whereby the tamper is hand-guided in said forward direction in a forwardly inclined disposition with said leading foot plate and said trailing foot plate arranged in series relative to said forward direction such that the earth tamped by the leading foot plate is subsequently tamped by the trailing foot plate.

3,899,263

COMPACTOR

Eugene C. Briggs, and Lee E. Reichel, both of Dayton, Ohio, assignors to Koehring Company, Milwaukee, Wis.

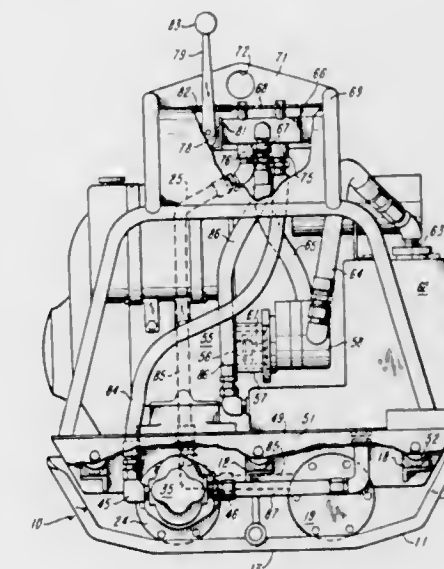
Continuation of Ser. No. 322,405, Jan. 10, 1973, abandoned.

This application Nov. 7, 1974, Ser. No. 521,844

Int. Cl. E01C 19/34

U.S. Cl. 404-133

12 Claims



1. A vibratory plate compactor including a work engaging vibratory base plate, a pair of exciter means, means mounting said exciter means in a closely adjacent connected relation to and for rotation on said base plate, said exciter means being positioned in a longitudinally spaced relation and having their axes of rotation extended in a sense transversely of said base plate, a separate motor connected with each exciter means having in connection therewith means for a separate and independent drive thereof, said motors being operable independently of one another and connected to drive the associated exciter means in respectively opposite directions, and control means associated with said motor drive means providing that one motor which is operating may be deenergized and the other motor energized substantially simultaneously.

3,899,264

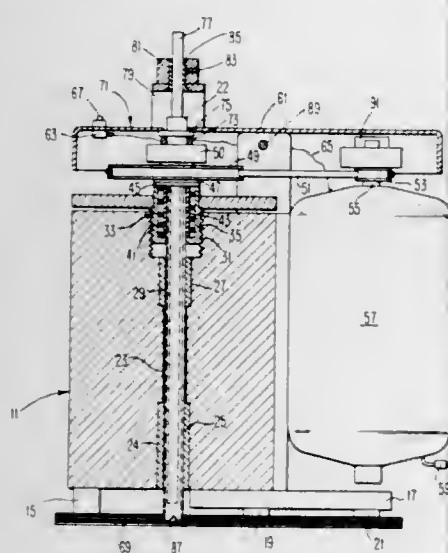
HOLE CUTTER DEVICE FOR GRAPHIC ARTS ACTIVITY

Philip E. Tobias, 1872 Watson Rd., Abington, Pa. 19001

Filed July 15, 1974, Ser. No. 488,533

Int. Cl. B23b 47/00

U.S. Cl. 408-14



1. A hole cutter device for cutting holes in film material, paper material and the like, comprising in combination: housing means having a top and a base, and further having an aperture disposed to pass through said housing from said base to said top, said aperture formed to have an enlarged section at the top thereof; spring means; adjusting means having a top and a base and formed to fit into said enlarged section, said adjusting means further formed to have an aperture therethrough with said last-mentioned aperture being aligned with said aperture of said housing means when said adjusting means is fitted into said enlarged section, said adjusting means further formed to hold said spring means whereby said spring means extends beyond said top of said adjusting means when in a non-compressed state; hollow shaft means formed to have cutting teeth at one end thereof and disposed within said apertures in said housing means and said adjusting means with said cutting teeth disposed in close proximity to said base of said housing means; driving means secured to said hollow shaft means in order to rotate said hollow shaft means, said driving means disposed to rest on said spring loaded means and thereby hold said hollow shaft means in a first position; rod means formed and disposed to pass through said hollow shaft and protrude therefrom in said first position; first support means secured to said housing means and to said rod means to hold said rod means in a fixed position; and second support means movably mounted on said housing means and formed to respond to a force to direct said driving means to compress said spring means and thereby to come to rest on the top of said adjusting means whereby said hollow shaft is moved from said first position and said cutting teeth are urged into the material to be cut and whereby when said force is terminated, said cutting teeth are urged away from said material to be cut by the expansion of said spring means as it returns said hollow shaft to said first position.

3,899,265

METHOD AND APPARATUS TO PERFORATE PIPE

David Lang, Mineral Wells, Tex., assignor to Harsco Corporation, Harrisburg, Pa.

Division of Ser. No. 266,552, June 27, 1972, abandoned. This application Dec. 27, 1973, Ser. No. 428,625

Int. Cl. B29C 17/10

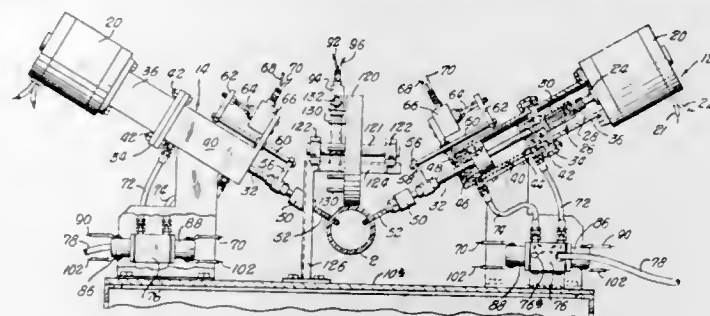
U.S. Cl. 408-50

7 Claims

1. Pipe perforating apparatus comprising support means; a cam wheel rotatably secured to said support means and positionable in rolling engagement with a pipe; a shaft; a drill bit secured to said shaft; means movably securing said shaft relative to the support means; means secured to the shaft to rotate

said shaft; actuated means secured between said shaft and said support means to move said shaft toward a pipe disposed in engagement with said cam wheel; actuating means associated with said cam wheel, said actuating means being arranged to

5 Claims



actuate the actuated means to move the shaft toward a pipe; and means secured between said shaft and said support means for moving the shaft away from a pipe in engagement with said cam wheel.

3,899,266

VORTEX BLOWER

Tadahisa Masai; Tetsuro Adachi, both of Hitachi; Shigeru Sasaki, Katsuta, and Kazuyoshi Moriyama, Hitachi, all of Japan, assignors to Hitachi, Ltd., Japan

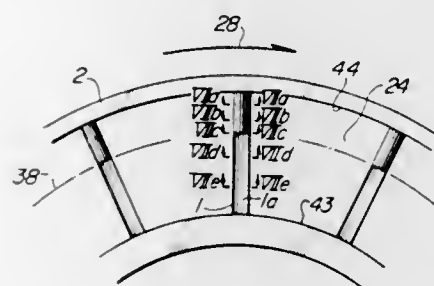
Filed Dec. 7, 1973, Ser. No. 422,697

Claims priority, application Japan, Dec. 18, 1972, 47-126106; Feb. 12, 1973, 48-16596

Int. Cl. F04d 7/00

U.S. Cl. 415-213 T

1 Claim



1. A vortex blower consisting of a stator body including an air passage having a suction port and a discharge port open thereto in the vicinity of the opposite ends of said passage and a rotor body having an air chamber divided into compartments by a plurality of rotor blades, in which the edge faces of the rotor blades in the vicinity of the inner circumference thereof is inclined rearwardly with respect to the rotational direction of said rotor body, the edge face of a rotor blade covering from the inner circumference to the outer circumference of said blade being so inclined that the height of the blade at the trailing edge of said edge face with respect to the rotational direction of the rotor is greater than that of the blade at the leading edge of said edge face.

3,899,267

TURBOMACHINERY BLADE TIP CAP CONFIGURATION

Ronald E. Dennis, Cincinnati; William D. Treece, Forest Park, and Robert J. Corsmeier, Cincinnati, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Apr. 27, 1973, Ser. No. 355,150

Int. Cl. F01d 5/08

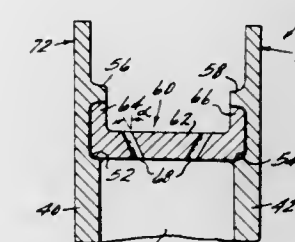
U.S. Cl. 416-92

8 Claims

1. In a turbomachinery blade of the type comprising an airfoil-shaped, hollow body portion having a pair of side walls defining an internal cavity therebetween, and an airfoil-shaped tip cap defining the outer bounds of said internal cavity, the improvement comprising:

each of said side walls includes a tip cap seat formed integrally therewith on the inner side thereof and at least one tip cap retaining member formed integrally therewith on

the inner side thereof and radially spaced from said seat so as to be capable of capturing said tip cap between said



seats and said retaining members such that said tip cap is mechanically secured to said blade.

3,899,268

WIND-DRIVEN MOTIVE APPARATUS

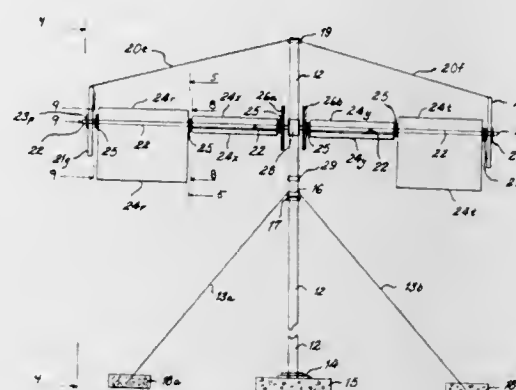
Edwin K. Hillman, 907 W. Desert Cove, Phoenix, Ariz. 85029

Filed Feb. 11, 1974, Ser. No. 441,483

Int. Cl. F03D 3/06

U.S. Cl. 416-117

10 Claims



1. Apparatus responsive to the force of the wind for generating power, said apparatus comprising in combination:

- a plurality of vanes for rotatably responding to the force of the wind;
- a horizontally oriented shaft for supporting said plurality of vanes;
- key means for maintaining a non-rotatable relationship intermediate said plurality of vanes and said shaft such that rotation of said plurality of vanes in response to the force of the wind produces a commensurate rotation of said shaft;
- slot means disposed within each of said plurality of vanes for engaging said shaft, said slot means accommodating downward sliding movement of each of said plurality of vanes in response to the force of gravity to periodically laterally reposition each of said plurality of vanes as said plurality of vanes and said shaft rotate such that each of said plurality of vanes presents a greater surface area to the force of the wind below said shaft than above said shaft;
- a power takeoff pulley attached to said shaft for transmitting power to a power consuming element; and
- mast means for supporting said shaft and said plurality of vanes in the wind; whereby, the disparate surface area above and below said shaft which is presented to the prevailing wind by the sliding action of said plurality of vanes induces rotation of said shaft and said power takeoff pulley.

3,899,269

ROTARY POWER DEVICE

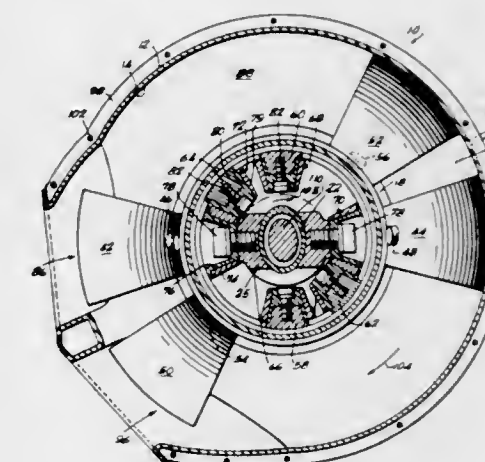
Morris B. Diamond, 201 Highland Ave., Apt. A5, Highland Park, Mich. 48203

Filed Aug. 20, 1973, Ser. No. 370,956

Int. Cl. F02b 53/00

U.S. Cl. 418-35

5 Claims



1. A rotary power device comprising:

- a main drive shaft;
- a toroidal housing disposed about said drive shaft in an inclined plane at a predetermined angle relative to said drive shaft;
- a toroidal cylinder, formed in said toroidal housing, in said inclined plane;
- first and second rotors, individually, rotatably mounted in said inclined plane in the central hole defined by said toroidal housing;
- means to link said drive shaft to the respective rotors; and including,
 - first pivot means, radially extending from said main drive shaft,
 - second pivot means connecting to said first and second rotors, and
 - link means pivotally connecting between said first and second pivot means;
- piston means, disposed in said toroidal cylinder, connected to each of said rotors.

3,899,270

DRIVE CONNECTION MEANS FOR A HYDRAULIC DEVICE

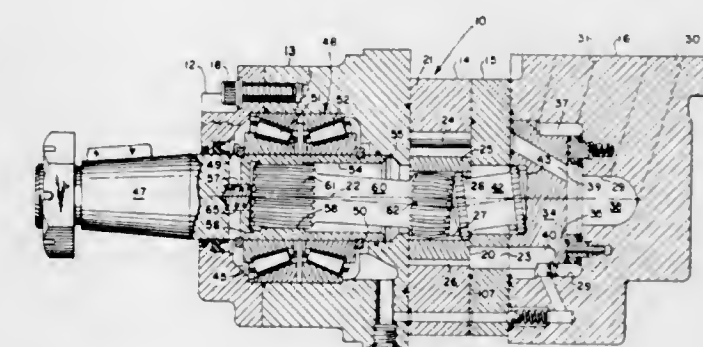
Nils Einar Swedberg, Chanhassen, Minn., assignor to Eaton Corporation, Cleveland, Ohio

Filed Aug. 13, 1973, Ser. No. 387,988

Int. Cl. F01C 1/10; F03C 3/00; F04C 1/06; F16D 3/18

U.S. Cl. 418-61 B

7 Claims



1. A rotary fluid device comprising: a gerotor set having an externally toothed member eccentrically disposed within an internally toothed ring member to define a plurality of volume chambers by teeth interaction;

valving means for sequentially providing high and low pressure fluid communication to said volume chambers whereby said externally toothed member partakes of hypocycloidal movement with respect to said ring member;

drive connection means for transmitting torque from the rotation of said externally toothed member to an input-output shaft, said drive connection means including said input-output shaft having a first bore axially extending therein from an end thereof and straight spline teeth within a portion of said bore, said externally toothed member having a central opening therethrough with straight spline teeth disposed thereabout and a main drive shaft having crowned spline teeth disposed at its end portions in driving engagement with said straight spline teeth in said input-output shaft and said externally toothed member respectively;

axial positioning means for maintaining said main drive shaft in an axially fixed position with respect to said input-output shaft and said externally toothed member, said positioning means including abutment means for preventing axial movement of said main drive shaft in a first axial direction and biasing means for preventing movement of said shaft in a second axial direction opposite said first direction, said abutment means including a rotatable valve member oppositely disposed about said externally toothed member from said main drive shaft and a crowned spline valve drive shaft in splined engagement with said straight spline teeth in said externally toothed member, said biasing means exerting a greater axial force on said main drive shaft than axial forces exerted on said main drive shaft by the torque developed in said gerotor set.

3,899,271

SLIDING VANE ROTARY COMPRESSOR

Rune Glanvall, Norrköping, Sweden, assignor to Stal Refrigeration AB, Norrköping, Sweden

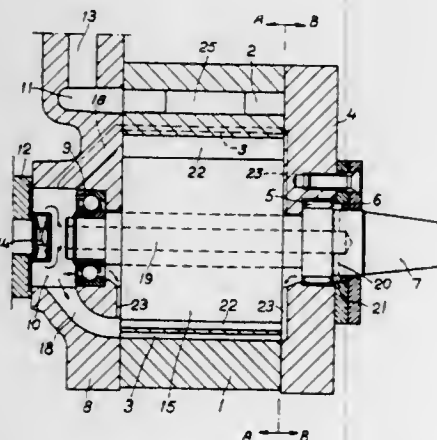
Filed Sept. 20, 1973, Ser. No. 399,170

Claims priority, application Sweden, Sept. 25, 1972, 12319/72

Int. Cl.² F01C 21/04

U.S. Cl. 418—82

3 Claims



1. In a rotary compressor for compressing a gaseous lubricant bearing working medium, means for passing said medium to the moving parts of the compressor, comprising:

- a stator having a peripheral wall and end walls defining a working chamber and having outlet passage means for the compressed medium;
- a slotted rotor accommodating a plurality of vanes slidably mounted in the slots thereof for frictionally engaging the walls of said working chamber to compress said medium;
- said rotor being carried by a rotary shaft the ends of which are journaled in bearings in said end walls and having a channel extending axially therethrough in lubricant communication relationship with said bearings;

- passage means in said stator for discharging the compressed medium from said working chamber to said outlet passage means in at least one of said end walls;
- a suction chamber in one of said end walls adjacent the bearing located therein and in lubricating communication therewith;
- means for supplying said medium to said suction chamber;
- first passage means for passing said medium from said suction chamber into said working chamber;
- a space in the end wall opposite to said suction chamber in lubrication relationship with respect to the bearing located in said end wall;
- second passage means for passing said medium from said space into said working chamber, and
- third passage means for passing said medium into said working chamber from said suction chamber through the adjacent bearing.

3,899,272

ROTARY MECHANISM HAVING APEX SEALS WITH LOW CONTACT PRESSURE

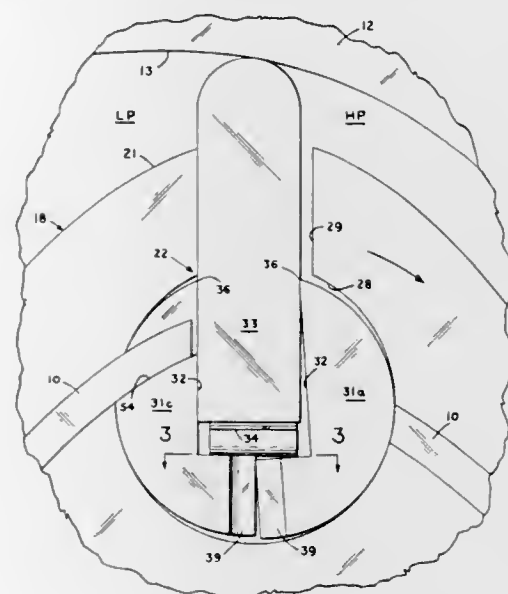
Winthrop B. Pratt, North Haledon, N.J., assignor to Curtiss-Wright Corporation, Wood-Ridge, N.J.

Filed May 13, 1974, Ser. No. 469,594

Int. Cl.² F01C 19/02

U.S. Cl. 418—113

8 Claims



1. A rotary mechanism having a housing comprising a peripheral shell having an inner surface and a pair of side walls defining therein a rotor cavity, a shaft journaled by the side walls coaxially with the peripheral shell and having an eccentric portion within the cavity, a rotor having a plurality of apex portions and rotatably mounted on the shaft eccentric portion and defining with the housing a plurality of operating chambers of variable volume wherein gas pressure alternates between lower and higher pressures, wherein the improvement comprises:

- each rotor apex portion having a radially disposed slot extending in the axial direction from one side of the rotor to the other;
- a seal strip disposed within the slot and radially movable therein and sweeping the inner surface of the shell in sealing relation, there being an underseal space between the radially inner edge of the seal strip and the bottom of the slot;
- each rotor apex portion having associated sealing means responsive to gas pressure to restrict entry of gas into the underseal slot space radially inward of the seal strip;
- the associated sealing means comprising movable means disposed on each side of the apex seal strip and extending in the axial direction and of substantially the same length as the apex seal strip, each movable means having a sealing edge facing the apex seal strip and parallel therewith, the movable means on the side exposed to the oper-

ating chamber having higher pressure being responsive to gas pressure in said chamber to appose its sealing edge to the side of the apex seal strip to occlude the underseal space from entry of gas.

3,899,273

FOOD FORMING APPARATUS

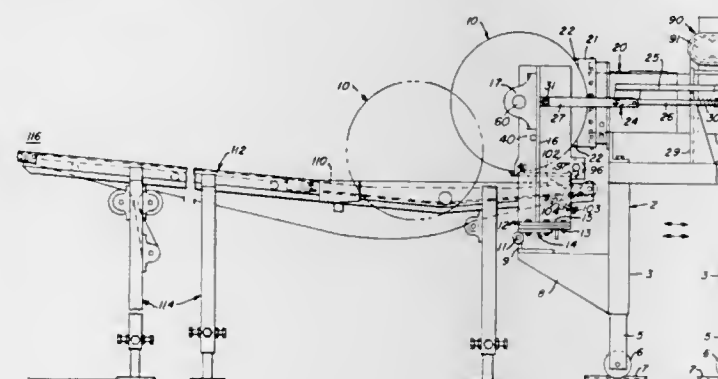
Glen R. Green, Ontario, Oreg., assignor to Ore-Ida Foods, Inc., Boise, Idaho

Filed July 23, 1973, Ser. No. 381,876

Int. Cl. A21c 5/04

U.S. Cl. 425—62

15 Claims



1. In an apparatus for forming shaped foodstuffs, the combination comprising:

- a frame;
- a cylindrical molding drum rotatably mounted on the frame and having a series of mold cavities formed therein, each mold cavity being open at the exterior surface of the drum and including a plurality of passageways at and spaced around the base thereof and extending into the interior of the drum;
- inherently lubricous mold inserts disposed in the respective mold cavities, each insert having a head portion conforming to the configuration of its mold cavity and slidable therein to form an effective sidewall seal, and appendages depending from the head portion and through said passageways, each insert being mounted for controlled reciprocal movement between an extreme retracted position within the mold cavity for receiving foodstuff in the mold cavity and an extreme extended position beyond the mold cavity for discharging shaped foodstuff from the mold cavity;
- a plenum chamber mounted on the frame for containing foodstuff to be formed and for cooperating with an arcuate portion of the periphery of the drum in sealing relationship therewith, whereby each mold cavity is filled as it passes into communication with the plenum chamber and its mold insert moves into said retracted position;
- means for rotating the drum so as to bring the mold cavities into and out of communication with the plenum chamber; and
- means for controllably reciprocating the mold inserts into and out of said retracted and extended positions as the drum rotates into and out of communication with the plenum chamber.

3,899,274

ADJUSTABLE STOP BLOCK FOR TIMING SPINDLE

William L. Lauterbach, Pittsburgh, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 443,263, Feb. 19, 1974, abandoned.

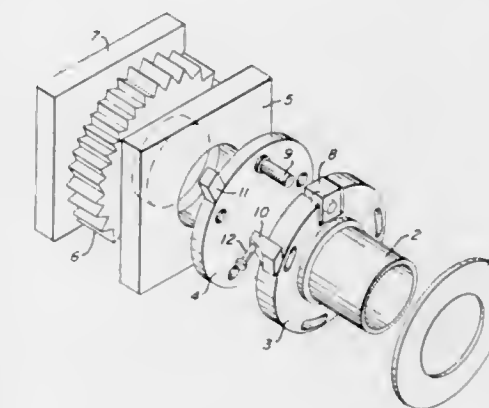
This application Nov. 4, 1974, Ser. No. 520,319

Int. Cl. B29c 3/00; B30b 11/16

U.S. Cl. 425—237

6 Claims

1. In a tandem roll briquette mold machine wherein the revolution timing of at least one roll is adjustable to coordinate it with the other roll, the adjustable roll having driving means including a timing sleeve and a coupling, the improve-



ment in the timing adjustment mechanism comprising a flange on said timing sleeve, an adjusting screw mounted on said

3,899,275

ROUNDER FOR DOUGH

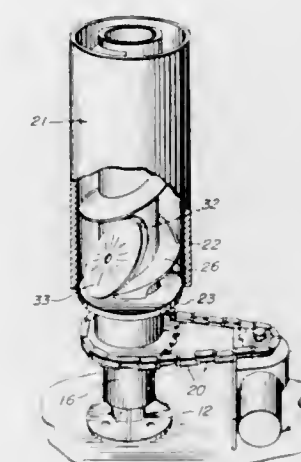
Harold T. Atwood, 14152 Irving Ave., Dolton, Ill. 60619

Filed May 28, 1974, Ser. No. 473,687

Int. Cl.² A21C 1/14

U.S. Cl. 425—333

1 Claim



1. A rounder for dough comprising a rotatably mounted vertically disposed cylindrical drum, a stationary tubular cylinder housed within said drum, said tubular cylinder having an open upper end and having a portion thereof broken away at its lower end, a vertically disposed spiral ramp projecting outwardly from said cylinder with its outer edge in engagement with the inner wall surface of said drum, said ramp being curved downwardly across its width to move pieces of dough positioned on said ramp into engagement with the inner wall surface of said drum, means for rotating said drum to move pieces of dough positioned on said ramp upwardly along the length of said ramp, and an angularly disposed dispenser plate rotatably mounted adjacent the lower end of said cylinder with the lower portion of its rim in frictional engagement with the bottom wall of said drum whereby rotation of said drum causes said dispenser plate to move pieces of dough dropped through said cylinder on to said ramp.

3,899,276

ANNULAR EXTRUSION DIE WITH BACK PRESSURE CONTROL

Nickolas Sokolow, Roscoe, Ill., assignor to Beloit Corporation, Beloit, Wis.

Filed May 29, 1973, Ser. No. 364,523

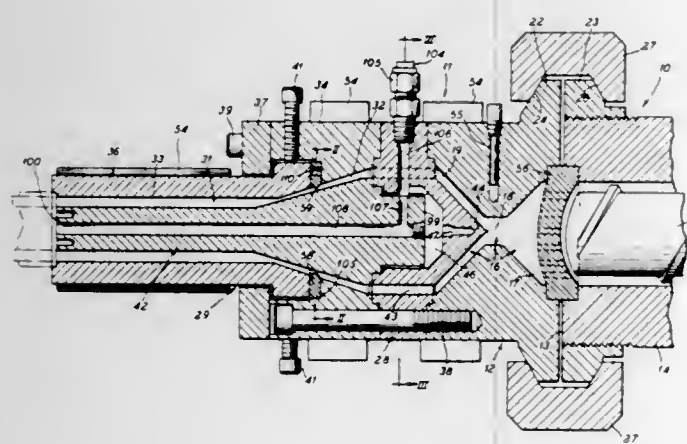
Int. Cl. B29d 23/04

U.S. Cl. 425—380

6 Claims

1. An extrusion die for making tubing, parisons, and the like, comprising in combination

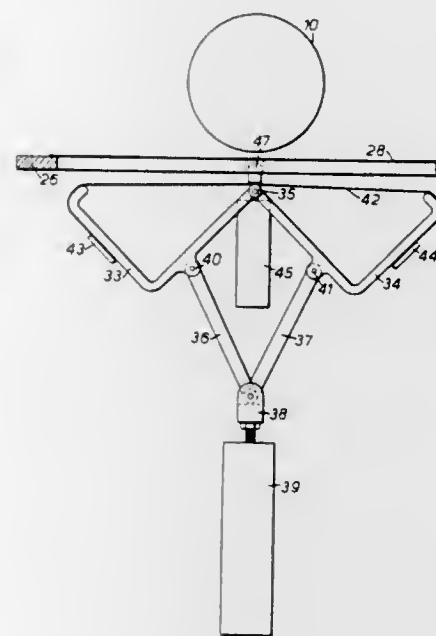
- A. a die adapted for mounting in face to face engagement with the face of a prechosen extruder, said die adapter defining therewithin a generally centrally located passageway.
- B. an annular spider means adjoining said die adapter, and having radially extending supporting fingers,
- C. an elongated die body means circumferentially adjoining said spider means through said supporting fingers, said die body defining therewithin an elongated cavity having a flared cross-sectionally circular entrance portion and a terminal, cylindrical land portion, said land portion having a predetermined ratio of the length thereof to the diameter thereof,
- D. elongated mandrel means supported by said spider means and continuously extending within said cavity in radially spaced relationship to said die body to define in combination with said spider means a passageway between said mandrel and said die body means and between said entrance portion and the end of said land portion, said passageway being annular in cross section except in the region of said spider means where the apertures between said supporting finger interconnect with said passageway,
- E. said die body means and said mandrel means in combination between said spider means and said land portion defining convergence in said passageway,



3,899,277
MOULDING MACHINES
 Alan William Winter, Cobham, England, assignor to Bowater Packaging Limited, London, England
 Filed Feb. 8, 1973, Ser. No. 330,590
 Claims priority, application United Kingdom, Feb. 8, 1972, 5793/72

Int. Cl. B29c 17/00
 U.S. Cl. 425—383

9 Claims



1. A moulding machine comprising in combination:
 a. a mould cavity
 b. a blank-receiving member, and
 c. transfer means for transferring a blank of sheet material to the said blank-receiving member,

wherein the transfer means comprises means for supporting the blank at a small distance from the blank-receiving member, means for holding a first part of the blank against the blank-receiving member and means for wrapping the remainder of the blank around the member so that the blank assumes the outer peripheral contour of at least part of the member, the wrapping means including a pair of pivoted arms, an end of each of which arms is operatively engageable with the blank, the blank-receiving member being provided with means for securing the blank to the member after the blank has been transferred to the member by the transfer means and the member being arranged to enter the mould cavity of the machine with the transferred blank secured to it; and wherein the holding means is movable to displace the said first part of the supported blank through said distance and into engagement with the blank-receiving member, and each arm is mounted for pivotal movement about a fixed pivot, pivotal movement of the arms bringing the said ends of the arms which engage the blank towards each other whereby the remainder of the blank extending in opposite directions from the said first part gradually engages the blank-receiving member.

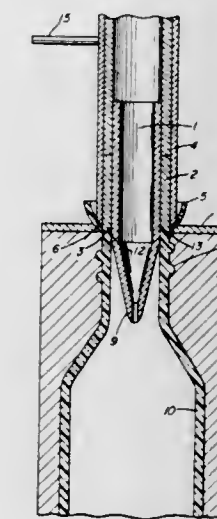
3,899,278
BLOW MOLDING APPARATUS
 William A. Fead, Westfield, N.J.; Thomas M. Glynn, Longmeadow, Mass.; Joseph F. Sbarra, Spring Valley, N.Y., and Alfred L. Bower, Lincoln Park, N.J., assignors to American Cyanamid Company, Stamford, Conn.
 Filed Dec. 17, 1973, Ser. No. 425,354
 Int. Cl. B29d 23/03

U.S. Cl. 425—387 B

1 Claim

1. An improved apparatus for blow molding a hollow plastic container including separable mold members for enclosing a parison into which air is blown causing the tube to conform to the inner configuration of the mold, the combination of a striker plate in annular form surrounding the neck portion of the container at the top of the mold with a portion of the

parison extending, a hollow blowing mandrel having a cutting sleeve surrounding the lower end of the mandrel, a blow pin sleeve with a serrated surface adjacent to the lower edge and being manually attached at the blow mandrel, and with means for causing rotation of the blow pin sleeve, the cutting edge of the cutting sleeve contacting the striker plate and the serrated surface of the blow pin sleeve contacting the extended portion of the parison with spring load pressure relationship, the blow pin sleeve of the container adapted to be rotated to sever the

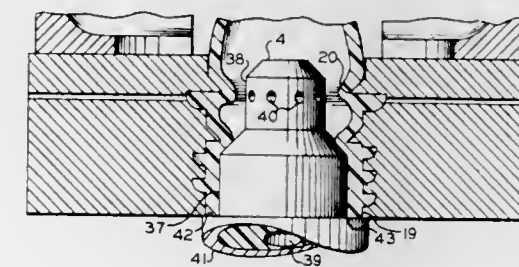


extended portion of the parison from the neck of the container after blowing, the improvement which comprises said cutting sleeve having a flat annular platform extending from the cutting edge before the start of a sealing surface forming edge which extends from above the lower surface, thereby imparting a raised sealing surface to the top of the container above the edge from which the extended portion of the parison has been severed, said edge being below, concentric with and outside of the sealing surface.

3,899,279
BLOW MOLDING APPARATUS
 Jimmie E. Hudson, and Jimmie L. Dean, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 15, 1974, Ser. No. 497,621
 Int. Cl. B29c 1/00, 17/07
 U.S. Cl. 425—387 B

8 Claims

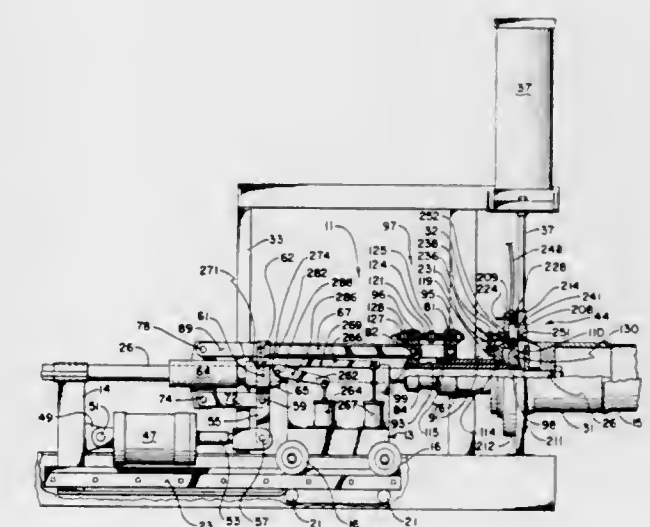


1. A blow mold for forming a container having a neck, said blow mold comprising:
 a. means forming a mold portion having a container forming cavity therein with the mold having portions thereof relatively movable between mold open and closed positions;
 b. surfaces defining a bore for forming a container neck forming portion of said mold, said bore opening into the cavity of said mold and having a free first end and a second end adjacent said cavity;
 c. thread forming grooves in said surfaces for forming threads on one end of a container formed in said mold;
 d. a collar forming groove in said surfaces and positioned between said thread forming grooves and said second end for forming a collar on said container neck;

- e. a first rib extending outwardly from each of said surfaces into said bore and positioned between said collar forming groove and said thread forming grooves and forming a flow restriction therebetween;
 and
 f. a second rib extending outwardly from each of said surfaces into said bore and positioned between said collar forming groove and said second end for restricting movement of container material away from said collar forming groove.

3,899,280
SWAGING UNIT FOR THERMOPLASTIC PIPE
 John M. Bailey, Elk River, and Richard C. Longfellow, Long Lake, both of Minn., assignors to The Crete Companies, Inc., Elk River, Minn.
 Filed June 5, 1973, Ser. No. 367,142
 Int. Cl. B29C 17/07
 U.S. Cl. 425—393

18 Claims



1. In a swaging unit for forming a bell and a gasket groove having an inner diameter in heated thermoplastic piping of the type having
 swage mandrel means having a forward end and a rearward end and a circumferential gap therebetween for inserting into the thermoplastic pipe to form a bell on one end thereof;
 gasket groove forming means having a portion which may be radially extended through the circumferential gap in the swaging head while the swage mandrel is positioned in the pipe; and
 translating means for expanding the gasket groove forming means through the circumferential gap to form the gasket groove in the thermoplastic pipe;
 the improvement wherein the gasket groove forming means comprise:

a plurality of nonelastic segments formed from a rigid material the segments being at all times coaxially and circumferentially aligned each with the other, each segment having gasket groove forming edges and being positioned relative to the translating means so that axial movement of the translating means expands the gasket forming portions of the segments radially in continuous coaxial and circumferential alignment through the circumferential gap and into the softened thermoplastic pipe to form the gasket groove in the pipe; and further comprising control means operatively connected to the translating means to precisely control the extent of translation whereby the outward radial expansion of the segments and thus the inner diameter of the gasket groove so formed is precisely controlled.

3,899,281

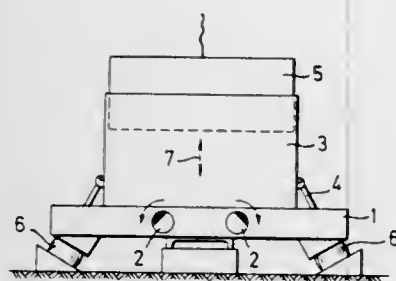
VIBRATOR APPARATUS, ESPECIALLY FOR PRODUCING LARGE SHAPED CARBON MEMBERS
Willy Jakobs, Porz-Grengel, Germany, assignor to Klockner-Humboldt-Deutz Aktiengesellschaft, Cologne, Germany
Filed Mar. 26, 1973, Ser. No. 344,600

Claims priority, application Germany, Mar. 24, 1972, 2214352

Int. Cl. B29b 1/08; B29c 1/16

U.S. Cl. 425-432

3 Claims



1. In vibrator apparatus for producing cast members of granular material comprising a foundation, a vibratory table having an oscillating drive, solid elastic spring means for vibratorily mounting said vibratory table on said foundation, and a molding box connected to said vibratory table; wherein said spring means are disposed between said vibratory table and said foundation so that, in direction of vibration, said spring means are at least partly stressed in shear, said spring means comprising a plurality of pairs of spring members that are inclined at an angle of between 30° and 60° with respect to the plane of said foundation, each of said respective pairs of said spring members forming a spring unit, the members of each pair being mutually inclined symmetrically so that the unit has the shape of a peaked roof, the members of each pair being held in position by force of gravity.

3,899,282

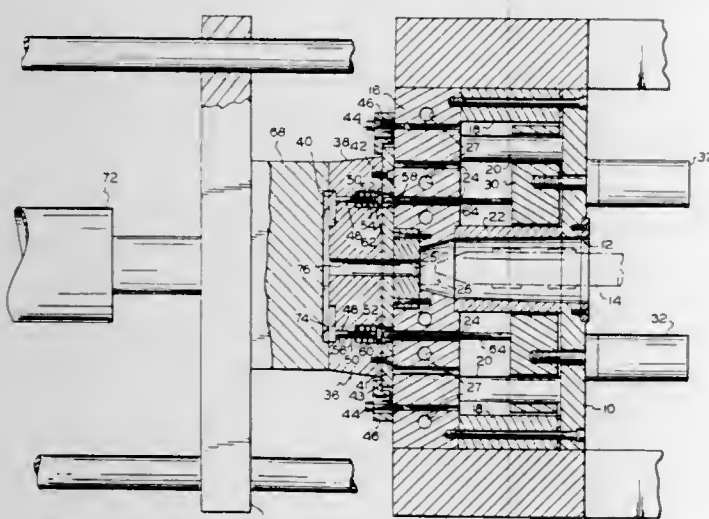
EJECTOR APPARATUS FOR MOLDING MACHINE
Edwin L. Jesse, West Caldwell, N.J., assignor to Evans Products Company, Portland, Oreg.

Filed Mar. 8, 1973, Ser. No. 339,316

Int. Cl. B28b 7/10

U.S. Cl. 425-444

7 Claims



7. In an injection molding machine having a fixed platen and a movable platen for mounting thereon of a core side and a cavity side, respectively, of a mold, said fixed platen having a plurality of openings therethrough for slidably receiving ejector rods in selected ones of said openings, an ejector plate mounted rearwardly of said fixed platen for movement toward and away from said fixed platen,

means operatively connected to said ejector plate for moving said ejector plate toward said fixed platen to cause said ejector rods to be extended from the forward surface of said fixed platen,

a core side of a mold mounted on said fixed platen and having in the front surface thereof opposite said fixed platen a cavity defining at least a portion of a part to be injection molded,

said mold core side having a plurality of openings therethrough extending from said cavity to the rear surface abutting said fixed platen, said openings being counter-bored from said rear surface,

a plurality of ejector pins mounted one in each of said mold core side openings for sliding movement therein, said ejector pins each comprising an enlarged head slidably received with the counterbore of the corresponding opening,

stop means operatively associated with each of said ejector pins to limit the rearward movement of said pins,

spring means operatively arranged with each of said ejector pins for biasing the head thereof against said stop means,

said ejector pins being so positioned that the head of each will be engaged by an ejector rod upon forward movement of the latter thereby to cause forward movement of said ejector pins to eject a part molded in said cavity,

and a plurality of ejector rods arranged within said openings in said fixed platen, there being an ejector rod aligned one with each of said ejector pins.

3,899,283

APPARATUS FOR EXTRUDING RESIN FILM WITH WEAKENED TEAR LINES

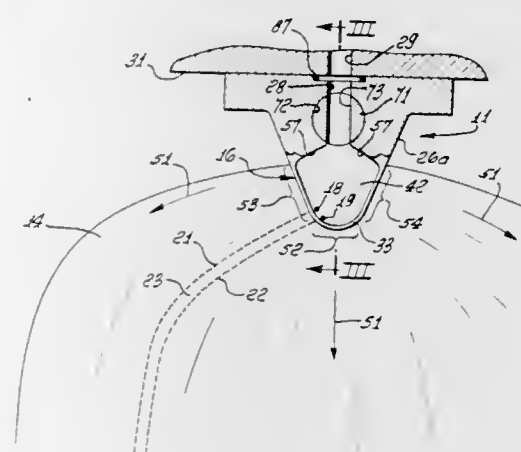
Marvin E. Wallis, 20741 Horace St., Chatsworth, Calif. 91311

Filed Jan. 15, 1973, Ser. No. 323,992

Int. Cl. B29d 7/04

U.S. Cl. 425-461

11 Claims



1. A film forming head for extruding a biaxially oriented film with weakened tear line, comprising head structure defining a cavity for receiving viscous resin material under pressure, means including a thin-lip orifice extending about a curvilinear portion of the cavity for extruding a biaxially oriented film that is wider than the orifice, and means for obstructing the flow of said resin outwardly of said orifice during extrusion at a location where the resin flow is bi-directional, whereby the extruded biaxially oriented film is formed with at least one weakened tear line.

3,899,284

FORM OF AMMONIUM TETRAMOLYBDATE AND METHOD OF PREPARATION

Robert W. Stanley, Kirkland, Canada, assignor to Noranda Mines Limited, Toronto, Canada

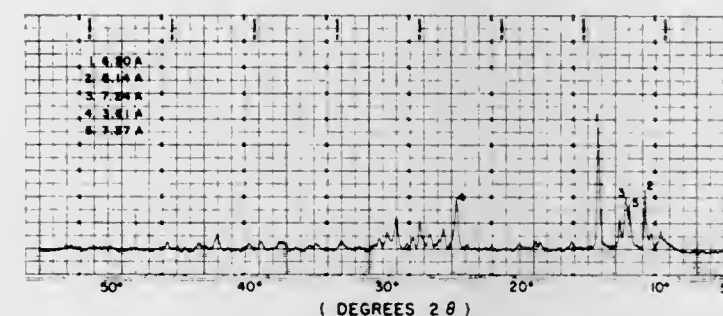
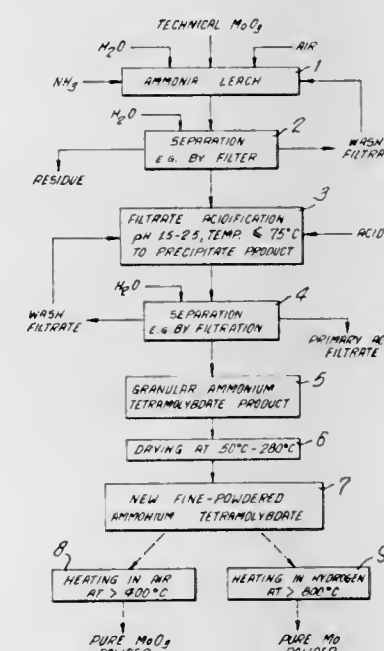
Filed Aug. 10, 1973, Ser. No. 387,500

Claims priority, application Canada, Apr. 19, 1973, 170022

Int. Cl. C01g 39/00

U.S. Cl. 423-593

20 Claims U.S. Cl. 431-152



1. A new fine-powdered form of ammonium tetramolybdate having an average particle size of up to about 5μ and having 60.65 percent ± 0.05 percent by weight of Mo and 5.6 percent ± 0.1 percent by weight of ammonia calculated as NH₄⁺, the remainder being oxygen, water of hydration and incidental impurities, and an X-ray diffraction pattern with peaks, by order of importance, at 6.20 Angstroms, 8.14 Angstroms, 7.24 Angstroms, 3.61 Angstroms, and 7.37 Angstroms.

4. Process for the preparation of a fine-powdered ammonium tetramolybdate compound having an average particle size of up to about 5μ which comprises:

- subjecting technical grade molybdic oxide to ammonia leach;
- removing residue from the leach to obtain an ammonium molybdate solution;
- acidifying said solution at a temperature of up to about 75°C to a pH of about 1.5 - 2.5 to precipitate a granular ammonium tetramolybdate product having an average particle size greater than 5μ;
- separating said granular product from the acidified solution; and
- drying said granular product at a temperature of between about 50°C and 280°C to produce the fine-powdered ammonium tetramolybdate compound.

20. Process for converting ammonium tetramolybdate defined in claim 1, into high purity molybdic oxide having an average particle size of between 2 and 5μ as determined by Fisher Sub-Sieve Sizer, which comprises heating said ammonium tetramolybdate in air at a temperature in excess of 400°C without any associated dissolution or atomization of the product.

3,899,285

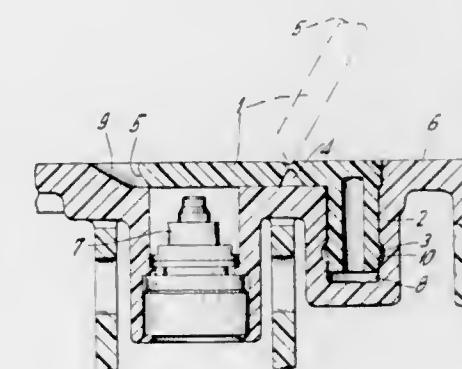
CIGARETTE LIGHTER COVER

Ronald Jack Christmas, Leatherhead, England, assignor to Ronson Products Limited, Woodbridge, N.J.
Filed Feb. 21, 1974, Ser. No. 444,557

Claims priority, application United Kingdom, Feb. 23, 1973, 9139/73

Int. Cl. F23Q 25/00

6 Claims



1. A cigarette lighter casing comprising a body having a first recess and a cover fitted within and displaceably mounted in said first recess, said first recess having a second recess formed therein extending inwardly into said body from said first recess, said cover comprising an integral molded member formed of plastic material and including a flat planar body portion, a hinge integrally formed in said body portion and dividing it into a first part of said body portion and a second part of said body portion, a protuberance formed on said first part of said body portion and spaced from said hinge and extending generally perpendicularly from said planar body portion, said protuberance being configured to extend in closely fitting engagement to said second recess and to be releasably secured therein so that said first part of said body portion can be held in place on said body and said second part of said body can be pivotally displaced relative to said first part about said hinge, a third recess extending from said first recess and inwardly into said body and having a filling valve therein, said second part of said body portion extending over said third recess in a closed position of said cover.

3,899,286

CIGARETTE LIGHTER HAVING ORIENTATION SENSITIVE VALVE ACTUATION MEANS

John C. Lockwood, Atlanta, and Harry L. Vaughan, Lawrenceville, both of Ga., assignors to Scripto, Inc., Atlanta, Ga.

Filed Aug. 23, 1974, Ser. No. 500,043

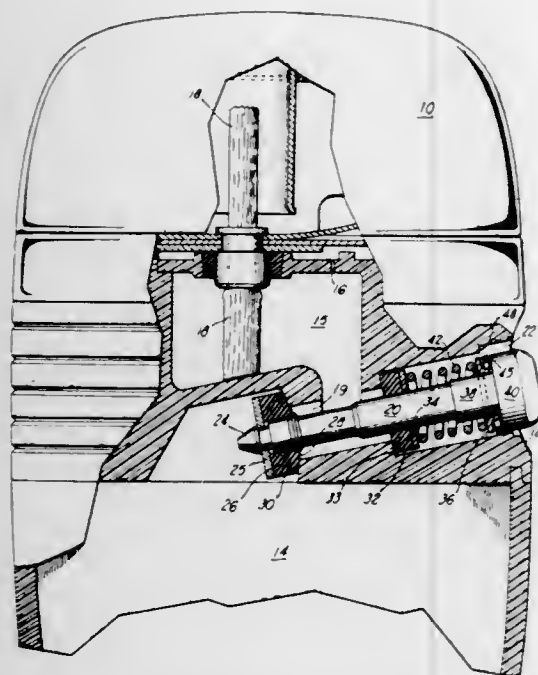
Int. Cl. F23D 3/18

U.S. Cl. 431-321

11 Claims

1. A lighter having a housing defining a main fuel reservoir and an auxiliary fuel reservoir in fluid communication with ambient air and with said main fuel reservoir; a wick extending from within said auxiliary fuel reservoir to ambient air; valve means for controlling the flow of fuel between said main fuel reservoir and said auxiliary fuel reservoir; spring means biasing said valve means towards a valve closed position; and valve actuation control means for inhibiting movement of said valve means from said valve closed position to a valve open position when said auxiliary fuel reservoir is not elevated above said

main fuel reservoir and for permitting movement of said valve means from said valve closed position to a valve open position



when said auxiliary fuel reservoir is elevated above said main fuel reservoir.

3,899,287

METHOD OF HEATING METALLIC MATERIAL

Bo Goran Hamrin, Fagersta, and Rune Peterson, Vasteras, both of Sweden, assignors to Granges Engineering Aktiebolag, Vasteras, Sweden

Filed Feb. 27, 1973, Ser. No. 336,353

Claims priority, application Sweden, Feb. 29, 1972, 2543/72

Int. Cl. F27b 5/04, 9/58

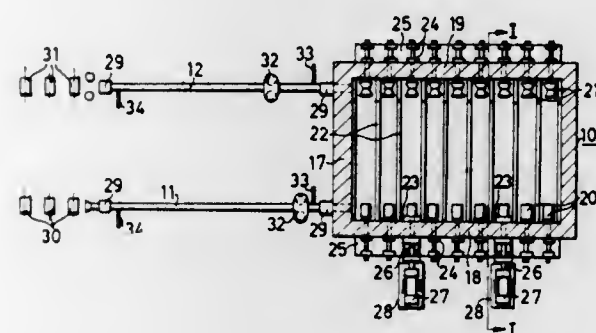
U.S. Cl. 432-23

2 Claims

1. A continuous method of heating metallic material in a substantially gas-tight furnace in a manner to substantially avoid changes in the chemical composition of the surface

portions of the material, said gas-tight furnace being provided with at least one feed valve, which is held closed against the surrounding atmosphere when placed in communication with the furnace space and which is held closed against the furnace space when placed in communication with the surrounding atmosphere, for feeding the material batchwise into and out of the furnace, the method comprising the steps of:

- charging the material substantially free from oxygen-containing coatings into the furnace;
- heating the material in said furnace in the absence of burning fuel within the actual furnace space;
- maintaining an atmosphere in said furnace space which is substantially in a chemical balance with the composi-



tion of the material being heated at the relevant heating temperature by constantly retaining substantially all of the gas forming said atmosphere in the furnace space and by allowing gas capable of reacting chemically with the material to enter the furnace space as said material is fed into and out of the furnace in restricted quantities insufficient to destroy said balance;

- flushing the feed valve with a gas which is substantially inert with respect to said material at least before discharging a material batch from the furnace;
- subjecting the feed valve to a subpressure at least before discharging a material batch; and
- using material batches each having a volume which is only slightly smaller than the cubic capacity of the feed valve.

CHEMICAL

3,899,288

KERATINIC FIBRES OXIDATION DYEING COMPOSITIONS CONTAINING A CARBONATE OF AN ALKALI METAL AMINO ACID

Jean Galerne, 74 rue de la Folie Regnault, Paris 14^e, France
Continuation of Ser. No. 204,379, Dec. 2, 1971, abandoned.

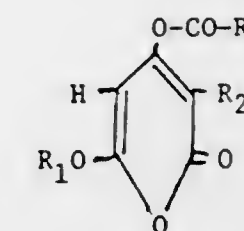
This application May 20, 1974, Ser. No. 471,826

Int. Cl. A61k 7/12

U.S. Cl. 8-10.2

9 Claims

1. A composition for dyeing keratinic fibres and human hair comprising an aqueous mixture containing about 0.2 to 15 wt. % of an oxidation dyestuff precursor selected from the group consisting of p-phenylenediamine, p-toluylenediamine, m-toluylenediamine, nitro p-phenylenediamine, 2,4-diamino anisol sulfate, p-N-methylamino phenol sulfate, resorcinol, hydroquinone and mixtures thereof and about 1 to 10 wt. % of a carbonate of an alkali metal salt of an amino acid as an alkaliizer, said amino acid being selected from the group consisting of glycine, lysine, methionine, tyrosine, glutamic acid, leucine, valine and alanine, and said alkali metal being selected from the group consisting of sodium, potassium and lithium.



in which R₁ is methyl, ethyl or propyl, and R₂ and R₃ are long chain alkyl groups containing from 12 to 17 carbon atoms.

3,899,291

PROCESS FOR THE SEMI-CONTINUOUS DYEING OF SYNTHETIC TEXTILE ARTICLES

Hans-Ulrich von der Elitz, Frankfurt am Main, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Mar. 26, 1973, Ser. No. 344,968

Claims priority, application Germany, Mar. 29, 1972, 2215297

Int. Cl. D06P 5/00

U.S. Cl. 8-174

3 Claims

1. In a process for the semi-continuous fixation of heat-fixable dyestuffs upon flat structures made from texturized polyester fibers, wherein a textile material that has been padded or printed with a dyestuff and an adjuvant is wound up on a perforated cylinder and said cylinder loaded with the textile material is placed in the form of a skein into a pressure vessel, the improvement which comprises: reducing the pressure in said pressure vessel to less than atmospheric pressure; introducing into said pressure vessel liquid water at a temperature of 110° to 135°C, substantially free of dyestuffs and other adjuvants; and permitting the heated water to act upon the dyestuffs padded or printed upon the textile material, thereby exploiting the pressure difference between the water introduced into and the textile material in the pressure vessel.

3. In a process for the semi-continuous fixation of heat-fixable dyestuffs upon flat structures made from texturized polyester fibers, wherein a textile material that has been padded or printed with a dyestuff and an adjuvant is wound up on a perforated cylinder and said cylinder loaded with the textile material is placed in the form of a skein into a pressure vessel, the improvement which comprises: introducing liquid water under superatmospheric pressure and at a temperature of 110° to 135°C to said pressure vessel, the interior of which is under normal atmospheric pressure.

3,899,292

PROCESS FOR CRUMPLING SYNTHETIC SUEDE

Kaoru Okazaki, Otsu; Kenkichi Yagi, Kyoto; Miyoshi Okamoto, Takatsuki; Koji Watanabe, Otsu; Toyohiko Hikota, Godocho, and Masayoshi Kubo, Kusatsu, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Mar. 6, 1973, Ser. No. 338,565

Int. Cl. D06p 7/00

U.S. Cl. 8-17

18 Claims

1. A process for preparing synthetic suede, said suede comprising a napped needle-punched fabric comprising a multiplicity of fibers of superfine denier into which polyurethane is impregnated, said process comprising repeatedly crumpling said napped sheet by passing it together with a dye liquid through an area of reduced cross-section according to the relationships:

$$<2 S/A < 22 \quad (1)$$

$$<10 S < 300 \text{ (cm}^2\text{)} \quad (2)$$

wherein S is the reduced cross-sectional area and A is the cross-sectional area of the napped sheet (cm²), said napped

3,899,290

FABRIC WATERPROOFING PROCESS

Edward S. Rothman, Glenside, Pa.; Stephen S. Hecht, Princeton, N.J., and Gordon G. Moore, Willow Grove, Pa., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed May 28, 1974, Ser. No. 473,476

Int. Cl. D06M 13/20

U.S. Cl. 8-120

5 Claims

1. A process for waterproofing fibrous cellulosic and fibrous proteinaceous materials comprising immersing the material to be waterproofed in a solution of an α -pyrone of the formula

sheet having naps of superfine denier fiber on at least one surface thereof and having a thickness of about 0.2-4.0 mm and a width of about 5-200 cm, and comprising (a) nonwoven fabric made up of 0.1-0.3 denier superfine staple fibers having a breaking strength of below 3 grams and an elongation at break of 60-180 percent, said fibers being adhered to (b) a polyurethane elastomer comprising the reaction product of a diol mixture consisting essentially by weight of 20-40 parts of polycaprolactone diol having a molecular weight of about 1000-3000 and 60-80 parts of polytetramethyleneetherglycol having a molecular weight of about 1000-3000 with an organic diisocyanate and a diamine chain extender and repeatedly contacting the suede with the dye liquid after the suede emerges from the said area of reduced cross-section.

3,899,293

METHOD FOR INHIBITING THE CORROSION OF IRON AND ALLOYS THEREOF IN AN AQUEOUS ENVIRONMENT WITH SULFITE COMPOSITIONS

Harley E. Bush, Houston, Tex., assignor to NL Industries, Inc., New York, N.Y.

Filed Aug. 28, 1973, Ser. No. 392,344

Int. Cl.² C09K 15/02, 15/32; C23F 11/16, 11/18

U.S. Cl. 21-2.7 A

12 Claims

1. In a method of inhibiting the corrosion of iron and alloys thereof in contact with an aqueous system containing dissolved oxygen and a metallic cation selected from the group consisting of ferrous, cobaltous, nickelic, manganous, cupric, and mixtures thereof, comprising adding to said system an aqueous sulfite solution containing a sulfite compound selected from the group consisting of alkali metal sulfites, alkali metal bisulfites, ammonium sulfites, ammonium bisulfites, and mixtures thereof, in an amount sufficient to provide a residual sulfite ion concentration in said system of from 20 to 100 ppm after said added sulfite compound and said oxygen have reacted, and wherein the concentration of said cation is sufficient to catalyze the reaction of said sulfite compound and said oxygen, the improvement which comprises:

adding to said aqueous system an aqueous sulfite solution, said sulfite solution being composed of from 5% up to saturation of said sulfite compound, and a water soluble organic polyphosphonate containing at least two phosphonic acid groups per molecule, said polyphosphonate being present in a concentration of from 1-20% by weight of said sulfite compound in order to inhibit the reaction of said sulfite compound with atmospheric oxygen.

3,899,294

METHOD FOR AUTOMATIC FEED FORWARD CONTROL OF EFFLUENT pH

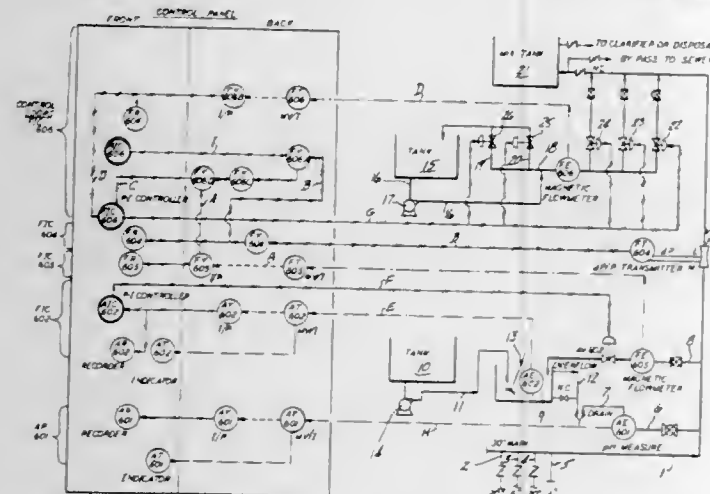
Peter G. Magiros, Houston, Tex., assignor to Olin Corporation, New Haven, Conn.

Filed July 18, 1974, Ser. No. 488,620

Int. Cl.² G05B 13/02; G05D 21/02

U.S. Cl. 23-230 A

10 Claims



1. A feed forward method for automatically controlling the pH of effluent stream comprising:

- continuously titrating upstream a slip stream of said effluent to a pH corresponding to a selected set point on a pH controller having proportional and integral response with a titrating stream of rapidly reacting neutralizing agent, the flow of either said slip stream or said titrating stream being constant while the flow of the other is automatically regulated;
- continuously monitoring the instantaneous flow rate of the stream whose flow rate is automatically regulated and transmitting a signal A, corresponding to the flow rate of said regulated stream;
- continuously monitoring the instantaneous flow rate of said effluent stream and transmitting a signal B corresponding to the flow rate of said effluent stream;
- conditioning signals A and B to automatically provide a signal C producing a variable set point on a dilution controller, said set point controlling the instantaneous flow rate of a stream of neutralizing agent to be added to said effluent stream to produce an outfall pH substantially corresponding to the pH represented by said selected set point.

3,899,295

INTEGRITY INDICATOR

Donald F. Halpern, Whitestone, N.Y., assignor to Bio-Medical Sciences, Inc., Fairfield, N.J.

Filed Nov. 23, 1973, Ser. No. 418,486

Int. Cl. B65b 31/02; G01n 31/22

U.S. Cl. 23-253 TP

5 Claims



1. A visual package integrity indicator comprising a normally sealed package, a sensor means in communication with the interior of said package and visible from the exterior of said package, said sensor means including a pH sensitive dye system which displays a first color at normal atmospheric pH and a second color slightly above said normal atmospheric pH, and an artificial atmosphere within said package containing a quantity of basic gaseous material in a quantity sufficient to maintain said dye system in its second color when said package is sealed; the color of said dye system being reversibly responsive to the presence or absence of said gaseous material thereby indicating damage to the integrity of said normally sealed package.

3,899,296

WHOLE BLOOD ANALYSIS ROTOR FOR A MULTISTATION DYNAMIC PHOTOMETER

James C. Mailen, Oak Ridge, and Wayne F. Johnson, Loudon, both of Tenn., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed July 17, 1974, Ser. No. 489,305

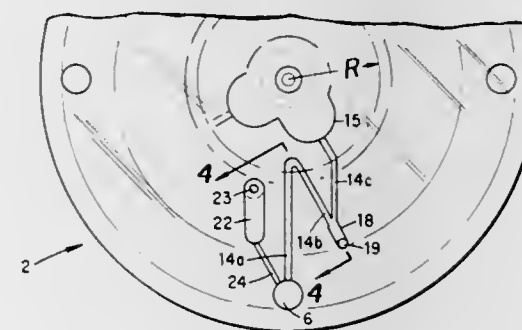
Int. Cl.² B04B 5/12; G01N 33/16, 21/00, 1/10

U.S. Cl. 23-259

5 Claims

1. An improved rotor for a photometric solution analyzer of the rotary cuvette type suitable for use in analyzing whole blood samples comprising a generally disk-shaped member defining:

- a plurality of sample analysis cuvettes disposed in a circular array for receiving liquid samples and reagents, said disk-shaped member having transparent walls adjacent said sample analysis cuvettes for permitting the passage-way of light therethrough;
- a centrally located static loading chamber having a loading port for receiving gross whole blood samples;
- a central fluid transfer cavity in open communication with the outside of said disk-shaped member;
- a continuous annulus positioned on a radius intermediate said cuvettes and said static loading chamber;
- at least one first passageway communicating between said annulus and said static loading chamber;
- at least one overflow chamber positioned intermediate said annulus and said static loading chamber;
- at least one second passageway communicating between said annulus and said at least one overflow chamber;



- a plurality of third passageways each of which is radially folded to form three radially extending interconnected passageway segments; a first segment extending radially from a respective sample analysis cuvette to a point centripetal to said overflow chamber, a second segment extending from the centripetal end of said first segment to a radius about equal to that of said annulus, and a third segment extending from the centrifugal end of said second segment to said central fluid transfer cavity;
- a plurality of connecting passageways extending between said annulus and the centrifugal ends of respective second and third segments of said third passageways;
- a magnetically actuated ball trap valve disposed in each of said connecting passageways; and
- means for injecting reagents into said sample analysis cuvettes.

3,899,297

BIOLOGICAL STAINING TECHNIQUE AND MIXTURE THEREOF

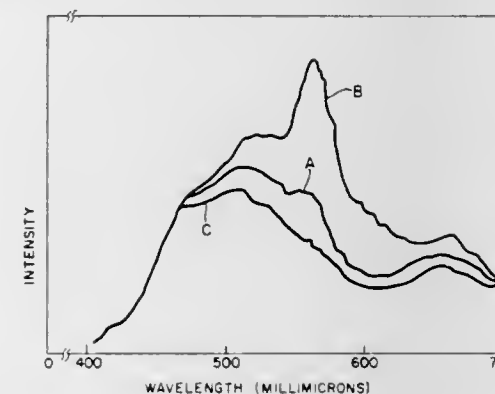
Tomas Hirschfeld, Framingham, Mass., assignor to Block Engineering, Inc., Cambridge, Mass.

Filed Dec. 19, 1973, Ser. No. 426,088

Int. Cl.² G01N 21/20, 33/16; C09B 69/00

U.S. Cl. 23-230 B

13 Claims



1. Method of characterising an unknown organic chemical compound, said method comprising,

staining said compound simultaneously in an equilibrium process with a mixture of at least two chemically compatible dyes each of which binds to said compound with a different binding energy said dyes being selected and in sufficient amount in said mixture so that when bound to said compound each dye provides spectral characteristics to the dyed compound sufficient to permit detection of the spectral characteristics of said dyed compound due to the other of said dyes;

exciting a spectral response in the dyed compound;

observing said spectral response at least at two different wavelength bands in the spectrum of said response, and comparing the intensities observed at said bands to obtain a value characteristic of the difference in the binding energies of said dyes to said compound.

3,899,298

METHOD AND APPARATUS FOR ANGIOTENSIN I DETERMINATION

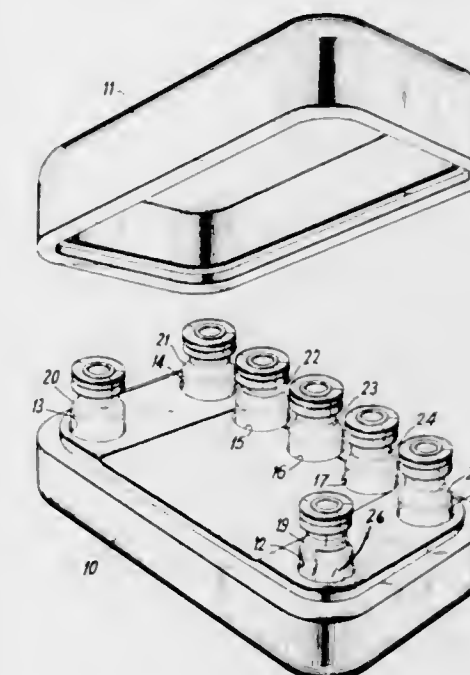
Raymond A. Szczesniak, Kendall Park, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Apr. 11, 1972, Ser. No. 242,956

Int. Cl. G01n 33/16

U.S. Cl. 23-253 R

3 Claims



1. Apparatus for determination of Angiotensin I comprising a carrier being compartmented to receive at least three vials and to maintain said vials in close confinement, a first vial comprising an acetic acid solution containing about 10 picograms of Angiotensin I per microliter, a second vial of Angiotensin I antiserum, and a third vial comprising an aqueous solution of ¹²⁵I Angiotensin I having a total activity of about 20 microcuries, and having therein a strip of paper, said paper impregnated with an anion exchange resin.

3,899,299

EXTRACTION APPARATUS

James D. Bushnell, Berkeley Heights, and Robert J. Fiocco, Summit, both of N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed May 21, 1973, Ser. No. 362,489

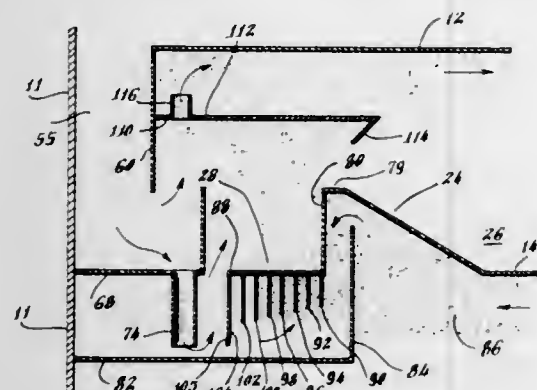
Int. Cl. B01d 11/04, 59/24

U.S. Cl. 23-270.5

9 Claims

1. In a vertical separating tower wherein first and second partially immiscible liquids of relatively high and low density respectively are charged to the tower and contacted thereby separating said liquids into a relatively light raffinate phase and a relatively heavier extract phase, said tower having a plurality of vertically spaced trays, a space between said trays wherein said raffinate phase settles into a layer which flows

beneath a lower surface of said trays and said extract phase settles into a layer which flows above an upper surface of said trays and downcomer means associated with each tray for providing a flow path for said first liquid or said extract phase from a location above a tray to a location beneath said tray and riser means associated with each tray for providing a flow path for said second liquid or raffinate phase from a location beneath a tray to a location above said tray, said riser means being horizontally spaced apart from said downcomer means and said riser means further comprising a seal box means adapted for laterally separating the space above a tray into a



dispersing zone and into a settling zone, said seal box means including aperture means comprising a surface having a plurality of apertures formed therein for more effectively dispersing said light liquid or said raffinate phase passing there-through, the improvement comprising a horizontally extending striker baffle plate positioned in the intertray space above said riser means, said striker baffle plate including means for the flow therethrough of only a portion of the raffinate phase which flows through the riser means from below, said striker plate including a flange segment forming an edge thereof and extending toward a principal bodied portion of the striker plate.

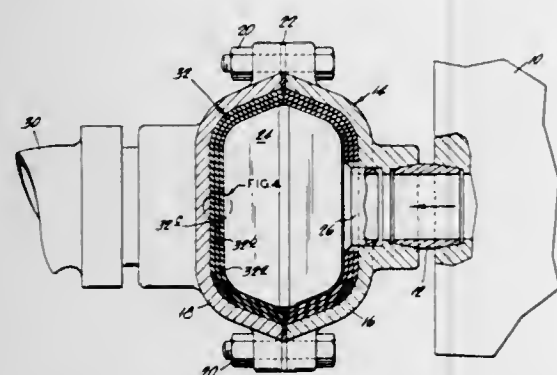
3,899,300

THERMALLY INSULATED EXHAUST GAS REACTOR
George D'Olier, Devon, Conn., assignor to Raybestos-Manhattan, Inc., Trumbull, Conn.

Division of Ser. No. 247,445, April 28, 1972, Pat. No. 3,821,063. This application Mar. 8, 1974, Ser. No. 449,475
Int. Cl. B01j 9/04; F01n 3/00; F23g 7/06

U.S. Cl. 23-277 C

5 Claims



1. An emission control device for converting atmospheric pollutants in the exhaust gas of an internal combustion engine to non-polluting forms comprising a reaction chamber of heat and corrosion resistant material, means for conducting internal combustion engine exhaust gas through said reaction chamber, container means surrounding and supporting said reaction chamber, and insulating means disposed between said reaction chamber and surrounding container means comprising at least two superimposed layers of an asbestos sheet in direct contact with one another, each of said layers of said sheet material comprising from about 75 to about 90 percent

by weight of chrysotile asbestos fibers, from about 10 to about 20 percent of an elastomeric binder comprising a copolymer of butadiene having a molecular weight of from about 150,000 to about 200,000 and from about 0 to about 10 percent of filler, the major portion of said asbestos fibers being oriented in a generally parallel relation with each other within said sheet, said sheet having been heat treated at a temperature of from about 525° to about 575°F., for a period of time to cause a weight reduction in said sheet of from about 8 to about 10 percent and to effect cracking of said elastomeric binder.

3,899,301

CONTINUOUS RENDERING APPARATUS

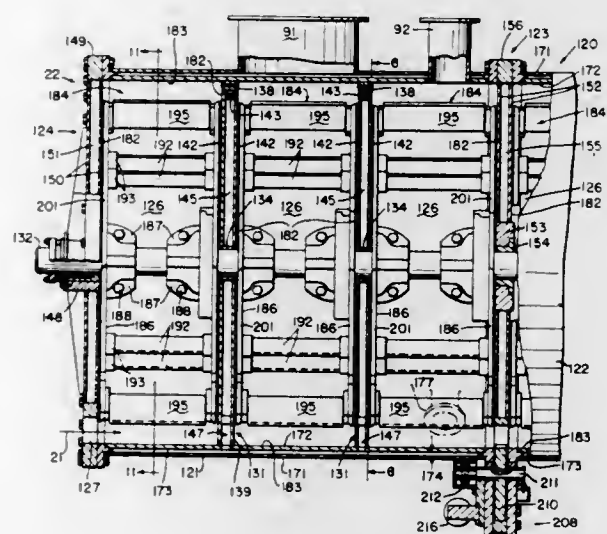
Dean K. Bredeson, Piqua, Ohio; John R. Harrison, Camden, S.C., and Earl A. N. Johnson, Edmonds, Wash., assignors to The French Oil Mill Machinery Company, Piqua, Ohio

Filed Apr. 24, 1972, Ser. No. 246,749

Int. Cl. B01d 43/00; B01j 3/00; C11b 1/12

U.S. Cl. 23-280

24 Claims



1. A cooker for a continuous rendering system comprising, a housing having a cylindrical heating surface extending along substantially its full length and having a pair of opposed ends, an inlet through one of said ends of receiving comminuted animal products, an outlet through the other of said ends for discharging said products after cooking thereof, at least one partition arranged between said ends and in fixed relationship to said housing, said partition having a pair of opposed planar heating surfaces, and dual-purpose means rotated within said housing for stirring comminuted particles during cooking thereof and simultaneously scraping both said cylindrical and said planar heating surfaces to prevent sticking and accumulation of products against said cylindrical and said planar surfaces to thereby cause efficient cooking, said dual-purpose means including separate means for scraping said cylindrical heating surface and separate means for scraping said planar heating surface.

3,899,302

CATALYTIC CONVERTER HOUSING

Melvin H. Wagner, Bartlett, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Nov. 23, 1973, Ser. No. 418,646

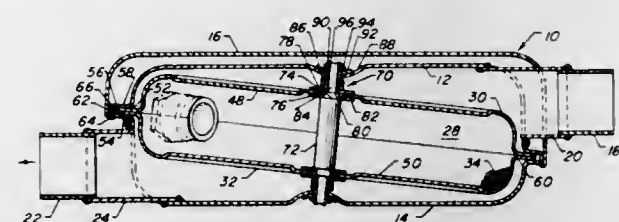
Int. Cl. B01J 8/02; F01N 3/15

U.S. Cl. 23-288 F

2 Claims

1. A catalytic converter assembly comprising a metal housing including an inlet housing cover portion and a metal outlet housing cover portion; a particulate catalyst retaining bed portion including a chamber defined by a pair of facing, dished, perforated metal inlet and outlet members; said pair of

dished members having peripheral, joined together, radially extending flange portions; each of said cover portions having peripheral flanges which extend radially beyond, and slidably engage, the flange portions on said dished members; at least one of said cover portions having an axially extending flange portion which is welded to the other cover portion at a location spaced radially outwardly of the flange portions of said dished members; said bed portion being free to slide in the plane of said flange portions in response to temperature differences between the metal housing and the bed portion; at least one spacer pin passing through said housing cover portions and said perforated members; said spacer pin having shoulder



portions spaced inwardly from its ends limiting movement of said perforated members toward each other; the end portions of said spacer pin projecting through apertures larger than said end portions which are formed in said housing cover portions; the cover portions being generally concavely shaped in the immediate area surrounding said pin ends; and retaining means on the ends of said at least one pin for preventing said cover portions from moving away from each other, a portion of said retaining means being shaped in a manner complementary to said concave shaped cover area so as to permit said retaining means to slide relative to said cover portion and said pin to pivot.

3,899,303

APPARATUS FOR THE CATALYTIC PURIFICATION OF EXHAUST GASES OF INTERNAL COMBUSTION ENGINES

Gerhard Gayser, Berkheim, Germany, assignor to J. Eberspacher, Germany

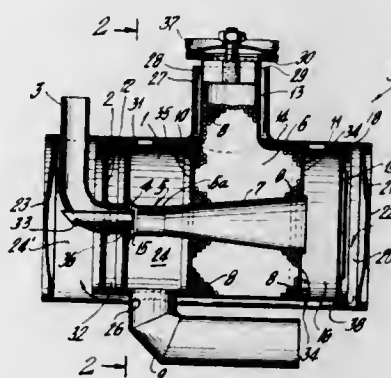
Filed Mar. 5, 1973, Ser. No. 337,947

Claims priority, application Germany, May 5, 1972, 2221970

Int. Cl. F01n 3/10, 3/14

U.S. Cl. 23-288 F

5 Claims



1. An apparatus for purifying exhaust gases, comprising a housing having an intermediate catalytic material chamber with a first chamber and a second mixing and reversing chamber on respective sides thereof, first and second perforated partitions in said housing on each side of said catalytic material chamber dividing said intermediate chamber from said first and second chambers but permitting the flow of gases therethrough, an aspiration tube having an inlet located in said first chamber and extending through said catalytic material chamber into said second chamber for the flow of exhaust gases from said first chamber into said second chamber, an exhaust gas delivery pipe connected into said first chamber and having a discharge terminating adjacent said aspiration tube inlet leaving a combustion air flow space between said exhaust gas delivery pipe and said aspiration tube for the

inflow of air along with the exhaust gases, means to deflect the exhaust gases and air backwardly from said second chamber back through said catalytic chamber for treatment in said catalytic chamber and for flow to said first chamber, a gas discharge in said first chamber for the discharge of the treated exhaust gases, wall means connected to said aspiration tube inlet and dividing said first chamber into an exhaust chamber which is adjacent said intermediate chamber and connected to said gas discharge, a third perforated partition spaced from said wall means, an inlet chamber located between said third perforated partition and said wall means, and combustion air supply means to supply combustion air through said third perforated partition into said inlet chamber, said exhaust gases in their passage from said exhaust gas delivery pipe into said aspiration tube inlet being cooled by the combustion air and acting to draw the combustion air into said inlet and through said aspiration tube for flow therethrough and into said second mixing and reversing chamber and then backwardly through said catalytic material chamber.

3,899,304

PROCESS OF GROWING CRYSTALS

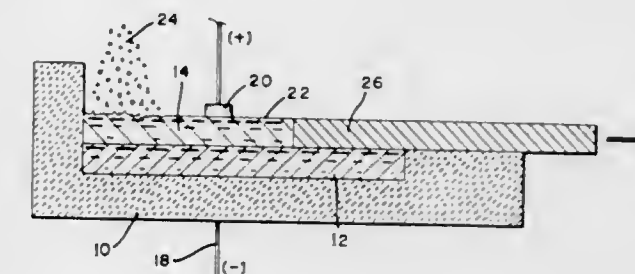
Robert C. Linares, Warren Twp., Somerset County, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

Filed July 17, 1972, Ser. No. 272,270

Int. Cl. B01j 17/20

U.S. Cl. 23-301 SP

12 Claims



1. A process for growing ionic crystals comprising
a. providing a molten support comprising a metal selected from the group consisting of tin, lead, platinum, aluminum, rhodium, iridium, molybdenum, tantalum, gallium, copper, gold, silver, tungsten and indium,
b. floating a melt of an ionic material selected from the group consisting of refractory oxides on said molten support, said molten support being immiscible with said ionic material,
c. maintaining at least a portion of said molten support at a temperature of at least the melting point of said ionic material,
d. growing a crystal from said ionic molten material while said material is supported on said molten support by reducing the temperature of said ionic molten material below its melting point, and
e. removing the grown crystal from said molten support.

3,899,305

INSERT FRAME FOR INSERT MOLDING

Raymond H. Hilgers, Schaumburg, and James P. Liautaud, Trout Valley, both of Ill., assignors to Capsonic Group, Inc., Elgin, Ill.

Filed July 23, 1973, Ser. No. 381,405

Int. Cl. B21c 37/00

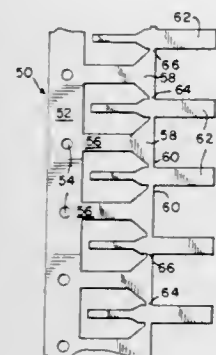
U.S. Cl. 29-193

12 Claims

1. An integral insert frame for use in molding a plurality of terminals into the wall of an injection molded housing, said frame comprising, in combination:

a plurality of elongated spaced-apart terminal portions arranged for insertion at spaced locations through said wall;

a plurality of barrier portions extending between adjacent ones of said terminal portions and attached thereto by means of frangible bridging portions; and



means including a carrier portion attached only to each of said barrier portions for maintaining said barrier portions in fixed spatial relationship whereby said terminal portions are aligned for insertion into said housing wall.

3,899,306

EXOTHERMIC BRAZING OF ALUMINUM

Walter V. Knopp, Wyckoff, and Paul J. Cascone, Haledon, both of N.J., assignors to A. Johnson & Co. Inc.

Filed Dec. 21, 1973, Ser. No. 427,366

Int. Cl.² B23P 3/14, 3/10

U.S. Cl. 29—197

8 Claims

1. A fluxless brazed aluminum joint comprising two abutting aluminum surfaces bonded together by virtue of the presence of nickel at said abutting surfaces in the form of an exothermic nickel-aluminum reaction product.

2. A method for the fluxless brazing of aluminum parts which comprises, abutting selected surfaces of said aluminum parts tightly together with a layer of finely divided metallic nickel brazing powder disposed at the interface thereof, and then heating the assembled parts to a temperature within the range of about 1000°F and 1200°F but below the melting points of said parts, whereby an exothermic reaction is effected at the interface of said parts between the finely divided metallic nickel powder layer and the selected abutting aluminum surfaces to form a strong fluxless brazed joint of the parts.

3,899,307

RESIN BONDED DIAMOND WHEELS WITH COPPER AND SILICON CARBIDE FILLERS

John R. Thompson, Westboro, Mass., assignor to Dresser Industries, Inc., Dallas, Tex.

Continuation of Ser. No. 88,502, Nov. 10, 1970, abandoned, which is a continuation-in-part of Ser. No. 812,453, April 1, 1969, abandoned, which is a continuation-in-part of Ser. No. 542,724, April 15, 1966, abandoned. This application Jan. 2, 1974, Ser. No. 429,996

Int. Cl.² C08J 5/14; E09K 3/14

U.S. Cl. 51—298

3 Claims

1. An abrasive grinding wheel having a relatively soft grinding grade comprising from 20 to 70% copper powder, from 5 to 45% silicon carbide filler, from 10 to 25% of a synthetic binder selected from the group consisting of a thermosetting polymer or linear aromatic polymer resin and from 3 to 30% diamond abrasive, the copper powder being in excess of 25% but less than 100%, by volume, of the silicon carbide filler, said copper powder and silicon carbide filler being finer than the diamond abrasive.

3,899,308

GAS PURIFICATION METHOD

Stig Arvid Petersson, Skelleftehamn, Sweden, assignor to Boliden Aktiebolag, Stockholm, Sweden

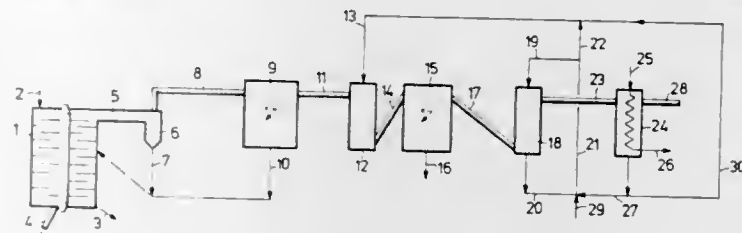
Filed Apr. 26, 1974, Ser. No. 464,465

Claims priority, application Sweden, May 2, 1973, 7361012

Int. Cl. B03c 3/01

U.S. Cl. 55—8

5 Claims



1. A process of selective purification of hot gases containing complex metallic dust in which the gas is first led to an electrostatic precipitator where material in particle form is separated after which the gas in a first cooling step undergoes a cooling and thereafter is caused to pass a second electrostatic precipitator and in a washing step is washed with water and finally, in a second cooling step undergoes an indirect cooling, characterized in that the hot gases in the first cooling operation are cooled by means of vapourization of injected water in such a maximum quantity that the heat present in the gas is sufficient to vapourize completely the added water and that the added water is derived from the water washing step and from condensation in the second cooling step, so that in the products condensed in the first cooling step and those separated in the water washing step are obtained in the second electrostatic precipitator in a dry condition.

3,899,309

AROMATIC POLYIMIDE, POLYESTER AND POLYAMIDE SEPARATION MEMBRANES

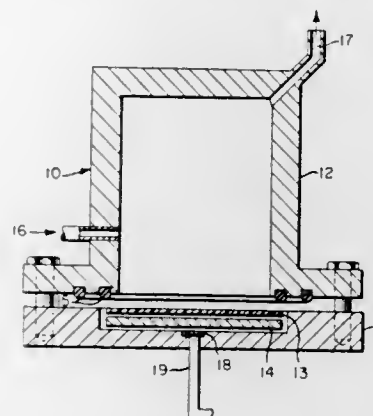
Harvey Herbert Hohn, Hockessin, Del., and John W. Richter, Kennett Square, Pa., assignors to E. I. du Pont de Nemours & Co., Wilmington, Del.

Continuation-in-part of Ser. No. 273,802, July 20, 1972, abandoned. This application Jan. 11, 1973, Ser. No. 322,800

Int. Cl. B01d 53/22, 31/00

U.S. Cl. 29—16

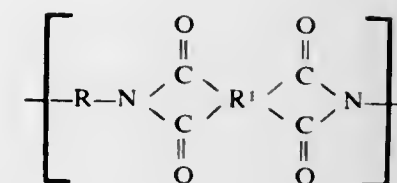
29 Claims



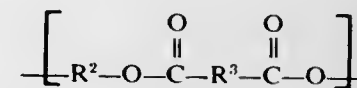
1. The process of separating fluids using a semipermeable membrane of which at least 50% by weight consists essentially of a polymer whose main chain has a repeating unit containing at least one group selected from the group consisting of aromatic imide, aromatic ester and aromatic amide groups, in which said repeating unit

- contains at least one rigid divalent subunit, the two main chain single bonds extending from which are not colinear,
- is sterically unable to rotate 360° around one or more of said main chain single bonds, and
- has more than 50% of its main chain atoms in aromatic groups,

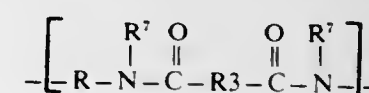
the said aromatic imide repeating unit having the formula



wherein R and R¹ are, respectively, a divalent and tetravalent organic radical, the said aromatic ester repeating unit having the formula



wherein each of R² and R³, alike or different, is a divalent organic radical, and the said aromatic amide repeating unit having the formula



wherein R and R³ are as defined above and R⁷ is hydrogen, lower alkyl or phenyl.

3,899,310

ALUMINA-ZEOLITE COMPOSITE ADSORBENTS FOR REFRIGERANTS

Donald G. Chi, and Hanju Lee, both of Columbia, Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Mar. 20, 1974, Ser. No. 452,718

Int. Cl.² B01D 53/04

U.S. Cl. 55—71

7 Claims

1. A method for removing fatty acid contaminants from a halocarbon refrigerant gas comprising contacting said gas with a composite alumina-zeolite adsorbent formed from blended zeolite and alumina powders, said zeolite component having a pore diameter of 3 to 6 angstroms and comprising 20 to 80 percent by weight of said composite and the remainder being alumina.

3,899,311

RECOVERY OF POWDER IN AN ELECTROSTATIC POWDER SPRAYING OPERATION

Herbert Rapp, Karlstr. 52, 7410 Reutlingen, Germany

Filed Apr. 18, 1973, Ser. No. 352,298

Claims priority, application Germany, Apr. 20, 1972, 2219314; Mar. 14, 1973, 2312560

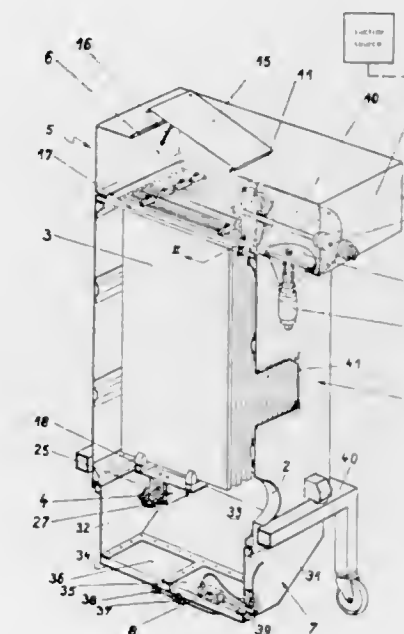
Int. Cl. B01d 46/08

U.S. Cl. 55—283

20 Claims

1. A powder recovery apparatus for use in EPS installations, comprising a filter chamber having an inlet portion and an outlet portion; filter means in said filter chamber intermediate said inlet and outlet portions thereof for intercepting powder particles from a gas stream admitted through said inlet portion; collecting means beneath said filter means; vibrating means operatively connected with said filter means for vibrating said filter means so as to release intercepted powder particles for collection of the same by said collecting means; a source of suction; a suction channel interposed between and communicating with said source and said outlet portion, said suction channel having an intake port for ambient air at atmospheric pressure from the exterior of the apparatus; first valve means between said outlet portion and said suction channel to open and close said outlet portion to suction; second valve means in said intake port; and control means connected to said valve means for displacing said first and second valve means between closed and open positions thereof so that said source draws said gas stream into and through said filter chamber and said suction channel when said first valve means

is in said open position thereof with attendant interception of the powder particles from said gas stream by said filter means, whereas ambient air from the exterior of the apparatus is drawn by the source into said suction channel through said



intake port when said second valve means is in said open position thereof and while said first valve means is in said closed position thereof with attendant interruption of the passage of gas stream through said filter chamber.

3,899,312

EXTRACTION OF ODORIZING SULFUR COMPOUNDS FROM NATURAL GAS AND REODORIZATION THEREWITH

August Kruis, and Heinz Karwat, both of Pullach, Germany, assignors to Linde Aktiengesellschaft Zentrale Patentabteilung, Munich, Germany

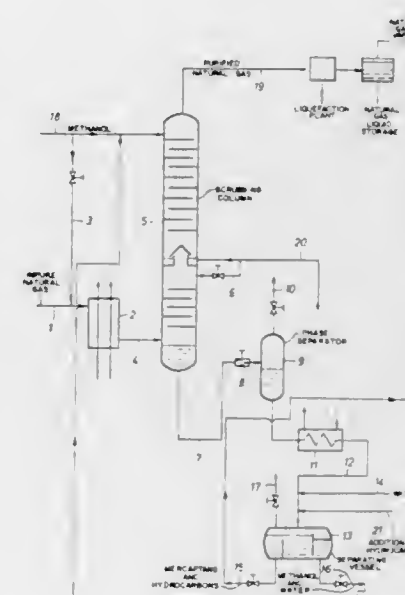
Filed Aug. 18, 1970, Ser. No. 64,757

Claims priority, application Germany, Aug. 21, 1969, 1942639

Int. Cl. F25j 3/00

U.S. Cl. 62—17

17 Claims



1. In a natural gas liquefaction process comprising prior to the step of liquefying the natural gas, the preliminary steps of scrubbing the natural gas with a polar organic scrubbing agent to remove odiferous organic sulfur compounds therefrom and then in a separating step, adding water to resultant loaded scrubbing agent to form an aqueous phase and a hydrocarbon

phase, the latter phase including hydrocarbons scrubbed out with said organic sulfur compounds, said organic sulfur compounds being distributed in both the aqueous and hydrocarbon phases, then liquefying and storing the scrubbed natural gas, and reevaporizing same during demand periods.

the improvement comprising adding additional liquid hydrocarbon, in said separating step, to said loaded scrubbing agent, in an amount to remove said organic sulfur compounds substantially completely and to transfer said organic sulfur compounds to said hydrocarbon phase, and recycling resultant liquid hydrocarbon phase containing said organic sulfur compounds to the scrubbed natural gas.

3,899,313

METHOD OF PRODUCING A LIGHT CONDUCTING FIBER HAVING A CORE AND A CASING

Josef Grabmaler, Unterhaching, and Rolf Plaettner, Otto-brunn, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

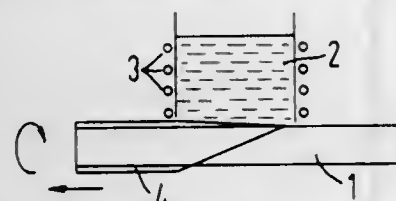
Filed June 27, 1973, Ser. No. 374,017

Claims priority, application Germany, July 13, 1972, 2234521

Int. Cl. C03c 25/02

U.S. Cl. 65—3

1 Claim



1. A method for producing a light conducting fiber consisting of a core formed of a quartz glass doped with TiO_2 and a surrounding casing formed of relatively pure quartz glass, whereby the refractive index of the casing is lower than that of the core, comprising the steps of: heating the core to a temperature which is slightly below its fusing temperature, immersing the core into a melt of relatively pure quartz glass, and withdrawing the core therefrom, said immersing being carried out at a reduced pressure relative to atmospheric pressure, said immersion being carried out by pulling said core beneath and in contact with said melt in a horizontal direction while simultaneously rotating said core about its longitudinal axis.

3,899,314

LENS MANUFACTURING PROCESS

Walter P. Siegmund, Woodstock, Conn., assignor to American Optical Corporation, Southbridge, Mass.

Filed Mar. 18, 1974, Ser. No. 452,177

Int. Cl. C03c 19/00

U.S. Cl. 65—23

10 Claims



1. The method of making a glass article having at least one finished surface of ophthalmic quality comprising the steps of: forming a first layer of glass of the type desired of said article, said first layer being of at least the length, width and thickness desired of said article;

covering at least one side of said first layer of glass with a second relatively thin layer of a removable glass during one stage of the forming of said first layer and fusing the

covering layer of glass interfacially to said first layer of glass, the combination of said layers of glass constituting a preform of said article;

flattening said preform to a degree of precision producing a finish of ophthalmic quality upon said first layer of glass adjacent said covering layer;

heat softening and shaping at least a portion of said preform to at least the approximate shape desired of said article; and

removing said covering layer of glass from said portion of said preform to expose the underlying surface of said first layer of glass, said underlying surface constituting said finished surface of said article.

3,899,315

METHOD OF MAKING GLASS CLAD GLASS LENSES

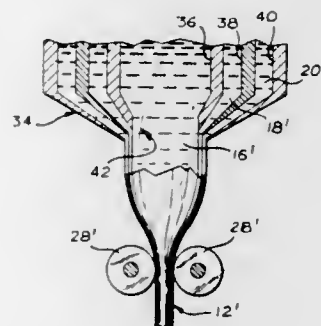
Walter P. Siegmund, Woodstock, Conn., assignor to American Optical Corporation, Southbridge, Mass.

Filed Apr. 15, 1974, Ser. No. 460,845

Int. Cl. C03b 19/00, 11/08

U.S. Cl. 65—23

5 Claims



1. The method of making a glass clad ophthalmic lens comprising the steps of:

forming a first thick layer of glass of the type desired of the major portion of said lens, said glass having a predetermined index of refraction and coefficient of expansion and said layer being of at least the length, width and thickness desired of said lens;

covering at least on side of said first layer of glass with a second relatively thin layer of a second glass having an appreciably lower coefficient of expansion than that of said first layer glass;

covering said second layer of glass with a third layer of a removable protective glass;

fusing with the application of heat said first, second and third layers of glass interfacially to one another at one stage of the formation of the combination thereof, said heat placing said first layer of glass in tension and said second layer glass of lower coefficient of expansion in compression, the fused combination comprising a preform of said lens;

flattening said preform to a degree of precision producing a finish of ophthalmic quality upon said second layer of glass adjacent said third layer;

shaping at least a portion of said preform to at least approximately the shape desired of said lens; and

removing said third layer of protective glass from said shaped portion of said preform to expose the underlying surface of said second layer of glass, said underlying surface thus constituting a finished surface of said lens with said second layer of glass being in compression and said first layer of glass under tension whereby said resulting lens is rendered highly resistant to damage by impact.

3,899,316

BENDING OF GLASS SHEETS

Robert Ehlers, Redditch, England, assignor to Triplex Safety Glass Company Limited, London, England

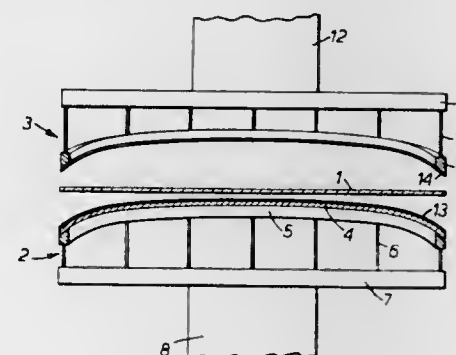
Filed Mar. 12, 1974, Ser. No. 450,375

Claims priority, application United Kingdom, July 20, 1973, 34708/73

Int. Cl. C03B 23/02

U.S. Cl. 65—106

12 Claims



1. A method of bending a glass sheet, comprising heating the sheet to a bending temperature and engaging opposite faces of the sheet with complementary bending surfaces at least one of which is a surface of resilient layer of aluminosilicate fibre mat material of non-oriented fibres disposed in random directions throughout the thickness of the layer and a binder which binds the fibres together, which mat material has the fibres so arranged that the volume of the mat includes from 85 percent to 95 percent free air space between the fibres.

3. A bending die for use in die bending a hot glass sheet, comprising a metal die shaped to the desired configuration of the sheet and on said die a resilient facing layer of aluminosilicate fibre mat material of non-oriented fibres disposed in random directions throughout the thickness of the layer and a binder which binds the fibres together, which mat material has the fibres so arranged that the volume of the mat includes from 85 percent to 95 percent free air space between the fibres.

3,899,317

GLASS BATCH LOG CONTROL DEVICE AND METHOD FOR USING

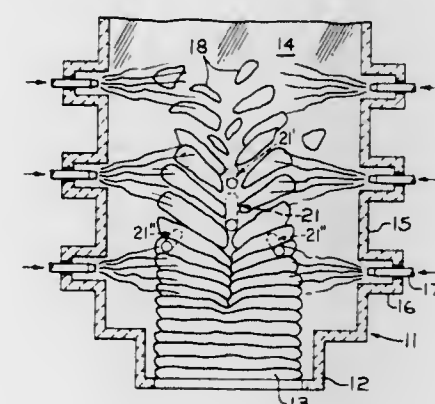
Robert B. Heithoff, Cumberland, Md., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed July 23, 1973, Ser. No. 381,467

Int. Cl. C03b 5/20

U.S. Cl. 65—135

8 Claims



1. In an apparatus for the manufacture of glass comprising a glass melting furnace having a bottom, side walls, a front wall, a back wall and a roof; further having, in the vicinity of said back wall, means for charging glass batch materials into said furnace; further having, in the vicinity of said front wall, means for discharging molten glass from said furnace; and

further having means for supplying heat to at least a portion of said furnace for melting glass batch materials forming molten glass therefrom; wherein a portion of said furnace is for moving glass batch materials floating on molten glass in a general direction away from said back wall and toward said front wall while melting said floating glass batch materials; the improvement comprising

an elongated anchoring element extending downwardly in said furnace at a location spaced from said back wall yet where floating batch materials are encountered, said anchoring element having a downwardly extending portion and, at its lower extreme, an outwardly extending portion adapted for contacting the upper portion of floating batch materials and imposing a drag upon the floating batch materials for controlling the movement of the floating batch materials in said furnace, said elongated anchoring element being sufficiently thin so as not to damage said floating batch materials.

3,899,318

HERBICIDAL

1,5-DITHIA-2,4,6,8-TETRAZACYCLOOCTANE-3,7-DIONE

Philip S. Magee, Ignacio, Calif., assignor to Chevron Research Company, San Francisco, Calif.

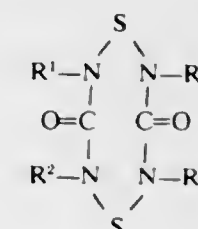
Division of Ser. No. 341,005, March 14, 1973, Pat. No. 3,853,853. This application Sept. 30, 1974, Ser. No. 510,272

Int. Cl. A01n 9/14

U.S. Cl. 71—90

12 Claims

1. An herbicidal composition comprising an herbicidally effective amount of a compound of the formula



wherein R^1 , R^2 , R^3 and R^4 individually are hydrogen, lower alkyl of 1 to 6 carbon atoms, cycloalkyl of 5 to 8 carbon atoms, phenyl, naphthyl, alkaryl of 7 to 10 carbon atoms or aralkyl of 7 to 10 carbon atoms, each of said phenyl, naphthyl, alkaryl or aralkyl groups being unsubstituted or substituted with from 1 to 4 substituents selected from the group consisting of fluorine, chlorine, bromine, trichloromethyl, trifluoromethyl, alkoxy of 1 to 4 carbon atoms or nitro, and a biologically inert carrier.

3,899,319

POWDER MIXTURE FOR THE PRODUCTION OF ALLOY STEEL WITH A LOW CONTENT OF OXIDE INCLUSIONS

Per Folke Lindskog, Hoganas; Per Gunnar Arbstedt, and Erik Goran Wastenson, both of Viken, all of Sweden, assignors to Hoganas AB, Fack, Hoganas, Sweden

Filed Oct. 29, 1974, Ser. No. 518,474

Int. Cl. B22F 9/00

U.S. Cl. 75—5 BA

8 Claims

1. A powder mixture for manufacturing of alloy steel articles having small and few oxide inclusions, comprising a metal powder portion which consists of a mixture of two powders, viz. an atomized prealloyed steel powder and a finely comminuted powder containing alloying elements, wherein alloying elements, the oxides of which have a free energy of formation with an absolute value less than 120 kcal/mole O_2 (502 kJ/mole O_2) at 1000° C substantially are contained in the atomized prealloyed powder while all alloying elements, the oxides of which have a free energy of formation with an absolute value exceeding 120 kcal/mole O_2 (502 kJ/mole O_2) at 1000° C, are completely contained in the finely comminuted powder.

3,899,320

PROCESS FOR MAKING IRON SPONGE PELLETS
CONTAINING SILICON CARBIDE

Theodor Benecke, Grefrath; Günter Wiebke, Munich, and Carl Pfannschmidt, Waltenhofen, all of Germany, assignors to Elektroschmelzwerk Kempten GmbH, Munich, Germany

Filed Feb. 25, 1974, Ser. No. 445,413

Claims priority, application Germany, Feb. 23, 1973, 2308888

Int. Cl.² C21B 13/00

U.S. Cl. 75—33

5 Claims

1. A process for making iron sponge from iron ores containing at least 95% by weight of iron oxide comprising, pulverizing the iron ore to extremely fine grain size, mixing the pulverized iron ore with fine-grained silicon carbide, pelletizing the so obtained mixture, and subjecting the same to direct reduction.

3,899,321

METHOD OF PRODUCING A VACUUM TREATED
EFFERVESCING BORON STEEL

Evan M. Oliver, Bethlehem, and Joseph V. Marsilio, Allentown, both of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed May 28, 1974, Ser. No. 473,975

Int. Cl. C21c 7/10; C22c 39/00

U.S. Cl. 75—49

9 Claims

1. Method of producing a low carbon, boron sheet steel comprising:

- providing a steel melt having low residual alloy content containing by weight no more than 0.01 percent tin, 0.04 percent chromium, 0.01 percent molybdenum and 0.10 percent copper, and 0.03 to 0.08 percent carbon,
- treating the steel melt with a vacuum to essentially complete the chemical reaction $C + O \rightarrow CO$ by reducing the carbon to about 0.005 percent by weight to leave an excess of oxygen in an amount greater than will provide a O:C ratio of at least 1.4:1,
- adding boron to the vacuum treated melt in an amount sufficient to retain 0.006 to 0.020 percent by weight boron,
- adding sufficient carbon to react with the residual oxygen in the melt so as to provide an effervescing steel melt containing 0.005 to 0.04 percent by weight carbon,
- solidifying the effervescing steel melt, and
- hot and cold rolling the solidified steel to form sheet.

3,899,322

NOBLE-TYPE METAL RECOVERY PROCESS BY USE OF
MOLTEN SALT BATH

Samuel J. Yosim, Woodland Hills, and LeRoy F. Grantham, Calabasas, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Continuation-in-part of Ser. No. 264,681, June 20, 1972, abandoned. This application May 16, 1973, Ser. No. 361,380

Int. Cl.² C22B 9/10, 11/00; C23G 1/34

U.S. Cl. 75—65 R

10 Claims

1. A process for the separation and recovery of a noble-type metal selected from the group consisting of copper, silver, gold, palladium, platinum, and aluminum from scrap containing such metal values, said scrap including at least some organic combustible material, said process being performed under conditions resulting in substantially reduced emission of environmental pollutants, comprising:

feeding said noble type-metal-value-containing scrap and a source of uncombined gaseous oxygen into a pool of a molten salt consisting essentially of sodium carbonate containing about 1 to 25 wt.% sodium sulfate at a temperature between 800° and 1,800°C and above the melting point of said noble-type metal to thermally decompose the scrap to form separable scrap decomposition products and said metal, and

separately recovering said metal in molten form free from said scrap decomposition products, the process being so controlled so that the final gaseous effluent vented to the atmosphere consists essentially only of gases selected from carbon dioxide, water vapor, oxygen, and nitrogen.

3,899,323

SILVER RECOVERY PROCESS

William Jan Van Slyke, Richland, Wash., assignor to Battelle Development Corporation, Richland, Wash.

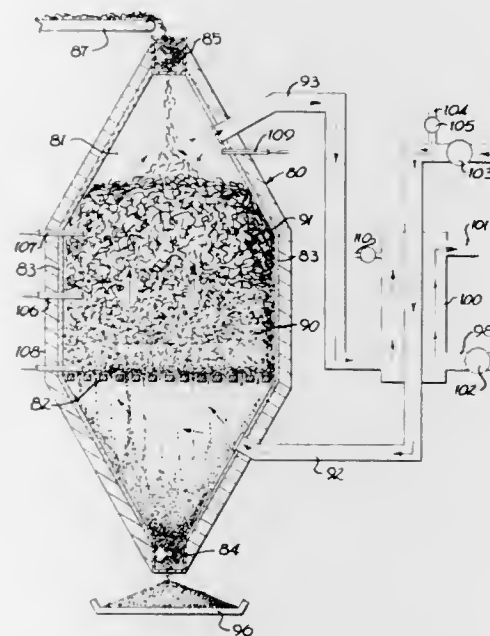
Division of Ser. No. 264,262, June 19, 1972, Pat. No.

3,820,982, which is a continuation of Ser. Nos. 17,507, March 9, 1970, abandoned, Ser. No. 137,219, April 26, 1971, abandoned, and Ser. No. 194,453, Nov. 1, 1971, abandoned, said Ser. No. 194,453, is a continuation-in-part of Ser. No. 17,507, March 9, 1970, abandoned. This application Oct. 29, 1973, Ser. No. 410,920

Int. Cl.² C22B 11/02

U.S. Cl. 75—83

11 Claims



1. A process for recovering silver from silver-bearing photographic film containing silver salts comprising the steps of:

- subjecting the photographic film to hot nonoxidizing gases to pyrolyze the photographic film to form a silver-bearing carbon residue and a pyrolytic off-gas mixture said hot nonoxidizing gases being a gaseous mixture containing sufficient hydrogen to reduce silver salts to metallic silver;
- burning the silver-bearing carbon residue in an oxidizing atmosphere of a heated air and water vapor mixture of a sufficient temperature and ratio to burn the residue to form a silver-bearing ash and produce said hot nonoxidizing gases;
- directing said nonoxidizing gases to the photographic film to perform step (a); and
- separating the silver from the ash to recover the silver.

3,899,324

FLUX FOR CONTINUOUS CASTING OF STEEL

Paul M. Corbett, Baltimore, Md., assignor to SCM Corporation, Cleveland, Ohio

Filed Mar. 16, 1973, Ser. No. 342,052

Int. Cl.² C22B 9/10; C03C 3/04; B22D 11/04

U.S. Cl. 75—94

3 Claims

1. In a process for the continuous casting of steel using an open-ended mold for the molten metal, the improvement which comprises covering the exposed surface of said molten metal with a layer of flux composition in the form of frit particles, said composition consisting of:

Ingredient	Percent by Weight
Na ₂ O	6-25
K ₂ O	0-10
Li ₂ O	0-8
SiO ₂	5-40
P ₂ O ₅	0-40
Al ₂ O ₃	0-20
B ₂ O ₃	0-10
F	2-15
MgO	0-20
CaO	5-30
BaO	0-20
SrO	0-20
Oxide of Period IV metal having Atomic Number of 23-28, inclusive	1-10
TiO ₂	0-6
ZrO ₂	0-5

wherein said percentages are selected to total 100%.

3,899,325

METHOD OF MAKING A CLOSED END TUBE

Brian G. Harrison, Drexel Hills, Pa., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed July 14, 1969, Ser. No. 841,260

Int. Cl. B22f 1/00, 3/00, 3/20

U.S. Cl. 75—208 R

2 Claims

1. A process for making a metallurgically integral closed-end tube having a straight-walled tube portion and a terminal inner plug portion, said portions consisting essentially of sintered shaped powdered metal and characterized by having homogeneous metal grain size which comprises:

- mixing powdered metal with a heat fugitive binder to form a clay-like mass;
- shaping said clay-like mass into a green structure of said tube with said closed end; and
- sintering said green structure in a reducing atmosphere to form said tube.

3,899,326

METHOD OF MAKING MONOLITHIC HONEYCOMBED
STRUCTURES

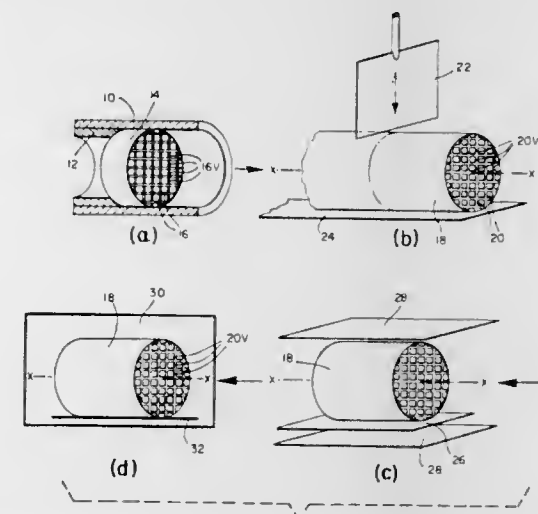
Rodney I. Frost, and Louis M. Holleran, both of Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Mar. 30, 1973, Ser. No. 346,606

Int. Cl.² B22F 3/12; B28B 21/52

U.S. Cl. 75—214

7 Claims



1. A method of making a monolithic honeycombed structure having a matrix of walls forming a multiplicity of open-ended cells extending from one end of the structure to the other by extruding a plastically deformable and sinterable batch through an extrusion die to form a honeycombed structure and firing the extruded structure to effect sintering, the improvement comprising:

positioning the extrusion axis of the structure during firing so as to extend in a substantially horizontal direction; and

orienting the cell walls during firing such that series of connected cell walls extending from one side of the structure to the other extend in a generally vertical direction with a minimum horizontal projection of said series.

3,899,327

CHARGE CARRIER FOIL

Karl Esser, Stein; Robert Friedrich, Nuremberg, and John E. Segain, Gunzenhausen, all of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Feb. 1, 1974, Ser. No. 438,832

Claims priority, application Germany, Feb. 8, 1973, 2306158; Feb. 8, 1973, 2306159

Int. Cl. G03g 5/00; B44d 1/16

U.S. Cl. 96—1.5

6 Claims

1. A charge carrier foil comprising:
a flexible conducting metal foil;
a conducting intermediate layer on said metal foil, said intermediate layer comprising polyvinyl acetal containing lampblack as an additive; and
a non-conducting selenium layer arranged on said intermediate layer.

3,899,328

ACTIVE MATRIX AND INTRINSIC PHOTOCONDUCTIVE
POLYMER OF A LINEAR POLYSILOXANE

William W. Limburg, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

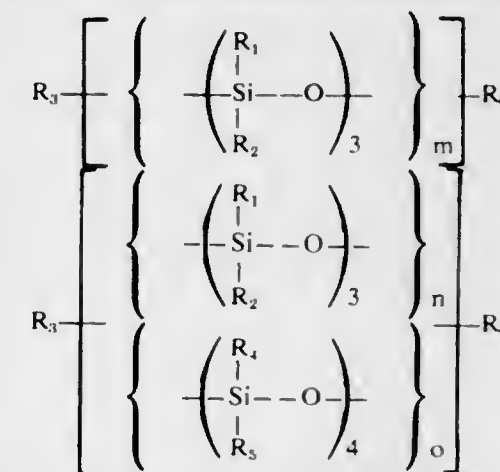
Filed May 7, 1973, Ser. No. 357,987

Int. Cl. G03g 5/06

U.S. Cl. 96—1.5

12 Claims

1. A photoconductive member comprising a substrate and at least one organic photoconductive layer comprising an intrinsic polymeric photoconductive material of the formulae



wherein R₁ is defined as a lower alkyl group;
R₂ is defined as an aromatic polycyclic group with fused aromatic rings having at least three fused ring nuclei or a heteroaromatic group;
R₃ is defined as a hydroxyl, or other polymeric end group;
R₄ and R₅ are individually defined as a lower alkyl group;
R₆ is defined as a polymeric end group; and m, n and o are positive numbers commensurate with a molecular weight of at least 1,000, the respective numerical products represented by 3n and 4o having a ratio of about 3:1 to 1:8.

3,899,329

MIXTURE OF PHOTOCONDUCTORS IN AN ACTIVE
MATRIX

Lloyd F. Bean, Rochester, and Robert W. Gundlach, Victor, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 94,195, Dec. 1, 1970, abandoned. This application Apr. 12, 1973, Ser. No. 350,666

Int. Cl. G03q 5/06

U.S. Cl. 96—1.5

6 Claims

1. A photoconductive layer comprising an unoriented mixture of finely divided photoconductive particles comprising

from about one-half to about 5 parts by weight cadmium sulfoselenide and from about 1 to about 5 parts by weight selenium dispersed in 100 parts by weight of an active binder matrix material, said photoconductive layer having a thickness of about 2 to 100 microns, with the photoconductive particles being present in a total combined concentration of about 0.5 to 5 percent by volume of the photoconductive layer, the mixture being capable of generating holes in response to imagewise radiation, the binder being capable of transporting holes injected from the photoconductive particles during imagewise exposure, with the binder material being selected from the group consisting of;

polyvinyl carbazole; poly-1-vinylpyrene; polymethylene pyrene; an N-substituted polymeric acrylic acid amide of pyrene; carbazole; N-ethylcarbazole; N-phenylcarbazole; pyrene; tetraphene; 1-acetylpyrene; 2,3-benzochrysene; 6,7-benzopyrene; 1-bromopyrene; 1-ethylpyrene; 1-methylpyrene; perylene; 2-phenylindole; tetracene; pice; 1,3,6,8-tetraphenylpyrene; chrysene; fluorene; fluorenone; phenanthrene; triphenylene; 1,2,5,6-dibenzanthracene; 1,2,3,4-dibenzanthracene; 2,3-benzopyrene; 2,3-benzochrysene; anthraquinone; dibenzothiophene; naphthalene; and mixtures thereof, with said photoconductive layer exhibiting an absorption coefficient of at least 1/L and not more than 8/L where L is the photoconductor layer thickness in microns.

3,899,330

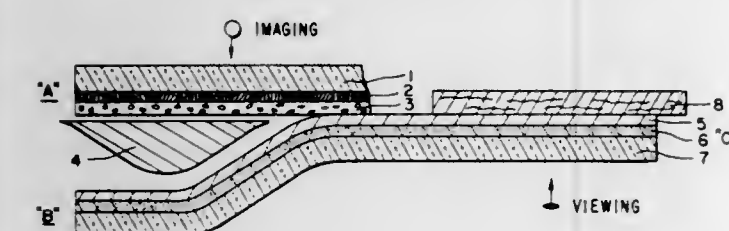
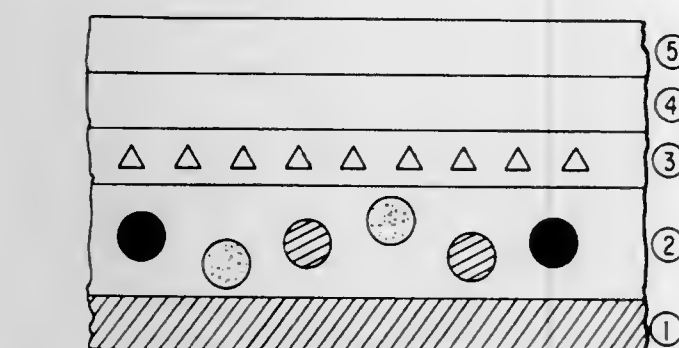
COLOR SCREENS FOR DIFFUSION TRANSFER PROCESSES CONTAINING COLOR FORMERS

Burton Harvey Waxman; Robert Thomas Shannahan, both of Endicott, and Felix Viro, Appalachin, all of N.Y., assignors to GAF Corporation, New York, N.Y.

Filed Mar. 2, 1973, Ser. No. 320,644 The portion of the term of this patent subsequent to Apr. 17, 1990, has been disclaimed.

Int. Cl. G03c 7/00, 5/54, 7/04, 1/40, 1/84; G03f 5/00
U.S. Cl. 96—3

8 Claims



1. A two dimensional dual nature screen of from one to three colors, comprising an array of red, green or blue colored oil droplets, each droplet containing a non-diffusing filter dye having one of the primary colors in addition to a low molecular weight colorless color former fast to diffusion in aqueous gelatin matrices having a pH normal to photographic coating operations of from 6.0 to 7.0 but diffusible through such aqueous gelatin matrices at a pH higher than 7.0, and capable of forming upon coupling with the oxidation products of a paraphenylenediamine color developer a non-diffusing dye complementary in color to the filter dye of the oil droplet in which said color former was contained.

5. A method of forming a multicolor reproduction of an original image or object using the dual nature screen carried by a panchromatic emulsion, according to claim 3, comprising:

exposing the panchromatic emulsion through said dual nature screen;

developing said exposed panchromatic emulsion with a fast acting color developer of alkaline pH while said exposed panchromatic emulsion is in contact with a receiving element, said colorless colorformer being diffusible at the pH of said color developer;

allowing sufficient time for maximum color former to transfer through unexposed areas of the panchromatic emulsion and for the fast acting developer to penetrate and fill the screen, panchromatic emulsion and receiving element to actuate the diffusion of the color formers, as modulated by the exposed panchromatic emulsion, from the dual nature screen to the receiving element;

and forming indoaniline or azomethine dyes in the receiving layer from the color former transferred to the receiving layer by coupling said color former with residual color developer or a p-phenylene derivative in the presence of an oxidizing agent.

3,899,331

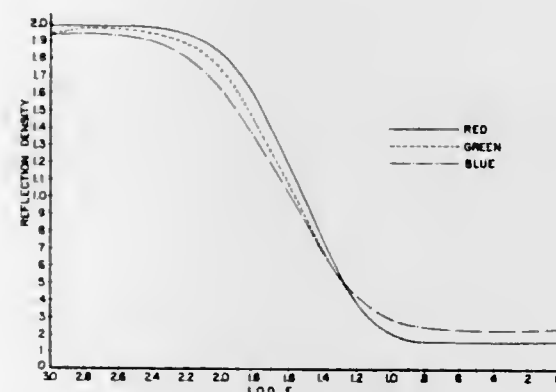
MULTICOLOR DYE DEVELOPER DIFFUSION TRANSFER PROCESSES WITH PYRAZOLO-[3,4D]PYRIMIDINES

Stanley M. Bloom, Waban, and Nicholas S. Hadzeczyriakides, Arlington, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

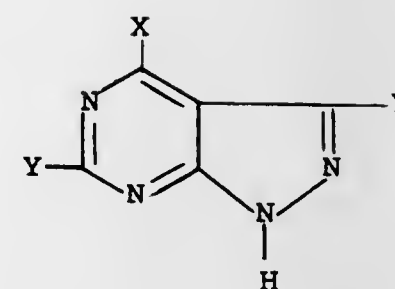
Filed Nov. 14, 1973, Ser. No. 415,783

Int. Cl. G03c 7/00, 5/30, 1/40, 1/06, 1/48, 1/34
U.S. Cl. 96—3

19 Claims



1. A diffusion transfer color process comprising exposing a photosensitive element comprising a blue-sensitive silver halide emulsion having a yellow dye developer associated therewith, a green-sensitive silver halide emulsion having a magenta dye developer associated therewith, and a red-sensitive silver halide emulsion having a cyan dye developer associated therewith, applying an aqueous alkaline processing composition to said exposed photosensitive element to effect development and to form an imagewise distribution of unoxidized dye developer in undeveloped areas of each of said silver halide emulsions as a function of said development, said process including the step of transferring by diffusion at least a portion of said imagewise distributions of unoxidized dye developer to an image-receiving layer in superposed relationship therewith to thereby provide a multicolor diffusion transfer image, said development being effected in the presence of a pyrazolo-[3,4d]pyrimidine of the formula



wherein each Y is hydrogen or a 1 to 5 carbon alkyl group and X is hydrogen, —NH₂ or —NH—R, R being a 1 to 5 carbon alkyl group or an aralkyl group of 7 to 10 carbons.

3,899,332

PRINTING PLATE AND METHOD OF MAKING THE SAME

Richard T. Traskos, Brooklyn, Conn., assignor to Lith-Kem Corporation, Lynbrook, N.Y.

Division of Ser. No. 288,043, Sept. 11, 1972, Pat. No.

3,837,858. This application June 12, 1974, Ser. No. 478,639
Int. Cl.² G03F 7/02; G03C 1/52

U.S. Cl. 96—33

37 Claims

1. A method of treating a planographic printing plate having a hydrophilic substrate and a first coating containing a water soluble light reactive diazo resin on said substrate, including the step of:

applying a second coating containing a photosensitive solvent-soluble diazo-borofluoride salt over and in intimate contact with said first coating;

said plate being developable by water or aqueous solution whereby areas of the first and second coatings unexposed to light are washed away to define hydrophilic oleophobic nonprinting areas, and areas of the first and second coatings exposed to light define hydrophobic oleophilic printing areas.

3,899,333

PHOTOSENSITIVE COMPOSITION CONTAINING TiO₂ HAVING A PARTICLE SIZE OF ABOUT 25 MILLIMICRONS AND THE USE THEREOF IN PHYSICAL DEVELOPMENT

Elliot Berman, Braintree, and Carl F. W. Ekman, Bedford, both of Mass., assignors to Itek Corporation, Lexington, Mass.

Continuation of Ser. No. 432,887, Feb. 15, 1965, abandoned, and a continuation-in-part of Ser. No. 360,094, April 15, 1964, abandoned. This application Feb. 27, 1973, Ser. No. 336,389
Int. Cl. G03c 5/24, 1/00

U.S. Cl. 96—48 PD

13 Claims

1. In a data storage medium comprising a substrate and a radiation sensitive coating thereon, said coating consisting essentially of particulate titanium dioxide dispersed in a binder, said medium being suitable for use in a process wherein said medium is exposed imagewise and contacted with a physical developer comprising a solution of metal ions and a reducing agent for said metal ions to produce a visible image in said medium, the improvement wherein said particulate titanium dioxide has an average particle size of about 25 millimicrons.

12. In a process of recording an image pattern of actinic light by exposing to an image pattern of actinic light a data storage medium comprising a particulate titanium dioxide in an organic binder which titanium dioxide becomes reversibly activated by such exposure and thereby capable of causing chemical reactions at portions of said medium corresponding to said image pattern of actinic light and then applying to at least reversibly activated portions of said medium a physical developer comprising a solution of metal ions and a reducing agent for said metal ions which forms metal images solely on contact with at least activated portions of said data storage

medium, the improvement wherein the titanium dioxide has an average particle size of about 25 millimicrons.

3,899,334

PHOTOIMAGING PROCEDURES AND COMPOSITIONS

Floyd B. Erickson, Webster Groves, Mo., assignor to Monsanto Company, St. Louis, Mo.
Division of Ser. No. 190,337, Oct. 18, 1971, Pat. No. 3,801,320. This application Oct. 11, 1973, Ser. No. 405,345
Int. Cl. G03c 5/24

U.S. Cl. 96—48 R

11 Claims

1. The method of treating an image comprised of hydroperoxy groups attached to a polymeric substrate comprising a polymer with a hydrocarbon backbone which comprises contacting same with sulfur dioxide.

3,899,335

DIAZOTYPE ELEMENTS AND PROCESSES WITH CARBODIIMIDE DEHYDRATING AGENTS TO GENERATOR COUPLERS

Wojciech Maria Przedziecki, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 20, 1974, Ser. No. 452,895

Int. Cl.² G03C 1/58, 1/60, 5/34

U.S. Cl. 96—49

8 Claims

1. A method of forming an azo dye image comprising the step of:

i. imagewise exposing to actinic radiation a supported layer comprising

a. a light-sensitive diazonium compound; and

b. at least one compound selected from at least one but not both of

i. a solid carbodiimide dehydrating agent having the formula



wherein R¹ is an organic radical of the group consisting of alkyl, cycloalkyl, aralkyl, and aryl groups and amino derivatives thereof, and R² is of the group consisting of hydrogen and said organic radicals, and

ii. an N-organic substituted glycine convertible by dehydration, when placed in reactive contact with carbodiimide, into a heterocyclic active methylene coupler reactive with said diazonium compound to form an azo dye; and

2. heating said imagewise exposed layer while in contact with a layer comprising the other of (i) and (ii) to a temperature sufficient to cause said acid and said carbodiimide dehydrating agent to come into reactive contact thereby initiating formation of said coupler by dehydration and production of said azo dye image by reaction of said coupler with unexposed portions of said diazonium compound.

4. A light-sensitive heat-developable diazotype imaging element comprising,

a. a layer comprised of a normally solid carbodiimide dehydrating agent having the formula



wherein R¹ is an organic radical of the group consisting of alkyl, cycloalkyl, aralkyl and aryl groups and amino derivatives thereof, and R² is of the group consisting of hydrogen and said organic radicals, and

b. a layer comprised of an N-organic substituted glycine convertible by dehydration, when in reactive contact with said carbodiimide, into a coupler having a heterocyclic ring containing both a nitrogen atom and a coupling reactive methylene radical, capable of coupling with a diazonium compound, wherein (a) and (a') are separate layers,

one of said layers (a) and (b) further including a light-sensitive diazonium compound.

7. A light-sensitive heat-developable diazotype composition for use with a coupler precursor capable of forming a coupler

upon dehydration; the composition comprising, an admixture of

- a light-sensitive diazonium compound, and
- a normally solid carbodiimide dehydrating agent having the formula



wherein R^1 is an organic radical of the group consisting of alkyl, cycloalkyl, aralkyl and aryl groups and amino derivatives thereof, and R^2 is of the group consisting of hydrogen and said organic radicals.

3,899,336

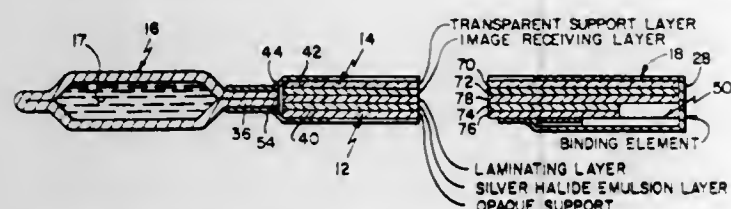
PROCESSING COMPOSITION FOR DIFFUSION TRANSFER COLOR PROCESS CONTAINING POLYETHYLENE GLYCOL

Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 247,023, April 24, 1972, Pat. No. 3,793,023. This application Nov. 29, 1973, Ser. No. 420,098
Int. Cl. G03c 5/30, 1/48

U.S. Cl. 96—66 R

8 Claims



1. A rupturable container releasably holding a processing composition adapted for use in forming diffusion transfer dye developer images, said processing composition comprising an aqueous alkaline solution of a film-forming, viscosity-providing polymer having a light-reflecting pigment dispersed therein, said composition further including a water-soluble polyethylene glycol.

3,899,337

MULTILAYER FILM PACK WITH SCRATCH REDUCING MEANS

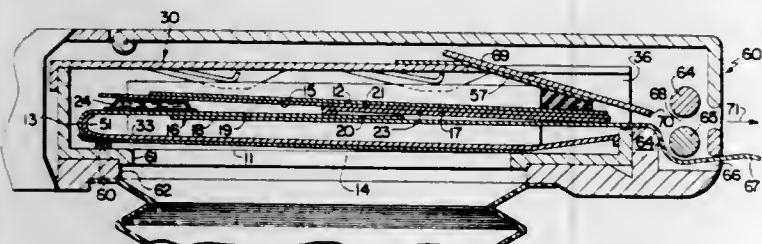
John W. Nestor, Jr., Carlisle, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 28, 1973, Ser. No. 429,042

Int. Cl. G03c 1/48

U.S. Cl. 96—76 C

6 Claims



1. A photographic film package comprising:
a generally flat, elongated container having an exposure opening in one flat wall and an exit opening at one transverse end;
a film unit including a photosensitive sheet element, a non-photosensitive sheet element and a rupturable container retaining a fluid processing composition, said photosensitive sheet element being cooperatively associated with said exposure opening and adapted to be exposed to light transmitted through said exposure opening;
web means interconnecting said sheet elements including means by which said photosensitive sheet can be moved into contacting superposition with said non-photosensitive sheet element; and
scratch reducing means mounted on said flat wall having said exposure opening and contacting said photosensitive sheet element, said scratch reducing means adapted to contact substantially the entire surface of said photosensitive sheet element as said photosensitive sheet element is

moved into contacting superposition with said non-photosensitive sheet element.

3,899,338

PHOTOSENSITIVE MATERIAL SUITABLE FOR USE AS A PHOTORESIST

James M. Lewis, Aurora, Ohio, assignor to Horizons Incorporated, Cleveland, Ohio

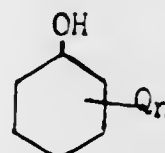
Continuation-in-part of Ser. No. 224,939, Feb. 9, 1972, abandoned. This application July 15, 1974, Ser. No. 488,857
Int. Cl. G03C 1/68, 1/70

U.S. Cl. 96—115 P

14 Claims

1. A photosensitive material suitable for use as a photoresist and consisting essentially of the following materials dissolved in a resin binder exhibiting a good degree of solubility in an alkanol selected from the group consisting of methanol, ethanol and propanols, and at least 2% solubility in an azeotrope of said alcohols and water;

- at least one polymerizable N-vinyl monomer;
- at least one activator for enhancing the effect of exposing said monomer to a suitable dose of electromagnetic radiation at least sufficiently to initiate polymerization of said monomer, said activator being selected from the group consisting of: organic halogen compounds in which at least three halogen atoms selected from the group consisting of Cl, Br and I are attached to a single carbon atom, sulfonyl chlorides, sulfonyl bromides, sulfonyl chlorides, sulfonyl bromides and mercapto compounds wherein the mercapto group is attached to a carbon atom in a heterocyclic nucleus; and
- a substituted phenol represented by the general formula:



in which Q represents one or more hydroxyl groups, amino groups, alkyl or allyl groups and not all of the Q's need be the same, and n is an integer from 1 to 5;

and in which the proportions of the several constituents are as follows, in parts by weight:

polymerizable N-vinyl monomer	15 to 150
activator	1 to 300
substituted phenol	1 to 100
resin binder	250 to 3000

the weight of binder being greater than the total weight of polymerizable monomer, activator and phenol and the resin binder being a polymer or copolymer of a polyvinyl compound selected from the group consisting of polyvinyl esters, ketones, acetals, alcohols and keto-esters soluble in said alcohols or in their azeotropes with water.

3,899,339

WATER SOLUBLE SOLDER RESIST

Henry G. Peters, Jr., Owego, and Philipp W. H. Schuessler, Endwell, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 12, 1972, Ser. No. 297,118

Int. Cl. C09d 5/20; B44d 1/52

U.S. Cl. 106—2

1 Claim

1. A masking composition to prevent deposition of molten solder consisting of by weight; 10 to 70% sodium silicate solution at 40° Baume, 5 to 10% of glycerol or glycol, 0.03 to 0.3% of a corrosion inhibitor which is a quarternary amine iodide, 0.1 to 0.6% of a xanthene tinting agent or non-reactive vegetable dye, and the remainder being water.

3,899,340

HIGH ELASTIC MODULUS GLASS-CERAMIC ARTICLES

Joseph W. Malmendier, South Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Nov. 29, 1973, Ser. No. 420,106

Int. Cl. C04b 35/04

U.S. Cl. 106—39.6

6 Claims

1. A glass-ceramic article demonstrating an elastic modulus greater than about 18×10^6 psi consisting essentially of crystals of aluminoborate and/or magnesium borate solid solutions homogeneously dispersed in a glassy matrix, which crystals comprise at least 75% by volume of said article, the composition of said article being substantially the same throughout and consisting essentially, by weight on the oxide basis, of about 5–25% MgO , 10–45% Al_2O_3 , and 20–45% B_2O_3 .

3,899,341

REFRACTORY FIRED SHAPED ELEMENT AND PROCESS OF ITS MANUFACTURE

Hans Georg Schwarz, Marktreutwitz, Germany, assignor to Didier-Werke AG, Germany

Filed Apr. 4, 1974, Ser. No. 458,022

Claims priority, application Germany, Apr. 30, 1973, 2321810

Int. Cl. C04B 35/48

U.S. Cl. 106—57

6 Claims

1. A refractory fired shaped element for closures in casting units for metals, said element comprising 10 to 50 % by weight zirconium oxide and 50 to 90 % by weight zirconium silicate, 30 to 60 % by weight of the total amount of zirconium oxide being present in stabilized form and 70 to 40 % by weight of the total amount of zirconium oxide being present in unstabilized form.

3,899,342

COMPLEX PHOSPHATES

James Derek Birchall; John Edward Cassidy; Nicholas Rolfe, and Clifford Granville Miles, all of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Oct. 12, 1972, Ser. No. 296,985

Claims priority, application United Kingdom, Oct. 19, 1971, 48576/71; June 8, 1972, 26803/72

Int. Cl. C04b 35/02

U.S. Cl. 106—65

11 Claims

1. A method of binding refractory solids which comprises forming a slurry or paste containing the solids to be bound and an aqueous solution containing aluminium ions and orthophosphate ions in an Al:P ratio of substantially 1:1 and additionally the anions of a carboxylic acid or a mineral oxyacid in a ratio of additional anion: aluminium ions in the range of 0.5:1 to 4:1, the aqueous solution containing from 1 to 25% of solids by weight of the refractory solids to be bound, and curing the phosphate binder.

3,899,343

BRIGHTNESS OF CRYSTALLINE LAYERED SILICATE MINERALS

John C. Lim, Somerville, N.J., assignor to Engelhard Minerals & Chemicals Corporation, Edison, N.J.

Filed Feb. 26, 1973, Ser. No. 335,471

Int. Cl. C09c 1/42; C08h 17/06

U.S. Cl. 106—72

3 Claims

1. A method for bleaching kaolin clay containing as an impurity a ferric compound which is not removed therefrom by a dithionite bleaching reagent which comprises forming a suspension of said clay with a dilute solution in dimethylsulfoxide of a complexing ligand selected from the group consisting of alkali metal thiocyanate, ammonium thiocyanate, acetylacetone, o-phenanthroline, bipyridine, ethylenediamine, mercaptoacetic acid, thiomalic acid, mercaptoethanol and mixtures thereof, said complexing agent being present in

amount to react with said ferric compound in said clay to form a colored coordination complex and said dimethylsulfoxide being present in amount substantially in excess of 1 mole per equivalent of said clay and sufficient to maintain a liquid phase of dimethylsulfoxide after said reaction is completed, maintaining said suspension under conditions of time and temperature which favor formation of a kaolinite-dimethylsulfoxide intercalation compound until a colored coordination complex is formed by reaction between ferric ions in the impurity and said complexing ligand, separating the clay from a liquid phase, and washing the separated clay with water to decompose the kaolinitedimethylsulfoxide complex and restore the crystal structure to the clay.

3,899,344

FIBER REINFORCED CONCRETE PRODUCTS AND THEIR FORMATION

Gus R. Jakel, Los Angeles, Calif., assignor to California Cement Shake Co., Inc., Alhambra, Calif.

Continuation-in-part of Ser. No. 303,677, Nov. 6, 1972. This application July 16, 1973, Ser. No. 379,749

Int. Cl. C04b 7/02

U.S. Cl. 106—99

4 Claims

1. In the process of making a reinforced, relatively flexible concrete slab product, the steps that include
a. combining the following constituents in the stated relative amounts to form an aqueous admixture:
between 180 and 195 pounds of Portland cement
between 72 and 90 pounds of perlite
between 38 and 46 gallons of aqueous cellulose pulp and polyester fibers, and
between 7 and 9 gallons of slaked lime, and
b. forming the product from said admixture and curing the product,
c. said polyester fibers comprising between 0.05 and 0.15 percent, by weight, of the admixture and being straight.

3,899,345

LIME-FLY ASH-SULFITE COMPOSITIONS

Leonard John Minnick, Cheltenham; William C. Webster, Norristown, and Charles L. Smith, Conshohocken, all of Pa., assignors to IU Technology Corporation, Miami, Fla.

Continuation of Ser. Nos. 259,461, June 5, 1972, Pat. No. 3,785,840, and Ser. No. 412,273, Nov. 12, 1973. This application Dec. 26, 1973, Ser. No. 427,686The portion of the term of this patent subsequent to Jan. 15, 1991, has been disclaimed.

Int. Cl. C04b 7/34

U.S. Cl. 106—118

42 Claims

1. An ecologically acceptable method of producing a hardenable, structural cementitious composition, said method consisting of treating a slurry produced in a stack gas scrubber wherein sulfur oxide-containing stack gases are desulfurized by chemical treatment with materials including lime or limestone, the resultant scrubber slurry comprising an aqueous suspension of alkaline earth metal sulfites and alkaline earth metal oxides, hydroxides, sulfates or carbonates, said slurry treatment consisting of dewatering said slurry and adding to said dewatered slurry a pozzolanically active waste material and alkaline earth metal material as required, such that the final composition of the solids in said treated slurry comprises 0.25 to 70 weight % alkaline earth metal hydroxides, 0.25 to 70 weight % alkaline earth metal sulfite, and pozzolanically active waste material providing pozzolanic activity equal to 10 to 99.5 weight % fly ash determined by ASTM Test C-618, the resultant composition having a solids content of 30–90%, by weight.

3,899,346

OPACITY MODIFIED PIGMENTARY COMPOSITIONS
Thomas Howard Ferrigno, 29 Clover Hill Cir., Trenton, N.J. 08638

Continuation-in-part of Ser. No. 306,926, Nov. 15, 1972, Pat. No. 3,856,545. This application Apr. 30, 1973, Ser. No. 356,055

Int. Cl.² C09C 3/00

U.S. Cl. 106—288

12 Claims

1. A pigmentary composition comprising calcined agglomerates consisting essentially of from about 70 to 98 parts by weight of anhydrous minerals having a refractive index of from about 1.47 to 1.74 and selected from the group consisting of silica, alkali metal silicates, alkali aluminosilicates and mixtures thereof; from about 1 to 10 parts by weight of an inorganic binder selected from the group consisting of soluble silicates, sodium polyphosphates and expanding lattice montmorillonites; and an opacifying agent consisting of an inorganic colorant having a refractive index exceeding that of the mineral in the composition, said inorganic colorant being selected from the group consisting of white inorganic colorants and inorganic colorants having a color other than white and when said colorant is white it is present in an amount of from about 1 to 20 parts by weight and when said colorant has a color other than white it is present in an amount of from 0.001 to 10% by weight, said anhydrous minerals being in the form of particles having an average particle size of from about 2 to 40 microns which are bonded together in the form of agglomerates ranging in size from about 20 microns to 1 centimeter and having voids therein such that the specific gravity of the agglomerates is in the range of from about 60 to 95% of that of the inorganic material in the composition.

3,899,347

PRASEODYMIUM CONTAINING CERAMIC PIGMENTSHeinz-Dieter de Ahna, Neusenberg, and Rüdiger von der Gonna, Erlensee, both of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Germany
Filed July 17, 1974, Ser. No. 489,435

Claims priority, application Germany, July 27, 1973, 2338154

Int. Cl.² C09C 1/00

U.S. Cl. 106—299

8 Claims

1. A zirconium dioxide-silicon dioxide-praseodymium oxide ceramic pigment containing 0.01 to 10% of an oxide of a metal of the group consisting of antimony, bismuth, niobium and tantalum.

3,899,348

METHOD FOR AUTOMATICALLY CLEANING REUSABLE FOODSTUFF CONTAINERS WITH REDUCED QUANTITIES OF FRESH WATER AND CHEMICALSErhard Tedden, D-423 Wesel 13, Am Moorbusch 1, Germany
Filed Oct. 19, 1972, Ser. No. 299,052

Int. Cl. B08b 3/04, 7/04, 9/08

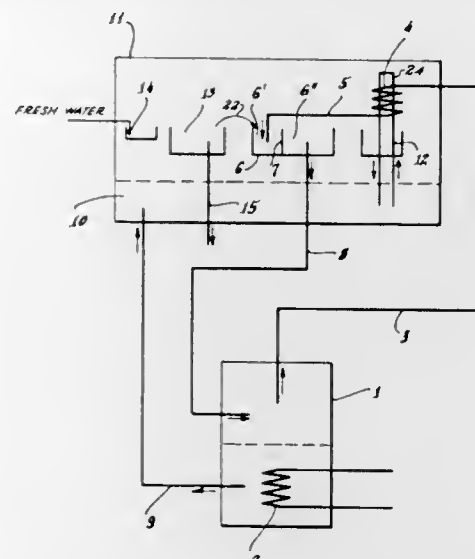
U.S. Cl. 134—12

6 Claims

1. A method for supplying and circulating liquid in an automatic cleaning machine for reusable foodstuff containers, said machine being of the type containing successive liquid cleaning and rinsing baths or stages for application of cleaning agent and rinse to the foodstuff containers travelling through the machine, said method comprising:

- heating liquid in an evaporator to form steam;
- passing the steam to a heat exchanger in the machine to liberate heat for heating washing liquid in the machine and to form condensate from said steam;

feeding the condensate to a first rinse water container in the machine; and



rinsing the foodstuff containers with the condensate in the first rinse water container.

3,899,349

CARBON DIOXIDE CURING OF PLATES FOR LEAD-ACID BATTERIES

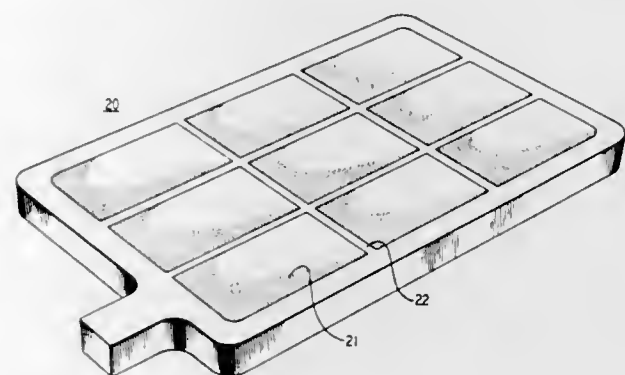
Charles Frederick Yarnell, Somerville, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 6, 1974, Ser. No. 440,152

Int. Cl.² H01M 39/00

U.S. Cl. 136—27

9 Claims



1. Process for the fabrication of lead-acid batteries containing positive electrodes, negative electrodes and electrolyte which includes the steps of pasting the positive and negative electrodes with a paste consisting essentially of tetrabasic lead sulfate, substantially drying the positive and negative electrodes before curing, curing the positive and negative electrodes and forming the positive and negative electrodes in aqueous sulfuric acid characterized in that at least one electrode is cured in a curing atmosphere which consists essentially of carbon dioxide and water vapor and the electrodes are maintained at a temperature below the temperature of the curing atmosphere but above the freezing point of water during at least part of the curing.

3,899,350

METHOD OF PREPARING HIGH CAPACITY NICKEL ELECTRODE POWDER

John F. Jackovitz, Monroeville, and Earl A. Pantier, Verona, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 20, 1972, Ser. No. 308,087

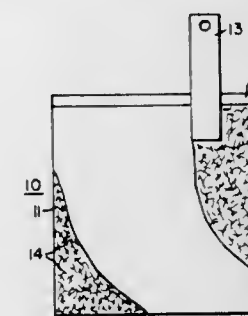
Int. Cl. H01m 43/04

U.S. Cl. 136—29

8 Claims

1. A method of producing active battery material for use in an electrode plate by (a) providing a starting material consisting essentially of $\text{Ni}(\text{OH})_2$ (b) chemically oxidizing 5 to 25

percent of the starting material by chemically reacting it with halogen in a caustic hydroxide solution, wherein about 3.3–13.2 moles of halogen is reacted per 100 moles of $\text{Ni}(\text{OH})_2$, forming an active material comprising between 75 to 95 weight percent $\text{Ni}(\text{OH})_2$ and between 5 to 25 weight percent $\text{Ni}(\text{III})$ hydroxide.



(OH)₂, forming an active material comprising between 75 to 95 weight percent $\text{Ni}(\text{OH})_2$ and between 5 to 25 weight percent $\text{Ni}(\text{III})$ hydroxide.

3,899,351

FORMATION OF ELECTRODES FOR ALKALINE BATTERIES

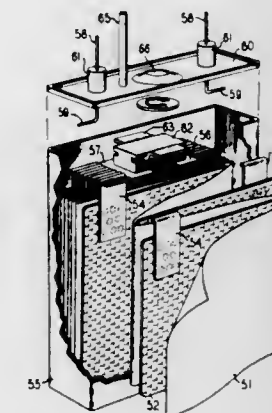
Dean William Maurer, Berkeley Heights, and Leona Louise Schull, Fanwood, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 12, 1974, Ser. No. 478,505

Int. Cl. H01m 35/30

U.S. Cl. 136—34

11 Claims



1. A process for the fabrication of alkaline cells in which at least one of the electrodes is made by a series of steps comprising impregnating a nickel plaque and forming the impregnated nickel plaque characterized in that forming is carried out in an aqueous electrolyte containing a base with a basicity constant greater than 0.1 with concentration between 4 Molar and the saturation concentration of the aqueous electrolyte with forming temperature between 40°C and the boiling temperature of the aqueous electrolyte and with a charge/discharge rate in amperes from 4 to 10 times the ampere-hour capacity of the electrode.

3,899,352

SEALED PRIMARY SODIUM-HALOGEN CELL

Gregory C. Farrington, Clifton Park; Fritz G. Will, Scotia, and Peter C. Lord, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 27, 1974, Ser. No. 455,150

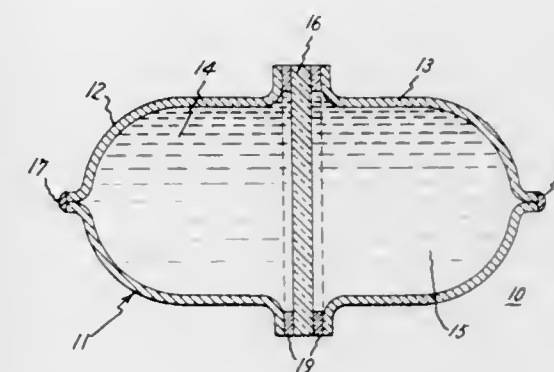
Int. Cl. H01m 27/16

U.S. Cl. 136—83 R

2 Claims

1. A sealed primary sodium-halogen cell comprising a casing, an anode positioned in the casing, the anode selected from the class consisting of sodium, sodium as an amalgam, and sodium in a nonaqueous electrolyte, a solid sodium ion-conductive electrolyte positioned in the casing adjacent the anode, and a cathode positioned adjacent the opposite side of the electrolyte, the cathode comprising a mixture selected from the class consisting of from 1.0 to 90.0 weight percent of

bromine and from 10.0 to 99.0 weight percent of a substance selected from the class consisting of phosphoryl chloride and phosphoryl bromide; from 1.0 to 90.0 weight percent of iodine and from 10.0 to 99.0 weight percent of a substance selected from the class consisting of phosphoryl chloride and phosphoryl bromide; from 1.0 to 89.0 weight percent of bromine,



3,899,353

THERMAL BATTERY

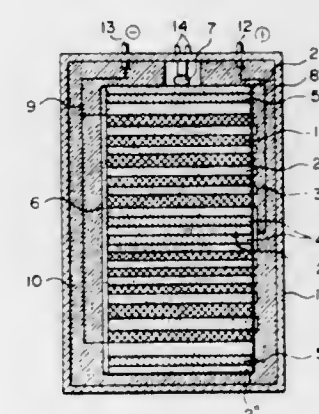
Masao Tomita, Takatsuki, Japan, assignor to Yuasa Battery Company Limited, Takatsuki, Japan

Filed Apr. 2, 1974, Ser. No. 457,186

Int. Cl.² H01M 11/00

U.S. Cl. 136—83 T

13 Claims



1. A thermal battery, comprising:

- a casing;
- a plurality of electrical battery cells disposed in a column within said casing, each said cell including a positive plate, a negative plate and an electrolyte layer between said positive and negative plates;
- a plurality of heat generating pellets for actuating said plurality of cells;
- at least one heat reservoir;
- each of said electrolyte layers comprising a eutectic mixture of potassium chloride and lithium chloride and an additive selected from the group consisting of barium nitrite and lithium chromate;
- means for conveying electrical energy produced in said cells from said cells and through said casing; and
- means for actuating said plurality of heat generating pellets.

3,899,354

GAS ELECTRODES AND A PROCESS FOR PRODUCING THEM

Karl V. Kordes, Lakewood, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

Filed Sept. 10, 1973, Ser. No. 395,552

Int. Cl. H01m 27/04

U.S. Cl. 136—86 D

12 Claims

1. A thin catalyzed gas electrode comprising a porous wetproofed conductive substrate having a first water-repellent porous active conductive layer over which is a second layer of a noble metal catalyst in an amount at least about 0.5 mg/cm², said noble metal substantially disposed on the surface of the wetproofed porous active conductive layer with effectively no penetration of said noble metal into the smaller pores of the active conductive layer, said pores being in the order of about 50A; said thin electrode having an overall thickness between about 0.005 and about 0.025 inch; and said water-repellent porous active conductive layer containing an active material dispersed in a water-repellent agent such that the active material is present in an amount at least about 45% by weight of the water-repellent porous active conductive layer.

3,899,355

BATTERY ASSEMBLY

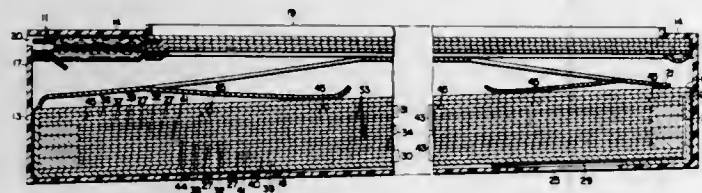
Charles K. Chiklis, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Feb. 14, 1974, Ser. No. 442,377

Int. Cl. H01m 21/00

U.S. Cl. 136—111

20 Claims



1. A planar battery which comprises, in combination and in superposed relationship, electrical energy generating components including:

- a planar anode;
- a planar cathode superposed substantially coextensive the anode;
- a planar separator positioned intermediate and extending substantially coextensive the facing surfaces of the anode and the cathode including marginal portions and an aqueous electrolyte permeable central portion;
- an aqueous electrolyte disposed in the central portion of the separator and in contact with the facing surfaces of the anode and the cathode; and
- an electrically nonconducting, water vapor impervious heat-activated thermosetting adhesive extending coextensive the marginal surfaces of the separator and securing the separator to the contiguous facing surfaces of the anode and the cathode, said adhesive being the product of the reaction between a polymer containing active hydrogen atoms and a thermally dissociated adduct of a compound containing at least two $-N=C=X$ groups wherein X is selected from the group consisting of oxygen and sulfur and the adduct is based on a compound selected from the group consisting of phenols, alkyl and aryl thiols and 1,3-dicarbonyl compounds.

3,899,356

POROUS ELECTRODE FOR A FUEL CELL AND METHOD OF MAKING SAME

Pierre Groult, Longjumeau; Francois Hubert, Paris; Jacques Daunay, Versailles, and Pierre Bono, Morangis, all of France, assignors to Societe Generale de Constructions Electriques et Mecaniques Alstom & Cie, France

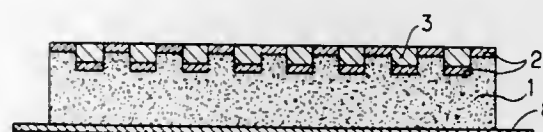
Filed Jan. 24, 1974, Ser. No. 436,330

Claims priority, application France, Jan. 24, 1973, 73.02454

Int. Cl. H01m 35/00

U.S. Cl. 136—120 FC

23 Claims



1. A porous electrode for a fuel cell comprising: a catalytic layer containing a mixture of a catalyst and of a polymer; a stop layer arranged on one of the faces of the catalytic layer and consisting essentially of said polymer, the stop layer and the catalytic layer having an open porosity of from about 40 to about 60%; and current collector means made of an electronically conductive and chemically inert material; said electrode being characterized in that the current collector means crosses through portions of the whole of the stop layer and penetrates into portions of the catalytic layer.

3,899,357

ELECTRODES INCLUDING MIXED TRANSITION METAL OXIDES

Rose V. Rinaldi, West Long Branch, and James E. Wynn, Neptune, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Division of Ser. No. 114,711, Feb. 11, 1971, abandoned. This application July 16, 1973, Ser. No. 379,885

Int. Cl. H01M 13/02

U.S. Cl. 136—121

1 Claim

1. A battery electrode comprising an expanded nickel mesh coated with a mixture of 20 to 35 percent by weight of a mixed transition metal oxide selected from the group consisting of $MgCoAl_2O_4$, $CuFeAl_2O_4$, $CuCoAl_2O_4$, $MgCuAl_2O_4$, $CoFeAl_2O_4$ and $MgFeAl_2O_4$ with conductive carbon and polytetrafluoro ethylene.

3,899,358

FILTER CAP FOR STORAGE BATTERIES

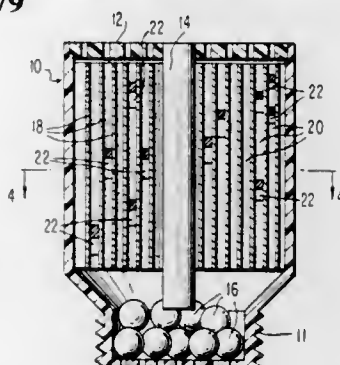
Erik G. Sundberg, Stockholm, Sweden, assignor to Aktiebolaget Tudor, Stockholm, Sweden

Filed Apr. 12, 1973, Ser. No. 350,654

Int. Cl. H01m 1/06

U.S. Cl. 136—179

9 Claims



1. In combination with a storage battery in which gas is liberated during its normal use and having openings in the

cover thereof, a filter cap for a cover opening, said filter cap comprising a housing with a lower end adapted to fit with a gas tight seal in the cover opening and an upper wall with vent openings, a plurality of substantially vertical walls of a micro-porous material in the space between the lower end and the upper wall, the space between said adjacent vertical walls forming passageways for the gas liberated from the battery, and slanted barrier means in said passageways comprising a plurality of members which extend across the sheet material at an angle relative to the vertical direction and which have a height such that when the spiral is wound, the members extend across the entire passageways.

3,899,359

THERMOELECTRIC GENERATOR

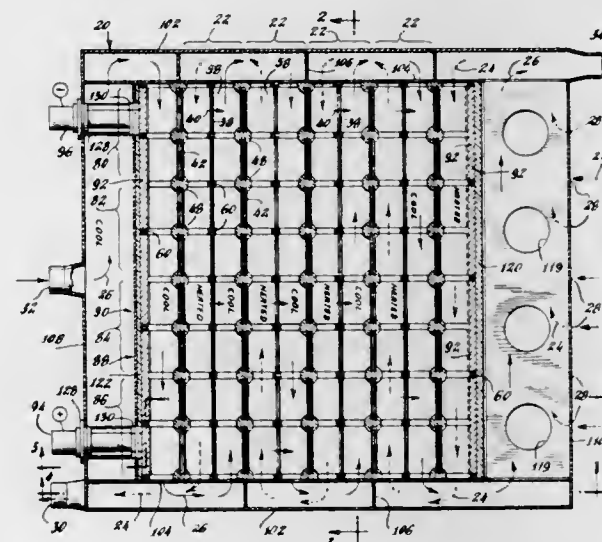
John Z. O. Stachurski, 1684 W. 10th St., Brooklyn, N.Y. 11223

Continuation-in-part of Ser. No. 53,168, July 8, 1970, abandoned. This application Apr. 12, 1973, Ser. No. 350,407

Int. Cl. H01L 35/32

U.S. Cl. 136—205

27 Claims



1. An efficient method for directly converting heat to electricity from thermoelectric elements arranged in electrical connection to produce electrical power comprising the steps of

passing heated and cool fluid streams in overall counterflow direct heat exchange relationship with each other to generate a temperature difference between passes of the direct heat exchanging fluid streams, with said cool fluid stream capturing a substantial portion of the heat energy in the heated fluid stream by heat transfer to the cool fluid stream, exposing opposite sides of said thermoelectric elements in high heat conductive relationship to respective passes of said direct heat exchanging streams to subject the elements to a temperature difference for the efficient production of electrical power from the electrically connected thermoelectric elements.

3,899,360

STABILIZED P-TYPE LEAD TELLURIDE

James H. Bredt, Garrett Park, Md., and Louis F. Kendall, Jr., Scotia, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 756,395, Aug. 30, 1968, abandoned.

This application Mar. 1, 1971, Ser. No. 119,821

Int. Cl. H01v 1/18

U.S. Cl. 136—238

2 Claims

1. A thermoelectric generator component for operation at a selected temperature above 400°C comprising a semiconducting thermoelement and a metal electrode in intimate electrical contact with the thermoelement, said electrode being of a metal selected from the group consisting of iron and iron-base alloys, and said thermoelement consisting essentially

3,899,361

STABILIZED DROPLET METHOD OF MAKING DEEP DIODES HAVING UNIFORM ELECTRICAL PROPERTIES

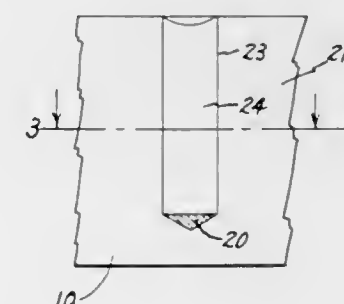
Harvey E. Cline, and Thomas R. Anthony, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 30, 1973, Ser. No. 411,008

Int. Cl. H01L 7/34

U.S. Cl. 148—1.5

10 Claims



1. The thermal gradient zone melting method of making a semiconductor device which comprises the steps of providing a matrix body of semiconductive material of first-type semiconductivity, providing within the matrix body a liquid body of metal-rich solution of matrix semiconductive material having a maximum width less than 1 millimeter, and migrating the liquid body through the matrix body in a straight line from one location to another under the driving force of a thermal gradient to produce a migration trail in the form of a recrystallized region of semiconductive material of second-type semiconductivity and a continuous junction at the interface between the first-type and the second-type semiconductive materials free from junction-bridging fragments of the migrated material.

3,899,362

THERMOMIGRATION OF METAL-RICH LIQUID WIRES THROUGH SEMICONDUCTOR MATERIALS

Harvey E. Cline, and Thomas R. Anthony, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 30, 1973, Ser. No. 411,018

Int. Cl. H01L 7/34

U.S. Cl. 148—1.5

19 Claims

1. A method for migrating a vapor deposited metal wire through a body of semiconductor material comprising the process steps of:

- selecting a body of semiconductor material so that the body has at least one surface having a preferred planar crystal structure orientation, the vertical axis of the body being substantially aligned with a first axis of the crystal structure;
- etching selectively the surface having the preferred planar crystal structure orientation to form at least one trough-like depression in the surface in a preferred crystal wire direction which is oriented to substantially coincide with at least one of the other axes of the crystal structure;
- vapor depositing a layer of a metal in the at least one trough-like depression on the selected surface of the body of semiconductor material;
- heating the body and the metal to a temperature sufficient to form a liquid wire of metal-rich material in each of the trough-like depressions on the surface of the body;
- establishing a temperature gradient along substantially the vertical axis of the body and the first axis of the crystal structure, and

f. migrating the metal-rich liquid wire through the body along the first axis of the crystal structure to form a planar region of recrystallized material of the body having solid solubility of the metal of the wire therein to impart a selected type conductivity and a selected level of a resistivity thereto.

3,899,363

METHOD AND DEVICE FOR REDUCING SIDEWALL CONDUCTION IN RECESSED OXIDE PET ARRAYS

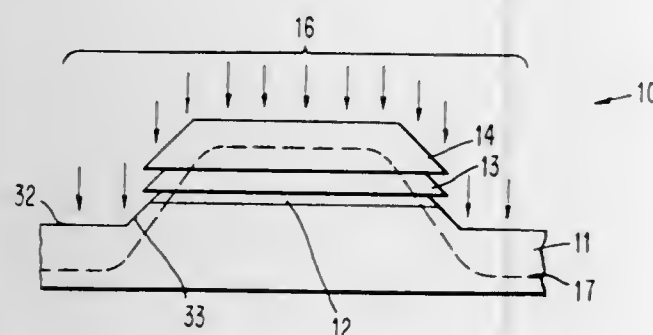
Robert H. Dennard, Croton-on-Hudson; Vincent L. Rideout, Mohegan Lake, and Edward J. Walker, Ossining, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 28, 1974, Ser. No. 484,033

Int. Cl. H011 9/54

U.S. Cl. 148—1.5

6 Claims



1. A method for fabricating silicon semiconductor devices having reduced subthreshold sidewall conduction between source and drain regions of a field effect transistor surrounded by recessed oxide, including the steps of:

1. providing a substrate having successively deposited thereon a surface protecting layer, an oxidation barrier layer, an ion-implantation blocking layer, and a pattern defining layer;
2. exposing and developing said pattern defining layer to provide a predetermined pattern on said ion-implantation blocking layer;
3. etching said ion-implantation blocking layer according to said predetermined pattern;
4. successively etching said oxide barrier and surface protecting layers in the areas defined by said etched ion-implantation blocking layer;
5. etching said substrate in the exposed areas defined by the oxidation barrier and surface protecting layers with an anisotropic etchant to obtain canted sidewalls in said substrate and which do not appreciably undercut said above layers;
6. ion-implanting said substrate with a p-type dopant beneath the etched out areas and along the canted sidewalls thereof;
7. removing said ion-implantation blocking layer by treating the same with a suitable etchant therefor;
8. subjecting said substrate to thermal oxidation in the areas not protected by said oxidation barrier layer to provide fully recessed oxide areas therein;
9. successively removing said oxidation barrier and surface protecting layers with suitable etchants and thereafter;
10. conventionally fabricating field effect transistors in said above treated substrate.

3,899,364

METHOD OF PRETREATING METAL SURFACES

Albert Edward John Evans, Lovendean; Anthony Norbert Aincough, Ropley, both of England, and Koen Verschoore, Essen, Belgium, assignors to Koninklijke Emballage Industrie Van Leer B.V., Amstelveen, Netherlands

Filed Oct. 24, 1972, Ser. No. 300,303

Claims priority, application Netherlands, Oct. 22, 1971, 7114590

Int. Cl. C23c 1/10; C22b 1; B23b 9/02

U.S. Cl. 148—6.15 R

27 Claims

1. A steel surface pre-treated to provide superior rust protection, high lubricity and direct paintability without degreasing, said surface having a first uniform coating of up to 50 milligrams of phosphating agent per square meter of surface and a second uniform coating of an oily material selected from the group consisting of mineral oils, vegetable oils, animal oils and equivalent synthetic oils, said phosphating agent being coated on said surface from an acidic aqueous solution of said phosphating agent, said second coating being applied subsequent to said first coating.

10. A steel surface pre-treated to provide superior rust protection, high lubricity and direct paintability without degreasing, said surface having a uniform coating of up to 50 milligrams of phosphating agent per square meter of surface and at least 150 milligrams of oily material per square meter of surface, said phosphating agent and said oily material being coated on said surface simultaneously, said phosphating agent being coated on said surface from an acidic aqueous solution of said phosphating agent, said oily material being selected from the group consisting of mineral oils, vegetable oils, animal oils and equivalent synthetic oils.

19. A steel surface pre-treated to provide superior rust protection, high lubricity and direct paintability without degreasing, said surface being coated with a phosphating agent and up to 150 milligrams of oily material per square meter of surface, said phosphating agent and said oily material being coated on said surface simultaneously, said phosphating agent being coated on said surface from an acidic aqueous solution of said phosphating agent, said oily material being selected from the group consisting of mineral oils, vegetable oils, animal oils and equivalent synthetic oils.

3,899,365

TREATMENT OF STEEL ROPING WIRE

Raymond Guy, Skellow, near Doncaster, England, assignor to Bridon Limited, Doncaster, England

Filed Aug. 17, 1973, Ser. No. 389,403

Claims priority, application United Kingdom, Aug. 18, 1972, 38614/72

Int. Cl. C23F 7/08

U.S. Cl. 148—6.15 R

4 Claims

2. A method of manufacturing steel wire strand or rope from steel wires which are at their final size, comprising the sequential steps of:

- cleaning the wires to remove wire-drawing residues, rinsing the wires with water,
- activating the wires, which are still wet, by means of a pre-treatment solution facilitating subsequent formation of a fine-grained manganese coating,
- forming a manganese phosphate coating on the wires, which are still wet with the pre-treatment solution,
- rinsing the coated wires with water,
- drying the wires,
- sealing the coating of the wires with a corrosion resistant sealant selected from the group consisting of organic compounds of the oil type (non-setting mineral oils of various weights and viscosities), the solvent type (petroleum base film forming materials and rust inhibitors dissolved in petroleum solvents), emulsifiable type (petroleum base rust preventatives modified to form stable emulsion when mixed with water), wax type, and inor-

ganic sealants of the chromate and dichromate type, and stranding the wires to form a strand.

3,899,366

TREATED SUBSTRATE FOR THE FORMATION OF DROP-WISE CONDENSATES AND THE PROCESS FOR PREPARING SAME

Edward George Tajkowski, Williamsville, N.Y., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Nov. 5, 1973, Ser. No. 412,991

Int. Cl. C23f 7/26

U.S. Cl. 148—6.16

41 Claims

1. A process for treating a metallic substrate formed of a material selected from the group consisting of copper, aluminum, copper alloys and aluminum alloys to obtain a dropwise condensation promoting surface which process comprises:

- a. cleaning the surface of the substrate;
 - b. applying a first solution comprising chromate ions to the substrate to form a chromate ion treated surface; and
 - c. applying, to the chromate ion treated surface, a fluorinated compound having a perfluorinated alkyl or alkoxy chain containing at least 6 carbon atoms and having at least one reactive group which is a carboxylic acid or a phosphate.
38. A process for treating a metallic substrate formed of a material selected from the group consisting of copper, aluminum, copper alloys and aluminum alloys to obtain a dropwise condensation promoting surface which process comprises:
- a. applying a first solution comprising chromate ions to a clean substrate to form a chromate ion treated surface; and
 - b. applying, to the chromate ion treated surface a fluorinated compound having a perfluorinated alkyl or alkoxy chain containing at least 6 carbon atoms and having at least one reactive group which is a carboxylic acid or a phosphate.

3,899,367

COMPOSITIONS AND METHODS FOR BLACKENING HARDENED STEEL

Abraham J. Mitchell, Stratford, Conn., assignor to The Mitchell-Bradford Chemical Co., Milford, Conn.

Filed Oct. 24, 1974, Ser. No. 517,485

Int. Cl. C23F 7/04

U.S. Cl. 148—6.24

9 Claims

5. Process for the blackening of steel, particularly hardened steel, comprising the step of immersing the steel for a period of from about 10 to 25 minutes in an aqueous bath heated to a temperature of from about 255° to 325°F and consisting essentially of an aqueous solution of from 50 to 90 parts by weight of an alkali metal hydroxide, from 0.1 to 50 parts by weight of an alkali metal nitrate, from 0.1 to 50 parts by weight of an alkali metal nitrite, from 0.001 to 20 parts by weight of a cyclic sulphur-containing compound from the group consisting of 2-mercaptobenzothiazole, benzothiazyl disulphide and 2-mercaptimidazole, from 0 to 20 parts by weight of a wetting agent, from 0 to 20 parts by weight of a metal salt of a sulfonated dye and from 0.001 to 20 parts by weight of a material from the group consisting of molybdic acid and alkali metal molybdate salts.

3,899,368

LOW ALLOY, HIGH STRENGTH, AGE HARDENABLE STEEL

George M. Waid, Williamsfield, and Robert T. Ault, Shaker Heights, both of Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio

Filed Dec. 13, 1973, Ser. No. 424,552

Int. Cl. C22c 39/26

U.S. Cl. 148—36

5 Claims

1. Low alloy, high strength, age hardenable, alloy steel consisting essentially in percentage by weight of about: 0.05%

C max., 0.3–0.8% Mn, 0.2–0.5% Si, 0.5–1.5% Ni, 1.5–5.0% Cr, 1.5–3.5% Cu, 0.02–0.45% Nb, 0–0.25% each of Mo, Al and Ti, 0–0.005% B, 0.015% P max., 0.02% S max., balance iron except for impurities within commercial tolerances, characterized as hot rolled at about 2,250°–1,850°F and air cooled, and also as thereafter solution treated at about 1,600°–2,200°F and cooled at least as rapidly as air cool, by a Rockwell "C" hardness of about 30 and under, suitable for forming and machining, and as thereafter aged at about 700°–1,100°F by room temperature tensile properties as follows, tensile and yield strengths of about 160–180 and 135–145 ksi, respectively, tensile elongations of about 17–20%, Charpy impact energies of about 15–30 ft-lbs. and higher, and Rockwell "C" hardnesses of about 35–40.

3,899,369

PROCESS FOR THE PRODUCTION OF MAGNETIC MATERIALS HAVING SELECTIVE COERCIVITY BY USING SELECTED D.C. MAGNETIC FIELDS

David R. Craig, Denver; George M. Lederle, Boulder, and Franklin T. Plante, Longmont, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 11, 1974, Ser. No. 449,862

Int. Cl. C21D 1/04; C22B 23/04; H01F 1/02

U.S. Cl. 148—108

3 Claims

1. A method for preparing finely divided magnetic cobalt-phosphorus alloy particles having a W/H_c less than about 1.2 and controlled coercivities in the range of about 500 to 550 oersteds and about 850 to 950 oersteds, said process comprising:

- preparing a solution consisting essentially of 35 g/l cobalt sulfate, sodium hypophosphite in an amount selected from the group consisting of 40 g/l and 200 g/l, and sodium citrate in an amount selected from the group consisting of 70 g/l and 35 g/l;
- stirring and heating said solution;
- adding to said solution a hot solution of 5 g/l of sodium hypophosphite and 300 g/l of 25% by weight polyacrylic acid, said hot solution being added in an amount selected from the group consisting of 0 ml and 200 ml per liter of said cobalt sulfate solution;
- adding to said solution 0.1% palladium chloride-hydrochloric acid solution in an amount selected from the group consisting of 20 ml and 10 ml per liter of said initial cobalt sulfate solution;
- after about 10 seconds adding to said solution 28% ammonium hydroxide in an amount equal to 100 ml per liter of said original cobalt sulfate solution;
- and then reacting said solution in the presence of a D.C. magnetic field of about 600 to 1400 gauss to form magnetic cobalt-phosphorus particles having coercivities in the range of about 500 to 550 oersteds and about 850 to 950 oersteds and a W/H_c less than about 1.2.

3,899,370

METHOD FOR PRODUCING COATED AND AGE HARDENED ALUMINUM OR ALUMINUM-BASED ALLOY MOLDED MATERIALS

Toshiro Takahashi; Toshihiro Nagano; Yasuo Aoshima, all of Shizuoka; Matsuo Suzuki, Yaizu; Shozo Suzuki, Shizuoka, and Teruo Asahina, Fujieda, all of Japan, assignors to Riken Light Metal Industries Co., Ltd., Shizuoka and Kuboko Paint Co., Ltd., Osaka, both of Japan

Filed Jan. 17, 1973, Ser. No. 324,448

Claims priority, application Japan, Jan. 20, 1972, 47-7230; Jan. 20, 1972, 47-7231; Feb. 17, 1972, 47-16675; Feb. 17, 1972, 47-16676; Feb. 19, 1972, 47-16908

Int. Cl. C21D 1/00; B32B 15/08

U.S. Cl. 148—159

2 Claims

1. In a method for producing painted molded aluminous material in which an aluminous material is subjected to extrusion molding, the molded material is subjected to an artificial

age hardening treatment; to conventional pre-treatments of degreasing, neutralization, washing with water and a surface-roughening treatment; and to a treatment for forming a base layer for painting by (1) anodic oxidation (2) treatment in boiling water or an aqueous solution of a chemical agent for forming a boehmite layer or (3) spraying with steam; the thus treated molded material is coated with a thermosetting paint and the painted molded material is heated to cure the painted film, the improvement which comprises, (a) subjecting the extrusion molded aluminous material in a super-saturated condition and having a hardness of less than 65 kg/mm² and a tensile strength of less than 15 kg/mm² to conventional pretreatments without first effecting artificial age hardening (b) subjecting the pre-treated material to a treatment for forming a base layer for painting (c) coating the material with a film of a thermosetting paint and (d) heat treating the painted material at a temperature of 205±5°C. for 50-120 minutes to effect said age hardening treatment simultaneously with the curing of the painted film.

3,899,371

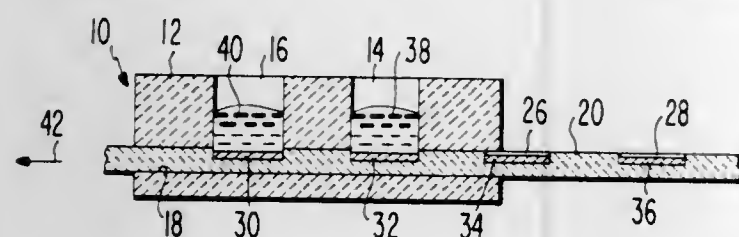
METHOD OF FORMING PN JUNCTIONS BY LIQUID PHASE EPITAXY

Ivan Ladany, Stockton, and Vincent Michael Cannuli, Trenton, both of N.J., assignors to RCA Corporation, New York, N.Y.
Filed June 25, 1973, Ser. No. 373,462

Int. Cl. H01L 7/38

U.S. Cl. 148-171

5 Claims



1. A method of depositing on a substrate a pair of epitaxial layers of semiconductor material comprising the steps of providing first and second solutions of a semiconductor material, having substantially the same ratio of elements, dissolved in a heated molten solvent, bringing first and second substrates into contact with said first and second solutions, respectively, so that a surface of each substrate is in contact with its respective solution, cooling both of said solutions to deposit from each solution a first epitaxial layer of the respective semiconductor material on the respective substrate in the solution, such that the remaining portions of the first and second solutions have substantially equal element ratios, then removing said substrates from the solutions and moving the first substrate into the second solution so that the first epitaxial layer on the first substrate is in contact with the second solution, and then further cooling said second solution to deposit from said second solution a second epitaxial layer of the semiconductor material on the first epitaxial layer on the first substrate.

3,899,372

PROCESS FOR CONTROLLING INSULATING FILM THICKNESS ACROSS A SEMICONDUCTOR WAFER
Ronald Philip Esch, and Patrick Chin-Sheng Huang, both of Manassas, Va., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 31, 1973, Ser. No. 411,518

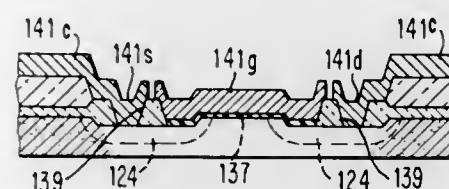
Int. Cl. H01L 7/44

U.S. Cl. 148-187

9 Claims

1. A process for fabricating semiconductor devices comprising the steps of:
a. depositing an initial insulating film on the surface of a semiconductor substrate of a first conductivity type,

- b. forming openings in the insulating film to expose the substrate surface,
c. forming regions of a second conductivity type within the openings and in the substrate,



- d. reforming the insulating film in the openings and entirely across the wafer to be of a substantially planar configuration, and,
e. forming an opening through the substantially planar insulating film to attach an electrode to the substrate.

3,899,373

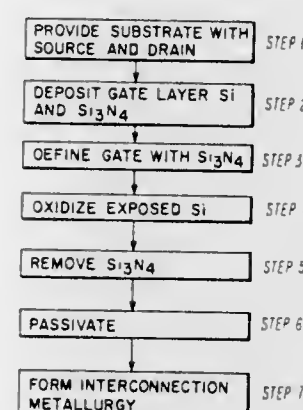
METHOD FOR FORMING A FIELD EFFECT DEVICE
Igor Antipov, Pleasant Valley, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 20, 1974, Ser. No. 471,401

Int. Cl.² H01L 21/265

U.S. Cl. 148-187

11 Claims



1. A method for fabricating an insulated gate field effect transistor device comprising

- a. providing a semiconductor substrate of a first conductivity type having at least source and drain regions of a second opposite conductivity type, and a field layer of insulating material on the surface having at least the gate area open between the source and drain regions,
b. forming a first thin blanket layer of an insulating material having a thickness of at least 100 Angstroms on the surface of said substrate,
c. depositing a second blanket layer of silicon material over said layer of insulating material,
d. depositing a third blanket layer of Si₃N₄ and a fourth blanket layer of SiO₂ over said silicon layer,
e. removing by photolithographic techniques areas of said third and fourth blanket layers of Si₃N₄ and SiO₂ over the field regions leaving areas at least over the gate regions,
f. oxidizing the exposed areas of said third silicon layer in their entirety forming a layer of thermal SiO₂,
g. removing the remaining areas of SiO₂ and underlying Si₃N₄ thereby uncovering the gate electrode,
h. depositing a fifth blanket passivating layer of an insulating material on the surface of the resultant device,
i. forming contact openings to at least said source and drain regions, and
j. forming an interconnection metallurgy system.

3,899,374

CALCIUM NITRATE EXPLOSIVE COMPOSITION

Thomas E. Sylkhouse, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Mar. 29, 1974, Ser. No. 456,083

Int. Cl. C06b 19/00

U.S. Cl. 149-2

23 Claims

1. An explosive composition which comprises, at least about 50 percent, as percent by weight, of the following mixture:
a. from about 51 to about 85 percent of inorganic oxidizing salts consisting essentially of ammonium nitrate and calcium nitrate wherein calcium nitrate consists of from about 53 to about 95 percent of said inorganic oxidizing salts;
b. from about 9 to about 35 percent of at least one water miscible organic fuel; and
c. from about 5 to about 21 percent of water, said composition having an oxygen balance ranging from about +20 grams to about -8 grams of oxygen per 100 grams of said mixture, said weight ratio of said water miscible organic fuel to calcium nitrate in said mixture ranging from about 0.80 to about 0.20 and sufficient gaseous voids incorporated in said mixture to provide a bulk density ranging from about 0.80 to 1.40 gm/cc.

3,899,375

METALLIC PHOSPHIDE COMPOSITION FOR USE IN AQUATIC FLARES

Malcolm George Palmer, Blakedown, Near Kidderminster, England, assignor to Erco Industries Ltd., Islington, Canada
Continuation of Ser. No. 46,996, June 17, 1970, abandoned.

This application Apr. 27, 1973, Ser. No. 355,194

Claims priority, application United Kingdom, June 20, 1969, 31293/69

Int. Cl. C06d 1/10; C06c 9/00

U.S. Cl. 149-29

2 Claims

1. A phosphide composition which upon contact with sea water releases phosphine gas in high yield, said phosphine gas being readily self-inflammable when contacted with air, said phosphide composition comprising the reaction product prepared by reacting aluminium and sodium with phosphorus in the absence of oxygen, and recovering the said reaction product.

3,899,376

PROCESS OF USING A MICROBIAL DEGRADATION FACILITY

Edward N. Azarowicz, Vienna, Va., assignor to Biotechnika International, Inc., Alexandria, Va.

Filed Feb. 23, 1973, Ser. No. 334,986

Int. Cl. C12b 1/00

U.S. Cl. 195-2

22 Claims

1. A process for the microbial degradation of polluting petroleum and oily wastes which comprises introducing an aqueous mixture of the effluent material to be degraded and at least one microorganism selected from the group consisting of *Candida parapsilosis* ATCC 20246, *Candida tropicalis* ATCC 20247, *Candida utilis* ATCC 20248, *Aureobasidium pullulans* ATCC 20249, *Myrothecium verrucaria* ATCC 20250, *Cladosporium cladosporioides* ATCC 20251, *Saccharomyces cerevisiae* ATCC 20252, *Aspergillus sp.* ATCC 20253, *Rhodotorula sp.* ATCC 20254, *Candida lipolytica* ATCC 20255, *Candida lipolytica*, ATCC 20362, *Candida lipolytica* ATCC 20363, *Candida lipolytica* ATCC 20364, *Nocardia corallina* ATCC 21504, *Nocardia globulara* ATCC 21505, *Nocardia globulara* ATCC 21506, *Nocardia opaca* ATCC 21507, *Nocardia rubra* ATCC 21508, *Nocardia paraffinae* ATCC 21509 and *Penicillium sp.* ATCC 20369, or mutants thereof, together with necessary nutrients for the microorganisms into an initial degradation system, aerating or stirring the mixture in the initial degradation

system until the microbial action has proceeded sufficiently to substantially degrade the pollutants in said effluent, conveying the substantially degraded effluent to a final degradation system and adding a fresh charge of at least one of said microorganisms together with nutrients therefor to the final degradation system for a time sufficient to permit the microbial action to proceed to the point where the desired degradation is obtained, and conveying the degraded effluent from said final degradation system.

3,899,377

BONDING ALUMINIUM

Penelope Jane Vesey Luc, 18, rue Fourcroy, Paris 17^e, France
Continuation of Ser. No. 191,080, Oct. 20, 1971, abandoned, and a continuation-in-part of Ser. No. 830,831, June 5, 1969, abandoned. This application July 9, 1974, Ser. No. 486,845

Int. Cl. B29c 27/08; B23k 27/00

U.S. Cl. 156-73.5

16 Claims

1. A method of bonding aluminum to a material of the group consisting of a paper and a non-resinous cloth, the bonding occurring at a predetermined area of the aluminum and the material at which a bond is desired, comprising the steps of:

- i. subjecting at least one of the surfaces of:
a. the aluminum to be bonded, the surface of the aluminum, excluding the predetermined area of the surface of the aluminum at which bonding is desired and consisting of at least one of at least:
1. the portion of the surface of the aluminum adjacent to, and
2. the portion of the surface of the aluminum substantially opposite to the predetermined area of the surface of the aluminum at which bonding is desired, and
b. a layer of solid material adjacent a surface opposite the surface having the predetermined area, of one of:
1. the aluminum having the predetermined area at which bonding is desired, at the predetermined area, and
2. the material of the group at the predetermined area of the material at which bonding is desired,

to a frictional treatment, the frictional treatment comprising the subsection of the at least one surface to dynamic friction created by a rotary tool in contact with the at least one surface.

- ii. bringing the predetermined area of the surface of the aluminum at which bonding is desired into intimate contact with the predetermined area of the surface of the material of the group at which bonding is desired, and
iii. maintaining the predetermined areas of the surfaces of the aluminum and the material in intimate contact at least during the step of subjecting,

whereby the aluminum and the material are bonded in the predetermined area.

3,899,378

METHOD OF PRODUCING RUBBER-PLASTICS COMPOSITES

Reginald Trevor Wragg, Tamworth, and James Frank Yardley, Shenston, near Lichfield, both of England, assignors to Dunlop Limited, London, England

Filed Mar. 5, 1974, Ser. No. 448,266

Claims priority, application United Kingdom, Mar. 9, 1973, 11591/73

Int. Cl.² B32B 31/20

U.S. Cl. 156-73.5

12 Claims

1. A method of producing a rubber-plastics composite by relative movement of a thermoplastic plastics component in friction contact with a compatible vulcanized rubber component until the plastics surface in contact with the rubber component melts, and

then allowing the plastics surface to solidify in contact with the rubber component, said compatible plastics and rubber components selected from the group consisting of substantially linear crystalline low pressure solution olefin polymers with ethylene/alpha-mono-olefin copolymer or ethylene/alpha-mono-olefin/diolefin terpolymer compositions containing up to 70 percent polymer; low density polyethylene or a crystalline copolymer of ethylene with a vinyl alkanolic ester, an alkyl acrylate or a vinyl halide, with ethylene/alpha-mono-olefin copolymer or ethylene/alpha-mono-olefin/diolefin terpolymer compositions containing up to 55 percent polymer; poly(ethylene terephthalate) or poly(tetramethylene terephthalate) with polyepichlorhydrin, styrene/butadiene rubber, nitrile rubber, polybutadiene rubber or epichlorhydrin/ethylene oxide rubber; polar elastoplastic linear block copolymers containing polyester blocks and polyether blocks with polyepichlorhydrin, epichlorhydrin/ethylene oxide rubber, natural rubber, styrene/butadiene rubber, nitrile rubber, polyurethane rubber, acrylate rubber, polychloroprene, propylene oxide/unsaturated epoxide rubber or polybutadiene rubber; polyamides with polyepichlorhydrin, sulphur-cured polyurethane, nitrile rubber, vinylidene fluoride fluoro-elastomer, natural rubber, polychloroprene, trans-polybutadiene, styrene/butadiene rubber or polybutadiene rubber; polycarbonates with nitrile rubber, polyepichlorhydrin or polybutadiene rubber; vinyl chloride polymers with nitrile rubber; poly(vinylidene fluoride) with acrylate rubber; styrene/acrylonitrile copolymer with nitrile rubber; methyl methacrylate resin with polyepichlorhydrin or nitrile rubber; poly(chlorotrifluoroethylene) with styrene/butadiene rubber; polyurethane plastics with styrene/butadiene rubber or natural rubber; and polyformaldehyde with polyepichlorhydrin or epichlorhydrin/ethylene oxide rubber.

3,899,379

RELEASABLE MOUNTING AND METHOD OF PLACING AN ORIENTED ARRAY OF DEVICES ON THE MOUNTING

William R. Wanesky, Wescosville, Pa., assignor to Western Electric Company, Incorporated, New York, N.Y.

Division of Ser. No. 64,898, July 30, 1970, Pat. No. 3,690,984, which is a division of Ser. No. 729,859, April 10, 1968, which is a continuation-in-part of Ser. No. 673,900, Oct. 9, 1967, abandoned. This application Mar. 8, 1972, Ser. No. 232,735

Int. Cl. B29b 3/00; B29c 27/00; B32b 25/20

U.S. Cl. 156—80

7 Claims

1. A method of transferring an oriented array of articles, which comprises:

releasably supporting the articles in said oriented array with at least one surface on each article exposed; abutting against said exposed surfaces of said articles a carrier constructed of material selected from the group consisting of silicone rubber and silicone resin, each of which exhibits pressure sensitive, vacuum holding properties; and then

releasing the supported articles to vacuum hold them in the original orientation of the carrier.

2. A method of transferring an array of articles from a support plate onto a carrier constructed of material having pressure sensitive, vacuum holding properties, wherein said material is selected from the group consisting of silicone rubber and silicone resin, which comprises:

applying a hardenable material over said array of articles and hardening the material to secure the articles in position;

removing the support plate to expose the undersurfaces of said secured articles;

placing said carrier against the exposed undersurfaces of said articles to vacuum hold said articles to said carrier; and then

removing said hardenable material to release and leave said articles held against said carrier.

3,899,380

METHOD OF MAKING ACOUSTICAL MATERIAL

Lance W. Pihlstrom, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 121,560, March 5, 1971, Pat. No. 3,773,605. This application May 21, 1973, Ser. No. 361,948

Int. Cl. B32B 5/26, 5/28, 31/20

U.S. Cl. 156—181

3 Claims

1. A method of making a rigid light-weight open porous integrated acoustical material in block form, which comprises selecting open porous webs of loosely raveled filament forming thermoplastic organic fibers having a diameter within a range of 0.2 and 25 microns and a length of at least about 0.5 cm, stacking at least eight of said webs one on top of another to form a loose pile, and, without external heat or binder, compressing said pile for a time and at a pressure sufficient to cause fusing of contacting fibers in said pile and to produce integration and compaction of said pile to form a unitary structure having a flexural strength of at least 100 pounds per square inch and a uniform density.

3,899,381

DIRECT MAIL ADVERTISING BOOKLET AND METHOD OF PRODUCTION

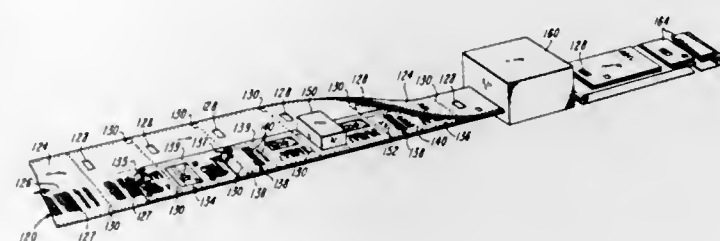
William J. O'Brien, Plandome Heights, N.Y., and John Sakal, Dayton, Ohio, assignors to The Standard Register Company, Dayton, Ohio

Filed Feb. 7, 1973, Ser. No. 330,214

Int. Cl. B42c 3/00; B41l 1/30; B31f 1/00

U.S. Cl. 156—204

10 Claims



1. A high speed method of producing booklets having personalized addresses thereon, comprising the steps of printing a continuous cover paper strip with repetitive information along the length thereof, the cover paper strip having a first half portion and a second half portion, forming a series of longitudinally spaced apertures within the first half portion of said cover paper strip, printing at least one continuous insert paper strip with repetitive information along the length thereof, the insert paper strip having a width substantially one-half that of said cover paper strip, collating the insert paper strip into superposed relation with the second half portion of the cover paper strip, attaching one longitudinal edge portion of the insert paper strip to the longitudinal center portion of the cover paper strip, personalized addressing the insert paper strip at longitudinally spaced intervals with different addresses, folding the first half portion of the cover paper strip over onto the insert paper strip for exposing a personalized address through each aperture and to form a continuous series of booklets, and severing the collated strips at longitudinally spaced intervals to separate the booklets.

3,899,382

ANAEROBIC BONDING AGENT

Hideaki Matsuda, 2-738, Tsunomori-cho, Marugame-shi, Kagawa-ken, and Takanori Okamoto, 7-651, Hukami, Horie, Oaza, Tadotsu-cho, Nakatado-gun Kagawa-ken, both of Japan

Filed Mar. 8, 1973, Ser. No. 339,065

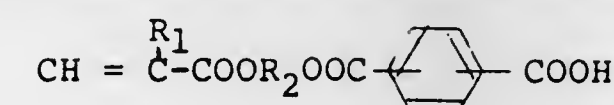
Int. Cl. C09j 3/16, 5/00

U.S. Cl. 156—327

7 Claims

1. An anaerobic bonding agent which comprises an admixture of

- an organic peroxide,
- a polyvalent metal salt of a compound of the formula:



wherein R₁ is hydrogen or methyl, R₂ is an aliphatic or aromatic polyhydric alcohol residue which can be substituted with halogen, —OH or contain an —O— bond,

- a compound containing an acrylic or methacrylic group selected from the group consisting of alkyl esters of acrylic or methacrylic acid, mono or polyacrylate esters of mono or polyhydric alcohols, mono or poly-methacrylate esters of mono or polyhydric alcohols, or polyester acrylates.

3,899,383

STRIP APPLYING DEVICE

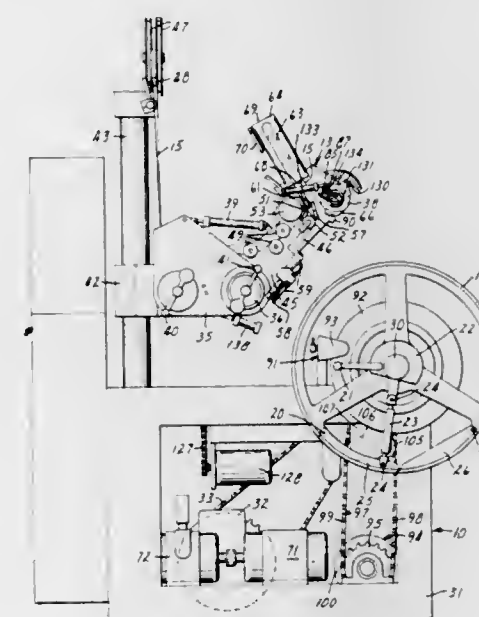
Thomas E. Schultz, Roseville, and Peter W. Schuchardt, May Twp., both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 15, 1974, Ser. No. 451,684

Int. Cl. B29h 17/00; B60c 13/00; G11b 15/58

U.S. Cl. 156—394

10 Claims



1. In a device adapted for adhesively applying lengths of elastic reflex-reflective strip material to tire casings from a supply of the strip material having a protective liner applied thereto, said device comprising means adapted for driving a said tire casing past an applying station; an applying head including a frame, an applying wheel rotatably mounted on said frame, and means for defining a path for said strip material along said frame including a predetermined arcuate path portion relative to said frame defined partially around said applying wheel; liner stripping means for stripping the liner from the strip material along said path in advance of said applying wheel; and means for mounting said applying head at an applying position with said wheel pressing tape along said

path portion against the tire casing at said applying station to apply strip material as the tire casing is driven past the applying station, the improvement wherein said device includes:

a vacuum column defining a portion of said path adjacent said applying wheel, said vacuum column having a chamber with open and closed ends adapted for receiving a U-shaped supply length of said strip material through said open end to form a loose fitting air seal between said open and closed ends;

means for providing air under less than atmospheric pressure at the closed end in said chamber to support the U-shaped length therein;

sensing means along said chamber for sensing the position of said U-shaped length of strip material within said chamber;

strip drive means along said path and in driving engagement with said strip material prior to said vacuum column for driving said strip along said path; and

control means connected to said sensing and strip drive means and responsive to the position of said U-shaped length of strip material in said vacuum column for operating said strip drive means to maintain a U-shaped supply length of material in said chamber as strip material is applied around a tire casing;

said liner stripping means and said strip drive means comprising:

a first roller having a cylindrical peripheral surface about an axis;

a second roller having cylindrical peripheral surface portions about an axis and at least two flatted peripheral surface portions, said first and second rollers being in an axially parallel relationship with a nip therebetween defining a portion of said path with the liner on the strip material adjacent the second roller, and being spaced to provide driving engagement on opposite surfaces of said lined strip material positioned in said nip when one of said circular peripheral surface portions is at said nip, said flatted peripheral surface portions affording movement of the strip material relative to the periphery of the rollers when one of said flatted peripheral surface portions is at said nip;

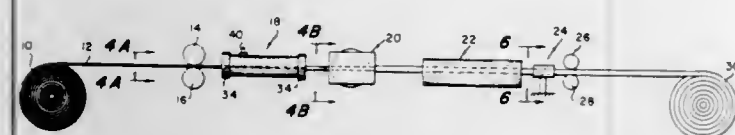
means for individually driving said first and second rollers in opposite rotational directions to propel strip material in said nip toward said vacuum column when one of said cylindrical peripheral surface portions is at said nip;

means for pressing the separated strip material into continuous driving engagement with the periphery of said first roller at a position spaced around the periphery thereof from said nip; and

an idler roller spaced around the periphery of said second roller from said nip and spaced from said second roller to provide driving engagement with said liner therebetween when one of said circular peripheral surface portions is adjacent said idler roller and to afford movement of the liner relative to said second roller when one of said flatted peripheral surface portions is opposite said idler roller, said flatted peripheral surface portions on said second roller being spaced so that at an adjust position of said second roller during each revolution thereof, one flatted peripheral surface portion is at the nip between said first and second rollers, while the other flatted peripheral surface portion is opposite said idler roller so that the drive means will provide said means for stripping the liner from the strip material when the lined strip material is fed through the nip between the driven first and second rollers with the strip material then extending along the periphery of the first roller to said pressing means and the liner extending along the periphery of the second roller to the idler roller, and any slack accumulated in the strip material and liner on the peripheries of the first and second rollers will be removed by slippage caused from tension in the supply length when said second roller rotates through said adjust position.

3,899,384

APPARATUS FOR MANUFACTURING A TENDON
 William F. Kelly, 100 Bellaire Dr., New Orleans, La. 70124
 Division of Ser. No. 94,247, Dec. 2, 1970. This application Jan.
 3, 1972, Ser. No. 214,983
 Int. Cl.² B29C 19/00; B29B 7/14; B65H 81/00
 U.S. Cl. 156—433 7 Claims



1. Apparatus for manufacturing a tendon embodying a strand of wire encased in a lubricant covered by a protective jacket for use in the post-tensioning of prestressed concrete, said apparatus including:

- feed means for advancing the strand of wire at a constant, predetermined speed,
- means for applying a lubricant of grease-like consistency and predetermined thickness to the periphery of said strand of wire,
- said means comprising an elongated housing providing a lubricant reservoir,
- means for forcing lubricant under pressure into the reservoir,
- inlet and outlet means at opposite ends of said housing for passing the strand of wire longitudinally through the reservoir, whereby the lubricant adheres to the outer periphery thereof,
- die means within said housing adjacent said outlet means for gauging a lubricant envelope of uniform predetermined thickness to the strand of wire prior to passing from said housing,
- guide means within said housing reservoir adjacent said die means for urging the lubricant in the direction of the strand of wire, and
- means for applying a protective jacket to the outer periphery of the lubricant envelope in spaced relation to the strand of wire.

3,899,385

APPARATUS FOR APPLYING LABELS COATED WITH PRESSURE-SENSITIVE ADHESIVE
 Friedhelm Brinkmeier, Ladbagen, Germany, assignor to Windmoller & Holscher, Lengerich, Germany
 Filed July 18, 1973, Ser. No. 380,198
 Claims priority, application Germany, Aug. 8, 1972, 2237846

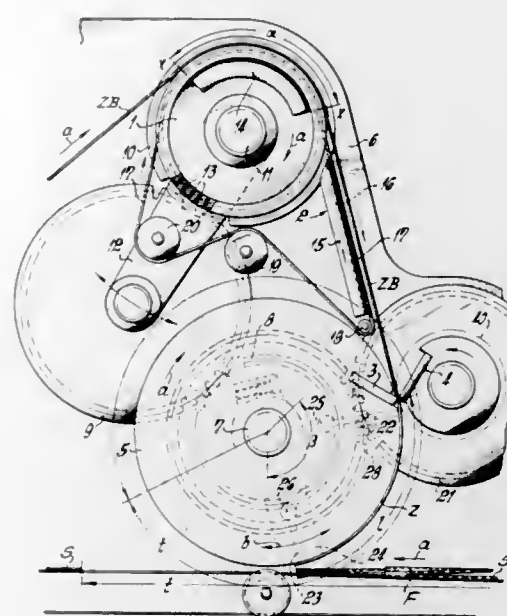
Int. Cl. B65c 9/14

U.S. Cl. 156—521

5 Claims

1. Apparatus for sticking labels coated with pressure-sensitive adhesive on articles which are moved past the apparatus in synchronism therewith, particularly for sticking end labels of plastics material sheeting on the folded ends of bags to protect and reinforce said ends, comprising feeding means for a continuous feeding of a label web, which is unilaterally coated with pressure-sensitive adhesive, and a continuously rotating applying roller which succeeds said feeding means and is provided with vacuum-applying means at its periphery and cooperates with a cross-cutter in such a manner that the labels are severed from the label web and are stuck on the folded ends of the articles, which are tangentially moved past the applying roller in synchronism therewith, said applying roller revolving at a higher peripheral velocity than the feeding means, characterized in that the means for feeding the label web comprises a continuously rotating vacuum drum, which is contacted by the label web on its uncoated side, and

a flat vacuum-applying member, which extends approximately in the direction of the common tangent to the vacuum drum



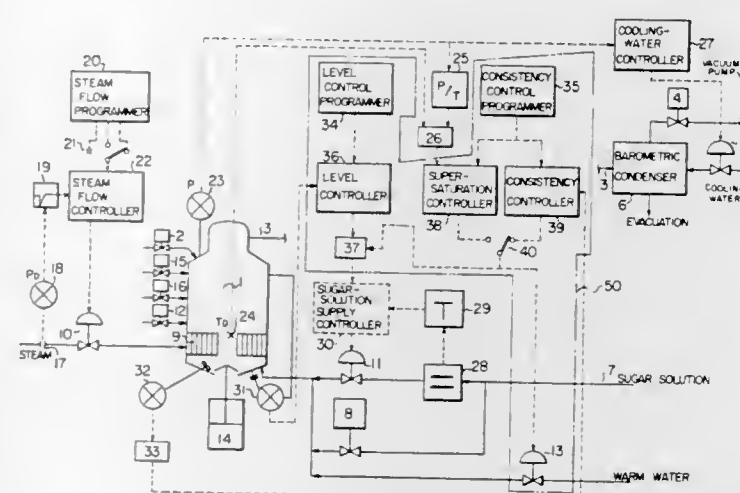
and applying roller and is covered by at least one driven endless vacuum belt.

3,899,386

METHOD FOR CONTROLLING VACUUM PAN
 Shigeo Komiyama; Ichiro Matsubara, both of Katsuta, and Masatake Shiraishi, Koriyama, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Dec. 29, 1972, Ser. No. 319,938

Claims priority, application Japan, Dec. 29, 1971, 47-3075
 Int. Cl. B01d 1/00; B01j 17/00, 17/02; B01d 3/42; C13f 1/02
 U.S. Cl. 159—47 R 26 Claims



1. In a method for controlling a vacuum pan according to which heat is exchanged between a heat exchanger and a massecuite to generate and grow crystals in the massecuite in a batch operation, the improvement comprising (a) measuring the inter-crystal gap length of the crystals grown in the solution and controlling the quantity of the supply of the solution on the basis of the measured inter-crystal gap length to effectively grow crystals, and (b) measuring the value of at least one other parameter indicative of the progress of the crystal growing process, comparing the measured inter-crystal gap length with a programmed value for the inter-crystal gap length provided by a first program, comparing the measured value of said other parameter with a programmed value for said other parameter provided by a second program, automatically preferentially selecting either said first program or said second program for controlling said supply quantity, and controlling said supply quantity on the basis of the deviation of the measured value from the programmed value of the parameter corresponding to the selected program.

3,899,387

PROCESS OF MAKING PAPER USING MONO-ISOCYANATE CAPPED POLY (OXYALKYLENE) DIOLS AS A RE-WETTING AND DEFOAMING AGENT
 Richard E. Freis, Minneapolis, and Larry M. Rue, Inver Grove Heights, both of Minn., assignors to Economics Laboratory, Inc., St. Paul, Minn.

Filed Apr. 11, 1973, Ser. No. 350,004

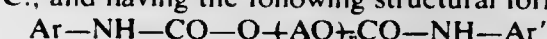
Int. Cl.² D21H 3/12

U.S. Cl. 162—158

5 Claims

1. In a method for increasing the hydrophilic properties of a waterlaid sheet and providing a de-foaming action during the formation of the waterlaid sheet on a paper-making machine, said waterlaid sheet being formed from a paper-making slurry, the improvement which comprises the steps of:

- treating the fibers in said paper-making slurry, and de-foaming said paper-making slurry, with an effective amount of a re-wet composition, having de-foaming properties, the active portion of said re-wet composition comprising at least about 25% by weight of a diaryl urethane having a cloud point, at 1 weight percent in water, below 45°C., and having the following structural formula:



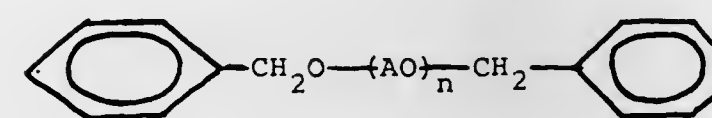
wherein

Ar and Ar' are monovalent aryl groups free of —NCO radicals,

A is an alkylene group containing 2–4 carbon atoms, n is a number greater than 3 selected such that the divalent radical (AO)_n has a molecular weight less than 12,000, and

(AO)_n is a block copolymer containing at least one block of oxypropylene units,

said effective amount being an amount sufficient to lower the re-wet time of said waterlaid sheet to less than 200 seconds as determined by the re-wet test in which a drop of water is added to a sample of said waterlaid sheet and the time needed to absorb the drop is noted; the defoaming action of said diaryl urethane, at 75°F., being at least about equal to the defoaming action of the compound



wherein

A, n, and (AO)_n have the previously indicated significance; and

- depositing the thus-treated fibers on a foraminous surface.

3,899,388

TREATING COMPOSITIONS
 John P. Petrovich, and David L. Taylor, both of St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.
 Filed Feb. 26, 1973, Ser. No. 335,614

Int. Cl. D21d 3/00

U.S. Cl. 162—164

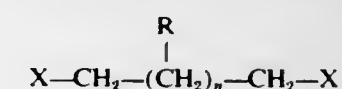
19 Claims

1. A composition for increasing the wet and dry strength of paper comprising

I. an uncured, thermosetting resinous reaction product of

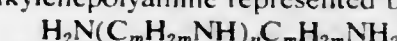
A. an adduct of

- a dihaloalkane represented by the formula



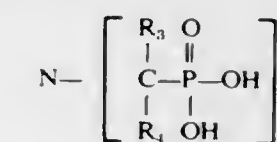
wherein X represents chloro, bromo or iodo, R is hydrogen, hydroxy or alkyl group having 1 to 4 carbon atoms, and n is 0 or 1 and

- a polyalkylenepolyamine represented by the formula

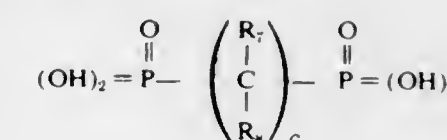


wherein m is an integer of from 4 to about 15 and p is 0 or 1 in a mole ratio of from about 0.5:1 to about 0.95:1 and B. an epihalohydrin selected from the group consisting of epichlorohydrin, epibromohydrin, and epiiodohydrin, in a mole ratio of from about 1.25 to about 2.5 moles of epihalohydrin per mole of amine group in said adduct, said reaction product being present in an amount of from about 5% by weight to about 40% by weight based on the total weight of the composition,

II. a polyanionic phosphorus compound, present in an amount of from about 0.1% to about 20% by weight, based on the weight of said resinous reaction product selected from the group consisting of (a)



wherein R₃ and R₄ each independently is hydrogen or an alkyl group containing 1 to 4 carbon atoms, (b) water soluble salts thereof, (c)



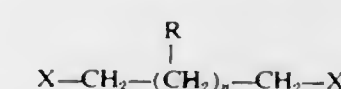
wherein c is an integer from 1 to 30, R₇ represents hydrogen or lower alkyl, R₈ represents hydroxyl, hydrogen or lower alkyl, (d) water soluble salts thereof, and

III. water, in an amount of from about 60 to 95% by weight, based on the total weight of the composition.

10. A cellulosic substrate having improved wet and dry strength which comprises a cellulosic substrate containing I. about 0.1 to about 5 weight percent based on the dry weight of the cellulosic fibers of a thermosetting resinous reaction product of

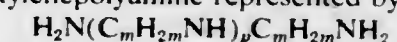
A. an adduct of

- a dihaloalkane represented by the formula



wherein X represents chloro, bromo, or iodo, R is hydrogen, hydroxy or an alkyl group having 1 to 4 carbon atoms, and n is 0 or 1 and

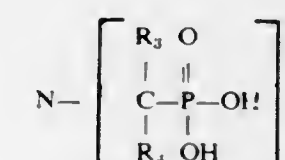
- a polyalkylenepolyamine represented by the formula



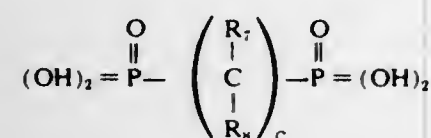
wherein m is an integer of from 4 to about 15 and p is 0 or 1 in a mole ratio of from about 0.5:1 to about 0.95:1 and

B. an epihalohydrin selected from the group consisting of epichlorohydrin, epibromohydrin, and epiiodohydrin, in a mole ratio of from about 1.25 to about 2.5 moles of epihalohydrin per mole of amine group in said adduct, and

II. a polyanionic phosphorus compound present in an amount of from 0.1% to about 20% by weight based on the weight of said resinous reaction product selected from the group consisting of (a)



wherein R_3 and R_4 each independently is hydrogen or an alkyl group containing 1 to 4 carbon atoms, (b) water soluble salts thereof, (c)



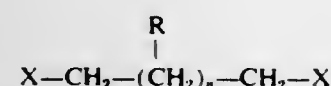
wherein c is an integer from 1 to 30, R_7 represents hydrogen or lower alkyl, R_8 represents hydroxyl, hydrogen or lower alkyl, (d) water soluble salts thereof, said resinous reaction product having been cured after application of both the resinous reaction product and polyanionic phosphorus compound to the cellulosic substrate.

8. A method for producing paper having improved wet and dry strength which comprises applying to said paper a composition comprising

I. an uncured, thermosetting resinous reaction product of

A. an adduct of

1. a dihaloalkane represented by the formula



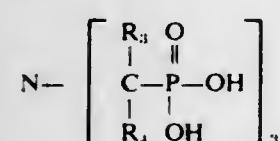
wherein X represents chloro, bromo or iodo, R is hydrogen, hydroxy or alkyl group having 1 to 4 carbon atoms, and n is 0 or 1 and

2. a polyalkylenepolyamine represented by the formula

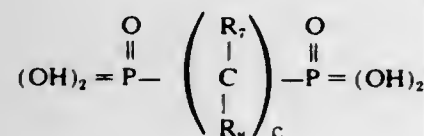
$H_2N(C_mH_{2m}NH)_pC_mH_{2m}NH_2$ wherein m is an integer of from 4 to about 15 and p is 0 or 1 in a mole ratio of from about 0.5:1 to about 0.95:1 and

B. an epihalohydrin selected from the group consisting of epichlorohydrin, epibromohydrin, and epiodohydrin, in a mole ratio of from about 1.25 to about 2.5 moles of epihalohydrin per mole of amine group in said adduct, said reaction product being present in an amount of from about 5% by weight to about 40% by weight based on the total weight of the composition.

II. a polyanionic phosphorus compound, present in an amount of from about 0.1% to about 20% by weight, based on the weight of said resinous reaction product selected from the group consisting of (a)



wherein R_3 and R_4 each independently is hydrogen or an alkyl group containing 1 to 4 carbon atoms, (b) water soluble salts thereof, (c)



wherein c is an integer from 1 to 30, R_7 represents hydrogen or lower alkyl, R_8 represents hydroxyl, hydrogen or lower alkyl, (d) water soluble salts thereof, and

III. water, in an amount of from about 60 to 95% by weight, based on the total weight of the composition, and thereafter curing said resinous reaction product, said composition being present in an amount to provide from about 0.1 to about 5 weight percent, based on the dry weight of the cellulosic fibers of said reaction product, and from 0.1 to about 20 percent based on the dry weight of the paper fibers of said polyanionic phosphorus compound.

3,899,389

CELLULOSIC MATERIALS INTERNALLY SIZED WITH COPOLYMERS OF ALPHA BETA-ETHYLENICALLY UNSATURATED HYDROPHOBIC MONOMERS AND AMMONIATED CARBOXYLIC ACID COMONOMERS
Walter Lee Vaughn, Lake Jackson, and Robert James Beam, Angleton, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 1, 1974, Ser. No. 438,913

Int. Cl. C08g 45/18

U.S. Cl. 162-168

21 Claims

1. In a method for internal sizing of a cellulosic material wherein an internal sizing agent and a retention aid are applied to the fibers of the cellulosic material, the improvement wherein the internal sizing agent is a water-dispersible, water- and alkali-insoluble copolymer of an α,β -ethylenically unsaturated hydrophobic monomer and an ammoniated α,β -ethylenically unsaturated carboxylic acid and the retention aid is a water dispersible reaction product of epihalohydrin and ammonia, or an aliphatic polyamine having at least two amine hydrogens per molecule or a mixture of ammonia and aliphatic polyamine.

3,899,390

MEASURING APPARATUS FOR THE COOLANT OUTLET TEMPERATURE IN NUCLEAR-REACTOR FUEL ELEMENTS

Klaus-Wilhelm Klein, Erlangen, and Peter Rau, Mittelehrenbach, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

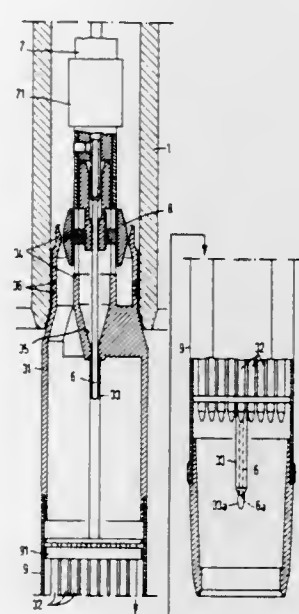
Filed June 12, 1972, Ser. No. 261,656

Claims priority, application Germany, June 14, 1971, 2129438

Int. Cl. G21c 17/02

U.S. Cl. 176-19 R

3 Claims



1. A nuclear reactor having a fluid pressure chamber in which a fuel element is suspended by a tubular attachment rod extending from the outside of said chamber downwardly to its inside, said element having an attachment head to which the lower end of said rod is attached and said head having a passage extending downwardly therethrough and aligned with the inside of said rod, and from which head an elongated enclosure depends and wherein spaced below said head and within said enclosure a fuel rod support plate is positioned from which a multiplicity of fuel rods depend, said head forming a coolant inlet for said enclosure and the enclosure's bottom end being open for downward flow of coolant therethrough; a guide tube having an inside aligned with the lower end of

said head's passage and depending from said head through said support plate and said fuel rods to below the lower ends of the fuel rods, said guide tube having a bottom end positioned within said downward flow of coolant, means for transmitting information about said coolant at said guide tube's bottom end extending upwardly through said guide tube and said attachment head and said attachment rod to the outside of said fluid pressure chamber which transmitting means can be slidably inserted into and withdrawn from said chamber, and means for preventing the escape of fluid from said pressure chamber via said guide tube, attachment head and attachment rod.

3,899,391

CONTAINMENT VESSEL CONSTRUCTION FOR NUCLEAR POWER REACTORS

Hans D. Sulzer, Winterthur, Switzerland, and Joseph L. Coletti, Quincy, Mass., assignors to Stone & Webster Engineering Corporation, Boston, Mass.

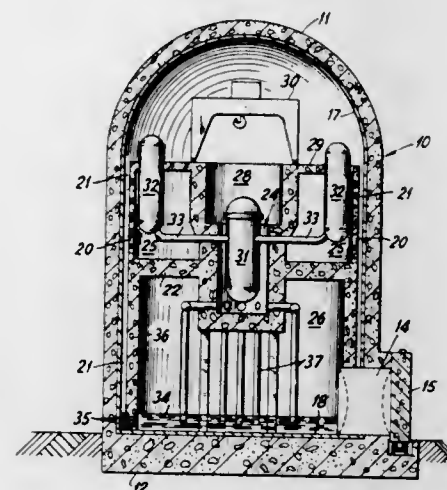
Continuation of Ser. No. 74,796, Sept. 23, 1970, abandoned, which is a continuation-in-part of Ser. No. 717,078, March 29, 1968, abandoned. This application June 12, 1973, Ser. No.

369,186

Int. Cl. G21c 9/00

U.S. Cl. 176-37

4 Claims



1. A containment vessel construction for nuclear power reactors with pressure suppression, comprising:

outer containment means for housing a nuclear reactor vessel and associated steam generators;

an inner housing structure within said outer containment means,

said inner housing structure having an outer wall secured to the floor of said outer containment means and extending upwardly therefrom in closely-spaced relationship to the inner peripheral surface of said outer containment means to form a relatively small annulus therebetween;

said inner housing structure divided by a gas-tight intermediate floor member into upper and lower chambers, said upper chamber being in open communication with the space contained by said outer containment means and also with said annulus;

said outer wall of inner housing structure extending in a substantially continuous, straight, vertical line from the portion thereof surrounding said upper chamber to the portion thereof surrounding said lower chamber, said portion of said outer wall of said inner housing structure surrounding said lower chamber being gas-tight;

said nuclear reactor vessel and associated steam generators mounted within said upper chamber; a pressure suppression pool provided in said lower chamber directly beneath said upper chamber;

3,899,392

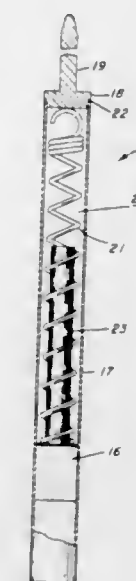
NUCLEAR FUEL ELEMENT CONTAINING PARTICLES OF AN ALLOYED Zr, Ti AND Ni GETTER MATERIAL
Leonard N. Grossman, Wilmington, N.C., and Harry A. Levin, Livermore, Calif., assignors to General Electric Company, San Jose, Calif.

Filed Dec. 8, 1971, Ser. No. 205,789

Int. Cl. G21c 3/18; H01j 7/18

U.S. Cl. 176-68

18 Claims



1. A nuclear fuel element which comprises an elongated container, a body of nuclear fuel material disposed in and partially filling said container and forming an internal cavity, an end closure integrally secured and sealed at each end of said container, a helical member positioned in the cavity, a hollow, gas-permeable container disposed within said cavity and having therein a multiplicity of particles of a ternary alloy, the alloy being comprised of from about 3 to about 12 weight percent nickel, of greater than 3 to about 30 weight percent titanium and the balance is zirconium, and the alloy being a getter material for water, water vapor and reactive gases.

3,899,393

NUCLEAR REACTOR ASSEMBLY

Heinrich Dörner, Manfred Scholz, and Axel Jungmann, all of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed May 22, 1973, Ser. No. 362,833

Claims priority, application Germany, May 31, 1972, 2226574

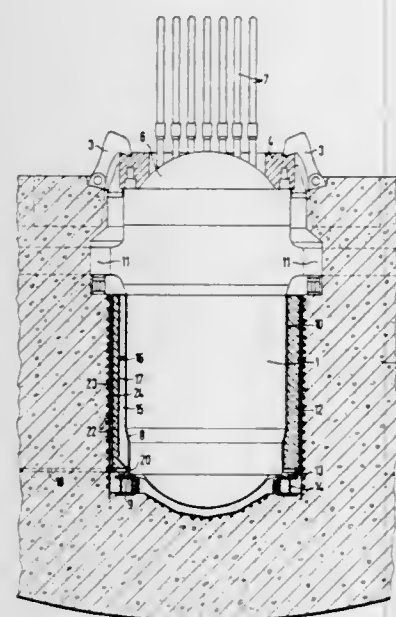
Int. Cl. G21c 17/00, 11/00

U.S. Cl. 176-87

7 Claims

1. A nuclear reactor assembly including a reactor pressure tank having a substantially cylindrical side wall and a biological shield having a cylindrical cavity forming a wall surrounding said side wall; wherein the improvement comprises a rota-

tive substantially cylindrical wall interposed between the aforesaid walls and having means for rotating it from outside



of said shield, and a probe carried by said rotative wall for monitoring said pressure tank's wall.

3,899,394

PRODUCTION OF ANTIBACTERIAL AGENTS

David Willner, Dewitt, and Leonard Bruce Crast, Jr., Clay, both of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Continuation-in-part of Ser. No. 318,340, Dec. 26, 1972. This application Feb. 21, 1974, Ser. No. 439,508

Int. Cl.² C12D 1/00

U.S. Cl. 195—29

10 Claims

1. A process for the production of 7-[D-α-amino-α-(4-hydroxyphenyl)acetamido]-3-(1,2,3-triazol-5-ylthiomethyl)-3-cephem-4-carboxylic acid or a salt thereof which comprises contacting methyl D-(-)-α-amino-α-(4-hydroxyphenyl)acetate or an acid addition salt thereof with 7-amino-3-(1,2,3-triazol-5-ylthiomethyl)-3-cephem-4-carboxylic acid or a salt thereof in aqueous solution in the presence of enzyme derived from a microorganism selected from the group consisting of *Xanthomonas citri* (IFO 3835), *Acetobacter turbidans* (ATCC 9325) and *Pseudomonas melanogenum* (IFO 12020).

3,899,395

LIPOLYTIC ENZYME RECOVERY METHOD

Gerard J. Moskowitz, Buffalo Grove; John J. Como, Glenview, and Louis I. Feldman, Morton Grove, all of Ill., assignors to Baxter Laboratories, Inc., Morton Grove, Ill.

Filed June 10, 1974, Ser. No. 477,889

Int. Cl. C07g 7/02

U.S. Cl. 195—66 R

10 Claims

1. The method of selectivity and substantially quantitatively recovering lipolytic enzyme from rennet from the fermentation growth product of *Mucor* species comprising adsorbing said fermentation growth product with material selected from the group consisting of diatomaceous earth and clay at pH of from about 4 to about 6 and then eluting the lipolytic enzyme from the adsorbent by adjusting the pH to a range of from about 9 to about 11.

3,899,396

ANTIBIOTIC ACTIVITIES FROM STREPTOSPORANGIUM VULGARE ATCC 21906

Carolina Coronelli; Maria Rosa Bardone, and Hermes Pagani, all of Milan, Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy

Filed May 24, 1974, Ser. No. 473,023

Claims priority, application United Kingdom, May 25, 1973, 25160/73

Int. Cl. C12d 9/00

U.S. Cl. 195—80 R

3 Claims

1. A process for producing antibiotic activity from *Streptosporangium vulgare* var. *antibioticum* var. *nov.* ATCC 21906 and separating it into the three active fractions named A, B and C which comprises cultivating said microorganism under submerged conditions in a liquid nutrient medium containing an assimilable source of carbon and nitrogen until a substantial antibiotic activity is present, recovering said antibiotic complex therefrom and separating it into the three active fractions A, B and C.

3,899,397

GLUTAMIC OXALACETIC TRANSAMINASE ASSAY METHOD

Leo G. Morin, and Jerome R. Prox, both of Miami, Fla., assignors to Medico Electronic Inc., Indianapolis, Ind.

Filed July 5, 1973, Ser. No. 376,333

Int. Cl. C12k 1/04; C07g 7/02

U.S. Cl. 195—103.5

9 Claims

1. A method for determining the glutamic-oxalacetic transaminase in biological fluids which comprises: (a) preparing a substrate of L-aspartic acid, α-ketoglutaric acid and water, said substrate having a pH between about 5 and about 8; (b) admixing a sample of biological fluid and said substrate; (c) incubating admixture (b); (d) admixing a dipolar aprotic solvent and methanol with admixture (b) to stop the reaction between the L-aspartic acid and α-ketoglutaric acid which is catalyzed by the glutamic-oxalacetic transaminase; (e) admixing a diazonium dye with admixture (d); and (f) determining the activity level of the glutamic-oxalacetic transaminase by measuring the absorbance against a reagent-specimen blank.

3,899,398

PROCESS FOR TREATING CITRUS WASTES TO OBTAIN WATER INSOLUBLE ESSENTIAL OILS

Edward L. Cole, Fishkill, and Howard V. Hess, Glenham, both of N.Y., assignors to Texaco Inc., New York, N.Y.

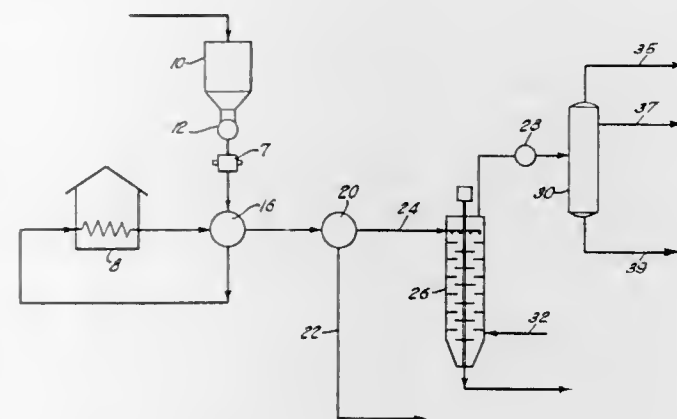
Continuation-in-part of Ser. No. 887,684, Dec. 23, 1969, abandoned, which is a continuation-in-part of Ser. No. 780,080, Nov. 29, 1968, Pat. No. 3,507,788. This application

Nov. 24, 1972, Ser. No. 309,391

Int. Cl. C10b 53/00

U.S. Cl. 201—2.5

4 Claims



1. Process for treating citrus wastes to obtain essential oils comprising coking said citrus wastes in the aqueous phase under autogeneous pressure at a temperature of about 350° to 750°F. in the absence of air or oxygen for a coking time rang-

ing from about 0.1 minute to about 2 hours under turbulent flow conditions characterized by a Reynolds number in excess of 2000, to form coke mixed with essential oils separating the coke so formed from the aqueous phase and heating said coke to distill off said essential oils.

3,899,399

RECOVERY OF HIGH PURITY VINYL CHLORIDE BY DISTILLATION

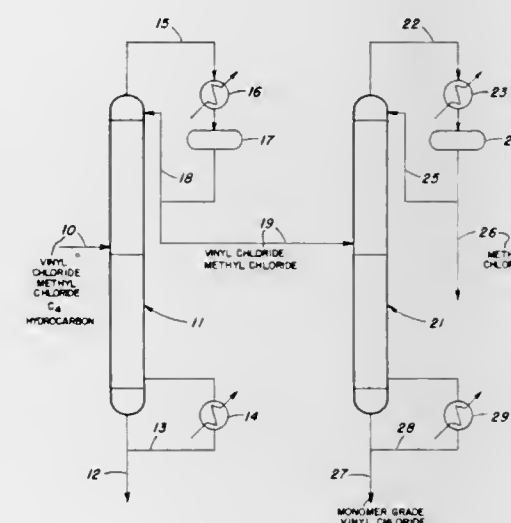
Raymond H. Long, Morristown, and Harold Unger, Fort Lee, both of N.J., assignors to The Lummus Company, Bloomfield, N.J.

Filed Jan. 21, 1974, Ser. No. 435,100

Int. Cl.² B01D 3/00, 3/10

U.S. Cl. 203—77

5 Claims



1. A process for recovering monomer grade vinyl chloride, comprising:

- introducing a mixture comprising 95 to 99 mole % vinyl chloride and as impurities, methyl chloride and at least one C₄ aliphatic hydrocarbon into a first fractional distillation zone designed and operated to recover vinyl chloride and lighter components as overhead, containing less than 500 ppm of components boiling higher than vinyl chloride;
- recovering the overhead from the first fractional distillation and introducing same into a second fractional distillation zone designed and operated to recover monomer grade vinyl chloride as bottoms; and
- recovering a monomer grade vinyl chloride bottoms containing at least 99.95 mole % vinyl chloride from said second fractional distillation zone.

3,899,400

SURFACE TREATMENT OF ALUMINUM AND ITS ALLOYS

Jos Patrie, Grenoble; Jacques Lefebvre, and Francois Allegret, both of Voiron, all of France, assignors to Produits Chimiques Ugine Kuhlmann, Paris, France

Filed July 9, 1974, Ser. No. 486,741

Claims priority, application France, July 13, 1973, 73.25800

Int. Cl.² C25D 5/44; C25F 3/04

U.S. Cl. 204—33

8 Claims

1. A method of decorating the surface of a piece of aluminum or aluminum alloy with a "lizardskin" appearance, which method comprises placing said piece as one electrode together with a second electrode in an aqueous electrolytic bath at about 5°–60°C and containing from about 0.1 to 20 grams/liter of hydrochloric acid, nitric acid, boric acid or fluoroboric acid

and from about 0.1 to 20 grams/liter of a polyfluorinated sulfonate surfactant; and passing an alternating electrolytic



Example of a "lizardskin" appearance

current of 50–60 cycles between said electrodes at a potential from about 5 to 50 volts.

3,899,401

ELECTROCHEMICAL PRODUCTION OF PINACOLS

Heinz Nohe, Meckenheim, and Fritz Beck, Ludwigshafen, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Aug. 19, 1974, Ser. No. 498,447

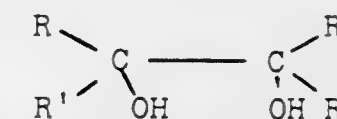
Claims priority, application Germany, Aug. 25, 1973, 2343054

Int. Cl. C07b 29/06; C07c 29/00, 31/20

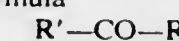
U.S. Cl. 204—59 R

3 Claims

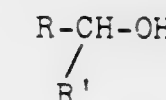
1. A process for the manufacture of pinacols of the formula



in which R is hydrogen or a hydrocarbon radical of one to six carbon atoms and R' is a hydrocarbon radical of one to six carbon atoms, by electrolytic hydrodimerization of carbonyl compounds of the formula



in which R and R' have the above meaning, in non-compartmented cells, wherein a mixture which contains from 5 to 75% by weight of the carbonyl compound, from 5 to 90% by weight of the alcohol corresponding to the carbonyl compound, of the formula



from 0.1 to 3% by weight of the quaternary ammonium salt and from 0 to 3% by weight of water is used for the electrolysis.

3,899,402

METHOD OF TAPPING ALUMINUM FROM A CELL FOR ELECTROLYTIC RECOVERY OF ALUMINUM

Kiranendu B. Chaudhuri, Gampel, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Jan. 24, 1974, Ser. No. 436,161

Claims priority, application Switzerland, Aug. 9, 1973, 11498/73

Int. Cl. C22d 3/12, 3/02

U.S. Cl. 204—67

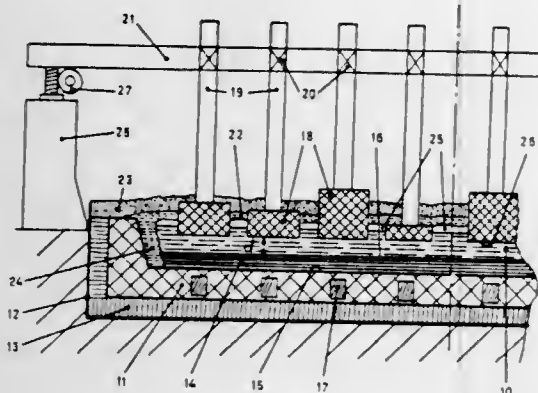
3 Claims

1. A method of tapping aluminum from a cell for recovery of aluminum by electrolysis of aluminum oxide dissolved in a fluoride melt, comprising the following operational steps:

- at regular time intervals the instantaneous ohmic cell resistance is calculated, the instantaneous values over a certain period of time are smoothed and the difference

ΔR between this smoothed cell resistance and the base resistance established for each cell is calculated;

- b. as soon as 30 to 60 minutes after a normal cell servicing, whenever the difference ΔR exceeds a limiting value given for each cell, the anode beam is raised or lowered, in order to match the existing ohmic resistance with the ohmic base resistance;
- c. the difference ΔB of the vertical levels of the anode beam is calculated from two values, of which the first is taken 30 to 60 minutes after the normal cell service following



the previous tapping operation, and the second is taken 30 to 60 minutes after the last normal cell service before the next tapping operation referred to at (e) below;

- d. the metal height H (mm) to be tapped is calculated according to the equation

$$H = J_m \cdot t \cdot f + \Delta B$$

in which J_m signifies the mean direct current in kiloamps, t the time in hours which has passed between successive tapping operations, and f a proportionality factor ($mm/kA \cdot h$)

- e. tapping is carried out to reduce the metal level by the height given by the equation under (d).

3,899,403

ELECTROLYTIC METHOD OF MAKING CONCENTRATED HYDROXIDE SOLUTIONS BY SEQUENTIAL USE OF 3-COMPARTMENT AND 2-COMPARTMENT ELECTROLYTIC CELLS HAVING SEPARATING COMPARTMENT WALLS OF PARTICULAR CATION-ACTIVE PERMSELECTIVE MEMBRANES

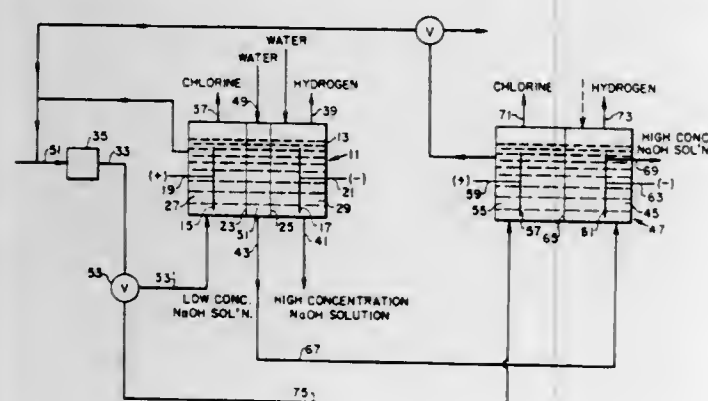
Edward H. Cook, Jr., Lewiston, and Alvin T. Emery, Youngstown, both of N.Y., assignors to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.

Filed Nov. 1, 1973, Ser. No. 411,619

Int. Cl. C01d 1/06; C01b 7/06

U.S. Cl. 204-98

9 Claims



1. A method for electrolytically manufacturing a concentrated hydroxide solution containing over 250 but less than 450 g./l. of sodium hydroxide or equivalent hydroxide which comprises making concentrated and dilute aqueous hydroxide solutions simultaneously by electrolyzing an aqueous solution containing halide ions in an electrolytic cell having at least

three compartments therein, an anode, a cathode, at least two cation-active permselective membranes of a polymeric material selected from the group consisting of a hydrolyzed copolymer of a perfluorinated hydrocarbon and a fluorosulfonated perfluorovinyl ether and a sulfostyrenated perfluorinated ethylene propylene polymer, defining anode and cathode side walls of a buffer compartment or compartments between anode and cathode compartments, and such walls, with walls thereabout, defining anode and cathode compartments, while adding water to the buffer compartment at such a rate as to produce a dilute hydroxide solution therein at the same time that a more concentrated hydroxide solution, containing over 250 but less than 450 g./l. of sodium hydroxide or equivalent is produced in the cathode compartment, while maintaining a high caustic efficiency, removing the dilute hydroxide from the buffer compartment and feeding it to the cathode compartment of a two-compartment electrolytic cell, having anode and cathode compartments separated by a cation-active permselective membrane of a polymeric material selected from the group consisting of a hydrolyzed copolymer of a perfluorinated hydrocarbon and a fluorosulfonated perfluorovinyl ether, and a sulfostyrenated perfluorinated ethylene propylene polymer, in which cell, in the anode compartment thereof, an aqueous solution containing halide ions is electrolyzed, and withdrawing from the catholyte compartment of the two-compartment cell concentrated hydroxide solution containing more than 250 but less than 450 g./l. of sodium hydroxide or equivalent, so that the cathode compartment efficiency of the combined processes is above 70%.

3,899,404

METHOD OF REMOVING MERCURY FROM AN AQUEOUS SOLUTION

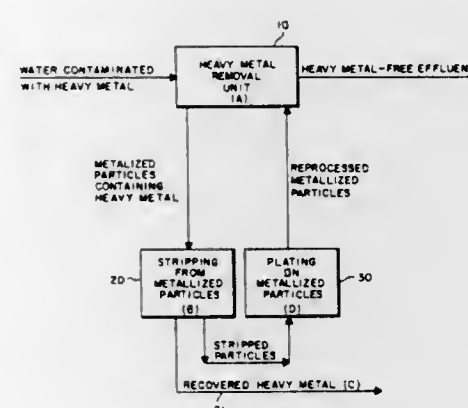
Marlowe L. Iverson, Simi, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Continuation-in-part of Ser. No. 240,058, March 31, 1972, abandoned. This application June 7, 1974, Ser. No. 477,530

Int. Cl.² B01K 3/00, 3/04; C02B 1/82

U.S. Cl. 204-146

11 Claims



7. A method of removing mercury from an aqueous solution containing the same comprising passing an electrically conductive aqueous solution containing mercury through an electrochemical cell containing an anode and a cathode comprising a bed of particles having zinc surfaces,

contacting said particles with a cathodically polarized collector,

passing a direct current from said anode through said solution to said particles whereby the mercury is deposited upon and amalgamated with the zinc surfaces of said particles, discharging said solution of reduced mercury content, and

recovering said mercury by electrolytically stripping the zinc from the amalgam whereby the mercury forms droplets which coalesce and are recovered.

3,899,405

METHOD OF REMOVING HEAVY METALS FROM WATER AND APPARATUS THEREFOR

Marlowe L. Iverson, Simi, and Lowell R. McCoy, Woodland Hills, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

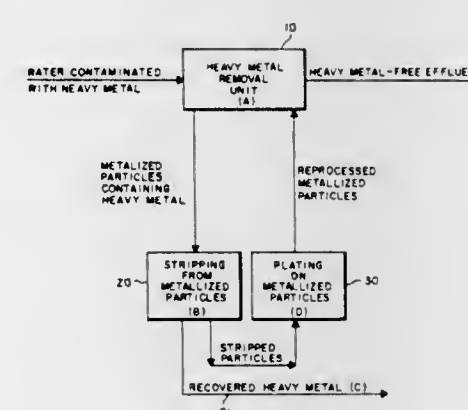
Continuation-in-part of Ser. No. 240,058, March 31, 1972.

This application June 7, 1974, Ser. No. 477,531

Int. Cl.² B01K 3/00, 3/02; C02B 1/82

U.S. Cl. 204-149

13 Claims



1. A method of removing a heavy metal from an aqueous solution containing the same comprising:

passing the solution through an electrochemical cell containing an anode and a cathode comprising a bed of particles having tin surfaces, contacting said particles with a cathodically polarized collector,

passing a direct current from said anode through the solution to said particles whereby heavy metal is removed from the solution and deposited on the tin surfaces of said particles and

discharging the aqueous solution of reduced heavy metal content.

3,899,406

ANTIOXIDANTS FOR ULTRAVIOLET CURABLE HIGH VINYL POLYBUTADIENES

Mark R. Roodvoets, Akron, Ohio, assignor to The Firestone Tire and Rubber Company, Akron, Ohio

Filed Apr. 26, 1974, Ser. No. 464,591

Int. Cl.² C08C 19/00; C08J 3/28

U.S. Cl. 204-159.2

23 Claims

1. A process of producing antioxidantized ultraviolet cured compositions comprising the steps of: adding by weight 100 parts of an ultraviolet curable resin; said resin containing about 40 parts to about 95 parts of a butadiene polymer or copolymer thereof with co-reactive monomers, said co-reactive monomers being vinyl monomers and ranging from about 5 parts to about 60 parts, said polybutadiene polymer being a homopolymer of butadiene or a copolymer of butadiene and styrene and containing at least 40% by weight of butadiene and at least 80% of the butadiene repeating units in the polymer or copolymer being in the 1,2-configuration, adding from 0.02 to about 0.4 parts of an antioxidant of a 2,2 methylene bis (4-R₁, 6-R₂-phenol) wherein R₁ is an aliphatic group having from 1 to 4 carbon atoms and R₂ is an aliphatic group having 3 or 4 carbon atoms, adding an antioxidant selected from the class consisting of (I) from 0.01 to about 0.5 parts of a dibutyl pararesol, and (II) from 0.005 to about 0.1 part of a N,N'-di(1-R₃, 1-R₄-methyl) p-phenylene diamine where R₃ is an aliphatic group having 1 to 4 carbon atoms and R₄ is an aliphatic group having 4 to 6 carbon atoms and III mixtures of (I) and (II), and then curing said curable resin having an improved cure rate with an ultraviolet source.

3,899,407

METHOD OF PRODUCING THIN FILM DEVICES OF DOPED VANADIUM OXIDE MATERIAL

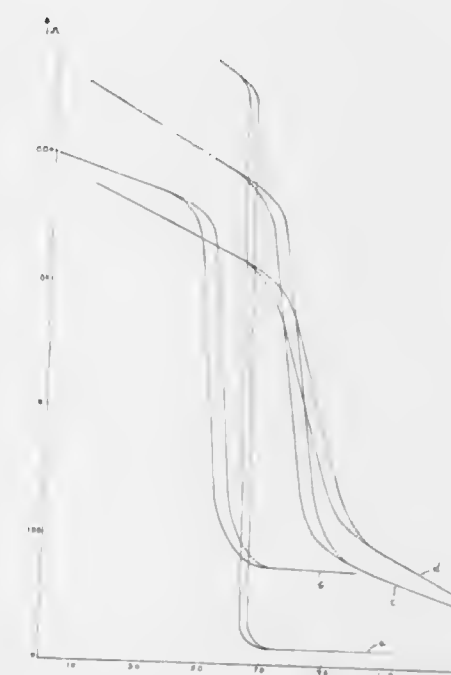
H. Keith Eastwood, Beaconsfield, and Barry A. Noval, Cote St. Luc, both of Canada, assignors to Multi-State Devices Ltd., Quebec, Canada

Filed Aug. 1, 1973, Ser. No. 384,505

Int. Cl. C23c 15/00

U.S. Cl. 204-192

7 Claims



1. A method of producing thin film devices of vanadium oxide material having a desired transition temperature, consisting in reactively sputtering onto a suitable substrate a thin film consisting essentially of a vanadium oxide material having a transition temperature of fixed value and from 0.05 to 10 atomic percent of a single doping material selected from the group consisting of tungsten, molybdenum, titanium, niobium, germanium, silicon and carbon, permitting the increase or decrease in the transition temperature respectively above or below said fixed value.

3,899,408

CATHODE FINGER STRUCTURE FOR AN ELECTROLYTIC CELL

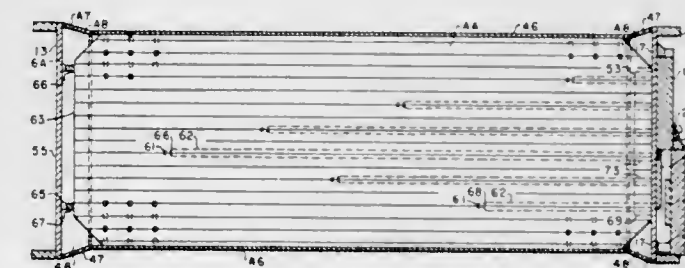
Leo G. Evans, Tonawanda, and Walter W. Ruthel, Grand Island, both of N.Y., assignors to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.

Filed Jan. 3, 1974, Ser. No. 430,430

Int. Cl. B01k 3/04

U.S. Cl. 204-286

6 Claims



1. A cathode finger, suitable for use in an electrolytic cell, wherein said cathode finger has a cathode finger structure which comprises a corrugated conductive metal reinforcing means, lengths of highly conductive metal positioned in the cathode finger structure, and foraminous conductive metal means attached to said cathode finger reinforcing means thereby forming the exterior of the cathode finger structure and providing a gas compartment space inside the cathode finger structure, said corrugated conductive metal structure

having protrusions positioned on the outer surfaces of its ridges to which said foraninous conductive metal means is attached to provide additional compartment space for gas, said lengths of highly conductive metal are positioned in the cathode finger structure in such a configuration wherein the lengths of highly conductive metal are adapted to carry an electric current and to maintain a substantially uniform current density through the cathode finger without any significant voltage drop across the cathode finger and with the most economical power consumption in the cathode finger.

3,899,409

BIPOLAR ELECTRODE

Robert F. Schultz, Niagara Falls, and Edward H. Cook, Jr., Lewiston, both of N.Y., assignors to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.

Filed May 25, 1973, Ser. No. 363,926 The portion of the term of this patent subsequent to July 30, 1991, has been disclaimed.

Int. Cl. B01k 3/04

U.S. Cl. 204—290 F

10 Claims

1. A bipolar electrode consisting of a core of a valve metal, at least a portion of the anodic surface of which is conductively covered by at least one anodic material selected from platinum group metals and platinum group metal oxides, and a barrier layer of boron on the cathodic side of the valve metal core, at least a portion of the exterior surface of the layer of boron being covered by at least one cathodic material selected from iron, copper, cobalt, nickel and alloys of these.

3,899,410

WATER TREATMENT DEVICE

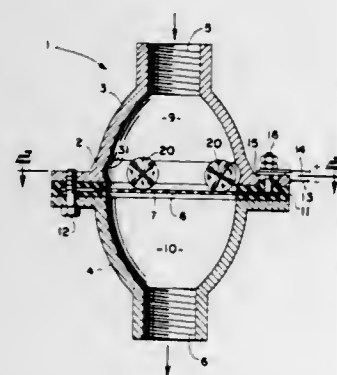
Henry S. Aber, Cleveland; Dean D. Riggs, Avon Lake, and John Lamantia, Lakewood, all of Ohio, assignors to Water Technology Service, Inc., Cleveland, Ohio

Filed May 2, 1973, Ser. No. 356,600

Int. Cl. B03c 5/02, 5/00

U.S. Cl. 204—302

18 Claims



1. In a liquid treatment device for connection to a liquid flow line including a fitting having a flow path therethrough and divided into separate chambers by at least one electrically conductive perforated screen supported in electrically insulated relation within said fitting in said flow path, the improvement comprising means positioned in said fitting for removing automatically and continuously accumulated deposits from said perforated screen as liquid flows therethrough.

3,899,411

OCTANE CRACKING

John C. Bonacci, Cherry Hill, and William P. Burgess, Princeton, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 8, 1974, Ser. No. 431,642

Int. Cl. C10g 39/00, 35/08

U.S. Cl. 208—66

7 Claims

1. In the method of upgrading the octane number of a naphtha boiling range hydrocarbon fraction by the sequence of reforming using a platinum type reforming catalyst followed by shape selective conversion of the reformate using a shape

selective crystalline aluminosilicate zeolite catalyst having a pore size of 4.5 to 6.0 Å. such as to admit only molecules having an effective diameter up to that of normal paraffins; the improvement which comprises utilizing in said shape selective conversion step a catalyst which is a mixture of said shape selective zeolite and about 20 to 50 weight percent of a platinum type reforming catalyst.

3,899,412

AROMATICS EXTRACTION PROCESS

Frederick Rowe; Michael George Norton, and John Anthony Fairweather, all of Stockton-on-Tees, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Mar. 13, 1973, Ser. No. 340,923

Claims priority, application United Kingdom, Mar. 13, 1972, 11593/72

Int. Cl. C10g 37/08

U.S. Cl. 208—92

10 Claims

1. A process for the treatment of a cracked gasoline prior to the recovery of aromatic hydrocarbons therefrom which includes in combination the steps,

- distilling the cracked gasoline to recover a first distillate fraction containing all the components in said cracked gasoline boiling up to 80°C at atmospheric pressure and a first residue containing all the components which boil above 80°C,
- heating said residue which boils above 80°C from distillation step (a) in the liquid phase at a temperature in the range 200° to 350°C to form a substantial amount of material boiling above the end point of said residue,
- distilling the heated residue from step (b) to separate a second distillate fraction boiling up to 250°C at atmospheric pressure, and a second residue containing said material boiling above the end point of the first residue, and
- hydrogenating said second distillate fraction.

3,899,413

PLATINUM-GERMANIUM-GOLD REFORMING CATALYST AND PROCESS

John W. Myers, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 17, 1973, Ser. No. 361,243

Int. Cl. C10g 35/06; B01j 11/74, 11/08

U.S. Cl. 208—138

9 Claims

1. The process for the catalytic reforming of hydrocarbons which comprises contacting a naphtha and hydrogen with a catalyst having increased activity and selectivity consisting essentially of a refractory support promoted with platinum, germanium and gold in an amount for each promoter ranging from 0.05 to 2 weight percent at reforming conditions and withdrawing a reformate of improved octane rating.

7. A reforming catalyst composition consisting essentially of:

- 0.05–1 weight percent platinum,
- 0.05–1 weight percent germanium, and
- 0.05–1 weight percent gold, incorporated into
- a refractory support.

3,899,414

DRILLING MUD SEPARATION SYSTEM

Leslie T. Hansen, Lakewood, Calif., assignor to Sweco, Inc., Los Angeles, Calif.

Filed Mar. 16, 1973, Ser. No. 341,942

Int. Cl. B04c 9/00

U.S. Cl. 209—17

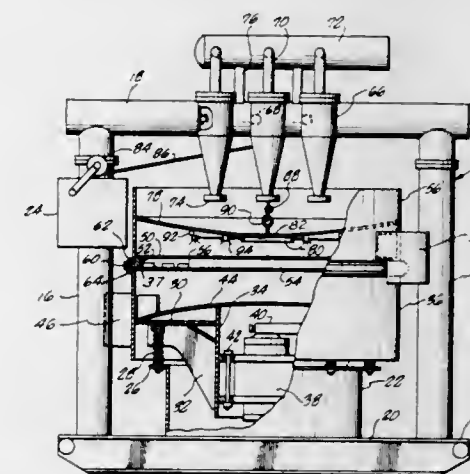
3 Claims

1. A separation system for separating drilled solids from drilling mud comprising

- a frame;
- an influent manifold fixed to said frame for receiving drilled solids-containing influent;

a plurality of hydrocyclones coupled to said manifold for receiving influent therefrom and separating that influent into a sediment which is exhausted downward from said plurality of hydrocyclones and a cleaned drilling mud effluent directed upward from said plurality of hydrocyclones;

a vibratory screen separator mounted on said frame below said hydrocyclones, said vibratory separator including a base, fixed to said frame, a housing resiliently mounted on said base, driving means for vibrating said separator, screen means for separating the sediment into a screened effluent of chemical additives and a concentrate of drilled



solids, a sediment receiver comprising an arcuate plate mounted to said housing directly below said plurality of hydrocyclones and above said screen means for receiving the sediment from said hydrocyclones and directing it to a central position on said receiver, receiver outlet means for directing the sediment from the central position on said receiver to a central position on said screen means, said receiver outlet means including a passageway through said sediment receiver at the central position on said receiver and a grate means positioned within said passageway for preventing the passage of large objects through said passageway.

3,899,415

SORTING MACHINE WITH DIGITAL ERROR CORRECTION

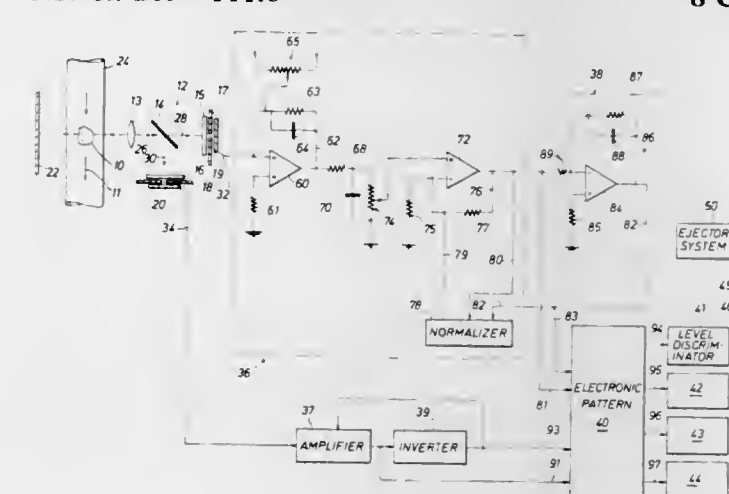
Elias H. Coddington, and Hoyd S. King, Jr., both of Houston, Tex., assignors to Petty-Ray Geophysical, Inc., Houston, Tex.

Filed Mar. 29, 1974, Ser. No. 456,257

Int. Cl. B07C 5/342

U.S. Cl. 209—111.6

8 Claims



6. In a light-sensitive sorting machine having direct coupled amplifier means for amplifying electrical signals indicative of a light reflective property of an article to be sorted, the improvement comprising normalizing means operatively coupled to said amplifier means for introducing an error correction thereto, said normalizing means including means for setting

said error correction in digital counter means, digital-to-analog converter means operatively coupled to said digital counter means for introducing said error correction to said amplifier means in analog format and means for redetermining the value of said error correction at selected intervals and resetting said predetermined error correction in said normalizing means.

3,899,416

SORTING DEVICE SEPARATING A POWDER MIXTURE INTO SPHEROIDAL AND SHARP-EDGED PARTICLES

Günther Schwartz, Hurth-Gleuel, and Klaus Frank, Hurth-Hermulheim, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

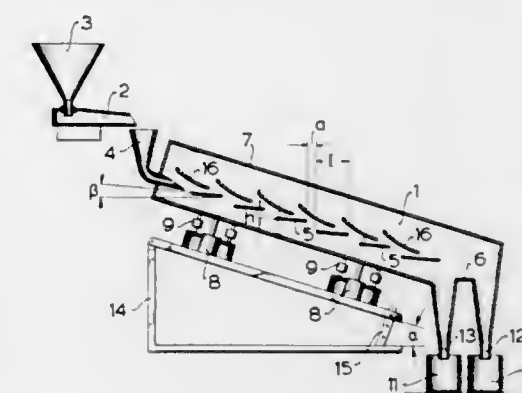
Filed Oct. 29, 1973, Ser. No. 410,686

Claims priority, application Germany, Oct. 31, 1972, 2253353

Int. Cl. B07b 13/10

U.S. Cl. 209—118

11 Claims



1. A sorting device for separating a powder into spherical particles and sharp-edged particles, wherein a plurality of separating cascade members are spaced apart, are disposed at successively lower levels and are inclined with respect to the horizontal so as to form an inclined cascade-sorting tunnel, and are secured to the side walls of an elongated container having an inlet disposed at its upper end and outlets disposed at its lower end; the sorting device comprising braking aprons secured above the separating-cascade members to form part of the sorting tunnel; a separation plate being positioned near the lower end of the elongated container; receiving means collecting spherical particles and sharp-edged particles, respectively, the receiving means being placed below the lower end of said container on both sides of the separation plate; a vibrating chute positioned above the upper end of the cascade-sorting tunnel; a frame supporting the container, the frame providing a downwardly inclined supporting plane having an angle α with α respect to the horizontal; a plurality of vibrators and shock absorbers being interposed between the container and the frame, and the braking aprons being disposed over the spaces between the cascade members.

3,899,417

IN-LINE PRESSURE SIFTER

Gilbert C. Morris, Columbus, Ohio, assignor to The Fred D. Pfening Company, Columbus, Ohio

Filed Sept. 19, 1973, Ser. No. 398,676

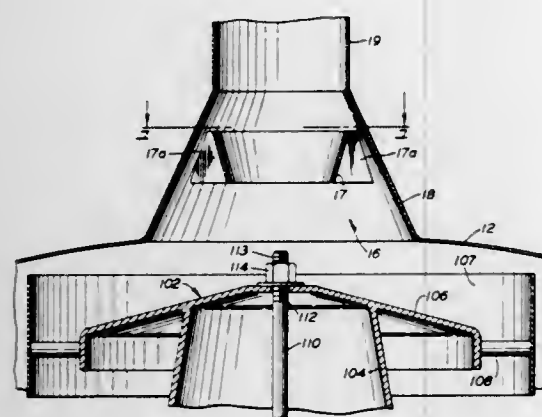
Int. Cl. B07B 1/46

U.S. Cl. 209—243

1 Claim

1. In a gyratory pressure sifter which includes a generally vertically arranged housing having an upper end closure provided with an inlet for air-entrained solid particles to be sifted and a lower end closure having a primary outlet for the discharge of air-entrained, sifted fines and a secondary outlet for the gravitational discharge of unsifted, larger size solid particles from said housing, and a plurality of generally horizontally arranged, vertically spaced apart sieve assemblies positioned in said housing between said upper and lower end

closures; that improvement which comprises: an upwardly tapering frusto-conical inlet conduit having a wider lower end connected with the upper end closure of said housing and defining a downwardly and outwardly flaring inlet passage into said housing; and a downwardly tapering funnel-shaped separator ring positioned intermediate the ends of said inlet conduit and in coaxial, inwardly spaced relation thereto, said separator ring being spaced downwardly from the upper end



opening of said inlet conduit and having a mouth opening of approximately the same size as the upper end opening of said inlet conduit, and being arranged to funnel the relatively heavier solid particles entering said inlet conduit inwardly toward the axis of said housing while permitting outward expansion of the relatively lighter air stream as it passes downwardly through said inlet conduit to thereby effect a partial separation of solid particles from the incoming air stream.

3,899,418

MINER'S PAN

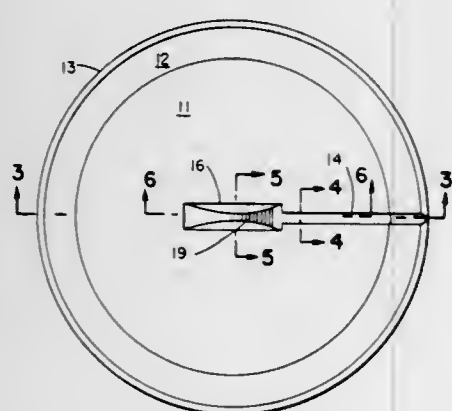
Manuel P. Lawrence, 633 Highland St., and Kenneth F. Jacobson, P.O. Box 1764, both of Carson City, Nev. 89701

Filed Sept. 24, 1973, Ser. No. 400,411

Int. Cl.² B03B 3/00

U.S. Cl. 209-447

5 Claims



5. A device for separating heavy precious metals from a placer material, comprising a pan having a generally circular bottom and an upwardly and outwardly extending side wall, a groove extending radially in said bottom and extending substantially to the lip of said side wall for hastening the separation of said precious metals from said placer materials, an upwardly opening trap formed centrally in said bottom and communicating with said groove, said trap comprising a depression in said bottom, said depression having two longitudinal sides depending in a V relationship from said bottom and joined by an arcuate trap bottom.

3,899,419 METHOD FOR CHEMICAL FRACTIONATION, DEFATTING AND DEWATERING OF SOLIDS AND SUSPENSIONS

Carl F. Emanuel, Bellevue, Wash., assignor to Resources Conservation Co., Renton, Wash.

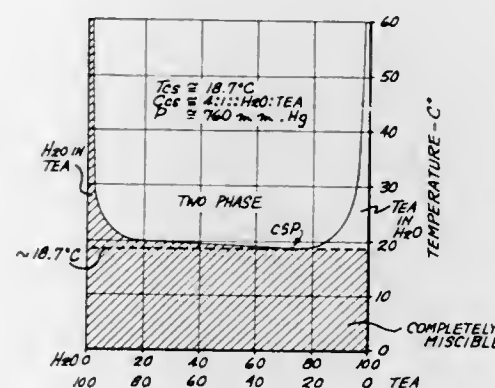
Continuation of Ser. No. 288,872, Sept. 13, 1972, abandoned.

This application June 21, 1974, Ser. No. 481,757

Int. Cl.² B01D 11/00

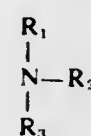
U.S. Cl. 210-22

47 Claims



1. A method for removing water from a mixture comprising water and particulate solid matter which is insoluble in water comprising:

contacting said mixture with a liquid composition to form a slurry, said composition having an inverse critical solution temperature in a two phase system with water and being selected from a member of or mixtures of members of the groups of amines having the formula



wherein

R_1 is a hydrogen or an alkyl radical, and

R_2 and R_3 are alkyl radicals having from one to six carbon atoms or alkenyl radicals having from two to six carbon atoms,

the total number of carbon atoms in the amine molecule being in the range of from three to seven, inclusive,

and said composition being present in said slurry in an amount of at least the critical solution concentration at which substantially all of said water in said mixture is completely miscible in a single liquid phase in said composition,

mechanically separating said slurry into a solid fraction comprising solid matter which is insoluble in said slurry and a liquid fraction comprising at least a portion of said water and said composition while maintaining the temperature of said slurry at a temperature at which said water and composition are present in a single liquid phase, after separating said solid fraction, increasing the temperature of said liquid fraction to a temperature above said inverse critical solution to form two liquid phases comprising a composition phase containing a small amount of water and a water phase containing a small amount of composition, and

thereafter mechanically separating said water phase from said composition phase.

3,899,420

STEAM REFORMER FOR HYDROCARBONS

Masao Nozawa; Takehiko Yasuno; Takashi Yamaguchi, Tokyo, and Hiroshi Uenoyama, Yokohama, all of Japan, assignors to Japan Atomic Energy Research Institute and Japan Gasoline Co., Ltd., both of Tokyo, Japan

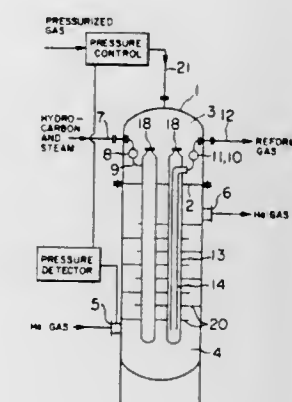
Filed Mar. 24, 1972, Ser. No. 237,865

Claims priority, application Japan, Mar. 27, 1971, 46-18136

Int. Cl. C12k 1/10

U.S. Cl. 196-129

6 Claims



1. An apparatus for the steam reforming of hydrocarbons, comprising:

an upright hollow casing having a tube sheet extending across the interior of said casing between the upper and lower ends thereof and dividing said casing into an upper closed pressure vessel and a lower closed pressure vessel, said vessels being isolated from each other and connected in gas-tight relationship;

a plurality of vertical reforming tube structures supported on said tube sheet and extending therethrough in gas-tight relationship therewith, said tube sheet being imperforate except where said reforming tube structures extend therethrough, said reforming tube structures each having an upper portion extending upwardly into said upper pressure vessel and a lower portion extending downwardly into said lower pressure vessel, each of said reforming tube structures comprising substantially concentric and spaced-apart inner and outer tubes which tubes are in gas flow communication with each other only at the lower end of said inner tube, and containing a bed of steam reforming catalyst packed in the space between said inner and outer tubes with the lower end of said bed being spaced upwardly from the lower end of said inner tube; first conduit means in said upper pressure vessel and connected to the upper end of the outer tube of each reforming tube structure for feeding a mixture of hydrocarbon and steam into the upper end of said outer tube, said outer tube being closed except for said first conduit means;

second conduit means in said upper pressure vessel connected to the upper end of the inner tube of each reforming tube structure for discharging from the upper end of said inner tube and thence outwardly from the casing the reformed gas produced by flowing said mixture through said catalyst, said inner tube being closed except for said second conduit means and the communication of the lower end of said inner tube with said outer tube;

means adjacent the lower end of said lower pressure vessel for flowing into said lower vessel a stream of helium gas having a temperature of from about 750° to about 1100°C and a pressure of from about 20 to about 60 kg/cm² and directing same against the lower ends of said reforming tube structures;

baffle means in said lower pressure vessel and associated with the exterior of said reforming tube structures and extending from adjacent the lower ends to adjacent the upper ends of the lower portions of said reforming tube

3,899,421

SALT RECOVERY SYSTEM

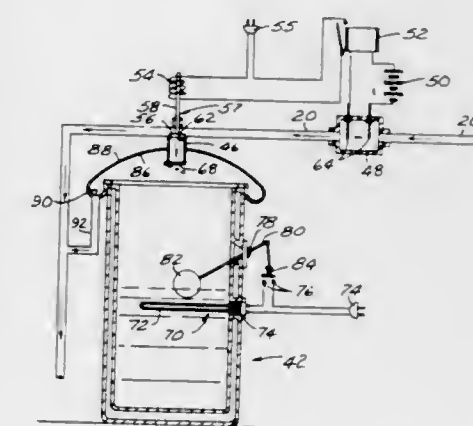
Bertram Keilin, 9711 La Capilla Ave., Fountain Valley, Calif. 92708, and Joseph M. Hebert, 336 N. Main St., Salinas, Calif. 93901

Filed Nov. 9, 1973, Ser. No. 414,400

Int. Cl. B01d 15/06

U.S. Cl. 210-96

6 Claims



1. In an automatic water softener comprising a mineral tank adapted to hold a quantity of water softening ion exchange material, a brine tank adapted to hold a supply of brine, flow control means, a drain line, and plumbing means interconnecting the mineral tank, brine tank and flow control means with a source of tap water, a service line for receiving softened water from the water softener, and said drain line, said flow control means being a flow control module;

said flow control module including associated valve and first valve control means for effectuating at least the following sequence of flow steps, in the order given: a service step in which hard tap water is passed through water softening ion exchange material in the mineral tank in a first direction to soften the water, the softened water then being passed into said service line; a backwash step in which new tap water is passed through the ion exchange material in the mineral tank in a second direction, opposite to the first, and then directed, as a substantially salt-free effluent, into said drain line; a brining step in which brine from the brine tank is passed through said ion exchange material for regeneration purposes, then, as a relatively high saline content effluent, into said drain line; and a rinse step in which fresh tap water is passed through said ion exchange material to rinse residual brine therefrom, and then into the drain line as a relatively low saline content effluent;

the saline recovery means comprising:

container means adapted to hold a quantity of liquid; conduit means connecting said container means with said drain line;

valve means associated with said conduit means, said valve means being adjustable between an open position in which it permits the flow of liquid from said drain line through said conduit means and into said container means by gravity, and a closed position in which it blocks the flow of liquid through the conduit means into the

container means, said valve means being in normally closed position; and

second valve control means for opening said valve means at the approximate time the brining step effluent reaches said valve means and holding the valve means open until approximately all of this effluent flows into said conduit means, then causing said valve means to close, said second valve control means including sensing and valve opening means for sensing when the saline content of the effluent liquid in said drain line is relatively high, as in said brining step effluent, and then opening said valve means, holding it open for as long as the effluent remains relatively high in saline content, and, when the saline content in the effluent drops to the low level of the saline content of the rinse step effluent, causing said valve means to return to its normally closed position; whereby said valve means remains closed at all times except when the relatively high saline content effluent from said brining step reaches it, at which time it opens and remains open long enough to permit the flow of the effluent into said container means then closes again, to thereby effectuate selective recovery of the brining step effluent from the various flow step effluents passing through said drain line;

said sensing and valve opening means comprising a conductivity cell with a pair of electrodes, said cell being situated so that the electrodes are positioned in said drain line, a solenoid, and associated circuitry; said valve means comprising a diverter valve with an obturating element characterized and positioned for vertical movement, for valve opening purposes, by said solenoid when the solenoid is appropriately energized;

the conductivity cell, solenoid, associated circuitry and diverter valve being adapted and relatively positioned for cooperation so that contact of the conductivity cell electrodes by the brining step effluent in the drain line causes current flow therebetween because of the saline content of this effluent and the resulting current flow causes energization of said solenoid and consequent vertical movement of said obturating element of the diverter valve to its valve-open position, whereby the brining step effluent flows through the open valve and into said container means;

said current flow between said electrodes ceasing when the brining step effluent ceases to contact them so that said solenoid is deenergized to return said obturating element to its normal, valve-closed position and thereby shut off the continued flow of liquid from the drain line through said diverter valve.

3,899,422

RECIRCULATING RESIN CLEANING CHEMICAL FEEDER SYSTEM FOR WATER SOFTENERS

James L. Williams, 11782 Bonnie Brae Dr., S.W., Massillon, Ohio 44646

Filed Apr. 24, 1974, Ser. No. 463,587

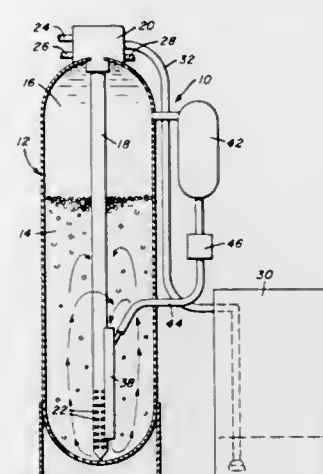
Int. Cl.² B01D 29/38

U.S. Cl. 210-108

2 Claims

1. In liquid treatment apparatus comprising a tank having a bed of particulate filter material therein, an elongated liquid carrying service tube extending into the bed, a backwash system for the particulate filter material comprising an elongated cleaning tube within the bed, said cleaning tube being affixed to and extending along a portion of said service tube, the cleaning tube having an open intake end and an open discharge end, means for introducing a forced flow of backwash liquid diagonally across said cleaning tube inward of the intake end thereof and angled toward the open discharge end to induce circulation of filter particles through the cleaning tube and the diagonally directed flow, said means for introducing a forced flow of backwash liquid comprising a port in the service tube between the service tube and the cleaning tube inward of the intake end for the selective directing of a

liquid flow from the service tube into the cleaning tube, and valve means normally closing said port and operatively openable in response to an internal pressure buildup in said service tube, said valve means, upon an opening thereof, being configured to direct flow diagonally across the cleaning tube substantially coextensive with the cross-section of the cleaning tube, said valve means comprising a flap valve overlying the



3,899,423

SEWAGE TREATMENT SYSTEM

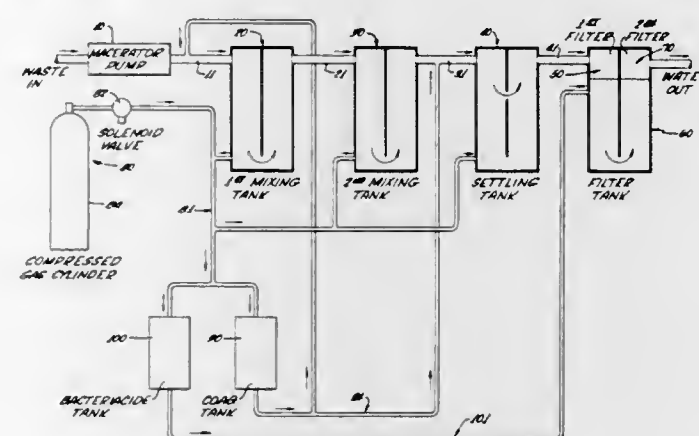
Thomas F. McGrath, Simi, Calif., assignor to Lee, Meyer & Associates, Inc., Westlake Village, Calif.

Filed Jan. 13, 1972, Ser. No. 217,586

Int. Cl.² B01D 23/14; C02B 3/08

U.S. Cl. 210-152

7 Claims



1. A portable, small volume sewage processing system adapted for use in watercraft, mobile equipment and where sewage treatment facilities are not available comprising, in combination;

means for receiving, macerating and delivering sewage to a mixing tank;

at least one mixing tank disposed and connected to receive macerated sewage which includes opposing generally vertical walls, said walls having a plurality of downwardly sloping vanes extending therefrom at a predetermined angle with respect to the vertical in alternating disposition such that material falling from one vane impinges upon an alternate lower vane extending from an opposing wall;

at least one settling tank disposed and connected to receive sewage from the mixing tank for permitting the separation of solid sewage components from liquid sewage components, the settling tank including opposed upright walls having a plurality of downwardly sloping vanes

extending therefrom at a predetermined angle with respect to vertical in alternation disposition such that material falling from one vane impinges upon a lower alternate vane extending from the opposing wall, with solid material falling from the bottom of such vanes and being collected in the bottom of the settling tank for periodic removal;

a filter tank connected for receiving clarified sewage from the settling tank the filter tank including an input filter through which the clarified sewage flows into the filter tank and an output filter through which clarified and disinfected sewage flows from the filter tank;

means for injecting coagulant into the sewage in the mixing tank and in the settling tank;

means for injecting oxygen into the mixing and settling tanks at a point below the alternating vanes therein; and means for injecting bactericide into the filter tank;

the output filter in said tank being so composed and constructed as to absorb bactericide thus providing a large surface contact area between the bactericide and the sewage and a reservoir of bactericide in the filter tank;

the vanes in the mixing tank being so spaced and angularly disposed as to cause turbulent flow at the point of which the sewage flow turns to direct heavy solid particles to the bottom of the tank for bacterial digestion, to direct a cloud of flocculated sewage to the bottom of the tank, and to form pockets of oxygen beneath said vanes to provide constant contact between oxygen and the sewage under treatment.

3,899,424

DISPOSABLE AQUARIUM FILTER

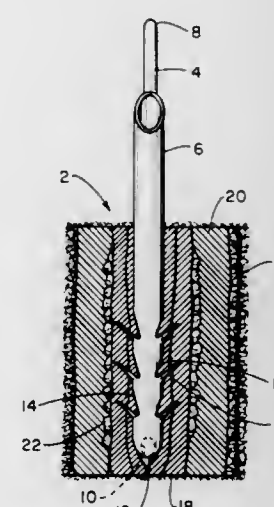
John K. Lake, Van Nuys, Calif., assignor to John P. Graff, Jr., Pasadena, Calif., a part interest

Filed Dec. 3, 1973, Ser. No. 420,916

Int. Cl. E04h 3/20

U.S. Cl. 210-169

8 Claims



1. A disposable aquarium filter comprising the combination of: a first tube adapted to be connected to an air supply source; a second tube of larger diameter than said first tube, the lower ends of said first and second tube being about coterminous, the lower portions of said second tube having fluid passageways therethrough; a first continuous layer of filter material wound about and encircling the lower portions of said first and second tubes; a second continuous layer of filter material wound about and encircling said first layer of filter material and said tubes; granules of a chemical purifier at the interface between said first and second layers of filter materials; and an outer continuous layer of open mesh material wound about and encircling said second layer of filter material, said fluid passageways being formed by extending, displaced tube wall portions of said second tube which protrude into said first continuous layer of filter material to form a mechanical connection therebetween.

3,899,425

MODULAR FILTER AND AUTOMATIC CHLORINATOR FOR SWIMMING POOLS

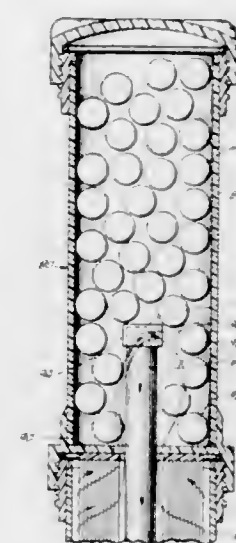
Kenneth Lewis, South Gate, Calif., assignor to H.S.M. Americas Ltd., Signal Hill, Calif.

Continuation-in-part of Ser. No. 284,237, Aug. 28, 1972, abandoned. This application Apr. 5, 1974, Ser. No. 458,091

Int. Cl. E04h 3/16

U.S. Cl. 210-206

3 Claims



1. A combined pool filter and chlorinating unit using chlorine pellets comprising:

a fluid-tight housing having an intermediate wall dividing the housing into an upper chamber and a lower chamber, the wall having a central opening therein, means admitting pool water into the lower chamber of the housing adjacent the sides thereof,

a central outlet tube extending vertically upwardly from the bottom of the housing through the opening in the intermediate wall into the upper chamber, the tube having a diameter smaller than the central opening in the intermediate wall,

a removable annular filter element in the lower chamber extending around the tube in spaced relation to the tube and to the chamber walls,

means providing a seal between the lower end of the filter element and the outlet tube adjacent the bottom of the lower chamber,

means providing a seal between the upper end of the filter element and the intermediate wall, whereby pool water admitted to the lower chamber must pass radially inwardly through the filter to reach the outlet tube, the tube having a restricted opening into the tube adjacent the upper end above the intermediate wall for controlling the rate of flow of water through the filter rises along the exterior of the tube into the upper chamber to enter the tube, soluble chlorine pellets in the upper chamber supported by the intermediate wall, and air-tight removable means providing access to the upper chamber for loading the pellets in the chamber.

3,899,426

APPARATUS AND METHOD FOR FILTER SEAL

Gene Hirs, Birmingham, Mich., assignor to Hydromation Filter Company, Livonia, Mich.

Filed May 20, 1974, Ser. No. 471,520

Int. Cl. B01d 33/02

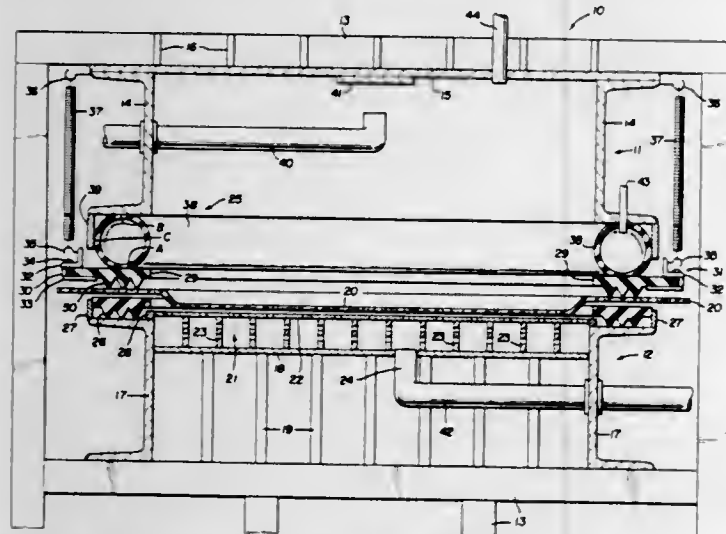
U.S. Cl. 210-387

6 Claims

1. In a pressure filter having a filter medium interposed, between fixed, vertically spaced upper and lower chambers, the improvement of sealing means normally sealing the chambers to one another, said sealing means including a support ledge surface encircling one of the chambers and engaging the

filter medium, a gasket peripherally encircling the other chamber and being vertically aligned with the support ledge for contacting the filter medium, means constantly biasing said gasket vertically away from the ledge surface, a radially distensible tube vertically interposed between said gasket and the other said chamber, said tube being vertically aligned with said gasket for sealing said other chamber around its entire periphery, and means for injecting fluid under pressure into said tube to radially distend the tube and (a) to displace the gasket into sealing engagement with the filter medium and the ledge, (b) to urge the tube into sealing engagement with the gasket, (c) to increase the tension on said biasing means, and (d) to close said other chamber for filtration flow, wherein said tube is collapsed upon deflation and said biasing means thereupon displaces the gasket from said support ledge to accommodate the removal of said filter medium.

4. In a pressure filter having fixed, vertically spaced upper and lower chambers and a sheet filter medium interposed between the chambers, each chamber having an encircling



sealing surface and said sealing surfaces being spaced and vertically aligned, wherein contaminated liquid enters one of said chambers under pressure, flows through said sheet filter medium for the removal of particulate contaminants, and exits through the other chamber, the improvement of a vertically displaceable sealing gasket interposed between said filter medium and the sealing surface of one of said chambers, a separate inflatable tube interposed between and unattached to the sealing gasket and the sealing surface of said one chamber, means for injecting fluid under pressure into said tube to radially distend the tube and (a) displace the gasket into sealing engagement with the filter medium and the sealing surface of the other chamber, (b) to urge the tube into sealing engagement with the gasket, and (c) to urge the tube into sealing engagement with the sealing surface of said one chamber, and constantly acting means for displacing the gasket away from the sealing surface of the other chamber upon collapse of the tube by deflation, to accommodate the removal of said filter medium.

3,899,427

DEVICE FOR SEPARATING PARTICLES FROM A FLUID STREAM

Thomas Macfarlane Connelly, Eaglesham; Ian George Rowe, and Douglas Stewart Morrison, both of Edinburgh, all of Scotland, assignors to Begg Cousland & Co. Ltd., Glasgow, Scotland

Filed June 7, 1973, Ser. No. 367,809

Claims priority, application United Kingdom, June 10, 1972, 27213/72

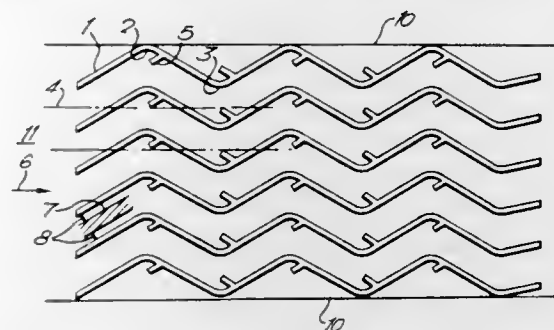
Int. Cl.² B01D 21/00

U.S. Cl. 210—521

8 Claims

1. In a device for separating particles from a fluid stream, comprising casing means defining a fluid stream path between an inlet and an outlet, a plurality of plates located in said casing means in the path of the fluid stream, said plates being formed with troughs and crests and arranged in at least one

group constituting a separating unit and oriented such that lines joining the crests and lines joining the troughs of each plate extend in a direction generally parallel to the fluid stream path defined by the casing and such that the crests of each plate face the troughs of each adjacent plate, the axes of the troughs extending transversely of said fluid stream path, said plates defining a plurality of passages between pairs of adjacent plates, said passages being of zig-zag configuration with alternate crests and troughs defined by the crests and



troughs of the plates, the improvement comprising upstanding vanes attached to the plates, one vane attached in the bottom half of each trough of its attached plate on the downstream side of the trough with respect to the direction of fluid flow between the plates and orientated to project outwardly from the trough bottom and to lean in the direction towards the upstream side of the same trough, each said vane extending along its trough for substantially the full width of the passage defined by its attached plate and an adjacent plate.

3,899,428

MILLIMETER WAVE DEVICES UTILIZING ELECTRICALLY POLARIZED MEDIA

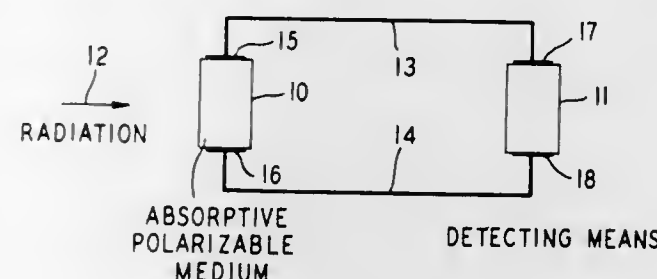
David Henry Auston, Mountainside, and Alastair Malcolm Glass, Millington, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 7, 1972, Ser. No. 232,407

Int. Cl. H011 15/00

U.S. Cl. 250—199

20 Claims



1. Apparatus comprising a transducer for altering incoming electromagnetic radiation provided with first means for receiving radiation and second means for emitting the altered energy, said radiation being within a range having a maximum wavelength of 10 micrometers and manifesting a variation in input radiation intensity on a time scale corresponding with a cycle time of up to about 10 terahertz, said transducer being so adapted as to emit an electrical signal having an electric field variation corresponding to the said variation, characterized in that said transducer consists essentially of a body which is capable of manifesting electrical polarization on a macro-scale and containing an absorbing species having a maximum absorption length for the said radiation of about 0.2cm, substantially the entirety of the absorption responsible for the said absorption length being due to a change in electronic configuration from a ground state to an excited state within the said absorbing species, the said absorbing species having a dipole moment in the ground state of at least 0.01 Debye when the environment of the absorbing species within the said body is polar, whereby electronic excitation results in an electrical impulse with the net electrical signal representing net effect of the totality of such impulses responsive to the said variation of

incoming electromagnetic radiation said second means including means for coupling said electrical signal to utilization means.

3,899,429

PULSE-FREQUENCY-MODULATION SIGNAL TRANSMISSION SYSTEM

Yoshito Ueno; Mitsuo Kajitani, and Yoshio Ohgushi, all of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

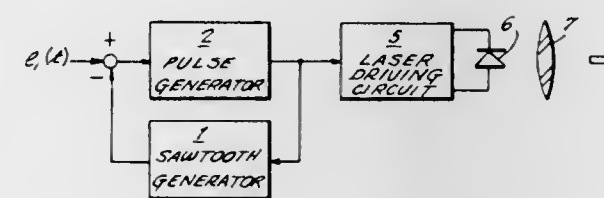
Filed Oct. 24, 1972, Ser. No. 300,179

Claims priority, application Japan, Oct. 29, 1971, 46-86418

Int. Cl.² H04B 9/00; H04L 25/00

U.S. Cl. 250—199

3 Claims



1. A pulse-frequency-modulation system for transmitting and receiving analog signals and the like wherein the magnitude of the sampled analog signal is represented by the time spacing between successively transmitted narrow pulses, said system comprising:

- a sawtooth generator;
- circuit means for comparing the analog signal to be transmitted with the output of said sawtooth generator;
- pulse generating means coupled to said comparison circuit for generating a narrow pulse when the level difference of the two inputs to the comparison circuit have a predetermined relationship;
- the input of said sawtooth generator being coupled to the output of said pulse generator which is adapted to instantaneously reset the ramp signal of said sawtooth generator to zero level by said narrow pulse and thereby instantaneously initiating a successive ramp signal after said resetting operation to enable said circuit means to perform a subsequent comparison operation, whereby adjacent narrow pulses are time-spaced relative to one another as a function of the instantaneous level of the analog input signal to be transmitted.

3,899,430

DETECTOR-MODULATOR FOR AN OPTICAL COMMUNICATIONS SYSTEM

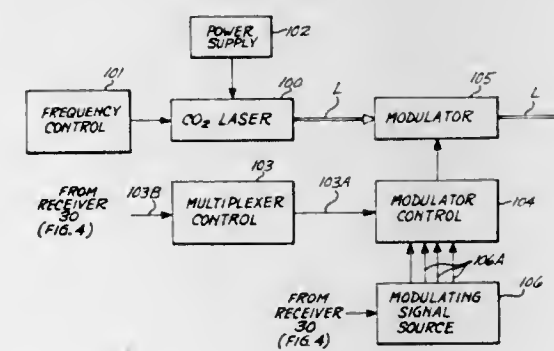
Betsy Ancker-Johnson, Reston, Va., assignor to The Boeing Company, Seattle, Wash.

Filed Oct. 15, 1973, Ser. No. 406,689

Int. Cl. H04b 9/00

U.S. Cl. 250—199

10 Claims



1. A detector-modulator for an optical communications system comprising:

- a. a narrow energy-gap semiconductor means capable of producing an electron-hole plasma by multiphoton ab-

sorption in response to irradiation by a modulated coherent optical carrier having a predetermined wavelength;

- b. a biasing circuit means connected to said semiconductor means resulting from said plasma to provide an output signal proportional to the modulation of said coherent optical carrier; and,
 - c. a modulating voltage means connected to said semiconductor means to apply a modulating voltage across said semiconductor means in response to a modulating signal to accordingly create a second plasma in said semiconductor means which modulates said coherent optical carrier by free-hole absorption thereof.
6. An optical communications system comprising:
- a. a first transceiver means including a source of a modulated coherent optical carrier having a predetermined wavelength; and
 - b. a second transceiver means including a narrow energy-gap semiconductor means capable of producing an electron-hole plasma by multiphoton absorption in response to irradiation by said coherent optical carrier and a biasing circuit means for detecting excess conductivity in said semiconductor means resulting from said plasma to provide an output signal in proportion to the modulation of said carrier.

3,899,431

OIL-IN-WATER MICROEMULSION DRILLING FLUIDS

John B. Hayes, Littleton; Gerald W. Haws, Denver, and William B. Gogarty, Littleton, all of Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed Jan. 18, 1973, Ser. No. 324,710

Int. Cl. E21b 21/04

U.S. Cl. 252—8.5 P

15 Claims

1. An improved fluid useful in the drilling of wells wherein a micellar dispersion comprised of water, hydrocarbon and petroleum sulfonate is used as the drilling fluid, wherein the improvement comprises using as the drilling fluid a water-external microemulsion comprised of about 10 to about 90% by volume water, about 5 to about 90% by volume hydrocarbon, about 1% to about 30% by volume of a sodium petroleum sulfonate having an average equivalent weight within the range of 350 to about 525, and about 0.01 to about 15% by weight, based on the water, of a water-dispersible clay.

11. In a process of drilling a well wherein a micellar dispersion comprised of hydrocarbon, water and petroleum sulfonate is used as a circulating drilling fluid, wherein the improvement comprising circulating in said well a water-external microemulsion which exhibits improves resistivity properties to permit better interpretation of electrical logging of the well and also which exhibits low fluid loss properties, the microemulsion comprised of about 50 to about 90% by volume water, about 10% to about 90% by volume of hydrocarbon, about 1 to about 30% of a sodium petroleum sulfonate having an average equivalent weight within the range of about 350 to about 525, about 0.01 to about 20% of an alcohol containing about 1 to about 20 carbon atoms, about 0.001 to about 5% by weight, based on the water, of an inorganic salt, about 0.1 to about 15% by weight, based on the water, of bentonite clay finely dispersed in the water phase, and up to about 70% of barite, finely dispersed in the water phase.

3,899,432

ALL-PURPOSE LUBRICATING OIL COMPOSITION WITH ANTI-CHATTER CHARACTERISTICS FOR WET DISC BRAKES

Kenneth Rothert, San Francisco; Donald D. Dexter, Concord, and Lester M. Hartmann, Tiburon, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed June 3, 1974, Ser. No. 475,687

Int. Cl. C10m 1/48, 1/46

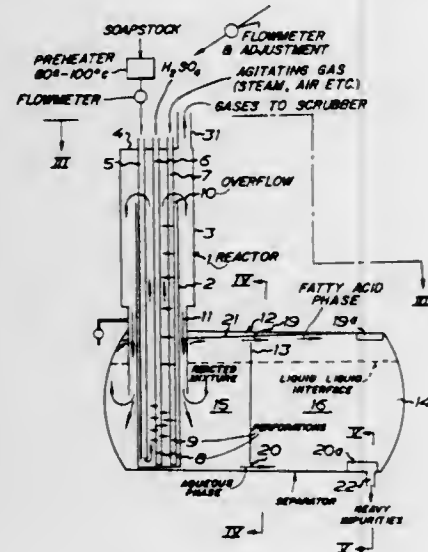
U.S. Cl. 252—32.7 E

6 Claims

1. A lubricating oil composition comprising:

reaction vessel (1) consisting of an inner vessel (2) which is closed at the bottom and open at the top to form an overflow

(10), an outer vessel (3) which is open at the bottom and has a cover (4) at its upper end and which is arranged around the inner vessel (2) so that an annular outlet space (11) is formed between said vessels (2, 3), the reaction vessel having a supply pipe (5) for soapstock, a supply pipe (6) for acid and a supply pipe (7) for gas for agitating reaction mixture of soapstock and acid in the inner vessel (1), said pipes (5, 6, 7) extending through the cover (4) down into the inner vessel (2) and terminating just above the bottom thereof, and the supply pipe (5) for soapstock opening at the bottom of the inner vessel (2), while the supply pipe (6) for acid is closed at its lower end and has perforations (8) along its extension in the lower part of the inner vessel (2) for successively supplying acid, and the tubular agitating means (7) which also is closed at its lower



end, has perforations (9) along substantially its entire extension in the inner vessel (2) for supplying gas acting as agitating medium, and that the reaction vessel (1) through the overflow (10) and the outlet space (11) is in direct communication with a separating device (12) for withdrawing reacted mixture of soapstock and acid from said reaction vessel (1) to said separating device (12) which includes one or more serially interconnected containers for gravitationally separating the reacted mixture, because of its different densities, into a lighter fatty acid and a heavier aqueous solution separated therefrom, said separating device (12) being provided at its upper part with an outlet (23) for fatty acid and at its lower part with an outlet (25) for aqueous solution, and the reaction vessel (1) and the separating device (12) being substantially closed to the outer surrounding.

3,899,441

REJUVENATION OF DAMAGED ZEOLITE-SUPPORTED METAL CATALYSTS

Rowland C. Hansford, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 170,619, Aug. 10, 1971, abandoned, which is a continuation-in-part of Ser. No. 874,063, Nov. 4, 1969, abandoned. This application Jan. 8, 1973, Ser. No. 321,670

Int. Cl. B01j 11/18, 11/16

U.S. Cl. 252-411 R

16 Claims

11. A method for rejuvenating and redispersal of catalytic metal of a catalyst comprising a Group VIII metal supported on particulate aggregates of a siliceous zeolite and a relatively non-zeolitic inorganic oxide binder, said catalyst having been compounded by a procedure which yields mechanically stable calcined aggregates having a crushing strength above about 20 pounds per 1/8 inch pellet, and whose mechanical strength is not increased or decreased more than about 10% by any of the hereinafter recited hydrocarbon conversion, oxidative regeneration or rejuvenation procedures, said catalyst having been utilized in a hydrocarbon conversion process to substantial deactivation and subsequently regenerated by oxidative com-

bustion, and during said hydrocarbon conversion and/or regeneration having been subjected to thermal or hydrothermal conditions of sufficient severity to bring about a maldistribution of said Group VIII metal with resultant loss in hydrogenation activity wherein a substantial proportion of the maldistributed metal is in the form of agglomerates of less than 50 A in diameter, which comprises:

1. contacting said catalyst, in its oxidized regenerated state and at a temperature below about 300°F., either simultaneously or in the order named, with water or water vapor and with ammonia to effect adsorption therein of about 5-40 weight-percent of water and about 5-35 weight-percent of ammonia based on the weight of adsorbed water;
2. stripping the resulting hydrated, ammoniated catalyst in a stream of non-reducing gas at temperatures between about 250° and 500°F. to effect substantial deammoniation and partial drying with removal of at least about one-half of the water added in step (1); and
3. calcining the partially dried and deammoniated catalyst in a stream of oxygen-containing gas at progressively increasing temperatures between about 500° and 1200°F., controlled to maintain the dewpoint of the effluent gas stream below about 40°F., at least the terminal portion of said calcining being carried out at temperatures between about 750° and 1200°F. for a sufficient length of time to produce an effluent gas stream having a dewpoint below about 0°F., and a substantially completely dehydrated and deammoniated catalyst having improved hydrogenation activity.

14. A method as defined in claim 11 wherein said Group VIII metal is a noble metal, and said zeolite is a molecular sieve of the Y crystal type wherein the zeolitic cations are primarily hydrogen ions and/or polyvalent metal ions.

15. A method as defined in claim 14 wherein said noble metal is palladium and wherein the zeolitic cations in said Y molecular sieve comprise a substantial proportion of hydrogen ions.

3,899,442

RECOVERY AND REACTIVATION OF RHODIUM HYDROFORMYLATION CATALYSTS

John P. Friedrich, Green Valley, Ill., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Jan. 31, 1974, Ser. No. 438,307

Int. Cl.² B01D 15/06; B01J 37/12; C11C 3/02; C07C 45/02 U.S. Cl. 252-416

5 Claims

1. In a method for recovering and reactivating rhodium catalysts in a process wherein unsaturated hydrocarbons, or unsaturated fatty compounds are hydroformylated at temperatures of about 100° to 300° C. with hydrogen and carbon monoxide under pressures of from atmospheric pressure to 3000 p.s.i.g. in the presence of a catalyst consisting of rhodium metal on a relatively inert support admixed with a trisubstituted phosphine, and wherein the hydroformylated reaction products are filtered and distilled leaving a residue which contains essentially all of the soluble rhodium, the improvement comprising the following steps:

- a. mixing said residue with a refractory catalyst support;
- b. volatilizing and carbonizing essentially all organic materials present in the mixture resulting from step (b) by heating said mixture to from 150° to 450° C. in an atmosphere such that volatile materials given off will be prevented from igniting;
- c. reacting in a suitable vessel essentially all of the carbonized material remaining from step (b) with oxygen contained in air at a temperature of from 350° to 1000° C. for a length of time sufficient to form carbon dioxide and water; and
- d. cooling said vessel and removing the resulting resupported catalyst.

3,899,443

NOVEL COCATALYST SYSTEM FOR TRIMERIZING POLYISOCYANATES

Harold E. Reymore, Jr., Wallingford, and John K. Zane, East Haven, both of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

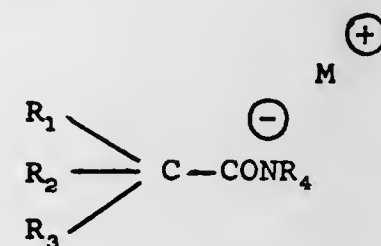
Filed Jan. 30, 1974, Ser. No. 437,781

Int. Cl. C08f 47/10; C08g 22/44

U.S. Cl. 252-431 C

8 Claims

1. In a catalyst system for the trimerization of a polyisocyanate which consists essentially of a tertiary amine trimerization catalyst, the improvement wherein said catalyst contains i. from about 20 to about 80 mole percent of an amide salt having the formula



wherein M is an alkali metal, R_1, R_2, R_3 can be the same or different and are selected from the group consisting of H, lower alkyl, aryl, aralkyl, and cycloalkyl, R_4 is selected from the group consisting of lower alkyl and aryl; ii. from about 3 to about 30 mole percent of a dibutyl tin di(alkanoate) wherein the alkanoate residue contains from 2 to 12 carbon atoms, inclusive; and iii. from about 10 to about 70 mole percent of said tertiary amine trimerization catalyst.

3,899,444

EXHAUST GAS CATALYST SUPPORT

Ruth E. Stephens, Royal Oak, Mich., assignor to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 224,240, Feb. 7, 1972. This application Dec. 22, 1972, Ser. No. 317,831

Int. Cl. B01j 11/40, 11/06, 11/32

U.S. Cl. 252-455 R

42 Claims

1. A catalyst useful in treating exhaust gas of internal combustion engines, said catalyst consisting essentially of an alumina matrix containing a catalytic metal selected from the group consisting of the metals of Groups I-B, V-B, VI-B, VII-B and VIII of the Periodic Table in an oxide form and a rare earth metal oxide, the atom ratio of said catalytic metal to said rare earth metal to aluminum being 0.1-1 to 0.8-1.4 to 8-20, said catalytic metal oxide and rare earth metal oxide being substantially uniformly distributed throughout said alumina matrix.

16. A catalyst of claim 1 wherein said alumina matrix consists essentially of an alumina coating on the surface of a refractory selected from the group consisting of zirconia, alumina, magnesia, silica, and mixtures thereof, said alumina coating containing a catalytic metal selected from the group consisting of the metals of Groups I-B, V-B, VI-B, VII-B and VIII of the Periodic Table in an oxide form and a rare earth metal oxide substantially uniformly distributed in said matrix, the atom ratio of said catalytic metal to said rare earth metal to aluminum in said alumina coating being 0.1-1 to 0.8-1.4 to 8-20.

3,899,445

CATALYST FOR OXIDATION OF ETHYLENE TO ETHYLENE OXIDE

Tsunesuke Kajimoto, and Shigeru Wakamatsu, both of Kamakura, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Continuation-in-part of Ser. No. 258,522, June 1, 1972, Pat. No. 3,838,481. This application Jan. 8, 1973, Ser. No. 321,911

The portion of the term of this patent subsequent to Sept. 17, 1991, has been disclaimed.

Int. Cl. B01j 11/08

U.S. Cl. 252-462

17 Claims

1. A catalyst composition for the oxidation of ethylene to ethylene oxide which comprises silver catalyst and, as a moderator, at least one rare earth metal selected from the group consisting of praseodymium, neodymium, terbium and dysprosium, which is prepared by coating a carrier with a slurried solution which contains reduced silver in the form of silver powder and a salt of at least one rare earth metal selected from the group consisting of praseodymium, neodymium, terbium and dysprosium and drying the coated carrier, wherein said reduced silver is prepared as silver powder by the chemical reaction of silver oxide in an aqueous solution, and wherein the reduced silver and the salt of the rare earth metal are previously combined by immersing the reduced silver into an aqueous solution of a soluble salt of said rare earth metal, adding thereto an aqueous solution of alkali or alkaline earth hydroxide thereby converting said soluble salt of said rare earth metal into the insoluble hydroxide and precipitating said insoluble hydroxide on the reduced silver, filtering off the combined reduced silver and precipitated rare earth metal hydroxide, and washing them with water.

3,899,446

PROCESS FOR PREPARING COPPER-CHROMIUM CATALYSTS

Bunji Miya; Katsuji Kasutani; Morio Matsuda; Akio Hashimoto; Shiyozo Nisigawa, and Youzi Sawamoto, all of Wakayama, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Jan. 31, 1974, Ser. No. 438,467

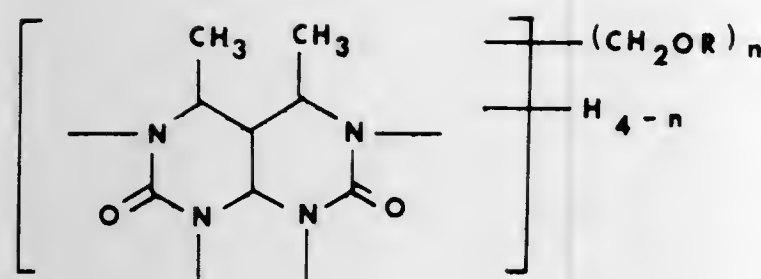
Claims priority, application Japan, Feb. 2, 1973, 48-13471

Int. Cl.² B01J 23/16, 23/64, 23/84

U.S. Cl. 252-467

10 Claims

1. A process for preparing a copper-chromium catalyst, which comprises dissolving 0.5 to 3 moles of chromic acid anhydride in water, adding 1 mole of cupric oxide to the obtained aqueous solution and effecting the reaction of said cupric oxide with said chromic acid anhydride; adding to the reaction mixture a reducing agent selected from the group consisting of formaldehyde, methanol, formic acid and oxalic acid, said reducing agent being transformed into carbon dioxide and water by oxidation, the amount of reducing agent added being such that its reducing effect corresponds to the reducing effect of from 0.1 to 1 mole of formaldehyde, and effecting the reduction of chromium (VI) of the unreacted chromic acid anhydride to chromium (III); further adding 0.9 to 8.0 moles of ammonia to the reaction mixture and effecting its reaction with the reaction mixture; drying the resulting mixture by evaporation and calcining the dried mixture to obtain the catalyst product.



wherein n is an integer from 1 to 4 and R is a hydrogen substituent or the residue of a monohydric alcohol, at least one of said R groups being said alkyl residue.

3,899,458

ETHERIFIED TRIMETHYLOLATED CROTONYLIDENEDIUREA AND ITS USE IN ALKYD RESIN COATING COMPOSITIONS

Alan L. Peterkofsky, Newark; James E. Tracy, Bernardsville, and Paul M. Schumacher, Hackettstown, all of N.J., assignors to Celanese Corporation, New York, N.Y.

Continuation of Ser. No. 135,749, April 20, 1971, abandoned.

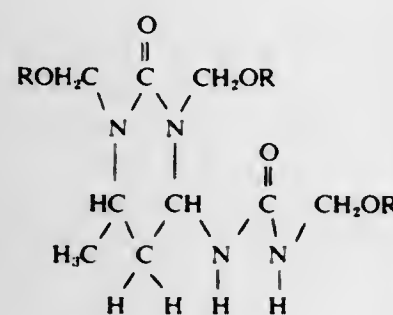
This application Sept. 12, 1973, Ser. No. 396,943

Int. Cl. B32b 27/06; C09d 3/52, 3/66

U.S. Cl. 260—21

9 Claims

1. A coating composition comprising an alkyd resin and an etherified trimethylolated crotonylidenediurea (C) of the formula



wherein R is H or the residue of a monohydric alcohol, at least one of said R moieties being the residue of a monohydric alcohol.

3,899,459

PRODUCTION OF POLYCHLOROPRENE

Paul Branlard, Grenoble, and Jacques Modiano, Varcès, both of France, assignors to Distugil, Clichy, France

Filed June 8, 1973, Ser. No. 368,360

Claims priority, application France, July 4, 1972, 72.24839

Int. Cl.² C08L 93/00

U.S. Cl. 260—27 BB

8 Claims

1. Process for the manufacture of polychloroprene rubber in an aqueous emulsion, comprising polymerizing chloroprene in the presence of a binary system the composition of which, by weight with regard to chloroprene, is from 1 to 2.5% of saturated and/or unsaturated fatty acids and/or alkali-metal salts thereof, and from 3 to 6% of rosin acid derivatives sufficiently modified so that it does not produce a phase separation which results from the formation of a complex between the magnesia, the phenolic resin and the rosin derivative when present together in a polychloroprene adhesive.

3,899,460

2-(PIPERIDINODITHIO)BENZOTHAZOLES

Joan L. Wilson, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 186,544, Oct. 4, 1971, abandoned.

This application Nov. 26, 1973, Ser. No. 419,184

Int. Cl. C07d 277/78

U.S. Cl. 260—293.57

4 Claims

1. The composition of matter, 2-(4-methylpiperidinodithio)-benzothiazole.

3,899,461

COPOLYMERS OF AN N-VINYL LACTAM AND A BRANCHED CHAIN ALIPHATIC CARBOXYLIC ACID ESTER

Eugene S. Barabas, Watchung, and Marvin M. Fein, Westfield, both of N.J., assignors to GAF Corporation, New York, N.Y.

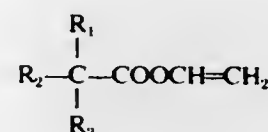
Filed Jan. 26, 1973, Ser. No. 327,106

Int. Cl. C08f 19/00; C09d 5/02

U.S. Cl. 260—29.6 HN

12 Claims

1. A copolymer composition, comprising approximately, by weight, (a) 1:99 percent of an N-vinyl lactam selected from the group consisting of N-vinyl-2-pyrrolidone, N-vinyl-2-piperidone, N-vinyl-6-caprolactam, N-vinyl-5-methyl-2-pyrrolidone, N-vinyl-3,3-dimethyl-2-pyrrolidone, N-vinyl-hexahydrophthalimidine, and N-vinyl-anphthostyryle; and (b) 99:1 percent of a branched chain aliphatic carboxylic acid ester corresponding to the formula:



wherein R_1 , R_2 , and R_3 are saturated alkyl groups.

3,899,462

REINFORCED POLYAMIDE MOLDING COMPOSITION

John Newbould, Sterling Heights; Elio Eusebi, Troy, both of Mich., and Edward G. Bobalek, Orono, Maine, assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 29, 1974, Ser. No. 456,226

Int. Cl.² C08L 77/02

U.S. Cl. 260—37 N

5 Claims

1. A reinforced polyamide composition comprising, by weight, 100 parts of a polyamide resin and from 5 to 220 parts of a finely divided filler dispersed therethrough, said filler being characterized by reactive surface hydroxyl groups, the particles of said filler having an average particle size in the range of from 0.1 to 400 microns and being coated with from 0.1 to 5 percent by weight, based on said filler, of a resole soluble in acetone, said resole being chemically combined with the underlying filler particles by reactions with said hydroxyl groups.

3,899,463

FLAME-RETARDANT COMPOSITION

Jack Newcombe, Freehold, N.J., assignor to Cities Service Company, Tulsa, Okla.

Division of Ser. No. 281,692, Aug. 18, 1972, which is a

continuation-in-part of Ser. No. 115,081, Feb. 12, 1971,

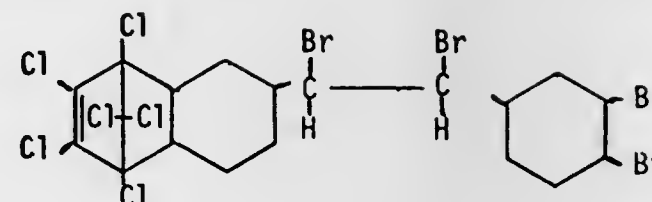
abandoned. This application Oct. 3, 1973, Ser. No. 402,960

Int. Cl. C08f 45/58; C08g 51/58

U.S. Cl. 260—45.7 R

1 Claim

1. A composition comprising a normally flammable organic polymer and a flame retardant corresponding to the formula:



said flame retardant being present in an amount of from 1 to 25 percent based upon the combined weights of the organic polymer and flame retardant.

3,899,464

PIPERIDINE DERIVATIVE AND USE THEREOF AS STABILIZERS

Keisuke Murayama; Syoji Morimura; Takao Yoshioka; Toshimasa Toda; Eiko Mori; Hideo Horiuchi; Susumu Higashida; Katsuaki Matsui; Tomoyuki Kurumada; Noriyuki Ohta, and Hisayasu Osawa, all of Tokyo, Japan, assignors to Sankyo Co., Ltd., Tokyo, Japan

Filed Oct. 11, 1973, Ser. No. 405,570

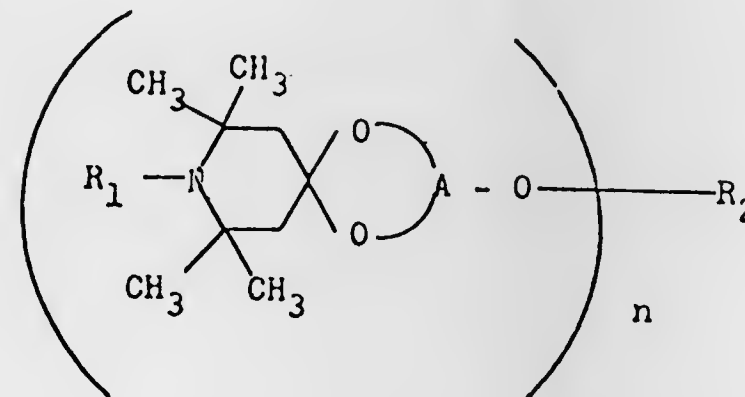
Claims priority, application Japan, Oct. 26, 1972, 47-107408

Int. Cl. C08f 45/58

U.S. Cl. 260—45.8 NZ

26 Claims

1. A composition comprising a synthetic polymeric material and from 0.01 to 5.0 percent by weight, based on the weight of the synthetic polymeric material, of a compound having the formula



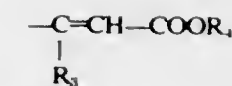
(I)

wherein

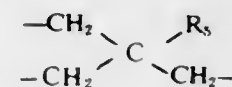
R_1 represents a hydrogen atom, an alkyl group, a substituted alkyl group, an alkenyl group, an alkynyl group, a substituted or unsubstituted aralkyl group, an aliphatic acyl group, an alkoxy carbonyl group or an aralkoxy carbonyl group.

n is an integer of 1 to 4,

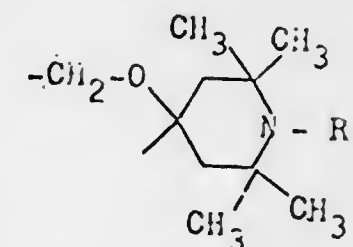
R_2 represents, when n is 1, a hydrogen atom, an aliphatic, aromatic or heterocyclic monoacyl group, an alkyl group, an alkenyl group, an alkynyl group, an aralkyl group, an aryl group, an alkoxyalkyl group, an epoxyalkyl group, an alkoxyalkylalkyl group, an N-substituted carbamoyl group, an N-substituted thiocarbamoyl group, a monovalent group from an oxoacid or a group



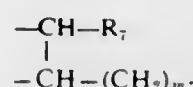
in which R_3 represents a hydrogen atom, a lower alkyl group or a phenyl group and R_4 represents an alkyl group, when n is 2, R_2 represents a carbonyl group, an aliphatic or aromatic diacyl group, an alkylene group, an alkenylene group, an alkynylene group, an aralkylene group, an N-substituted dicarbamoyl group or a divalent group from an oxoacid, when n is 3, R_2 represents an aromatic triacyl group or a trivalent group from an oxoacid, and when n is 4, R_2 represents an aromatic tetraacyl group, and A represents a group



in which R_5 represents a hydrogen atom or a lower alkyl group and, when the above n is 1, R_5 together with R_2 may represent a group



in which R_6 represents the same group as defined under R_1 , above and may be the same or different from R_1 , or A represents a group



in which m is 1 or 2, and R_7 represents a hydrogen atom, and, when the above m and n are both 1, R_7 represents a methylene group together with R_2 .

3,899,465

SYNERGISTIC ORGANOTIN STABILIZER COMPOSITIONS AND RESINS STABILIZED THEREWITH

Christian H. Stapfer, Aachen, Germany, assignor to Cincinnati Milacron Chemicals, Incorporated, Reading, Ohio

Continuation-in-part of Ser. No. 189,038, Oct. 13, 1971, Pat.

No. 3,822,233, which is a continuation-in-part of Ser. No.

780,888, Dec. 3, 1968, Pat. No. 3,630,993. This application

June 18, 1974, Ser. No. 480,487 The portion of the term of this

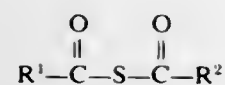
patent subsequent to July 2, 1991, has been disclaimed.

Int. Cl.² C08F 6/00

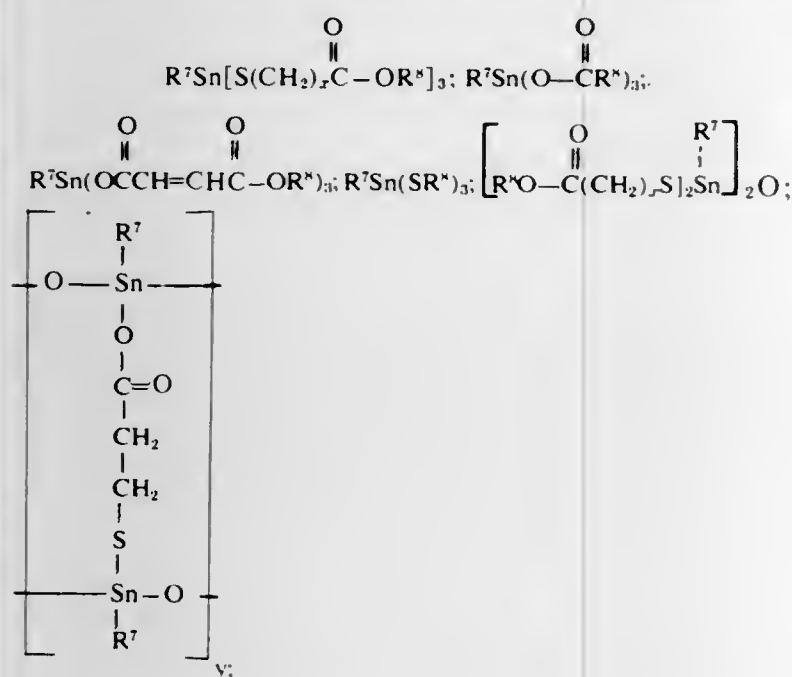
U.S. Cl. 260—45.75 S

10 Claims

1. A stabilizing composition for vinyl halide resins selected from the group consisting of polyvinyl chloride, polyvinylidene chloride, copolymers of vinyl chloride and vinylidene chloride, copolymers of vinyl chloride with other ethylenically unsaturated monomers and mixtures thereof comprising a synergistic combination of (1) a thiolanhydride corresponding to the formula



wherein R^1 and R^2 are hydrocarbyl radicals containing 6 to 20 carbon atoms and (2) 2.5 to 15 weight per cent based on said thiolanhydride of a monohydrocarbyltin compound corresponding to a formula selected from the group consisting of



$\text{R}^8\text{SnS}_{1.5}$ and
 R^8SnSSH ,

wherein R^7 is an alkyl having one to 12 carbon atoms, R^8 is an alkyl having one to 20 carbon atoms; R^9 is an alkyl having one to 12 carbon atoms, x is 1 or 2 and y is at least 2.

3,899,466

BROMINATED XYLENE DIOLS

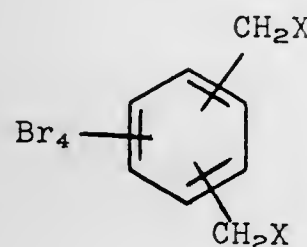
Michael Dubeck, Birmingham, and David R. Brackenridge, Royal Oak, both of Mich., assignors to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 70,922, Sept. 9, 1970, abandoned. This application May 25, 1973, Ser. No. 363,790
Int. Cl. C09k 3/28

U.S. Cl. 260—45.95 L

3 Claims

1. A polyolefin composition comprising an α -olefin polymer and a flame retardant amount of a tetrabrominated xylene compound of the general formula



wherein X is a hydroxyl radical.

3,899,467

POLYURETHANES FROM 3,3'DIMETHYL DIPHENYL 4,4'-DIISOCYANATE POLYESTER DIOLS AND BIS(HYDROXYETHYL ETHER) OF HYDROQUINONE

Henry W. Bonk, Wallingford, and Tilak M. Shah, North Haven, both of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

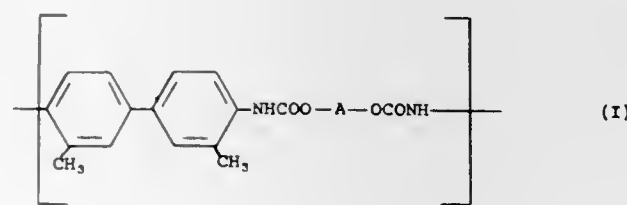
Filed May 14, 1974, Ser. No. 469,656

Int. Cl. C08g 22/26

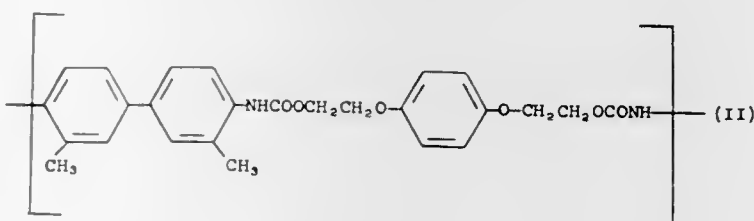
U.S. Cl. 260—47 CB

6 Claims

1. A high temperature resistant, thermoplastic polyurethane elastomer characterized by the presence therein of each of the recurring units of the following formulae:



and



wherein A is the residue of a polyester diol $\text{HO}-\text{A}-\text{OH}$ having a molecular weight in the range of 800 to 3500, the overall proportion of units having the formula (I) to units having the formula (II) in said polyurethane elastomer being within the range of 1:1 to 1:7.

3,899,468

NOVEL INTERPOLYMER OF AMINE, ALDEHYDE AND SULFANILAMIDE

Shirley H. Roth, Highland Park, N.J., assignor to Cities Service Company, Tulsa, Okla.

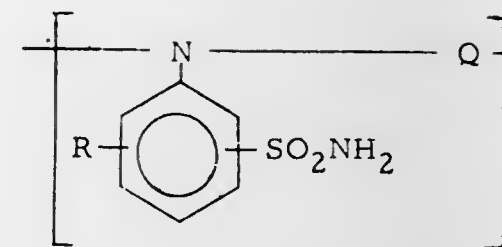
Continuation-in-part of Ser. No. 291,847, Sept. 25, 1972, abandoned. This application June 27, 1974, Ser. No. 483,859

Int. Cl. C08G 12/08, 12/30, 12/32, 12/36

U.S. Cl. 260—67.6 R

10 Claims

1. A water-insoluble amine-sulfonamide-aldehyde interpolymer consisting essentially of (A) about 50–99 mol percent of sulfonamide-aldehyde units corresponding to the formula:



wherein Q is the aldehyde residue and R is hydrogen, alkyl, haloalkyl, alkoxy, haloalkoxy, halo, nitro, acetamido, or sulfonamido and (B) about 50–1 mol percent of amine-aldehyde units wherein the amine is selected from the group consisting of urea, thiourea, ethyleneurea, melamine, guanidine, aminoguanidine, cyanamide, and/or dicyandiamide.

3,899,469

PROCESS FOR THE MANUFACTURE OF NEW CONDENSATES

Arthur Buhler, Rheinfelden; Hans Ulrich Schutz, Basel; Dieter Mausezahl, Biel-Benken; Melvin Harris, Dornach, and Christian Guth, Basel, all of Switzerland, assignors to Ciba Geigy AG, Basel, Switzerland

Division of Ser. No. 104,142, Jan. 5, 1971, Pat. No. 3,776,767, which is a continuation of Ser. No. 768,495, Oct. 17, 1968, abandoned. This application Aug. 15, 1973, Ser. No. 388,517
Claims priority, application Switzerland, Oct. 24, 1967, 14826/67

Int. Cl. C08g 9/32

U.S. Cl. 260—67.5

4 Claims

1. Textile finishing compositions for improving the crease and abrasion resistance of textile materials containing (1) a curable aminoplast precondensate, (2) a condensation product obtained by reacting

- cyanuric chloride with
- a member selected from the group consisting of thiourea, sodium-, potassium- and ammonium hydrogensulfide, and
- a member selected from the group consisting of a mono-alkanolamine and a dialkanolamine with 1 to 4 carbon atoms in an aqueous medium at a temperature from about 10° to 30° C at a molecular ratio for (B) as well as for (C) from 1:2 to 1:0.5, then finalizing the reaction at temperatures from 30° to 100° C and removing water from the resulting mixture by distillation, and (3) a curing catalyst, the ratio by weight of aminoplast precondensate: condensation product being from about 10:1 to 10:4.

3,899,470

CONTINUOUS PROCESS FOR PREPARATION OF BASIC DYEABLE POLYESTER

John W. McGee, and Henry L. King, both of Cary, N.C., assignors to Monsanto Company, Decatur, Ala.

Filed Aug. 1, 1973, Ser. No. 384,782 The portion of the term of this patent subsequent to Aug. 12, 1992, has been disclaimed.

Int. Cl. C08g 17/01

U.S. Cl. 260—75 S

14 Claims

1. A method for producing fiber-forming modified polyesters which comprises (1) forming a reaction product prepolymer consisting of at least 85 percent by weight of the polyester of an aromatic dicarboxylic acid and a polymethylene glycol selected from the group consisting of those having the formula $\text{HO}(\text{CH}_2)_n\text{OH}$, wherein n is an integer from 2 to 10, and cyclohexane dimethanol, by reacting said acid and said glycol under esterification conditions until said reaction product has a carboxyl level of not more than 2000 $\mu\text{eq/g}$ and an intrinsic viscosity of not more than 0.10; and (2) continuously reacting with said reaction product prepolymer a glycol solution of a bis glycol ester of a difunctional aromatic compound possessing a metallo sulfonate group of such concentration that when said bis glycol ester is mixed with said prepolymer, the result-

ing glycol/dicarboxylic acid moiety ratio is at least about 1.6; and copolymerizing and polycondensing said reactants at a temperature in the range of from about 120° C to about 300° C until the resulting polymer attains an intrinsic viscosity in the range of about 0.3 to 0.8.

3,899,471

DIALKYLAMINOETHYL VINYL ETHER INTERPOLYMERS

Donald H. Lorenz, Basking Ridge, N.J., and Earl P. Williams, Pen Argyl, Pa., assignors to GAF Corporation, New York, N.Y.

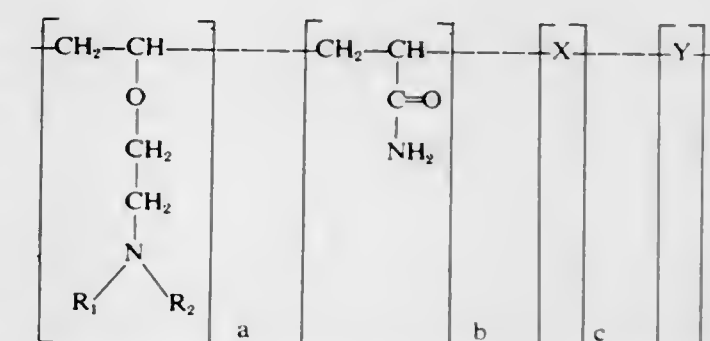
Filed Oct. 21, 1971, Ser. No. 191,538

Int. Cl. C08f 15/02, 15/00

U.S. Cl. 260—80.73

12 Claims

1. A member selected from the group consisting of water-soluble solid dialkylaminoethyl vinyl ether interpolymers of the formula



the salts thereof with inorganic and organic acids wherein R_1 and R_2 are each selected from the group consisting of methyl, ethyl and hydroxyethyl and taken together with the nitrogen atom to which they are attached a heterocyclic ring, X and Y are each vinyl monomers copolymerizable with said other monomer units in said interpolymer wherein the proportions of a, b, c and d of said monomer units in said interpolymer calculated on the basis of weight percent of the interpolymer amount to 80–10 weight percent of a, 70–10 weight percent of b, 30–0 weight percent of c, and 20–0 weight percent of d.

3,899,472

CHELATING RESIN AND PROCESS FOR PREPARING THE SAME

Toshihiko Aya; Kazumasa Chiba, and Zenzi Izumi, all of Nagoya, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Nov. 18, 1974, Ser. No. 524,353

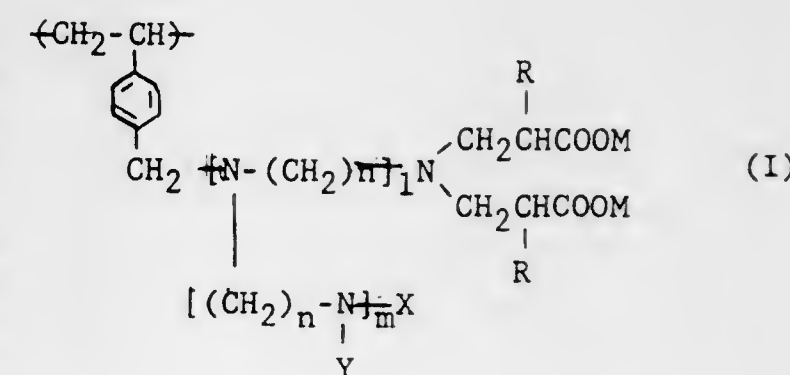
Claims priority, application Japan, Nov. 21, 1973, 48-130083; Mar. 5, 1974, 49-24736

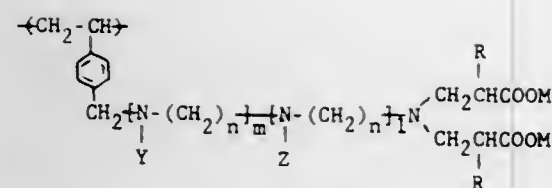
Int. Cl. C08F 210/00, 212/00

U.S. Cl. 260—80.78

7 Claims

1. A chelating resin having a crosslinked polymer structure whose main structural unit is selected from the group consisting of the following (I) and (II)





wherein l is an integer from 1–8, m is an integer from 0–8, n is an integer from 2–12, M represents hydrogen, a univalent ion selected from the group consisting of sodium, potassium, lithium and NH_4^+ , R designates hydrogen or a methyl group, X , Y and Z each represents hydrogen or a group selected from the class consisting of an alkyl group having 1–8 carbon atoms, a hydroxyalkyl group having 1–8 carbon atoms, an aromatic group having 6–9 carbon atoms, an aralkyl group having 7–10 carbon atoms and $-\text{A}-\text{COOM}$, wherein A represents a divalent alkyl residual group having 1–8 carbon atoms and M is as heretofore stated.

3,899,473

METHOD OF INCORPORATING SOLID ADDITIVES INTO VINYL CHLORIDE POLYMERS

Bernt Eric Johansson, Domsjoverken, Sweden, assignor to Kemanord AB, Stockholm, Sweden

Filed Mar. 10, 1972, Ser. No. 233,740

Int. Cl. C08f 1/84

U.S. Cl. 260—92.8 W

2 Claims

1. An improved method for incorporating solid additives in vinyl chloride polymers consisting of vinyl chloride and up to 30% by weight of a copolymerizable monomer, which comprises:

- introducing the monomers to be polymerized into a first zone together with insoluble solid additives having a particle size within the range 0.01–20 μm and carrying out mass polymerization to a conversion up to 20%;
- adding water and other water-soluble polymerization aids to the products of step a, and
- carrying out suspension polymerization until the desired degree of conversion of the monomers has been obtained.

3,899,474

PROCESS FOR MANUFACTURING HYDROGENATED POLYMERS FROM CONJUGATED DIOLEFINS

Emmanuel Goldenberg, Poissy; Francois Dawans, Bougival; Jean-Pierre Durand, Rueil-Malmaison, and Germain Martino, Poissy, all of France, assignors to Institut Francais du Pétrole des Carburants et Lubrifiants, France

Continuation-in-part of Ser. No. 267,523, June 29, 1972, abandoned. This application Dec. 26, 1973, Ser. No. 428,046

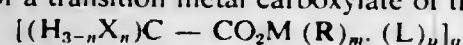
Claims priority, application France, July 5, 1971, 71.24566

Int. Cl. C08d 5/02, 1/18, 3/04

U.S. Cl. 260—94.3

25 Claims

1. A process for manufacturing hydrogenated polymers or copolymers from at least one conjugated diolefin, which comprises a first step of manufacturing an unsaturated polymer or copolymer by solution polymerizing the conjugated diolefin of 4–12 carbon atoms in contact with a catalytic quantity of a derivative of a transition metal carboxylate of the formula:



where n is 0, 1, 2 or 3, each X is a halogen atom, M is a transition metal of the groups IV to VIII of the periodic classification of the elements, each R is selected from the group consisting of a hydride ion, a halogen atom, a hydrocarbon radical and a carbonyl group, m is an integer from 1 to 4 inclusive, L is a Lewis base containing at least one ether, alcohol or ketone group, p is 0, 1 or 2 and q is an integer, in the absence of any metallic reducing agent and a second step, of hydrogenating the raw product from the first step, containing residual catalyst from this step, under a sufficient pressure of hydrogen in the additional presence of a sufficient quantity of a catalyst component consisting essentially of a metallic reducing agent, to form in situ a hydrogenation catalyst with said residual catalyst.

(II)

3,899,475

EXTREME PRESSURE LUBRICATION ADDITIVE

Bruce W. Hotten, Orinda, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Oct. 24, 1972, Ser. No. 297,575

Int. Cl. C09f 1/00, 7/00

U.S. Cl. 260—97.5

5 Claims

1. The composition of matter prepared by reacting (1) an unsaturated ester formed by the reaction of a $\text{C}_1\text{--}\text{C}_{25}$ alcohol or alkenyl with a $\text{C}_{10}\text{--}\text{C}_{25}$ fatty acid, (2) sulfur, and (3) a $\text{C}_2\text{--}\text{C}_{18}$ dialkylphosphonate wherein the molar ratio of the reactants is about 1:1–2:0.1–0.5 and the reaction temperature is about 150°–180°C and reacted for a period of about 2–20 hours.

3,899,476

PROCESS FOR MAKING A METHACRYLIC ACID ADDUCT OF LINOLEIC ACID AND PRODUCT

Benjamin F. Ward, Isle of Palms, S.C., assignor to Westvaco Corporation, New York, N.Y.

Filed Apr. 29, 1974, Ser. No. 465,160

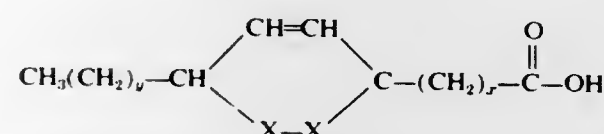
Int. Cl. C09F 1/00, 7/02

U.S. Cl. 260—97.5

7 Claims

1. A process for forming a cycloaliphatic C_{22} -dicarboxylic acid from a fatty acid mixture containing conjugated linoleic acid and non-conjugated linoleic acid comprising,

simultaneously reacting both the non-conjugated and conjugated linoleic acid portion of the fatty acid mixture with up to 30% by weight of said fatty acids, methacrylic acid and 0.01% to 0.50% by weight of said fatty acid mixture of iodine at a temperature between 250°C. and 260°C. to convert the conjugated and non-conjugated linoleic acid portion to a dicarboxylic acid having the formula



wherein x and y are integers from 3 to 9, x and y together equal 12, and one X is CH_2 and the other X is a $-\text{C}(\text{CH}_3)_2\text{COOH}$ group.

3,899,477

POLYMERIZATION OF ETHYLENE

Joseph M. Altmore, Dickinson, and Morris R. Ort, Seabrook, both of Tex., assignors to Monsanto Company, St. Louis, Mo.

Filed Feb. 16, 1973, Ser. No. 333,250

Int. Cl. C08f 1/52

U.S. Cl. 260—94.9 B

10 Claims

1. In a process for producing polyethylene by bringing ethylene under polymerization conditions at low pressures in contact with a catalyst comprising a titanium halide, a vanadium halide and an organoaluminum compound, the improvement which comprises controlling the molecular weight distribution of said polyethylene by using a catalyst prepared by reacting said titanium halide, said vanadium halide and said organoaluminum compound in such proportions that the $\text{Al}/(\text{Ti} + \text{V})$ ratio is between about 0.1 and about 0.5 to form a catalyst complex and thereafter admixing said catalyst complex with a mixture of an alkylaluminum sesquialkoxide and a trialkylaluminum prior to contacting ethylene therewith.

3,899,478

BASIC AZO DYESTUFFS OF THE 2,6-DIAMINO-PYRIDINE SERIES

Erwin Fleckenstein, Hofheim, Taunus; Reinhard Mohr, Offenbach am Main, and Ernst Heinrich, Frankfurt am Main, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

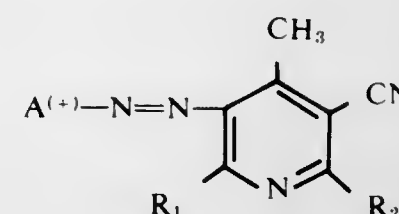
Filed May 2, 1973, Ser. No. 356,608

Claims priority, application Germany, May 5, 1972, 2222099

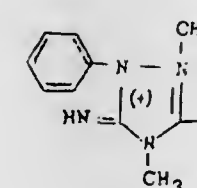
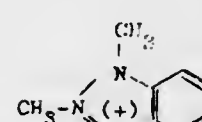
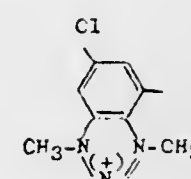
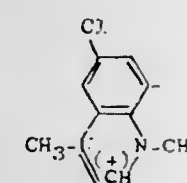
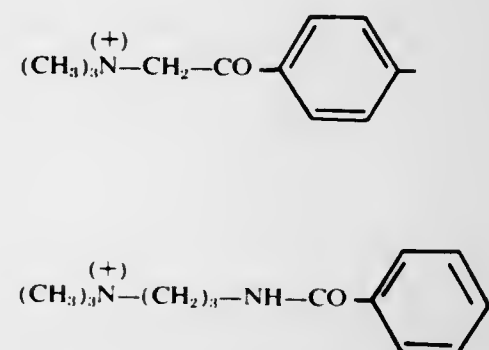
Int. Cl. C09b 29/36

U.S. Cl. 260—156

1. A basic azo dyestuff of the formula



where $\text{A}^{(+)}$ is trialkylammonium phenylene,



R_1 and R_2 each are methylamino, ethylamino, β -hydroxyethylamino or γ -methoxypropylamino, and $\text{X}^{(-)}$ is an anion.

3,899,479

2-(P-PHENYLAZOANILINO)QUINOLIZINIUM BROMIDE

Robert J. Alaimo, and Marvin M. Goldenberg, both of Norwich, N.Y., assignors to Morton-Norwich Products, Inc., Norwich, N.Y.

Division of Ser. No. 278,618, Aug. 17, 1972, Pat. No. 3,880,868. This application Dec. 26, 1973, Ser. No. 431,141

Int. Cl. A61K 31/435; C07C 107/00

U.S. Cl. 260—156

1. The compound 2-(p-phenylazoanilino)quinolizinium bromide.

3,899,480

SHAPED POLYSACCHARIDE ARTICLES AND A METHOD FOR PRODUCING THEM

Hiroshi Kimura, Kyoto; Kensuke Kusakabe, Osaka; Katsuhiko Tokuda, Osaka; Masaru Miyawaki, Osaka, and Hiromi Nakatani, Kyoto, all of Japan, assignors to Takeda Chemical Industries, Ltd., Japan

Filed Dec. 29, 1971, Ser. No. 213,740

Claims priority, application Japan, Dec. 29, 1970, 45-128940

Int. Cl. C07g 3/00

U.S. Cl. 260—209 R

2 Claims

1. A gelled polysaccharide selected from the group consisting of a gelled PS-A, PS-B and Curdlan which is produced by a process comprising: while maintaining a temperature not higher than 60°C throughout the process, dissolving 1 to 10% (weight/volume) of a PS-A, PS-B or Curdlan polysaccharide which is thermally gelable in a concentration of not lower than 1% (weight/volume) and mainly consists of β -1,3-glucose units, in a solution containing 0.05 to 5% (weight/volume) of a solubilizing agent selected from the group consisting of sodium hydroxide, potassium hydroxide and barium hydroxide; then decreasing the amount of said solubilizing reagent in the solution by diffusion, thereby allowing the polysaccharide to gel.

3,899,481

PROCESS FOR THE CONTROLLED PARTIAL DEGRADATION OF DEOXYRIBONUCLEIC ACID EXTRACTED FROM ANIMAL ORGANS

Adriano Butti, Como; Giuseppe Prino, Milan, and Gianfranco Bertellini, Maslianico, all of Italy, assignors to Crinos Industria Farmacobiologica S.A., Villa Guardia, Italy

Continuation-in-part of Ser. No. 194,917, Nov. 2, 1971, abandoned. This application Feb. 6, 1974, Ser. No. 440,269

Claims priority, application Italy, Nov. 3, 1970, 31308/70

Int. Cl. C07H 21/04

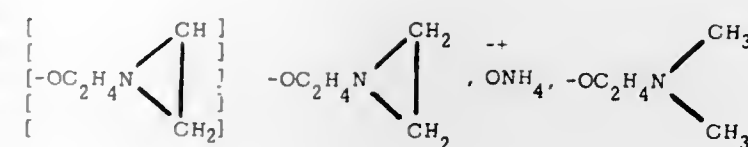
U.S. Cl. 260—211.5 R

10 Claims

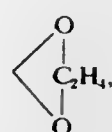
1. A process for the partial degradation of deoxyribonucleic acid extracted from animal organs as alkali salts, said degradation being short of the formation of monomer nucleotides, comprising the steps of:

dissolving the alkali salt of deoxyribonucleic acid in water; heating the resultant solution at 50°–90° C. in the presence of a proton releasing substance selected from the group consisting of water soluble organic acids and cation exchange resins at a pH between 3.5 and 7 until the deoxyribonucleic acid is degraded to an extent that a 1% solution thereof in 0.5 molar sodium chloride will have a viscosity of greater than 1.05 centipoise and below 1.80 centipoise;

neutralizing the degraded solution, and precipitating the degraded solute by adding a liquid non-solvent to the degraded solute and inert to the components of the neutralized degraded solution.



—NHC₂H₄OH, and, where x is 1, both Z's together can represent



n is 1-12 and R₁ is selected from the group consisting of CF₃(CF₂)_y, (CF₃)₂CF(CF₂)_y and (CF₃)₂CFO(CF₂)_y wherein y is an integer of 1 to 14.

3,899,485

PROCESS FOR THE PURIFICATION OF CAPROLACTAM
Otto Immel, and Hans Helmut Schwarz, both of Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Germany
Filed Jan. 23, 1973, Ser. No. 326,125

Claims priority, application Germany, Jan. 28, 1972, 2203945

Int. Cl. C07d 1/06

U.S. Cl. 260—239.3 A

15 Claims

1. A process for the purification of impure solid ε-caprolactam which comprises extracting said lactam with a saturated solution of said lactam in a solvent for a period of up to 60 hours at a temperature of 0° to 50°C., said solvent being one in which said lactam has a solubility at 25°C. which is greater than 15 g of said lactam per 100 g of solvent.

3,899,486

WATER-SOLUBLE PHTHALOCYANINE REACTIVE DYE STUFFS CONTAINING AN ETHYLSULFONYL SUBSTITUENT

Jäger Horst, Cologne, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Germany

Filed Dec. 31, 1969, Ser. No. 889,672

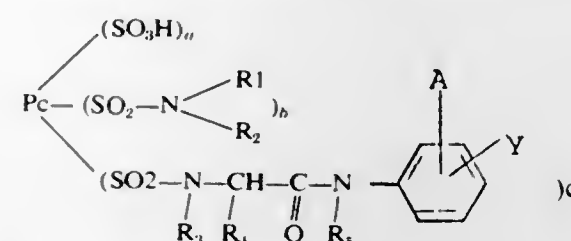
Claims priority, application Germany, Jan. 10, 1969, 1901041

Int. Cl. C07d 27/76

U.S. Cl. 260—239.6

9 Claims

1. A phthalocyanine reactive dyestuff of the formula



in which Pc represents the radical of a phthalocyanine joined to the indicated substituents at the 3- or 4-position of different benzene rings of the phthalocyanine nucleus; R₁ and R₂ are hydrogen, or identical or different alkyls of 1-5 carbon atoms which are unsubstituted or are substituted by hydroxy, carboxy, sulfo, morpholino, cyclohexyl, benzyl, phenyl, naphthyl, and substituted phenyl and substituted naphthyl where the substituent is lower alkoxy, carboxy, or sulfo; R₃ stands for hydrogen or alkyl of 1-5 carbon atoms which is unsubstituted or substituted by hydroxy or sulfo; R₄ and R₅ represent hydrogen or lower alkyl radicals; A represents hydrogen, hydroxy, lower alkoxy, carboxy, sulfo, nitro, halo, or lower alkyl; Y represents a group —SO₂—CH₂—CH₂—OSO₃H, —SO₂—CH=CH₂ or —SO₂—CH₂—CH₂—S—SO₃H; a stands for 0, 1, 2, or 3, b for 0, 1, or 2, and c for 1, 2, 3, or 4, the sum total of a, b, and c not exceeding 4.

3,899,483

PRODUCTION OF TEXTILE MATERIALS WITH IMPROVED FLAME RETARDANCE

Robert Bruce Le Blanc, Wickford, R.I., assignor to Cotton Incorporated, New York, N.Y.

Division of Ser. No. 307,796, Nov. 20, 1972, Pat. No. 3,827,907, which is a continuation-in-part of Ser. No. 220,453, Jan. 24, 1972, abandoned. This application Mar. 27, 1974, Ser. No. 455,311

Int. Cl. C08b 11/04, 27/70

U.S. Cl. 260—231 A

2 Claims

1. Titanated phosphonemethyl ether of cellulose.

3,899,484

FLUORINATED PHOSPHATES

Gerald Joseph Walter, King of Prussia, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Division of Ser. No. 283,886, Aug. 25, 1972, abandoned. This application Apr. 8, 1974, Ser. No. 459,144

Int. Cl. C07f 9/08; C07d 105/04

U.S. Cl. 260—239 EP

5 Claims

1. A fluorinated phosphate of the structure



where x is 1-2 and Z is selected from the group consisting of Cl, OH, —OC₂H₅, —OC₂H₄OH,

3,899,487

PHENYLSTILBENE TRIAZOLE COMPOUNDS

Fritz Fleck, Bottmingen, Basel, Switzerland; Alec Victor Mercer, Leeds; Roger Paver, Bradford, both of England, and Horst Schmid, Munchenstein, Basel, Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Filed Dec. 12, 1972, Ser. No. 314,333

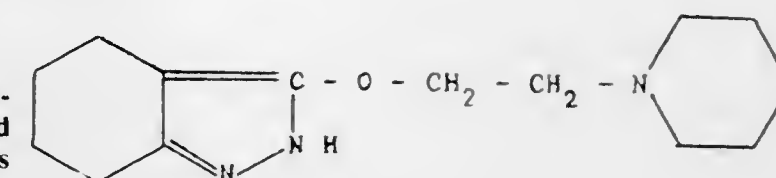
Claims priority, application Switzerland, Dec. 17, 1971, 18433/71

Int. Cl. C09b 23/00

U.S. Cl. 260—240 C

12 Claims

1. A compound of the formula,



and the hydrobromide thereof.

3,899,489

HEXAHYDROTRIAZINONE DERIVATIVES

Gerhard Horlein, Frankfurt am Main; Peter Langelddeke, Diedenbergen; Hubert Schonowsky, Neu-Isenburg, and Adolf Studeneer, Kelkheim, Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Apr. 30, 1973, Ser. No. 355,915

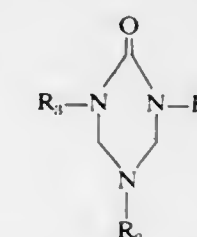
Claims priority, application Germany, May 4, 1972, 2221787

Int. Cl. C07D 251/06

U.S. Cl. 260—248 NS

14 Claims

1. Hexahydrotriazinone compound of the formula



in which R₁ and R₂ each are alkyl having 1-4 carbon atoms or alkenyl having 3 to 4 carbon atoms, R₃ represents



in which X₁ is fluoroalkoxy- or fluoroalkylthio having 1-3 carbon atoms and containing 2 to 6 fluorine atoms, or halogenated vinyloxy, X₂ is hydrogen, halogen, —CH₃, —CF₂Cl or CF₃.

3,899,490

HEXAHYDRO PYRAZINOQUINOLINES

Hugh C. Richards, Canterbury, England, assignor to Pfizer Inc., New York, N.Y.

Continuation of Ser. No. 789,610, Jan. 7, 1969, abandoned.

This application Dec. 5, 1973, Ser. No. 422,087

Claims priority, application United Kingdom, Jan. 12, 1968, 1853/68; Aug. 2, 1968, 36884/68

Int. Cl. C07D 295/08

U.S. Cl. 260—268 TR

3 Claims

1. A hexahydro pyrazinoquinoline compound selected from the group consisting of 7-nitro-8-hydroxymethyl-2,3,4,4a,5,6-hexahydro-1H-pyrazino-[1,2-a]-quinoline, 8-hydroxymethyl-9-nitro-2,3,4,4a,5,6-hexahydro-1H-pyrazino-[1,2-a]-quinoline, 3-n-propyl-8-hydroxymethyl-9-nitro-2,3,4,4a,5,6-hexahydro-1H-pyrazino-[1,2-a]-quinoline, 3-isopropyl-8-hydroxymethyl-9-nitro-2,3,4,4a,5,6-hexahydro-1H-pyrazino-[1,2-a]-

3,899,488

2H-INDAZOLONE COMPOUND

Herbert Oelschläger; Uwe Matthiesen, both of Frankfurt am Main, and Wilhelm A. Behrendt, Marburg, all of Germany, assignors to Firma Temmler-Werke, Marburg, Germany
Division of Ser. No. 163,508, Aug. 16, 1971, abandoned. This application Feb. 9, 1973, Ser. No. 330,947

Claims priority, application Germany, July 17, 1970, 2035494; July 10, 1971, 2134592

Int. Cl. C07D 231/00

U.S. Cl. 260—247.5 EP

1 Claim

1. 3-(β-morpholino-ethoxy)-4,5,6,7-tetrahydro-2H-indazolo as represented by the formula:

quinoline, 7-chloro-8-hydroxymethyl-2,3,4,4a,5,6-hexahydro-1H-pyrazino-[1,2-a]-quinoline, 8-hydroxy-methyl-9-chloro-2,3,4,4a,5,6-hexahydro-1H-pyrazino-[1,2-a]-quinoline, 3-methyl-8-hydroxymethyl-9-chloro-2,3,4,4a,5,6-hexahydro-1H-pyrazino-[1,2-a]-quinoline, 8-hydroxymethyl-9-chloro-10-methyl-2,3,4,4a,5,6-hexahydro-1H-pyrazino-[1,2-a]-quinoline and 3-n-propyl-8-hydroxymethyl-9-chloro-2,3,4,4a,5,6-hexahydro-1H-pyrazino-[1,2-a]-quinoline.

3,899,491

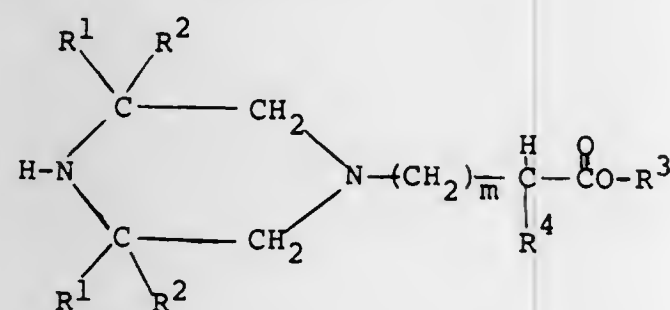
ALKYL ALKANOATE DERIVATIVES OF SUBSTITUTED PIPERAZINES AND POLYMER COMPOSITIONS STABILIZED THEREBY

Chester E. Ramey, Spring Valley, and John J. Luzzi, Carmel, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 239,350, March 29, 1972, abandoned. This application Feb. 15, 1973, Ser. No. 332,839
Int. Cl. C07d 51/72

U.S. Cl. 260—268 TR

1. A compound of the formula



wherein,

R¹ and R² are methyl or together with the carbon to which they are bound are cyclopentyl or cyclohexyl;
R³ is alkyl of from 1 to 20 carbon atoms;
R⁴ is hydrogen or methyl, and m is 0 or 1.

3,899,492

PROCESS FOR THE PRODUCTION OF SUBSTITUTED 1,2-DIHYDROQUINOLINES

Leonard Sergeevich Povarov, ulitsa Krasikova, 7/43, korpus 3, kv.28, and Boris Mikhailovich Mikhailov, ulitsa Vavilova, 55, kv.85, both of Moscow, U.S.S.R.

Continuation of Ser. No. 834,860, June 19, 1969, abandoned.

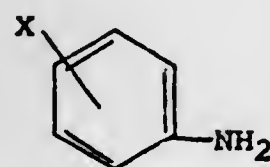
This application Oct. 17, 1972, Ser. No. 298,280

Int. Cl. C07d 33/18

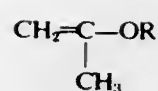
U.S. Cl. 260—283 SY

10 Claims

1. A process for the production of 2,2,4-trimethyl-1,2-dihydroquinolines or benzoquinolines which consists of reacting 3-naphthylamine or an aniline of the formula



wherein X is in the 3 or 4 position and is selected from the group consisting of primary or secondary alkyl of 1 to 5 carbon atoms, alkoxy of 1 to 4 carbon atoms, halogen or phenyl, with an isopropenyl ether of the formula



wherein R is primary alkyl of 1 to 5 carbon atoms in the presence of a catalyst selected from the group consisting of AlBr₃ and BF₃·O(C₂H₅)₂ and a solvent selected from the group consisting of benzene, ethyl acetate and chloroform.

3,899,493

CHROMIC ACID OXIDATION OF VINBLASTINE SULFATE TO FORM VINCRISTINE

Karolina Jovanovics; Kálmán Szász; György Fekete; Emil Bittner; Eszter Dezséri, and János Éles, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar R.T., Budapest, Hungary

Filed Dec. 29, 1972, Ser. No. 319,468

Int. Cl.² C07D 459/00

U.S. Cl. 260—287 P

3 Claims

1. A process for the preparation of vincristine, comprising the steps of oxidizing the sulfate salt of vinblastine with chromic acid in an organic solvent selected from the group consisting of acetic acid and mixtures of glacial acetic acid and acetone at a temperature of about -60°C, adjusting the reaction mixture to a pH of 7-9 and recovering the vincristine.

3,899,494

SUBSTITUTED 6-PHENYL BENZO-NAPHTHYRIDINES

Hans Ott, Pfeffingen, and Rudolf Suess, Bettingen, both of Switzerland, assignors to Sandoz Ltd., Basle, Switzerland

Continuation-in-part of Ser. No. 305,289, Nov. 10, 1972, abandoned, which is a continuation-in-part of Ser. No.

303,069, Nov. 2, 1972, abandoned, which is a continuation of Ser. No. 140,239, May 4, 1971, abandoned. This application Oct. 19, 1973, Ser. No. 408,053

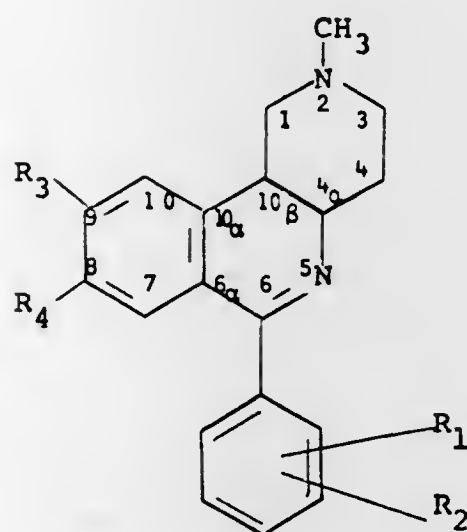
Claims priority, application Switzerland, May 13, 1970, 7086/70; May 13, 1970, 7089/70; Oct. 26, 1972, 15675/72; Oct. 26, 1972, 15676/72; Oct. 26, 1972, 15677/72; Oct. 26, 1972, 15678/72

Int. Cl. C07d 35/10

U.S. Cl. 260—287 R

70 Claims

1. A compound of the formula:



wherein R₁ is hydrogen, alkyl of one to three carbon atoms, alkoxy of one to three carbon atoms or alkylthio of one to three carbon atoms, fluorine, bromine, chlorine, nitro, trifluoromethyl, amino or -NH-CO-R
wherein -CO-R is alkanoyl of 1 to 18 carbon atoms, benzoyl, benzoyl wherein the benzene ring is substituted by one X and one Y, X being lower alkyl of one to four carbon atoms, lower alkoxy of one to four carbon atoms, fluorine, chlorine, or bromine, and Y being hydrogen,

lower alkyl of one to four carbon atoms, lower alkoxy of one to four carbon atoms, or chlorine, phenyl-alkenoyl, wherein the alkylene section has one to three carbon atoms, cinnamoyl, phenyl-alkenoyl as defined above or cinnamoyl which are substituted in the benzene ring by one X and one Y which are as defined above, or A-CO-, A being thienyl, furyl, pyrrolyl, or pyridyl
R₂ is hydrogen, chlorine, alkyl of one to three carbon atoms or alkoxy of one to three carbon atoms, and
R₃ and R₄ are both hydrogen or both methoxy, or
R₃ and R₄ together are methylenedioxy,
or a pharmaceutically acceptable acid addition salt thereof.

3,899,495

PROCESS FOR THE PRODUCTION OF 2,6-DICHLOROPYRIDINE

Helmut Beschke; Hans Schaefer, both of Grossauheim, and Wilhelm Alfons Schuler, Bad Homburg, all of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Germany

Filed Jan. 22, 1973, Ser. No. 325,834

Claims priority, application Germany, Feb. 21, 1972, 2208007

Int. Cl. C07d 31/26

U.S. Cl. 260—290 HL

9 Claims

1. A process for preparing 2,6-dichloropyridine from pyridine and chlorine comprising carrying out the reaction in the presence of steam at a temperature between 370° and 440°C, employing 8 to 14 moles of steam and 2 to 3.5 moles of chlorine per mole of pyridine cooling the reaction product and dissolving it in an aromatic hydrocarbon.

3,899,496

PRODUCTION OF

1-AMINOALKANE-1,1-DIPHOSPHONIC ACIDS

Norbert Schindler, Monheim-Baumberg, and Walter Ploger, Hilden Rhld., both of Germany, assignors to Henkel & Cie GmbH, Dusseldorf, Germany

Continuation of Ser. No. 184,635, Sept. 28, 1971, abandoned.

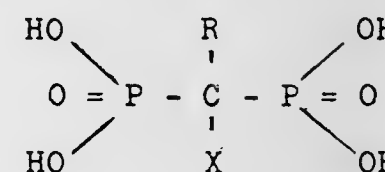
This application Nov. 21, 1973, Ser. No. 417,710

Int. Cl. C07d 295/04

U.S. Cl. 260—293.51

11 Claims

1. A process for the production of 1,1-diphosphonic acids of the formula



in which R represents a member selected from the group consisting of hydrogen, alkyl with 1 to 12 carbon atoms, phenyl, cyclohexyl, phenylalkyl with 7 to 12 carbon atoms, piperidinyl, carboxyalkyl with 2 to 12 carbon atoms, and carbalkoxy alkyl with 3 to 12 carbon atoms; and in which X represents a member selected from the group consisting of NH₂, piperidino, morpholino and NR₁R₂, wherein R₁ and R₂ represent alkyl with 1 to 4 carbon atoms, consisting of reacting the corresponding amide dihalide compounds of the formula selected from the group consisting of R₁CCl₂X and R₂CCl₂X, wherein R and X have the above-assigned meanings, with phosphorous acid; and recovering said 1,1-diphosphonic acids.

3,899,497

PREPARATION OF 3-QUINUCLIDINYL BENZILATE

Jacob I. Miller; Gaston E. Dudley, both of Baltimore, Md.; Philip A. Blackwell, Jr., Cleveland, Miss., and Omer O. Owens, Edgewood, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 26, 1962, Ser. No. 183,337

Int. Cl.² C07D 211/00

U.S. Cl. 260—293.53

5 Claims

1. A method for the preparation of 3-quinuclidinyl benzilate which comprises reacting methyl benzilate with 3-quinuclidinol in an inert anhydrous aliphatic hydrocarbon solvent in the presence of 7-15 molar percent of metallic sodium based on the methyl benzilate.

3,899,498

QUINUCLIDINE-2-CARBOXALDEHYDES

Gunter Grethe, North Caldwell, and Milan Radoje Uskokovic, Upper Montclair, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 166,583, July 27, 1971, Pat. No.

3,823,146, which is a continuation-in-part of Ser. No. 117,131, Feb. 19, 1971, abandoned, which is a continuation-in-part of Ser. No. 20,034, March 16, 1970, abandoned. This application

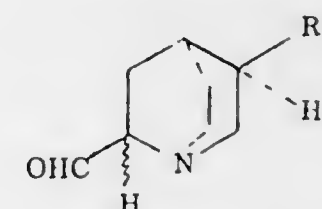
May 2, 1974, Ser. No. 466,356

Int. Cl.² C07D 453/02

U.S. Cl. 260—293.53

5 Claims

1. An epimeric compound of the formula



wherein R₂ is ethyl or vinyl, and enantiomers and racemates thereof.

3,899,499

MANUFACTURE OF BIPYRIDYLUM SALTS

John Edward Colchester, and Thomas Blundell, both of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 833,709, June 16, 1969, Pat. No.

3,790,585. This application Jan. 21, 1974, Ser. No. 435,167

Claims priority, application United Kingdom, July 1, 1968, 31365/68; Sept. 11, 1968, 43147/68; Oct. 8, 1968, 47585/68; Nov. 1, 1968, 51850/68; Nov. 23, 1968, 61012/68; Feb. 17, 1969, 8509/69

Int. Cl.² C07D 213/22

U.S. Cl. 260—295 AM

26 Claims

1. A process for the manufacture of a dihydropyridyl which is oxidizable to a 1,1'-disubstituted-4,4'-bipyridyl salt wherein each 1-substituent is an alkyl or carbamidoalkyl of up to 10 carbon atoms consisting essentially of reacting the corresponding 1-substituted pyridinium salt under basic conditions with soluble cyanide in the presence of a protic solvent which is an alcohol.

3,899,500

MANUFACTURE OF BIPYRIDILIUM SALTS

John Edward Colchester, and Thomas Blundell, both of Run-corn, England, assignors to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 833,709, June 16, 1969, Pat. No.

3,790,585. This application Jan. 21, 1974, Ser. No. 435,168 Claims priority, application United Kingdom, July 1, 1968, 31365/68; Sept. 11, 1968, 43147/68; Oct. 8, 1968, 47585/68; Nov. 1, 1968, 51850/68; Nov. 23, 1968, 61012/68; Feb. 17, 1969, 8509/69

Int. Cl.² C07D 213/22

U.S. Cl. 260—295 AM

33 Claims

1. A process for the manufacture of a dihydrobipyridyl which is oxidizable to a 1,1'-disubstituted-4,4'-bipyridylium salt wherein each 1-substituent is an alkyl or carbamidoalkyl of up to 10 carbon atoms consisting essentially of reacting the corresponding 1-substituted pyridinium salt with soluble cyanide in the presence of a protic solvent and an added alkali metal base or ammonium base.

3,899,501

CONTINUOUS SACCHARIN PROCESS

Francis Huba, and Robert G. Banner, both of Painesville, Ohio, assignors to Diamond Shamrock Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 52,363, July 6, 1970, abandoned. This application Feb. 8, 1973, Ser. No. 330,737 Int. Cl.² C07D 275/06

U.S. Cl. 260—301

4 Claims

1. A continuous process for producing saccharin of improved quality which comprises

- adding o-toluenesulfonamide, a hexavalent chromium compound, sulfuric acid and water simultaneously and continuously to a reactor at ratios of from about 0.8 to about 4 moles of the hexavalent chromium compound, from about 2 to about 20 moles of the acid, and from about 0.04 to about 2 liters of water per mole of the o-toluenesulfonamide to provide continuous production of reaction products of the o-toluenesulfonamide and the chromium compound,
- a continuously reacting together the o-toluenesulfonamide and the chromium compound in the presence of the acid in the reactor at a temperature of from about 30° to about 70°C. over a means residence time of from about 0.2 to about 4 hours,
- continuously removing sufficient reaction mixture from the reactor to maintain a constant volume in the reactor,
- cooling and separating crude saccharin, trivalent chromium compound liquor, and unreacted o-toluenesulfonamide from the reaction mixture removed from the reactor,
- returning the unreacted o-toluenesulfonamide to step (a), and
- recovering the saccharin and the trivalent chromium as individual reaction products.

3,899,502

1,2,4-THIADIAZOL-3,5-DIYL-SULFENAMIDES

Marion W. Harman, Dunbar, W. Va., assignor to Monsanto Company, St. Louis, Mo.

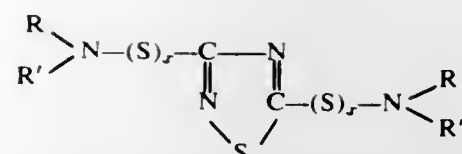
Filed May 14, 1973, Ser. No. 359,978

Int. Cl. C07D 91/60

U.S. Cl. 260—302 SD

7 Claims

1. A compound of the formula



in which x is one or two, R and R' independently are hydrogen, alkyl of 1-8 carbon atoms, aralkyl of 7-10 carbon atoms, cycloalkyl of 5-8 carbon atoms, or R and R' together with the nitrogen atom form pyrrolidinyl, 2,5-dimethylpyrrolidinyl, piperidino, 4-methylpiperidino, 2,6-dimethylpiperidino, 2,4,6-trimethylpiperidino, 2-ethylpiperidino, morpholino, thiomorpholino, 2,6-dimethylmorpholino, hexahydro-1H-azepin-1-yl or azabicyclo(3.2.2)non-3-yl.

3,899,503

PROCESS FOR PREPARING

2-(2')-FURYL-, 2-(2')-THIENYL-2-(4')-THIAZOLYL-OR 2-(2')-PYRRLYL-5 (OR 6) NITROBENZIMIDAZOLE

Robert J. Alaimo, and Ronald J. Storrin, both of Norwich, N.Y., assignors to Morton-Norwich Products, Inc., Norwich, N.Y.

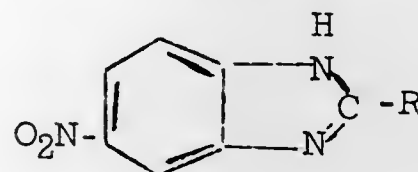
Filed Jan. 25, 1974, Ser. No. 436,462

Int. Cl.² C07D 235/18

U.S. Cl. 260—302 H

1 Claim

1. A process for preparing a compound of the formula:



wherein R is 2-furyl, 2-thienyl, 4-thiazolyl or 2-pyrrolyl, which consists in reacting an aldehyde selected from the group consisting of furfural, thienaldehyde, thiazolealdehyde and pyrrole aldehyde with 4-nitro-o-phenylenediamine in the presence of benzoquinone.

3,899,504

CERTAIN BENZAZOLYLAMINO-ANTHRAQUINONES

Diether Wessling; Heinrich Leister, both of Cologne, and Eberhart Degener, Opladen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Germany

Filed Dec. 3, 1971, Ser. No. 204,722

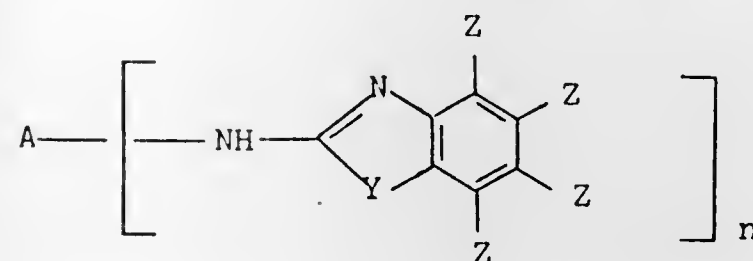
Claims priority, application Germany, Dec. 4, 1970, 2059724

Int. Cl. C07d 91/34, 85/48

U.S. Cl. 260—303

3 Claims

1. Dyestuff free of sulfonic acid groups of the general formula



wherein

A denotes anthraquinone or anthraquinone substituted by 1 to 3 substituents selected from the group consisting of hydroxyl, chlorine, amino, methoxy or anilino, Y denotes S or O, Z denotes chlorine or bromine, n denotes 1 or 2 and wherein the tetrahalobenzazolylamino groups are attached to the α-positions of the anthraquinone nucleus.

3,899,505

METHOD OF PRODUCING 1,3,4-THIADIAZOL-2-YLUREAS

Tony Cebalo, Allentown, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

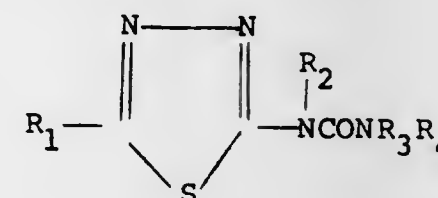
Filed Jan. 19, 1970, Ser. No. 4,075

Int. Cl. C07d 91/62

U.S. Cl. 260—306.8 D

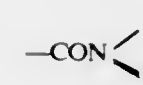
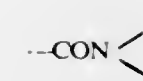
6 Claims

1. A method for producing 1,3,4-thiadiazol-2-ylurea compounds having the general structure:



wherein

R₁ is a lower alkyl radical having from 1 to 4 carbon atoms, a fluoroalkyl radical having from 1 to 4 carbon atoms, and R₂, R₃ and R₄ are lower alkyl radicals having from 1 to 4 carbon atoms, which comprises reacting a 2-alkylamino-1,3,4-thiadiazole compound with an N,N-dialkylcarbamoyl chloride compound in the presence of a sodium metalating agent, the reaction being conducted at a temperature in the range of from about -5°C to about +15°C.



where Y is C₁₋₃ alkyl with the proviso that R₁, R'₁, R₂, R₃, X and Y cannot be all hydrogen when R₄ is -COOH.

3,899,507

PROCESS FOR PREPARING IMIDAZO-[2,1-A]ISOINDOLES

Goetz E. Hardtmann, Florham Park, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.

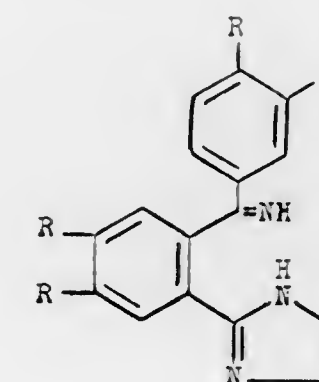
Filed July 30, 1973, Ser. No. 384,035

Int. Cl. C07d 49/36

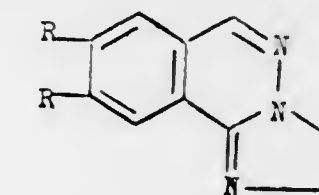
U.S. Cl. 260—309.6

6 Claims

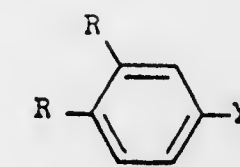
1. A process for preparing a compound of the formula



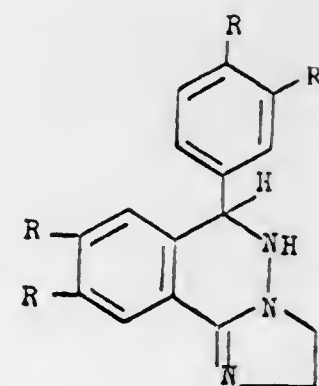
which comprises treating a compound of the formula



with a compound of the formula



in organic solvent at a temperature of about -40° to +50°C., and hydrolyzing the resulting product to obtain a compound of the formula



3,899,506

4-(BENZOXAZOL-2-YL)-PHENYLACETIC ACIDS AND DERIVATIVES THEREOF

Tsung-Ying Shen, Westfield; Conrad P. Dorn, Jr., Plainfield, both of N.J., and Jorge P. Li, Brown Deer, Wis., assignors to Merck & Co., Inc., Rahway, N.J.

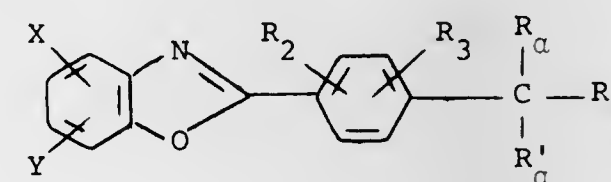
Continuation-in-part of Ser. No. 165,389, July 22, 1971, abandoned, which is a continuation-in-part of Ser. No. 71,227, Sept. 10, 1970, abandoned. This application Aug. 16, 1973, Ser. No. 388,852

Int. Cl.² C07D 263/56

U.S. Cl. 260—307 D

10 Claims

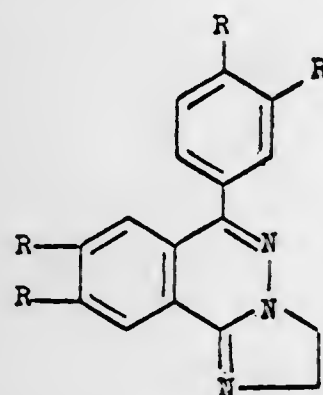
1. A compound of formula:



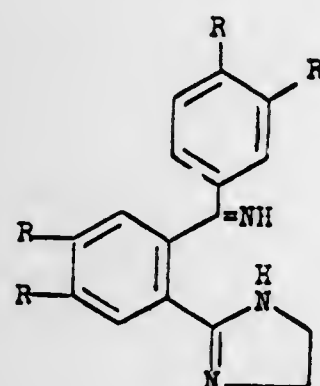
or pharmaceutically acceptable salt thereof, wherein

R₁ is hydrogen or methyl; R'₁ is hydrogen, or R₁ and R'₁ taken together can be methylene; or R'₁ is a methylene linkage attached to the unsubstituted ortho position of the benzenoid ring; X, Y, R₂ and R₃ are the same or different and each is hydrogen, C₁₋₃ alkyl, chloro, bromo, or fluoro; R₄ is -COOH, -COOR where R is C₁₋₅ alkyl, -CONH₂,

oxidizing the latter in strong oxidizing agent which is manganese dioxide, aqueous potassium permanganate or 2,3-dichloro-5,6-dicyano-benzoquinone in inert solvent at about 0° - 150°C. to obtain a compound of the formula



and reducing the latter with mild reducing agent which is (a) zinc, acetic acid and hydrochloric acid, or (b) Raney nickel and hydrogen to obtain a compound of the formula



where each

R, independently, represents H or halo having an atomic weight of about 19-36, and Y represents MgX or Li, and X is halo of atomic weight about 35-80.

3,899,508

5-(2-AMINOPHENYL)PYRAZOLE-3-CARBOXYLIC ACIDS AND ESTERS THEREOF

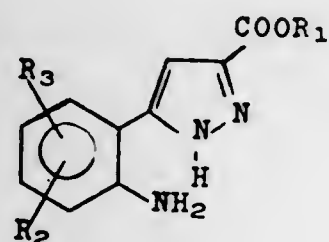
James H. Wikel, Greenwood, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Apr. 12, 1974, Ser. No. 460,646

Int. Cl. C07d 47/02

U.S. Cl. 260-310 R

1. A compound of the formula,



wherein R₁ is hydrogen or C₁-C₃ alkyl and R₂ and R₃ are monovalent groups independently selected from the group consisting of hydrogen, methyl, methoxy, fluoro, chloro, and bromo, with the limitation that R₂ and R₃ must be different unless each of R₂ and R₃ is hydrogen.

3,899,509 PROCESS FOR THE MANUFACTURE OF MALEIC ACID IMIDE

Wilhelm Riemenschneider, Frankfurt am Main, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Continuation-in-part of Ser. No. 622,399, March 13, 1967, abandoned. This application Nov. 12, 1970, Ser. No. 89,056

Claims priority, application Germany, Mar. 25, 1966, 48773; Dec. 23, 1966, 51057

Int. Cl. C07D 207/40

U.S. Cl. 260-326.5 FM

5 Claims

1. A continuous, recycle type gas phase process for the manufacture of maleic acid imide from maleic anhydride and ammonia which comprises reacting maleic anhydride with ammonia in the presence of an inert gaseous diluent at super-atmospheric pressure with a substantial molar deficiency of ammonia to maleic anhydride in the presence of an aluminum oxide catalyst and with relatively low conversions per pass in the range of from 5 to 20 %.

3,899,510

CYCLOALKYLAMINO COMPOUNDS

John William Lewis, North Ferriby, and Michael John Readhead, North Hull, both of England, assignors to Reckitt & Colman Products Limited, Hull, England

Filed June 4, 1973, Ser. No. 366,609

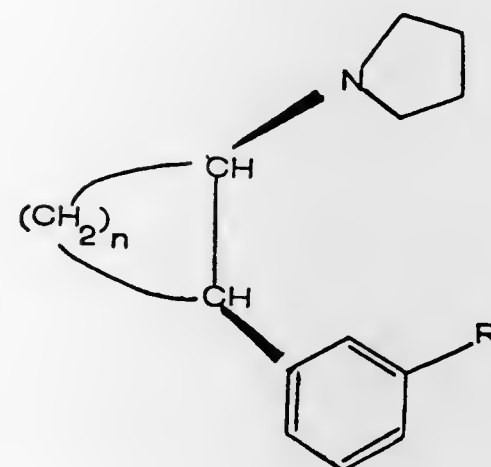
Claims priority, application United Kingdom, June 7, 1972, 26602/72

Int. Cl. C07D 27/00

U.S. Cl. 260-326.5 M

9 Claims

1. Compounds of the general formula:



wherein n is an integer from 3 to 5 inclusive, R is selected from the group consisting of hydroxy, amino, dimethylamino and OR¹ wherein R¹ is selected from the group consisting of acetyl, propionyl, butyryl, carbamoyl, methylcarbamoyl and dimethylcarbamoyl; and pharmaceutically acceptable salts thereof.

3,899,511

PHOTOGRAPHIC PROCESSES AND PRODUCTS EMPLOYING BENZINDOLE PHTHALEINS AS OPTICAL FILTER AGENTS

Stanley M. Bloom, Waban, and Paulina P. Garcia, Arlington, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

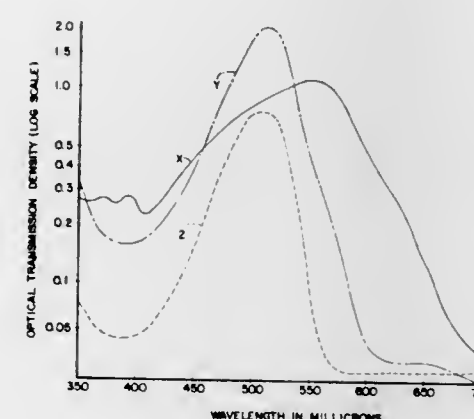
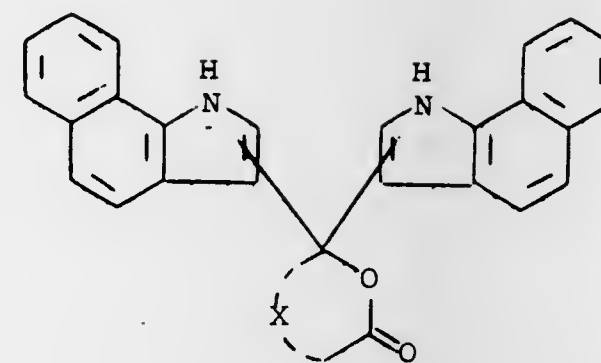
Division of Ser. No. 176,053, Aug. 30, 1971, Pat. No. 3,779,752. This application Aug. 30, 1973, Ser. No. 393,133

Int. Cl. C07D 209/18

U.S. Cl. 260-326.13

11 Claims

1. A symmetrical di-benzindolyl indicator dye having the formula



wherein X represents the atoms necessary to complete a ring-closing moiety selected from phthalide, 7-carboxyphthalide and naphthalide, said benzindolyl radicals being selected from benzindol-2-yl radicals and benzindol-3-yl radicals.

3,899,512

BENZOXEPIN DERIVATIVES

Jules Freedman, Thiensville, Wis., assignor to Colgate-Palmolive Company, New York, N.Y.

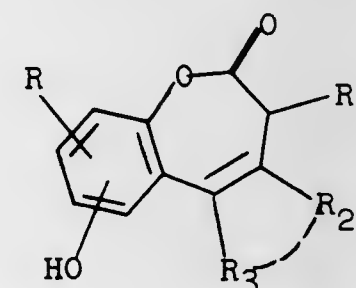
Continuation-in-part of Ser. No. 339,057, March 8, 1973, abandoned. This application Apr. 22, 1974, Ser. No. 462,604

Int. Cl. C07D 313/10

U.S. Cl. 260-343.2 R

10 Claims

1. A compound of the following formula:



in which R is hydrogen or an alkyl of 1 to 9 carbon atoms, and R₁ is hydrogen, a lower alkyl of 1 to 4 carbon atoms or phenyl, R₂ and R₃ are hydrogen, lower alkyl of 1 to 4 carbon atoms, phenyl, halophenyl, dihalophenyl, dimethylphenyl, and alkoxyphenyl, or a heterocyclic group selected from nictinoyl and thenoyl, or R₂ and R₃ are joined together by an alkylidene chain to form cyclohexyl or methyl-cyclohexyl.

3,899,513

1-(2-SUBSTITUTED-CHROMONYLOXY)-2-HYDROXY-3-(SUBSTITUTED-PHENOXY)PROPANES

Brian Thomas Warren, Ickenham, and John William Spicer, London, both of England, assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Jan. 2, 1973, Ser. No. 320,600

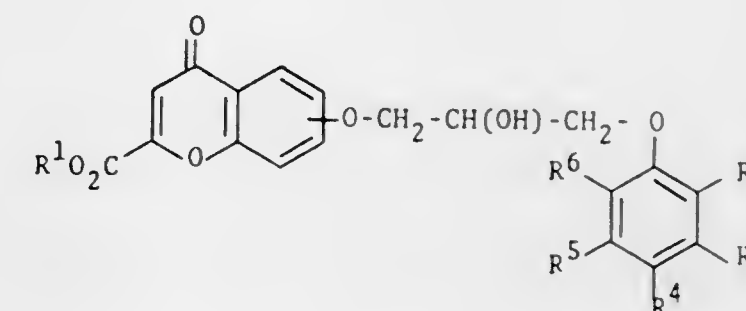
Claims priority, application United Kingdom, Jan. 14, 1972, 1912/72

Int. Cl. C07d 311/02, 311/72

U.S. Cl. 260-345.2

10 Claims

1. A compound having the formula



wherein:

R¹ is selected from the group consisting of hydrogen, alkyl of 1 to 4 carbon atoms, and a nontoxic pharmaceutically acceptable cation; each of R², R³, R⁵, and R⁶ is hydrogen; and, R⁴ is cyano.

3,899,514

NOVEL SPIRODIPYRANS AND CHROMOGENIC MATERIALS FOR COPYING PROCESSES

Hans Baumann, Ludwigshafen, and Andreas Oberlinner, Mannheim, both of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed June 28, 1973, Ser. No. 374,353

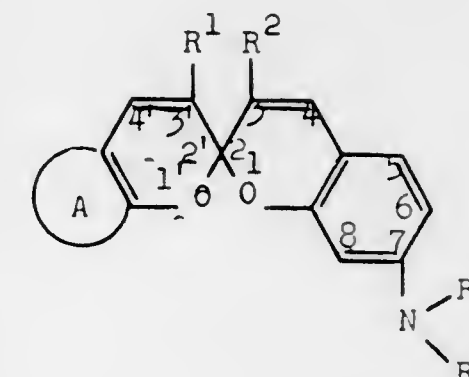
Claims priority, application Germany, July 1, 1972, 2232364

Int. Cl. C07d 7/26

U.S. Cl. 260-345.2

4 Claims

1. A spirodipyrans of the formula:



3,899,531

PROCESS FOR THE PREPARATION OF FLUORINE CONTAINING CARBONYL DIHALIDES

Günter Siegemund, Hofheim, Taunus, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany
Filed Dec. 12, 1973, Ser. No. 424,118

Claims priority, application Germany, Dec. 14, 1972, 2261108

Int. Cl.² C07C 51/58; C01B 17/45

U.S. Cl. 260—544 F

3 Claims

1. A process for the preparation of carbonyl dihalides of the formula



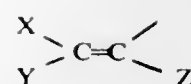
(I)

wherein X is fluorine, chlorine or bromine, which comprises reacting a perhalomethane of the formula



(II)

where X is fluorine, chlorine or bromine, Y and Z each are chlorine and/or bromine with the restriction that if X is fluorine Y and/or Z are bromine, and if X is bromine Y and Z are also bromine, with sulfur trioxide in the presence of sulfuric acid or a catalyst consisting essentially of mono- or bivalent mercury salts or mixtures thereof, at a temperature of from -10° to +100°C.



in which X, Y and Z are the same or different from each other and represent atoms selected from the group consisting of hydrogen, halogen, C₁ to C₃ alkyl groups and C₁ to C₃ alkyl groups which are substituted by at least one halogen atom.

3,899,533

CHLORINATED MANDELAMIDINES

Maddy Souchard, Champigny-Sur-Marne, France, assignor to Societe Anonyme dite: Orsymonde, Paris, France

Filed Nov. 21, 1973, Ser. No. 417,772

Claims priority, application France, Nov. 24, 1972, 72.41908

Int. Cl.² C07C 123/00

U.S. Cl. 260—564 G

1 Claim

1. 2,6-Dichloromandelamidoxime.

3,899,534

CROSS-LINKED POLYELECTROLYTES

Alan Rembaum, and Shiao-Ping S. Yen, both of Altadena, Calif., assignors to California Institute of Technology, Pasadena, Calif.

Division of Ser. No. 188,619, Oct. 12, 1971, abandoned. This application Apr. 30, 1973, Ser. No. 355,927

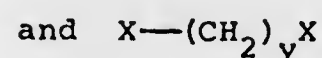
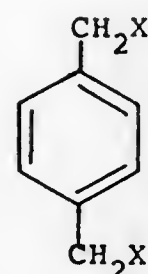
Int. Cl. C07c 87/68

U.S. Cl. 260—567.6 P

6 Claims

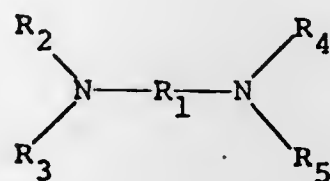
1. A cross-linked, water-insoluble, polyquaternary ammonium polymer consisting essentially of the quaternized reaction product of:

a dihalo substituted organic compound selected from the group consisting of compounds of the formulae:



where X is chloro, bromo or iodo and y is an integer from 2-20;

a ditertiary amine of the formula:



where R₁ is alkylene containing from 3-20 carbon atoms; R₂-R₅ are individually alkyl containing 1-20 carbon atoms; and at least 0.1 and no more than 31 weight percent of a cross-linking agent of the formula:

3,899,532

METHOD FOR THE SIMULTANEOUS PRODUCTION OF ORGANIC ACID CHLORIDES AND CHLORINATED UNSATURATED HYDROCARBONS

Jean-Claude Lanet, Saint-Auban, France, assignor to Rhone-Progil, Courbevoie, France

Filed Oct. 29, 1973, Ser. No. 410,966

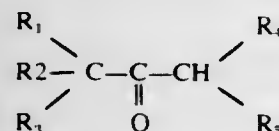
Claims priority, application France, Oct. 31, 1972, 72.38554

Int. Cl.² C07C 21/04

U.S. Cl. 260—544 M

17 Claims

1. A method for the simultaneous production of organic acid chloride and chlorinated unsaturated hydrocarbons, characterized in that a ketone having the general formula:



is reacted, by heating, in the presence of a Lewis acid as a catalyst, with a trichloromethylated hydrocarbon having a double bond in the alpha position and having the formula R—C(Cl)₃ in which R₁, R₂, R₃, R₄ and R₅ represent atoms selected from the group consisting of hydrogen, halogens, C₁ to C₃ alkyl groups unsubstituted or substituted by halogens or C₆ to C₁₀ aryl groups which may be unsubstituted or substituted by C₁ to C₃ alkyl groups or halogens; and R represents a group selected from the group consisting of (a) a C₆ or C₁₀ aromatic hydrocarbon residue, unsubstituted or substituted by at least one group selected from the group consisting of C₁ to C₃ alkyl groups, and at least one halogen atom and (b) an alkenyl group having the formula

3,899,537

PRODUCING BENZOPHENONE AND RELATED PRODUCTS

Hans D. Holtz, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed July 12, 1972, Ser. No. 271,031

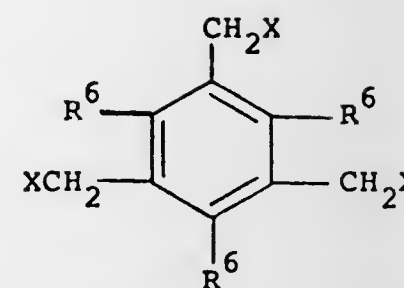
Int. Cl. C07c 49/76, 45/04

U.S. Cl. 260—591

11 Claims

1. The oxidation of a stilbene under conditions to produce a benzophenone which comprises subjecting said stilbene dissolved in a solvent selected from carboxylic acids and halogenated aromatic compounds in the presence of a catalyst having the formula C_nX_{2n+1}CO₂H wherein X is fluorine or chlorine and n can be 1-10, to the action of oxygen under pressure.

11. The oxidation of diphenylacetaldehyde under a pressure of oxygen to produce benzophenone in the presence of trifluoroacetic acid and, as a solvent, chlorobenzene.



where X is chloro, bromo or iodo and R⁶ is hydrogen, methyl or —CH₂X, said reactants being present in an essentially stoichiometric ratio of nitrogen to halogen.

3,899,535

CORROSION INHIBITOR COMPOSITION AND PROCESS

Louise H. Brown, Santa Monica, and Ronald Swidler, Pasadena, both of Calif., assignors to Tallow Company, Salinas, Calif.

Continuation-in-part of Ser. Nos. 111,495, May 22, 1961, abandoned, and Ser. No. 504,217, Oct. 23, 1965, abandoned.

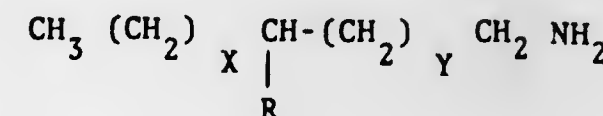
This application Oct. 3, 1973, Ser. No. 403,337

Int. Cl. C07c 87/28

U.S. Cl. 260—570.8 R

5 Claims

1. Amines having the formula:



wherein Y is greater than 3 and X + Y is 15 and R is an aryl radical.

3,899,536

PREPARATION OF

2,4,6,2',4',6'-HEXANITRO-DIPHENYLAMINE

Hubert Girardon, Villeneuve les Avignon, and Jean Marie Emeury, Sorgues, both of France, assignors to Societe Nationale des Poudres et Explosifs, Paris, France

Filed May 8, 1972, Ser. No. 251,475

Claims priority, application France, May 18, 1971, 71.17872

Int. Cl. C07c 87/60

U.S. Cl. 260—576

8 Claims

1. A process for the preparation of Hexyl of melting point 252°C which consists of a first nitration stage in which 2,4,6-trinitro-diphenylamine is nitrated to pentanitrodiphenylamine with aqueous nitric acid having a concentration of from 45 to 65% of nitric acid by weight using a nitric acid: trinitro-diphenylamine weight ratio of from 4 to 10 at a temperature of from 75°-80°C, nitration being terminated after 1 to 3 hours, and a second nitration stage in which the pentanitrodiphenylamine obtained is nitrated to 2,4,6,2',4',6'-hexanitrodiphenylamine with nitric acid having a concentration of from 90 to 100% by weight of nitric acid using a nitric acid: pentanitro-diphenylamine weight ratio of from 4 to 10 at a temperature of from 50° to 70°C, nitration being terminated after ½ to 3 hours.

3,899,539

PROCESS FOR THE PREPARATION OF PROPIONALDEHYDE

Hans Fernholz, Fischbach, Taunus; Friedrich Wunder, Florsheim, Main, and Hans-Joachim Schmidt, Frankfurt am Main, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Apr. 27, 1971, Ser. No. 137,944

Claims priority, application Germany, Apr. 29, 1970, 2020890

Int. Cl.² C07C 41/02

U.S. Cl. 260—601 R

10 Claims

1. A process for the preparation of propionaldehyde, which comprises the step of reacting a saturated carboxylic acid allyl ester wherein said saturated carboxylic acid is free of further functional groups and having up to 12 carbon atoms in the molecule, in the presence of from 1 to 10 moles of water per mole of carboxylic acid allyl ester at a temperature of between 75°C and 300° from in the gaseous phase and in the presence of an acid catalyst selected from the group consisting of orthophosphoric acid, pyrophosphoric acid, polyphosphoric acids, silico-tungstic acid, phosphomolybdic acid, boro-tungstic acid, and phospho-tungstic acid, phospho-tungstic-molybdic acid and mixtures thereof.

3,899,540

HYDROXYLATION PROCESS

Takashi Suzuki, and Susumu Naito, both of Niigata, Japan, assignors to Mitsubishi Gas Chemical Company, Ltd., Tokyo, Japan

Filed Jan. 28, 1974, Ser. No. 437,242

Claims priority, application Japan, Jan. 31, 1973, 48-11889

Int. Cl. C07c 37/00

U.S. Cl. 260—621 G

5 Claims

1. A process for preparing a hydroxylated aromatic compound which comprises reacting at least one aromatic compound selected from the group consisting of unsubstituted aromatic hydrocarbons and aromatic hydrocarbons substituted with lower alkyl, lower alkoxy, halogen and hydroxy with hydrogen peroxide in the presence of trifluoroacetic acid and hydrogen fluoride at a temperature of from $-70^{\circ}\text{C}.$ to $+50^{\circ}\text{C}.$; at least one mole of trifluoroacetic acid and 5 to 50 moles of hydrogen fluoride being employed per mole of hydrogen peroxide.

3,899,541

PROCESS FOR COUPLING IODOPERHALO COMPOUNDS

Henry R. Nychka, East Aurora, N.Y., assignor to Allied Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 818,107, April 21, 1969, Pat.

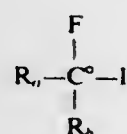
No. 3,637,868. This application Dec. 27, 1971, Ser. No. 212,821

Int. Cl. C07c 17/26

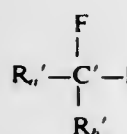
U.S. Cl. 260—648 F

16 Claims

1. The method which comprises coupling two iodoperhalo organic reactants of the formula



and



wherein R_a , R_b , R_a' and R_b' are independently fluorine or a perhalo radical of 1 to 24 carbon atoms selected from the group consisting of perhaloalkyl, perhalocycloalkyl and perhaloalkylene substituted perfluoroaryl, with the provisos that the total number of carbon atoms in each iodoperhalo organic reactant being no more than 37, both R_a and R_b are not fluorine, both R_a' and R_b' are not fluorine, and iodine atoms are separated from C^a and C' and from each other, if at least two are present, by at least one non-iodo containing carbon atom, by reacting said iodoperhalo organic reactants with a metal fluoride selected from the group consisting of CsF , RbF , KF and BaF_2 , at a temperature of at least about $275^{\circ}\text{C}.$

3,899,542

PREPARATION OF ALKYL HALIDES

Charles M. Starks, Ponca City, Okla., and Ronnie D. Gordon, Richardson, Tex., assignors to Continental Oil Company, Ponca City, Okla.

Continuation-in-part of Ser. No. 10,045, Feb. 9, 1970, abandoned. This application Mar. 10, 1972, Ser. No. 233,769

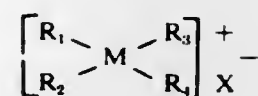
Int. Cl. C07c 17/20

U.S. Cl. 260—658 R

5 Claims

1. In a halogen exchange process wherein a halogen of a first liquid halogen substituted alkane is exchanged with a different halogen of a second liquid halogen substituted alkane, said halogen being chlorine, bromine or iodine, the improvement comprising utilizing as the catalyst an organic

quaternary salt having the general formula



wherein M is nitrogen or phosphorous; R_1 , R_2 , R_3 , and R_4 are alkyl groups containing from 1 to about 30 carbon atoms respectively; and X is halide, sulfate, hydrocarbon sulfonate, or acetate.

3,899,543

PROCESS FOR HYDROGENATING AROMATIC COMPOUNDS CONTAINING SULFUR IMPURITIES

Jean Cosyns, Nanterre; Jean-Pierre Franck, Bougival, and Jean-Francois Le Page, Rueil Malmaison, all of France, assignors to Institut Francais du Petrole des Carburants et Lubrifiants, Rueil-Malmaison, France

Filed Aug. 31, 1973, Ser. No. 393,607

Claims priority, application France, Sept. 1, 1972, 72.31209

Int. Cl. C07c 5/10

U.S. Cl. 260—667

14 Claims

1. A process for hydrogenating a feedstock of aromatic compounds containing sulfur impurities in which a mixture of hydrogen with at least one aromatic compound containing sulfur impurity is contacted, at a temperature of from 200° to $450^{\circ}\text{C}.$, under a pressure of from 10 to 200 kg/cm^2 , in successive order with:

A. A catalyst containing:

- at least one desulfurizing element selected from the oxides and/or sulfides of molybdenum, tungsten, nickel and cobalt;
- alumina and;
- iron oxide, the ratio by weight of Al_2O_3 to Fe_2O_3 in this catalyst being from 0.25 to 4; and,

B. A group VIII metal hydrogenation catalyst.

3,899,544

CONVERSION OF ALCOHOLS AND ETHERS TO HYDROCARBONS

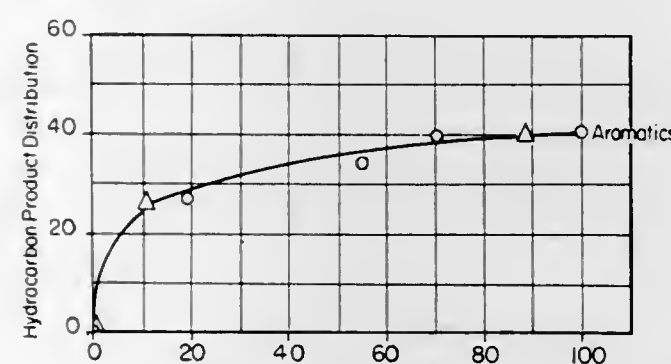
Clarence D. Chang, Princeton, and William H. Lang, Pennington, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 28, 1974, Ser. No. 455,692

Int. Cl. C07c 1/20

U.S. Cl. 260—668 C

8 Claims



1. In the process of converting lower aliphatic organic feed compounds containing up to about 8 carbon atoms in a hydrocarbon constituent thereof and at least one hetero atom selected from the group consisting of sulfur, oxygen, nitrogen and halogen to a higher hydrocarbon product having a substantial fraction in the C_3 to 400°F boiling range by contacting said feed with a crystalline aluminosilicate zeolite, having a silica to alumina ratio of at least about 12 and a constraint index of about 1 to 12, at about 500° to $8850^{\circ}\text{F}.$, up to about 50 atmospheres, 0.5 to 50 LHSV and in the substantial absence of added, preformed hydrogen; the improvement which comprises utilizing as said catalyst said zeolite containing

about 30 to 85% of its cation sites satisfied by a Lewis or Bronsted base.

3,899,545

RECOVERY OF HYDROGEN CHLORIDE IN AN ALKYLATION PROCESS

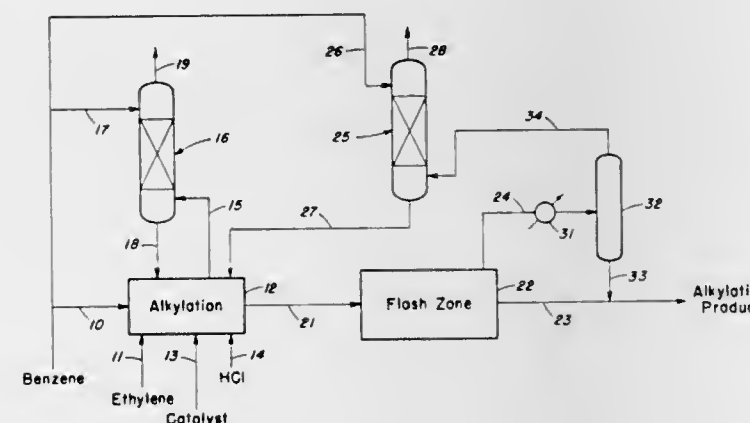
Utah Tsao, Jersey City, N.J., assignor to The Lummus Company, Bloomfield, N.J.

Filed Dec. 12, 1973, Ser. No. 423,902

Int. Cl. C07c 3/54

U.S. Cl. 260—671 R

6 Claims



3,899,548

N-(DIALKYLPHOSPHONOALKYL)-CARBAMIC ACID
ALKYL ESTERS

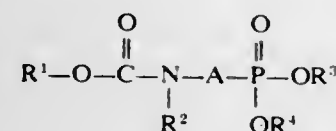
Harro Petersen, Frankenthal; Friedrich Fuchs, Kirchheim, and Peter Scharwaechter, Ludwigshafen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed June 17, 1974, Ser. No. 479,893

Int. Cl. C071 9/40

U.S. Cl. 260-932

1. A substance of the formula:



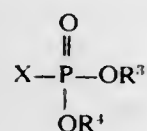
in which

R¹, R², R³ and R⁴ are identical or different and are alkyl of one to five carbon atoms,

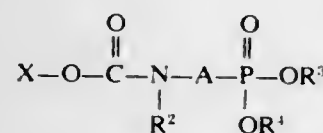
R³ and R⁴ may also be chlorinated alkyl of one to five carbon atoms or together may be alkylene of two to three carbon atoms,

R² may also be hydrogen, methylol or alkoxyethyl of one to three carbon atoms in the alkoxy,

A is unbranched or branched alkylene of two to eight carbon atoms of which at least two are situated in the chain connecting nitrogen and phosphorus, and R¹ may also be a radical of the formula:



or:



in which

X is linear or branched alkylene of two to eight carbon atoms which may be interrupted by oxygen atoms, and R², R³ and R⁴ have the meanings given above.

3,899,549

POLY(DIALKYLPHOSPHONOALKYL)CARBAMATES

Harro Petersen, Frankenthal; Friedrich Fuchs, Kirchheim, and Peter Scharwaechter, Ludwigshafen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

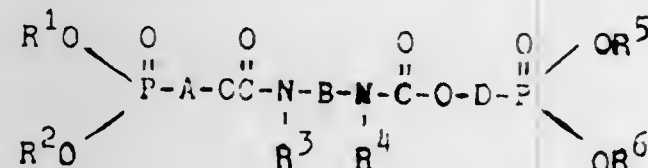
Filed Mar. 6, 1974, Ser. No. 448,549

Claims priority, application Germany, Mar. 10, 1973, 2312090

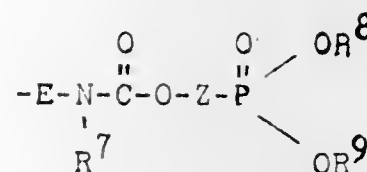
Int. Cl. C071 9/40; D06c 27/00

U.S. Cl. 260-932

1. Substances of the formula



in which R¹, R², R⁵ and R⁶ denote C₁₋₄ alkyl optionally substituted by halogen atoms, R³ and R⁴ denote hydrogen, C₁₋₃ alkyl, methylol or C₁₋₃ alkoxyethyl or a radical of the formula:



in which R⁷ is hydrogen, C₁₋₃ alkyl, a methylol or C₁₋₃ alkoxyethyl group and R⁸ and R⁹ are C₁₋₄ alkyl optionally substituted by halogen atoms or together form alkylene of 2 to 3 carbon atoms, and the radicals A, B, D, E and Z are the same or different and denote alkylene radicals of from 2 to 6 carbon atoms.

3,899,550

METHOD FOR ALKOXYLATION OF CHLORIDES AND
BROMIDES OF TRIVALENT PHOSPHORUS

Michel Demarcq, Lyon, France, assignor to Produits Chimiques Ugine Kuhlmann, Paris, France

Filed Jan. 16, 1974, Ser. No. 433,709

Claims priority, application France, Feb. 21, 1973, 73.06041

Int. Cl. C07F 9/141, 9/142, 9/145, 9/15

U.S. Cl. 260-977

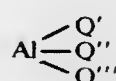
9 Claims

1. In the method of alkoxylation of chlorides and bromides of trivalent phosphorus with an epoxide, wherein the trivalent phosphorus can be described by the general formula



where X can be chlorine or bromine, Y and Z can each (independently of each other) be chlorine or bromine or a monovalent radical R-, RO-, RS- or RR'N- wherein R is selected from the group of C₁-C₃₀ radicals consisting of alkyl, alkenyl, cycloalkyl, cycloalkenyl, aryl, alkylaryl and arylalkyl radicals and their derivatives wherein one or more hydrogen atoms are substituted by chlorine, bromine, oxygen, sulfur, nitrogen or phosphorus and wherein R' can be hydrogen or R and wherein R and R' can together form a ring and wherein Y and Z also can together form a ring,

the improvement which comprises performing said alkoxylation, in the presence and absence of a stabilizing base, and in the presence of a suitable catalytic quantity of an organic aluminum compound selected from (1) compounds having the formula



where O', and O'' and O''' can be the same or different from each other and can each be C₁-C₁₀ alkyl or aryl, C₁-C₁₀ alkoxy or aryloxy and can each have one hydrogen substituted by halogen aluminum nitrilotriethylate, (3) aluminum acetylacetonate and (4) aluminum dimedonate.

3,899,551

APPARATUS FOR CONTROLLING AND MODULATING
ENGINE FUNCTIONS

Alfred C. Korte, St. Louis, Mo., assignor to ACF Industries, Incorporated, St. Louis, Mo.

Filed Feb. 9, 1973, Ser. No. 331,220

Int. Cl. F02m 1/10, 7/00

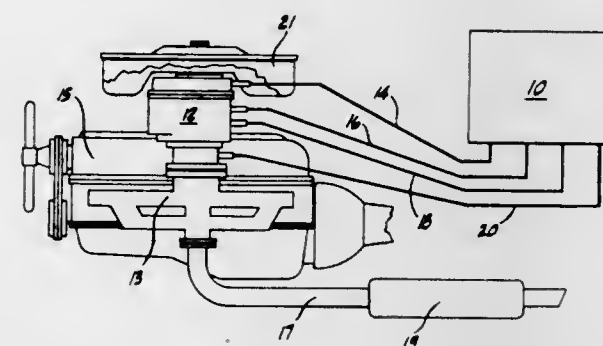
U.S. Cl. 261-39 A

5 Claims

1. In an internal combustion engine having a plurality of engine functions operable by the suction created by the natural aspiration of said engine during running condition, the improvement comprising:

an attachment connected to said engine communicating on one side with ambient air and on another side with at least

one suction-controlled passage leading to at least one engine function controlling means, said attachment including control means responsive to barometric and/or temperature changes to change a dimension of said control means,



said control means being connected to a metering means adapted to admit said ambient air to said suction-controlled passage in accordance with changes in said dimension, said control means comprising a sealed bellows, said bellows being adapted to increase its length upon a decrease in the absolute density of said ambient air, and said bellows abutting an adjustment means in a pivoted plate, said plate being connected to said metering means.

3,899,552

CARBURETOR WITH AUTOMATIC AIR-FUEL RATIO
ADJUSTMENT CONTROL

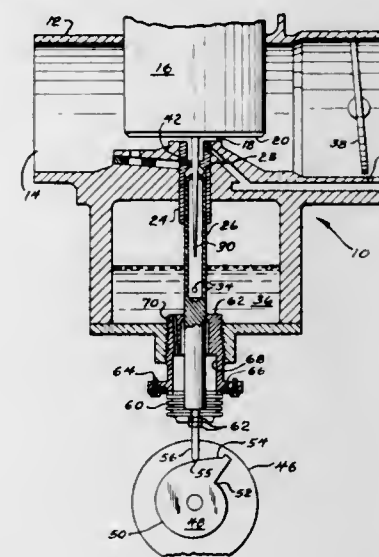
Carl F. Bauer, Chicago, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Mar. 1, 1974, Ser. No. 447,439

Int. Cl. F02M 9/06

U.S. Cl. 261-44 R

5 Claims



1. Apparatus for continuously adjusting the air-fuel ratio of a carburetor of the type having a fuel bowl, a tubular main fuel jet valve seat mounted in the fuel bowl and a tapered main fuel jet needle valve mounted to move within said tubular main jet valve seat and axially relative thereto to vary the flow of fuel from said jet, said apparatus comprising means for mounting said tubular main fuel jet valve seat for rapid reciprocatory movement along its axis, said mounting means including resilient means comprising a corrugated bellows member for biasing said tubular main jet valve seat in one direction relative to the tapered main jet needle, said mounting means further including a contact portion positioned externally of said fuel bowl and adapted when contacted to move said tubular main jet valve seat in an opposite direction and against the bias of said resilient means, and means periodically operative in response to an electrical signal indicative of a desired change in the air-fuel ratio of the carburetor to contact said contact portion and either drive said tubular main jet a predetermined distance in said opposite direction or permit said resilient

means to move said tubular main jet a predetermined distance in said one direction.

3,899,553

COOLING TOWER PLUME CONTROL

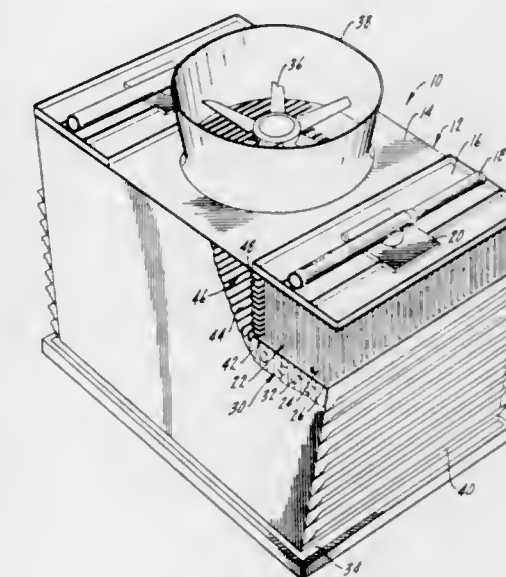
Donn B. Furlong, San Rafael, and John C. Ovard, Santa Rosa, both of Calif., assignors to Ecodyne Corporation, Lincolnshire, Ill.

Filed July 27, 1973, Ser. No. 383,219

Int. Cl. F28c 1/00

U.S. Cl. 261-109

12 Claims



1. A wet/dry cooling tower for controlling plume emission to the atmosphere, comprising: a wet section and a dry section; said dry section being positioned immediately above said wet section; separate air inlet means associated with said wet section and dry section for respectively directing ambient air therethrough in a substantially horizontal direction; a hot water distribution basin positioned immediately above said dry section so as to define the upper portion of said dry section and a substantially horizontal partition deck separating said wet section from said dry section; a plurality of substantially vertical heat exchange tubes positioned within said dry section having upper ends which extend through openings in the floor of said basin for receipt of hot water therefrom and lower ends which extend through openings in said partition deck into said wet section; said lower ends of said heat exchange tubes having spray nozzle means directly secured thereto for receiving and spraying partially cooled water from said tubes over said wet section; a cold water collection basin positioned below said wet section for collecting cooled water passing through said dry section; movable louver means provided for selective control of ambient air flow through said wet and dry sections dependent upon atmospheric conditions; and a plenum area centrally disposed within said tower for receiving and mixing together the exhaust air passing through said wet and dry sections prior to its return to the atmosphere.

3,899,554

PROCESS FOR FORMING A CERAMIC SUBSTRATE

Harold D. Kaiser, Poughkeepsie, and Robert W. Nufer, Hopewell Junction, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 14, 1973, Ser. No. 425,040

Int. Cl. B29d 27/04; C04b 33/28, 39/12; H011 7/00

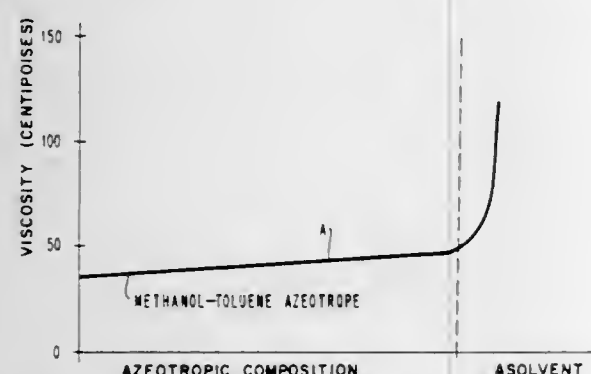
U.S. Cl. 264-41

7 Claims

1. In a process for forming ceramic substrates, the steps comprising:

A. formulating a ceramic slip composition by blending a ceramic particulate with a solvent soluble thermoplastic binder resin dissolved in a volatile organic solvent mixture forming a complete solvent for said resin and comprising a volatile first solvent fraction and a volatile second non-solvent fraction with said first solvent fraction

constituting a complete solvent for said resin and said second fraction being substantially a non-solvent for said resin, said first and second solvent fractions combining to form an azeotropic mixture, with an excess of said non-solvent fraction;



B. forming a layer of said composition on a removable support, evaporating the azeotropic mixture so as to leave at least a portion of the second solvent fraction for causing a rapid increase in viscosity of the resin and then precipitation and gelling of the resin with the second non-solvent uniformly trapped therein; and evaporating said second non-solvent fraction from said resin structure to form a uniform distribution of micropores therein.

3,899,555

METHOD OF PREPARING CERAMIC STRUCTURES

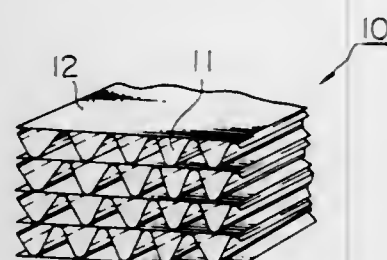
Hiroshi Takao, Yokosuka; Kinmochi Togawa, Tokyo; Satoshi Abe, and Sigeyosi Nakagawa, both of Yokosuka, all of Japan, assignors to Nissan Motor Company Limited, Japan
Filed Dec. 27, 1971, Ser. No. 212,019

Claims priority, application Japan, Jan. 13, 1971, 46-678

Int. Cl. B29h 7/20

U.S. Cl. 264-44

5 Claims



1. A method of preparing a ceramic structure, comprising the steps of:

- dispersing a mixture comprising particulate ceramic materials in powder or short fiber form together with short cellulose fibers in an aqueous medium to form a non-colloidal slurried suspension of the particulate ceramic materials and the cellulose fibers in said aqueous medium;
- introducing said suspension onto a wire cloth papermaking machine;
- draining said aqueous medium from said insoluble particulate material and fibers through said wire cloth to form a matted sheet of particulate material and cellulose fibers on said wire cloth;
- removing said sheet from said wire cloth to form a paper sheet in which said mixture of ceramic materials and said cellulose fibers are randomly and uniformly dispersed;
- drying the resultant paper sheet to remove excess water and to form a plasticized green ceramic sheet;
- forming said green ceramic sheet into a plasticized green honeycomb structure;
- baking the green honeycomb structure for a time and at a temperature sufficient for sintering the particulate ceramic materials dispersed therein, to a self-supporting honeycomb and for burning off the cellulose fibers dispersed therein, thereby leaving a porous ceramic honey-

comb having its pores randomly distributed in the wall thereof.

3,899,556

PROCESS FOR PRODUCING IMPLANTABLE, POROUS, CERAMIC, BONE SUBSTITUTION, BONE CONNECTION OR PROSTHESIS ANCHORING MATERIALS

Helmut Heide, Schwalbach, Taunus; Ulrich Hoffmann, Eschborn-Niederhochstadt; Gunther Brotz, Stierstadt, Taunus, and Eva Poeschel, Altenhain, all of Germany, assignors to German Federal Republic, represented by the Minister for Research and Technology, Bonn, Germany
Filed Aug. 31, 1973, Ser. No. 393,487

Claims priority, application Germany, Aug. 31, 1972, 2242867

Int. Cl. B29h 7/20

U.S. Cl. 264-44

21 Claims

1. The process for producing an implantable, porous, ceramic bone substitution- or bone connection - or prosthesis anchoring material, and the like, which has open pores of substantially regular or uniform size, distribution and disposition which comprises: (a) producing a frame which corresponds approximately to the pores and pore interconnections of the desired finished product, the frame being formed by preparing a compact arrangement of spherical bodies, which are approximately of equal or uniform size, filling said compact arrangement of spherical bodies with a liquid which gradually, gently dissolves said bodies, said liquid gradually, gently dissolving part of said filler bodies, the time of dissolving being sufficient to dissolve enough of said filler bodies so that bridges of the dissolved portion of said filler bodies can form bridges after said liquid is removed, and removing said liquid so that a liquid film remains on said bodies, said film constituting a liquid medium meniscus at the points or edges of contact of said bodies, whereby bridges of said dissolved portion said filler bodies form between said filler bodies; (b) filling the frame with a physiologically suitable and biologically compatible castable or pourable ceramic mass; and (c), after at least a partial hardening of the ceramic mass, dismantling or decomposing and removing the frame, whereby said desired finished product or said ceramic material is obtained.

3,899,557

HOLLOW SEMICONDUCTOR BODIES AND METHOD OF PRODUCING THE SAME

Wolfgang Dietze, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

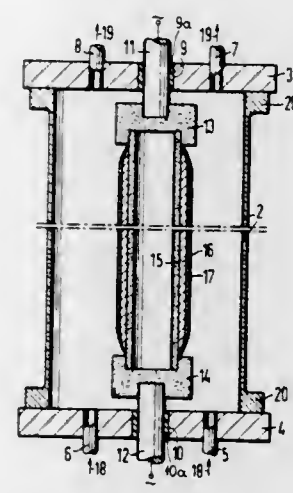
Filed Oct. 29, 1973, Ser. No. 410,758

Claims priority, application Germany, Oct. 31, 1972, 2253411

Int. Cl. C23c 11/06

U.S. Cl. 264-81

14 Claims



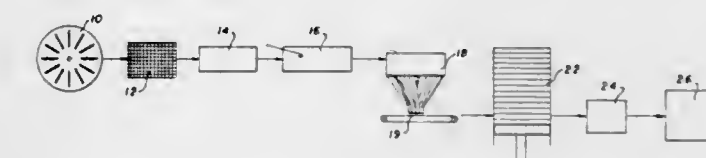
1. A method of producing a directly heatable hollow semiconductor body formed of at least two distinct layers and being useful in diffusion processes comprising:

vapor depositing a continuous layer of a first semiconductor material selected from the group consisting of silicon and doped silicon onto a graphite carrier surface until a desired thickness thereof is attained;

vapor depositing a continuous layer of a second semiconductor material selected from said group onto said layer of said first semiconductor material until a desired thickness thereof is attained and a hollow semiconductor body is formed on said carrier surface; and

removing said carrier surface without destroying said layers of semiconductor materials;

whereby said hollow semiconductor body has an inner surface composed of one of said semiconductor materials of said group and has an outer surface composed of the other semiconductor material of said group.



thereon mats of wafers of uniform density and thickness, pressing the mats of wafers on the plates in a hot press at temperatures ranging from about 390° to about 430°F for a suitable time to form waferboards of predetermined thickness and density, and cooling said boards and storing the boards in hot stacks at temperatures from about 210° to about 300°F to prevent thermal degradation.

3,899,558

METHOD OF MAKING A CURRENT CONTROLLING DEVICE INCLUDING VO₂

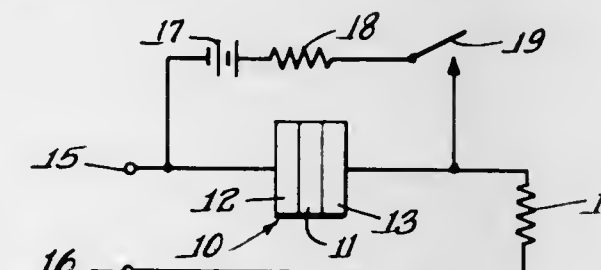
Gordon R. Fleming, Pontiac, and Stanford R. Ovshinsky, Bloomfield Hills, both of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Division of Ser. No. 830,581, May 27, 1969, Pat. No. 3,588,638, which is a continuation-in-part of Ser. No. 809,580, March 24, 1969, abandoned. This application Sept. 8, 1970, Ser. No. 70,155

Int. Cl. C04b 35/00; B29g 7/00

U.S. Cl. 264-104

11 Claims



1. The method of making a semiconductor element of a current controlling device for an electrical circuit including a semiconductor element and electrodes in low electrical resistance contact therewith, wherein said semiconductor element has a threshold voltage value and a high electrical resistance to provide a blocking condition for substantially blocking current therethrough, and wherein said high electrical resistance in response to a voltage above said threshold voltage value substantially instantaneously decreases between the electrodes to a low electrical resistance which is orders of magnitude lower than the high electrical resistance to provide a conducting condition for substantially conducting current therethrough, said method comprising, substantially individually coating high electrical resistance refractory powder particles with a thin solid coating of substantially VO₂ within a molar percent range of about 5 to 25% of substantially VO₂, and forming said semiconductor element from said substantially VO₂ coated refractory powder particles.

3,899,559

METHOD OF MANUFACTURING WAFERBOARD

Fred E. Johnanson, Vancouver, and William L. Watkins, Hudson Bay, both of Canada, assignors to MacMillan Bloedel Research Limited, Vancouver, Canada

Filed Dec. 27, 1972, Ser. No. 318,840

Claims priority, application Canada, Nov. 24, 1972, 157386

Int. Cl. B29j 5/02

U.S. Cl. 264-115

10 Claims

1. A method of manufacturing waferboard, which comprises cutting thin wafers from wood logs having a moisture content of about 40 to about 70% based on dry weight of the wood, screening the cut wafers to remove therefrom any fine wood particles, drying the wafers at surface temperatures ranging from about 200° to about 240°F to reduce the mois-

ture content thereof to about 2 to about 10% based on the dry weight of the wood, mixing the wafers with about 1.5% to about 4% by weight fine powdered binder resin and from 1 to 6% by weight wax in molten or emulsified form to coat each wafer with a coat of wax covered by powdered resin, depositing the coated wafers uniformly on supporting plates to form



3,899,560

METHOD OF PREPARING TRANSPARENT ALUMINA

David J. Sellers, Peperell; William H. Rhodes, Lexington, and Thomas Vasilos, Winthrop, all of Mass., assignors to Avco Corporation, Cincinnati, Ohio

Division of Ser. No. 717,585, April 1, 1968. This application Feb. 14, 1972, Ser. No. 226,338

Int. Cl. C04b 35/10; B29c 25/00

U.S. Cl. 264-65

7 Claims

1. A process for producing transparent polycrystalline alumina having a primary recrystallized grain structure with C axis orientation of grains parallel to the direction of plastic deformation of the alumina crystals comprising:

- forming a compact consisting essentially of submicron particles of high purity polycrystalline alumina having a purity in excess of 99.90%;
- stabilizing the compact at a temperature in the region of 1800°C to 1900°C without substantial grain growth;
- hot forging said compact by compressing without lateral constraints at a pressure of at least 3000 p.s.i. to introduce into said compact material a strain in excess of the critical strain; and
- annealing said compact under pressure for 70 minutes to 6 hours to induce primary recrystallization.

3,899,561

METHOD OF MAKING PLASTIC SIDING

Peter F. Heilmayr, McPherson, Kans., assignor to Certain-teed Products Corporation, Valley Forge, Pa.

Division of Ser. No. 243,205, April 12, 1972, Pat. No. 3,776,672, which is a continuation-in-part of Ser. No. 225,348, Feb. 10, 1972, abandoned, and Ser. No. 225,347, Feb. 10, 1972, abandoned, which is a division of Ser. No. 2,900, Jan. 14, 1970, abandoned, said Ser. No. 225,348, is a continuation of Ser. No. 2,900, This application July 17, 1973, Ser. No. 380,017

Int. Cl. B29c 17/00, 17/14

U.S. Cl. 264-151

1 Claim

1. In the method of manufacturing siding boards having hanger and butt edges with an intervening panel by plasticating a thermoplastic resin material in a heated extruder, shaping the plasticated resin material by extruding it through a die orifice generally conforming with a desired cross sectional

shape of the siding, cooling and rigidifying the extruded siding, and cutting the extrudate into siding board lengths, the improvement which comprises feeding rigid polyvinyl chloride resin material in powder form to the extruder, extruding the resin generally horizontally through a die orifice having a maximum dimension from 3 to 20% larger than the final width of the siding being made and having a flat mid portion for forming the panel of the siding which mid portion of the orifice is of thickness of from 25 to 75% of the thickness of the panel of the siding being made, embossing the upper side of the extrudate to impart a textured surface thereto, passing the embossed extrudate between and in contact with lower and upper series of spaced templates respectively having concavely curved edges and convexly curved edges for curving the extrudate to a shape having a concave upper side and a convex lower side and bringing the extrudate uniformly to the desired size, directing cooling air against both surfaces of the extrudate as the extrudate passes between the spaced templates to cool and rigidify the extrudate, the lower convex side of the extrudate bearing cooled faster than the upper concave side of the extrudate to minimize warping.

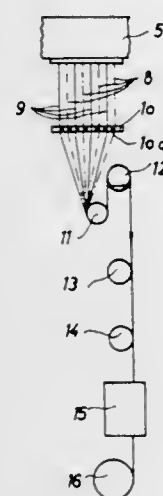
3,899,562

PROCESS FOR THE PRODUCTION OF MIXED YARNS
Anton Seidl, Bad Vilbel, Germany, assignor to Vickers-Zimmer Aktiengesellschaft, Frankfurt am Main, Germany
Continuation of Ser. No. 130,085, April 1, 1971, abandoned.
This application Oct. 23, 1973, Ser. No. 408,839
Claims priority, application Germany, Apr. 15, 1970, 2018019

Int. Cl.² D01D 5/12

U.S. Cl. 264-210 F

7 Claims



1. A process for continuously producing a homogeneous, mixed multicolored yarn which comprises the separate steps of:

- melt spinning a colored, synthetic polyamide or polyester polymer through spinning nozzles and solidifying the resultant polymer to provide a plurality of monofilament groups;
- melt spinning a second, different colored, synthetic polyamide or polyester through a second different set of spinning nozzles and solidifying the resultant polymer to provide a plurality of monofilament groups;
- guiding said monofilament groups of different color from the different nozzles in separate, spaced, different colored planes upon emergence from said spinning nozzles, the filament groups of each of said different colored planes being spaced apart and alternating with each other, and combining the monofilament groups of each colored plane to provide a plane of alternately spaced apart, different colored, combined monofilament groups;
- subsequently gathering said plane of different colored, spaced apart, alternating combined monofilament groups

to produce a homogeneous multicolored filament bundle; and,
e. stretching said homogeneous filament bundle.

3,899,563

SYNTHETIC FIBERS HAVING IMPROVED SOIL AND STAIN REPELLENCY

Bryce C. Oxenrider, Florham Park, and Cyril Woolf, Morristown, both of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

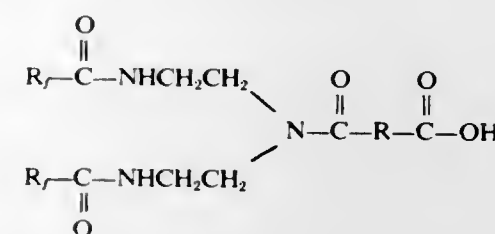
Division of Ser. No. 205,424, Dec. 6, 1971, Pat. No. 3,767,625, which is a division of Ser. No. 867,368, Oct. 17, 1969, Pat. No. 3,646,153. This application July 23, 1973, Ser. No. 381,453
Int. Cl. B28b 3/20; D01f 1/02

U.S. Cl. 264-211

4 Claims

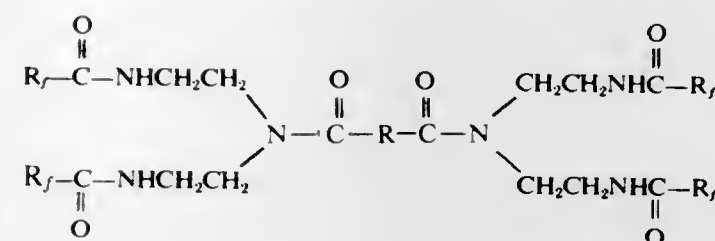
1. In a process for preparing a melt extruded filament of a melt extrudable fiber-forming thermoplastic resin selected from the group consisting of polypropylene, polyamide, polyester, polyacrylonitrile, and blends thereof, the improvement which comprises intimately blending with the resin prior to extruding the resin, from about 0.1 to about 2 percent by weight based on the weight of the resin of an additive which improves the soil and stain repellency of the filament, said additive being selected from the group consisting of:

a. monoamides of the formula

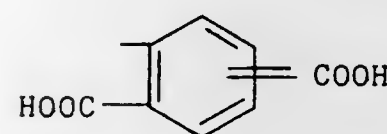


wherein R is an alkyl diradical of 1 to 8 carbon atoms, an alkylene diradical of 2 to 8 carbon atoms, or a phenyl diradical;

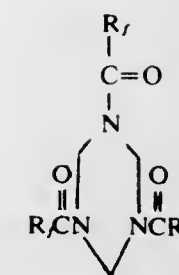
b. diamides of the formula



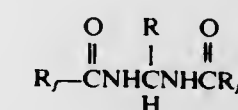
wherein R is an alkyl diradical of 1 to 8 carbon atoms, an alkylene diradical of 2 to 8 carbon atoms, a phenyl diradical, or a dicarboxy phenyl diradical having the formula



c. hexahydrotriazines of the formula

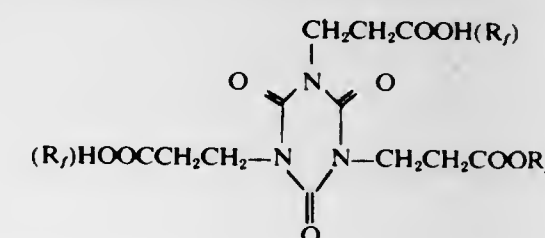


d. bisamides of the formula

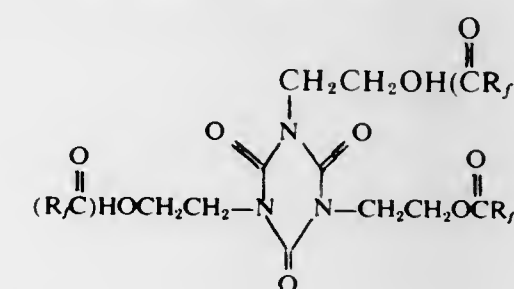


wherein R is hydrogen, trichloromethyl or a phenyl radical;

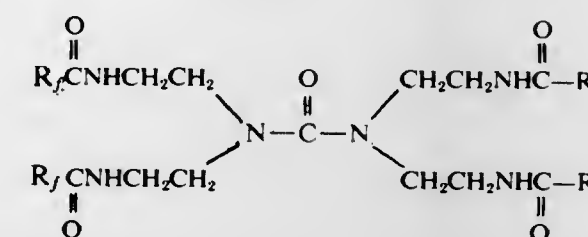
e. isocyanurate esters of the formula



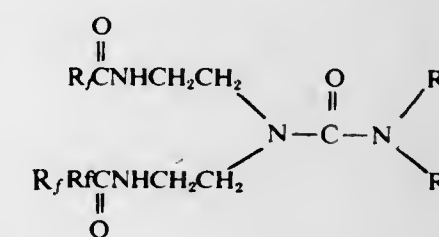
f. isocyanurate esters of the formula



g. substituted ureas of the formula

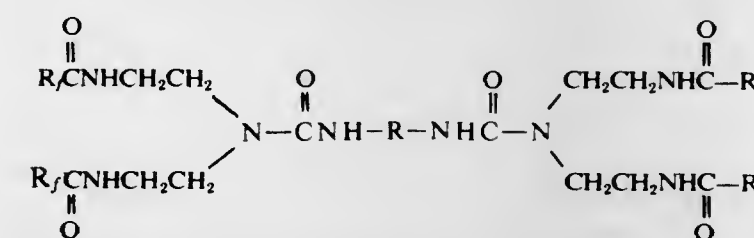


h. substituted ureas of the formula



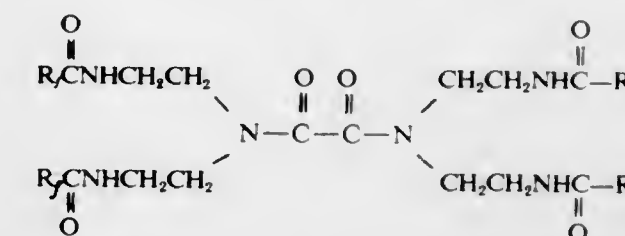
wherein R₁ and R₂ are independently hydrogen or an alkyl radical of 1 to 6 carbon atoms, and alkylene radical of 2 to 6 carbon atoms, or a phenyl radical;

i. substituted ureas of the formula

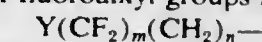


wherein R is an alkyl diradical of 1 to 13 carbon atoms, an alkylene diradical of 2 to 13 carbon atoms, or an aryl, aralkyl

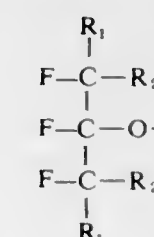
or aralkylene diradical of 6 to 13 carbon atoms; and
j. substituted oxamides of the formula



R_f being, in each of the above formulas, selected from the group consisting of fluoroalkyl groups having the formula



wherein m is an integer from 1 to 16, n is an integer not greater than m from 0 to 8, with the sum of m plus n being from 1 to 20, and Y is selected from the group consisting of F₃C— and radicals having the formula



wherein R₁ and R₂ are fluorine or perfluoroalkyl groups having from 1 to 2 carbon atoms, provided that not more than three of the R₁ and R₂ groups are perfluoroalkyl groups said additive having a surface energy of less than 20 ergs/cm² and being thermally stable and nonfugative at the temperature at which the filament is extruded.

3. The improvement of claim 1 including the additional step of annealing the extruded filament to lower the surface energy of the filament.

3,899,564

METHOD OF MAKING PLASTIC-COATED WIRE OBJECTS SUCH AS INTRAUTERINE CONTRACEPTIVE DEVICES

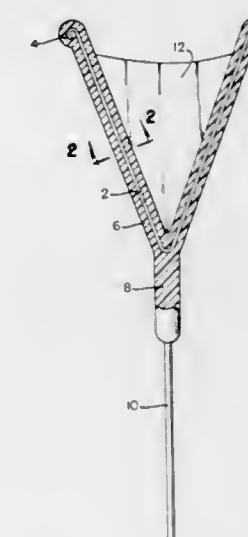
Milton Kessler, 6690 Harrington Ave., Youngstown, Ohio 44512, and Ronald N. Kessler, 4551 Woodhurst, Apt. 3, Youngstown, Ohio 44515

Filed Nov. 15, 1973, Ser. No. 416,221

Int. Cl. B29c 3/00; B29f 1/10

U.S. Cl. 264-255

3 Claims



1. Method of making an IUD comprising a V-shaped portion having a springy, soft-plastic-coated metal wire core and a soft-plastic tail portion extending away from the apex of the V comprising

a. molding at least the bottom half of the plastic tail and a bottom plastic part of the V-shaped portion in a two-part

- die having a cavity in the bottom half of the die corresponding to the entire bottom half of the plastic coat, the upper half of the two-piece die having a male projection rounded at its end to produce in the center of said plastic coat portion a depression corresponding to the bottom half of the wire to be coated, said upper half having also recesses to produce upstanding foldable members of plastic material projecting upwardly on both sides of said depression,
- b. withdrawing the upper half of the die, leaving in the bottom half the plastic element thus formed, which constitutes a tail portion and a bottom part of the V-portion, said last part having a central V-shaped depression corresponding to the lower half of the wire core of the IUD, and said foldable members extending up from said bottom part on either side of said depression,
- c. placing the V-shaped metal wire core of the IUD in said depression so that it lies on the bottom thereof with said foldable members extending upwardly on either side of the wire to prevent its displacement,
- d. replacing the upper half of the die with a second upper half die having an elongated cavity corresponding to the upper half of the product and forcing said second half die down into engagement with the lower half die so that its elongated cavity portion folds said foldable members inwardly over and around the top part of the wire to securely position the wire within the plastic and cause said members to interdigitate,
- f. and injecting more plastic material through said upper half die to completely surround and enclose the wire and complete forming the IUD.

3,899,565

METHOD FOR FORMING TUBE WITH THICKENED SOCKET END

Warner Jan de Putter, Hardenberg, and Willem Cornelis den Hertog, Zwolle, both of Netherlands, assignors to Wavin B. V., Zwolle, Netherlands

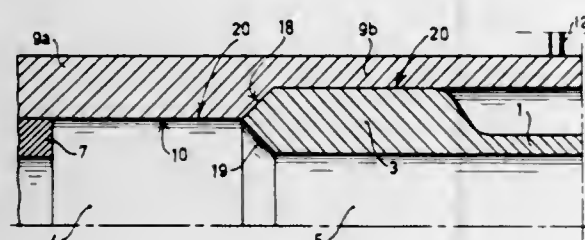
Filed Apr. 18, 1973, Ser. No. 352,329

Claims priority, application Netherlands, Apr. 19, 1972, 7205280

Int. Cl. B29c 17/00; B29d 23/00

U.S. Cl. 264—296

8 Claims



1. Method for forming a socketed tube made of a plastic material which is rigid in an unheated condition, the tube having opposite inner and outer sides and being provided with a thickened end by deforming the tube which has been brought into a condition in which deformation is possible by applying heat, comprising the steps of:

- a. heating the end part of the tube up to a temperature above the deformation temperature of the plastic material,
- b. thickening this end part of the tube without substantially changing the diameter of the inner side by subjecting the same to an upsetting operation by deforming the tube between a first supporting wall positioned within the tube and a second supporting wall positioned outside of the tube, with the first and second walls being arranged with a predetermined spacing between them and so deforming the tube until the inner side and outer side of the thickened part are supported by the first and second supporting walls,

- c. cooling at least the outer side of the thickened part of the tube down so as to have a temperature at least 10° lower than the temperature of the thickened mass so that on removal of the second supporting wall the thickened part substantially retains its form, while on the other hand cooling is performed such that after removal of the second supporting wall, the heat in a particular inner cross-sectional area suffices to bring this entire cross-sectional area up to at least the temperature of deformation; and
- d. subsequently widening the thickened part to form a socket.

3,899,566

PROCESS FOR MANUFACTURING COLOR-STRIPED STAMPED DETERGENT BARS

Graeme Douglas Murray, Newcastle upon Tyne, England, assignor to The Procter & Gamble Company, Cincinnati, Ohio

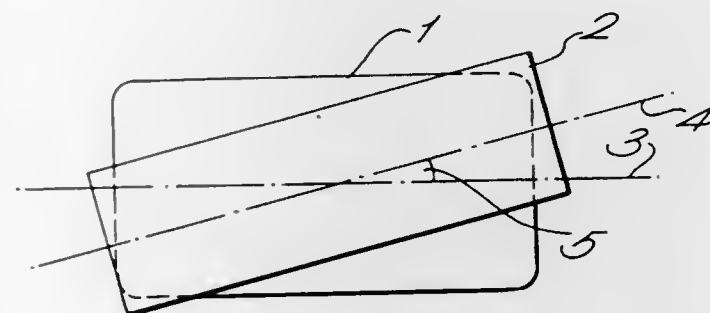
Filed Aug. 8, 1973, Ser. No. 386,655

Claims priority, application United Kingdom, Aug. 11, 1972, 37560/72

Int. Cl. B29C 9/00

U.S. Cl. 264—245

4 Claims



1. A process for manufacturing a soap or detergent bar having stripes of at least one distinctive color, curved relative to the long axis of the bar, which comprises feeding into a die box a longitudinally striped billet of soap or detergent, whose length is greater than the corresponding dimension of the die box, the billet being so aligned when it is forced into the die box that its long axis is not coincident with the long axis of the die box at the instant when it is subjected to compression therein, said long axis of the billet at said instant lying in a plane of a cross-section of the die box taken at right angles to the axis defined by the center of the open ends of the die box.

3,899,567

METHOD OF MANUFACTURING DYNAMIC PRESSURE SEAL

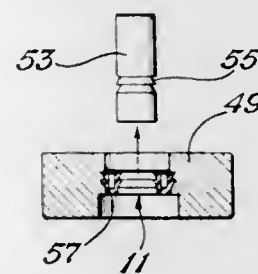
Gerald W. Gorman, Rt. 2, Box 320, Midlothian, Tex. 76065

Filed Aug. 12, 1974, Ser. No. 496,560

Int. Cl. B29c 7/00

U.S. Cl. 264—318

5 Claims



1. A method of manufacturing an annular seal having protruding sealing lips that must not be damaged; said method combining both compression and transfer molding techniques and comprising the steps of repeating cycles, including:

- a. assembling a mold by emplacing a stem within a press ring with said press ring being on the bottom, slipping a master ring over and conformingly engaging a portion of said press ring and concentrically about said stem so as to define a seal cavity, providing interior and exterior grooves in respective said stem and said master ring for forming said sealing lips, providing upwardly protruding teeth on said press ring such that a seal material forced into said seal cavity will have the desired shape of said seal, providing slots intermediate said teeth and disposed at an angle such that said seal is formed with no radial along which there is solid material in said seal between its interior wall and its exterior wall; and providing a compression ring for forcing seal material into said seal cavity;
- b. heating said mold to a first predetermined temperature;
- c. inserting into at least the top of said seal cavity a predetermined piece of seal material for forming said seal;
- d. pressing said compression ring into conforming fit in the top of said cavity, thereby forcing by compression and transfer said seal material into said seal cavity to completely fill same in order to form said seal with its said sealing lips and ribs at an angle such that no radial has solid material intermediate the interior and exterior wall of said seal;
- e. pressing, clamping and heating said mold and said seal at a vulcanizing temperature for a predetermined time interval sufficient to convert said seal material in the form of the raw said seal into a final vulcanized said seal;
- f. unloading said seal by a critical series of steps that alleviates problems with damaging said seal; said steps being:
- i. pulling out said compression ring from a first end of said master ring and the top of said seal cavity;
- ii. removing said press ring from the second and opposite end of said master ring, thereby withdrawing said teeth from within said seal to allow said seal to flex and accommodate otherwise damaging deformation;
- iii. removing said stem out of said second end of said master ring such that said groove on said stem slips out of engagement with said sealing lips of said seal by moving said sealing lips along an inclined surface instead of pulling against a surface inclined at 90° to the central longitudinal axis of said stem;
- iv. removing said seal out of said first end of said master ring such that said sealing lips slip out of engagement with said grooves in said master ring by moving along an inclined surface instead of pulling against a surface inclined at 90° to the central longitudinal axis of said master ring; and
- g. repeating said cycle.

3,899,568

ALUMINA REMOVAL FROM CHROMATE LEACH LIQUORS

Douglas G. Frick, Liverpool; Thomas R. Morgan, Solvay, and Terry L. Streeter, Syracuse, all of N.Y., assignors to Allied Chemical Corporation, New York, N.Y.

Filed June 12, 1974, Ser. No. 478,812

Int. Cl. C01F 7/14; C01G 37/14

U.S. Cl. 423—55

10 Claims

1. In the process for removing dissolved aluminate from alkaline chromate leach liquor by acidification of the leach liquor to precipitate alumina hydrate, the improvement which comprises, in combination: (a) passing the leach liquor sequentially through a series of at least two agitated vessels; (b) maintaining the liquor at a temperature of at least about 90°C.; and (c) adding acidifying agent to said vessels in amount sufficient to establish gradually decreasing pH levels in the liquor from vessel to vessel in the direction of liquor flow such that the pH in the vessel through which the liquor passes first is maintained within the range of from 10 to 13.5, and the pH in the vessel through which the liquor passes last is maintained within the range of from 6 to 9.5, so that the

precipitated alumina hydrate comprises predominantly alumina trihydrate.

3,899,569

PREPARATION OF HIGHLY PURE TITANIUM TETRACHLORIDE FROM ILMENITE SLAG

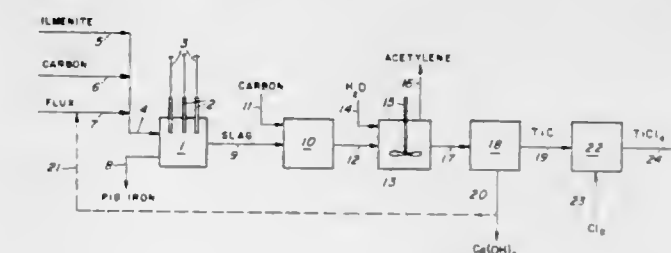
Willard L. Hunter; Jack C. White, and William A. Stickney, all of Albany, Oreg., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Feb. 1, 1972, Ser. No. 222,503

Int. Cl. C01G 23/02

U.S. Cl. 423—76

7 Claims



1. In a process for the production of titanium tetrachloride by the reaction of elemental chlorine with a titaniferous slag obtained from the smelting of ilmenite, the improvement comprising adding a fluxing agent selected from the group consisting of calcium oxide, calcium hydroxide, and limestone to the smelting charge in an amount sufficient to yield a titaniferous slag containing more than 10 percent calcium oxide by weight, reacting said titaniferous slag with carbon at temperatures above about 1,850°C to produce solid titanium carbide particles in a liquid calcium carbide matrix, cooling the mixture of calcium and titanium carbides, crushing the mixture, and reacting it with water to decompose the calcium carbide with the formation of acetylene and the release of titanium carbide particles from the calcium carbide matrix, separating the titanium carbide from solid residues produced in the decomposition reaction and reacting the recovered titanium carbide fraction with elemental chlorine while maintaining the chlorination temperature below the melting point of the impurity metal chlorides formed to produce titanium tetrachloride.

3,899,570

EXTRACTION OF MERCURIC CHLORIDE FROM DILUTE SOLUTION AND RECOVERY

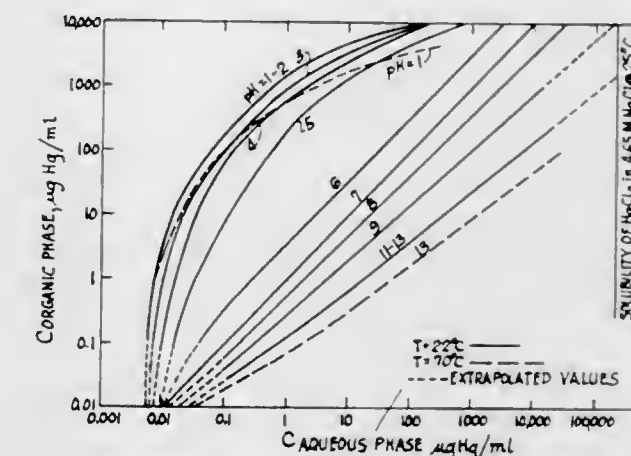
Thomas W. Chapman, Madison, Wis., and Reinaldo Caban, Rio Piedras, P.R., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Feb. 9, 1973, Ser. No. 331,024

Int. Cl. C01g 13/00

U.S. Cl. 423—100

14 Claims



12. A method for the extraction and recovery of mercury from its ores the steps of treating the ore with an aqueous oxidizing halide solution for removal of the mercury as the solubilized halide, acidifying the solution to a pH within the range of 0.5–3.0, contacting the acidified aqueous solution

with an organic phase formed of an organic solvent solution of an alkyl amine selected from the group consisting of primary, secondary and tertiary amines in which alkyl groups are C_4 to C_{18} in the primary and secondary amines and C_6 to C_{18} in the tertiary amine, separating the organic phase from the aqueous phase, contacting the organic phase with an aqueous phase at a pH above 9 to extract the soluble mercuric salts from the organic phase at sufficiently high concentration for economic reduction to the metal mercury.

3,899,571

METHOD FOR THE REMOVAL OF ORGANIC SUBSTANCES FROM SODIUM ALUMINATE SOLUTION

Koichi Yamada; Tadanori Hashimoto, both of Niihama, and Kazuhiko Nakano, Katano, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan
Filed Dec. 4, 1973, Ser. No. 421,638

Claims priority, application Japan, Dec. 6, 1972, 47-122189
Int. Cl.² C01F 7/04, 7/06, 7/34

U.S. Cl. 423-127

8 Claims

1. A method for the removal of organic substances from a sodium aluminate solution in the production of alumina from bauxite in accordance with the Bayer process or improved processes thereof, characterized by adding sodium oxalate crystals as seeds to a sodium aluminate solution during the time period extending from after the aluminate hydroxide precipitation step to before the dissolution step, thereby precipitating organic substances mainly composed of sodium oxalate in said sodium aluminate solution; separating the crystals of organic substances from the sodium aluminate solution; washing the said separated crystals with an aqueous solution having a pH of 5 to 12 to remove substantially all of the organic substances newly deposited on the seeds from the separated crystals; and recycling the sodium oxalate crystals as seeds for precipitating organic substances after the removal of substantially all of the newly deposited organic substances.

3,899,572

PROCESS FOR PRODUCING PHOSPHIDES

Naozo Watanabe; Kenji Morizane, and Masaaki Ayabe, all of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan
Continuation-in-part of Ser. No. 96,030, Dec. 8, 1970. This application July 19, 1972, Ser. No. 273,297

Claims priority, application Japan, Dec. 13, 1969, 44-100301; Dec. 13, 1969, 44-100303; Dec. 13, 1969, 44-100304; Dec. 13, 1969, 44-100305

Int. Cl. C01b 25/00

U.S. Cl. 423-299

12 Claims

1. A process of producing a phosphide comprising: positioning a suitable gaseous phosphorus-source material along a first lower portion of a reaction zone and positioning a select phosphide-forming material within a second lower portion of said reaction zone and below an upper portion of said reaction zone;

feeding an inert gas into said reaction zone and maintaining said inert gas within said reaction zone at a pressure at least equal to the decomposition pressure of the phosphide being produced at a given temperature;

cooling said upper portion of the reaction zone to a temperature below the inversion temperature of liquid phosphorus into red phosphorus and above the melting point of yellow phosphorus at the pressure within said reaction zone so that any gaseous phosphorus coming in contact with the cooled upper portion of the reaction zone is converted to liquid phosphorus;

heating said first lower portion of the reaction zone to a temperature sufficient to vaporize at least a portion of said gaseous phosphorus-source material into gaseous phosphorus at a pressure greater than the pressure of the inert gas at said lower portions of said reaction zone but below the pressure of the inert gas at the upper portion of the reaction zone so as to establish equilibrium pressure conditions within said reaction zone wherein at least

a top portion of said upper portion of the reaction zone is composed of said inert gas and at least a top portion of said lower portions of the reaction zone are composed of gaseous phosphorus;

heating said second lower portion of the reaction zone to a temperature sufficient to initiate a reaction between said phosphide-forming material and gaseous phosphorus; and maintaining said pressure-temperature conditions within said reaction zone for a period of time sufficient to produce said phosphide.

3,899,573

PRODUCTION OF FINE POWDERS

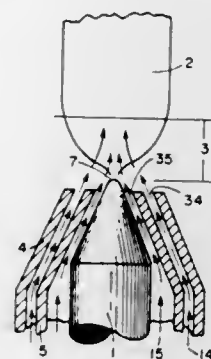
Henry Shaw, Scotch Plains, and Derek J. Angier, Somerville, both of N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed Oct. 18, 1971, Ser. No. 190,055

Int. Cl. B01k 1/00; C01b 33/18; C01f 7/02

U.S. Cl. 423-337

8 Claims



1. In the process of comminuting a particulate inorganic oxide by vaporizing the inorganic oxide with a plasma jet and subsequently recondensing the vaporized inorganic oxide, the improvement comprising:

providing a free burning arc discharge between an anode and a cathode having a conical tip whereby said arc discharge forms a contraction zone of current-carrying area in the transition region in the vicinity of the cathode; forcefully projecting a particulate inorganic oxide along said conical tip of said cathode into and through said contraction of the current-carrying area into said arc discharge while simultaneously forcefully projecting a reducing agent along said conical tip of said cathode into and through said contraction of the current-carrying area into said arc discharge; and,

thereafter contacting the vapors with an oxygen containing quench gas.

3,899,574

METHOD FOR MAKING GRAPHITE FIBER AND RIBBON

Daniel E. Sliva, Pittsfield, Mass.; Charles M. Krutchen, and Ray W. Shade, both of Elnora, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 86,295, Nov. 2, 1970, abandoned. This application Apr. 20, 1973, Ser. No. 352,922

Int. Cl.² C01B 31/02, 31/04, 31/07

U.S. Cl. 423-447

7 Claims

1. A method for making graphite fiber or ribbon which comprises

1. melt extruding at a temperature in the range of up to about 150°C, a polyacetylene-organic solvent blend comprising by weight

A. from 20 to 50% by weight of polyacetylene having an intrinsic viscosity of 0.5 to 1.5 in ortho-dichlorobenzene at 120°C,

B. From 80 to 50% of organic solvent selected from the class consisting of para-dichlorobenzene, orthodichlorobenzene, nitrobenzene, and halogenated arylhydrocarbons having an average weight percent of chlorine

from about 12 to 75 percent, based on total weight of halogen, carbon and hydrogen where said blend is in the form of a free flowing powder, a wet granulated mixture or paste to produce a polyacetylene fiber or ribbon, where said polyacetylene is a member selected from the class consisting of

a. a copolymer consisting essentially of from 88 to 92 mole percent of chemically combined metadiethynylbenzene units and from 8 to 12 mole percent of para-diethynylbenzene units, and

b. a terpolymer consisting essentially of from 85 to 92 mole percent of chemically combined metadiethynylbenzene units, 4 to 10 mole percent of para-diethynylbenzene units and 2 to 6 mole percent of dipropargyl ether units of a bisphenol,

2. exposing the polyacetylene fiber or ribbon to a temperature of up to 1000°C to produce a heat treated fiber or ribbon having an elastic modulus greater than the extrudate of (1) and up to about 10×10^6 psi,

3. thereafter exposing the heat treated fiber or ribbon of (2) while under a tension of up to 1×10^5 psi and under non-oxidizing conditions to a temperature of up to about 3300°C to produce a graphite fiber or ribbon having an elastic modulus of at least about 20×10^6 psi.

3,899,575

PROCESS OF BAKING OR GRAPHITIZING CARBON MOLDINGS

Toshio Tokushige, and Motokiyo Nagayasu, both of Ehime, Japan, assignors to Sumitomo Chemical Company Limited, Osaka, Japan

Filed Mar. 21, 1973, Ser. No. 344,022

Claims priority, application Japan, Mar. 23, 1972, 47-29550; Jan. 22, 1973, 48-9733

Int. Cl. C01b 31/02, 31/04

U.S. Cl. 423-448

9 Claims

1. In the process of baking or graphitizing carbon moldings covered with packing cokes at an elevated temperature, the improvement to reduce oxidation of the packing cokes which comprises covering the upper surfaces of the packing cokes with at least two layers of a refractory having sizes larger than the sizes of the packing cokes and sizes of at least about 5 mm but smaller than about 50 mm. and being durable to the temperature of the baking or graphitizing operation.

3,899,576

CYCLIC PROCESS FOR THE PRODUCTION OF HYDROGEN PEROXIDE

Rudolph Rosenthal, Broomall, and Joseph A. Kieras, Lincoln University, both of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Aug. 20, 1973, Ser. No. 389,935

Int. Cl.² C01B 15/02

U.S. Cl. 423-586

8 Claims

1. A method for the production of hydrogen peroxide which comprises treating a peroxy titanium complex produced by reacting titanium sulfate with an organic hydroperoxide having from 4 to 12 carbon atoms and characterized by the formula ROOH wherein R is an alkyl, aralkyl or cycloalkyl radical at a temperature in the range of from 0°C. to 100°C., and at a pH of less than 1.5 and having one peroxy oxygen group per titanium atom with excess aqueous alkali metal hydroperoxide solution at a temperature in the range of from 0°C. to 60°C. for a time sufficient to obtain a solution of a complex containing more than one peroxy group per titanium atom and a titanium oxide precipitate, separating said precipitate, acidifying said complex solution containing more than one peroxy oxygen group per titanium atom to produce the titanium complex having one peroxy oxygen group per titanium atom and hydrogen peroxide and recovering the hydrogen peroxide from said complex solution.

3,899,577

CARBON MONOXIDE CONVERSION CATALYSTS

André Sugier, Rueil-Malmaison, France, assignor to Institut Français du Pétrole des Carburants et Lubrifiants, Rueil-Malmaison, France

Division of Ser. No. 56,974, July 21, 1970, Pat. No. 3,787,332.

This application Oct. 2, 1973, Ser. No. 402,762

Claims priority, application France, July 25, 1969, 69.25671

Int. Cl. C01b 1/03, 1/08

U.S. Cl. 423-656

19 Claims

1. A process for manufacturing hydrogen by reacting carbon monoxide with steam at a temperature of from 150° to 450°C and in the presence of a catalyst comprising a mixed oxide of (a) copper and (b) at least one trivalent metal selected from the group consisting of aluminum, chromium, manganese, iron and cobalt, at least 60% by weight of said mixed oxide having a spinel structure.

3,899,578

GRISEOFULVIN COMPOSITIONS

Margaret Ellen Bird, and Norman Senior, both of Macclesfield, England, assignors to Imperial Chemical Industries Limited, London, England

Continuation-in-part of Ser. No. 245,658, April 19, 1972, abandoned. This application May 14, 1974, Ser. No. 469,860
Claims priority, application United Kingdom, May 24, 1971, 16624/71

Int. Cl.² A61K 31/78, 31/70

U.S. Cl. 424-81

4 Claims

1. A gel consisting essentially of a solution of griseofulvin in a mixture of benzyl alcohol and dimethyl phthalate, a diluent selected from the group consisting of propylene glycol and glycerol, and a gelling amount of a gelling agent selected from the group consisting of carboxypolyethylene, hydroxyethylcellulose and sodium carboxymethylcellulose, said gel containing from 0.25 percent w/w to 5 percent w/w of griseofulvin, the amount of griseofulvin present being sufficient to treat a fungal skin infection effectively by topical application.

3,899,579

TREATMENT OF EMPHYSEMA, POLYARTHRITIS SYNDROME AND PECTIN RELATED DISEASES IN RUMINANTS

Eric C. Anderson, Box No. 1175, Bozeman, Mont. 59715

Filed Jan. 25, 1974, Ser. No. 436,604

Int. Cl.² A61K 31/70, 33/08, 33/14, 33/42

U.S. Cl. 424-128

3 Claims

1. The method of controlling bloat in ruminants eating pectin containing plants comprising the steps of mixing in ratios of 100 pounds,

20 pounds of hydrated lime containing one part of hydrate magnesium oxide with substantially four parts of sodium chloride,

23 pounds of monosodium phosphate,

10 pounds of wheat bran,

10 pounds of dried molasses, and

32 pounds of salt,

and feeding said mixture to the ruminants, said mixture precipitating out pectin as calcium pectate and magnesium pectate.

3,899,580

ANTI-INFLAMMATORY TOPICAL GEL

Joseph L. O'Neill, Lafayette Hill, Pa., and Joseph V. Bondi, East Brunswick, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 267,743, June 30, 1972, abandoned, which is a continuation-in-part of Ser. No. 261,186, June 9, 1972, abandoned. This application May 8, 1974, Ser. No. 467,982

Int. Cl.² A61K 17/16

U.S. Cl. 424—241

8 Claims

1. A method of treating inflammation which comprises applying to the skin a topical formulation comprising a therapeutically effective amount of an anti-inflammatory agent selected from the group consisting of 2'-(4-pyridyl)-6,16α-dimethyl-11β,17α,21-trihydroxypregna-4,6-dieno-[3,2-c]-pyrazol-20-one, dexamethasone alcohol prednisolone alcohol and hydrocortisone alcohol in a clear water-white gel consisting of 0.05 percent by weight of disodium edetate, from 8 to 18 percent by weight of water, from about 54 to about 84 percent by weight of a solvent selected from the group consisting of propylene glycol and mixtures thereof with isopropyl alcohol, and 2.6 percent by weight of hydroxypropyl cellulose.

3,899,581

TRIAMCINOLONE ACETONIDE DERIVATIVE

Agustin Agusti, Barcelona, Spain, assignor to J. Uriach & Cia S.A., Barcelona, Spain

Division of Ser. No. 452,322, March 18, 1974. This application Oct. 1, 1974, Ser. No. 511,075

Int. Cl.² A61K 17/00

U.S. Cl. 424—241

6 Claims

1. A pharmaceutical preparation comprising as active ingredient triamcinolone acetonide 4,4'-methylene-bis(3-methoxy-2-naphthoate); and a pharmaceutically acceptable carrier.

3,899,582

AROMATIC IMIDOCARBONATE COMPOSITION AND METHOD OF USE FOR COMBATTING FUNGI

Shizuya Tanaka, Minoo; Toshiaki Ozaki; Akihiko Mine, both of Toyonaka; Katsutoshi Tanaka, Takarazuka; Sigeo Yamamoto, Toyonaka; Tadashi Ooishi, Takarazuka; Naganori Hino, Toyonaka, and Takeo Satomi, Takarazuka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Division of Ser. No. 238,537, March 27, 1972, Pat. No. 3,832,351, which is a continuation-in-part of Ser. No. 133,744, April 13, 1971, abandoned. This application Jan. 31, 1974, Ser. No. 438,425

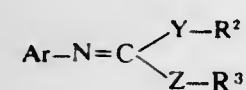
Claims priority, application Japan, Apr. 21, 1970, 45-34457; Nov. 22, 1971, 46-93874

Int. Cl. A01N 9/22

U.S. Cl. 424—263

4 Claims

1. A fungicidal composition comprising as the active ingredient a fungicidally effective amount of an imidocarbonate derivative represented by the formula,



wherein Y and Z, which may be the same or different, are individually an oxygen or sulfur atom; Ar is an unsubstituted or a halogen- or lower C₁-C₄ alkyl (straight or branched)-substituted pyridine nucleus, the number of the substituents being 1 to 3;

R² is a C₁-C₁₈ straight alkyl, a C₁-C₆ branched alkyl,

a C₁-C₃ alkyl (straight or branched) having 1 to 2 hydroxy radicals provided that 2 hydroxy groups are not bonded to the same carbon atom or one alkoxy carbonyl (the alkoxy has 1 to 4 carbon atoms) radical in the carbon chain,

a cycloalkyl having up to 6 carbon atoms, allyl,

propargyl,

a benzyl, the benzene nucleus of which may be unsubstituted or substituted by 1 to 4 halogen atoms, 1 to 4 lower C₁-C₄ alkyl (straight or branched) radicals or a nitro radical, or

a halogen- or lower C₁-C₄ alkyl (straight or branched)-substituted phenoxy-C₁-C₂ alkyl; and

R³ is a C₁-C₃ alkyl (straight or branched) having 1 to 2 hydroxy radicals or one alkoxy carbonyl (the alkoxy has 1 to 4 carbon atoms) radical in the carbon chain,

allyl,

propargyl, or

a benzyl, the benzene nucleus of which may be unsubstituted or substituted by 1 to 4 halogen atoms, 1 to 4 lower C₁-C₄ alkyl (straight or branched) radicals, a nitro radical or a C₂-C₄ alkylene radical

and an inert carrier.

3,899,583

METHOD OF USING 6-SUBSTITUTED AMINO PHENYL-2,3,5,6-TETRAHYDRO-[2,1-B] THIAZOLES

Larry Dean Spicer, Princeton, and John James Hand, Trenton, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

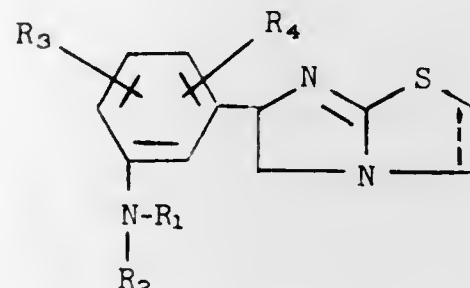
Division of Ser. No. 289,016, Sept. 14, 1972, which is a continuation-in-part of Ser. No. 174,939, Aug. 25, 1971, abandoned, which is a continuation-in-part of Ser. No. 22,701, March 25, 1970, Pat. No. 3,673,205. This application Nov. 16, 1973, Ser. No. 416,464

Int. Cl.² A61K 27/00

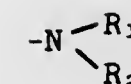
U.S. Cl. 424—270

13 Claims

1. A method for controlling gastrointestinal nematodes in warm-blooded animals comprising administering to said animals, a nematocidally effective amount of a compound of the formula:



wherein R₁ and R₂ are selected from the group consisting of hydrogen, alkyl C₁-C₁₀, alkenyl C₂-C₈, cycloalkyl C₃-C₇, hydroxy loweralkyl, loweralkanoyloxy loweralkyl, loweralkoxy loweralkyl, benzyl, substituted benzyl, phenylethyl, substituted phenylethyl, mono- and dinitrophenyl, R₃-C(O)- wherein R₃ is selected from the group consisting of hydrogen, alkyl C₁-C₉, alkenyl C₂-C₇, cycloalkyl C₃-C₇, haloalkyl C₁-C₆, aminoalkyl C₁-C₆, monoloweralkylaminoloweralkyl, diloweralkylaminoloweralkyl, loweralkoxy loweralkyl, phenyl, substituted phenyl, alkoxy C₁-C₈ amino, monoloweralkylamino or diloweralkylamino;



taken together is the group (loweralkyl)₂-NCH=N-; and R₃ and R₄ are selected from the group consisting of hydrogen, halogen and nitro; the term substituted represents monohalo, dihalo, trihalo, mononitro, dinitro, monoloweralkyl, diloweralkyl, triloweralkyl, monoloweralkoxy, diloweralkoxy, and triloweralkoxy; and halogen or halo is fluoro, chloro, bromo, or iodo; with the proviso that when R₃ and R₄ are both hydrogen, not more than one member from the group R₁ and R₂ can be hydrogen, is a single or double bond; and a pharmaceutically acceptable salt thereof.

3,899,584

4,5-BIS-(TRIFLUOROMETHYLIMINO)-THIAZOLIDINES AS FUNGICIDAL, INSECTICIDAL AND ACARICIDAL AGENTS

Hans-Joachim Scholl, Cologne; Erich Klauke, Odenthal; Ferdinand Grewe, Burscheid, and Ingeborg Hammann, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation-in-part of Ser. No. 206,158, Dec. 8, 1971. This application Nov. 20, 1973, Ser. No. 417,703

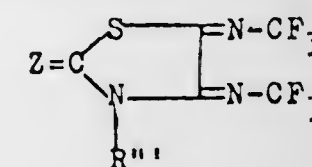
Claims priority, application Germany, Dec. 18, 1970, 2062348

Int. Cl. A01N 9/12, 9/22

U.S. Cl. 424—270

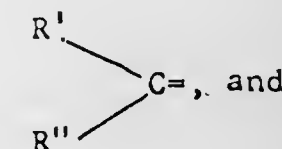
14 Claims

1. A method of combating fungi, insects or acarids which comprises applying to such fungi, insects, acarids or a habitat thereof a fungicidally, insecticidally or acaricidally effective amount of a compound of the formula



in which

Z is R-N= or



and

R, R', R'' and R''' each is hydrogen; alkyl, alkenyl or alkynyl with up to 8 carbon atoms optionally substituted by halogen, cyano, lower alkoxy or alkylmercapto of up to 3 carbon atoms; cyclopentyl or cyclohexyl optionally substituted with alkyl of up to 3 carbon atoms, carbalkoxy having up to 8 carbon atoms in the alkoxy group; phenylalkyl or naphthylalkyl with up to 2 carbon atoms in the alkyl moiety; or phenyl or naphthyl radicals optionally being substituted by halogen, cyano, nitro, lower alkyl of up to 3 carbon atoms, haloalkyl of up to 8 carbon atoms, lower alkoxy or alkylmercapto of up to 3 carbon atoms.

3,899,585

FUNGICIDAL METHOD FOR PROTECTING A PLANT

Tomomasa Misato, Tokyo; Keng Tang Huang, Wako; Yasuo Homma, Fukuoka; Ryonosuke Yoshida, Kamakura; Tadaomi Saito, Yokohama, and Akira Shimizu, Kawasaki, all of Japan, assignors to Rikagaku Kenkyusho Ajinomoto Co. Ltd., Tokyo, Japan

Division of Ser. No. 219,550, Jan. 20, 1972, Pat. No.

3,821,403. This application Mar. 27, 1974, Ser. No. 455,343

Int. Cl. A01N 9/20, 9/24

U.S. Cl. 424—274

8 Claims

1. A method of combatting bacteria or fungi on plants which comprises applying to said plants a bactericidally or fungicidally effective amount of a salt of C₁₂-C₁₈ alkyl ester of DL- or β-alanine, said salt being selected from the group consisting of hydrochloric acid, sulfuric acid, nitric acid, acetic acid, oxalic acid, formic acid, butyric acid, lactic acid, p-toluenesulfonic acid and pyroglutamic acid.

3,899,586

SYNERGISTIC CHRYSANTHEMATE INSECTICIDES

Yoshitoshi Okuno, Toyonaka, and Masachika Hirano, Ashiya, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Oct. 16, 1974, Ser. No. 515,332

Claims priority, application Japan, Oct. 18, 1973, 48-117497

Int. Cl. A01N 9/22, 9/24

U.S. Cl. 424—274

9 Claims

1. An insecticidal composition containing an inert carrier and as active ingredients an insecticidally effective amount of a mixture consisting of (1) N-(3,4,5,6-tetrahydrophthalimido)-methyl chrysanthemate or (2) 2-allyl-3-methylcyclopent-2-ene-1-one-4-yl chrysanthemate and (3) 3-phenoxybenzyl-2',2'-dimethyl-3'-(2'',2''-dichlorovinyl) cyclopropanecarboxylate wherein the ratio of compounds (1) or (2) to compound (3) is 2:8 to 8:2.

3,899,587

USE OF PROSTAGLANDINS E AND F FOR ABORTION

Bruce B. Pharriss, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

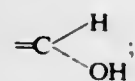
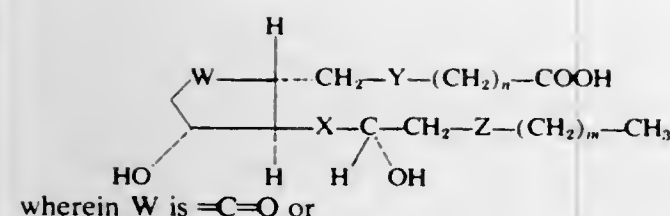
Continuation of Ser. No. 881,296, Dec. 1, 1969, abandoned, which is a continuation-in-part of Ser. No. 756,294, Aug. 29, 1968, abandoned. This application Sept. 24, 1973, Ser. No. 400,460

Int. Cl.² A61K 31/20, 31/215

U.S. Cl. 424—305

11 Claims

1. A method of accomplishing a medical abortion in an ovulating human which consists essentially of providing to said human in a span of time beginning at about the time of implantation and ending at about the first 16 weeks of the gestation period an effective amount for accomplishing the medical abortion of a member selected from the group consisting of the free acids, pharmaceutically acceptable salts, and alkyl esters having 1 to 6 carbon atoms, inclusive, in the alkyl portion, of a compound represented by the formula



wherein X is $-\text{CH}_2\text{CH}_2-$ or $\text{trans}-\text{CH}=\text{CH}-$ and Y and Z are $-\text{CH}_2\text{CH}_2-$, or wherein X is $\text{trans}-\text{CH}=\text{CH}-$, Y is $\text{cis}-\text{CH}=\text{CH}-$, and Z is $-\text{CH}_2\text{CH}_2-$ or $\text{cis}-\text{CH}=\text{CH}-$; and wherein m is 0, 1, or 2 and n is 2, 3, 4 or 5, in a dosage unit form compounded with pharmaceutical means which adapt the form for systemic administration.

3,899,588

ROT AND MILDEW PREVENTION EMPLOYING CERTAIN ALKANOIC ACID SALTS

Ebbe R. Skov, Middletown; Roderick B. Judge, Montclair, and Geoffrey Hemphill, Manasquan, all of N.J., assignors to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of Ser. No. 304,462, Nov. 7, 1972, Pat. No. 3,786,086. This application Oct. 17, 1973, Ser. No.

407,106

Int. Cl. A01N 9/24

U.S. Cl. 424-317

7 Claims

1. A process for preparing a liquid solution useful for preventing rot and mildew from forming on silage or seeds comprising:

- forming a first mixture by admixing water and an alkanolic acid having 2-10 carbons in a mixing and reacting zone having a cooling means, an upper portion, a lower portion, and an agitating means positioned in at least the lower portion, the mole ratio of water to alkanolic acid being 1:0.16-0.36;
- feeding liquid anhydrous ammonia into the bottom of the mixing and reacting zone and agitating the first mixture and the resulting reacting mixture therein while maintaining the temperature of said reacting mixture at about 25°-95°C, the liquid anhydrous ammonia being added in an amount to provide about 0.85-0.95 moles of ammonia per mole of said alkanolic acid; and
- removing the resulting liquid solution from the mixing and reacting zone and recovering said solution.

3,899,589

METHOD AND COMPOSITIONS FOR INDUCING RESISTANCE TO BACTERIAL INFECTIONS

Elton S. Cook, and Kinji Tanaka, both of Cincinnati, Ohio, assignors to Stanley Drug Products, Inc., Portland, Oreg.

Division of Ser. No. 138,331, April 28, 1971, Pat. No. 3,728,444, and a continuation of Ser. No. 341,079, March 14, 1973, abandoned. This application Mar. 18, 1974, Ser. No. 452,370

Int. Cl. A61K 31/195

U.S. Cl. 424-319

3 Claims

1. A method of treating *Salmonella typhi* and *Staphylococcus aureus* infections in mammals comprising administering to a mammal suffering from said infection an antibacterial effective amount of cysteine acid.

3,899,590

TREATMENT OF HYPERLIPIDAEMIA

Seymour Jeffrey Corne, Kew, England, assignor to Aspro-Nicholas Limited, Slough, England

Filed Mar. 1, 1974, Ser. No. 447,453

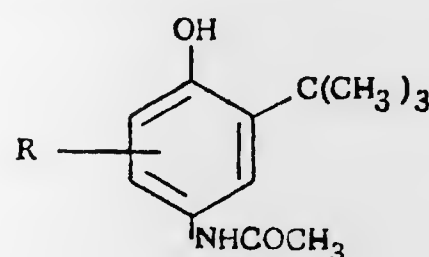
Claims priority, application United Kingdom, Mar. 7, 1973, 11070/73; Mar. 7, 1973, 11071/73

Int. Cl. A61K 31/165

U.S. Cl. 424-324

8 Claims

1. A method of reducing serum cholesterol in a mammal which comprises administering to the mammal in need thereof a cholesterol-reducing effective amount of a 3-tert.-butyl-4-hydroxyacetanilide of the formula:



wherein R is in the 5 or 6 position and represents a hydrogen atom or an alkyl group of one to four carbon atoms.

3,899,591

PREPARATION FOR TREATING PSORIASIS

Gunnar P. E. Swanbeck, Taby; Gösta L. Zetterberg, and Karl Hubert Agback, both of Uppsala, all of Sweden, assignors to Pharmacia Aktiebolag, Uppsala, Sweden

Filed June 21, 1974, Ser. No. 481,735

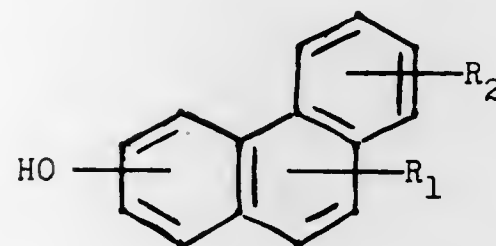
Claims priority, application Sweden, June 29, 1973, 7309193

Int. Cl. A61k 27/00

U.S. Cl. 424-346

6 Claims

1. A preparation for the treatment of psoriasis comprising 0.1 - 10 per cent of a compound having the formula



wherein R_1 and R_2 are each a member selected from the group consisting of hydrogen, methyl, ethyl, propyl, isopropyl, halogen, and methoxy; and a dermatologically acceptable carrier, said per cent being calculated on the total weight of the preparation.

3,899,592

SWEETENING AGENT

Tulio Suarez; Edmund C. Kornfeld, and Jack M. Sheneman, all of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 719,730, April 8, 1968, abandoned.

This application Jan. 31, 1972, Ser. No. 222,373

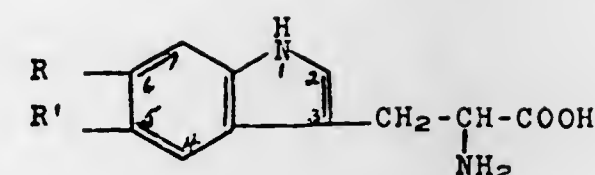
Int. Cl. A23I 1/26

U.S. Cl. 426-2

33 Claims

1. The method which comprises orally administering essentially simultaneously to a warm-blooded animal in which it is desired to limit caloric uptake, said animal being selected from the group consisting of human being and dog

- an orally acceptable substance and
- a non-nutritive sweetener which is the d-enantiomorph of a substituted tryptophane compound of the formula



or its non-toxic physiologically acceptable salts, wherein R represents halo of an atomic weight of less than 85, lower alkyl, lower alkoxy, or trifluoromethyl; and when R is trifluoromethyl, R' represents hydrogen, or when R is halo as defined, lower alkyl, or lower alkoxy, R' represents hydrogen, halo of an atomic weight of less than 85, lower alkyl, or lower alkoxy, said non-nutritive sweetener being administered in an amount sufficient to impart a desired degree of sweetness to the orally acceptable substance.

3,899,593

XYLITOL CHEWING GUM

John E. Hammond, Ridgewood, N.J., and Thomas K. Streckfus, Yonkers, N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Continuation of Ser. No. 102,139, Dec. 28, 1970, abandoned.

This application June 24, 1974, Ser. No. 482,120

Int. Cl. A23G 3/30

U.S. Cl. 426-3

8 Claims

1. A sugarless chewing gum which presents a pleasant cooling effect in the mouth comprising on a weight basis xylitol 50 to 80% and gum base 18% to 30%.

3,899,594

FOOD PRESERVATION

John T. R. Nickerson, Somerville, and John R. Darack, Framingham, both of Mass., assignors to Dirigo Corporation, Boston, Mass.

Continuation of Ser. No. 180,099, Sept. 13, 1971, abandoned.

This application Mar. 29, 1974, Ser. No. 456,181

Int. Cl. A23L 1/31; A23B 1/00, 7/00; A23L 3/00

U.S. Cl. 426-9

3 Claims

1. A method for safely extending the storage life of foods normally highly susceptible to common food-borne disease and common spoilage organisms selected from the group of foods consisting of custard filled foods, eclairs, fish fillets, potato salad, egg salad, cooked lobster meat, cooked peeled shrimp, chicken salad, squash pies, ham salad, lobster salad, shrimp salad, crab meat salad, and tuna salad, which method comprises adding to the food the combination of a composition which inhibits the growth of organisms and an inoculum, and permitting the inoculum to grow for a finite period of time until it causes an undesirable flavor in the food, thus causing the food to be discarded; said compound comprising an organic acid or salt thereof which inhibits the growth of common food-borne disease and spoilage organisms in the temperature range of approximately 40° to 86° F., but only slightly inhibits the growth of the inoculum at such temperatures; the inoculum being a non-pathogenic member of the Lactobacteriaceae which is characterized as growing in food in the temperature range of approximately 40° to 86° F.; said inoculum being either *Pediococcus cerevisiae* or *Lactobacillus viridescens* and said organic acid being a mixture of sorbic acid compound with propionate compound; said sorbic acid compound being either sorbic acid, potassium sorbate or sodium sorbate and said propionate compound being either sodium, calcium or potassium propionate; each said compound being present in said food at a concentration of at least 0.01%.

3,899,595

PROCESS AND APPARATUS FOR THE CONTINUOUS PRODUCTION OF CURDS

Pierre Stenne, Lozon, France, assignor to Claudel S.A., Hauts-de-Seine, France

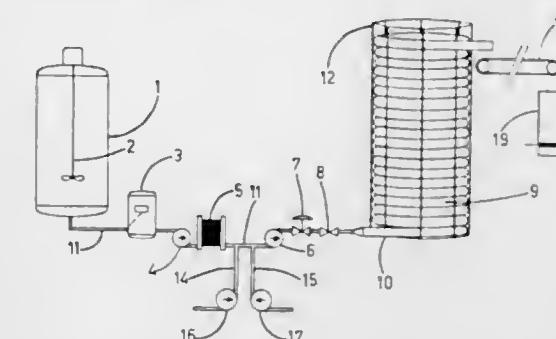
Filed Sept. 4, 1973, Ser. No. 393,848

Claims priority, application France, Sept. 4, 1972, 72.31234; Apr. 16, 1973, 73.13766

Int. Cl. A23c 19/00

U.S. Cl. 426-36

20 Claims



1. A process for the continuous production of curds for use in cheese making, wherein renneted or acidified milk or mixtures thereof is introduced under pulsation into a conduit whose wall is deformed under the effect of the pulsations and in which the curd is formed, and wherein the curd is collected at the outlet end of this conduit.

3,899,596

METHOD FOR THE MANUFACTURE OF CHEESES

Pierre Stenne, Lozon, France, assignor to Claudel S.A., Courbevoie, France

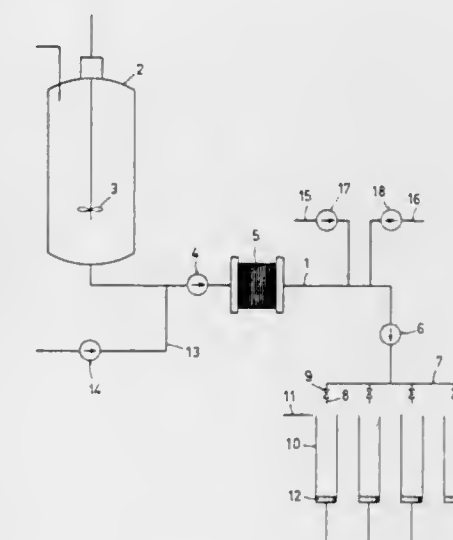
Filed Apr. 10, 1974, Ser. No. 459,594

Claims priority, application France, Apr. 16, 1973, 73.13767; Aug. 16, 1973, 73.29866

Int. Cl. A23c 19/02

U.S. Cl. 426-40

10 Claims



1. A process for the production of cheese which comprises treating milk by ultrafiltration to obtain as a sustained fraction a liquid product having a higher protein content than that of the milk, subjecting this liquid to a heat treatment to bring it to the coagulation temperature, renneting the liquid product after inoculation with suitable ferments, introducing a batch of the renneted liquid into at least one vertical chamber in which it is left to coagulate in the stationary phase until a coherent mass is obtained, displacing the coagulated mass obtained upwards under the effect of a pressure uniformly distributed over the base of the mass, and cutting unit slabs of coagulum which will each constitute a cheese at the top of the chamber after the mass has emerged by a predetermined height.

3,899,597

ALTERING RASPBERRY FLAVORED FOODSTUFFS WITH 4-(2,6,6-TRIMETHYL-1,3-CYCLOHEXADIEN-1-YL)-2-BUTANOL AND/OR

4-(6,6-DIMETHYL-2-METHYLENE-3-CYCLOHEXEN-1-YL)-2-BUTANOL, AND/OR ACETATES THEREOF

Braja Dulal Mookherjee, Matawan; Manfred Hugo Vock, Locust, both of N.J.; Carlos Benaim, Hartsdale, and Edward J. Shuster, Brooklyn, both of N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Apr. 17, 1974, Ser. No. 461,704

Int. Cl.² A23L 1/226, 1/235

U.S. Cl. 426—538

9 Claims

1. A process for altering the flavor of a raspberry flavored foodstuff comprising adding to said raspberry flavored foodstuff in an amount of from 0.02 up to 50 ppm, an oxo compound selected from the group consisting of 4-(2,6,6-trimethyl-1,3-cyclohexadien-1-yl)-2-butanol, 4-(6,6-dimethyl-2-methylene-3-cyclohexen-1-yl)-2-butanol, 4-(2,6,6-trimethyl-1,3-cyclohexadien-1-yl)-2-butyl acetate and 4-(6,6-dimethyl-2-methylene-3-cyclohexen-1-yl)-2-butyl acetate, and mixtures thereof.

3,899,598

FORTIFIED GELATING DESSERT POWDER AND PROCESS

Valentine J. Fischer, Katonah; George Bernard Ponzone, Spring Valley, and Charles J. Tressler, White Plains, all of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Feb. 15, 1974, Ser. No. 442,995

Int. Cl. A23I 1/30

U.S. Cl. 426—73

9 Claims

1. Method for preparing a powdered, fortified gelatin dessert mix comprising the steps of:

- dry blending gelatin and finely ground fumaric acid in order to effect coating of the gelatin with fumaric acid, said acid having a particle size less than 30 U.S. mesh,
- blending sucrose, buffer salts, flavor, color and a vitamin premix with the gelatin-fumaric acid blend, said vitamin premix containing vitamin C, and then
- dry blending adipic acid with the blend obtained from step b), the adipic-fumaric acid weight being from 10 to 35% fumaric acid and 65 to 90% adipic acid.

3,899,599

INFUSION BAG, PARTICULARLY FOR TEA

Adolf Rambold, Bachstrasse 8, D-4005 Meerbusch 1, Germany

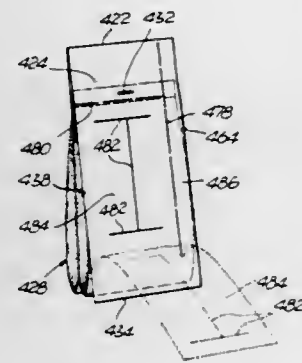
Filed July 26, 1973, Ser. No. 382,885

Claims priority, application Germany, July 26, 1972, 2236616

Int. Cl.² A47G 19/16; B65B 29/04

U.S. Cl. 426—82

16 Claims



1. An infusion bag containing an infusible substance comprising a porous-walled container for the infusible substance, said container including an elongated head portion and at

least two sides, a strip of non-porous sheet material secured to said head portion and folded about said container along a line extending substantially parallel to said head portion, said strip including side portions having lateral edges and extending from said fold line on opposite sides of said container, at least one of said side portions extending over substantially the entire length of said container adjacent the respective side thereof, said at least one side portion including a first pre-stamped scribe line extending parallel to said fold line, at least one additional pre-stamped scribe line extending from said fold line adjacent and parallel to one of said lateral edges and running over a predominant portion of said at least one side portion, said at least one additional scribe line intersecting said first scribe line and defining therewith, when said sheet material is cut along said scribe lines, a hanger having means adapted to be connected to a pour spout of a pot, said hanger remaining connected to said head after cutting of said lines by means of at least one narrow web defined in said at least one side portion between said at least one additional scribe line and the respective adjacent lateral edge of said at least one side portion.

3,899,600

ADDITIVE COMPOSITION FOR REDUCED PARTICLE SIZE MEATS IN THE CURING THEREOF

Clyde W. Sweet, Ann Arbor, Mich., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 18, 1974, Ser. No. 524,440

Int. Cl.² A23L 1/31

U.S. Cl. 426—532

6 Claims

1. A composition for addition to reduced particle size meats in the curing thereof in the absence of added nitrites comprising a mixture of tertiary-butylhydroquinone and one or more salts selected from the group consisting of edible sodium and potassium salts of phosphoric, polyphosphoric, pyrophosphoric, orthophosphoric and metaphosphoric acids, wherein the ratio in parts by weight of the salt to the tertiary-butylhydroquinone is 500/1 to 5/1.

3,899,601

DRY MIX FOR GLAZED CAKE

James H. Johannes, Minneapolis, Minn., assignor to General Mills, Inc., Minneapolis, Minn.

Filed Dec. 3, 1973, Ser. No. 420,821

Int. Cl. A21d 13/00

U.S. Cl. 426—554

6 Claims

1. A dry cake mix consisting essentially of: about 22 to 30% wheat flour by weight of the dry cake mix composition, said wheat flour having a protein content of from about 8 to 10% by weight of the wheat flour, about 40 to 50% sucrose by weight of the dry cake mix composition, about 1 to 9% starch by weight of the dry cake mix composition, said starch being selected from wheat and corn starch, about 18 to 21% plastic shortening by weight of the dry mix composition, said shortening having a solid fat index of about:

Temperature, °F.

SFI, %

50	29-33
70	21-24
80	19-22
92	14-17
104	8-10

and

about 1 to 2% by weight of a slow-acting baking powder blend.

3,899,602

INHIBITED STARCH PRODUCTS CONTAINING LABILE AND NON-LABILE CROSS-LINKS

Morton W. Rutenberg, North Plainfield; Martin M. Tessler, Edison, and Leo Kruger, Kendall Park, all of N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Division of Ser. No. 287,887, Sept. 11, 1972, Pat. No.

3,832,342. This application Apr. 5, 1974, Ser. No. 458,181

Int. Cl. A23I 1/14, 1/10

U.S. Cl. 426—578

8 Claims

1. A food product containing a starch thickener characterized in that a substantial portion of said starch thickener is a dully inhibited starch having labile and non-labile cross-linkages wherein both the labile and non-labile cross-linkages remain substantially intact when said starch is cooked in pH 6.1 buffer at a temperature of 212°F for 20 minutes and only the non-labile cross-linkages remain substantially intact when said starch is retorted in pH 6.1 buffer at a temperature of 250°F for 15 minutes; and the viscosity of the retorted starch is higher than the viscosity of the cooked starch.

3,899,603

FRANKFURTER/HAMBURGER BUN

Merritt H. Brodie, 26 Laura Dr., Westbury, N.Y. 11590

Filed Oct. 12, 1973, Ser. No. 405,922

Int. Cl. A21d 13/00

U.S. Cl. 426—138

7 Claims

1. A frankfurter or hamburger bun comprising a bread body having a pair of relatively flat opposed surfaces, one of said surfaces having a soft crust thereon, the other of said surfaces being substantially crust free, said bread body being elongated, a transversely extending centrally located groove in said bread body for permitting the folding of said bread body along said groove to bring the two sides of said uncrusted surface on opposite sides of said transverse groove into confronting relation, whereby to form a hamburger bun, and a longitudinally extending centrally located groove in said bread body for permitting the folding of said bread body along said longitudinal groove to bring the two sides of said uncrusted surface on opposite sides of said longitudinal groove into confronting relation, whereby to form a frankfurter bun.

3,899,604

PROCESS FOR THE PRODUCTION OF FOODS AND DRINKS WITH THE EMPLOYMENT OF MALTOBIONIC ACID

Toshio Miyake, and Yoshinori Sato, both of Okayama, Japan, assignors to Hayashibara Company, Okayama, Japan

Continuation of Ser. No. 94,526, Dec. 2, 1970, abandoned.

This application Sept. 20, 1973, Ser. No. 399,097

Claims priority, application Japan, Dec. 4, 1969, 44-97374

Int. Cl.² A23L 1/26, 1/02, 1/24; A23G 3/00

U.S. Cl. 426—590

5 Claims

2. A method of imparting an acid taste to food products to which a component is customarily added to provide an acid taste which comprises: adding unsubstituted maltobionic acid as the sole additive for providing said acid taste to the food products said acid

being in a quantity sufficient to provide an acid taste thereto.

3,899,605

PROCESS OF PREPARING A FAT EMULSION

Johannes Emmus Schaap, Lunteren, Netherlands, assignor to Stichting Bedrijven van het Nederlands Instituut voor Zuivelonderzoek, Ede, Netherlands

Filed Sept. 5, 1973, Ser. No. 394,446

Claims priority, application Netherlands, Sept. 5, 1972, 7212074

Int. Cl. A23c 19/12

U.S. Cl. 426—582

8 Claims

1. A process of preparing a fat emulsion by mixing

- a milk fraction containing casein and having a low fat content and
- an emulsified fat having been subjected to a treatment to divide it into finely dispersed particles, particularly globules, the size distribution of which approximately corresponds to that of fresh cow's milk, said treatment comprising the steps of mixing the fat prior to emulsifying at a temperature up to 50°C., with whey originating from the making of cheese, subjecting the mixture to a shearing action until the fat has been divided in particles (predominantly globules) having a diameter of from 1 1/2 - 6 μm and an average of 3 μm, and subsequently mixing said blend with said milk fraction containing casein and having a low fat content.

3,899,606

PROCESS FOR THE TREATMENT OF COCONUT AND FOOD PRODUCTS RESULTING THEREFROM

John H. Forkner, Fresno, Calif., assignor to The Pillsbury Company, Minneapolis, Minn.

Continuation of Ser. No. 240,191, March 31, 1972,

abandoned. This application Mar. 20, 1974, Ser. No. 452,740

Int. Cl.² A23L 1/36

U.S. Cl. 426—250

28 Claims

1. In a process for the treatment of particulate coconut meat that is characterized by aligned rod-like cells arranged in cell bundles, immersing the particulate coconut meat in a water solution of a physiologically acceptable acid at an elevated temperature and at a pH and for a period of time sufficient to effect disruption of cells and loosening of the cells with respect to each other.

3,899,607

SIMULATED BONE

Timothy A. Miller, Ferguson, Mo., and Carlo J. Hansen, Waterloo, Ill., assignors to Ralston Purina Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 174,569, Aug. 24, 1971, abandoned. This application Sept. 10, 1973, Ser. No. 395,479

Int. Cl. A23k 1/20

U.S. Cl. 426—285

7 Claims

1. A process for the production of a simulated bone having a structural matrix comprising a substantially unpuffed, farinaceous material consisting of the following steps:

- forming a dough mixture which comprises about 50 to 75% by weight farinaceous material, a fat in an amount of between about 5 to 15% by weight of said dough, and water in an amount of between about 15 to 45% by weight of said dough;
- working and shaping the dough at a temperature of between about 170° to 220°F. to form said bone; and
- drying said bone to a moisture content of between about 5 to 12% by weight.

3,899,608

METHOD FOR CHEMICALLY PEELING FRUITS AND VEGETABLES

Salvador Forroll Soler, San Cugat Del Valles, Spain, assignor to Etablissements du Paroy, Gentilly, France

Filed Aug. 16, 1973, Ser. No. 388,981

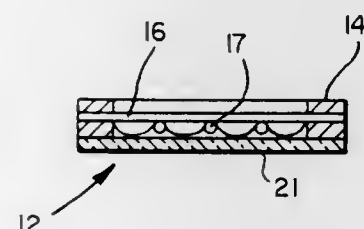
Claims priority, application Spain, Aug. 19, 1972, 406358

Int. Cl.² A23L 1/212

U.S. Cl. 426—287

8 Claims

1. A method of chemically removing the skins of fruits and vegetables, which comprises dipping the fruits and vegetables for a period of 1 to 30 minutes in a composition kept at a temperature within the range of 60° to 100°C., said composition being an aqueous solution comprising 0.5 to 15% by weight of an ammonium salt of an inorganic acid having a pH value of 7 to 9.5 at 20°C. selected from the group consisting of monoammonium orthophosphate, diammonium orthophosphate, triammonium orthophosphate, mixed salts of ammonium and of an alkali metal base of orthophosphoric acid, ammonium carbonate, and mixtures of these ammonium salts.



3,899,609

PROCESS FOR CHEMICALLY BONDING ANIMAL PROTEIN TO PEELED KERNELS OF CEREAL GRAINS

Neal A. Lonkeker, Star Rte., Prescott, Wash. 99348; Herman H. Miller, Jr., 13880 S.W. Hargis Rd., Beaverton, Oreg. 97005, and George M. Pigott, 5834 N.E. 181st St., Seattle, Wash. 98133

Continuation-in-part of Ser. Nos. 734,529, June 5, 1968, abandoned, and Ser. No. 179,150, Sept. 9, 1971, abandoned.

This application Jan. 4, 1974, Ser. No. 430,747

Int. Cl.² A23J 3/00; A23L 1/172

U.S. Cl. 426—287

4 Claims

3. A process for chemically bonding animal protein to peeled kernels of wheat, comprising the steps of:

- immersing whole kernels of wheat in water having a temperature up to 180°F;
- draining the whole kernels of wheat;
- applying an alkali solution in a 20 to 50% range of concentration by weight utilizing 1 U.S. gallon of the alkali solution to a pound of wheat, exposing all kernels of wheat to the alkali to remove the testa and germ and to relax the starch structure of the whole wheat kernels;
- draining the alkali solution from the wheat kernels;
- placing the wheat kernels into water to stop the alkaline action;
- draining said whole wheat kernels and their still remaining diluted alkaline solution to remove the excess water, alkali, testas and germs;
- shaking and spraying with water the drained whole wheat kernels to further stop the alkaline action yet allowing the then peeled kernels of wheat to retain their alkaline surface;
- placing both the wheat kernels while still warm, swelled and open and the animal protein concentrate into a coating-predryer apparatus in which the animal protein concentrate contacts the gelatinized surface of the peeled wheat kernels and is held in and on the aleurone layer of the whole wheat kernels;
- contacting said coated whole wheat kernels with a warm dilute solution of acetic acid;
- draining and rinsing the whole wheat kernels with warm water; and
- finally drying the protein fortified peeled wheat kernels for a period of time sufficient to reduce the moisture content to below 15%, using drying temperatures ranging between 120° to 180°F.

3,899,610

MEANS FOR PREPARING CELLS FOR INSPECTION

Donald E. Henry, 983 Memorial Dr., Cambridge, Mass. 02138

Filed Jan. 7, 1974, Ser. No. 431,167

Int. Cl. G02b 21/34

U.S. Cl. 427—2

11 Claims

1. In a process for preparing cells for microscopic examination comprising the steps of (a) forming a suspension of said cells in a liquid suspension medium, and (b) forming a shallow pool of said suspension on a slide, and (c) evaporating the liquid medium from said suspension

the improvement comprising the steps of inducing menisci across the surface of said pool as the liquid suspension medium evaporates, utilizing the collapse of said menisci to avoid agglomeration and piling up of said cells on said slide and thereby facilitate the examination of said cells.

3. A process as defined in claim 1 wherein a radiant-heat absorbing surface is positioned beneath said transparent slide to modify the evaporation steps so cells are preferentially distributed in areas which are congruent with areas of the slide beneath the pool which are incongruent with said radiant-heat-absorbing surface.

3,899,611

CURING BY ACTINIC RADIATION

Roger P. Hall, Middleburgh Hts., Ohio, assignor to SCM Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 255,365, May 22, 1972, abandoned. This application Oct. 19, 1973, Ser. No. 408,244

Int. Cl.² C08F 8/00; B05C 5/00

U.S. Cl. 427—54

4 Claims

1. A coating composition polymerizable by actinic radiation which comprises in parts by weight the following components:

- about 10 to 70 parts of an acrylyl terminated prepolymer having a molecular weight from about 170 to about 30,000;
- about 5 to 75 parts of an alkyl acrylate melamine ether containing an average of more than 3 acrylate or lower alkacrylate groups per triazine ring and miscible with the acrylyl terminated prepolymer;
- about 0 to 75 parts of a monoethylenically-unsaturated viscosity-reducing diluent miscible with, and copolymerizable under actinic irradiation with, the prepolymer and the melamine ether; and
- an actinic radiation-sensitive polymerization initiator in an proportion effective for initiating polymerization of said components (A), (B) and (C) upon exposure of said composition to actinic radiation, said proportion being from about 0.01 to 5 parts;

wherein said parts of said components (A), (B), (C) and (D) total 100.

3,899,612

METHOD OF PREPARING MOULDS FOR CASTING METALS

Harold Garton Emblem, Mirfield, England, assignor to Zirconal Processes Limited, Bromley, England

Filed Oct. 2, 1973, Ser. No. 402,785

Claims priority, application United Kingdom, Aug. 1, 1973, 36641/73

Int. Cl.² B05D 1/38

U.S. Cl. 427—133

3 Claims

1. A method of preparing a mould suitable for use in the casting of metals, such method including the steps of coating an expendable pattern with a composition consisting essentially of a finely divided refractory powder dispersed in an aqueous alcoholic solution of an aluminum hydroxyhalide of the general formula $Al_2(OH)_nX_{(6-n)}mH_2O$ or a polymer thereof, where n is a number less than 6, m is a number less than 4 and X represents a chlorine, bromine or iodine atom, dusting a coarse refractory material onto the wet coating and then hardening the coating by contacting it with ammonia vapor.

3,899,615

METHOD OF COATING PAPER OR OTHER SHEET MATERIAL WITH SURFACE LAYERS OF DIFFERENT COATING COMPOSITIONS

Hans Ivar Wallsten, Saffle, Sweden, assignor to AB Inventing, Saffle, Sweden

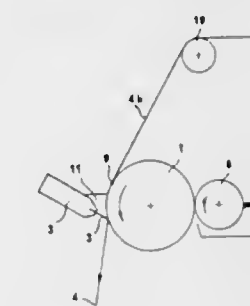
Filed Feb. 28, 1973, Ser. No. 336,777

Claims priority, application Sweden, Mar. 13, 1972, 3150/72

Int. Cl.² B05C 9/04

U.S. Cl. 427—211

2 Claims



1. A method of coating paper or other sheet material with surface layers by applying different coating compositions to both sides of a moving sheet by feeding the sheet between two opposed members defining a press nip formed of a resilient thin blade having a sharp edge comprising one member of the press nip and a rotatable roller supporting the sheet on one side comprising the other member of the press nip, said steps comprising:

applying a first coating composition to one side of the sheet by means of contact transfer of said first coating composition, which is applied to the surface of said roller; said first coating applied to said roller being limited laterally so that the width of the applied layer is narrower than the width of the sheet;

applying a second coating composition to the other side of the sheet from a dam arranged above the press nip and defined on one side by the sheet and on the other side by the blade; said sheet being brought into engagement with the surface of said roller before entering said nip to prevent the first coating composition from entering the dam and thus being mixed with the second coating composition in said dam.

3,899,616

FUNGISTATIC FABRIC TREATMENT

Frank A. Simonelli, 2731 Ironwood Dr., Springfield, Ohio 45504

Filed Nov. 9, 1973, Ser. No. 414,350

Int. Cl.² A61L 13/00; D06M 13/02

U.S. Cl. 427—242

4 Claims

4. A cloth treated by the process of claim 1 so as to be free from bacterial and fungal attack, said cloth containing 0.05 to 0.1% residual undecylenic acid after treatment.

3,899,617

PROCESS FOR CONDITIONING ABS RESIN SURFACE

Constantine I. Courduvelis, Athens, Greece, assignor to Enthone, Incorporated, West Haven, Conn.

Filed July 19, 1973, Ser. No. 380,634

Int. Cl.² B44D 1/18

U.S. Cl. 427—304

14 Claims

1. A process for conditioning surfaces of acrylonitrile-butadiene-styrene copolymers which comprises etching the acrylonitrile-butadiene-styrene copolymer surface by contacting the surface with a strong acid oxidizing solution at a temperature in the range of room temperature to up to but below the softening temperature of the acrylonitrile-butadiene-styrene copolymer, and contacting the thus-etched acrylonitrile-butadiene-styrene copolymer surface with an aqueous solu-

3,899,614

METHOD OF PRODUCING BUNDLED MULTIFILAMENT YARN

Tsuyoshi Okamoto; Yoichi Kawaguchi, and Takayuki Kai, all of Tsuruga, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Filed Mar. 11, 1974, Ser. No. 450,240

Claims priority, application Japan, Mar. 10, 1973, 48-28199

Int. Cl.² C08J 5/04

U.S. Cl. 427—175

5 Claims

1. A method of producing bundled multifilament yarn which comprises depositing a rosin ester of a random copolymer of ethylene oxide and propylene oxide on the surface of a synthetic fiber multifilament yarn in an amount of more than 0.1% by weight based on the weight of the yarn, said random copolymer having an average molecular weight of 5,000 to 20,000 and wherein the ratio of ethylene oxide to propylene oxide in the copolymer is 50-85 mol % of ethylene oxide to 15-50 mol % of propylene oxide.

tion of a soluble alkanol amine wherein the alkanol radical contains from 2 to 3 carbon atoms at a temperature in the range of room temperature up to but below the softening temperature of the acrylonitrile-butadiene-styrene copolymer for a time sufficient to materially improve adhesion to said surface of electrolessly deposited metal, the aqueous alkanolamine solution having an alkanolamine concentration of from about 1% to about 50% by weight.

3,899,618

PROCESS FOR FLAMEPROOFING CELLULOSIC TEXTILES

Donald J. Daigle, New Orleans; Armand B. Pepperman, Jr., Metairie, and Gordon J. Boudreaux, New Orleans, all of La., assignors to The United States of America, as represented by the Secretary of Agriculture, Washington, D.C.

Filed May 20, 1974, Ser. No. 471,516

Int. Cl.² C09D 5/18; C07D 295/00

U.S. Cl. 427-396

1 Claim

1. A process for imparting to a cellulosic textile the quality of flame retardancy, comprising: (a) impregnating the cellulosic textile with a dimethyl sulfoxide solution containing about 15% by weight of a phosphine compound selected from the group consisting of 2-thia-1,3,5-triaza-7-phosphaadamantane 2,2-dioxide, 2-thia-1,3,5-triaza-7-phosphaadamantane 2,2,7-trioxide, and 2-thia-1,3,5-triaza-7-phosphoniaadamantane 2,2-dioxide iodide to a wet pickup of about 80%, and (b) drying the wet impregnated textile for about 5 minutes at about 80°C to obtain a treated fabric with about 12% weight gain.

3,899,619

1,3,5-TRIAZA-7-PHOSPHAADAMANTANE AND DERIVATIVES AS FLAME RETARDANTS FOR TEXTILES

Donald J. Daigle, New Orleans; Armand B. Pepperman, Jr., Metairie, and Sidney L. Vail, New Orleans, all of La., assignors to The United States of America, as represented by the Secretary of Agriculture, Washington, D.C.

Filed Aug. 24, 1973, Ser. No. 391,189

Int. Cl.² C09D 5/18; C09K 3/28

U.S. Cl. 427-396

5 Claims

1. A process for imparting to a cellulosic textile the quality of flame retardancy, comprising: (a) impregnating the cellulosic textile with an aqueous solution containing about 15% by weight of a phosphine compound selected from the group consisting of 1,3,5-triaza-7-phosphaadamantane, 1,3,5-triaza-7-phosphaadamantane 7-oxide, 1-methyl-1-azonia-3,5-diaza-7-phosphaadamantane iodide, and 1-methyl-1-azonia-3,5-diaza-7-phosphaadamantane 7-oxide iodide to a weight pickup of about 80%, and (b) drying the wet impregnated textile for about 5 minutes at about 80°C to obtain a treated fabric with about 12% weight gain.

3,899,620

CAMOUFLAGE NETTING

Johannes Franciscus Roeloffzen, Sas van Gent, Netherlands, assignor to Spectrum N.V., Sas van Gent, Netherlands

Filed Apr. 14, 1972, Ser. No. 244,106

Claims priority, application Netherlands, Apr. 23, 1971, 7105590

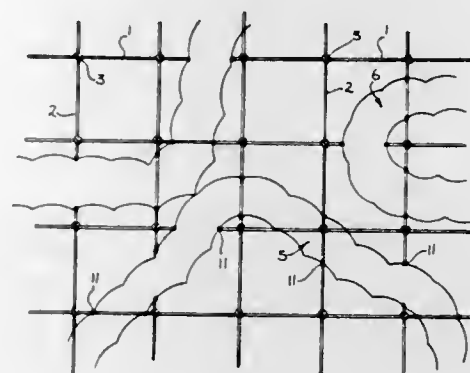
Int. Cl.² D04G 1/00

U.S. Cl. 428-112

16 Claims

1. A camouflage unit comprising:
a. a supporting net;
b. a plurality of trimming strips randomly disposed through said supporting net, said trimming strips formed from a supporting layer and first and second covering layers, said first covering layer disposed on one side of said support-

ing layer, and said second covering layer disposed on the opposite side of said supporting layer, said first and sec-



ond covering layers comprised of randomly arranged, nonwoven bound together vegetable fibers.

3,899,621

SECURITY FILM FOR SHATTER-PROOFING WINDOWS

Michael E. Willdorf, Malden, Mass., assignor to Material Distributors Corporation, Woburn, Mass.

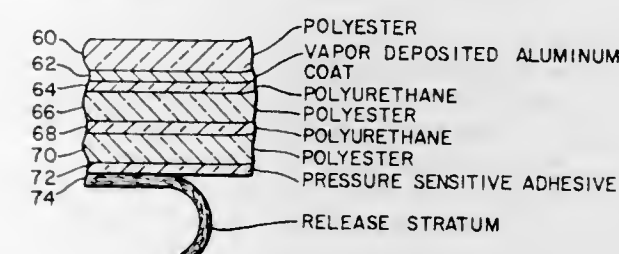
Continuation-in-part of Ser. No. 113,426, Feb. 8, 1971, Pat. No. 3,775,226. This application Oct. 10, 1972, Ser. No. 295,816

The portion of the term of this patent subsequent to Nov. 27, 1990, has been disclaimed.

Int. Cl.² B44F 1/100

U.S. Cl. 428-216

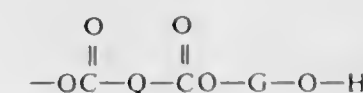
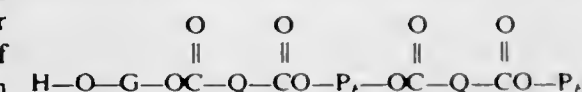
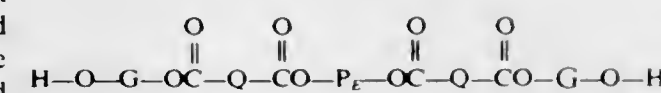
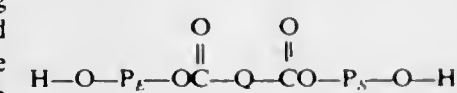
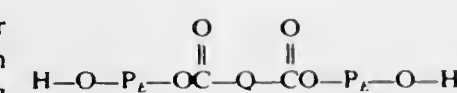
7 Claims



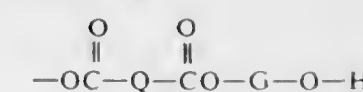
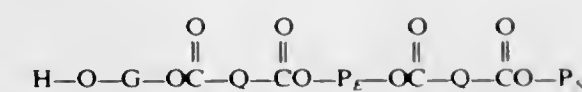
1. An assemblage consisting of only one sheet of window glass and a security film, said security film comprising an assemblage of strata including at least one first polyester support stratum, at least one second polyester support stratum, at least one elastomeric bonding stratum, and only one pressure sensitive adhesive stratum, said one first polyester support stratum and said one second polyester support stratum each being composed of polyethylene terephthalate and ranging from 0.5 to 5 mils in thickness, said one elastomeric bonding stratum being composed of polyurethane and being interposed between said one first polyester support stratum and said one second polyester support stratum and in direct contact with the inner faces of said one first polyester support stratum and said one second polyester support stratum, said polyurethane bonding stratum ranging in thickness from 0.2 to 0.4 mil, said pressure sensitive stratum being coated on one of the outer faces of said assemblage and being adhered to said only one face of only one sheet of window glass, said pressure sensitive stratum being composed of a composition including a rubber and a tackifier and ranging in thickness from 0.5 to 1.5 mil, all of the strata of said assemblage being optically clear and moisture permeable, and a light transmitting aluminum coat that is vapor deposited on one inner face of said one first polyester stratum and said one second polyester stratum, said vapor deposited aluminum coat being characterized by a visible light transmission ranging from 5 to 60% and a thickness of no more than 300 angstrom units, at least one of said one first polyester stratum and said one second polyester stratum containing an ultraviolet absorbing dye.

2. A security film for application to only one face of only one sheet of window glass, said security film comprising an assemblage of strata including at least one first polyester support stratum, at least one second polyester support stratum, at least one elastomeric bonding stratum, and only one

pressure sensitive adhesive stratum, said one first polyester support stratum and said one second polyester support stratum each being composed of polyethylene terephthalate and ranging from 0.5 to 5 mils in thickness, said one elastomeric bonding stratum being composed of polyurethane and being interposed between said one first polyester support stratum and said one second polyester support stratum and in direct contact with the inner faces of said one first polyester support stratum and said one second polyester support stratum, said polyurethane bonding stratum ranging in thickness from 0.2 to 0.4 mil, said pressure sensitive stratum being coated on one of the outer faces of said assemblage for adhesion to said only one face of only one sheet of window glass, said pressure sensitive stratum being composed of a composition including a rubber and a tackifier and ranging in thickness from 0.5 to 1.5 mil, all of the strata of said assemblage being optically clear and moisture permeable.



and



3,899,622

LAMINATED FABRIC

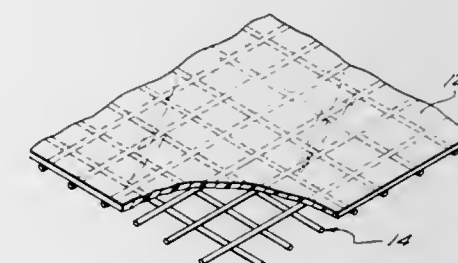
David H. Geiger, 125 Grandview Dr., Toms River, N.J. 13905

Filed July 20, 1973, Ser. No. 381,065

Int. Cl.² B32B 7/04, 31/06

U.S. Cl. 428-245

19 Claims



1. A composite sheet material comprising a foraminous web formed of a plurality of fibers defining a plurality of openings in the web and a thin film of transparent polytetrafluoroethylene sheet material having a pair of opposite sides, said fibers being coated with polytetrafluoroethylene, and said polytetrafluoroethylene sheet being secured on one side thereof to said polytetrafluoroethylene coating on said fibers and extending across said openings to form said composite sheet and whereby said composite sheet is transparent.

13. The sheet material as defined in claim 12 wherein said inner coating has a plurality of glass beads embedded therein.

3,899,623

SYNTHETIC LEATHER COMBINATION OF NEEDLE-PUNCHED FABRIC AND POLYETHERESTER POLYURETHANE

Kaoru Okazaki; Kenkichi Yagi, both of Otsu; Akira Ichimura, Kyoto, and Yoshinori Masubuchi, Nagoya, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Continuation of Ser. No. 242,819, April 10, 1972, abandoned.

This application July 31, 1974, Ser. No. 493,402

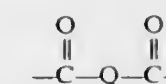
Int. Cl.² C08G 22/10; B44D 1/40

U.S. Cl. 428-290

25 Claims

1. Sheet material comprising a needle punched non-woven fabric and a substantially linear polyurethane elastomer produced by the process of reacting
a. a linear block copolymer diol selected from the group consisting of the formula

in which $-\text{O}-\text{P}_x-\text{O}-$ is a polytetramethyleneether glycol residue having a molecular weight of at least about 1,000; $-\text{O}-\text{P}_y-\text{O}-$ is a residue of polyester glycol of a molecular weight of at least about 300 and selected from the group consisting of polyesters made by the condensation of organic dicarboxylic acids and low molecular weight glycols, and polyesters made by the ring opening polymerization of lactones; $-\text{O}-\text{G}-\text{O}-$ is glycol residue having a molecular weight of below about 500;

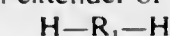


is an organic dicarboxylic acid residue selected from the group consisting of an aliphatic dicarboxylic acid having from 2 to 10 carbon atoms, aromatic dicarboxylic acid and ester formable derivatives thereof; and the weight ratio of polytetramethyleneether glycol residue ($-\text{O}-\text{P}_x-\text{O}-$) to other components in the block copolymer diol is from about 55/45 to about 95/5; with

b. a molar excess of an organic diisocyanate of the formula $\text{O}=\text{C}-\text{N}-\text{R}_2-\text{N}=\text{C}=\text{O}$

wherein R_2 is a residue of aliphatic or aromatic diisocyanate, and further reacting the resulting isocyanate-terminated intermediate by the reaction of (a) and (b) with

c. a difunctional chain extender of the formula



wherein R_1 is a residue of alkylene diamine or arylene diamine or alkylene glycol or alkanol amine, the molar ratio of (a) + (c) : (b) being about 1:1.

3,899,624

METHOD FOR PROTECTING SURFACES AGAINST ENVIRONMENTAL DAMAGE AND THE RESULTANT PRODUCTS

William M. Sutherland, San Diego, Calif., assignor to General Dynamics Corporation, San Diego, Calif.

Filed Apr. 26, 1973, Ser. No. 354,601

Int. Cl.² B32B 15/08

U.S. Cl. 428-327

4 Claims

1. A protective finish comprising a substantially continuous adherent film over a surface to be protected comprising small particles of a cation exchange resin regenerated with protective ions comprising zinc ions, and a resinous film forming agent whereby corrosion and fouling of said surface is reduced when the coated surface is exposed to the environment.

3,899,625

SHEET METAL TREATED WITH LUBRICANT FOR PRESS WORK

Soichi Izumi; Takeo Ashiura, both of Muroran; Yoshiji Ito, Noboribetsu, and Nobutaka Miura, Tokyo, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

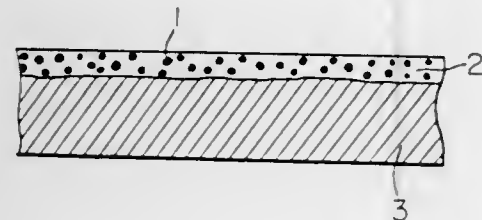
Filed Dec. 21, 1972, Ser. No. 317,142

Claims priority, application Japan, Dec. 27, 1971, 47-1988

Int. Cl.² B32B 15/08

U.S. Cl. 428—457

2 Claims



1. A sheet metal coated on at least one surface thereof with a dried lubricant film having a high coefficient of static friction to prevent sliding of said coated sheet metal when stacked, said film comprising a discrete lubricant dispersed in at least one member selected from the group consisting of

- a. a water soluble resin which has a higher coefficient of static friction than said lubricant, and
 - b. a water dispersible resin containing carboxylic groups and having an acid value of about 30 to 400 and a glass transition temperature of 35°C. or less,
- said discrete lubricant being selected from at least one member of the group consisting of solidified to semi-solidified waxes, higher fatty acids, esters of higher fatty

acids and metallic salts of higher fatty acids, wherein the weight ratio of said resin to said discrete lubricant is between 0.05 and 10.

3,899,626

COMPOSITE ARTICLES BASED ON HEAT-RESISTANT RESINS

Joseph Steffen, Tassin, France, assignor to Rhone-Poulenc, S.A., Paris, France

Filed Sept. 7, 1973, Ser. No. 395,156

Claims priority, application France, Sept. 11, 1972, 72.32138

Int. Cl. B32b 27/34, 3/12; C09j 5/00

U.S. Cl. 428—474

14 Claims

1. Process for the manufacture of a composite article which comprises stacking at least one layer (a) comprising a prepolymer of a bis-imide and a polyamine, and at least one layer (b) of a solid material, and then pressing the resulting stack, under the following conditions:

- i. the layers are positioned such that when two or more layers (b) are used, said layers (b) are separated from each other by at least one layer (a);
- ii. before the layers are positioned a polyamide-imide solution is applied over at least a part of the surfaces to be brought into contact such that when a surface of a layer (a) is to be positioned adjacent a layer (b) at least one of said surfaces is coated; and
- iii. the concentration of the polyamide-imide in the solution does not exceed about 70% by weight at the time of stacking.

14. A composite article manufactured by a process as defined in claim 1.

3,899,627
CRUCIBLE

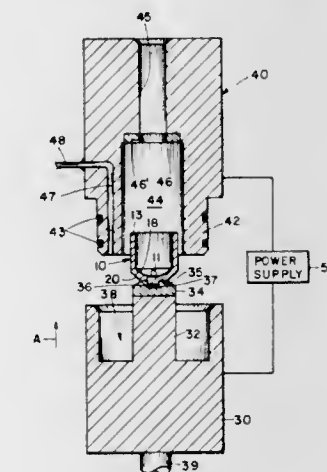
George J. Sitek, Stevensville, and Charles W. Berk, St. Joseph, both of Mich., assignors to Leco Corporation, St. Joseph, Mich.

Filed June 28, 1974, Ser. No. 484,303

Int. Cl. F27b 14/10; H05b 3/00

U.S. Cl. 13—22

10 Claims



1. A resistance heating crucible made of a conductive material for fusion of a specimen and comprising a cylindrical side wall having an open end defining the top of said crucible and an enclosed end defining the bottom of said crucible, wherein the interior of said bottom is concavely rounded and the junction of the exterior of said side wall with the bottom is chamfered to reduce the cross-sectional area of the electric current path through said bottom of said crucible.

3,899,628
ELECTRIC ARC FURNACE WITH AUXILIARY BURNERS

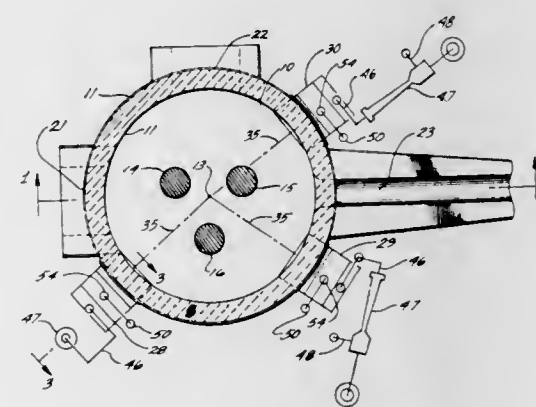
John H. Hirt, Monterey Park, Calif., assignor to Southern California Gas Co., Los Angeles, Calif.

Filed Sept. 4, 1973, Ser. No. 393,719

Int. Cl. H05b 7/00

U.S. Cl. 13—2

15 Claims



1. An electric arc furnace comprising:
a furnace having a hearth, a side wall surrounding the hearth, and a roof over the side wall to define a generally cylindrical enclosure with a vertical central axis;
a plurality of electrodes extending vertically through the roof into the center of the enclosure;
a source of carbonaceous fluid fuel;
a source of oxygen;
means for mixing the fuel and the oxygen to form a combustible mixture;
means for igniting the combustible mixture; and
a burner for directing the ignited combustible mixture into the enclosure in a downward and radially inward direction that intersects the central axis, the burner having an

ELECTRICAL

elongated passage outwardly disposed from the side wall of the furnace, the passage having an inlet coupled to the mixing means, an outlet opening into the enclosure at the side wall, and a longitudinal axis extending downwardly from the inlet through the outlet to intersect the central axis of the furnace in the hearth.

3,899,629

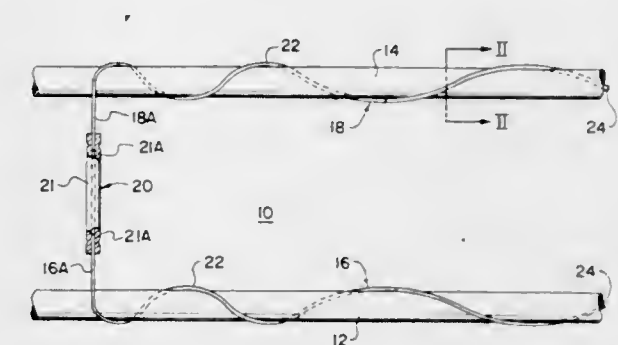
PRESHAPED WIRE ROD AND SPACER HAVING INCREASED LEVERAGE AND GRIPPING FORCE
Ronald G. Hawkins, Massena, N.Y., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed May 22, 1974, Ser. No. 472,138

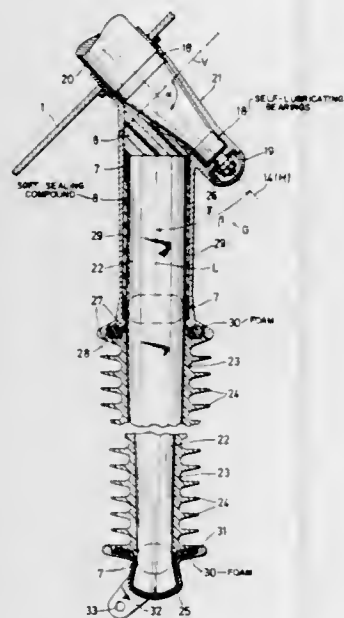
Int. Cl.² H02G 7/12

U.S. Cl. 174—40 R

4 Claims



the coupling means including two spaced apart clamping elements which grip said second end portion of said core at



3,899,631

INFLATABLE SEALING ELEMENT HAVING ELECTRICAL CONDUCTORS EXTENDING THERE THROUGH

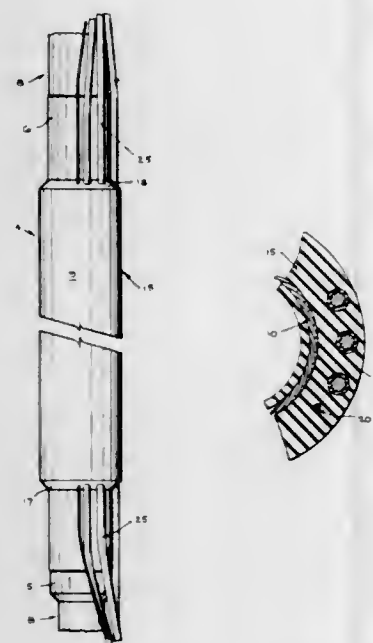
Billy E. Clark, Houston, Tex., assignor to Lynes, Inc., Houston, Tex.

Filed Apr. 11, 1974, Ser. No. 459,889

Int. Cl.² E21B 33/127; F16J 15/46

U.S. Cl. 174-47

3 Claims



1. An inflatable device for positioning in a well string in a well bore comprising:

- a. spaced annular members having threads for securing the annular members in a well string;
- b. an annular reinforcing sheath extending continuously longitudinally and circumferentially between and secured to said spaced annular members for receiving an inflating fluid from the well string;
- c. an elastomer cover surrounding said sheath and extending between said spaced annular member said elastomer cover expandable by said reinforcing sheath and the inflating fluid therein; and

d. at least one electrical conductor embedded in said expandable elastomer cover and extending from each end thereof.

3,899,632

RETROFIT EMERGENCY LIGHTING PACKAGE

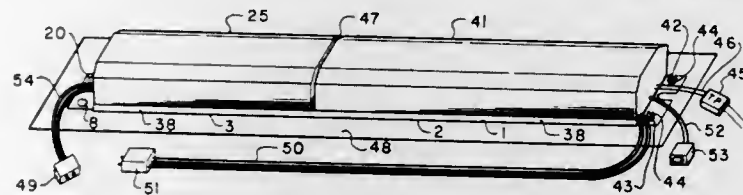
Robert P. Alley, Danville, Ill., assignor to Construction Materials Division General Electric Company, Indianapolis, Ind.

Filed Oct. 23, 1973, Ser. No. 408,661

Int. Cl.² H05K 5/04

U.S. Cl. 174-52 R

10 Claims



1. Apparatus for mounting an emergency lighting system for starting and operating at least one gaseous discharge lamp comprising:

- a first elongated mounting member adapted to be mounted to a lighting fixture;
- a first enclosure to house at least an emergency lighting driving device, said first enclosure being mounted on a first portion of said first elongated mounting member;
- a second enclosure to house at least a battery for providing emergency power;
- a second elongated mounting member;
- means mounting said second enclosure on said second elongated mounting member;
- means selectively mounting said second elongated mounting member on a second portion of said first elongated mounting member;
- means maintaining said first enclosure a predetermined distance from said second enclosure for providing thermal insulation, said means maintaining including a pair of tabs connected to one end of said second enclosure, a raised portion on one end of said first portion and a slot associated with said raised portion receiving said pair of tabs.

3,899,633

SUBSCRIPTION TELEVISION SYSTEM

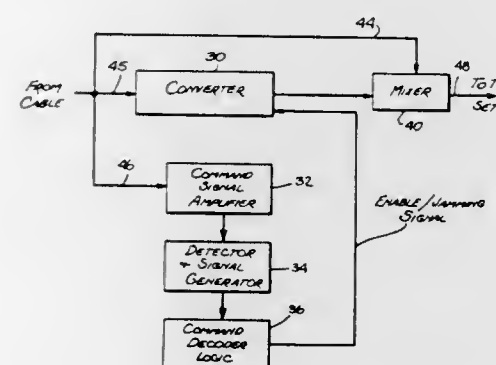
Keith S. Sorenson, Diamond Bar, and David E. Lewis, Orange, both of Calif., assignors to Columbia Pictures Industries, Inc., New York, N.Y.

Filed May 12, 1972, Ser. No. 252,670

Int. Cl. H04n 1/44

U.S. Cl. 178-5.1

10 Claims



1. In a controlled transmission system including a central sending station for sending information on at least two secure channels, a plurality of receiving stations, a transmission path coupling the central sending station with said plurality of receiving stations and wherein receivers at said stations are not capable of directly receiving the secure channels sent, each of said receivers having associated therewith a tuner

converter coupled to the central sending station for converting the secured channels sent to a channel receivable by the receiver each tuner converter including a turret tuner switch having a set of contacts to select one or the other of the secured channels for conversion, means for selectively disabling and enabling each of said receivers to receive one or the other of said secure channel signals comprising:

- a. means associated with the central sending station for sending in addition to the secure channel signals coded address signals and command signals;
- b. means at each receiving station for decoding address and command signals, each decoding means being responsive to a different address code from said central sending station and responsive to at least two separate command signal codes from said sending station;
- c. means at said receiving station for providing an interfering signal to said tuner converter;
- d. first storage means adapted to be set in response to the reception and decoding of a coded signal addressed to its receiving station and a first command signal;
- e. second storage means adapted to be set in response to the reception and decoding of a coded signal addressed to its receiving station and a second command signal; f. an additional set of contacts in said turret tuner having a wiper ganged to the tuner, said wiper coupled to a deactuating input of said interfering means, the additional contact corresponding to the one secured channel being coupled to the output of said first storage means and the additional contact corresponding to said other secured channel being coupled to the output of said second storage means whereby if one of said secured channels is selected that channel can be received only if an appropriate code address and command signal has been received by the receiver causing the associated storage means to be set to disable the interfering means in that receiver when tuned to that secured channel.

3,899,634

VIDEO CONTROLLED POSITIONING METHOD AND APPARATUS

Liber J. Montone, and Leonard J. Pietruszynski, both of Reading, Pa., assignors to Western Electric Company, Incorporated, New York, N.Y.

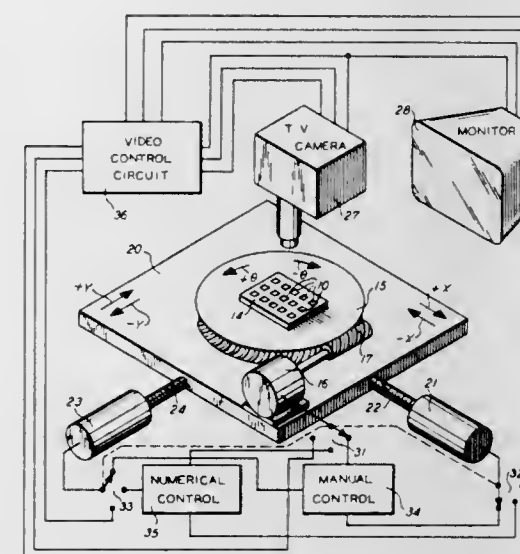
Continuation of Ser. No. 147,051, May 26, 1971, abandoned.

This application July 11, 1973, Ser. No. 378,307

Int. Cl. H04m 7/18

U.S. Cl. 178-6.8

29 Claims



20. Apparatus for positioning an article comprising: means for generating first video signals representing an image of the article; means for generating second video signals representing an image of a first two-dimensional position marker;

means for generating third video signals representing an image of a second two-dimensional position marker; means for sensing a coincidence of the first and second video signals and of the first and third video signals; and means for moving the article in response to the sensed coincidence.

3,899,635

DUAL MODE DEFLECTION SYNCHRONIZING SYSTEM

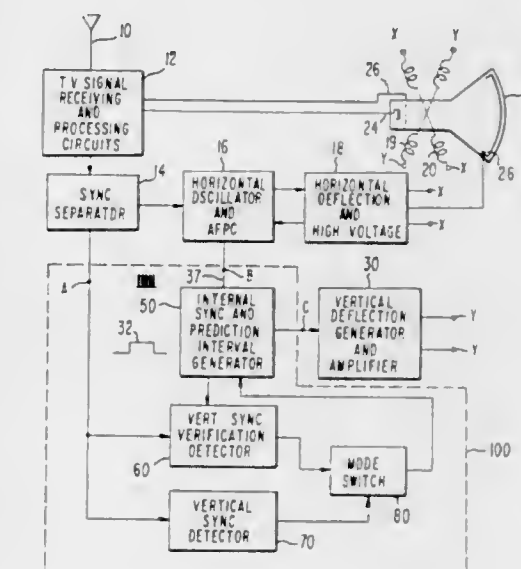
Steven Alan Steckler, Clark, and Allen Leroy Limberg, Lambertville, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Jan. 30, 1974, Ser. No. 438,047

Int. Cl.² H04N 5/04

U.S. Cl. 178-69.5 TV

6 Claims

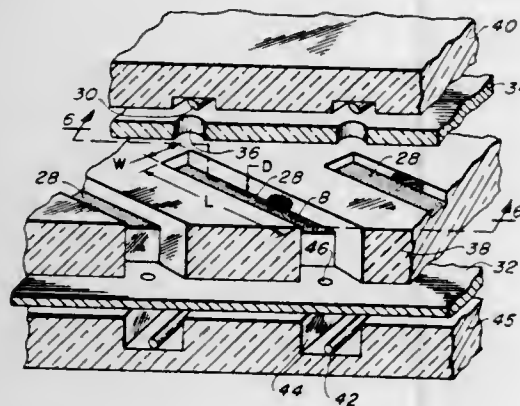


1. A synchronizing system comprising: a source of external synchronizing signals; resettable counting means adapted for counting signals from a source of second signals integrally related in frequency to said external signals for generating internal signals at said external synchronizing signal frequency, said resettable counting means capable of being reset by said internal signals; external synchronizing signal verification means coupled to said source of external synchronizing signals and to said resettable counting means for verifying the presence and absence of said external synchronizing signals during said internal signals and for generating first and second signal levels respectively in response thereto; external synchronizing signal detecting means coupled to said source of external synchronizing signals for detecting when signals from said source have at least a predetermined time duration and for generating signals when said time duration is greater than the minimum time duration of said external synchronizing signals; and mode switching means coupled to said resettable counting means, to said external synchronizing signal detecting means and to said external synchronizing signal verification means for switching to a non-synchronous mode of operation in response to said second signal level generated by said external synchronizing signal verification means for passing a signal from said external synchronizing signal detecting means upon the occurrence of a subsequent signal from said source of external synchronizing signals for resetting said resettable counting means for synchronizing said internal signals such that succeeding internal signals are substantially in synchronism with said subsequent signal from said source of external synchronizing signals.

3,899,636

HIGH BRIGHTNESS GAS DISCHARGE DISPLAY DEVICE
Gerald J. Chodil, Harwood Heights, and Michael C. De Jule, Chicago, both of Ill., assignors to Zenith Radio Corporation, Chicago, Ill.Continuation-in-part of Ser. No. 396,273, Sept. 7, 1973, abandoned. This application Jan. 24, 1974, Ser. No. 436,294
Int. Cl.² H04N 5/66; H01J 61/16, 61/30
U.S. Cl. 178—7.3 D

1 Claim



1. For use in a high brightness, high efficiency gas discharge display panel having a matrix of rows and columns of gas discharge cells in which the positive columns are established for generating ultraviolet radiation for illuminating a light-emissive phosphor coating on a cell wall, an improved gas discharge cell capable of operating efficiently at current densities up to 5 amperes per square centimeter for generating a high brightness display even when pulsed at television rates, said cell comprising:

means defining a shallow, substantially rectangular, elongated cavity having a high surface to volume ratio and a length, width and depth selected for generating a long positive column and a short path to the walls of the cavity for photons generated in the positive column, the length of said cavity being from 30 to 70 mils, the width of said cavity being from 10 to 15 mils, and the depth of said cavity being from 2 to 5 mils;

a cavity wall extending lengthwise of the cavity, having a coating of a light emitting phosphor thereon, and oriented such that the phosphor coating is exposed to the viewed side of the cell;

a gas filling said cavity and comprising helium at a pressure of approximately 100 torr and mercury vapor at a pressure of approximately 0.1 torr; and

anode means and cathode means situated near opposite ends of said cavity between which cell current flows when a positive column is established within the cavity, the combination of said gas, gas pressure and cavity geometry together operating to increase the energy of free electrons within the positive column and to thereby increase cell efficiency and brightness.

3,899,637

FREQUENCY SHIFT KEYED COMMUNICATIONS DEVICE

Frank G. Willard, Pitcairn, Pa., and Earl T. Farley, Altamonte Springs, Fla., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 8, 1974, Ser. No. 440,935
Int. Cl.² H04L 5/14

U.S. Cl. 178—59

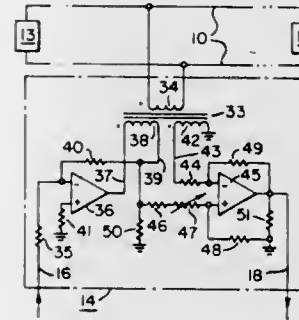
19 Claims

7. Full duplex frequency shift keyed communications apparatus for communication of digital data over a two-conductor transmission line having characteristic impedance terminations, which line may carry a signal to be received by such apparatus, comprising:

a transmitter to generate a transmit tone comprising one cycle of a repetitive signal in response to a transmission datum bit, and to control the frequency of the generated

tone at one of two predetermined values in accordance with the transmission datum bit value, said transmitter to generate a third constant signal when a transmission datum bit is absent;

a transmit/receive separator to generate a voltage signal across the transmission line conductors having a constant proportionality with the transmit tone, so that the composite signal across the conductors is the sum of the generated voltage signal with a signal which may be carried to the apparatus by the transmission line, and to



separate a received tone by subtracting the transmit tone from the composite signal, the received tone comprising one cycle of a repetitive signal having a first or second predetermined frequency in accordance with the bit value of a received datum; and

a receiver responsive to each received tone separated by the transmit/receive separator to detect the frequency of the received tone and to generate a signal in accordance with the datum bit value corresponding to the detected frequency of the received tone.

3,899,638

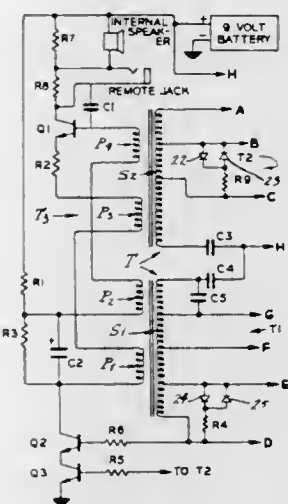
PORTABLE TONE DATA TRANSMITTER

James H. Hahn, St. Louis, Mo., assignor to Interface Technology, Inc., St. Louis, Mo.

Filed Oct. 29, 1973, Ser. No. 410,546
Int. Cl. H04m 11/06, 1/50

U.S. Cl. 179—2 DP

11 Claims



1. In a portable data transmitter for use in sending a signal representative of data over a transmission means such as a telephone, said transmitter incorporating at least a pair of tuned circuits which upon oscillation generate a summed oscillation in a third oscillating circuit which establishes an alternating current for energization of the transmitter for sending of the signal over the transmission means, entry means and a power source in the portable transmitter, the actuation of said entry means energizing said circuits from the power source for establishment of the frequency of oscillations in said tuned circuits, a starter circuit electrically coupled to said third oscillating circuit and being connected to the power source for energization of said third oscillating circuit and

inducement of the summed oscillations therein upon an actuation of the entry means, said starter circuit including a switch means which is energized for operation by means of the tuned circuits immediately upon activation of the entry means for effecting energization of said oscillating circuit from the power source and for establishing its summed oscillating frequency therein for inducement of the alternating current that establishes the signal representative of data for transfer over the transmission means.

3,899,639

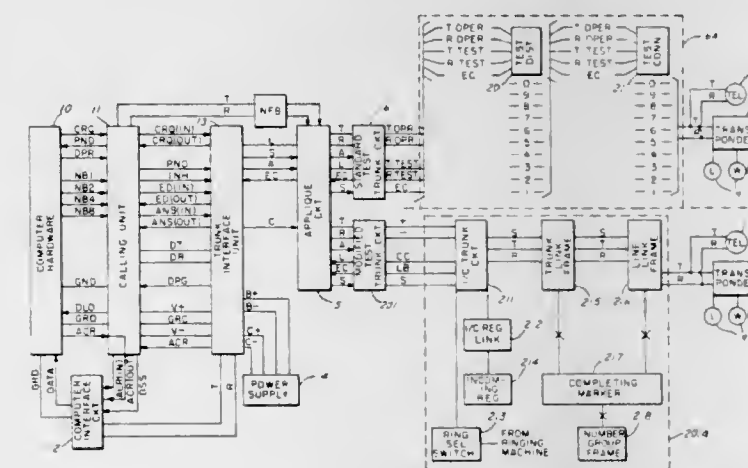
SYSTEM AND METHOD FOR READING REMOTELY LOCATED METERS

John B. Cleveley, and Kenneth C. Laubman, both of Edmonton, Canada, assignors to The City of Edmonton, Edmonton, Canada

Filed May 11, 1973, Ser. No. 359,245
Int. Cl. H04q 9/00

U.S. Cl. 179—2 A

21 Claims



10. In a transducer reading system wherein a telephone number calling unit is programmed by a computer to dial data calls to selected telephone numbers by operating telephone line switching circuitry to connect a selected set of telephone lines through a telephone trunk circuit to the computer and a transducer reading transponder associated with said selected set of telephone lines transmits transducer reading data over said set of telephone lines to said computer, the improvement in combination therewith of means for aborting a data call and resetting said transducer reading system whenever a switch in said telephone line switching circuitry encountered is busy or said set of telephone lines called is busy.

3,899,640

DEVICE FOR BLOCKING TOLL CALLS FROM SUBSCRIBER TELEPHONES

Luigi Piacente, and Sanzio Capannini, both of Milan, Italy, assignors to Societa Italiana Telecomunicazioni Siemens S.p.A., Milan, Italy

Filed Dec. 18, 1972, Ser. No. 315,892

Claims priority, application Italy, Dec. 17, 1971, 32584/71
Int. Cl. H04m 1/66

U.S. Cl. 179—18 DA

10 Claims

1. A device for blocking the initiation of certain outgoing calls, characterized by a predetermined numerical value of a specified call-number digit, from a subscriber station of a telecommunication system connected via an outgoing line to a central office, comprising:

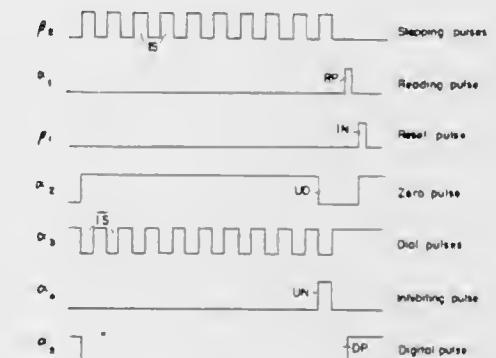
monitoring circuitry at said station connected across said line for detecting dial pulses generated at said station by a call selector periodically opening and closing a line loop;

pulse-shaping means in said circuitry for generating trains of stepping pulses in the rhythm of said dial pulses;

integrating means connected to said pulse-shaping means for deriving an individual digital pulse from any train of stepping pulses;

an electronic pulse counter connected to said circuitry for receiving said stepping pulses therefrom, said counter having at least one output lead electrically marked in response to a predetermined number of consecutive stepping pulses;

control means connected to said integrating means and responsive to a predetermined digital pulse in a sequence of such digital pulses for passing a concurrently generated train of said stepping pulses to said counter;



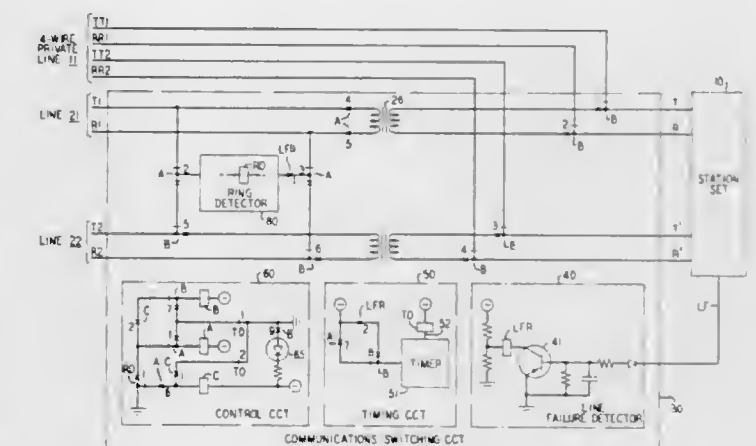
electronic switch means connected to said output lead for shunting said call selector, thereby preventing effective open-circuiting of said line loop and attenuating the dial pulses transmitted to said central office; and detector means connected to said pulse-shaping means for operating said switch means independently of said counter in response to spurious dial pulses of less than a predetermined duration.

3,899,641

FOUR-WIRE BACKUP FACILITY USING DDD LINES
Richard Henry Etra, Highland Park, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.Filed Mar. 4, 1974, Ser. No. 447,476
Int. Cl.² H04Q 1/24

U.S. Cl. 179—18 EA

11 Claims



1. Backup facilities for a station normally connected to a four-wire transmission line, said backup facilities using a pair of two-wire transmission lines and comprising, switching means operable for disconnecting said station from said four-wire line and connecting said station to said pair of two-wire lines, and means operative only upon failure of said four-wire line for operating said switching means automatically in response to a predetermined sequence of signals on said pair of two-wire lines.

3,899,642

METHOD OF DISTRIBUTING TONE AND ALERTING SIGNALS IN A TDM COMMUNICATION SYSTEM

Ivor Jones, Winchester, England; Hans Rudolf Muller; Daniel Wild, and Pitro Alois Zafiropulo, all of Adliswil, Switzerland, assignors to International Business Machine Corporation, Armonk, N.Y.

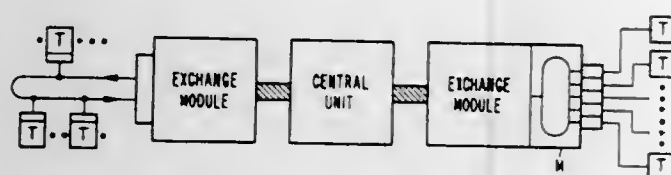
Filed Mar. 29, 1973, Ser. No. 345,938

Claims priority, application Switzerland, Mar. 30, 1972, 4775/72

Int. Cl. H04m 3/00

U.S. Cl. 179-18 J

9 Claims



1. The method of distributing tone and alerting signals to terminals in a time division multiplex communication system, characterized by concurrently transmitting binary sample bits of the cadencing signals for all tone and alerting signals over a common time-division multiplex channel accessible by all terminals, all sample bits corresponding to one sampling time being combined in one cadence control word; and generating in a terminal the signal temporarily required for it, after receiving a corresponding command, by evaluating the received cadence control words and influencing a separate basic signal with a regenerated cadencing signal.

3,899,643

TELEPHONE SUBSET CIRCUIT

Camilo Manansala Tabalba, Harlow, England, assignor to International Standard Electric Corporation, New York, N.Y.

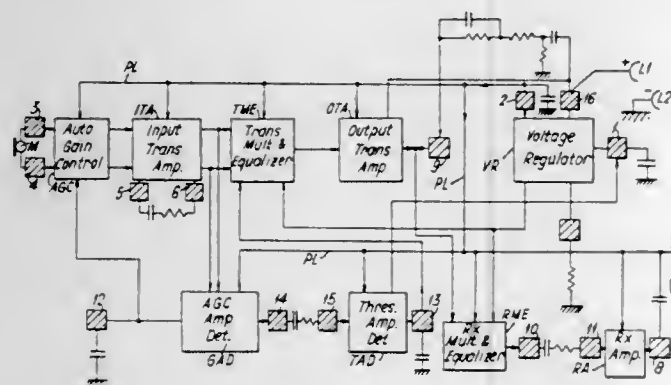
Filed July 30, 1973, Ser. No. 383,735

Claims priority, application United Kingdom, Aug. 22, 1972, 39083/72

Int. Cl. H04m 1/60

U.S. Cl. 179-81 B

18 Claims



1. An electronic circuit for use in a telephone subscriber's instrument having a microphone and a receiving transducer comprising: first amplification means for coupling said microphone to a two-wire telephone line coupled to a telephone exchange and to provide a side tone; automatic gain control means coupled to said microphone and said first amplification means; second amplification means for coupling said line to said receiving transducer; voltage regulator means coupled to said line and said first and second amplification means, said voltage regulator means being responsive to line conditions of said line to

- adjust the gain of both of said first and second amplification means according to said line conditions;
- a first conductor coupled between said first amplification means and said second amplification means to provide said side tone for said receiving transducer to enable a subscriber to hear in said receiving transducer what is leaving said instrument;
 - a second conductor to couple an output of said first amplification means to one wire of said line; and
 - a resistor-capacitor filter network coupled between one wire of said line and the input of said second amplification means, said filter network conducting therethrough an equal value of output signal from said first amplification means in phase opposition thereby leaving only said side tone and an input signal from said telephone line to be coupled to said second amplification means.

3,899,644

AC/DC-MONITORING TELEPHONE LINE RINGING VOLTAGE DETECTOR

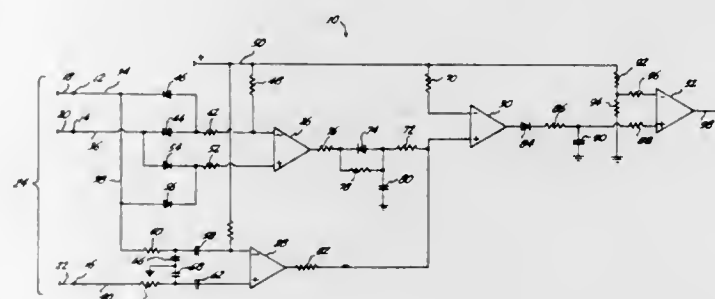
Theodore R. Hunt, Aloha, Oreg., assignor to Data Time, Inc., Portland, Oreg.

Filed June 19, 1974, Ser. No. 480,613

Int. Cl. H04q 9/00

U.S. Cl. 179-84 R

3 Claims



3. Apparatus for detecting at the location of a subscriber's telephone set the presence of AC ringing voltage in a telephone line connected to the set, where the line includes conductors that will present such voltage with placement of a call to the set, as well as conductors wherein DC voltage of two different levels may exist at different times depending upon the on-hook or off-hook condition of the set, such DC voltage being larger than a certain voltage with the set in an on-hook condition, and less than said certain voltage with the set in an off-hook condition, said apparatus comprising input means adapted for connection to the conductors in a telephone line, a DC voltage monitor operatively connected to said input means for producing an indication of a certain type with the level of DC voltage in those telephone line conductors wherein the magnitude of DC voltage is indicative of the on-hook/off-hook condition of a connected telephone set above said certain voltage, an AC voltage monitor operatively connected to said input means for producing an indication when AC exists in the telephone line, and a simultaneity circuit operatively connected to said DC and AC voltage monitors for indicating the simultaneous occurrence of an indication of said certain type from the former, and of an indication by the latter that AC exists in the telephone line.

3,899,645

PROCESSOR FOR CONTROLLING THE OPERATION OF A TELEPHONE

Hanoch Brafman, Tel Aviv, Israel, assignor to Yeda Research and Development Company Incorporated, Tel Aviv, Israel

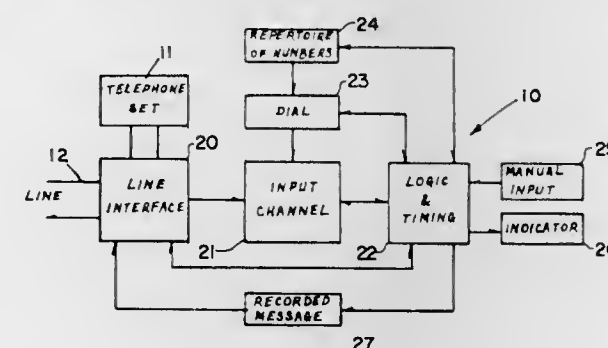
Filed Dec. 11, 1972, Ser. No. 314,019

Claims priority, application Israel, Dec. 16, 1971, 38379

Int. Cl. H04M 3/42

U.S. Cl. 179-90 AD

11 Claims



5. In a telephone system, apparatus disposed between a calling party instrument and a telephone line for successively placing calls from a repertoire of numbers to be called, said apparatus comprising:

active storage means for storing a list of numbers to be dialed including first and second sections, said list being originally stored in said first section, dialing means coupled to said first section and the telephone line for dialing a number from said list of numbers, sensing means coupled to the telephone line for sensing the line signals at predetermined sensing intervals after completion of a dialing cycle, and for generating a first signal in the presence of a busy tone, a second signal in the presence of a ring back tone, a third signal in the presence of a ring back tone that persists for a predetermined period of time, and a fourth signal in the absence of line signals for a predetermined period of time; and audio means for providing an audio input to the line between said predetermined sensing intervals.

3,899,646

TELEPHONE SET SPEECH NETWORK

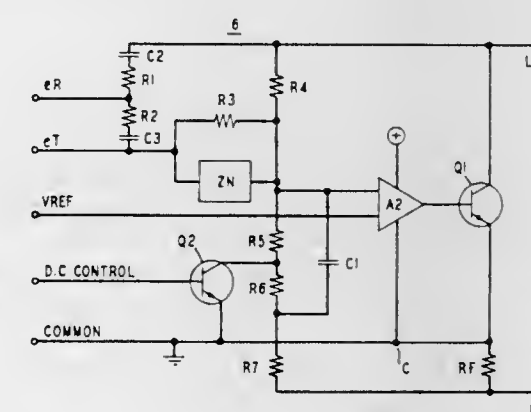
Douglas Romain Cobb, Dunwoody, Ga.; Roger Edward Holtz, Indianapolis, Ind., and David Carlaw Trimble, Holmdel, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 28, 1974, Ser. No. 473,792

Int. Cl. H04B 1/52

U.S. Cl. 179-170 NC

18 Claims



1. A speech network for a telephone set comprising first and second telephone line terminals, a common terminal, a reference terminal, a third transmit terminal and a fourth receive terminal, CHARACTERIZED IN THAT said network includes:

a current source connected between said first line terminal and said common terminal, said current source having first and second control inputs with said second control input connected to said reference terminal;

a first impedance network connected between said first line terminal and said first control input;

a second impedance network connected between said third terminal and said first control input;

a third impedance network connected between said second line terminal and said first control input;

a first impedance element connected between said common terminal and said second line terminal; and

means for combining signals appearing at said third transmit terminal with signals appearing at said first line terminal for producing a signal at said fourth receive terminal.

3,899,647

BUTTON TELEPHONE LOCK GUARD

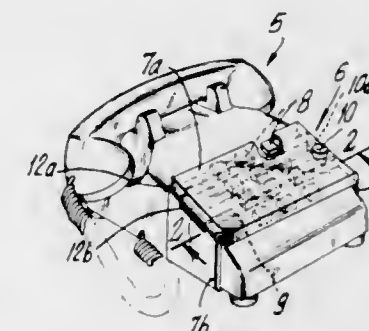
Zolman Nachsi, 613 Bedford Ave., and Abraham Zorger, 226 Broadway, both of Brooklyn, N.Y.

Filed July 20, 1973, Ser. No. 381,076

Int. Cl. H04M 1/66

U.S. Cl. 179-189 D

6 Claims



1. A button-telephone lock-guard device comprising in combination: at least first and second structure means, one including a first portion of a locking means and the other including a second portion of a locking means, the first and second locking portions comprising in combination a locking means for locking releasably one to the other, at least one of the first and second structure means including at least one downwardly extending partition element of a predetermined size and shape received between adjacent buttons of a push-button telephone when the locking means is in a locked state, each of the first and second structure means including securing means fastened securely to and at least partially circumscribingly of a button-containing portion of the push-button telephone when the locking means is in a locked state such that when each of the first and second structure means are fastened to the push-button telephone having push buttons, and the locking means in a locked state, the at least one downwardly extending partition element extending longitudinally along with of the first and second structure means, providing thereby against lateral shifting of the first and second structure means and also providing thereby a deterrent against access to the buttons, each partition element being an elongated thin flange extending downwardly from an upper portion of at least one of the first and second structure means at substantially a right angle thereto.

3,899,648

NODALLY OPERATED PUSH-BUTTON SWITCH

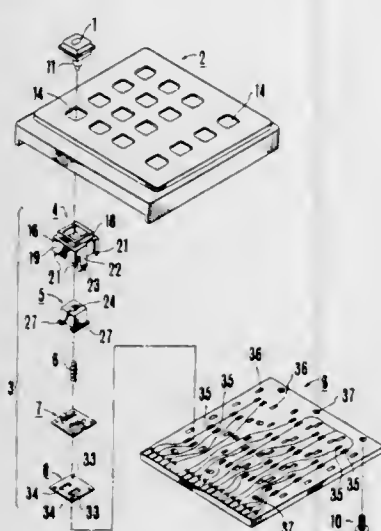
Taneo Murata, Tokyo, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Mar. 13, 1974, Ser. No. 450,865

Claims priority, application Japan, Mar. 16, 1973, 48-30685

Int. Cl. H01h 5/30, 13/64

U.S. Cl. 200-5 R



1. A nodally operable push-button switch comprising a case, and a flexible conducting metal plate, said plate having a normally curved central stripe and a pair of rectangular holes at both sides of said central stripe integrally formed therewith and also having a pair of resilient contact pieces integrally extended therefrom smaller than the size of the holes, and opposite side edges of said metal plate being drawn so that they are shorter than the said central stripe.

3,899,649

INERTIAL IMPACT SWITCH WITH NORMALLY CENTERED, CONDUCTIVE OSCILLATING CONTACT

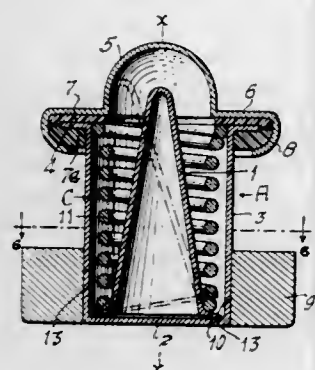
Bernard M. Jenkins, Chatham, N.J., assignor to C. B. Kaupp & Sons, Inc., Maplewood, N.J.

Filed June 20, 1974, Ser. No. 481,212

Int. Cl.² H01H 35/14

U.S. Cl. 200-61.51

4 Claims



1. An inertial impact switch comprising a housing which includes first and second coaxial conductive sections electrically insulated from each other, the first of which serves as a switch contact element, a coaxial movable contact element normally in conductive engagement with the second housing section, said movable contact element being normally urged by a spring into contact with the second housing section and into spaced relation to the first housing section and adapted to be urged to momentarily contact with the first housing section in response to an impact received by the switch, said spring having one end directly engaging said movable contact element and its other end abutting an insulation disc between said housing sections, said first housing section having an exterior circular mounting terminal and said second housing

section having an exterior polysided mounting terminal coaxial with said circular mounting terminal.

3,899,650

GROUNDING TANK CIRCUIT BREAKER

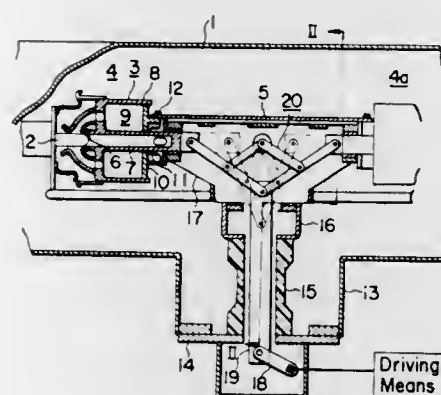
Tuneo Kishi, and Seizo Nakano, both of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Filed Aug. 17, 1973, Ser. No. 389,266

Int. Cl. H01h 33/88

U.S. Cl. 200-148 A

6 Claims



1. A circuit breaker of a grounded tank type comprising:
 - a. a grounded tank containing an arc-extinguishing gas;
 - b. first and second breaking sections disposed in the grounded tank, each of said breaking sections including a stationary contact, a movable contact opposed to the stationary contact, a movable cylinder integral with the movable contact, and a fixed piston cooperating with the moveable cylinder to produce a pressurized arc-extinguishing gas;
 - c. a link device interposed between said first and second breaking sections for transmitting driving force from a driving source to the respective movable cylinders of said first and second breaking sections;
 - d. supporting means which supports said first and second breaking sections in the grounded tank through the respective fixed piston; and
 - e. conductive means electrically connecting said first and second breaking sections in series and substantially enclosing said link device for shielding said link device from the grounded tank.

3,899,651

METHOD AND APPARATUS FOR CONTROL OF WELD TEMPERATURE IN A HIGH FREQUENCY ELECTRIC RESISTANCE WELDED PIPE MILL

Howard J. Bowman, Eustis, Fla., and Donald G. Schindler, Pittsburgh, Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

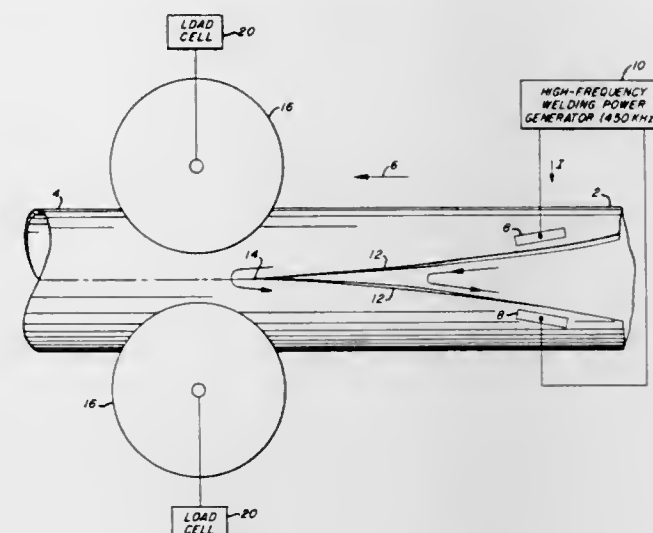
Filed Oct. 11, 1973, Ser. No. 405,369

Int. Cl. B23k 31/06

U.S. Cl. 219-67

15 Claims

1. A method of controlling the welding temperature in a high frequency electric resistance welded pipe mill comprising the steps of
 - selecting a control factor, for which an actual value will be compared to a desired value for control purposes, from the equation



$$\Delta T = \frac{K_R I^2}{WS}$$

where ΔT is the temperature rise of the material being welded, K_R is a constant, I is the weld power current, W is the wall thickness of the pipe and S is the mill speed, continuously measuring mill control parameters I and S , continuously providing a signal representative of wall thickness,

continuously calculating one value of said factor using said equation with the measured value of I , the wall thickness signal and a value for the remaining factor in the equation,

continuously providing a difference signal by comparing said one value of said control factor with the other value of said factor

selecting one of said mill control parameters, and continuously varying said mill control parameter in accordance with said difference signal.

3,899,652

EXTENDED RANGE INDUCTOR ALTERNATOR ARC WELDER

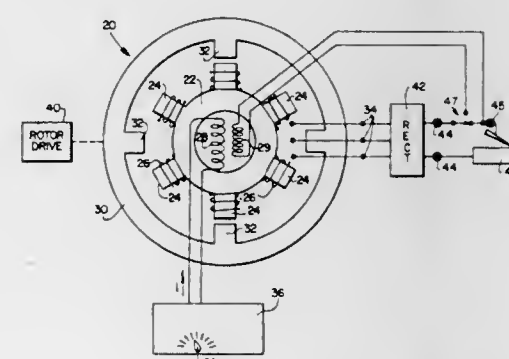
Stanley M. Terry, deceased, late of Dayton, Maine, and by the Third National Bank of Hampden County, executor, Springfield, Mass., assignors to Maremont Corporation, Saco, Maine

Filed Dec. 26, 1973, Ser. No. 427,818

Int. Cl. H02k 17/42

U.S. Cl. 219-133

5 Claims



1. An arc welder comprising an inductor alternator having a stator core with a plurality of poles, a first field winding fixed relative to said stator core and having when excited a magnetic field passing through said stator poles, a plurality of generating windings fixed relative to said stator core and received on said poles thereof, and a windingless rotor rotatable relative to said stator core to cyclically vary the reluctance of flux paths through said stator poles to vary the flux

passing through said poles and to thereby induce alternating voltages in said generating windings, a variable electrical supply connected to excite said first field winding, two output terminals, means connected between said generating windings and said two output terminals to supply said two output terminals with electrical power derived from the voltages induced in said generating windings, a welding electrode, means for connecting one of said two output terminals to said electrode, means for connecting the other of said two output terminals to a workpiece, a second field winding included in said inductor alternator and fixed relative to said stator core and having when excited a magnetic field which also passes through said stator poles, and means for selectively connecting and disconnecting said second field winding to and from exciting series relationship with the output current from said two output terminals.

3,899,653

ELECTRICAL RESISTANCE WELD METHOD AND APPARATUS

Gaetano Emanuele Spinnato, Genova, Italy, assignor to Oral-technic Anstalt, Liechtenstein, Italy

Division of Ser. No. 342,524, March 19, 1973, abandoned.

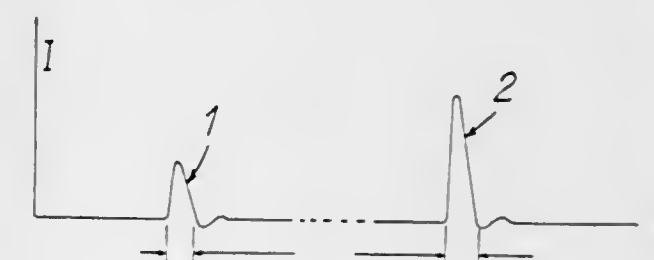
This application Apr. 24, 1974, Ser. No. 463,766

Claims priority, application Italy, Mar. 22, 1972, 12549/72; Mar. 22, 1972, 12550/72

Int. Cl.² B23K 11/24, 9/28

U.S. Cl. 219-113

6 Claims



1. An apparatus for welding together metallic parts comprising:

- a. first and second variable transformers,
- b. a rectifier,
- c. a condenser,
- d. a pulse transformer,
- e. first switch means for cyclically and alternately connecting said first and second variable transformers to said rectifier;
- f. second switch means for selectively connecting said rectifier to said condenser;
- g. third switch means for selectively connecting said condenser to said pulse transformer;
- h. programmer means, which controls said switch means at each welding cycle, for, in sequence, during each cycle, connecting said first variable transformer to said rectifier, and said rectifier to said condenser, and disconnecting said condenser from said pulse transformer for a time sufficient to charge said condenser to a first weld charge; disconnecting said rectifier from said condenser and connecting said condenser to the said pulse transformer for a time sufficient to discharge said condenser and connecting said second variable transformer to said rectifier, connecting said rectifier to said condenser, and disconnecting said condenser from said pulse transformer for a time sufficient to charge said condenser to a second weld charge and then disconnecting said rectifier from said condenser and connecting said condenser to said pulse transformer, for a time sufficient to discharge said condenser;
- i. and a welding tool connected to the output of said pulse transformer.

3,899,654

SOLDERING IRON TIP ASSEMBLY AND CORDLESS SOLDERING IRON EMBODYING SAME

William M. Walton, Sterling, Ill., assignor to Wahl Clipper Corporation, Sterling, Ill.

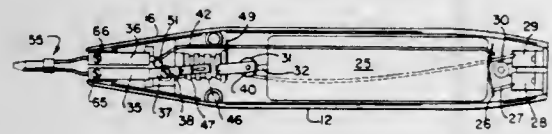
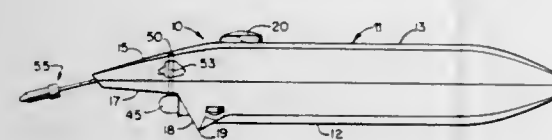
Continuation of Ser. No. 214,303, Dec. 30, 1971, abandoned.

This application Sept. 26, 1973, Ser. No. 401,060

Int. Cl. H05b 3/02; B23k 3/04

U.S. Cl. 219-229

8 Claims



1. An electrically and thermally highly efficient cordless soldering iron, comprising:
 - a housing having a forward end;
 - a rechargeable battery means of limited capacity in said housing;
 - a pair of terminals electrically insulated from each other mounted at the forward end of said housing and connected to said battery means;
 - a switch in said housing in circuit with said battery means and said terminals;
 - a hollow heatable tip member adapted to be supported in spaced relation with the forward end of said housing;
 - a heating element of resistance wire within said tip member in effective heating relation therewith and electrically insulated therefrom, said element having predetermined power consumption in operation; and
 - a pair of electrical conductors of deformable solid wire connected between said heating element and said terminals for energizing said element and for solely supporting said element and said tip member in spaced relation to the forward end of said housing, the combined operating resistance of said conductors being less than 10% of the operating resistance of said element and the heat conductance of said conductors being less than 1/2 that of copper conductors of the same cross sectional area;
 - said predetermined power consumption of said element in operation (watts) and the transverse cross sectional area of said electrical conductors (square inches) being such that the quotient thereof is more than 4000 watts per square inch;
 - said rechargeable battery means having current and voltage ratings sufficient to satisfy said power consumption requirement;
 - whereby said deformable solid electrical conductors provide requisite support and electrical conductivity with a sufficiently small cross-sectional area to prevent significant heat transfer to said terminals and said housing and to prevent significant heat loss by radiation and conduction from said electrical conductors, rendering said soldering iron electrically and thermally highly efficient.

OVEN, HEATING ELEMENT AND SOCKET ASSEMBLY

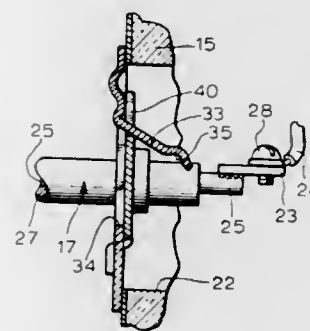
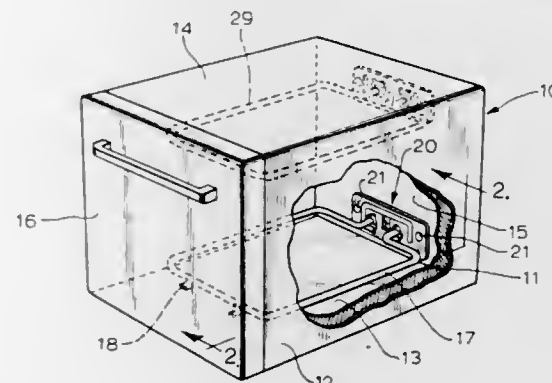
Charles Arthur Skinner, Laurel, Md., assignor to Electro-Therm, Inc., Laurel, Md.

Division of Ser. No. 431,848, Jan. 9, 1974. This application Nov. 1, 1974, Ser. No. 519,905

Int. Cl. F27d 11/02

U.S. Cl. 219-404

1 Claim



1. In an oven, the combination of:
 - an oven housing having a side wall and defining an aperture in said side wall;
 - a rod-type heating element in said oven housing; and
 - a socket assembly over said aperture of said housing for suspending said rod-type heating element, said socket assembly comprising:
 - a base plate dimensioned so as to be able to overlie the aperture of the oven and including means adapting the base plate to be affixed overlying that aperture;
 - a hinge plate having means for receiving in locking engagement a portion of the rod-type heating element; and
 - said hinge and base plates defining means for holding said plates together and for allowing said hinge plate and its captivated heating element to be pivoted from a normal operating position wherein said plates are parallel and adjacent to one another and said heating element is substantially perpendicular to said side wall, to an alternative position wherein said plates are pivoted apart to be on an angle with respect to each other, and said heating element is angularly disposed to said side wall;
 - said means for holding said plates together including ear-receiving means formed longitudinally on one of said plates and longitudinally extending ear formed on the other of said plates; and
 - said means for holding said plates together further including a tab formed unitarily with and depending from one of said plates for bearing against a cutout portion of the other of said plates to urge said ear into engagement with said ear-receiving means.

SELF-CLEANING OVEN WITH TEMPERATURE LIMITING PROTECTION SYSTEM FOR BAKE AND CLEAN

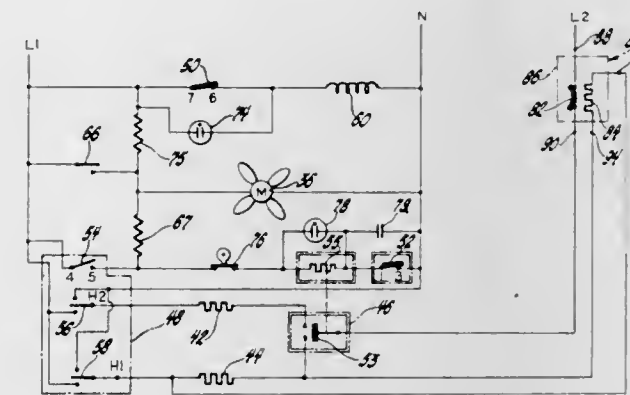
Roy R. Smith, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 13, 1974, Ser. No. 532,622

Int. Cl. F27D 11/02

U.S. Cl. 219-413

5 Claims



1. In an oven comprising an oven liner and an access door forming an oven cooking cavity, heating means for cooking food placed within the cavity as well as for pyrolytically removing food soil from the inner wall surfaces of the oven cavity, said heating means including a heating element and electrical power supply circuitry settable for energizing said heating element at high voltage when said circuitry is set for a BAKE mode of operation and for energizing said heating element at low voltage when said circuitry is set for a CLEAN mode of operation, oven thermostat means including oven temperature responsive switch means in said circuitry in power supply relationship with said heating means for controlling said heating element below first and second predetermined temperature limits, an oven cabinet surrounding the oven liner, and insulation between said oven liner and said oven cabinet, the invention comprising over-temperature protective means for selectively protecting against temperatures in said oven cavity above either of said first and second predetermined temperature limits, said protective means including an enclosure housing a thermostatic oven temperature limiter switch in heat transfer relation with said enclosure and a supplemental heater in heat transfer relation with said limiter switch, said supplemental heater connected in shunt with said heating element to provide more heat to said limiter switch during a BAKE mode of operation when said heating element is energized at high voltage than during a CLEAN mode of operation when said heating element is energized at low voltage, said enclosure mounted in heat transfer relation with said oven cabinet to sense indirectly temperature changes within said oven cavity, and said limiter switch in said circuitry in power supply relationship with said oven temperature responsive switch means thereby to interrupt power supply to said heating element during a BAKE mode of operation when oven temperature exceeds said first predetermined temperature limit and to interrupt power supply to said heating element during a CLEAN mode of operation when oven temperature exceeds said second predetermined temperature limit.

ELECTRIC HEATING DEVICE FOR INTERNALLY COOKING A MEAT PRODUCT

Jarl Johnson, 18 Crestview Dr., Somers, Conn. 06071

Filed June 20, 1973, Ser. No. 371,720

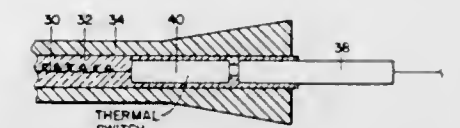
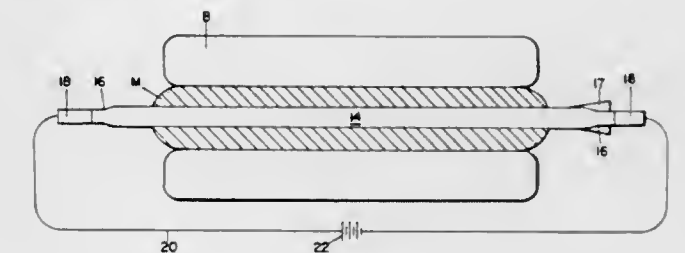
Int. Cl. H05b 3/48; A47j 37/00

U.S. Cl. 219-523

1 Claim

1. In a meat product cooking assembly connectible to an appropriate power source in such as a vehicle or boat and functioning as an impaling member for impaling a meat product during a cooking program,

the combination of:
 an elongated electric heating element,
 a sheathing of electrical insulating material encapsulating the heating element,
 an outer tubular and metallic heat conductive shell circumscribing the sheathing,
 a thermal switch located within the outer shell,
 a first terminal extending out from a first end of the outer shell with one end of the heating element being connected thereto,
 the other end of the heating element being connected to one side of the thermal switch,



- a second terminal extending out of the second end of the outer shell with the other side of the thermal switch being connected thereto,
- the thermal switch being encapsulated in the sheathing of electrical insulating material,
- one end of the outer shell being crimped to define a pair of diametrically-opposed flattened winglike appendages for facilitating manipulation of the assembly during operational use,
- electrical connections extending from the terminals for connecting the heating element and thermal switch to the power source.

3,899,658

SHEATHED HEATING ELEMENT INSTALLATION

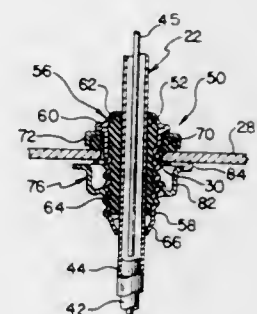
Johnny W. Yartz, Anchorage, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Sept. 6, 1973, Ser. No. 394,929

Int. Cl. H05B 3/06

U.S. Cl. 219-536

4 Claims



1. In a dishwasher comprising a door and a tub, having first and second apertures therethrough and, an exterior coated metallic section adjacent said apertures, providing together a wash chamber; the improvement being a resistive heating element in the chamber having opposite ends extending through the apertures, each end including a core, an insulator around the core, a metallic sheath around the insulator and terminals exterior of the tub; and means sealing the sheath to the inside of the tub and grounding the sheath to the metallic section, said sealing and grounding means comprising: a first resilient seal in surrounding sealing relationship with each of the ends of said sheath; a rigid metallic sleeve, in surrounding

sealing engagement with each of said first seals, each rigid sleeve extending through one of said apertures and having a first end including a radially outwardly projecting flange and a second threaded end having an element bearing against the sheath in electrical connection therewith, said ends being disposed adjacent the interior and the exterior, respectively, of the tub and said first resilient seals each underlying and extending from said first end to said second end of its respective rigid sleeve; a second seal member including a rigid cup-shaped washer abutting said flange of said first sleeve end; and, a resilient washer disposed between said cup shaped washer and the interior of the tub in sealing engagement therewith, said rigid cup-shaped washer partially enclosing and deforming said resilient washer; a metallic rotatable fastener threadably connected to each second sleeve end and bearing against the exterior of the tub and binding said flange against the seal member, the fastener comprising at least one pointed element projecting in bearing engagement with the metallic section for scratching the coating therefrom upon rotation of the fastener against the tub exterior and effecting grounding; the sealing and grounding means providing a ground path between the sheath and the metallic section through the sleeve element bearing against the sheath, the metallic sleeve and the rotatable fastener.

3,899,659

MAGNETIC CARD READER

Siyunzi Nakai, Moriguchi, and Masazumi Nakarai, Kyoto, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

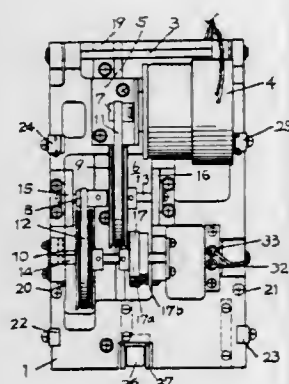
Filed Aug. 24, 1973, Ser. No. 391,468

Claims priority, application Japan, Aug. 25, 1972, 47-85497

Int. Cl.² G06K 7/08, 13/103; B65H 3/30; G11B 25/04

U.S. Cl. 235-61.11 D

5 Claims



1. A magnetic card reader for reading information from a card containing a magnetic record thereon comprising: magnetic head means for reading information from said card as said card traverses said head means; a lower frame carrying said head means; an upper frame carrying a drive roller means; and positioning means for placing said drive roller means in alignment with said magnetic head means and causing the direct engagement of said card between said drive roller means and said magnetic head means, said drive roller means including rollers disposed only on the opposite side of the card from said magnetic head means and in alignment with said head means when so positioned by said positioning means; and support means for said card on said lower frame consisting only of said magnetic head means and guide means for engaging the edges of said card; whereby the only element which contacts said magnetic record is said magnetic head means, thus minimizing wear of said magnetic record.

3,899,660 MECHANISM FOR MAINTAINING A COUNTER AT ITS RESET POSITION

Yukuo Karube, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

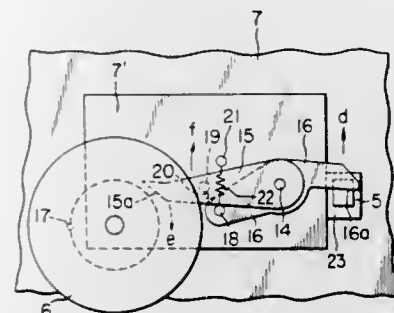
Filed Dec. 11, 1973, Ser. No. 423,773

Claims priority, application Japan, Dec. 25, 1972, 48-2396

Int. Cl.² G06C 15/42; G06M 1/28

U.S. Cl. 235-103

7 Claims



1. A mechanism for maintaining a counter at its reset position until the start of forward rotation of a rotatable member, said counter counting the rotation of the rotatable member and being provided with a resetting member for resetting the counter to its initial position, said mechanism comprising:

- a first projection member provided on said rotatable member to project in a nonparallel direction with respect to the plane of the rotation of the rotatable member;
- a first lever engageable with an engaging portion of said resetting member, said first lever being pivotally mounted on a basic body;
- a second lever pivotally mounted on the basic body, said second lever being adapted to be disposed across a locus of the movement of said first projection member when said resetting member is engaged with said first lever;
- a second projection member mounted on said first lever within the range of the movement of said second lever, said second projection being engageable with said second lever when the rotatable member rotates forwardly;
- a first urging member for urging said first and second levers to approach each other, said first urging member being disposed between said first and second levers; and
- a second urging member disposed between the basic body and said first lever, said second urging member, when said resetting member is engaged with said first lever, effecting the urging action thereof to maintain the engagement between said resetting member and said first lever, and, when said resetting member is not engaged with said first lever, urging said second projection member to displace said second lever out of the locus of the movement of said first projection.

3,899,661

METHOD AND APPARATUS FOR ALTITUDE CAPTURE CONTROL FOR AIRCRAFT GUIDANCE SYSTEMS

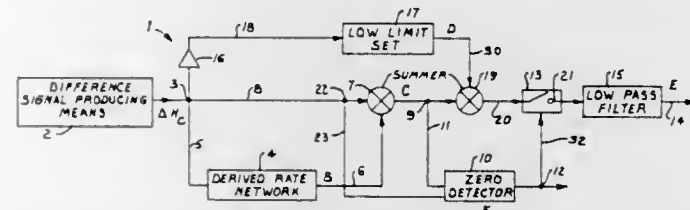
James J. Lehfeldt, Olathe, Kans., assignor to King Radio Corporation, Olathe, Kans.

Filed Aug. 27, 1973, Ser. No. 391,854

Int. Cl. G01c 21/00; B64c 13/18

U.S. Cl. 235-150.2

9 Claims



1. A system for computing the initiation of an altitude capture maneuver for an aircraft, said system comprising:

means for providing a first electrical signal representing the altitude differential between a known aircraft altitude and a desired aircraft altitude;

means for deriving a second electrical signal representing the rate of aircraft altitude change;

means for summing said first and said second electrical signals thereby producing a third signal;

means interconnected by said third signal for detecting a zero indication;

means for generating a fly through bias signal in response to said first electrical signal;

means for adding said fly through bias signal to said third signal thereby generating an aircraft maneuver signal; and

means responsive to said detecting means for switching said maneuver signal to an output line.

3,899,662

METHOD AND MEANS FOR REDUCING DATA TRANSMISSION RATE IN SYNTHETICALLY GENERATED MOTION DISPLAY SYSTEMS

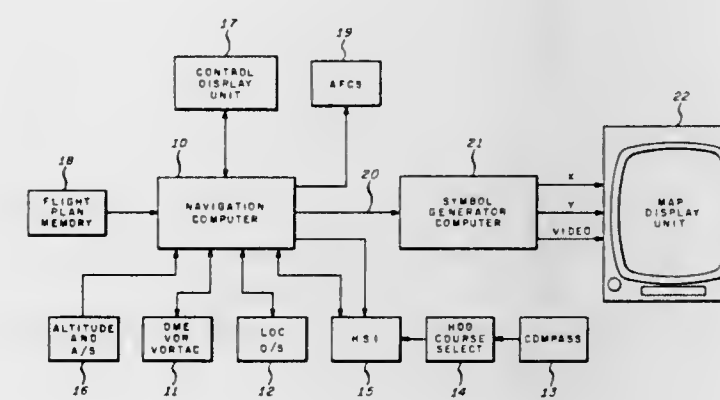
Richard C. Kreeger, Phoenix, and Matthew O. Kuitunen, Glendale, both of Ariz., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Nov. 30, 1973, Ser. No. 420,748

Int. Cl. G06f 15/20

U.S. Cl. 235-151

15 Claims



1. A digitally controlled synthetically generated motion display system in which successively displayed frames of information provide an illusion of motion comprising

first digital computer means for providing digital background words representative of information elements that comprise nonsuccessive frames and of the locations of said elements in said frames and for further providing digital incremental words representative of incremental motions of said information elements between successive frames,

second digital computer means responsive to said background and incremental words for combining said incremental words with said background words to provide incremented words defining said successive frames,

transmission means coupled said first digital computer means to said second digital computer means for transmitting said background and incremental words therebetween, and

display means coupled to said second digital computer means for displaying said successive frames in response to said incremented words, thereby displaying a succession of frames providing an illusion of motion.

3,899,663

MEASURING DIMENSIONS OF SECTIONS

Robert Alfred Pirlet, Embourg, Belgium, assignor to Centre de Recherches Metallurgiques-Centrum voor Research in de Metallurgie, Brussels, Belgium

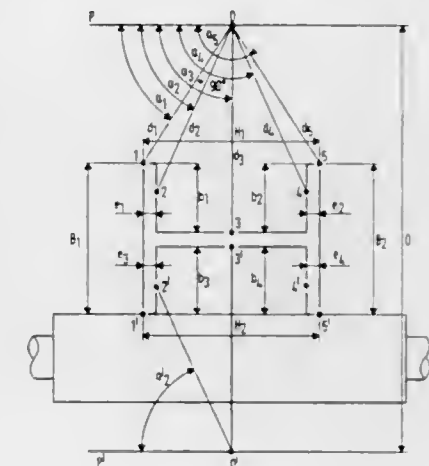
Filed June 18, 1973, Ser. No. 370,660

Claims priority, application Belgium, June 20, 1972, 785160

Int. Cl. G06f 15/20; G01b 11/00

U.S. Cl. 235-151.32

13 Claims



1. A method of measuring the dimensions of an elongate section, comprising: selecting two fixed observation points so that the elongate section lies between them; arranging two directional telemeters to measure the distance from the respective observation points to the section along a directional axis which is pivotable about a pivot axis passing through the corresponding observation point and extending along the elongate section, the observation points and directional axes lying in a single plane transverse to the elongate section the intersection of this plane with the elongate section having a periphery which is the sectional contour of the elongate section; scanning the sectional contour by means of the telemeters by pivoting the directional axes about the pivot axes; recording the distance and direction of a plurality of points on the sectional contour with respect to the corresponding observation point; and calculating the dimensions of the elongate section from the said distances and directions.

3,899,664

APPARATUS FOR DETERMINING THE COURSE OF STROKE, SPEED, AND ACCELERATION ON A CAM PROFILE

Mario Bencini, and Massimo Fantacchiotti, both of Turin, Italy, assignors to Consiglio Nazionale Delle Ricerche, Rome, Italy

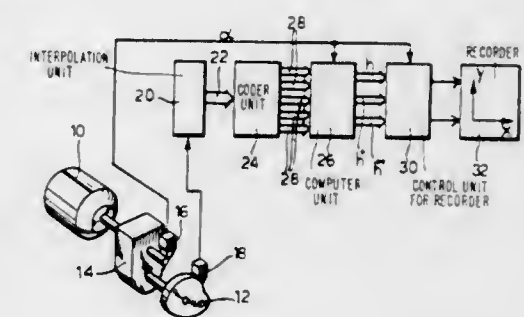
Filed Feb. 21, 1974, Ser. No. 444,423

Claims priority, application Italy, Feb. 23, 1973, 67471/73

Int. Cl. G06f 15/20; G06g 7/78

U.S. Cl. 235-151.32

4 Claims



3. An apparatus according to claim 2, wherein said coder means further comprises a circuit for the determination of the sign controlled by the figure of increment of the stroke, the complement of the figure of increment of the stroke, and a

to said data processor to utilize selected information transmitted by said fixed transmitters, and wherein said vehicle memory selects information from the received information relevant to stop signs.

3,899,672

SOLAR ENERGY COLLECTION

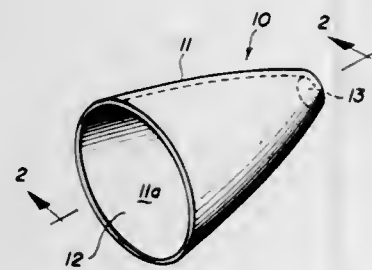
Riccardo Levi-Setti, Chicago, Ill., assignor to The University of Chicago, Chicago, Ill.

Filed Feb. 19, 1974, Ser. No. 443,615

Int. Cl. G02b 5/10

U.S. Cl. 350-293

10 Claims



1. Apparatus for use in collection and utilization of solar energy, said apparatus comprising:

at least one generally conical-shaped, non-imaging, primary solar energy concentrator element, said element including a substantially circular solar energy entrance aperture of a diameter d_1 , a substantially circular solar energy exit aperture spaced apart from said entrance aperture and having a diameter d_2 which is less than the diameter d_1 of said entrance aperture, and solar energy reflective wall means extending from said entrance aperture to said exit aperture for directing solar energy entering the element at said entrance aperture toward said exit aperture, the profile curve of said wall means revealing symmetrical substantially concave curved segments,

said solar energy concentrator element comprising means, including the dimensions of said apertures, the distance separating said apertures and the curvature of said wall means, which permits concentration of solar energy by a factor of $(d_1/d_2)^2$ with the concentration element in a fixed position and without tracking of apparent solar motion, for a time period, in hours, equal to,

$(24/\pi) \arctan (\sin \theta_{max} / \cos T)$

wherein: θ_{max} is the half field of view of the concentrator element, and T is equal to $\pi/2$ minus the angle, α , between the earth's axis of rotation and the earth-sun direction;

and a hollow solar energy trap means disposed at said exit aperture of said concentrator element.

3,899,673

DATA PROCESSING SYSTEM EMPLOYING QUENCH SIMULATION FOR ENABLING ACCURATE COMPUTATION OF SAMPLE ACTIVITY LEVELS IN LIQUID SCINTILLATION SPECTROMETRY

Lyle E. Packard, Hinsdale, Ohio, assignor to Packard Instrument Company Inc., Downers Grove, Ill.

Continuation of Ser. No. 256,546, May 24, 1972, abandoned, which is a division of Ser. No. 630,892, April 14, 1967, Pat. No. 3,688,120. This application June 21, 1974, Ser. No. 481,868

Int. Cl. G01t 7/02

U.S. Cl. 250-328

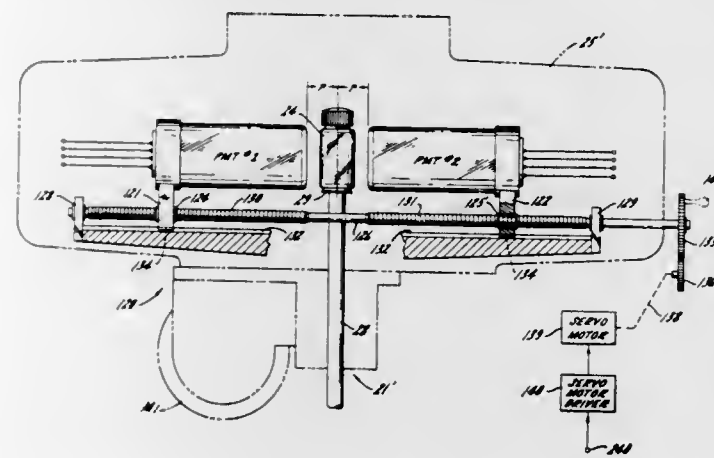
23 Claims

1. A method of measuring the radioactivity of a sample containing at least one radioactive isotope disposed in a liquid scintillation medium comprising the steps of

a. determining the value of a selected quench correlation parameter for a standard material,

b. measuring said selected quench correlation parameter for a quenched sample,

c. terminating the measuring of the selected quench correlation parameter for said sample and generating an output signal representing the difference between the value of the quench correlation parameter determined for the standard material and the value of the quench correlation parameter measured for said sample,



d. generating a control signal as a function of said output signal and representing an adjustment required of an operating parameter to make the value of the quench correlation parameter measured for said sample substantially equal to the value of the quench correlation parameter determined for the standard material,

e. adjusting said operating parameter in response to said control signal, and

f. measuring the activity level of said sample after said adjustment of said operating parameter.

3,899,674

CRYOGENIC RADIATORS FOR RADIOMETERS, AND MORE PARTICULARLY FOR SATELLITE-SUPPORTED RADIOMETERS

Lionel Decramer, Lasbordes-Balma, and Philippe Mauroy, Saint-Orens, both of France, assignors to Centre National d'Etudes Spatiales, Paris, France

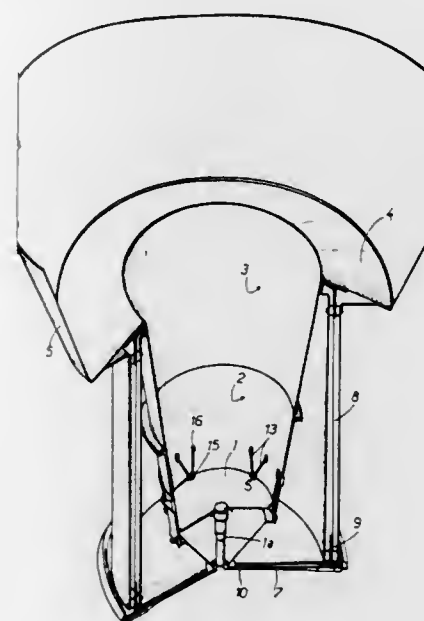
Filed Mar. 21, 1974, Ser. No. 453,339

Claims priority, application France, July 13, 1973, 73.25754

Int. Cl. G01J 1/00

U.S. Cl. 250-352

15 Claims



1. A structure substantially of revolution about an axis, including upper and lower outwardly open frusto-conical

coaxial screens functioning as radiant stages, said screens being thermally insulated toward the exterior, having high reflecting capacity on their interior faces with respect to infrared radiation and arranged to reflect radiation from the sun and other bodies arriving at incidence angles in excess of 65° with respect to said axis, a cryogenic radiator which behaves substantially as a black body with respect to infrared radiation and as a reflector with respect to solar radiation, said radiator including a radiometer platform fitted on board a satellite in space at a cryogenic temperature of approximately 80°K and means for supporting said radiator within said screens, the upper one of said screens being wider than and positioned above the other screen over virtually its entire height in the direction of divergence of the screens, the mutually facing surfaces thereof corresponding to only a small fraction of said height, the upper screen functioning primarily as a sunshade for said radiation with respect to direct solar radiation and reflecting back into space the greater part of the other external fluxes, the lower screen facilitating radiation from the radiator into space and protecting said radiator against infrared radiation from said upper screen and against possible solar radiation diffused thereby.

3,899,675

WHOLE BODY IMAGING

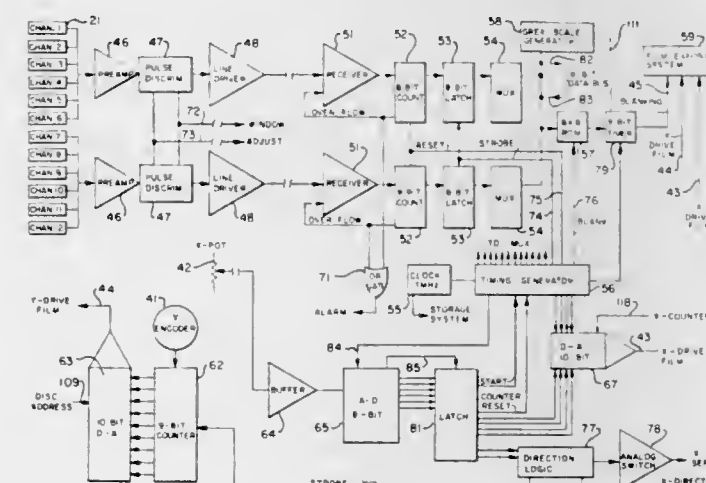
Roger F. Floyd, Hudson, N.H., assignor to Cleon Corporation, Needham, Mass.

Filed Mar. 4, 1974, Ser. No. 447,989

Int. Cl. G01t 1/20

U.S. Cl. 250-369

4 Claims



1. In a radiant energy imaging apparatus having patient support means for supporting a patient with the length of the patient aligned along a longitudinal direction, a plurality of spaced radiant energy detecting means aligned along a curve in a direction generally transverse to said longitudinal direction for providing respective signals representative of radiant energy emanating from correspondingly spaced points on a patient when on said patient support means, means for moving said detecting means back and forth along said curve to scan substantially the entire projection of said curve upon said patient support means, and means for advancing said detecting means along said longitudinal direction at a speed less than that of the speed of said detecting means along said curve to scan the entire patient, the improvement comprising,

means responsive to the position of said detecting means for providing digital position signals representative of a rectilinear array of points embracing a patient when on said patient support means,

a cathode ray tube, and means responsive to the signals provided by said detecting means and said digital position signals for illuminating a corresponding rectilinear sequence of spots on said cathode ray tube representative of said array of points with the energy intensity of each illuminated spot corresponding to the radiant energy then being received by a detector from a corresponding one of said array of points.

3,899,676 APPARATUS FOR POWER AND BREEDING DISTRIBUTION MEASUREMENTS IN BREEDER REACTORS

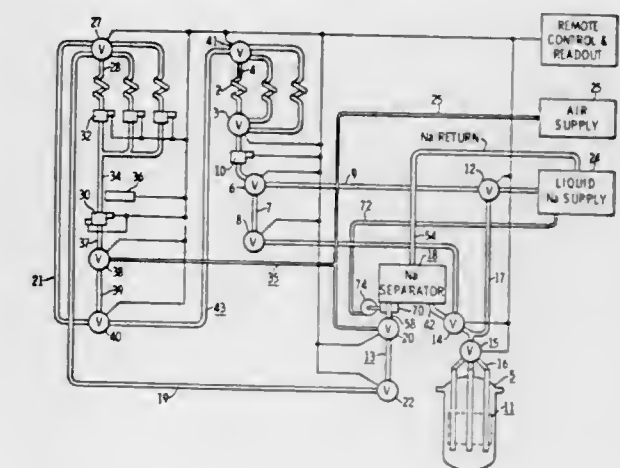
Norman P. Goldstein, and Kuan H. Sun, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 88,605, Nov. 12, 1970, Pat. No. T901,026. This application Feb. 5, 1973, Ser. No. 329,915

Int. Cl. G01t 3/00

U.S. Cl. 250-390

14 Claims



1. Apparatus for measuring the breeding distribution within a liquid metal cooled fast breeder power reactor having a fuel inventory including fertile material, said apparatus comprising a plurality of detectors formed in part from neutron flux sensitive fertile material, said flux sensitive material having substantially the same energy dependence of its neutron interaction probability as the fertile material in said fuel inventory, means for inserting and distributing said detectors within said reactor in a predetermined arrangement so as to be activated by said reactor, means for withdrawing said detectors from said reactor, wherein said inserting means and withdrawing means employ a liquid transfer medium compatible with the reactor coolant to drive said detectors and means for measuring in conformance with said arrangement the radiation emitted from the end products produced by the activation of sensitive fertile material.

3,899,677

PLASTIC FOR INDICATING A RADIATION DOSE

Yutaka Hori, Nobuharu Yoshikawa, and Saburo Ohmori, all of Osaka, Japan, assignors to Nitto Electric Industrial Co., Ltd., Ibaraki, Japan

Continuation of Ser. No. 260,242, June 6, 1972, abandoned, which is a continuation of Ser. No. 840,478, July 9, 1969.

Claims priority, application Japan, July 9, 1968, 43-48308; July 9, 1968, 43-48309

Int. Cl. G01t 1/12

U.S. Cl. 250-474

17 Claims

1. A film comprising a stable plastic composition coated on one side of a carrier and an adhesive layer coated on at least a portion of the other side of said carrier, said stable plastic composition indicating a radiation dose by a distinct change or loss of color when irradiated with ionizing radiation, said composition consisting essentially of:

a. a moldable chlorine-containing polymer having a chlorine content of from 30 to 80 percent by weight based on the weight of the polymer, said polymer releasing hydrogen chloride when irradiated with ionizing radiation;

b. from 0.1 to 5 parts by weight, based on 100 parts by weight of said polymer, of aniline blue as an acid-sensitive coloring agent, and, at least one other acid-sensitive coloring agent which discolors or loses color, upon irradiation with ionizing radiation, by the action of the hydrogen chloride released from said polymer; and

c. from 5 to 80 parts by weight, based on 100 parts by weight of said polymer, of a plasticizer which does not

react with or inhibit the function of the hydrogen chloride released by said polymer upon irradiation with ionizing radiation and which has good color stability after irradiation with ionizing radiation, said plasticizer being selected from the group consisting of phosphoric acid esters, polyesters, chlorinated paraffins, and trimellitic esters of aliphatic alcohols.

3,899,678

RADIATION SENSITIVE MARKING AND PROCESS UTILIZING SAME

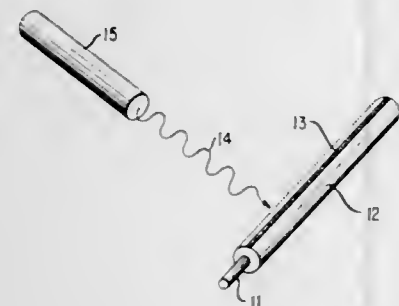
Edwin Arthur Chandross, Murray Hill; Coralie Anne Pryde, Morristown, and Warren Allen Salmon, Summit, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 20, 1974, Ser. No. 452,850

Int. Cl.² G01N 21/38

U.S. Cl. 250—484

13 Claims



1. Article of manufacture comprising a body of a material whose processing comprises exposure to electron radiation characterized in that at least a portion of said article's surface includes a radiation indicator comprising, prior to electron irradiation, a compound which is a polyarylated bicyclo-[2,2,1]-heptene-7-one which, when irradiated with electrons, at least in part transforms by decarbonylation into a cyclohexa-1,3-diene, whereby the said indicator is rendered fluorescent when exposed to ultraviolet light including a wavelength within the range of from 300 to 400 nanometers.

3,899,679

MANGANESE ACTIVATED PHOSPHATE GLASS FOR DOSIMETRY

Dieter Regulla, Munich, Germany, assignor to Gesellschaft für Strahlen-und Umweltforschung mbH, Munich, Germany

Filed Nov. 21, 1973, Ser. No. 417,754

Int. Cl. G01t 1/11

U.S. Cl. 250—484

4 Claims

1. Measuring element for detecting ionizing radiation and determining radiation doses in the range from milliroentgen to more than 10 megarentgens by radiation induced thermoluminescence, comprising a metaphosphate glass doped with manganese as an activator for increasing thermoluminescence yield.

3,899,680

PROTECTED ISOTOPE HEAT SOURCE

Raymond K. Burns, Lakewood; Lloyd I. Shure, Willowick, both of Ohio, and Elliott D. Katzen, Palo Alto, Calif., assignors to The United States of America as represented by the United States Aeronautics and Space Administration, Washington, D.C.

Filed May 26, 1971, Ser. No. 146,939

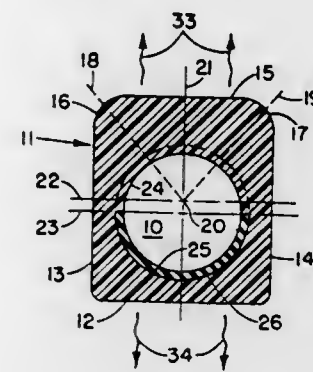
Int. Cl. G21h 5/00; G21f 5/02

U.S. Cl. 250—496

10 Claims

1. An isotope heat source for atmospheric reentry comprising: a container having a cavity therein and having a flat front face, flat side surfaces and a rear face which merges with said flat side surfaces along respective curved surfaces

which extend from one end of the container to the other; an isotope capsule disposed in said cavity of said container, said capsule being substantially smaller than said cavity, and being in direct contact over a substantial



portion of its surface with the cavity wall adjacent said rear face of said container; and a heat insulating layer disposed between said capsule and the well of said cavity adjacent said flat front face.

3,899,681

ELECTRON BEAM DEVICE

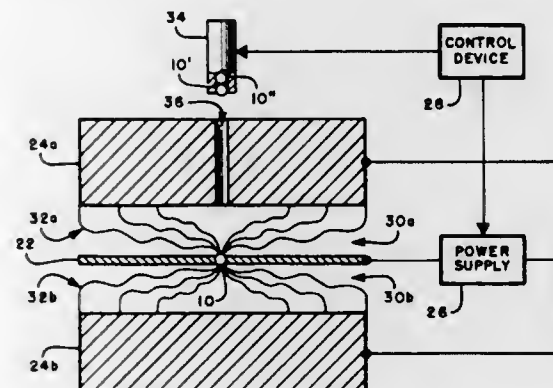
Everet H. Beckner, and Milton J. Clauser, both of Albuquerque, N. Mex., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Apr. 1, 1974, Ser. No. 457,673

Int. Cl. G21b 1/00

U.S. Cl. 250—502

8 Claims



1. An electron beam device comprising a target consisting essentially of a hollow shell of an electron absorbing material, said shell having a thickness to diameter ratio of from about 1 to 5 to about 1 to 50, a thickness of from about 0.1 to 1.0 mm sufficient to absorb in outer portions of said shell substantially all electrons impinging on the shell, and hydrogen isotope disposed in the interior thereof; and means adjacent and generally encircling said shell for producing a high energy pulse beam of electrons circumferentially encompassing and focused on and substantially encircling said target for accelerating inner portions of said shell inwardly against said hydrogen isotope.

3,899,682

CORONA REACTOR METHOD AND APPARATUS

Frank Eugene Lowther, Phelps, N.Y., assignor to Purification Sciences Inc., Geneva, N.Y.

Division of Ser. No. 830,248, June 4, 1969, Pat. No. 3,798,457.

This application July 16, 1973, Ser. No. 379,844

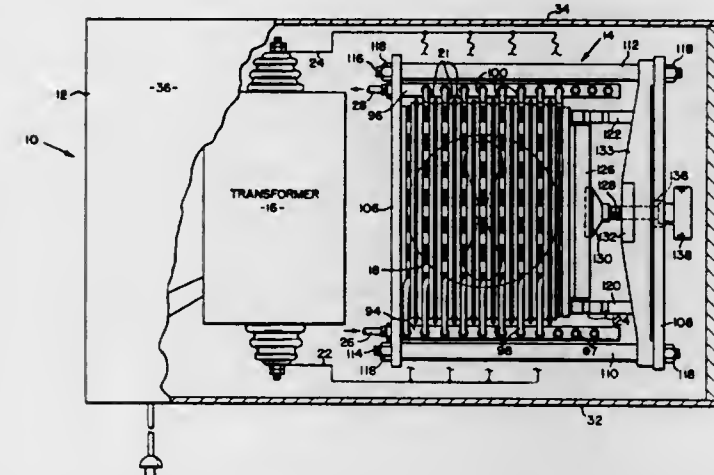
Int. Cl.² C01B 13/12

U.S. Cl. 250—532

10 Claims

1. An electrode for use as one of a pair of electrodes in a corona reactor cell of a corona reactor adapted to expose a fluid to a corona discharge produced in a corona discharge chamber between the interior surface of each of a pair of

corona reactor electrodes, said electrode comprising a flat, rectangular, planar, metal plate having a continuous peripheral edge that curves away from the plane of the plate in a direction away from the interior surface thereof, said curving edge including the entire peripheral edge of said plate, said



curving edge having a uniform width and height, and said electrode having a ceramic dielectric coating covering the entire area of said interior surface of said plate, and said plate being imperforate except for only a pair of spaced-apart passageways extending transversely completely through said plate and coating.

3,899,683

DIELECTRIC LIQUID-IMMERSED CORONA GENERATOR

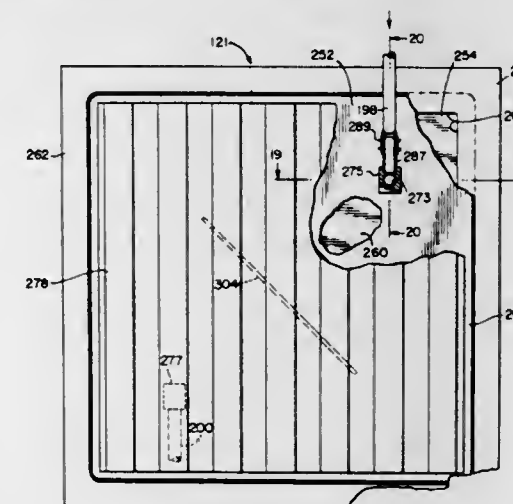
Frank E. Lowther, Severna Park, Md., assignor to Purification Sciences Inc., Geneva, N.Y.

Division of Ser. No. 281,451, Aug. 17, 1973, Pat. No. 3,836,786, which is a continuation-in-part of Ser. No. 141,148, May 7, 1971, which is a continuation-in-part of Ser. No. 709,485, Feb. 29, 1968, abandoned, which is a continuation-in-part of Ser. No. 612,751, Jan. 4, 1967, abandoned, said Ser. No. 281,451, is a continuation-in-part of Ser. No. 830,248, June 4, 1969, Pat. No. 3,798,457. This application Oct. 26, 1973, Ser. No. 409,802 The portion of the term of this patent subsequent to Sept. 17, 1991, has been disclaimed.

Int. Cl.² C01B 13/12

U.S. Cl. 250—532

16 Claims



1. A dielectric liquid-immersed corona generator comprising:

- a fluid-tight housing;
- a heat exchanger;
- means for pumping a dielectric liquid from said housing to said heat exchanger and back to said housing;
- a corona generator positioned within said housing and including a plurality of gas-tight corona generating cells, each cell comprising a pair of flat, solid, spaced-apart

electrodes forming a corona discharge chamber between inner facing surfaces of said electrodes, a layer of dielectric material coated on the inner surface of each of said electrodes, a gasket positioned between said pair of electrodes adjacent the peripheries thereof and defining, along with said inner facing surfaces of said pair of electrodes, said corona discharge chamber therewithin, said gasket also determining the thickness of said corona discharge chamber and a spacer element positioned between each adjacent pair of cells and in contact with the external surface of the adjacent electrodes of the adjacent cells, said spacer elements including gas passageways therethrough, and including means for holding said cells and said spacer elements together;

e. a gas inlet and a gas outlet conduit extending through said housing and into gas communication with the corona discharge chamber of each of said cells for feeding oxygen-containing gas into the ozone-containing gas from, said chambers;

f. means including a solid electrical conductor connected to said electrodes for applying a voltage across the electrodes of each of said cells, and

g. a disc centrally located in each of said discharge chambers and having a thickness substantially equal to that of said gasket for maintaining said electrodes flat and providing a more uniform air flow through said chamber.

16. A method for preventing electrical discharge between the adjacent peripheries of a pair of spaced-apart electrodes of an airtight corona generating cell, said electrodes including internal surfaces defining a corona generating chamber and external heat exchange surfaces, said method comprising immersing said cell in a dielectric liquid and surrounding said peripheries with said dielectric liquid, cooling said liquid whereby said liquid serves to simultaneously prevent said discharge and to cool said cell, providing a plurality of said cells in a housing, filling said housing with said dielectric liquid, and circulating said dielectric liquid from said housing to a cooler and back to said housing, said electrodes being flat and parallel and providing a stack of said cells spaced apart by spacer means contacting said external surfaces and providing liquid coolant passageways through said spacers, providing a gasket of fluorosilicon rubber material between each pair of electrodes of each cell adjacent the peripheries of said electrodes for setting the distance therebetween, and maintaining said electrodes flat by providing a disc centrally located between each pair of electrodes of each cell and having a thickness substantially equal to the thickness of each of said gaskets.

3,899,684

CONTROL SYSTEM FOR CORONA DISCHARGE OZONE GENERATING UNIT

Robert I. Tenney, Deerfield, Ill., assignor to Ozone Incorporated, Deerfield, Ill.

Filed June 3, 1974, Ser. No. 475,760

Int. Cl. C01b 13/12; F25b 9/02

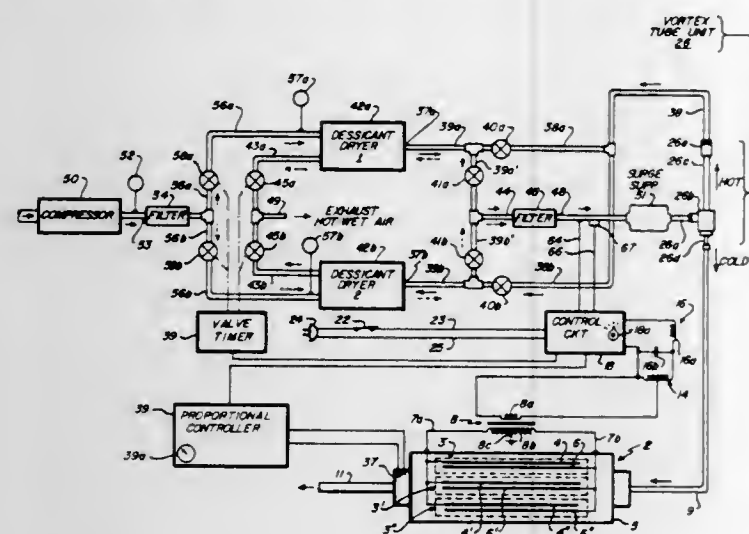
U.S. Cl. 250—535

11 Claims

1. In an ozone generating system including a corona discharge ozone generating unit for ozonizing an oxygen containing gas, the ozonized gas rapidly dissociating at temperatures above a given value, the ozone generating unit including at least one pair of electrodes to be connected to the terminals of a high voltage source and a heat damageable dielectric tube between said electrodes, a source of ozone producing high voltage to be operably connected to said electrodes and means for circulating the oxygen containing gas to be ozonized through said corona discharge generating unit, the improvement in means for controlling the operation of the ozone generating system, said means comprising temperature responsive means responsive to the temperature of the ozonized gas, and control means responsive to said temperature responsive means for interrupting the coupling of said ozone producing high voltage to said electrodes of the ozone generating unit

when the temperature of the ozonized gas reaches a level below the temperature at which said ozonized gas rapidly dissociates, the circulation of the gas to be ozonized through said unit continuing during said interruption of the high voltage.

6. The ozone generating system of claim 5 wherein there is provided a vortex tube unit for receiving gas to be ozonized at a first inlet and separating the high energy gas molecules from the low energy gas molecules therein and delivering the result-



tant relatively cool gas molecules to a cool gas outlet thereof and the relatively warm gas molecules to a warm gas outlet thereof, said cool gas outlet being connected to the inlet of the ozone generating unit, said vortex tube unit requiring gas of at least a given pressure to be operable and there is provided pressure responsive means responsive to the pressure of the gas to be ozonized being fed to the inlet of said vortex tube unit and means for preventing the coupling of high voltage to said electrodes of the ozone generating unit until the pressure reaches said given pressure.

3,899,685 OZONISERS

Peter Douglas Francis; Ronald Albert Redford, both of Chester; Philip Franklin Gale, and Maurice Raymond Hillis, both of Cheshire, all of England, assignors to The Electricity Council, London, England

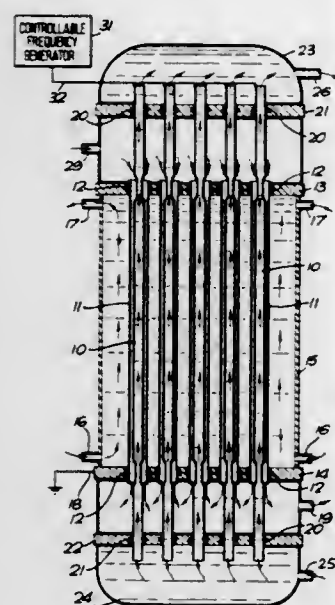
Filed Mar. 22, 1973, Ser. No. 343,761

Claims priority, application United Kingdom, Mar. 23, 1972, 13759/72

Int. Cl. C01B 13/12

U.S. Cl. 250—536

6 Claims



1. An ozoniser having at least one pair of electrodes with an oxygen-containing gas and dielectric material in the gap between the electrodes wherein means are provided for applying

between said electrodes a direct potential, switched to be alternately of opposite polarity, said means comprising a step-up transformer having primary and secondary windings with at least one primary winding arranged for energisation from an alternating power supply source, rectifying means connected to said secondary windings to produce a high voltage direct power supply, power supply lines connected to said rectifying means to be maintained at positive and negative direct voltages with respect to a datum potential, means connecting one electrode of said pair to a point at said datum potential, means connecting the other electrode of said pair both to the cathode of a first grid-controlled gas discharge device and the anode of the first gas discharge device and the cathode of the second gas discharge device being connected respectively to said positive and negative supply lines, and a controllable frequency pulse generator arranged to apply trigger pulses alternately at a controllable frequency to control grids of the two gas discharge devices whereby they fire alternately.

3,899,686 APPARATUS AND METHOD FOR CONTROLLING REGISTRATION

Zdenek Luska, Lausanne, Switzerland, assignor to J. Bobst & Fils S.A., Switzerland

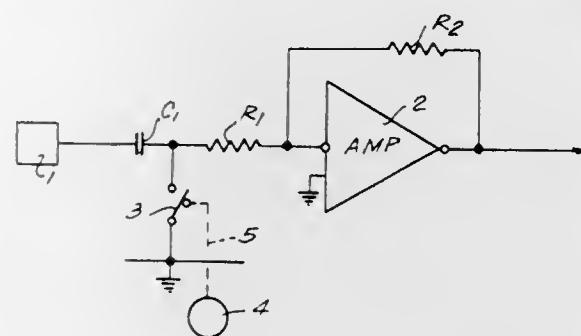
Filed Oct. 17, 1973, Ser. No. 407,187

Claims priority, application Switzerland, Oct. 27, 1972, 1571372

Int. Cl. G01j 5/00

U.S. Cl. 250—555

10 Claims



1. In a system for controlling registration in a multistage process comprising means for generating a pulse in response to detection of a data mark on a strip of material being processed by said multistage process, an amplifier for amplifying said pulse, a capacitor for interconnecting said pulse generator and said amplifier, and a selectively operable switch for normally shortcircuiting the input of said amplifier.

3,899,687 OPTICAL LABEL SCANNING

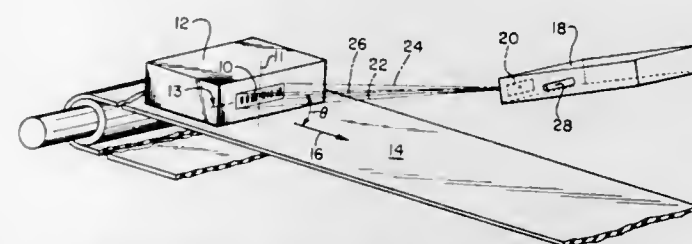
Paul W. Jones, Franklin, Mass., assignor to Identicon Corporation, Franklin, Mass.

Continuation-in-part of Ser. No. 270,203, July 10, 1972, Pat. No. 3,801,182. This application Aug. 9, 1973, Ser. No. 386,957

Int. Cl. G08c 9/06

U.S. Cl. 250—568

7 Claims



1. Label reading apparatus comprising, scanning means having a field of view for scanning along a first direction a label carrying a bar code and including detecting means responsive to radiant energy from said

label for providing a signal representative of the bar code when the label is within said field of view, means for supporting an item carrying said label and relatively displacing said scanning means and said item in a second direction generally perpendicular to both said first direction and the plane of said label, whereby said label enters said field of view, and means for interpreting said signal.

3,899,688 DEVICE FOR CHECKING THE CONTENT OF HYDROCARBONS IN A MIXTURE OF WATER AND HYDROCARBONS

Jacques A. Périères, 3, Residence Beaumanoir-Allee des Lilas, Aix-en-Provence, France

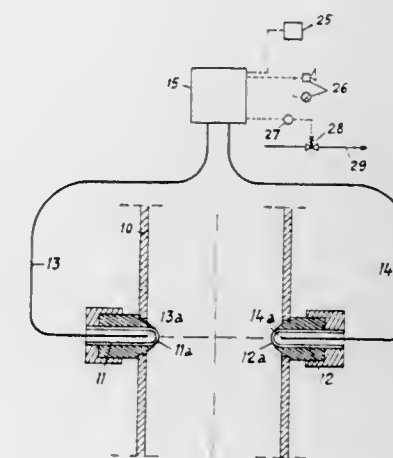
Filed Nov. 14, 1973, Ser. No. 415,824

Claims priority, application France, Nov. 24, 1972, 72.42946

Int. Cl. G01N 21/26

U.S. Cl. 250—576

3 Claims



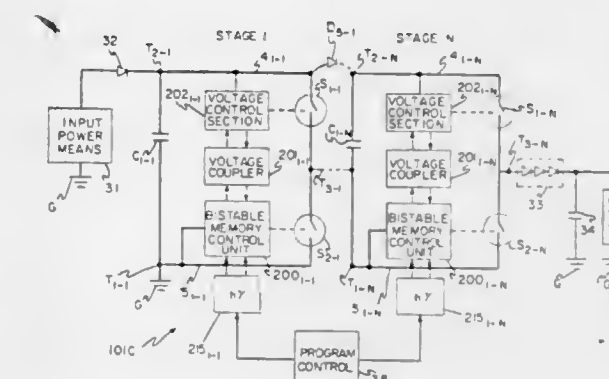
1. Apparatus for checking the content of hydrocarbons in a mixture of water and hydrocarbons which flows from a reservoir and comprising drain piping adapted to be connected to said reservoir, a volumetric pump having a predetermined pumping capacity, said pump being connected to said drain piping for taking samples of said mixture therefrom, a delivery pipe connected to an outlet side of said pump for conveying said samples to discharge, said delivery pipe having a starting point and a delivery point, spaced therefrom, both points being upstream of said discharge, and said delivery point being upstream of said starting point, a loop circuit connected between said starting and said delivery points and including as part thereof that portion of said delivery pipe between said starting and said delivery points, said loop circuit including (a) a pipe through which said samples circulate (b) an optical detector comprising a light emitter and receiver, each being disposed inside a separate tube, one end of each tube being terminated by a transparent cap which projects inside said sample circulating pipe from opposite sides thereof, (c) an emulsifier pump upstream of said detector and having a pumping capacity greater than said predetermined pumping capacity of said volumetric pump whereby samples of the mixture are recycled several times through said emulsion pump and past said optical detector before discharge.

3,899,689
ELECTRIC POWER SOURCE
Richard H. Baker, Bedford, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.
Continuation-in-part of Ser. No. 256,811, May 25, 1972, Pat. No. 3,748,492. This application May 15, 1973, Ser. No. 360,501 The portion of the term of this patent subsequent to July 24, 1990, has been disclaimed.

Int. Cl. H02m 7/00

U.S. Cl. 307—117

68 Claims



1. An electric system that comprises a plurality of stages connected in cascade, each stage including, in combination, supply voltage means connected along two alternate paths to an electric terminal of the stage, semiconductor switch means connected between the supply voltage means and the terminal and operable to determine which of the two paths is conductive thereby to determine which side of the supply voltage means is connected to the terminal, a light-actuated bistable memory and control circuit connected to control the switch means, said bistable memory and control circuit having a bistable portion, one state of the bistable portion of the circuit acting to render conductive one of said paths and the other state of the bistable portion of the circuit acting to render conductive the other of said paths as alternate conditions of system operation, a voltage control section that includes a plurality of field effect transistors and a voltage coupler connected between the bistable memory and control circuit and the voltage control section.

3,899,690 CONTROL DEVICE DETECTING SIGNAL DEVIATIONS FROM THRESHOLD VALUES

Jose Luis Gomez Llona, and Rodolfo Di Pietro Elizaran, both of Munguia (Vizcaya), Spain, assignors to Artech Instrumentacion Y Sistemas Electronicos, S.A., Munguia (Vizcaya), Spain

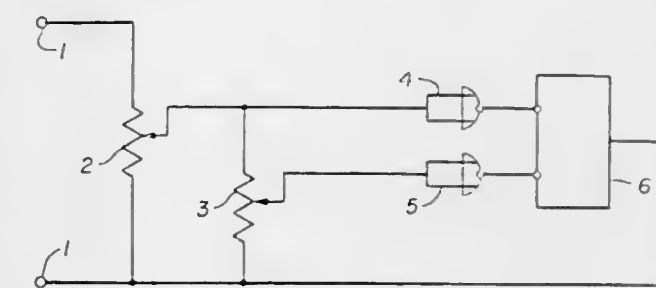
Filed May 8, 1974, Ser. No. 467,910

Claims priority, application Spain, May 10, 1973, 414.624

Int. Cl. H03k 19/34

U.S. Cl. 307—215

13 Claims



1. An electrical signal detection system for generating a control signal in response to variations of an input signal, comprising:
first means (2) coupled to said input signal and providing a first signal which is a fraction of said input signal;

second means (3) coupled to the output of said first means (2) and providing a second signal which is a fraction of said first signal of said first means (2);
 a first logic device (4) coupled to the output of said first means (2);
 a second logic device (5) coupled to the output of said second means (3); and
 a third logic device (6) having at least two inputs, two inputs of which are respectively coupled to the outputs of said first and second logic devices (4,5) for generating (i) a first output signal when the two input signals coupled thereto coincide in time and are at identical first logic levels, and holding or maintaining said first output signal until the inputs thereto coincide in time and are of a second logic level, and (ii) generating a second output signal, distinctive from said first output signal, when said two input signals coincide in time and are of said second logic level.

3,899,691

DRIVING CIRCUITS FOR ELECTRONIC WATCHES
 Tetsuro Hama, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

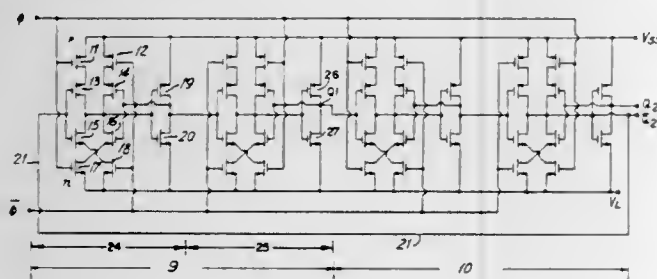
Filed Nov. 9, 1973, Ser. No. 414,572

Claims priority, application Japan, Mar. 31, 1971, 46-19075

Int. Cl.² H03K 23/08

U.S. Cl. 307-223 C

6 Claims



1. A driving circuit for an electronic watch comprising oscillator means for producing a high frequency time standard signal; and divider means coupled to said oscillator means to receive said time standard signal for dividing the frequency of said time standard signal to produce low frequency timing signals for time indication, said divider means including ring counter circuit means formed from MOS transistors, said ring counter circuit means being divide-by- $2n$ ring counter means, wherein n is an integer and equal to the number of stages of said ring counter means, each of said ring counter stages having a write terminal and an output terminal, the output terminal of each of said stages other than the last stage being connected to the write terminal of the next succeeding stage; first and second control terminals having first and second control signals respectively applied thereto; means operatively coupling said first and second control terminals to each of said stages for the control thereof; and means for applying the inverse of the signal at the output terminal of the last stage to the write terminal of the first stage.

3,899,692

CONSTANT CURRENT SOURCE

Robert L. Caswell, Placentia, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 10, 1973, Ser. No. 423,620

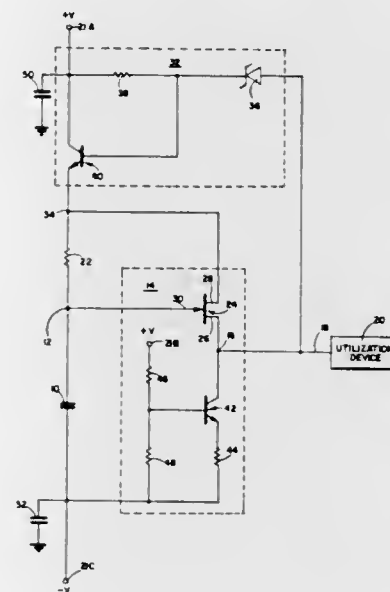
Int. Cl. H03K 4/12, 4/24

U.S. Cl. 307-228

6 Claims

1. In combination:
 high input impedance voltage follower means having an input terminal connected to a load and having an output terminal isolated from said input terminal, said voltage follower means comprising a field effect transistor having a source, drain, and gate electrodes, said gate electrode

connected to said input terminal and said source electrode connected to said output terminal;
 impedance means connected to said input terminal;
 a voltage source, said voltage source comprising a voltage regulator having a first terminal thereof connected to said voltage follower output terminal and having a second terminal thereof connected to a point common with said impedance means and said drain electrode of said field



effect transistor in order to supply thereto a voltage signal regulated with respect to the voltage at said output terminal; and
 means connecting said voltage source between said output terminal and said impedance means, whereby a substantially constant voltage is developed across said impedance means for establishing a substantially constant current therethrough to said load.

3,899,693

TEMPERATURE COMPENSATED VOLTAGE REFERENCE DEVICE

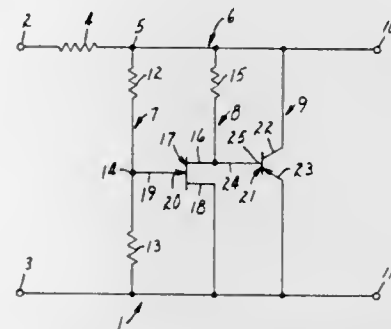
Eugene H. Gaudreault, Oakdale, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 14, 1974, Ser. No. 442,422

Int. Cl. H03K 1/14, 1/04

U.S. Cl. 307-297

6 Claims



1. A temperature compensated voltage reference device for monitoring at least a portion of an applied input voltage and providing an output control signal when the applied input voltage reaches a predetermined non-zero level, which reference device comprises:

- a pair of output terminals;
- a pair of input terminals to which said input voltage is applied;
- a source of bias voltage;
- a bipolar transistor having a base terminal, a collector terminal connected to one of said output terminals, and an emitter terminal connected to the other of said output

terminals, which transistor has a temperature dependent junction voltage across its base to emitter junction;
 a field effect transistor having a gate terminal, a drain terminal connected to said other of said output terminals, and a source terminal connected to the base terminal of said bipolar transistor, which transistor has a temperature dependent bias voltage across its gate to source junction; a biasing means connected across said input terminals and joined to the gate of said field effect transistor to bias the same near a pinched-off condition; and
 a resistive means connected at one end to said source of bias voltage and connected at an opposite end to the source terminal of said field effect transistor so that current flow through said bipolar transistor is increased when current flow through said field effect transistor decreases, and temperature variations in the bias voltage of said field effect transistor are substantially negated by temperature variations in the junction voltage of said bipolar transistor.

3,899,694

COMPENSATING REFERENCE VOLTAGE CIRCUIT FOR SEMICONDUCTOR APPARATUS

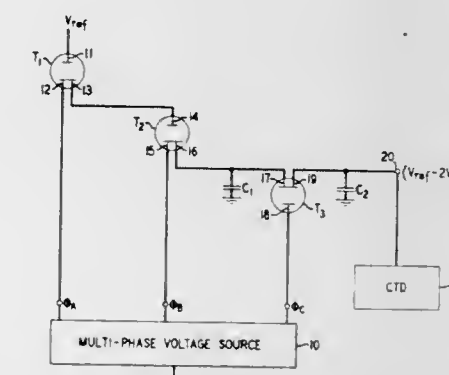
Michael Francis Tompsett, New Providence, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 8, 1974, Ser. No. 440,643

Int. Cl.² H03K 3/53, 19/08

U.S. Cl. 307-304

11 Claims



1. A circuit which comprises
 - a. a first field effect transistor having a low current carrying terminal controlled by and connected to a reference voltage terminal and having a first high current carrying terminal controlled by and connected to a first clock pulse terminal; and
 - b. a second field effect transistor having a low current carrying terminal controlled by and connected to a second high current carrying terminal of the first transistor and having a first high current carrying terminal controlled by and connected to a second clock pulse terminal, said first and second clock terminals for providing pulses sufficient that the first transistor periodically be ON and OFF while the second transistor be ON only when the first transistor is OFF and that the second transistor be OFF otherwise.

3,899,695

SEMICONDUCTOR PRESSURE TRANSDUCER EMPLOYING NOVEL TEMPERATURE COMPENSATION MEANS

James E. Solomon, Saratoga, and Arthur R. Zias, Palo Alto, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 400,355, Sept. 24, 1973, Pat. No.

3,836,796. This application Sept. 16, 1974, Ser. No.

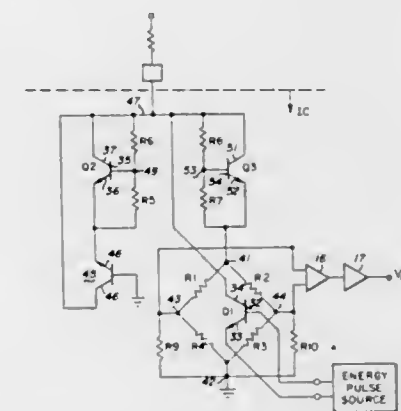
506,419. The portion of the term of this patent subsequent to

Sept. 17, 1991, has been disclaimed.

Int. Cl.² H01V 3/00; H03K 3/26

U.S. Cl. 307-310

6 Claims



1. A semiconductor pressure transducer apparatus comprising:

a semiconductor body comprising a substrate and a surface layer of a material of a first conductivity type, said body having a cavity region formed therein, said cavity region including a thin wall section formed by a section of said surface layer, said thin wall section being flexible responsive to pressure exerted across said thin wall section, an electrical bridge circuit formed in said thin wall section of said surface layer and comprising four resistor arms, two opposed nodes of said bridge forming a bridge input, the two other opposed nodes of said bridge forming a bridge output, each of said bridge resistors being formed by a diffusion of a dopant of opposite conductivity type to that of the surface layer into said thin semiconductor wall section, circuit means for applying a voltage to the input nodes of said bridge circuit, said circuit means including a common collector node formed by said layer of said semiconductor material of said first conductivity type, a voltage regulator circuit coupled across said common collector node and one input node of said bridge, and a temperature compensation circuit for said bridge coupled between another input node of said bridge and said common collector node comprising:
 a transistor formed in said surface layer having an emitter coupled to said other bridge input node, a collector coupled to said common collector node, and a base, and
 a pair of resistors coupled in series between said common collector node and the emitter of said transistor, the junction node between said two resistors being coupled to the base of said transistor.

3,899,696

ELECTRIC POWER GENERATION SYSTEM DIRECTLY FROM LASER POWER

James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of and Katsunori Shimada, Pasadena, Calif.

Filed Mar. 27, 1974, Ser. No. 455,165

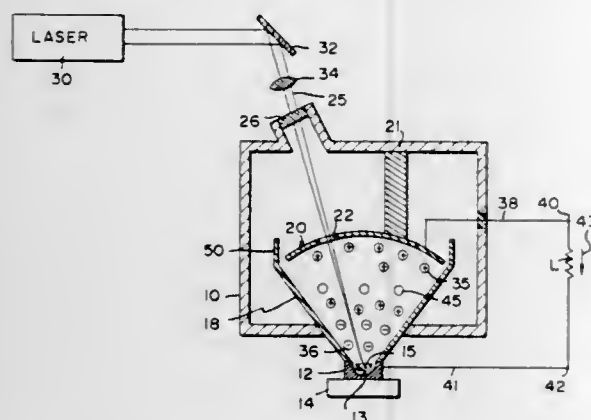
Int. Cl.² H01V 45/00

U.S. Cl. 310-4

13 Claims

1. A system comprising:

a source of liquid cesium;
 a laser for providing a laser beam;
 first means in the path of said laser beam for directing said beam to said liquid cesium, to vaporize some of said liquid cesium and to ionize at least some of said vaporized cesium into cesium ions and electrons by the collisions between the beam photons and the vaporized cesium atoms; and
 collector means electrically insulated from said liquid cesium source and spaced apart therefrom, said collector means having a work function which is different from the



work function of said liquid cesium whereby either said ions or said electrons, formed when said cesium vapor is ionized, are attracted to said collector means, thereby generating a potential difference between said liquid cesium and said collector means, said laser beam ionizing only part of the cesium vaporized by said laser beam, whereby some neutral cesium atoms are present between said liquid cesium and said collector means, the latter being at a temperature which is sufficiently higher than said liquid cesium source, to repel the neutral cesium atoms from said collector means toward said liquid cesium source.

3,899,697

BISTABLE POSITIONER COMPRISING A DIMENSIONALLY BISTABLE FERROELECTRIC CRYSTAL

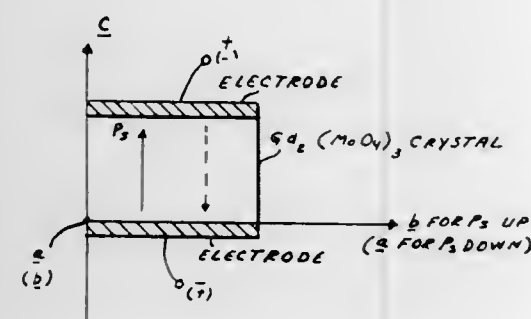
Stewart E. Cummins, 11810 Stafford, New Carlisle, Ohio 45344

Continuation of Ser. No. 143,598, May 14, 1971, abandoned, which is a continuation of Ser. No. 814,406, April 8, 1969, abandoned. This application June 19, 1972, Ser. No. 263,896

Int. Cl. H01v 7/00

U.S. Cl. 310-8

9 Claims



1. The method of bistably positioning a first element with respect to a second element comprising: attaching a crystal of a molybdate of a rare earth at one point on the crystal to the first element and at another point on the crystal to the second element, said crystal having orthorhombic crystallographic axes conventionally designated a , b , and c and said points of attachment lying on a line parallel to one of the a and b axes; and momentarily subjecting said crystal to an electric field that is parallel to the c axis, of polarity determined by which

of the two stable positions is occupied by the first element, and of magnitude exceeding the coercive field of the crystal.

3,899,698

PIEZOELECTRIC KEY

Peter Kleinschmidt, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

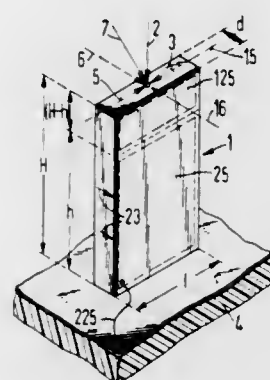
Filed Mar. 18, 1974, Ser. No. 452,060

Claims priority, application Germany, Mar. 22, 1973, 2314420

Int. Cl. H01L 41/10

U.S. Cl. 310-9.5

41 Claims



1. A key for controlling an amplifier of an electronic circuit in response to the application thereto of an intentionally applied and dimensioned compressive force, comprising:

a piezoelectric transducer including a body of piezoceramic material for receiving the compressive force, a pair of electrodes on said body for taking off electrical signals and for connection to the amplifier, said body having a substantially constant cross section perpendicular to the compressive force, said body polarized in a direction d in at least a sub-volume ($d \cdot l \cdot h$) thereof where d is the thickness dimension, l is the length dimension, and h is the height dimension, said electrodes mounted on opposite surfaces of said body spaced apart the thickness d ,

the thickness d perpendicular to the direction of the compressive force, the length l being perpendicular to the thickness d and to the direction of the compressive force and is greater than the thickness d , and the height h is perpendicular to the thickness d and the length l and is greater than $10d$.

3,899,699

BRUSHLESS LINEAR DC MOTOR ACTUATOR

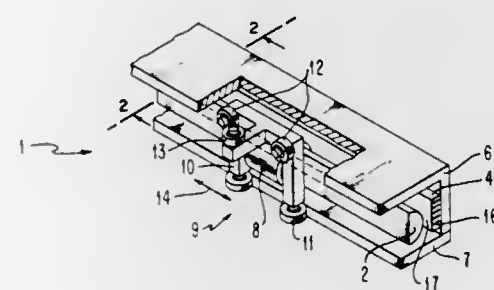
Brandt Mead Griffing, Delray Beach, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 316,645, Dec. 19, 1972. This application May 28, 1974, Ser. No. 474,123

Int. Cl. H02K 41/00

U.S. Cl. 310-13

3 Claims



1. A linear actuator comprising a magnetic flux field source having two elongated surfaces with the magnetic flux field being produced perpendicular to said two surfaces,

a first bar of ferromagnetic material parallel to but spaced from said magnetic source surfaces for providing a low magnetic reluctance path therebetween, a coil mounted around said first bar for permitting relative motion between said coil and said bar,

means movable with said coil and at least partially mounted within said coil for providing a low magnetic reluctance path between said first bar and one of said magnetic flux source surfaces,

said means for providing a low reluctance path from within said coil being attached to said coil and being comprised of a center portion and two arms in a generally U-shaped configuration with said center portion passing through said coil and with the outer ends of said arms terminating in proximity to said one of said magnetic flux source surfaces, and

means for applying electrical energy to said coil, whereby a moving force is applied to said coil in a direction determined by the polarity of the said electrical energy and the orientation of the magnetic field polarity from said source.

3,899,700

INDEXING MECHANISM FOR ELECTRIC WATCH

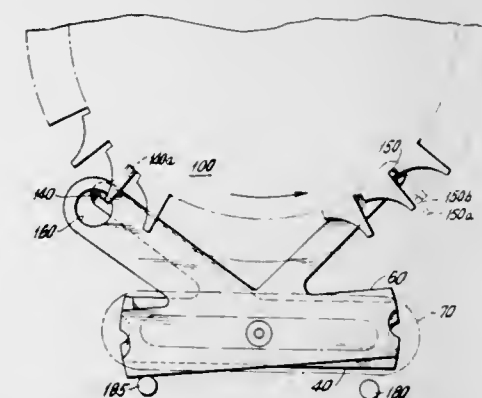
Paul Wuthrich, Watertown, Conn., assignor to Timex Corporation, Waterbury, Conn.

Filed Sept. 3, 1974, Ser. No. 503,142

Int. Cl. H02K 33/00

U.S. Cl. 310-37

5 Claims



1. An improved indexing mechanism for transforming oscillatory motion by electromagnetic motor means to unidirectional rotation of a toothed index wheel, wherein the improvement comprises:

first and second rotatable indexing members mounted on a common axis, each of said members having an index pin and adapted to be rotated together in the same direction by said motor means when it is active,

means providing limited relative rotation between said first and second members, and

means biasing said first and second members in opposite rotational directions such that their index pins are biased toward the index wheel when the motor means is inactive.

3,899,701

SMALL A.C. ELECTRIC MOTOR

Takashi Ogawa; Shunichi Sugiyama, and Kiyonori Kida, all of Kawasaki, Japan, assignors to Fuji Denki Seizo Kabushiki Kaisha, Japan

Filed Aug. 9, 1973, Ser. No. 387,036

Claims priority, application Japan, Sept. 29, 1972, 47-97821

Int. Cl. H02k 1/12

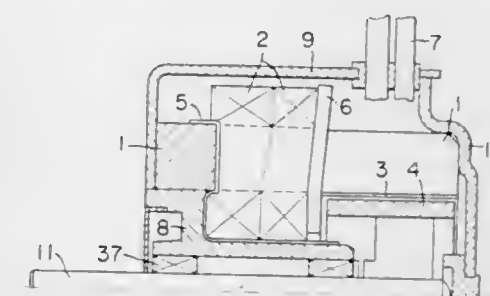
U.S. Cl. 310-40 MM

2 Claims

1. A small A.C. electric motor which comprises:

a stator core in the form of a unitary block made of sintered soft magnetic material, said stator core having a disk-shaped yoke used as a common magnetic path and a plurality of tooth-like poles having winding-receiving

slots formed therebetween, said poles extending from the periphery of said yoke in the axial direction thereof;
 b. a plurality of individual windings each placed surrounding the tooth-like poles within corresponding winding-receiving slots from the axial direction of the stator core;



c. a rotor adjacent to said axially-extending tooth-like poles of the stator core; and
 d. sleeve means made of soft magnetic material formed about the peripheral surfaces of said tooth-like poles between said poles and said rotor for alleviating higher spatial harmonics of magnetomotive force.

3,899,702

TORQUER ARMATURE

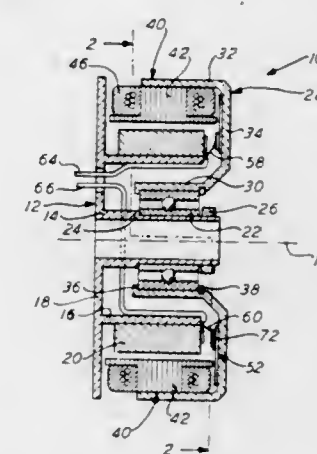
Samuel C. Hanna, Wyckoff, and Walter J. Krupick, Succasana, both of N.J., assignors to The Singer Company, Little Falls, N.J.

Filed Dec. 9, 1971, Ser. No. 206,465

Int. Cl. H02k 7/00

U.S. Cl. 310-67

4 Claims



1. A D.C. torquer comprising:

a permanent magnet ring having a longitudinal axis and having a plurality of magnetized poles peripherally spaced about said axis,

a pair of brushes mounted on said magnetic ring;

a one-piece armature ring rotatable relative to said magnet ring about said axis and having a plurality of coils mounted thereon defining a corresponding plurality of coil-wound poles peripherally spaced about said axis, said armature ring having a plurality of slots disposed between said poles, said armature poles being separated from said magnet poles by a substantially constant gap; and

a commutator ring mounted on said armature ring and disposed coaxially with said armature ring and said magnet ring to be contacted by said brushes, wherein:

said armature ring has a ring-shaped web portion and a ring-shaped flange portion, said armature web portion and said armature flange portion having selected axial widths, said armature flange portion axial width being substantially greater than said armature web portion axial width; said magnet ring has a selected axial width substantially greater than said armature web portion axial width and approximately equal to said armature flange portion axial width; said armature flange portion has axially opposite projecting portions extending beyond said web portion and having respective axial widths of substantially

equal size, said axial width of each flange projecting portion being not greater than 0.4 times the overall armature flange portion axial width; each said armature coil has a coil portion projecting axially beyond the face of said armature web portion; and each said armature flange projecting portion extends axially beyond said armature coil portion disposed adjacent thereto.

3,899,703

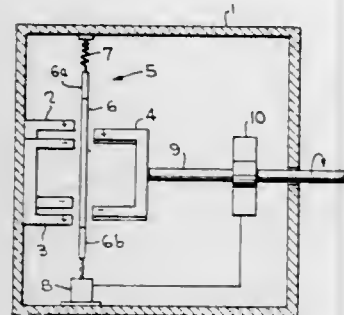
PERMANENT MAGNET MOTION CONVERSION MEANS
Robert W. Kinnison, 1611 E. Lincoln St., Fort Collins, Colo. 80521

Filed May 10, 1974, Ser. No. 468,978

Int. Cl.² H02K 49/10

U.S. Cl. 310-103

7 Claims



1. A magnetic motor having at least one magnetic drive unit, the drive unit comprising: first and second stationary magnets arranged with inverse directions of polarity; a movable magnet mounted for rotation within the magnetic fields of said first and second stationary magnets, said movable magnet being mounted about an axial member so as to enable its direction of polarity to be inverted as said movable magnet rotates; diverter means for alternately diverting the magnetic fields of said first and second stationary magnets for preventing such magnetic fields from influencing said movable magnet so as to enable only said stationary magnet having its direction of polarity in opposition with the polarity of said movable magnet to influence said movable magnet by creating a repulsion force between said magnets and thereby causing the movement of said movable magnet.

3,899,704

STARTER OR DAMPER WINDING ARRANGEMENT FOR A SYNCHRONOUS ELECTRICAL MACHINE

Werner Leistner, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

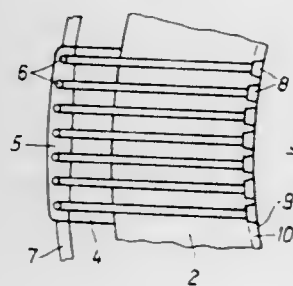
Filed Mar. 5, 1974, Ser. No. 448,299

Claims priority, application Germany, Mar. 7, 1973, 2311945

Int. Cl. H02k 3/11

U.S. Cl. 310-183

5 Claims



1. In an electrical synchronous machine such as of the vertical type or the like having a rotor equipped with laminated poles, an arrangement for a winding suitable as a starter winding, a damper winding or a starter-damper winding comprising: a first shorting ring, a plurality of insulated resistors, a body of ferromagnetic material forming part of the rotor and having slots for accommodating said insulated resistors therein, a plurality of insulated winding bars mounted on at

least one of the poles, one end of each of said bars being connected to said first shorting ring and the other end of each of said bars being connected to a corresponding one of said resistors at one end thereof, and a second shorting ring connected to the other end of each one of said resistors.

3,899,705

SHRINK-RING COMMUTATOR SEGMENT ASSEMBLY
Werner Heil, Birr, Switzerland, assignor to BBC Aktiengesellschaft Brown Boveri & Cie., Baden, Switzerland

Continuation of Ser. No. 253,132, May 15, 1972, abandoned.

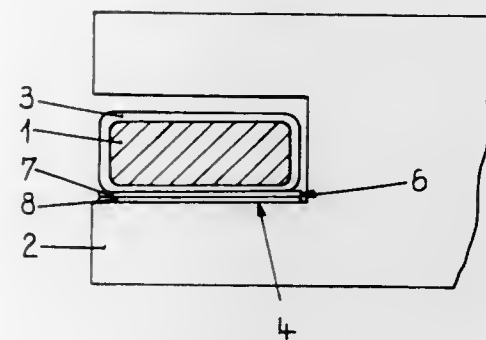
This application May 17, 1973, Ser. No. 361,224

Claims priority, application Switzerland, June 3, 1971, 8098/71

Int. Cl. H01r 39/16

U.S. Cl. 310-235

3 Claims



1. An electrical commutator component of a dynamoelectric machine comprising a cylindrical assembly of commutator segments, and shrink-ring surrounding and exerting a compressive force on said commutator segment assembly, the entire surface area of said shrink-ring including insulation material thereon having a maximum thickness not exceeding approximately 0.5 mm thereby to render it substantially incompressible and consisting of two layers, the inner layer in actual contact with the surface of the shrink-ring being mica-containing paper and the outer layer being polyimide.

3,899,706

PARTICLE MULTIPLIERS

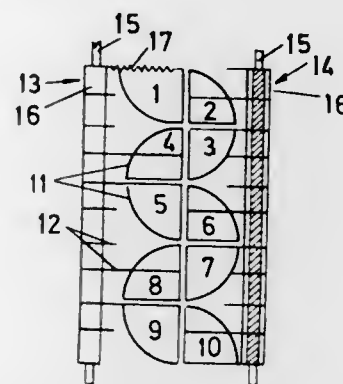
Geoffrey William Ball, Apple Patch, Bellingdon, Chesham Buckinghamshire, England

Filed Dec. 29, 1972, Ser. No. 319,702

Int. Cl. H01j 43/10

U.S. Cl. 313-105

8 Claims



1. In a particle multiplier having a plurality of dynodes generally arranged in a first direction, a plurality of serially connected resistive elements, and means for electrically connecting successive ones of the dynodes to the junctions of successive ones of the resistive elements, the improvement wherein (A) the resistive elements comprise a stack of spacers successively arranged in the first direction and formed from insulating material, the opposed ends of each spacer in the first direction being provided with a conductive layer, the side of each spacer between the conductively coated ends being provided with a resistive layer interconnecting the conductive layers on the ends to form a resistive body, and wherein (B)

the connecting means position each dynode between and in contact with the conductive layers on the opposed ends of a separate pair of adjacent spacers.

3,899,707

COLD CATHODE DISCHARGE TYPE DISPLAY DEVICE
Rentaro Sasaki; Akinori Watanabe, both of Takasaki; Mamoru Ikegame, Tachikawa, and Tatsuo Ogasawara, Tokyo, all of Japan, assignors to Oki Electric Industry Co., Ltd. and Okaya Electric Industry Co., Ltd., both of Tokyo, Japan

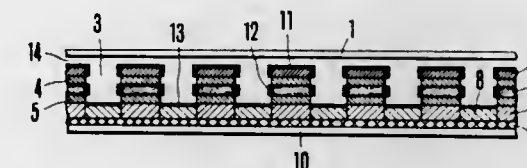
Filed Oct. 26, 1973, Ser. No. 409,851

Claims priority, application Japan, Nov. 1, 1972, 47-125411

Int. Cl. H01j 61/54

U.S. Cl. 313-197

2 Claims



1. In a cold cathode discharge type display device of the type wherein a cathode substrate, a starting electrode substrate and an anode substrate are laminated between upper and lower insulative substrates with said starting electrode substrate between said cathode and anode substrates, said cathode substrate, starting electrode substrate and anode substrate are provided with a plurality of sets of aligned perforations which are arranged in a plurality of matrixes, and said perforations act as discharge cells, the improvement which comprises spacing means for one of said insulative substrates for forming a deionization gap area over said matrixes contiguous with said discharge cells.

3,899,708

NOISE FREE INCANDESCENT LAMP

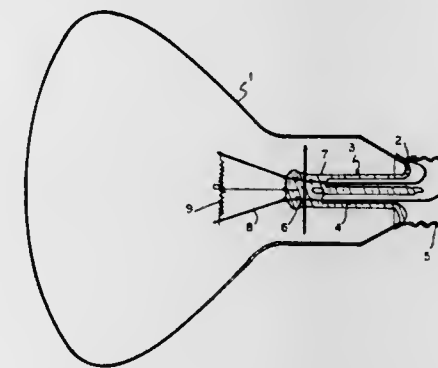
Alexander Tartakoff, Beverly; John J. Gutta, Salem, and Robert M. Griffin, South Hamilton, all of Mass., assignors to GTE Sylvania Incorporated, Danvers, Mass.

Filed Apr. 10, 1974, Ser. No. 459,528

Int. Cl. H01k

U.S. Cl. 313-315

4 Claims



1. In an incandescent lamp for use with a solid-state dimmer of the type that can induce noisy physical vibrations in lamp magnetic lead-in wires, said lamp including a gas filled glass envelope sealed at its lower end to the flare of a stem press glass mount and a metal base attached to the lower end of the envelope, the improvement comprising two outer lead-in wires connected to said base and extending to said stem press where they are connected to intermediate wires embedded in said stem press where they are connected to intermediate wires embedded in said stem press; two inner lead-in wires connected to said intermediate wires and extending inwardly in said envelope, said inner and outer lead-in wires being made of nonmagnetic metal; and a coiled tungsten filament connected to and supported by said inner lead-in wires.

3,899,709

CATHODE RAY TUBE ACOUSTIC TRANSDUCERS
Patrick Harold Brown, Hillingdon, and Raymond Frank Sivyer, Sunbury-on-Thames, both of England, assignors to EMI Limited, Hayes, England

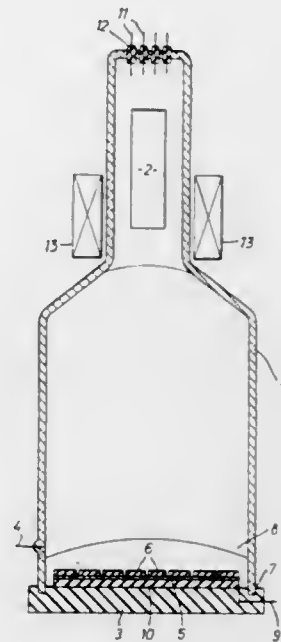
Filed June 13, 1974, Ser. No. 479,128

Claims priority, application United Kingdom, Sept. 4, 1973, 41512/73

Int. Cl.² H01J 31/495

U.S. Cl. 313-369

7 Claims



1. A cathode ray tube acoustic transducer including:
a. an evacuated envelope,
b. a faceplate of acoustically transmissive material sealed to said envelope,
c. a piezo-electric transducing layer supported by said faceplate within said envelope and sensitive to spatial variations of pressure applied thereto,
d. an electron gun mounted within said envelope for providing a beam of electrons directed toward said transducing layer,
e. means for scanning said beam,
f. signal electrode means for deriving electrical output signals from said transducing layer indicative of the spatial variations of pressure applied thereto and
g. an acoustically transmissive layer of resilient material separating and in contact with said faceplate and said transducing layer for maintaining the resonant frequency of said transducing layer.

3,899,710

COLOR CATHODE RAY TUBE WITH TEMPERATURE-RESPONSIVE COLOR PURITY MAGNETS

Hiromasa Machida, Tokyo, and Noboru Yamaguchi, Yokohama, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 2, 1973, Ser. No. 329,049

Claims priority, application Japan, Feb. 3, 1972, 47-14377

Int. Cl.² H01J 29/07, 29/51

U.S. Cl. 313-412

4 Claims

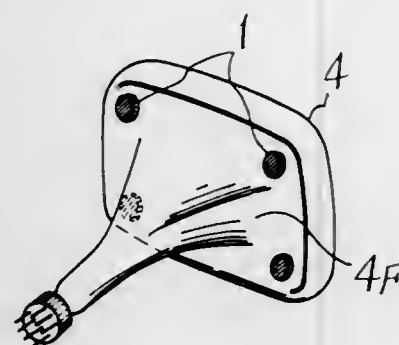
1. A color cathode ray tube arrangement comprising:

A. a color cathode ray tube comprising:

1. a color phosphor screen comprising areas arranged in a predetermined pattern to emit light of different colors when struck by electrons,
2. electron beam generating means to direct electron beams at said screen, and
3. a beam selecting element disposed near said screen comprising electron passages positioned relative to said areas to allow said electron beams to land on predetermined areas of said screen according to the directions

along which said beams pass through said passages; and B. temperature responsive magnetic means provided on said tube for compensating for mislanding of said electron beams on incorrect ones of said areas of said screen due to thermal expansion of said beam selecting element resulting in displacement of at least some of said passages relative to their respective areas of said screen, said temperature responsive magnetic means comprising:

1. a permanent magnet, and
2. a magnetic shunt element having temperature responsive variable permeability, said magnetic shunt element



forming a path for at least a part of the magnetic flux originating in said permanent magnet and being located on said tube to be heated by heat from said beam selecting element to change the intensity of magnetic flux from said magnetic means with temperature variations in said tube to cause the path of said electron beams landing on the screen to change in response to said thermal expansion of the beam selecting element thereby to maintain excellent color purity of light emitted by said screen, said magnetic element being formed into a block-like shape having a recess on one surface, and said permanent magnet being placed in said recess.

3,899,711

LAMINATED MULTI-APERTURED ELECTRODE

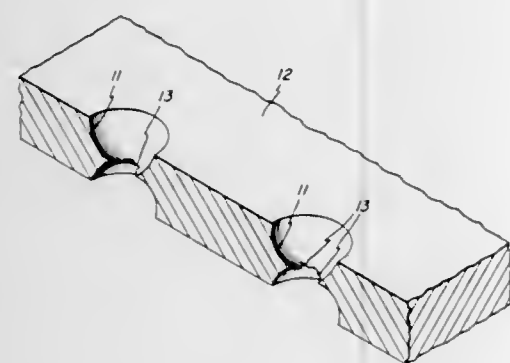
Charles Q. Lemmond, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 9, 1973, Ser. No. 358,735

Int. Cl.² H01J 29/07, 29/02, 29/62

U.S. Cl. 313-458

5 Claims



1. An electron optical lens comprising:
 - a conductive support plate having an array of apertures therein;
 - a pair of lens plates, each having the same number of apertures therein as said support plate and in the same pattern;
 - said support plate positioned between said lens plates and bonded thereto with said apertures in substantial alignment;
 - the apertures in said support plate being larger than the apertures in said lens plates whereby the electron optical characteristics of said lens are determined solely by the size and shape of the apertures in said lens plates;

said apertures characterized by a generally circular shape, the apertures of said lens plates having a diameter of up to 30 mils and a center to center spacing of up to 60 mils.

3,899,712

TAPERED HELICAL COMPACT FLUORESCENT LAMP

Harald L. Witting, Burnt Hills, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 1, 1974, Ser. No. 465,901

Int. Cl.² H01J 17/34, 61/33

U.S. Cl. 313-493

1 Claim



1. An electric discharge lamp comprising:
 - an evacuable envelope including inner and outer glass members of tapered cylindrical shape in nested coaxial relationship, at least one of said members having a helically-shaped channel therein for providing an electrical discharge path; said channel characterized by a non-uniform pitch around the circumference of said cylindrical member wherein the helix angle of said channel is a minimum where the channel crosses a vertical plane passing through said envelope and is a maximum at 90° to said plane, thereby providing an asymmetric helically-shaped channel;

a pair of electrodes, one disposed adjacent each end of said channel and supported by at least one of said glass members;

a luminescent material covering the interior walls of said glass members at least along said discharge path, the luminescent material covering the interior wall of said inner glass member being thicker than the luminescent material covering the interior wall of said outer glass member;

ballast means electrically connected to said electrodes for regulating electric current flow along said discharge path, said ballast means positioned within the opening defined by said inner glass member;

means including a screw-in base for providing said electric current to said ballast means;

means sealing together the ends of said inner and outer glass members; and

a gaseous filling in said discharge path.

3,899,713

TOUCH LAMP, LATCHING AC SOLID STATE TOUCH SWITCH USABLE WITH SUCH LAMP, AND CIRCUITS FOR THE SAME

Harold Barkan, Ardsley, N.Y.; George E. Brayman, Stamford, Conn., and Jerome Swartz, Stony Brook, N.Y., assignors to Hall-Barkan Instruments, Inc., Tuckahoe, N.Y.

Continuation of Ser. No. 215,863, Jan. 6, 1972, abandoned.

This application June 20, 1974, Ser. No. 481,304

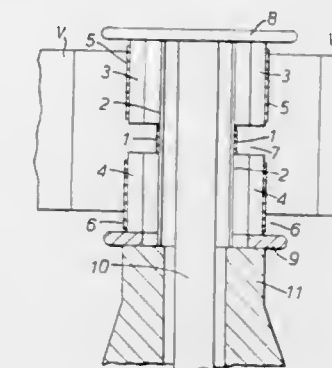
Int. Cl.² H05B 41/16

U.S. Cl. 315-34

8 Claims

1. In combination,
 - A. an electrically actuatable load,

- B. an on touch element having no parts which are movable as a requisite to the actuation of the load,
- C. an off touch element having no parts which are movable as a requisite to the deactuation of the load, and
- D. totally solid state circuitry means to energize said load upon touching said on touch element and to de-energize said load upon touching said off touch element,
- E. said solid state circuitry means being engageable with so as to be energizable by an AC source of power, said solid state circuitry means including
 - i. input terminals connectable to said AC source of power,
 - ii. a power handling solid state switch having
 - a. a cathode terminal,
 - b. an anode terminal and
 - c. a control terminal,
 - iii. means connecting said cathode and anode terminals through the load to said input terminals,
 - iv. a solid state amplifier means having



sioned so as to at least partially screen the first cathode structure from electron bombardment during normal running of the magnetron.

3,899,715

MAGNETRON WITH ROTATABLE TUNING MEANS

Maurice Esteron, and Robert Bernard Coulson, both of Chelmsford, England, assignors to English Electric Valve Company Limited, Chelmsford, England

Continuation of Ser. No. 371,684, June 20, 1973, abandoned.

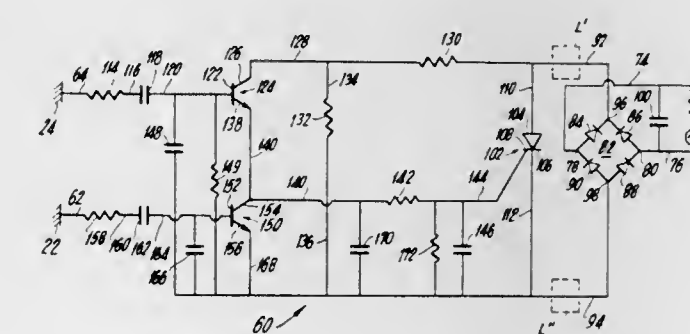
This application Sept. 20, 1974, Ser. No. 507,594

Claims priority, application United Kingdom, June 22, 1972, 29227/72

Int. Cl.² H01J 25/50

U.S. Cl. 315-39.61

18 Claims



- a. input means and
- b. output means,
- v. means connecting the amplifier input means to the touch elements,
- vi. means connecting the amplifier output means to the control terminal of a solid state switch whereby when said on touch element is touched the solid state switch is placed in a conductive mode and the load thereby is energized,
- vii. capacitor means between the cathode and control terminals,
 - a. said capacitor means being of such value that upon energization of the solid state switch it will be charged sufficiently to latch the solid state switch in conductive mode after the same is placed in such mode, and
- viii. circuit means connected to the output means of the solid state amplifier means and activated by contacting the off touch element after the load is energized for discharging the capacitor means so as to disable the latching means and thereby return the solid state switch to a non-conductive mode so as to de-energize the load.

3,899,714

QUICK STARTING MAGNETRON WITH SHIELDED CATHODE

Maurice Esteron, and Francis James Weaver, both of Chelmsford, England, assignors to English Electric Valve Company Limited, Chelmsford, England

Filed Dec. 13, 1973, Ser. No. 424,358

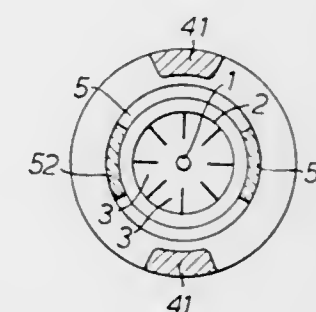
Claims priority, application United Kingdom, Dec. 21, 1973, 59136/73

Int. Cl. H01j 25/50

U.S. Cl. 315-39.51

10 Claims

1. A quick starting magnetron including an anode; a first thermally emissive cathode structure of low heat inertia; and a second cathode structure of relatively high heat inertia positioned between said anode and said first cathode structure; a continuous circumferential aperture provided in said second cathode so that said second cathode is formed in two axially separated portions, the aperture permitting electrons



1. A tunable coaxial magnetron comprising in combination:
 - a cathode member;
 - an anode member defining a plurality of radially disposed cavity resonators disposed adjacent to said cathode member and presenting an outer cylindrical wall surface;
 - an outer wall member surrounding said anode member and presenting an inner cylindrical wall surface defining with said outer cylindrical wall surface an annular resonant main cavity disposed coaxially with respect to said anode member and along the annular path of which an electric field is generated;
 - means for producing at least one region of locally intensified electric field along the annular path of said main cavity, said means comprising at least one conductive projection on one of said wall surfaces, such projection extending radially toward the other wall surface whereby locally to reduce the radial cross section presented to the electric field; and
 - a rotary tuning member including at least one dielectric member within said main cavity and means for rotating said tuning member to cause the dielectric member to move periodically through said region of locally intensified electric field to effect cyclic variation of tuning.

3,899,716

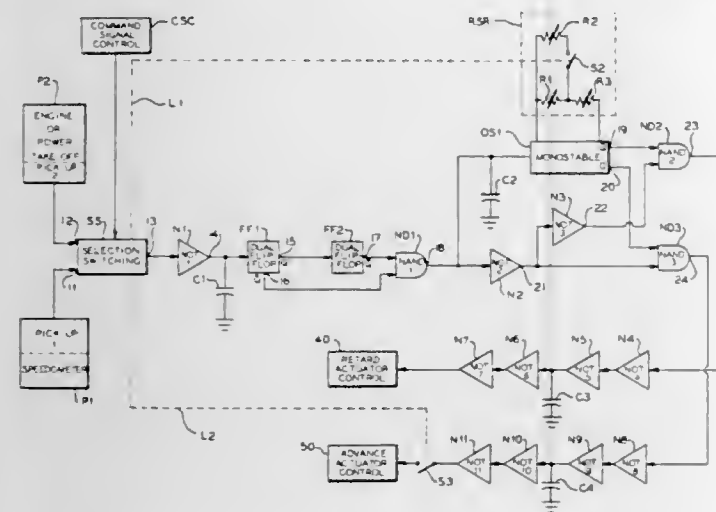
CONDITION SENSING AND CONTROL APPARATUS
David C. Kaminski, 5715 Centerview Dr., Sylvania, Ohio 43560

Filed Sept. 27, 1973, Ser. No. 401,371

Int. Cl. G01p 3/58

U.S. Cl. 317-5

23 Claims



1. Digital condition sensing and control apparatus comprising

- means for sensing the condition of a variable and providing an actual condition signal in which said signal has a time duration related in magnitude to the actual condition of the variable;
- means responsive to said sensing means for generating a reference signal which is initiated at the same time as said actual condition signal, said reference signal having a time duration related in magnitude to a desired condition for said variable;
- first logic circuit means including means for providing a complementary signal of said reference signal and for further providing a first output signal in response to a coincidence of said actual condition signal and said reference complementary signal to indicate a deviation of said variable in a first direction from said desired condition for said variable, said first output signal having a time duration related in magnitude to the difference between the actual condition and the desired condition; and
- second logic circuit means including means for providing a complementary signal of said actual condition signal and for further providing a second output signal in response to a coincidence of said reference signal and said complementary actual condition signal to indicate a deviation of said variable in a second direction from said desired condition for said variable, said second output signal having a time duration related in magnitude to the difference between the actual condition and the desired condition.

3,899,717

GROUND FAULT DETECTORS

Raymond H. Legatti, Belleair; Charles M. Clinton, Safety Harbor, and Charles W. Draper, Clearwater, all of Fla., assignors to Electromagnetic Industries, Inc., Fla.

Filed July 16, 1973, Ser. No. 379,263

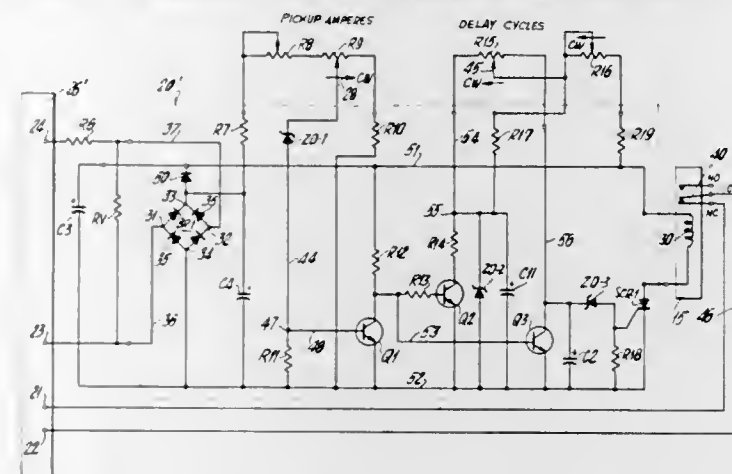
Int. Cl. H02h 3/28

U.S. Cl. 317-18 D

10 Claims

1. A ground fault detector, for protecting electrical equipment from destructive arcing ground faults by opening service disconnect equipment, having a control winding, in the circuit to be protected, said ground fault detector comprising, in combination, a current transformer having a primary winding through which conductors of the protected circuit are adapted to pass, and having a secondary winding; a rectifier bridge having input terminals connected to said secondary winding and having output terminals; a storage capacitor connected directly across said bridge output terminals for direct charging

solely by a rectified fault current; a voltage divider connected across said output terminals and said capacitor and monitoring the voltage across said capacitor; a normally open switch connected in a series circuit including said capacitor and a control winding of said service disconnect equipment; and a voltage responsive device connected to said voltage divider and connected in controlling relation with said normally open switch, and operable, responsive to the voltage across said capacitor, as monitored by said voltage divider, attaining a preselected magnitude due to charging of said capacitor by a



rectified fault current, to close said normally open switch to discharge said capacitor through said control winding to open said service disconnect equipment; said current transformer operating in the zero sequence mode to produce a secondary winding output voltage proportional only to a ground fault current; said current transformer and said storage capacitor being of sufficient capacity respectively, as associated herein, to operatively power said ground fault detector in response to a ground fault in the protected circuit sensed by said current transformer alone.

3,899,718

METHOD AND ARRANGEMENT FOR LIMITING THE POWER DISSIPATED IN ELECTRONIC COMPONENTS
Ulrich Schafe, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

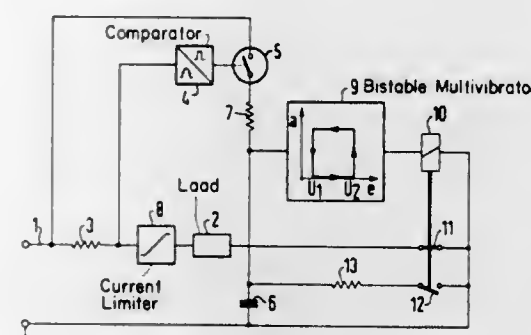
Filed Jan. 28, 1974, Ser. No. 437,228

Claims priority, application Germany, Feb. 7, 1973, 2306013

Int. Cl. H02h 7/20

U.S. Cl. 317-33 R

7 Claims



1. Apparatus for limiting the power dissipation of an electronic component coupled to a power source in the case of excessive load current comprising:

- means to detect a load current exceeding a predetermined threshold value and to provide a first output signal indicative thereof;
- means responsive to said first output signal to provide, after a first predetermined first time delay, a second output signal;
- said means further adapted to remove said output signal after a second predetermined time interval;
- means arranged between said power source and said electronic component responsive to said second output

signal for interrupting the load current supplied to said component when said second output signal is present; and e. means interposed between said power source and said component to limit the maximum current flowing during said first predetermined time interval.

3,899,719

INTEGRATED CIRCUIT PANEL AND DUAL IN-LINE PACKAGE FOR USE THEREWITH

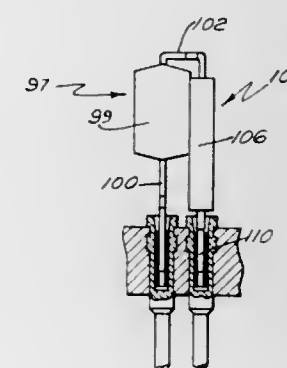
James V. Murphy, Warwick, R.I., assignor to Electronic Molding Corporation, Woonsocket, R.I.

Filed Aug. 30, 1973, Ser. No. 393,214

Int. Cl. H05k 1/04

U.S. Cl. 317-101 CC

6 Claims



1. An integrated circuit panel assembly comprising, a panel board having a plurality of female terminals secured in a predetermined pattern therein, and a plurality of dual in-line integrated circuit packages mounted on said panel board, each of said integrated circuit packages including a body portion, the vertical dimension of which is greater than the horizontal dimension thereof in the normal position of use thereof as mounted on said panel, a plurality of integrated circuits embedded in said body portion, and a plurality of leads electrically interconnected to said embedded integrated circuits and projecting outwardly of said body portion, a first set of said leads being located in the bottom of said body portion and projecting downwardly therefrom in the position of use of said package and extending into corresponding aligned female terminals located in said panel, a second set of said leads being located in opposed relation to said first set at the top of said body portion, the leads of said second set being bent to depend downwardly in parallel and close adjacent relation to said first set in the position of use of said package and electrically communicating with corresponding aligned female terminals located in said integrated circuit panels, the leads of one set being vertically foreshortened, and an adapter being interconnected to each of the foreshortened leads and being receivable in a terminal.

3,899,720

PACKAGE FOR MICROWAVE INTEGRATED CIRCUITS
Noel C. Peterson, Severna Park, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 14, 1973, Ser. No. 397,486

Int. Cl. H02B 1/00

U.S. Cl. 317-101 D

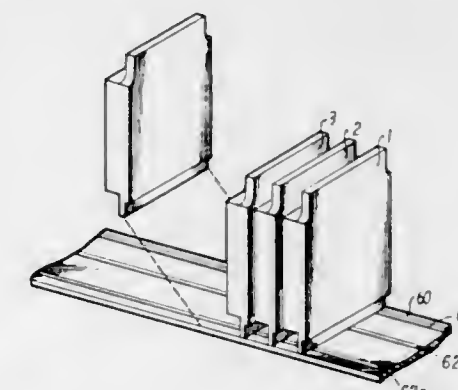
15 Claims

1. An hermetically sealed flat package housing a microwave circuit board comprising:

- a thin, planar base of dielectric material having a metal layer on a central portion of a first planar surface thereof;
- a thin planar spacer of dielectric material having a peripheral shape generally corresponding to said planar base and having a central portion and first and second terminal end portions extending from said central portion, said central portion having a cut-out extending between the said first planar surface and the opposite, second planar surface of said spacer for exposing said metal layer of said planar base through said cut-out,

said first terminal end portion extending outwardly from said base and including on said second planar surface a first plurality of electrically conductive metal film connector leads extending from the cut-out of said central portion to the outer edge of said first terminal end portion and at least one metal film on said first planar surface disposed to underlie and provide a ground plane for each of said first plurality of metal film connector leads whereby each of said metal film connector leads of said first terminal end portion comprises a microstrip transmission line, and said second end portion of said spacer having a second plurality of electrically conductive metal film leads thereon extending from said cut-out to an outer edge of said second terminal end portion;

said spacer being bonded on a first planar surface thereof to said first planar surface of said base, with said cut-out of said central portion aligned with said metal layer of said base and with said metal film of said first planar surface of said first terminal end portion in mechanical and electrical contact with said metal layer of said base; a planar frame having a thickness substantially greater than that of said spacer and having a cut-out larger than said



cut-out of said spacer, said planar frame being bonded to said spacer with the respective cut-outs thereof in alignment exposing within said cut-out of said frame, portions of said first and second pluralities of said connector leads adjacent said cut-out of said planar spacer;

a circuit board received within said cut-outs of said planar frame and of said planar spacer and mounted on said metal layer of said planar base, said circuit board having a first plurality of microstrip connector leads thereon and a second plurality of low frequency connector leads thereon, said first plurality of connector leads of said first terminal end portion being connected to said first plurality of microstrip connector leads of said circuit board and said second plurality of connector leads of said second terminal end portion being connected to said second plurality of low frequency connector leads of said circuit board at the said portions thereof adjacent the cut-out of said central portion as exposed within said cut-out of said frame, and

a planar metal top plate having a peripheral shape generally corresponding to said planar frame and bonded thereto hermetically sealing said circuit board within said package.

3,899,721

PRINTED CIRCUIT CARD GUIDE

Edwin Harley Borchard, Brielle, N.J., and Karl-Heinz Pohl, Boulder, Colo., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 20, 1974, Ser. No. 452,931

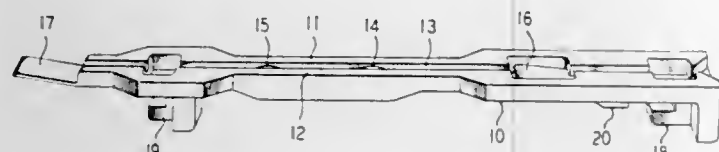
Int. Cl. H02B 1/02

U.S. Cl. 317-101 DH

7 Claims

1. An elongated resilient guide member having a longitudinal channel extending therethrough said channel being defined by:

a pair of substantially parallel side walls and a floor, said side walls being disposed to receive between them the opposite faces of a printed circuit card and said floor being disposed to receive a non-facial edge of said circuit card,



at least a pair of nodes disposed in said channel floor, said nodes being positioned to interfere ingly engage said non-facial edge of said circuit card, and
at least one cantilever element having a fixed end integral with said channel floor and a free end extending away from said channel floor for interferingly engaging said non-facial edge, said node and said cantilever element exerting a pressure at various points of contact along said non-facial edge for constraining said circuit card against rotational motion in its facial plane.

3,899,722

PLASTICS-INSULATED SWITCH UNIT FOR MULTI-PHASE HIGH-VOLTAGE SWITCHGEAR INSTALLATIONS WITH EARTHING CONTACT

August Cadez, Wettingen, and Rolf Schaumann, Würenlos, both of Switzerland, assignors to BBC Brown Boveri & Company Limited, Baden, Switzerland

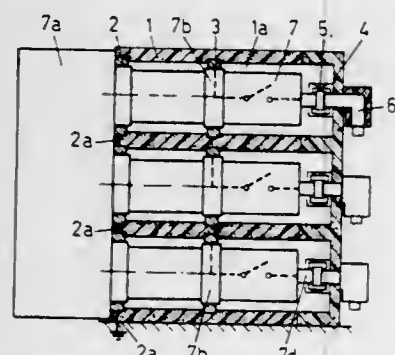
Filed July 1, 1974, Ser. No. 484,856

Claims priority, application Switzerland, July 12, 1973, 10207/73

Int. Cl. H02b 11/04; H01h 31/04

U.S. Cl. 317-103

6 Claims



1. A plastics-insulated switch unit in a multi-phase high-voltage switchgear installation comprising a frame made from a plastic material and including parallel spaced cylindrical recesses for the respective phases, each said recess being provided with at least two longitudinally spaced internal ring-shaped contact pieces, and plug-in type cylindrical switching modules correlated to said phases and recesses and each of which includes at least one external ring-shaped counter contact piece and which is alternatively engaged with one or the other of said internal ring-shaped contact pieces dependent upon whether the switching module is plugged into the recess or withdrawn therefrom, one of said ring-shaped contact pieces in each recess being earthed and providing an earth connection for the correspondingly positioned ring-shaped contact piece on the switching module when in the withdrawn position.

3,899,723

CATHODE FOIL FOR ELECTROLYTIC CONDENSERS

Martin Mühlhüsser, Hohentwiel, and Christian Roth, Gottmadingen, both of Germany, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Continuation of Ser. No. 219,112, Jan. 19, 1972, abandoned.

This application Nov. 26, 1973, Ser. No. 419,146

Claims priority, application Germany, Jan. 21, 1971, 2102702

Int. Cl. H01G 9/00; C22C 21/00

U.S. Cl. 317-230

2 Claims

1. In an electrolytic condenser, a foil strip cathode electrode comprising an alloy of 0.2 to 2.0 percent by weight of manganese and the balance of the alloy being commercially pure aluminum having a purity of from 99.0 to 99.8 percent by weight, said electrode having a thickness from 0.0043 to 0.1520 millimeters.

3,899,724

SETTING UP MACHINE INCLUDING COMPUTER-CONTROLLED POSITIONER FOR MACHINE PART ADJUSTING ELEMENT

Peter Malcolm Colton, Leicester, England, assignor to Wadkin Limited, Leicester, England

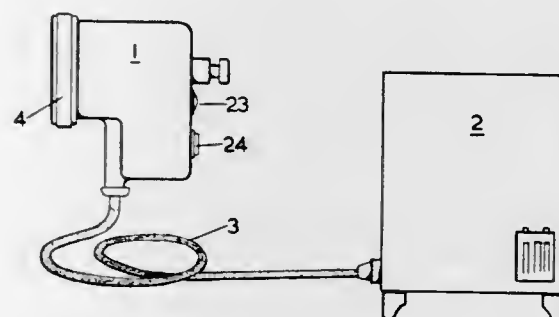
Filed May 24, 1973, Ser. No. 363,554

Claims priority, application United Kingdom, May 26, 1972, 24850/72

Int. Cl. B23q 17/18, 3/18

U.S. Cl. 318-162

7 Claims



1. A setting up unit for machinery comprising a transportable positioner for machine part adjusting elements, means for connecting the positioner to individual adjusting elements in turn, a computer for controlling the operation of the positioner to shift a machine part adjusting element connected to the positioner from one predetermined setting to another and means for identifying the machine part adjusting element to which the positioner at any time is connected and conveying that information to the computer.

3,899,725

BRAKING EFFORT CONTROL

Allan B. Plunkett, Lawrence Park, Pa., assignor to General Electric Company, Erie, Pa.

Filed Feb. 25, 1974, Ser. No. 436,341

Int. Cl. H02p 5/40

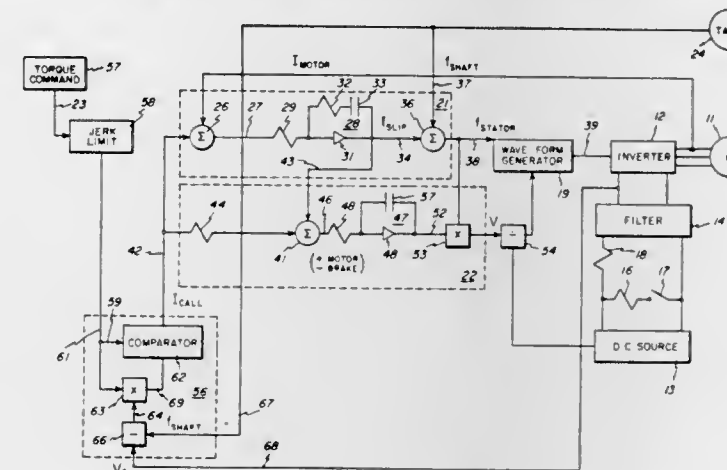
U.S. Cl. 318-227

21 Claims

1. An improved control circuit for an inverter which is suitable for interconnecting a d-c power source and an a-c motor load, the a-c motor being adapted to deliver power to the inverter during periods of electrical braking and the inverter being operative in a square wave mode when the speed of said motor is above a predetermined value, wherein the improvement comprises:

- means for generating a current command signal representative of the desired motor current;
- means for modulating said current command signal in response both to the motor speed and to changes in the motor voltage; and

c. means responsive to the modulated command signal for controlling the operation of said inverter so as to control



the motor current during periods of electrical braking and to maintain a constant torque output whenever the motor speed is above said predetermined value.

3,899,726

AUTOMATIC REVERSING CONTROL EQUIPMENT

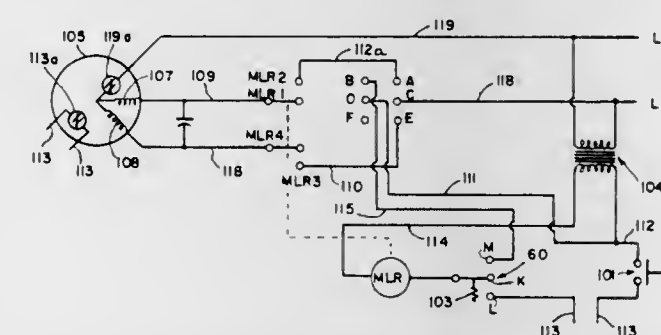
John W. Ellmore, West Chester, Pa., assignor to Allister Manufacturing Company, Inc., Exton, Pa.

Continuation-in-part of Ser. No. 393,283, Aug. 31, 1973, Pat. No. 3,813,590. This application May 17, 1974, Ser. No. 470,760

Int. Cl. H02h 7/06

U.S. Cl. 318-472

7 Claims



1. A drive system including a reversible motor for driving an element between limit positions, and a control circuit for the motor comprising

a power supply circuit for supplying power to the motor, a switch means in the supply circuit for controlling the supply of power to the motor, a control circuit for controlling the switch means, the control circuit including an actuating switch for controlling the operation of the switch means, a first thermal switch which opens in response to an increase in the operating temperature of the motor above a first predetermined temperature for disabling the actuating switch, and a second thermal switch which opens in response to an increase in operating temperature of the motor above the first predetermined temperature for interrupting the supply of power to the motor.

3,899,727

PLURAL MOTOR CONTROL SYSTEM FOR CONTROL ROD DRIVE MECHANISMS

John R. Thayer, Lancaster, Ohio, assignor to Diamond Power Specialty Corporation, Lancaster, Ohio

Continuation of Ser. No. 746,578, July 22, 1968, abandoned.

This application Sept. 8, 1971, Ser. No. 178,844

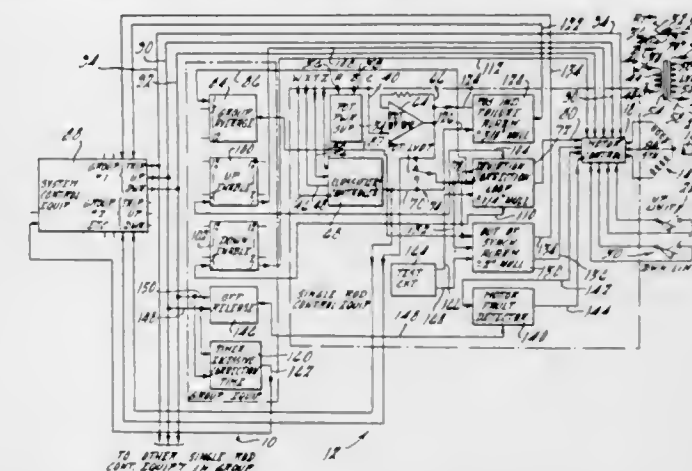
Int. Cl. G05b 9/02

U.S. Cl. 318-564

17 Claims

1. A system for positioning a plurality of drive mechanisms to a preselected reference position comprising a plurality of drive mechanisms having an individual load for each drive mechanism to be driven by each mechanism, sensing means

operatively associated with each drive mechanism for sensing the position of each drive mechanism and, thus, the associated load, including single drive signal means for generating a position signal for each drive mechanism, single reference signal generating means responsive to said sensing means for generating a single reference signal which is common to all



3,899,728

APPARATUS FOR MAINTAINING HIGH PRECISION IN A ROTATING DEVICE USED WITH OPTICAL APPARATUS

Walter Hoppe, Munich, Germany, assignor to Max-Planck-Gesellschaft ZUR Forderung der Wissenschaften e.V., Göttingen, Germany

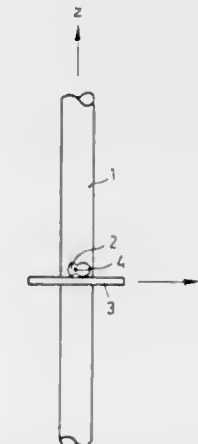
Filed July 12, 1973, Ser. No. 378,421

Claims priority, application Germany, July 21, 1972, 2236529

Int. Cl. G05b 11/00, 1/06

U.S. Cl. 318-687

7 Claims



1. In a charged particle beam optical apparatus, the combination comprising:

- a frame;
- at least one support bearing mounted in said frame;
- a tilting device, including an elongated shaft rotatably mounted in said bearing for supporting a specimen and rotating said specimen about a specified axis of rotation; means, disposed adjacent and coupled to said tilting device, for measuring linear movement of said tilting device in at least one direction with respect to said beam; means, coupled to said frame, for movably supporting said tilting device for movement in at least said one direction; and
- means, coupled to said measuring means and said support means, for determining the position of said tilting device and axis of rotation and adjusting the position thereof by means of said support means with respect to said particle beam.

3,899,729

MAXIMUM SPEED CONTROL CIRCUIT FOR A STEPPING MOTOR

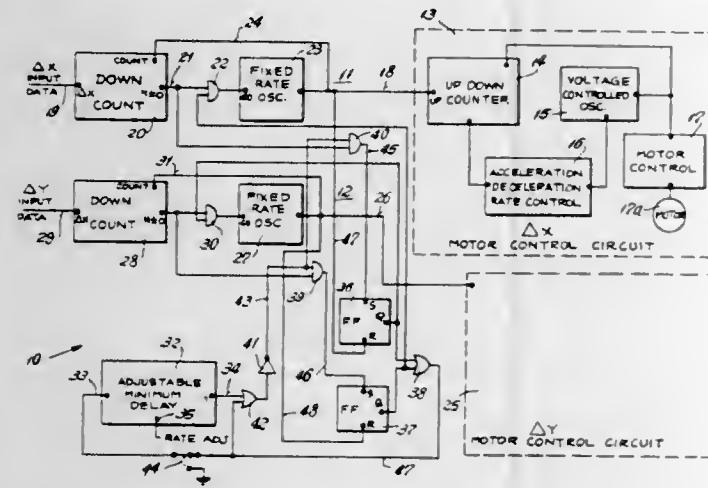
Arthur Richard Emery, Bristol, Conn., assignor to The Superior Electric Company, Bristol, Conn.

Filed Jan. 16, 1974, Ser. No. 433,873

Int. Cl. G05b 19/40

U.S. Cl. 318—696

8 Claims



1. A speed control circuit having an input, said motor control means including a variable rate oscillator means for setting the rate at which the changes of energization occur and having a maximum rate, said speed control circuit including a fixed rate oscillator and an adjustable delay means, means setting said fixed rate oscillator to produce pulses at a fixed rate no greater than the maximum rate of the variable rate oscillator means and means interconnecting the adjustable delay means to the fixed rate oscillator to regulate a lesser rate of the pulses produced by the fixed rate oscillator than that to which it is set whereby said motor is prevented from normally stepping at a rate greater than the maximum rate set by the pulses from the speed control circuit.

3,899,730

METHOD OF ELIMINATING RISK OF DISCHARGE OF A BATTERY IN AN ELECTRICAL INSTALLATION FOR A MOTOR VEHICLE AND AN APPARATUS FOR EFFECTING THE SAME

Aldo Volontieri, Milan, Italy, assignor to Alfa Romeo S.p.A., Milan, Italy

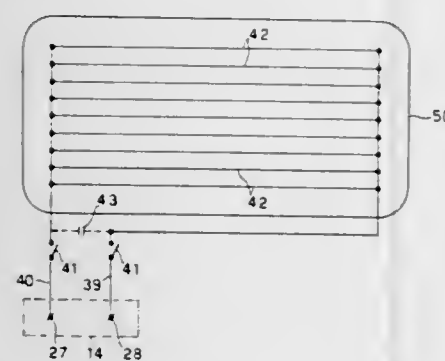
Continuation-in-part of Ser. No. 205,536, Dec. 7, 1971. This application June 20, 1974, Ser. No. 481,472

Claims priority, application Italy, Dec. 12, 1970, 32944/70

Int. Cl. B60l 1/02

U.S. Cl. 320—61

1 Claim



1. In an electrical installation for a motor vehicle powered by an internal combustion engine which permits the connection thereto of selected electrical-power consuming devices of the vehicle operated directly from a constant and regulated alternating current supplied from an A.C. alternator, the improvement comprising, in combination:

a. an A.C. alternator driven by the engine and having a controllable D.C. field excitation winding;

a. voltage regulator associated with said controllable D.C. field excitation winding for maintaining the output of said A.C. alternator at a constant and regulated voltage;

a. storage battery connected to be charged by said A.C. alternator at a constant and regulated voltage;

a. storage battery connected to be charged by said A.C. alternator through current rectifying means;

a. first set of said selected electrical-power consuming devices connected directly to the battery;

a. second set of said selected electrical-power consuming devices comprising heat generating resistors embedded in a transparent window material for the motor vehicle and connected directly to the constant and regulated alternating current supplied from A.C. generator, thereby effecting operation of said second set of said selected electrical-power consuming devices by the output voltage of said A.C. alternator which is regulated and held constant irrespective of the speed of said A.C. alternator and thereby eliminating the risk of discharge of said battery by reducing the number of selected electrical-power consuming devices connected to said battery; and

wherein capacitors coupled in parallel with said resistors are provided for correcting the power factor.

3,899,731

VOLTAGE REGULATOR WITH CONTROLLED CURRENT

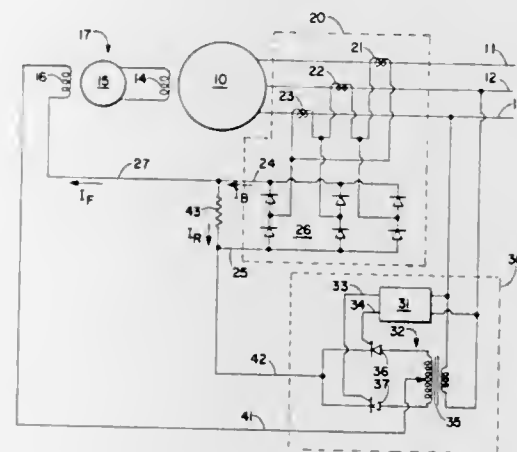
Forest D. Smith, St. Louis Park, Minn., assignor to Electric Machinery Mfg. Company, Minneapolis, Minn.

Filed May 29, 1973, Ser. No. 364,865

Int. Cl. H02p 9/10, 9/14

U.S. Cl. 322—25

10 Claims



1. A voltage regulating system for a generator having field energizing means, comprising:

a. voltage responsive means connected to the output of the generator, for producing field energizing control signals in response thereto to maintain the output voltage of the generator at a predetermined level, said voltage reference means including a full converter output circuit;

b. current responsive means associated with the output of the generator for producing boost signals in response to the current output of the generator;

c. means connecting said full converter output circuit and said current sensing means in series circuit with said field energizing means of said generator;

d. load means connected to said current sensing means; and

e. said voltage responsive means operable in response to excessive boost signals to adjust said control signals to divert the excessive boost signals through said load means, thereby preventing loss of regulator control.

3,899,732

METHOD AND APPARATUS FOR MONITORING BATTERY ENERGY LEVEL

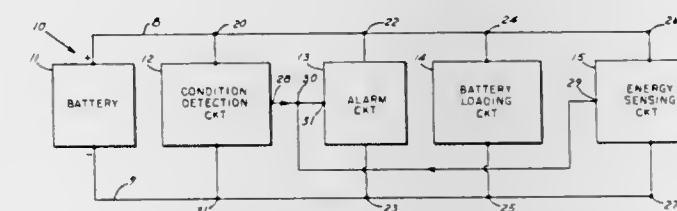
Paul A. Staby, Lakewood, Colo., assignor to Statitrol Corporation, Lakewood, Colo.

Filed Aug. 16, 1973, Ser. No. 388,975

Int. Cl. G01n 27/42; G08b 21/00

U.S. Cl. 324—29.5

15 Claims



1. Battery operated detection apparatus comprising: first and second electrical lead means for connection, respectively, to the positive and negative terminals of a battery power source;

battery powered means for sensing a selected condition and generating a first electrical output signal representative of said condition, said sensing means being connected between said electrical lead means to receive power therefrom whereby to be powered by the battery power source connected thereto;

battery powered alarm means connected between said first and second electrical leads to receive power therefrom whereby to be powered by the battery power source connected thereto, said alarm means being connected to said sensing means to receive said first electrical output signal and being operable to generate an output signal corresponding thereto;

means connected between said first and second electrical leads for periodically loading the battery power source connected thereto to subject it to momentary increased discharge current;

means for generating a first voltage signal having a magnitude equal to a selected proportion less than 100 percent of the output voltage of the battery power source prior to said loading;

means for generating a second voltage signal having a magnitude less than said first voltage signal and equal to the output voltage of the battery power source when loaded less a predetermined voltage drop; and,

means for comparing said first and second voltage signals and generating a second electrical output whenever their difference exceeds a predetermined magnitude, said difference only exceeding a predetermined magnitude whenever the energy stored in the battery power source is below a selected energy level, and alarm means being connected to receive said second output signal and being operable to generate an output signal corresponding thereto.

3,899,733

APPARATUS FOR COMPENSATING FOR INSTRUMENTATION LOSS

Merlin L. Osborn, Saxonburg; Layton D. Crytzer, Natrona Heights, and Donald M. Stewart, Tarentum, all of Pa., assignors to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.

Filed Mar. 4, 1974, Ser. No. 447,801

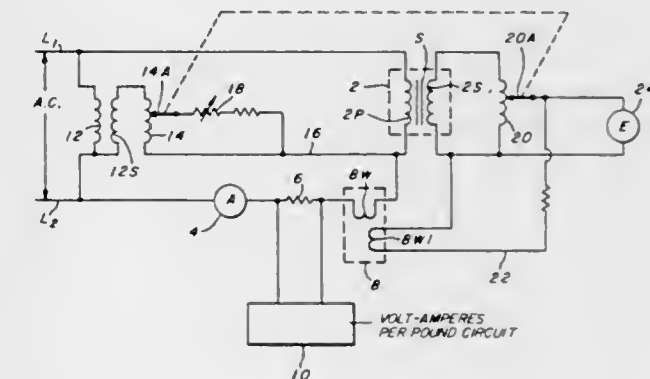
Int. Cl. G01r 33/00

U.S. Cl. 324—34 R

7 Claims

1. A measuring apparatus with means for compensating the measurement for instrumentation loss comprising a load, a power source, an isolation transformer having its primary connected across said power source, a first lead from a first side of said power source to the first side of said load, a second lead from a second side of said power source to the second side of said load, at least one instrument connected in said second lead, a third lead from one side of the secondary of

said isolation transformer to said second side of said power source, a first ratio transformer, one side of said ratio transformer connected to the other side of the secondary of said isolation transformer, said ratio transformer including a slide arm, a variable resistor connected to said slide arm across said first ratio transformer, the second side of said ratio trans-



former being connected to the second side of said load a second ratio transformer connected across said first named load, a second instrument, said second ratio transformer including a slide arm connected to one side of said second instrument, a lead connecting the other side of said second instrument to said second ratio transformer, and means for moving said slide arms in unison to corresponding positions.

3,899,734

MAGNETIC FLUX LEAKAGE INSPECTION METHOD AND APPARATUS INCLUDING MAGNETIC DIODES

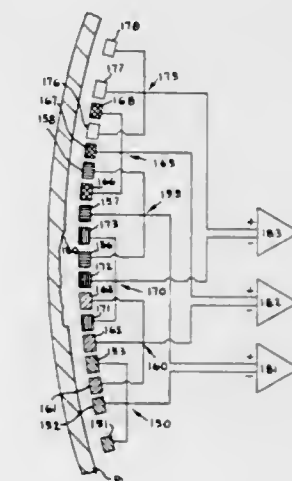
Ruby C. Beaver, Houston, Tex.; Theodor Clasen, Wienhausen; Wolfgang Henning, Celle, both of Germany, and Emil S. Johnson, Houston, Tex., assignors to Vetco Offshore Industries, Inc., Ventura, Calif.

Continuation-in-part of Ser. No. 360,161, May 14, 1973, abandoned. This application Mar. 15, 1974, Ser. No. 451,505

Int. Cl. G01R 33/12

U.S. Cl. 324—37

19 Claims



1. An inspection apparatus for inspecting a magnetizable test object having at least one surface, said apparatus comprising

a support;

magnetizing means mounted on said support for magnetizing said test object;

sensing means mounted on the support adjacent to said magnetizing means and for detecting magnetic flux leakage from the test object caused by flaws in the test object, said sensing means including a plurality of single magnetic diodes disposed in pairs in magnetic opposition and connected electrically to form twin diodes whose output signals are substantially independent of temperature; and

means cooperating with said support for moving said support to cause the magnetizing and sensing means to traverse the surface of the test object in sufficiently close

proximity to magnetize said test object and to inspect said test object with said sensing means; wherein the twin diodes are connected electrically to form at least two separate groups, each group having a plurality of twin diodes; and

the twin diodes in each group are spaced along a path so that the distance between the centers of any two adjacent twin diodes in that group is no more than approximately one-half the longest linear dimension along said path of the smallest flaw sought to be detected; and the groups are spaced along the path so that each group is adjacent to at least one other group; and the groups are spaced along the path in overlapping relationship so that at least one twin diode in each group is between at least two twin diodes of each adjacent group, whereby said smallest flaw will be detected by at least two twin diodes in one of the groups when said path of twin diodes is moved over said flaw.

3,899,735

VOLTAGE DETECTOR FOR DETECTING AC VOLTAGES
Edouard Singer, 53, rue de Mulhouse, 68790 Morschwiller-le-Bas, France

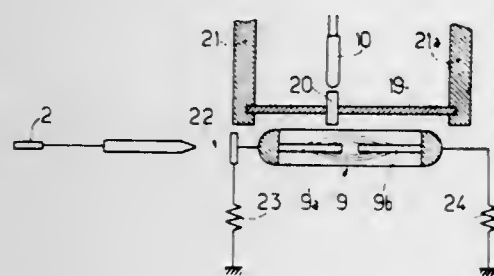
Continuation-in-part of Ser. No. 237,108, March 22, 1972, abandoned. This application Jan. 23, 1974, Ser. No. 435,776

Claims priority, application France, Mar. 22, 1971, 71.11200; Jan. 19, 1972, 72.02482

Int. Cl. G01r 13/40, 19/16

U.S. Cl. 324—122

12 Claims



1. A voltage detector comprising: a glow lamp having two spaced apart electrodes responsive to a voltage under test during use for developing light energy in an illuminating discharge region having an area proportional to the magnitude of the voltage under test;

light sensitive means responsive to said light energy for developing an electrical signal in response thereto; a movable screen disposed between said glow lamp and said light sensitive means and having means defining a tubular aperture therethrough to permit the light energy from said glow lamp to pass therethrough and illuminate said light sensitive means to develop the electrical signal; means for adjustably positioning said screen relative to said glow lamp and said light sensitive means to define the area of said discharge region which will illuminate said light sensitive means and thereby determine a voltage threshold for the voltage under test above which the electrical signal will be developed; and

indicating means responsive to said electrical signal for developing an alarm signal having a predetermined magnitude independent of the magnitude of the voltage under test to indicate that the voltage under test has a magnitude greater than the voltage threshold value.

3,899,736 VIBRATION-RESISTANT DEVICE FOR TAUT BAND SUSPENSION TYPE INDICATING INSTRUMENT

Takehiko Sakaguchi, Sakaki, Japan, assignor to Hioki Electric Works Co., Ltd., Sakaki, Japan

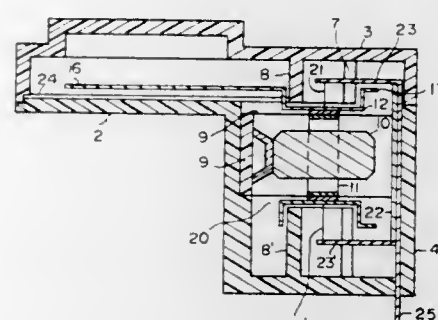
Filed Dec. 5, 1973, Ser. No. 421,868

Claims priority, application Japan, Dec. 5, 1972, 47-121840

Int. Cl. G01R 5/10, 5/02, 1/14

U.S. Cl. 324—154 R

1 Claim



1. In an electrical indicating instrument of the type comprising a casing for holding said instrument therein, a magnet, a moving coil, and a taut metal band serving as the rotating axis of the moving coil located in the magnetic field of the magnet, the taut band being suspended between support members,

the improvement for providing a vibration-resistant device, wherein said casing comprises a lower cylindrical portion, an intermediate base portion and a cover, and wherein said instrument further includes moving coil displacement preventive rings disposed concentrically with the rotating axis on both sides of the moving coil, and moving coil displacement preventive cylinders within the casing and integral thereto and opposite to each other and closely adjacent to the moving coil displacement preventive rings on both sides, each of said rings having a planar portion with elements projecting from the periphery of said planar portion to provide a cup-like configuration, said coil displacement preventive cylinders projecting into said cup-like configurations, one of said coil displacement preventive cylinders being integral with said cover and the other being integral with the bottom of said cylindrical portion of said casing.

3,899,737 APPARATUS FOR TESTING ALTERNATOR DIODES

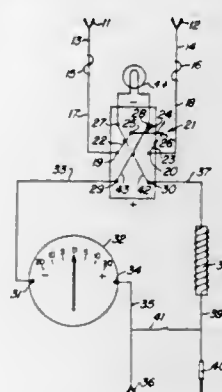
Owen Aston, Salt Lake City, Utah, assignor to Carl R. Haueter, Salt Lake City, Utah, a part interest

Filed Oct. 12, 1972, Ser. No. 296,802

Int. Cl. G01r 31/22, 1/36

U.S. Cl. 324—158 D

7 Claims



1. Apparatus for testing alternator diodes, comprising in combination:

coupling means comprising first, second, third, and fourth couplings adapted for connection respectively to the negative terminal of an electrical source, the positive terminal of an electrical source, an alternator and to a diode of said alternator;

an amperage metering circuit having means for indicating amperage of current flowing in either direction in the circuit, said circuit being connected in series with the third coupling;

a current limiting circuit having current limiting choke means, said circuit being connected in series with the fourth coupling, circuit switching means having means for alternately connecting said amperage metering circuit with the first coupling and with the second coupling and for alternately connecting said current limiting circuit with said first coupling and with said second coupling and switching means disposed between said third and fourth couplings for alternately closing and opening the circuit between said couplings.

3,899,738

SYSTEM FOR MEASURING GROUP DELAY AND/OR ATTENUATION IN CLOSED SIGNAL-TRANSMISSION LOOP

Peter Harzer, Eningen, Germany, assignor to Wandel u. Goltermann, Reutlingen, Germany

Continuation of Ser. No. 355,492, April 30, 1973, abandoned.

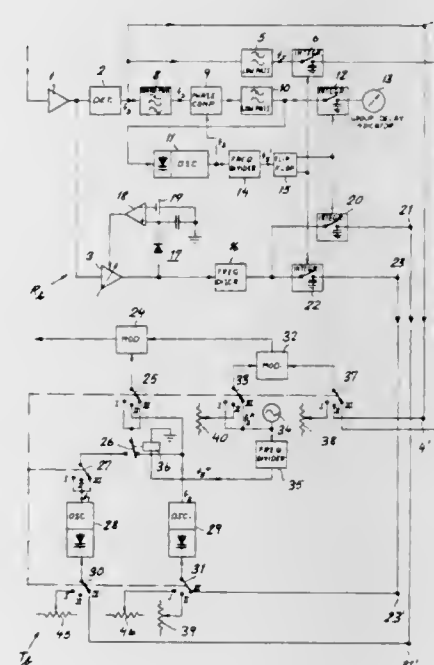
This application Aug. 8, 1974, Ser. No. 495,848

Claims priority, application Germany, Apr. 29, 1972, 2221256

Int. Cl. H04b 7/14

U.S. Cl. 325—2

15 Claims



1. A system for sending amplitude-modulated carrier waves over transmission paths linking a plurality of measuring stations in a closed loop, said stations serving to determine the characteristics of said transmission paths, comprising:

a receiving section and a transmitting section at each measuring station;

a wave synthesizer in said transmitting section including oscillation-generating means for producing separate high-frequency carrier oscillations and low-frequency modulating oscillations, said wave synthesizer further including modulating means for combining said oscillations into an outgoing amplitude-modulated carrier wave;

processing means in said receiving section for isolating a carrier component and a modulating component of an incoming amplitude-modulated carrier wave, said processing means including output circuitry producing signal voltages derived from at least one of said components; evaluation means in said receiving section connected to said output circuitry for translating a signal voltage thereof into an indication of a transmission characteristic of a transmission path terminating at said receiving station;

switch means in at least one of said measuring stations selectively settable in a basic position and at least one alternate position; and

conductor means in said one of said measuring stations connected to said output circuitry of the receiving section thereof for energization by at least some of said signal voltages, said conductor means being connected in said alternate position of said switch means to said wave synthesizer of the associated transmitting section for modifying the operation thereof to replicate a parameter of a component of said incoming carrier wave in a corresponding constituent of said outgoing carrier wave, said wave synthesizer being disconnected from said conductor means in said basic position of said switch means.

3,899,739

DECODE SQUELCH CIRCUIT FOR A CONTINUOUS TONE CONTROL RADIO RECEIVER

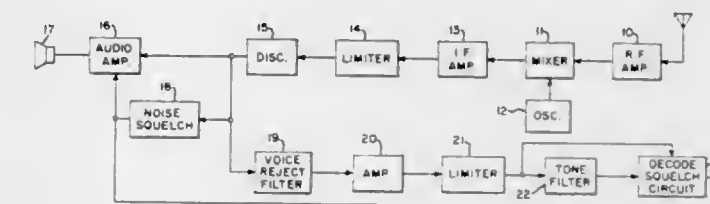
Arthur L. Herman, Lynchburg, Va., assignor to General Electric Company, N.Y.

Filed Sept. 4, 1973, Ser. No. 393,807

Int. Cl. H04b 1/10

U.S. Cl. 325—319

3 Claims



1. In a radio receiver having means to be unsquelched in response to an unsquelch signal and to be squelched in response to a squelch signal, an improved decode squelch circuit comprising:

a. means adapted to be connected to said radio receiver for deriving a continuous tone therefrom that is transmitted over a system to said radio receiver;

b. first means connected to said deriving means for producing a first tone signal of a first phase;

c. second means connected to said deriving means for producing a second tone signal of a second phase that is shifted substantially 180 degrees with respect to said first phase;

d. a first transistor having input and output electrodes;

e. means connecting said first transistor input electrodes to said first means;

f. means connected to said first transistor input electrodes for preventing said first transistor from responding to said first tone signal;

g. a second transistor having input and output electrodes;

h. means connecting said second transistor input electrodes to said second means;

i. means connecting said output electrodes of said second transistor to said input electrodes of said first transistor for permitting said first transistor to respond to said first tone signal at said first input in response to said second tone signal at said second input;

j. a capacitor;

k. means connecting said capacitor to said output electrodes of said first transistor to charge said capacitor in response to said first transistor being prevented from responding to said first tone signal, and to discharge said capacitor in response to said first transistor being permitted to respond to said first tone signal;

l. an output transistor having input and output electrodes;

m. means connecting said input electrodes of said output transistor to said capacitor for causing said output transistor to produce a squelch signal in response to said capacitor being charged above a selected level and for causing said output transistor to produce an unsquelch signal in

response to said capacitor being discharged below a selected level;

n. means connected between said output electrodes of said output transistor and said electrodes of said second transistor for causing said second transistor to respond to second tone signals of a lower magnitude in response to said output transistor producing an unsquelch signal;

o. and output means connected to said output electrodes of said output transistor for applying said squelch and unsquelch signals to said receiver.

3,899,740

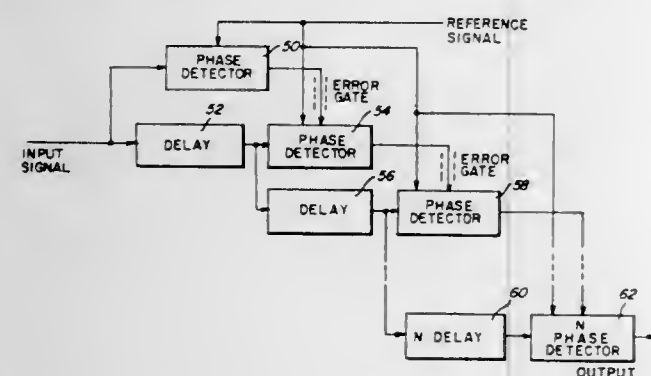
FM SIDETONE PHASE COMPARISON SYSTEM

Manfred G. Unkauf, Franklin; Derek V. Harris, Acton, and Sven G. Gustafsson, Framingham, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 297,144, Oct. 12, 1972, abandoned, which is a continuation of Ser. No. 85,615, Oct. 30, 1970, abandoned. This application Nov. 21, 1973, Ser. No. 417,986 Int. Cl.² H04B 1/16

U.S. Cl. 325—349

12 Claims



1. A phase determining system comprising in combination: means for producing a reference signal; a plurality of serially coupled phase determining stages, each of said stages comprising in combination: means for receiving a frequency modulated signal; means for detecting phase variations in a modulation component of said frequency modulated signal; means for removing disturbance portions in said modulation component when said phase variations exceed a predetermined value; and means for comparing the phase of the unremoved modulation component of said frequency modulated signal with the reference signal, whereby an accurate phase comparison is made after the said phase disturbance portions have been removed.

3,899,741

FREQUENCY SHIFT KEYED DETECTOR

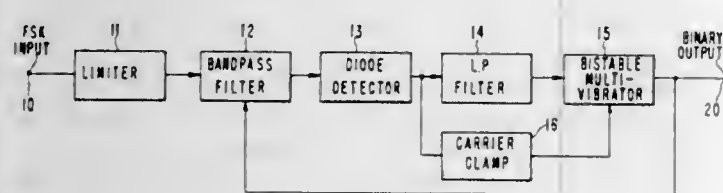
Randy Brandt, Cupertino, and Richard B. Rice, Los Gatos, both of Calif., assignors to Cermetek, Inc., Mountain View, Calif.

Filed Nov. 12, 1973, Ser. No. 414,935

Int. Cl.² H04L 27/14

U.S. Cl. 329—104

13 Claims



1. A frequency shift keyed detector comprising: input signal limiter means for receiving a frequency shift keyed signal the frequency of which is to be determined,

and for producing a first intermediate signal at the same frequency as said frequency shift keyed signal;

bandpass filter means for passing said first intermediate signal thereby to remove the harmonics and noise outside of the pass band of said bandpass filter means from said first intermediate signal and for producing a second intermediate signal at the same frequency as said first intermediate signal;

rectifying means for receiving said second intermediate signal and for producing a rectified third intermediate signal representative of the amplitude of said second intermediate signal;

low pass filter means for smoothing said third intermediate signal and for producing a fourth intermediate signal representing a smoothed version of said third intermediate signal;

output signal means responsive to said fourth intermediate signal for producing an output signal, said output signal being capable of assuming two different levels in response to the amplitude of said fourth intermediate signal; and means, responsive to changes in the level of said output signal, for changing the center frequency of said bandpass filter means.

12. A frequency shift keyed detector comprising: input signal limiter means for receiving a frequency shift keyed signal, the frequency of which is to be determined, and for producing a first intermediate signal at the same frequency as said frequency shift keyed signal;

bandpass filter means for passing said first intermediate signal thereby to remove the harmonics and noise outside of the passband of said passband filter means from said first intermediate signal and for producing a second intermediate signal at the same frequency as said first intermediate signal;

rectifying means for receiving said second intermediate signal and for producing a rectified third intermediate signal representative of the amplitude of said second intermediate signal;

low pass filter means for smoothing said third intermediate signal and for producing a fourth intermediate signal representing a smoothed version of said third intermediate signal;

output signal means responsive to said fourth intermediate signal for producing an output signal capable of assuming two different levels in response to the amplitude of said fourth intermediate signal; and means for disabling said output signal means for a given period of time following the start of the detection process to prevent noise signals from inadvertently starting said detector circuit.

3,899,742

AMPLIFIER APPARATUS HAVING COMBINED DC AND AC DEGENERATIVE FEEDBACK

Doocho Yum, Elk Grove; Peter A. Mercola, and William R. Jacobs, both of Wilmette, all of Ill., assignors to Beltone Electronics Corporation, Chicago, Ill.

Filed Mar. 20, 1974, Ser. No. 452,747

Int. Cl.² H03F 3/343, 1/08

U.S. Cl. 330—19

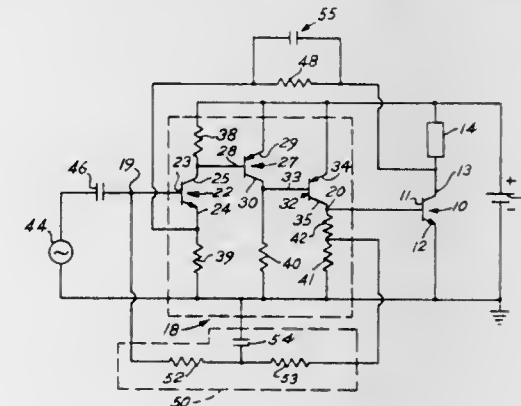
13 Claims

1. In a system for amplifying an alternating input signal including a driver element comprising a driver input circuit having a non-linear characteristic and a driver output circuit for conducting an output current corresponding to the alternating input signal through a load, said output current having an alternating component and a DC component, improved apparatus for varying the DC component of current flowing in the output circuit to improve the efficiency and linearity of the system comprising in combination:

bias means for producing a quiescent DC voltage on the driver input circuit which maintains the DC component of the driver element output current at a low level in the absence of an alternating input signal;

preamplifier means having an input terminal adapted to receive the input signal and an output terminal coupled to the driver input circuit for producing a driver input voltage on the output terminal;

degenerative AC feedback means for feeding a portion of the alternating component of the output current back to the preamplifier so as to reduce the amplitude of the alternating input signal and to allow the alternating input signal to be modified by the non-linear characteristic of



the driver input circuit in order to produce a non-linear form of driver input voltage; and

DC feedback means for applying at least a portion of the DC voltage on the driver input circuit to the preamplifier means so as to urge the average DC voltage on the driver input circuit in a direction which increases the DC component of the driver element output current as the magnitude of the alternating input signal increases to provide linear amplification of the alternating input signal.

3,899,743

BIASING CIRCUIT FOR MULTISTAGE TRANSISTOR AMPLIFIERS

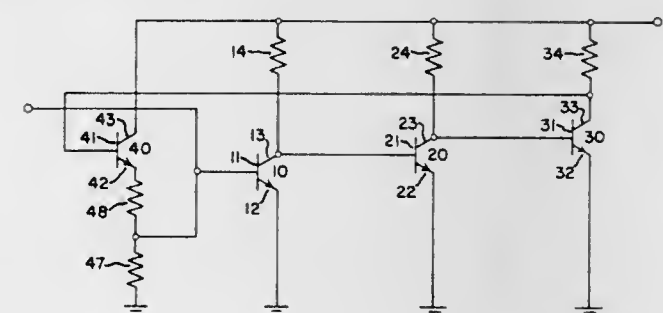
Antal Csicsatka, Decatur, Ill., assignor to General Electric Company, Syracuse, N.Y.

Filed Jan. 7, 1974, Ser. No. 431,505

Int. Cl.² H03F 3/04

U.S. Cl. 330—22

8 Claims



1. In a multistage electronic amplifier having first and last stages comprising first and last transistors, each of said transistors having an impedance for connecting one terminal thereof to a direct current bias potential source, a circuit for biasing an input terminal of said first transistor comprising:

a multiterminal semiconductor device developing a substantially constant direct current voltage between two terminals thereof,

means for connecting a first terminal of said two terminals of said multiterminal semiconductor device to said one terminal of said last transistor,

first and second resistors connected in series between an input terminal of said first transistor and a common point, said first and second resistors having a common terminal mediate said first and second resistors, the second terminal of said two terminals of said multiterminal semiconductor device being connected to said mediate terminal,

said multiterminal semiconductor device having a third terminal arranged for connection to a direct current bias potential source, said multiterminal semiconductor device being operative to cause a current to flow into said input terminal of said first transistor to cause said first transistor to be rendered active.

3,899,744

TRANSISTOR AMPLIFIER CIRCUIT

Yasuo Kominami, Kokubunji, Japan, assignor to Hitachi, Ltd., Japan

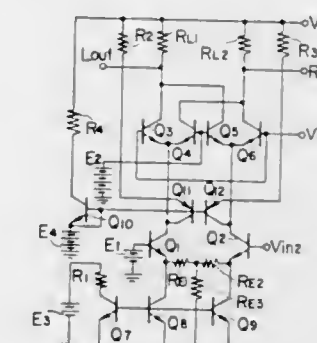
Filed Feb. 7, 1974, Ser. No. 440,355

Claims priority, application Japan, Feb. 7, 1973, 48-14660

Int. Cl.² H03F 3/45, 3/68

U.S. Cl. 330—30 D

1 Claim



1. A transistor amplifier circuit comprising: first to sixth transistors, each having an emitter, a base and a collector;

a first resistor, one end of which is connected to the emitter of said first transistor;

a second resistor, one end of which is connected to the emitter of said second transistor;

a third resistor, one end of which is connected to ground; means for connecting the other ends of said first to third resistors in common;

means for connecting the emitters of said third and fourth transistors with the collector of said first transistor;

means for connecting the emitters of said fifth and sixth transistors with the collector of said second transistor;

means for connecting the base of the third transistor with the base of the sixth transistor;

means for connecting the base of the fourth transistor with the base of the fifth transistor;

a fourth resistor, one end of which is connected to the collectors of said third and fifth transistors;

a fifth resistor, one end of which is connected to the collectors of said fourth and sixth transistors;

means for connecting the other ends of said fourth and sixth resistors with a first voltage source;

means for connecting the base of said first transistor with a second voltage source;

means for connecting the bases of said fourth and fifth transistors with a third voltage source;

first input means for applying a first input signal to the base of said sixth transistor;

second input means for applying a second input signal to the base of said second transistor;

a first constant current circuit connected between the emitter of said first transistor and ground;

a second constant current circuit connected between the emitter of said second transistor and ground;

a third constant current circuit connected between the collector of said first transistor and said first voltage source; and

a fourth constant current circuit connected between the collector of said second transistor and said first voltage source.

3,899,745

ISOLATED OUTPUT SYSTEM FOR A CLASS D SWITCHING-MODE AMPLIFIER

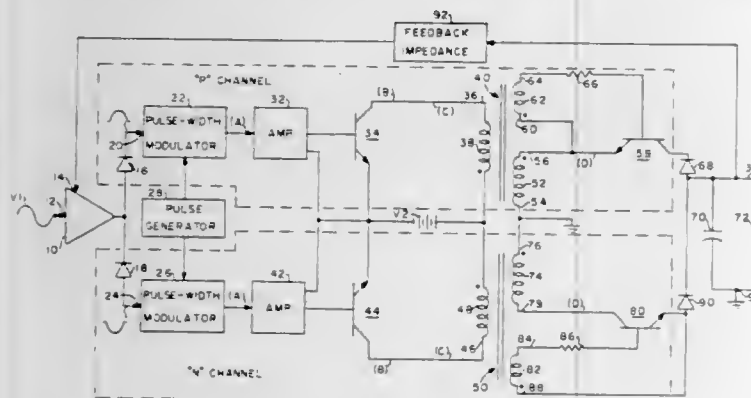
James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of and Martial A. Honnell, Auburn, Ala.

Filed Apr. 26, 1974, Ser. No. 464,723

Int. Cl.² H03F 21/00

U.S. Cl. 330-207 A

5 Claims



1. A Class D amplifier comprising:

input signal means responsive to an input signal for providing a first signal output corresponding to the positive polarity content of said input signal and a second signal output corresponding to the negative polarity content of said input signal;

first and second pulse-width modulators, said first modulator being responsive to said first output for providing a chain of first output pulses wherein the width of each pulse is proportional to the instantaneous level of said first output, and said second modulator being responsive to said second output for providing a chain of second output pulses wherein the width of each pulse is proportional to the instantaneous level of said second output;

a DC power source;

a first output stage comprising:

first switching means comprising a two-terminal switched circuit responsive to the presence of a said first output pulse for presenting a closed circuit and otherwise presenting an open circuit,

a first transformer comprising a primary winding and at least one secondary winding,

connecting means connecting said power source in series with said primary winding and said two-terminal switched circuit, and

second switching means comprising a two-terminal switched circuit in series with said secondary winding and being responsive to a discrete polarity output of said transformer for providing a first stage output from said first secondary winding of a first polarity and responsive to the release of stored energy previously supplied through said primary winding to the core of said first transformer, and otherwise said second switching means blocking current flow through said secondary winding;

a second output stage comprising:

third switching means comprising a two-terminal switched circuit responsive to the presence of a said second output pulse for presenting a closed circuit and otherwise presenting an open circuit,

a second transformer comprising a primary winding and at least one secondary winding,

connecting means for connecting said power source in series with said primary winding of said second transformer and said two-terminal switched circuit of said third switching means, and

fourth switching means comprising a two-terminal switched circuit in series with said secondary winding of said second transformer and being responsive to a discrete polarity output of said second transformer for providing a second circuit output from said sec-

ondary winding of said second transformer of a second polarity responsive to the release of stored energy previously supplied through said primary winding of said second transformer to the core of said second transformer and otherwise said fourth switching means blocking current flow through said secondary winding of said second transformer; and

filter means coupled to receive said first and second circuit outputs of said first and second output stages for eliminating pulse switching occurrences and thereby recreating an amplified replica of said input signal.

3,899,746

TWO OSCILLATORS ALTERNATELY SWITCHED INTO A PHASE LOCK LOOP WITH OUTPUTS TAKEN ONLY DURING FREE RUNNING PERIOD OF EACH OSCILLATOR

Josef Engelbert Gammel, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

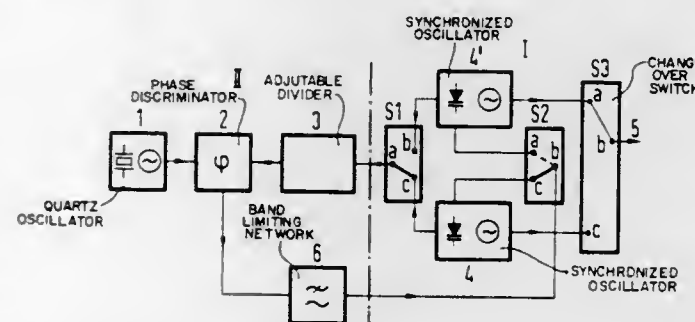
Filed Sept. 14, 1973, Ser. No. 397,401

Claims priority, application Germany, Sept. 22, 1972, 2246487

Int. Cl. H03b 3/04

U.S. Cl. 331-2

7 Claims



1. A stabilized oscillator circuit comprising two controlled oscillator stages, an output terminal, first switching means for periodically switching said output terminal from the output of one oscillator stage to the output of the other, each of said controlled oscillator stages being stable within predetermined limits for a given period when free running, a reference oscillator circuit, an adjustable frequency divider network, a phase discriminator having a first input connected to said reference oscillator, and having a second input connected to an output of said frequency divider network, second switching means for selectively connecting alternately one of said controlled oscillator stages into a loop between an output of said phase discriminator and an input of said frequency divider network, said first and second switching means being alternately operative to connect the output of one of said controlled oscillator stages while it is free-running to said output terminal and to connect the other controlled oscillator stage into said loop to be stabilized by said reference frequency oscillator.

3,899,747

ARRANGEMENT FOR PROVIDING RADIO EQUIPMENT WITH A PLURALITY OF OSCILLATORS

Olin S. Giles, and Edwin C. Lafferty, both of Lynchburg, Va., assignors to General Electric Company, N.Y.

Filed Sept. 26, 1973, Ser. No. 400,842

Int. Cl. H03b 3/04

U.S. Cl. 331-2

5 Claims

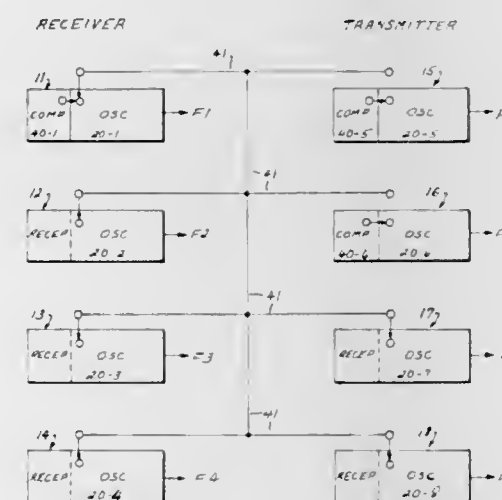
1. An improved arrangement for providing radio apparatus with a plurality of oscillators, some of which have a high frequency stability and some of which have a low frequency stability, said improved arrangement comprising:

a. a plurality of substantially similar oscillator modules each having an oscillator circuit substantially similar to the other oscillator circuits, a compensator input for said oscillator circuit, and a compensator receptacle;

b. a first compensator positioned in a first of said modules;

c. means connecting the output of said first compensator to only the compensator input of the oscillator in said first module for providing said oscillator of said first module with said high frequency stability;

d. a second compensator positioned in a second of said modules;



e. and means connecting the output of said second compensator in parallel with the compensator input of the oscillator in said second module and to the compensator input of the oscillator in at least a third module for providing said oscillators of said second and third modules with said low frequency stability.

3,899,748

METHOD FOR THE FREQUENCY STABILIZATION OF A LASER

Viktor Bodlaj, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

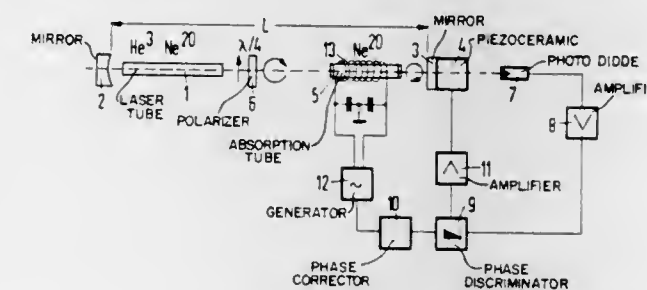
Filed Sept. 27, 1972, Ser. No. 292,613

Claims priority, application Germany, Sept. 27, 1971, 2148193

Int. Cl. H01s 3/11

U.S. Cl. 331-94.5 S

3 Claims



1. A method for the frequency stabilization of a laser of the type wherein an active laser medium is situated in a resonator between a fixed mirror and a movable mirror, said movable mirror attached to a piezo ceramic and movable in the axial direction of the laser upon energization of the piezo ceramic, and wherein the laser radiation is circularly polarized and passes through an absorption tube within a magnetic coil in the resonator and filled with the laser active gas, and a photosensitive element behind the absorption tube and outside the resonator receives the laser beam and produces a signal which is proportional to the frequency deviation of the laser radiation from the center frequency γ_0 caused by the absorption tube, and wherein the laser radiation is intensity modulated by an alternating energization of the coil and comprising the steps of:

comparing the amplitude and phase of the signal produced by the photosensitive element with the alternating wave which energizes the coil, the alternating wave depending on the center frequency γ_0 caused by the absorption tube,

3,899,749

GAS DYNAMIC LASERS

Roland John Hill, Quarndon, and Norman Thomas Jewell, Mickleover, both of England, assignors to Rolls-Royce Limited, London, England

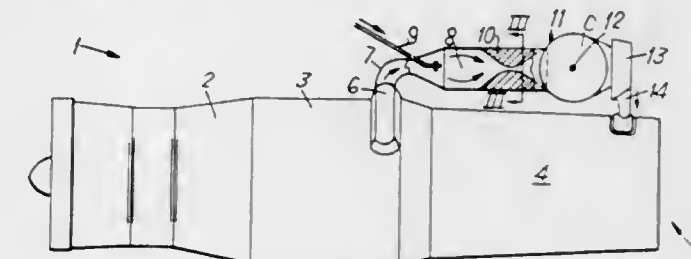
Filed July 18, 1972, Ser. No. 272,842

Claims priority, application United Kingdom, July 20, 1971, 33872/71

Int. Cl. H01s 3/09, 3/22

U.S. Cl. 331-94.5 P

30 Claims



1. A method of producing a laser beam, comprising diverting gases from their normal flow path through a continuous combustion engine into an auxiliary flow path, injecting into said diverted gases at least one additional substance to produce a gaseous mixture having a composition suitable for the support of lasing therein, aerodynamically expanding said gases supersonically to produce an energy population inversion in a lasing species of the mixture, and stimulating the production of said laser beam in an optically resonant cavity, said continuous combustion engine being a gas turbine engine.

3,899,750

LONG LIFE GAS LASER SYSTEM AND METHOD

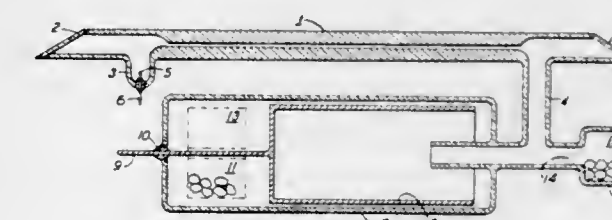
Urs E. Hochuli, 7011 Southwark Ter., Hyattsville, Md. 20782

Filed Sept. 21, 1973, Ser. No. 399,295

Int. Cl.² H01S 3/02

U.S. Cl. 331-94.5 G

3 Claims



1. In a gas laser having means forming an elongated gas filled bore, an anode and a low current density oxidized metal cathode at the respective ends of said bore, the improvement for extending the life of said laser comprising a source of gaseous impurities communicating with said cathode, said gaseous impurities having a partial pressure below about 10^{-5} Torr, wherein said impurity being selected from the group comprising hydrogen, oxygen, water vapor and mixtures thereof.

3,899,751

LONG LIFE MOLECULAR GAS LASER

Urs E. Hochuli, 7011 S. Wark Ter., Hyattsville, Md. 20782

Filed Dec. 3, 1973, Ser. No. 421,135

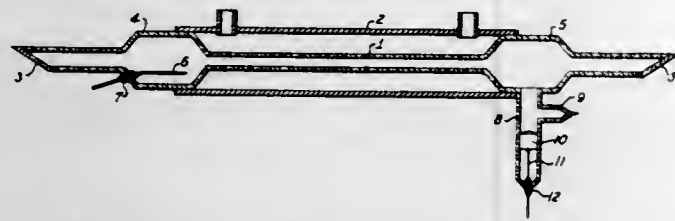
Int. Cl.² H01S 3/00

U.S. Cl. 331-94.5 T

14 Claims

1. In a CO₂ gas laser having means forming an elongated gas filled bore, an anode and a cold cathode for laser excitation of the gas in said bore, the improvements for extending the life of said gas laser comprising a reducing gas mixture compatible

with laser action in combination with a cold cathode material whose discharge created scale can be reduced over a substantially short time interval by said gas mixture to minimize layers



of scale matter on the cold cathode and in the sputtering products thus maintaining the partial pressures of the gas mixture components over a period of time of at least 10,000 hours.

3,899,752

MICROWAVE OSCILLATOR

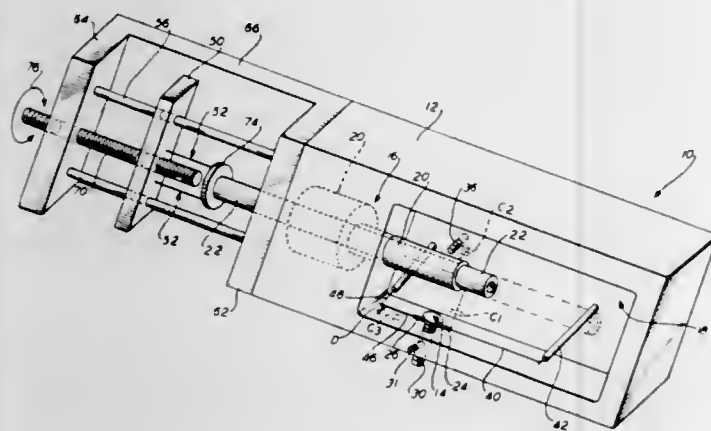
Herbert F. Engelmann, Kinnelon, N.J., assignor to Engelmann Microwave Co., Montville, N.J.

Filed Nov. 15, 1973, Ser. No. 416,082

Int. Cl.² H03B 5/24

U.S. Cl. 331-101

4 Claims



1. In a tunable wide band microwave oscillator having a frequency band including a high frequency end, and which tunable wide band microwave oscillator includes a resonator assembly for varying the frequency of said oscillator and a transistor having a lead capacitively coupled to said resonator assembly, the improvement comprising:

mechanical means for supporting said transistor and for varying the distance between said transistor and thereby said resonator assembly to provide optimum capacitive coupling between said transistor lead and said resonator assembly for maximum power output from said oscillator at the high frequency end of said frequency band; a housing in which said resonator assembly is mounted and which receives said transistor means; and said mechanical means mounted reciprocally in said housing for moving said transistor and thereby said transistor lead toward or away from said resonator assembly.

3,899,753

CONTROLLED HIGH FREQUENCY TRANSISTOR CRYSTAL OSCILLATOR

Shashi D. Malaviya, Fishkill, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 6, 1974, Ser. No. 466,942

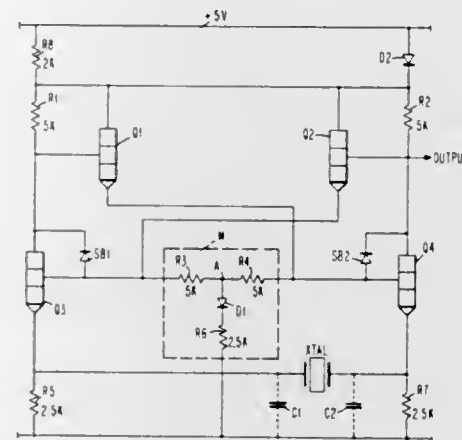
Int. Cl.² H03B 5/36

U.S. Cl. 331-109

5 Claims

1. A controlled amplitude oscillator comprising:
a. collector-to-base cross-coupled first and second transistors;

b. a piezoelectric crystal connected between the emitters of said first and second transistors; and
c. a mixer circuit connected between the bases of said first and second transistors, wherein said mixer circuit comprises



d. two like resistors connected in series between said bases; and
e. a third resistor connected from the common junction of said like resistors to a reference potential.

3,899,754

DELTA MODULATION AND DEMODULATION WITH SYLLABIC COMPANDING

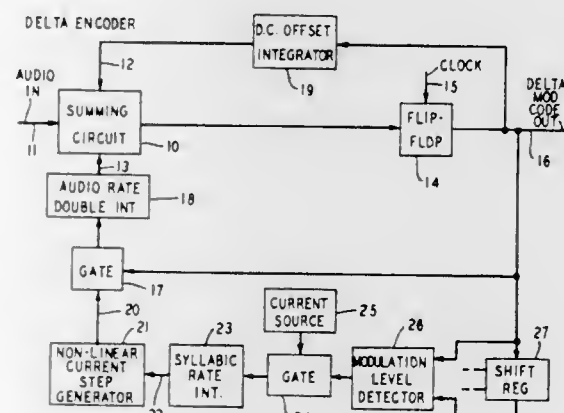
Stephen Joseph Brolin, Livingston, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 9, 1974, Ser. No. 468,449

Int. Cl.² H03K 13/22

U.S. Cl. 332-11 D

13 Claims



1. A delta modulator comprising
a comparator,
a source of input signals to one input of said comparator,
a source of feedback signals around said comparator to the other input of said comparator,
a pulse generator for generating an output pulse when said input signal exceeds said feedback signal as determined by said comparator, and
a feedback circuit utilizing said output pulses to generate said feedback signals,
characterized in that
said feedback circuit includes a syllabic rate integrator having a charging time-constant proportional to syllabic attack times and a discharging time-constant proportional to syllabic decay times.
6. A delta encoder comprising
a digitally-controlled feedback circuit, and
a syllabic rate integrator in said feedback circuit having different charging and discharging time constants, said charging time constant being proportional to syllabic attack time and said discharging time constant being proportional to syllabic decay time.

3,899,755

FREQUENCY MODULATOR INCLUDING A CLAPP-TYPE OSCILLATOR

Teiji Uchida, c/o Nippon Electric Co. Ltd., Minatoku, Tokyo, Japan

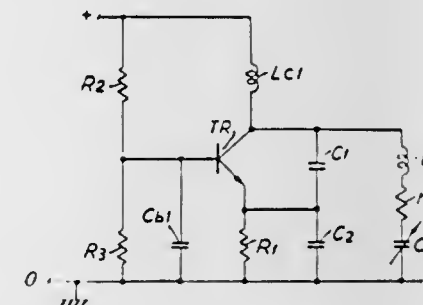
Filed Sept. 28, 1966, Ser. No. 582,710

Claims priority, application Japan, Nov. 10, 1965, 40-69015

Int. Cl. H03c 3/22

U.S. Cl. 332-30

1 Claim



1. In a transistorized frequency modulator of the type including a Clapp-type oscillator having a transistor and a frequency defining circuit connected across the emitter and collector of the transistor and composed of an inductive element and a plurality of capacitive elements, the improvement for improving the oscillation frequency versus output power characteristics of the modulator comprising a variable capacitance diode substituted for one of said capacitive elements; means for supplying a modulating signal across said variable capacitance diode; and means connected to said signal supplying means and said variable capacitance-diode for supplying a portion of said modulating signal to one control terminal of said transistor, thereby to increase the collector current when the capacitance of said variable capacitance diode decreases in response to a variation in the voltage of said modulating signal.

3,899,756

MICROWAVE PHASE CORRECTING NETWORK UTILIZING WAVEGUIDE COUPLER HAVING MISMATCHED PORTS CAUSED BY LATERSALLY DISPLACED END SECTION

Janos Bodonyi, Bicknacre, England, assignor to The Marconi Company Limited, Chelmsford, England

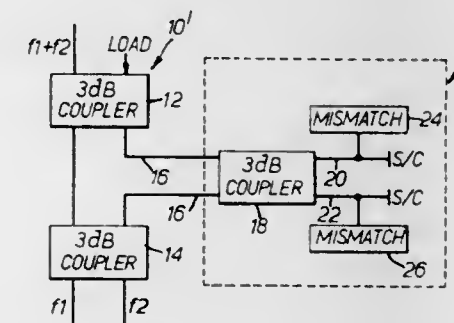
Filed Apr. 11, 1974, Ser. No. 459,950

Claims priority, application United Kingdom, May 5, 1973, 21480/73

Int. Cl.² H01P 1/20, 5/18, 9/00

U.S. Cl. 333-10

11 Claims



1. A phase correcting network for improving the phase/frequency characteristic of a delay line including a 3dB coupler adapted to be inserted in the said delay line and terminated in a pair of short circuited waveguide stubs, each of said waveguide stubs being susceptance loaded by means of at least one mismatch achieved by laterally displacing sections of the waveguide relative to one another in the direction of the H-plane.

3,899,757

SQUARE TURNING MEANDER LINE

Takakiyo Nakagami, Tokyo; Kazunari Hatanaka, Yokohama, and Masayuki Ishizaki, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

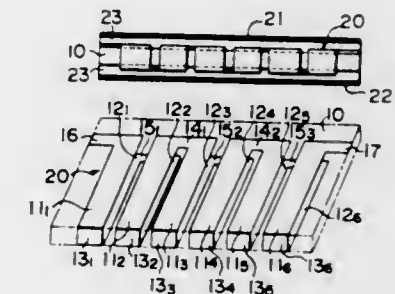
Filed Mar. 5, 1974, Ser. No. 448,287

Claims priority, application Japan, Mar. 19, 1973, 48-31581

Int. Cl.² H01P 9/00

U.S. Cl. 333-31 R

5 Claims



1. A square turning meander line comprising:
a dielectric plate having first and second parallel, generally planar surfaces,
a continuous conducting line formed on said plate and disposed to include first and second pluralities of parallel conducting lines on said first and second surfaces, respectively, of said dielectric plate with corresponding ones of said lines of said first and second pluralities in opposed relationship, first commonly disposed ends of corresponding, opposed lines of said first and second pluralities thereof being connected and the other ends of adjacent lines of each plurality being connected in paired relationship and in alternate succession as to said first and second pluralities thereof,
each of said lines being of a common length and of a common width selected in accordance with a desired frequency characteristic of the said meander line and adjacent said parallel lines of each said plurality plate being separated by a distance less than the said common width thereof, and
first and second parallel, spaced earth conductors, said dielectric plate with said continuous line thereon being positioned in parallel relationship in the spaced between said first and second earth conductors.

3,899,758

VARIABLE INDUCTIVE RESONANT CIRCUIT ARRANGEMENT HAVING A DIAMAGNETIC CORE FOR THE UHF RANGE

Gerhard Maier, Schwenningen, and Bertram Fischer, Deisslingen, both of Germany, assignors to GTE International, Stamford, Conn.

Filed May 1, 1974, Ser. No. 465,859

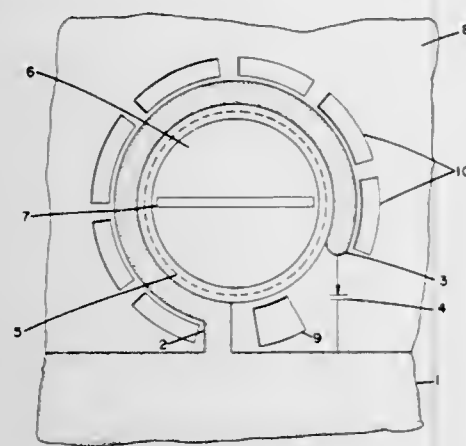
Int. Cl.² H03H 13/00, 5/12

U.S. Cl. 333-70 S

3 Claims

1. A variable, predominately inductive resonant circuit assembly for the UHF range of a transistorized UHF television employing varactor tuners comprising:
a threaded member of insulating material disposed within an aperture of a printed circuit board;
an arcuate conductor strip having apertures surrounding the extreme periphery thereof and having less than one turn surrounding and affixed to said threaded member of insulating material;
a core of diamagnetic material disposed within said

threaded member of insulating material, said core including means for adjustment; and



varactor diode means coupling said arcuate conductor strip to a potential reference level.

3,899,759

ELECTRIC WAVE RESONATORS

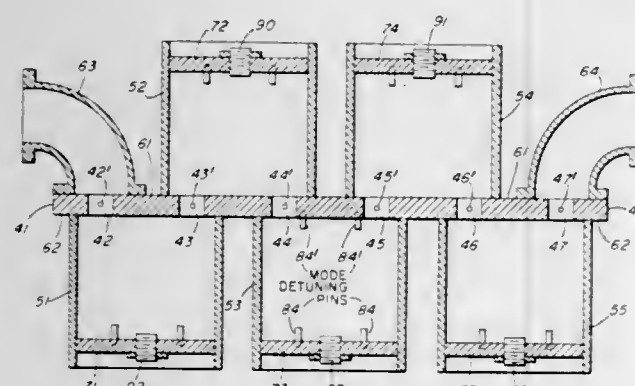
Marion E. Hines, Weston, and Konrad K. Benz, Winchester, both of Mass., assignors to Microwave Associates, Inc., Burlington, Mass.

Filed Apr. 8, 1974, Ser. No. 458,564

Int. Cl.² H01P 1/16, 1/20, 7/06

U.S. Cl. 333-73 W

18 Claims



1. An electric-wave cavity resonator with a plurality of modes or resonance in a given frequency band intended for operation in a single one of said modes in said band of frequencies, comprising electrically-conductive surrounding walls to define said cavity, coupling means on one or more of said walls, and mode detuning means comprising one or more elongated conductive pins having no cross-sectional dimension that is greater than a minor fraction of the length dimension placed within the cavity in positions and orientations so selected that the length dimension of each lies substantially perpendicular to the high frequency electric field of said single mode of resonance and substantially parallel to the high frequency electric field of others of said modes of resonance for tuning the resonance frequency of said cavity for said other modes to frequencies outside of said frequency band with substantially minimum addition of surface upon which electric currents must flow.

3,899,760

ELECTRONIC CHANNEL ADDRESS REMOTE CONTROL SYSTEM

David Lee Funston, Batavia, N.Y., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed May 17, 1974, Ser. No. 471,040

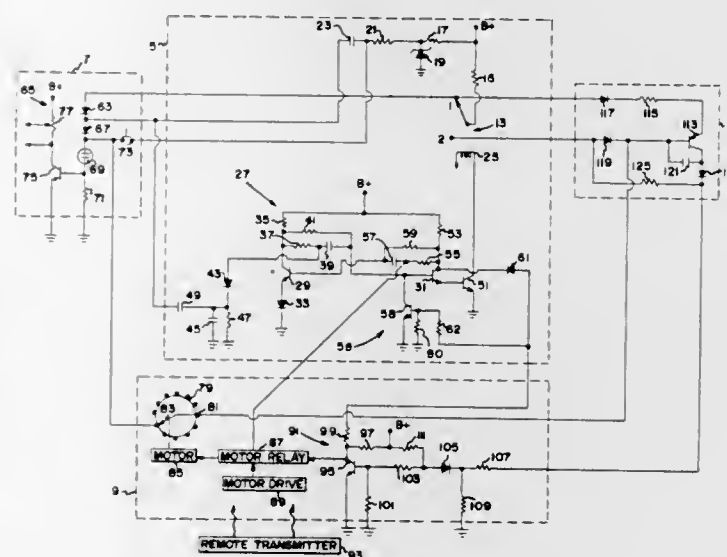
Int. Cl.² H03J 1/06

U.S. Cl. 334-9

7 Claims

1. In a signal receiver having a potential source, a varactor tuner, and a remote signal channel selecting means, an electronic channel address system comprising:

means coupled to said potential source for remote-manual switching, said means including a switching relay means coupled to a memory circuit; means coupled to said means for remote-manual switching and to said varactor tuner for manual signal channel selection; means coupled to said means for remote-manual switching and said means for manual signal channel selection for remote signal channel selection, said means including control circuitry coupled to a motor means mechanically connected to a rotary switching means and motor drive



means coupled to said motor and responsive to said remote signal channel selecting means; and means coupled to said control circuitry and rotary switching means of said means for remote signal channel selection, to said means for manual signal channel selection, and to said means for remote-manual switching for effecting tracking of manual signal channel selection by said means for remote signal channel selection, said tracking means altering said control circuitry and rotary switching means in response to manual signal channel selection to provide alignment of said rotary switching means with said manually selected signal channel and a path for current flow therethrough.

3,899,761

COLOUR PICTURE TUBES CONTAINING AN IN-LINE TYPE ELECTRON GUN ASSEMBLIES

Masaaki Yamauchi, Mobara, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 21, 1974, Ser. No. 444,275

Claims priority, application Japan, May 4, 1973, 48-49112

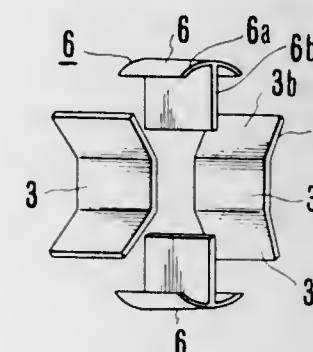
Int. Cl.² H01F 3/12

U.S. Cl. 335-211

2 Claims

1. In an in-line type colour picture tube of the type comprising three electron guns arranged on a straight line, and means for adjusting on substantially the same plane the dynamic convergence and the static convergence provided for concentrating three electron beams emanated from said three electron guns at a point on the fluorescent screen of said colour picture tube, the improvement which comprises a pole piece assembly disposed in said plane of convergence adjustment, said pole piece assembly including a first pair of spaced pole piece segments substantially symmetrically disposed with respect to a plane perpendicular to said straight line, which plane passes through the axis of a central electron gun, one of

said first paired pole piece segments being disposed between the axes of the central electron gun and an outer electron gun, the other being disposed between the axes of the central electron gun and the other outer electron gun, individual segments of said first paired pole piece segments being disposed also symmetrically with respect to another plane passing through the axes of the three electron guns and opposed to each other by a smaller distance at said straight line than at



the extremities remote from said straight line, and a second pair of pole piece segments being disposed symmetrically with respect to said plane passing through the axes of three electron guns, individual segments of said second paired pole piece segments being disposed also substantially symmetrically with respect to said plane perpendicular to said straight line and passing through the axis of the central electron gun, and having a web projecting toward said central electron gun substantially on the last mentioned plane.

3,899,762

PERMANENT MAGNETIC STRUCTURE

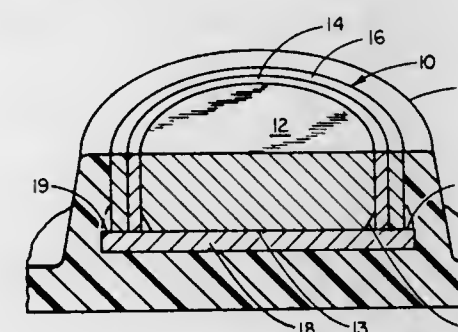
Robert J. Studders, Toledo, Ohio, assignor to Permagnet Corporation, Toledo, Ohio

Filed Oct. 3, 1974, Ser. No. 511,681

Int. Cl. H01F 7/02

U.S. Cl. 335-302

12 Claims



1. A permanent magnet structure for casting in a non-magnetic plastic support, said structure comprising:

- a central non-corrosive permanent magnetic core of outside uniform cross-section with opposite parallel pole surfaces on the opposite axial ends thereof,
- a non-magnetic non-corrosive inner sleeve intimately surrounding said core extending between and to said parallel pole surfaces,
- a magnetic non-corrosive outer sleeve intimately surrounding said inner sleeve and also extending between and to said parallel pole surfaces, and
- a magnetic pole plate slightly larger in outer circumference than the outer circumference of said outer sleeve and magnetically held against one of said pole surfaces, said structure being cast into a non-magnetic plastic support so that only the other said pole surface is exposed.

3,899,763

INTERLEAVED WINDING FOR ELECTRICAL INDUCTIVE APPARATUS

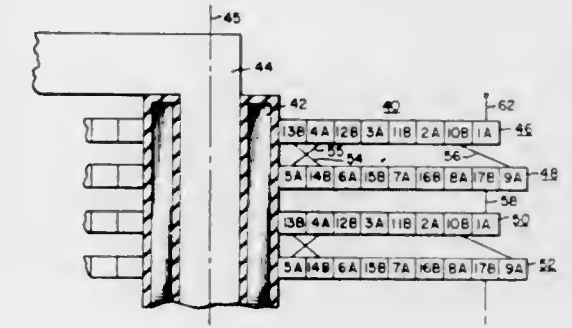
Robert I. Van Nice, Sharon, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 30, 1974, Ser. No. 474,851

Int. Cl.² H01F 15/14

U.S. Cl. 336-70

3 Claims



1. An interleaved winding for electrical inductive apparatus, comprising:

- at least first and second coil disks disposed axially adjacent to each other, said first coil disk containing an even number of turns of an electrical conductor, and said second coil disk containing an odd number of turns of an electrical conductor;
- start-start connections which connect together and radially transpose the conductors of the first and second coil disks; and,
- a finish-finish connection which connects together the outermost turn of the second coil disk to the turn of the first coil disk which is adjacent to the outermost turn of the first coil disk.

3,899,764

FOUR-STRAND INTERLEAVED-TURN TRANSFORMER WINDING

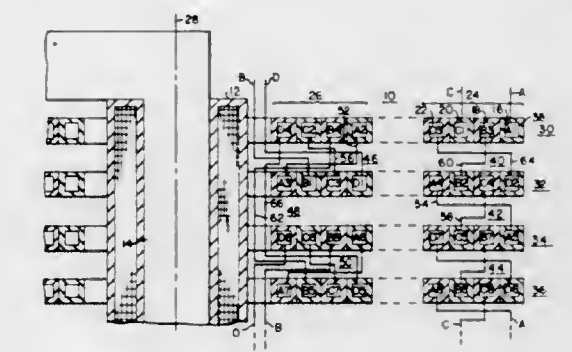
Robert I. Van Nice, Sharon, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 16, 1974, Ser. No. 506,641

Int. Cl. H01F 15/14

U.S. Cl. 336-70

3 Claims



1. An interleaved winding for electrical inductive apparatus, comprising:

- at least first and second coil disks disposed axially adjacent to each other, with each coil disk containing a plurality of conductors spirally disposed around a common axis to form at least inner and outer turns of the conductors;
- start-start and finish-finish connections located between the coil disks to provide at least first, second, third and fourth conduction paths through the coil disks, said conduction paths being directed in a first radial direction when progressing towards said axis and in a second radial direction when progressing away from said axis;
- said first and second conduction paths beginning at the outer turn of the first coil disk and progressing in the first direction through the first coil disk and then in the second direction through the second coil disk;

said third and fourth conduction paths beginning at the inner turn of the second coil disk and progressing in the second direction through the second coil disk and then in the first direction through the first coil disk; with said third conduction path being radially positioned, in the coil disks, between the first and second conduction paths; said first coil disk being connected to a third coil disk in the winding by a start-start connection which is positioned under the inner turn of the second coil disk, said third coil disk being axially located in the winding with two coil disks between the first and third coil disks.

3,899,765

THERMALLY ACTUATED SWITCH

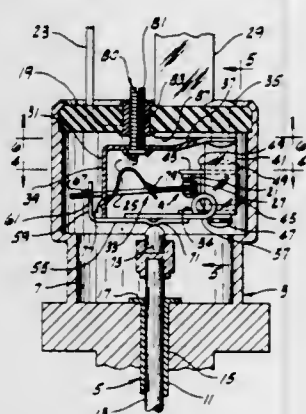
Theodore J. Daigneault, Jr., Sheldonville, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed July 31, 1974, Ser. No. 493,283

Int. Cl.² H01H 37/74

U.S. Cl. 337—386

9 Claims



1. A thermally actuated snap-acting switch comprising a switch housing, thermal actuator means having a portion within said housing movable relative thereto in response to changes in temperature, and switch means within the housing actuatable by said thermal actuator means, said switch means comprising a stationary contact, a first terminal for said stationary contact, a switch arm, a movable contact carried by said switch arm, and a second terminal for said movable contact, said switch arm and said movable contact being movable between a first position in which said stationary and said movable contacts are in electrical contact with one another and a second position in which said contacts are spaced from one another for making and breaking an electrical circuit between said terminals, said switch means further comprising a switch frame secured to said housing and means for abruptly moving said switch arm and said movable contact from their first position to their second position when said thermal actuator portion moves into a position corresponding to a predetermined temperature, said means for abruptly moving said movable contact and said switch arm comprising spring means interposed between said switch arm and said switch frame for biasing said switch arm into one of its positions and for abruptly moving said switch arm between said positions in response to a predetermined amount of movement of said thermal actuator portion, and adjustable means for varying the temperature at which said movable contact and switch arm move abruptly over center from one position to another, said adjustable means comprising means for moving said switch frame and said spring means relative to said stationary contact.

3,899,766

PRESSURE TRANSDUCER

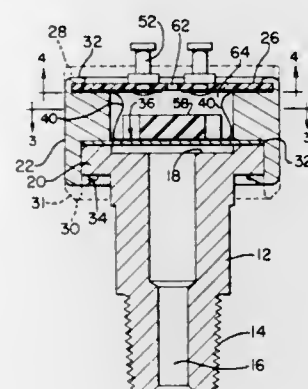
Seymour Mermelstein, Newton, Mass., assignor to Tyco Laboratories, Inc., Waltham, Mass.

Filed Mar. 29, 1974, Ser. No. 456,122

Int. Cl.² H01C 13/00; G01L 1/18

U.S. Cl. 338—42

11 Claims



1. A pressure transducer comprising a hollow case that is open at both ends and has an internal shoulder, a diaphragm disposed in said case with one side of the peripheral portion of said diaphragm engaging said shoulder, annular means engaging the other side of the peripheral portion of said diaphragm, said case having a portion at one end that is bent over said annular means and forces said annular means to clamp said peripheral portion tightly against said shoulder, with a hermetic seal being formed at said shoulder between said diaphragm and said case, a strain gage with at least one electrical resistance element bonded to one side of said diaphragm, and electrical termination means mounted to said case and electrically connected to said at least one electrical resistance element.

3,899,767

IMAGING SYSTEM

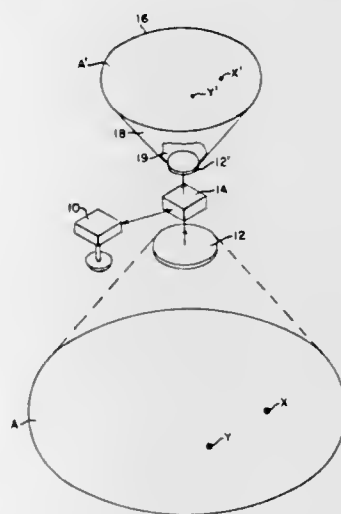
Charles H. Jones, Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 15, 1973, Ser. No. 416,326

Int. Cl.² G01S 9/66, 7/56, 3/80

U.S. Cl. 340—3 R

28 Claims



1. An imaging system comprising:

- A. a plurality of receiving elements for receiving energy from a target area to be viewed, for providing first output signals;
- B. a plurality of transmitting elements for transmitting energy;

- C. said receiving elements being arranged in a geometric array over a first predetermined surface;
- D. said transmitting elements being arranged in a similar, scaled geometric array over a second predetermined surface;
- E. said second predetermined surface being a similar scaled replica of said first predetermined surface;
- F. output means for receiving and displaying the energy pattern from said transmitting elements;
- G. signal processing means responsive to said first output signals and operable to process said first output signals to provide second output signals to said plurality of transmitting elements;
- H. said processing being operable to change said first output signals such that the energy distribution at said output means is a scaled replica of the energy distribution from said target area under investigation.

3,899,768

METHOD OF SEISMIC SURVEYING BY EXTRACTING AND DISPLAYING SEISMIC PROPERTIES

Roy Gibson Quay, and Clifford Harvey Ray, both of San Antonio, Tex., assignors to Petty-Ray Geophysical, Inc., Houston, Tex.

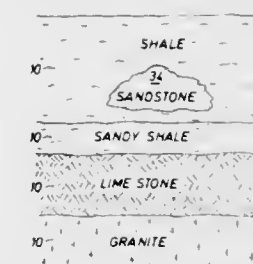
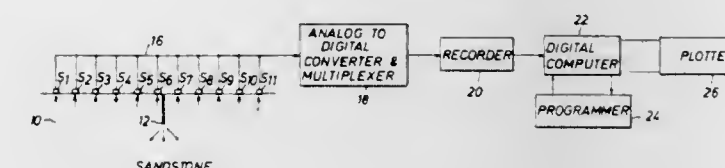
Continuation of Ser. No. 347,197, April 2, 1973, abandoned.

This application July 11, 1973, Ser. No. 378,176

Int. Cl. G01v 1/24

U.S. Cl. 340—15.5 DS

47 Claims



1. A method of seismic surveying comprising the steps of: obtaining a plurality of seismic signals each from different points along a traverse in a seismic survey; generating a multi-channel seismic record of such seismic signals grouped in side-by-side format to represent a section of the geological structure of the earth beneath such traverse; selecting multiple sets of laterally extending guidelines associated at least in part with the geologic structure represented on such seismic record; extracting a seismic property from the data contained within zones associated with each of such guidelines; establishing a reference axis that conforms with such guidelines; and plotting a value proportional to the magnitude of such seismic property about such reference axis.

3,899,769

METHOD OF AND APPARATUS FOR REPRESENTING THE MOVEMENT OF A MOVING BODY IN A TWO-DIMENSIONAL SPACE

Etienne Augustin Henri Honore, Chatenay Malabry, France; Emile Leon Gabriel Torcheux, deceased, late of Paris, France; by Micheline Marie Torcheux, born Deloffre, heir, Paris, France; Alain Torcheux, heir, Paris, France, and Adeline Geret, born Torcheux, heir, Paris, France, assignors to Societe d'Etude et d'Application des Techniques Nouvelles NEO-TEC, France

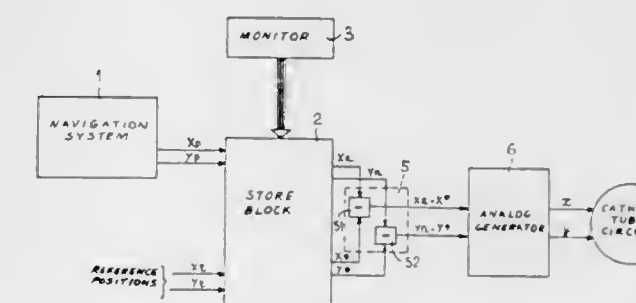
Filed June 25, 1973, Ser. No. 373,555

Claims priority, application France, June 27, 1972, 72,23193

Int. Cl. G08c 21/00; G01s 7/22

U.S. Cl. 340—24

9 Claims



1. Method of representing the movement of a moving body on the screen of a cathode ray tube system having two spot-position control inputs, from a pair of items of information giving the current position of the moving body in a two-dimensional coordinate system, comprising the steps of:

- a. storing a plurality of pairs of items of information giving the position of reference points, in the same two-dimensional coordinate system,
- b. storing from time to time the pair of items of information giving the current position of the moving body, while eliminating the oldest stored pair, so as to keep in store only a limited number of such items of information,
- c. sequentially reading each pair of items of position information in the group comprising the pairs of items of said stored information giving the positions of reference points, the pairs of items of said stored information giving the position of the moving body, and the pair of items of information giving the current position of the moving body,
- d. sequentially subtracting each read pair of items of position information from a predetermined pair of items of information in said group, respectively, so as to obtain a pair of items of position information relative to the position corresponding to said predetermined pair,
- e. sequentially converting at least parts of the two items of information of each successive pair of items of relative-position information, into a pair of analogue signals, respectively,
- f. applying succession each pair of analogue signals respectively to the said two spot-position control inputs of the cathode ray tube system, and
- g. selectively repeating said steps c) through f), thereby providing a representation of the current position and the past positions of the moving body and of the positions of the reference points.

3,899,770

MULTIPLE INPUT WARNING SYSTEM FOR A MOTOR VEHICLE

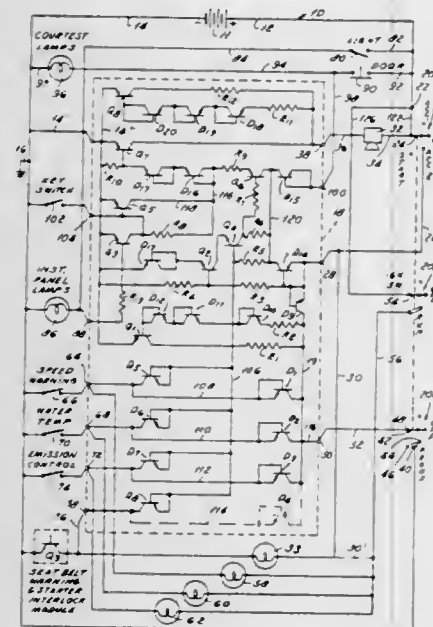
Kenneth G. Slotkowski, Southfield, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Apr. 1, 1974, Ser. No. 457,511

Int. Cl.² B60Q 5/00; G08B 23/00

U.S. Cl. 340—52 F

10 Claims



1. A multiple input warning system for a motor vehicle, said motor vehicle including:

- a DC source of electrical potential;
- first and second voltage supply leads connected to opposite terminals of said DC source of electrical potential;
- a warning device electrically actuable upon the application of an electrical potential difference across its terminals;
- a door on said vehicle;
- a switch controlled by the opening and closing of said door, said switch being nonconductive when said door is closed and conductive is open; said door is open;
- an instrument panel lamp;
- a light switch, coupled to said instrument panel lamp, for controlling the supply of electrical potential to said instrument panel lamp;
- an ignition switch operated by the insertion in it of a key, said ignition switch including a key switch for sensing the presence of a key in said ignition switch, said key switch having a first state of conductivity when a key is in said ignition switch and a second state of conductivity in the absence of a key in said ignition switch, said ignition switch being connected to said first lead and having an electrical pole, said ignition switch having a condition wherein said first voltage supply lead is connected to said pole;
- an indicating lamp; and
- a switching device connected in series with said indicating lamp, a junction thereby being formed between said switching device and said indicating lamp, said series-connected indicating lamp and switching device being connected, through said ignition switch, across said first and second voltage supply leads when said ignition switch is in said condition; wherein the improvement comprises:
- circuit means, coupled to said second voltage supply lead, to said pole of said ignition switch, to the junction formed between said series-connected indicating lamp and switching device, to said door switch, to said light switch, to said key switch and to said warning device, for applying an electrical potential, derived from said first and second voltage supply leads, across terminals of said warning device; when said key switch is in its first state of conductivity, said ignition switch is not in said condition and said door switch is closed; when said ignition switch is in said condition and

said indicating lamp is energized; and when said instrument panel lamp is energized, said ignition switch is not in said condition and said door switch is closed.

3,899,771

METHOD OF CHARACTER RECOGNITION BY LINEAR TRAVERSE EMPLOYING SHIFTED EDGE LINES

Peter Saraga, and Peter Roy Wavish, both of Salfords, near Redhill, England, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 281,344, Aug. 17, 1972, abandoned.

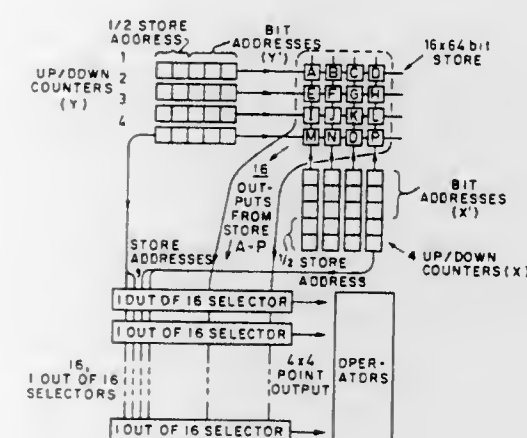
This application June 17, 1974, Ser. No. 479,904

Claims priority, application United Kingdom, Aug. 17, 1971, 38528/71; Aug. 17, 1971, 38527/71; Mar. 1, 1972, 9488/72

Int. Cl. G06k 9/16

U.S. Cl. 340—146.3 AE

11 Claims



1. A method of recognizing a character of varying stroke width comprising the steps of:

- storing digital electrical signals identifying the shape of the character in a first matrix of storage cells whereby a character cell is distinguished from a background cell position by the presence of a digital signal;
- sensing the digital signal characteristics of a predetermined group form of storage cells starting from a first predetermined group and sensing the condition of all cells within that group;
- assigning for said sensed group of cells an appropriate operator, said operation being selected from a predetermined set of unique operators, said assigned operator establishing the center of said group and an associated vector direction for said group, said center being an interstitial point between cells of said group;
- establishing the next group of cells whose digital information is to be sensed by employing the center and vector direction information of said first group of cells;
- determining and storing in a second matrix a shifted edge line by repeated application of said sensing, assigning and establishing steps in a complete circuit of said character, said shifted line lying between the outermost character cell positions and adjacent background cell positions;
- comparing said shifted edge line with a standard edge line in order to recognize the character.

3,899,772

MOBILE COMPUTER TERMINAL AND SYSTEM

Alan B. Mead; John L. Aker; David A. Malan, all of Chanute, and John R. Alden, Olathe, all of Kans., assignors to Kustom Electronics, Inc., Chanute, Kans.

Filed Apr. 23, 1973, Ser. No. 353,509

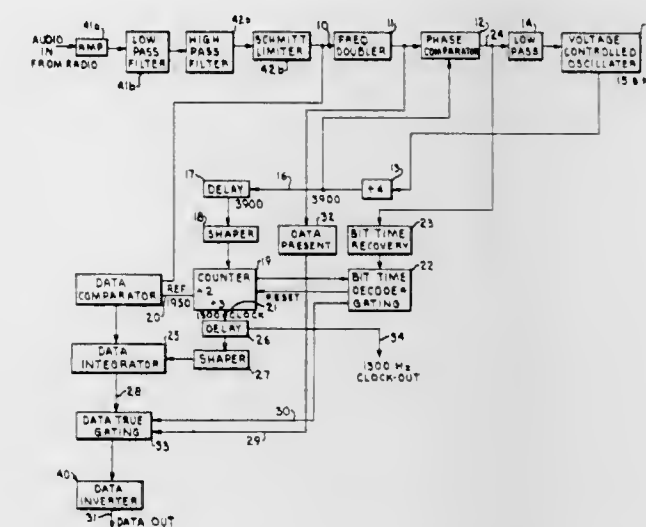
Int. Cl. G06f 3/14

U.S. Cl. 340—152

18 Claims

1. In a mobile terminal computer system having a plurality of mobile terminal units, a base radio and a computer data base, the improvement comprising:

said mobile terminal unit including means for encoding, transmitting, receiving and decoding digital data means for communicating said digital data between said terminal unit, said base radio and said computer data base thereby facilitating terminal unit dispatching, unit status updating and computer information retrieval without voice communication,



means for automatically transmitting an acknowledgement to said computer data base that digital data has been received by said mobile terminal unit, and means for transmitting an operator acknowledgement to said computer data base that said digital data is received by said terminal unit operator.

3,899,773

REMOTE CONTROL SIGNAL GENERATOR WHICH OPERATES TO INDIVIDUALLY CONTROL A PLURALITY OF CONTROLLED CIRCUITS

Selzo Yamauchi, and Kazuo Shimomura, both of Osaka, Japan, assignors to Sanyo Electric Company, Ltd., Osaka, Japan

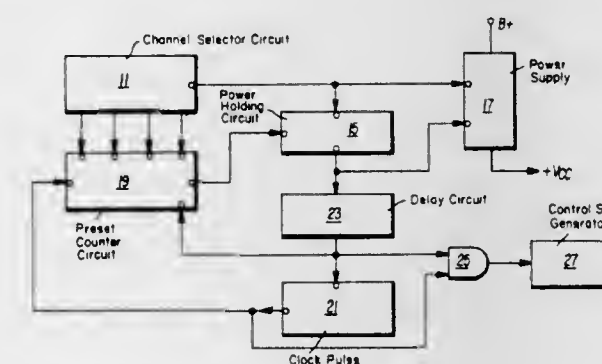
Filed Feb. 9, 1973, Ser. No. 331,019

Claims priority, application Japan, Feb. 10, 1972, 47-14425; Feb. 10, 1972, 47-14426; Feb. 10, 1972, 47-14427; Feb. 10, 1972, 47-14428; Feb. 16, 1972, 47-16642; June 14, 1972, 47-59793

Int. Cl. H04q 5/00

U.S. Cl. 340—167 R

19 Claims



1. A remote control signal generator which operates in a manner so as to individually control a plurality of remote circuits comprising:

- channel selector means including a plurality of selector switch means for producing a binary coded signal corresponding to a selected one of said selector switch means;
- holding means actuated by said channel selector means;
- clock pulse generating means, actuated by said holding means for generating a predetermined number of clock pulses;

- power supply means coupled to said channel selector means and said holding means;
- preset counting means coupled to said channel selector means such that the count set in said counting means corresponds to said binary coded signal, said counting means counting the number of pulses generated by said clock pulse generating means up to the count set by said channel selector means and providing a stopping signal to said holding means to control said clock pulse generating means when said preset count has been reached; and,
- control signal generator means, coupled to said clock pulse generating means and synchronized with the pulses generated by said clock pulse generating means for generating remote control signals to control said plurality of remote circuits.

3,899,774

INTERROGATION OF REMOTE STATIONS

Alexander J. Binnie, Luton; Kenneth Bowdell, Shefford, and Philip James Clark, Luton, all of England, assignors to George Kent Ltd., Luton, England

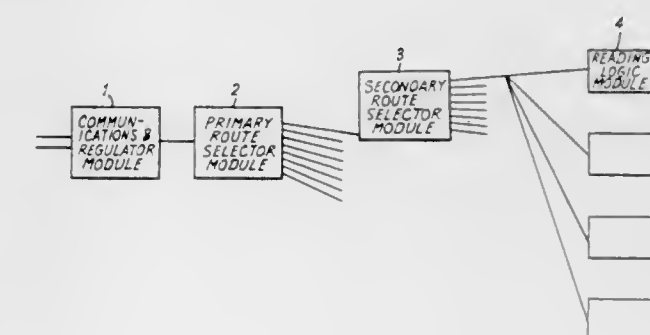
Filed May 4, 1973, Ser. No. 357,111

Claims priority, application United Kingdom, May 4, 1972, 20785/72

Int. Cl.² H04Q 11/00

U.S. Cl. 340—163

6 Claims



1. Apparatus for reading sources of information connected thereto and for transmitting information from the sources to a remote interrogator in response to an interrogation signal, containing coded instructions from the interrogator, comprising:

- a data transmission line;
- route selector means remote from the interrogator and connected to the interrogator by said data transmission line, said route selector means having an input terminal electrically connected to said transmission line and a plurality of output terminals, and being for establishing an electrical path, upon receiving a first coded interrogation signal via said transmission line from the interrogator, from said input terminal to a particular one of said plurality of output terminals as directed by the coded instructions in said first interrogation signal;
- at least one reading circuit means electrically connected to each of said plurality of output terminals of said route selector means, each reading circuit means having input means electrically connected to a respective one of the sources of information, for reading said information from a respective one of the sources selected in response to a third coded interrogation signal upon receiving said third coded interrogation signal from said interrogator via said route selector means;
- means for generating a coded signal representative of the information of the source in response to said third coded signal; and
- coupling means independent of said route selector means for applying said generated coded signal to said transmission line.

3,899,775

AUTOMATIC STORE TRANSACTION SYSTEM AND TERMINAL THEREFOR

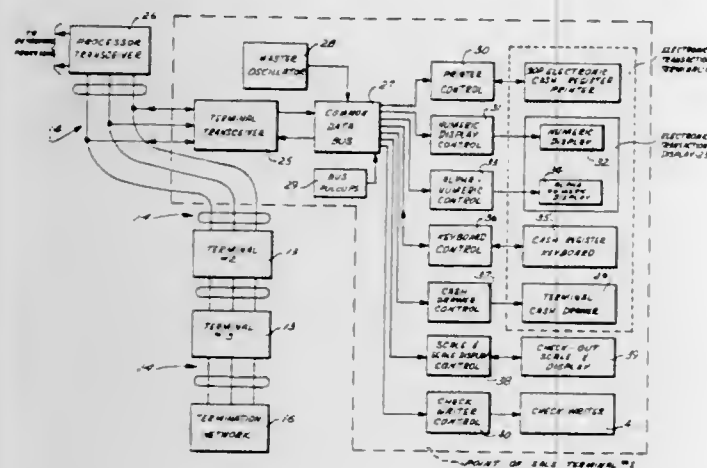
John M. Larsen, Bellflower, Calif., assignor to MSI Data Corporation, Costa Mesa, Calif.

Filed Apr. 13, 1973, Ser. No. 351,087

Int. Cl. G06F 15/20, 3/04

U.S. Cl. 340—172.5

14 Claims



1. An automatic store transaction system comprising a digital computer having preselected, accessible transaction information recorded therein and capable of executing preselected operations on transaction information, the computer generating a train of binary coded signals including a unique signal for activating a single transaction terminal adapted to respond to the unique signal, a transceiver coupled to said computer for transmitting binary coded signals to and from the computer,

a terminal for recording store transactions including means for generating binary coded signals representative of a transaction entered therein and means responsive to a unique signal for activating the terminal in response to the reception of the unique signal,

a transceiver coupled to the terminal for transmitting binary coded signals to and from the terminal,

and means coupled between said transceivers for transmitting the binary coded signals between the digital computer and the terminal, said means comprising a transmission line system having three transmission lines arranged in a balanced system, the store transactions entered into the terminal being represented by binary coded signals that are transmitted to the digital computer for processing once the terminal is activated in response to the unique signal and the processed data being transmitted back to the transaction terminal for completing the store transaction.

3,899,776

PROGRAMMABLE TERMINAL

John S. Sicko, Schenectady, N.Y.; Raymond J. Hodson, Jr., Salem, Va., and John T. Adamchick, Amsterdam, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 318,363, Dec. 26, 1972, abandoned.

This application Feb. 28, 1974, Ser. No. 446,636

Int. Cl. G06F 3/00, 9/00

U.S. Cl. 340—172.5

12 Claims

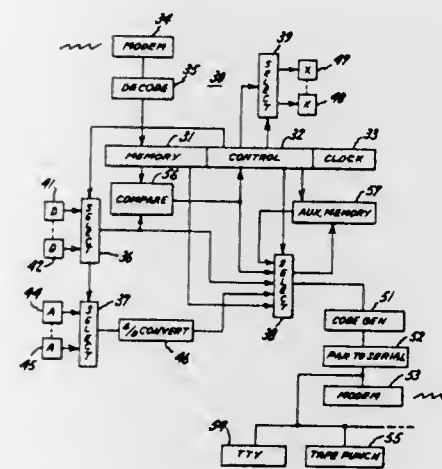
1. A programmable terminal for operating on-line or off-line to control or monitor a plurality of external devices comprising:

memory means for storing program and control information;

logic means coupled to said memory means and said external devices for converting information from said memory into control signals, said logic means including external selection means for selectively activating at least one of said external devices;

comparison means coupled to said memory means and said external devices for comparing incoming information with information from said memory means;

internal selection means, coupled to said memory means and said external devices, for selecting one of a plurality



of internal signals for transmission from said terminal, said internal signals including said control signals and signals received from selectively activated external devices; and

output means, coupled to said internal selection means, for providing an output signal from said terminal.

3,899,777

MEANS FOR EQUALIZING LINE POTENTIAL WHEN THE CONNECTING SWITCH IS OPEN

Erwin Feicht, Berlin; Werner Otto Haug, Boeblingen; Rolf Remshardt, Boeblingen, and Helmut Schettler, Boeblingen, all of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

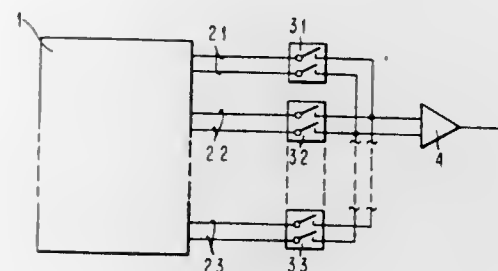
Filed Feb. 25, 1974, Ser. No. 446,033

Claims priority, application Germany, Feb. 23, 1973, 2309186

Int. Cl. G11C 7/06

U.S. Cl. 340—173 R

5 Claims



1. Storage arrangement comprising:

a read amplifier having input lines;

a plurality of separate read lines each connectable separately or in pairs to the input lines of said read amplifier;

switch means connected between said input lines and said read lines; and

means connected between a source potential and both said input lines and said read lines for bringing both said input lines and said read lines to the same potential level when said switch means is open.

3,899,778

MEANS EMPLOYING A MULTIPLE LENS ARRAY FOR READING FROM A HIGH DENSITY OPTICAL MEMORY STORAGE

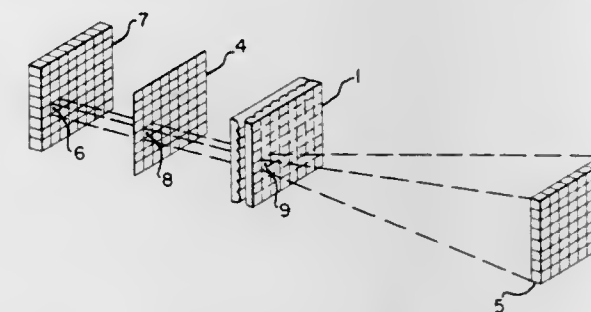
Donald L. Roberts, San Diego, Calif., assignor to NCR Corporation, Dayton, Ohio

Filed Jan. 4, 1974, Ser. No. 430,932

Int. Cl. G11C 13/04; G02B 3/00

U.S. Cl. 340—173 LM

14 Claims



1. A system for retrieving information stored page-by-page on a mask comprising:

A. illumination means, said illumination means including a plurality of discrete light emitting areas and means for selectively enabling said discrete areas for light emission;

B. a multiple lens array comprising first and second substrates each having parallel corrugations on a face thereof, said faces brought together with the parallel corrugations of said first substrate perpendicular to the parallel corrugations of said second substrate, said corrugations forming at each intersection thereof one of a plurality of lenslets, said multiple lens array being disposed proximate said illumination means such that each of said lenslets is aligned with one of said discrete light emitting areas; and

C. photosensitive detector means, said photosensitive detector means including a plurality of light sensitive areas, said photosensitive detector means being disposed to intercept light issued from a light emitting discrete area of said illumination means and passed through a corresponding lenslet of said multiple lens array;

whereby an information bearing area of a mask positioned intermediate said illumination means and said multiple lens array is illuminated by a selected light emitting area, and the resultant information encoded beam passes through the corresponding one of said lenslets and impinges on said photosensitive detector means.

3,899,779

MAGNETIC BUBBLE DOMAIN SYSTEM USING DIFFERENT TYPES OF DOMAINS

Alexis Plato Malozemoff, New York, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 29, 1973, Ser. No. 375,285

Int. Cl. G11C 11/14, 19/08

U.S. Cl. 340—174 TF

14 Claims

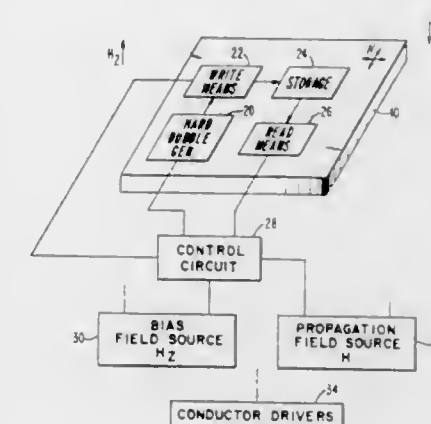
1. A magnetic information handling system using different types of magnetic bubble domains for representation of information, comprising:

a single layer of magnetic medium in which multi-state magnetic bubble domains can exist at the same time, said domains having different numbers of vertical Bloch lines in their domain walls, said information being represented by said multi-state domains and in particular by the number of vertical Bloch lines in said domains,

storage means for simultaneously storing domains having different numbers of vertical Bloch lines in said magnetic medium,

write means for producing information in said magnetic medium, said information being in the form of coded patterns of said multi-state domains, said write means including means for producing magnetic domains having

different numbers of said vertical Bloch lines in their domain walls and further means for entering a pattern of coded information into said storage means,



3,899,780

MAGNETIC BUBBLE STORE HAVING OPTICAL CENTERING APPARATUS

Matti Niilo Tapani Ojala, Oulu, Finland, assignor to U.S. Philips Corporation, New York, N.Y.

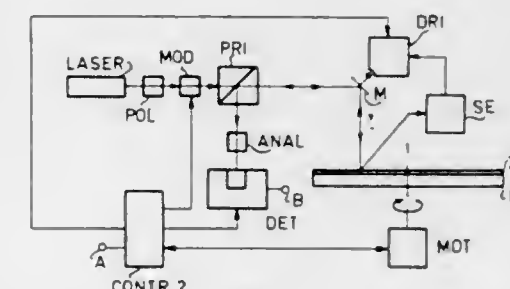
Filed Jan. 30, 1974, Ser. No. 437,975

Claims priority, application Netherlands, Feb. 12, 1973, 7301929

Int. Cl. G11C 13/06, 11/14

U.S. Cl. 340—174 YC

5 Claims



1. A storage system comprising a plate of magnetic material, said magnetic material being provided with a regular two-dimensional array of first recesses, said first recesses forming in cooperation with said magnetic material magnetically active elements for storing digital information in the form of magnetic bubbles, write means comprising an electromagnetic radiation source for locally heating the magnetically active elements whereby the magnetic bubbles are formed, means for maintaining a magnetic bias field in the vicinity of said magnetically active elements, the magnitude of the field determining the bubbles dimensions, electromagnetic read means for detecting said bubbles, addressing means for directing said read means and the said read write means to scan a selected magnetically active area, said plate being further provided with second recesses elongated in the direction in which said magnetically active areas are scanned, said second recesses forming a regular two-dimensional array with said first recesses, and optical centering means for directing electromagnetic radiation to said second recesses and for centering said plate with respect to said read means and said write means in response to said radiation from said second recesses.

3,899,781

MAGNETIC BUBBLE TRANSMISSION SYSTEM USING A ROTATING MAGNETIC FIELD

Teruji Watanabe, Niza, and Hideo Ishihara, Kamakura, both of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Japan

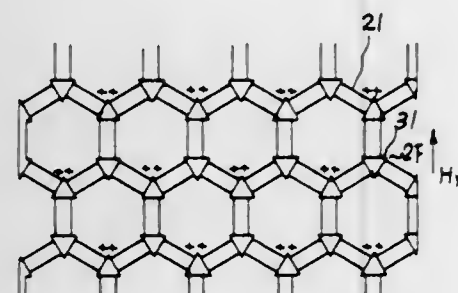
Filed June 21, 1974, Ser. No. 481,889

Claims priority, application Japan, June 22, 1973, 48-69900

Int. Cl. G11c 11/14

U.S. Cl. 340-174 TF

5 Claims



1. A magnetic bubble transmission system, comprising: a magnetic thin plate for causing therein at least one magnetic bubble; bias means for applying a bias magnetic field to said magnetic thin plate in a direction perpendicular to the surface thereof; rotation means for applying a rotating magnetic field to said magnetic thin plate along the surface thereof; a honeycomb soft magnetic thin film formed into substantially hexagonal patterns and disposed on said magnetic thin plate in close contact therewith; direction specifying means of thin films coupled to said honeycomb soft magnetic thin film for giving priority order of the transmission direction of said magnetic bubble from each of branching positions of said honeycomb soft magnetic thin film positioned at each of vertex of each of said hexagonal patterns to three sides thereof contiguous to said branching positions, said thin films being disposed on at least one of said three sides; and control means connected to said bias means and said rotation means for reducing and restoring said bias magnetic field in synchronism with the rotation cycle of said rotation magnetic field.

3,899,782

APPARATUS FOR MONITORING REACTION END POINT

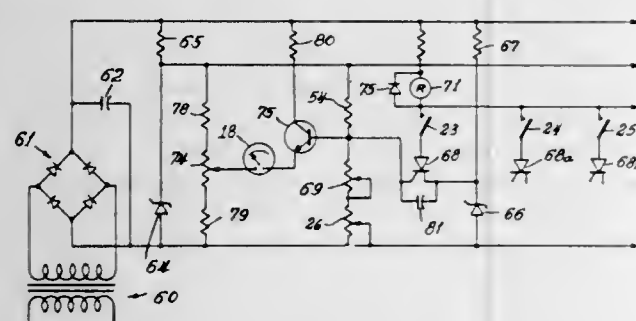
Everett L. Miller, 339 W. Burnham St., Battle Creek, Mich. 49015, and Frank D. Miller, 609 Warwick Ave., Thousand Oaks, Calif. 91360

Filed Aug. 27, 1973, Ser. No. 391,672

Int. Cl. G08b 25/00

U.S. Cl. 340-228 R

5 Claims



1. An apparatus for monitoring the course of a reaction carried out by heating reaction mixtures in a plurality of reaction kettles and sensing the attainment of a particular temperature by the reaction mixture in each kettle as indicative of a desired end point, said apparatus comprising:

1. means providing a direct current power supply;
2. an alarm circuit connected to said direct current comprising a common relay for all said kettles having alarm means connected to the contact points thereof;
3. a silicon controlled rectifier connected to the coil of said relay;
4. a probe mounted on the wall of each kettle
5. end point control means for each kettle connected across said direct current power supply comprising in series:
 - a. a potentiometer having a graduated scale on its dial;
 - b. a calibrating potentiometer; and
 - c. a solid state thermoresistive temperature sensing device mounted in the end of each of said probes, the junction between each of said temperature sensing devices and the corresponding one of said potentiometers for each kettle being connected to the gate of said silicon controlled rectifier, whereby the calibrating potentiometer for each kettle may be adjusted so that the readings on the graduated scale potentiometers for each kettle are the same when the same end point is reached by the reaction mixture in each kettle.

3,899,783

MECHANICAL ALARM SOUNDING FAILURE OF ELECTRICAL SYSTEM

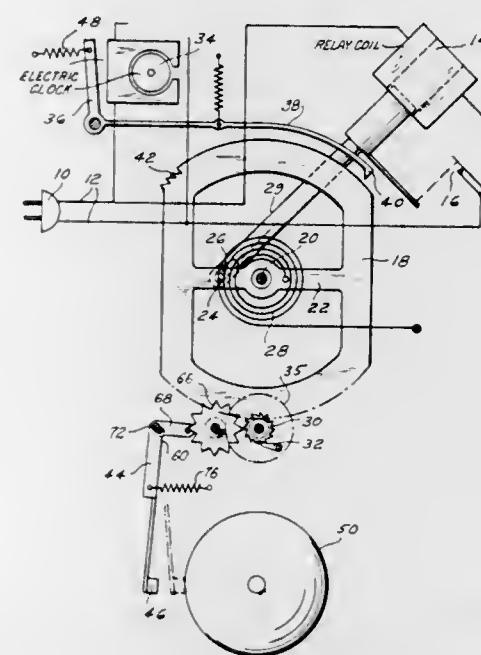
Edward Kuzmar, and Mary Kuzmar, both of 4407 S. Campbell Ave., Chicago, Ill. 60632

Filed Aug. 15, 1973, Ser. No. 388,627

Int. Cl. G08B 21/00

U.S. Cl. 340-253 C

3 Claims



1. A device for sounding an alarm when electrical power fails, said device comprising: a flat oval shaped member having a central opening spanned by a cross piece, said member being freely rotatable about an axis extending at right angles through the center of the cross piece, said member having a prong which is parallel to said axis and is secured to said cross piece offset from the center; an electric relay having a winding energized when said power is present and deenergized when said power fails, and a plunger pulled in when the winding is energized and pushed out when the winding is deenergized, said plunger having a longitudinal slot in its free end, said slot being engaged by said prong, movement of the plunger causing rotation of the member, whereby the member is rotated in one direction to a first position when the plunger is pulled in and is rotated in opposite direction to a second position when the plunger is pushed out;

- a windup spring connected at one end to said member, said spring being wound up when the member is rotated from the first position to the second position and being free to unwind when the member is in the second position, said spring being prevented from unwinding when the member is in the first position; and means including a gong and hammer, said means being actuated by said spring as it unwinds to cause the hammer to repeatedly strike and move away from the gong to sound the alarm.

3,899,784

GLASS BREAKAGE DETECTOR

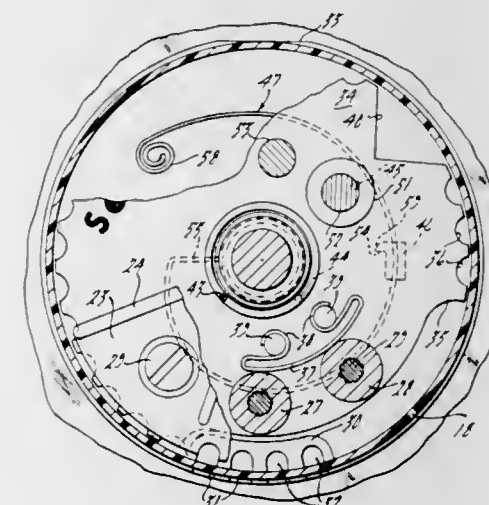
Vincent J. McHenry, Farmington, Mich., assignor to Omni Spectra, Inc., Farmington, Mich.

Filed May 17, 1973, Ser. No. 361,207

Int. Cl. G08b 13/08

U.S. Cl. 340-274 R

20 Claims



1. In a glass breakage detector, a sensing element, means securing said element to the inside surface of the glass, the element extending from said securing means, the shape of said element being such that movement of said securing means by the shock wave attendant only upon glass breakage will set said element into strong resonant vibration principally parallel to the plane of the glass, the shape of said element further being such that it is relatively immune to movement of said securing means by vibrations normal to the glass plane, and means connected to said sensing element and movable from a normal set position to a triggered position in which it initiates an alarm, said last-mentioned means being responsive to said vibrations of the sensing element parallel to the glass plane to move to its triggered position and thus initiate an alarm.

3,899,785

APPARATUS FOR CONTROLLING AND MONITORING THE OPERATION OF A LOAD DEVICE

Kurt Ryser, Langenthal, Switzerland, assignor to Greiner Electronic AG, Langenthal, Switzerland

Filed Dec. 28, 1973, Ser. No. 429,160

Claims priority, application Switzerland, Jan. 19, 1973, 753/73

Int. Cl. G08b 23/00

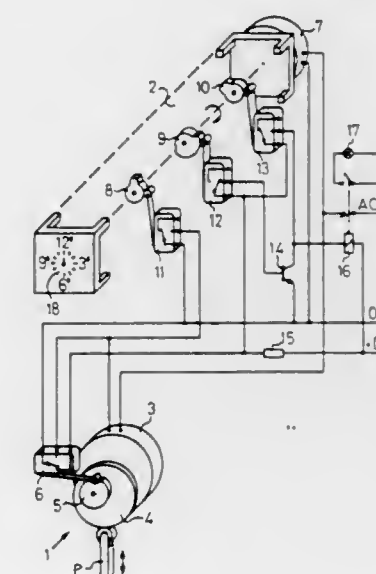
U.S. Cl. 340-309.1

9 Claims

1. Apparatus for controlling and monitoring the operation of periodically operable load means (P), such as the dosage means of an automatic clinical analyzer, comprising:
 - a. at least a first voltage source (AC);
 - b. normally de-energized load motor means (3) for driving said load means periodically between first and second positions;
 - c. means including an actuating switch (11) for initially connecting said load motor means with said first voltage

source for a relatively brief initial period to initiate the operating cycle of said load means;

- d. means including a holding switch (6) for subsequently connecting said load motor means with said first voltage source for a subsequent period of time, said holding switch means having a first condition when said load means is in the first position, and a second condition when said load means is displaced from said first position;
- e. display means (17) having an initial state of energization; and



- f. means including disconnect means (16) and monitor switch means (12, 13) responsive to the instantaneous condition of said holding switch for disconnecting said load motor means from said first voltage source and for operating said display means to the other state of energization in the event that said holding switch is not in its anticipated condition during any given period of the operating cycle of said load means.

3,899,786

LIQUID CRYSTAL COLOR DISPLAY SYSTEM

Waldemar Greubel; Hans Krueger, and Ulrich Wolff, all of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

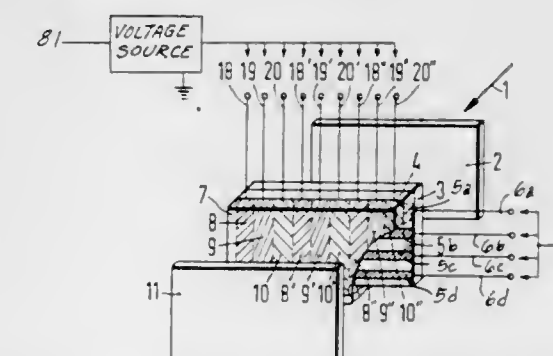
Filed May 16, 1973, Ser. No. 360,767

Claims priority, application Germany, June 2, 1972, 2226959

Int. Cl. G09f/32

U.S. Cl. 340-336

7 Claims



1. In an apparatus for presenting colored images comprising: a first light polarizing means, a second light polarizing means, a liquid crystal means mounted between first and second polarizing means, electrode energizing means, a plurality of transparent electrodes suitably mounted adjacent said crystal means such that said electrode energizing means produces a field across said liquid crystal wherein the improvement comprises an addition of at

least one pigment to the transparent electrode material whereby a colored image may be selectively derived.

3,899,787

TRIPLEX ANTENNA

Watson P. Czerwinski, Shrewsbury, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed July 18, 1974, Ser. No. 489,873

Int. Cl.² H01Q 9/04

U.S. Cl. 343—790

14 Claims



1. A broadband antenna system for a plurality of radio apparatus adapted to operate simultaneously in the same frequency band, comprising in combination:

a generally vertically oriented electrically conductive and grounded support conduit of predetermined length;

a respective plurality of in-line tubular dipole radiating elements, one for each of said plural radio apparatus, axially mounted on said support conduit, the inner surface of said tubular radiating elements being grounded to said conduit substantially mid-way along their respective lengths;

a port in the sidewall of said support conduit at the location of each of said radiating element;

a respective coaxial cable, having an inner and outer conductor, coupling each radiating element to a respective radio apparatus of said plurality of radio apparatus, running through support conduit and out of a respective port, said outer conductor being electrically grounded in the vicinity of said port;

each said tubular radiating element having an opening to the outer wall surface thereof wherein the inner conductor of the respective coaxial cable passes therethrough and is electrically connected to said outer surface; and respective impedance broadbanding means for each of said dipole radiating elements disposed exteriorly of each of said radiating elements.

3,899,788

LIGHT METERING SYSTEMS AND EXPOSURE CONTROL SYSTEMS FOR CAMERAS

Kenji Toyoda, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Apr. 5, 1974, Ser. No. 458,413

Claims priority, application Japan, Apr. 12, 1973, 48-40852

Int. Cl. G03b 7/08; G01j 1/46; G03b 17/18

U.S. Cl. 354—23 D

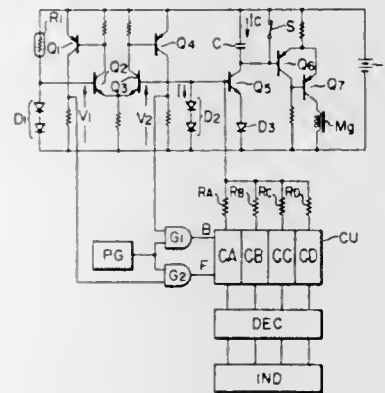
23 Claims

1. A light metering system comprising:

photoelectric means for producing a first analog signal which represents the intensity of light incident thereon; a reversible counter;

converter means for producing a second analog signal which represents the count stored in said counter; and counter control means for stepping said counter in a first direction when the difference between the first and second analog signals is greater than a predetermined value and for stepping said counter in the opposite direction when said difference is less than said predetermined value.

10. An automatic exposure control system comprising:



photoelectric means for producing a first analog signal which represents the brightness of an object to be photographed;

a reversible counter;

converter means for producing a second analog signal which represents the count in said counter;

counter control means for stepping said counter in a first direction when the difference between the first and second analog signals is greater than a predetermined value and for stepping said counter in the opposite direction when the difference between the analog signals is less than said predetermined value; and

exposure control means for controlling exposure of film in a camera in accordance with the count in said counter.

3,899,789

EXPOSURE CONTROL SYSTEM IN A PHOTOGRAPHIC CAMERA

Tatsuya Taguchi, Tokyo; Takashi Uchiyama, Yokohama; Soichi Nakamoto, Machida, and Tadashi Ito, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

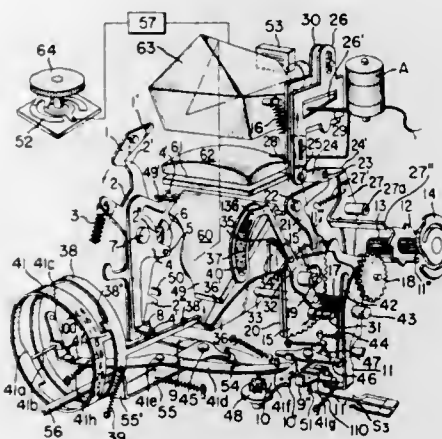
Filed Dec. 4, 1973, Ser. No. 421,540

Claims priority, application Japan, Dec. 9, 1972, 47-123633

Int. Cl. G03b 7/08

U.S. Cl. 354—30

2 Claims



1. An exposure control system in a single-lens reflex type photographic camera which comprises in combination:

- an interchangeable lens provided with an aperture preset device;
- a light receiving means for metering light through the fully open aperture of said interchangeable lens;
- a first exposure operating circuit;
- a second exposure operating circuit;
- an exposure control circuit including a storage circuit and an aperture information input element; and
- an automatic aperture mechanism;
- said first exposure operating circuit constituting means for controlling the automatic aperture mechanism in accordance with a preset exposure time and with the quantity of light from an object to be photographed received by said light receiving means to preset an aperture value and, simultaneously therewith, changing the value of said information input element so as to correspond to said aperture value;
- said second exposure operating circuit constituting means for causing said storage to store an electrical quantity corresponding to said quantity of light from said object and for controlling the exposure time in accordance with the output of said storage circuit and the value of said information input element as set by said first exposure operating circuit;
- said aperture information input element comprising a variable resistor, and
- said entire system further including lock means for said automatic aperture mechanism, said lock means being adapted to lock said automatic aperture mechanism when said aperture preset device is manually operated, to thereby vary the resistance value of said variable resistor in accordance with the amount of rotation of an aperture preset member, whereby said second exposure operating circuit controls the exposure time.

3,899,790

APPARATUS FOR TAKING UNDERWATER PICTURES

Alain Pocachard, Marseille, France, assignor to Le Nickel; Centre National pour l'Exploitation des Océans, both of Paris and Erji, Marseille, all of France, part interest to each

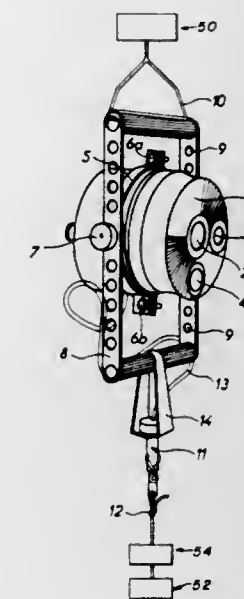
Filed Nov. 15, 1973, Ser. No. 415,986

Claims priority, application France, Nov. 15, 1972, 72.70458

Int. Cl. G03b 17/08

U.S. Cl. 354—64

4 Claims



1. An apparatus for taking underwater pictures on making contact with the sea-bed, the apparatus comprising a sealed casing provided with at least one window; camera means and a flash generator housed within the casing; a framework on which the casing is adjustably mounted; means for connecting

the framework to a float and means for detachably connecting the framework to ballast; electromagnetic triggering means arranged between the float and the ballast to close an electric circuit when contact is made with the sea-bed; an electromagnetic control device arranged within the sealed casing to actuate the camera means and the flash generator on closing of said electrical circuit; and an electric cable which provides a sealed connection between the electromagnetic triggering means and the electromagnetic control device; wherein said framework is provided with two parallel upright members which are formed with series of aligned holes, and said casing is clamped in a collar secured on the framework by transverse screws which extend through two aligned holes of said series; wherein said framework includes a tubular member through which a cable extends to connect the framework to the float; wherein said sealed casing comprises two windows, one facing the object lens of the camera means and the other facing the flash generator; and wherein each of the said windows has a frustoconical part in mating engagement with a corresponding frustoconical part of said casing, and a toroidal sealing joint is interposed between the two frustoconical parts.

3,899,791

PHOTOGRAPHIC POSITIONING AND ALIGNING GRID

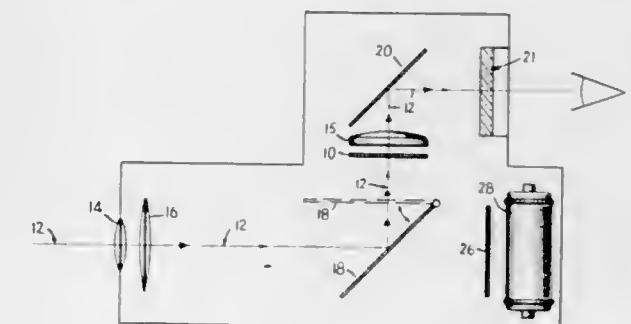
Maximilian Kerr, Sea Girt, N.J., assignor to Maximilian Kerr Associates, Inc., New York, N.Y.

Filed Feb. 9, 1973, Ser. No. 331,314

Int. Cl. G03b 19/12

U.S. Cl. 354—155

13 Claims



1. In a single lens reflex camera having a focal plane, a pivotable mirror for selectively and alternately directing light to the camera film and to the said viewfinder focal plane, the improvement comprising means mounted on said viewfinder focal plane, said means having a plurality of markings thereon for dividing said viewfinder focal plane into one or more viewable areas, said viewfinder focal plane being mounted intermediate of the said eyepiece and a camera lens, said means and the film plane being substantially equidistant from said pivotable mirror, said means being precisely sized to a selected exposable area of the film in said camera, said plurality of markings precisely correlating the location of a subject in said viewfinder to the selected exposable area of the film whereby the precise location of the image on the film is controlled.

3,899,792

COPY SHEET DRYING AND DELIVERING DEVICE FOR REPROGRAPHIC MACHINE

Giovanni Ravera, and Giorgio Siletto, both of Turin, Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea (Turin), Italy

Filed May 24, 1974, Ser. No. 473,115

Claims priority, application Italy, June 12, 1973, 25089/73

Int. Cl.² G03D 3/08; G03B 27/32, 27/52

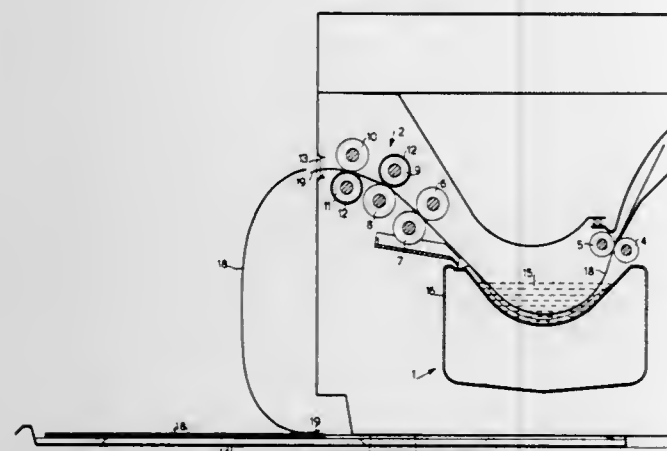
U.S. Cl. 354—320

5 Claims

1. In a reprographic machine of the liquid developing type having a liquid developing station and a copy sheet accumulating plane for receiving copy sheets discharged from the machine, a copy sheet drying and delivering device comprising:

a pair of squeezing rollers receptive of a copy sheet from the developing station for squeezing same;

means receptive of the copy sheet for drying same comprising a plurality of pairs of drying rollers, at least one drying roller of each pair having the outer surface thereof covered by a layer of liquid absorbent material; and



means for guiding the copy sheet from the developing station to turn it upside down upon discharge onto the copy sheet accumulating plane comprising an output slit from the machine and means mounting the longitudinal axes of said pairs of squeezing and drying rollers in an ascending convex arcuate path from said developing station to said output slit to define a corresponding ascending arcuate guide path for the copy sheet carried to the output slit by said squeezing and drying rollers.

3,899,793

INTEGRATED CIRCUIT WITH CARRIER KILLER SELECTIVELY DIFFUSED THEREIN AND METHOD OF MAKING SAME

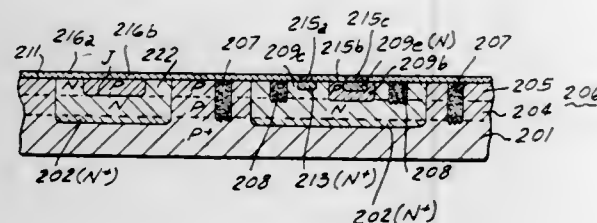
Kinji Wakamiya, Tokyo, and Isamu Kobayashi, Yokohama, both of Japan, assignors to Sony Corporation, Tokyo, Japan Division of Ser. No. 233,673, March 10, 1972, Pat. No. 3,775,196, which is a division of Ser. No. 852,819, Aug. 25, 1969, Pat. No. 3,694,276. This application June 25, 1973, Ser. No. 373,604

Claims priority, application Japan, Aug. 24, 1968, 43-60713; Aug. 24, 1968, 43-60714

Int. Cl. H011 19/00

U.S. Cl. 357-48

2 Claims



2. A semiconductor device having a plurality of active circuit elements therein comprising a semiconductor substrate of one conductivity type, a plurality of islands of the opposite

conductivity type formed in one face thereof, a first monocrystalline epitaxial layer formed on said one face of said substrate, a second monocrystalline epitaxial layer formed on said first epitaxial layer, an active circuit element formed in said epitaxial layers, a first polycrystalline ring in said second epitaxial layer around and spaced from at least a portion of said active circuit element, a second polycrystalline ring around and spaced from said first ring extending in depth from the outer face of said second epitaxial layer through both epitaxial layers to said substrate, said first polycrystalline ring having diffused therein a carrier killer which is out diffused into adjacent monocrystalline regions which form at least a part of said active elements.

3,899,794

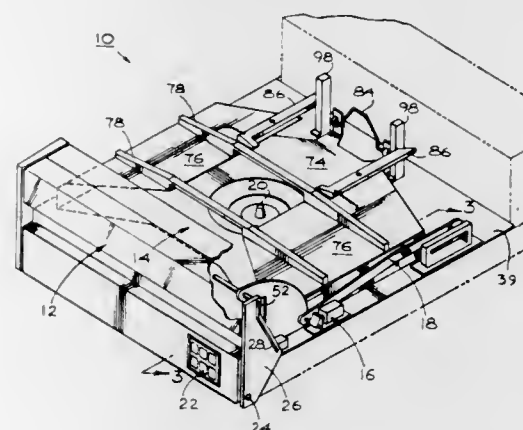
FRONT LOADING DISC DRIVE APPARATUS Leon Henry Brown, Jr., Sylmar, Calif., assignor to Wangco Incorporated, Los Angeles, Calif.

Filed Nov. 30, 1973, Ser. No. 420,664

Int. Cl. G11b 23/04, 17/22

U.S. Cl. 360-133

18 Claims



1. In disc drive apparatus adapted for receiving a standard disc cartridge through a front loading door, the combination comprising:

a frame;

a receiver for accepting and retaining the disc cartridge in a generally horizontal attitude at a first level relative to the frame, the receiver being mounted on the frame for movement between respective extended and retracted positions generally parallel to each other;

a base upon which the disc cartridge is to be mounted for operation within the apparatus at a second level lower than said first level, said base being connected to the frame and including an upwardly extending drive spindle upon which the disc cartridge is to be centrally engaged; a front panel loading door pivotably joined to the frame for rotation about a pivot axis located near the lower forward edge of the door; and

actuating means coupled between the frame, the door, and the receiver for moving the receiver in two orthogonal directions between the extended position at the first level

and the retracted position at the second level in response to movement between respective open and closed positions of the loading door. having at least said magnetic head fixed thereon and being slidably mounted on said main molded chassis for selectively

3,899,795

CASSETTE TAPE RECORDING AND/OR REPRODUCING APPARATUS HAVING MOLDED CHASSIS AND MOLDED HEAD CARRIAGE

Kunitake Watanabe, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed May 21, 1973, Ser. No. 362,163

Claims priority, application Japan, May 22, 1972, 47-59635

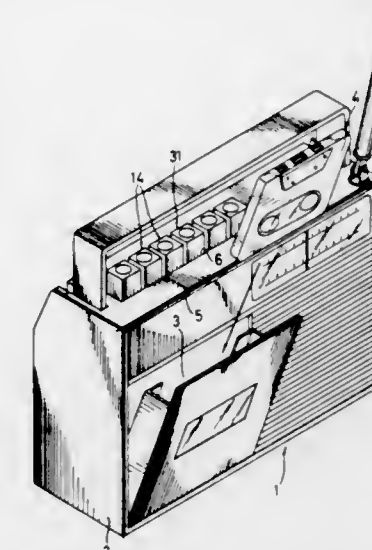
Int. Cl. G11B 1/00, 5/105, 15/04, 21/02

U.S. Cl. 360-137

19 Claims

1. In a tape recording and/or reproducing apparatus having a tape driving mechanism that includes reel shafts for engagement with tape supply and take-up reels, a capstan and a motor for driving the reel shafts and capstan, and a magnetic head for selectively recording and/or reproducing signals on the tape as the latter is transported between the supply and take-up reels by means of the capstan; a main molded chassis of synthetic resin having said tape driving mechanism mounted thereon, and a molded carriage of synthetic resin

disposing said head in an operative position in respect of the tape between the supply and take-up reels.



DESIGN PATENTS

GRANTED AUGUST 12, 1975

ERRATA

See
CLASS
027-042.....

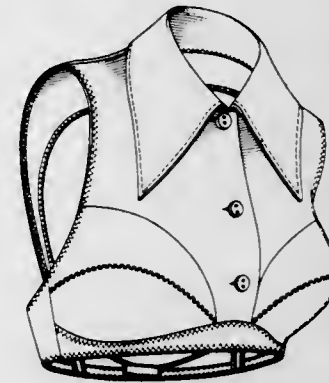
See
PATENT NO.
236,280

DESIGNS

AUGUST 12, 1975

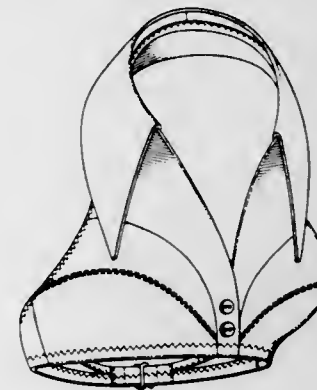
236,242
COMBINED DICKEY AND BRA
Harry W. Froehlich, 1344 Marinele Road,
Pacific Palisades, Calif. 90272
Filed Apr. 12, 1974, Ser. No. 460,505
Term of patent 3½ years
Int. Cl. D2—02

U.S. Cl. D2—211



236,243
HALTER
Harry W. Froehlich, 1344 Marinele Road,
Pacific Palisades, Calif. 90272
Filed Apr. 12, 1974, Ser. No. 460,504
Term of patent 3½ years
Int. Cl. D2—02

U.S. Cl. D2—353



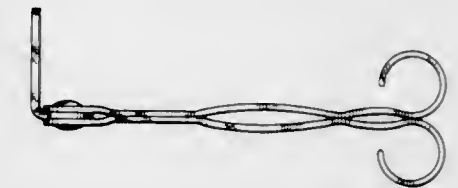
236,244
STEP STOOL
Ralph B. Lay, Columbus, Ind. 47201
(% Hamilton Cosco Inc., 2525 State St., Columbus, Ind.)
Filed Nov. 12, 1973, Ser. No. 414,895
Term of patent 14 years
Int. Cl. D6—01; D6—99

U.S. Cl. D6—35



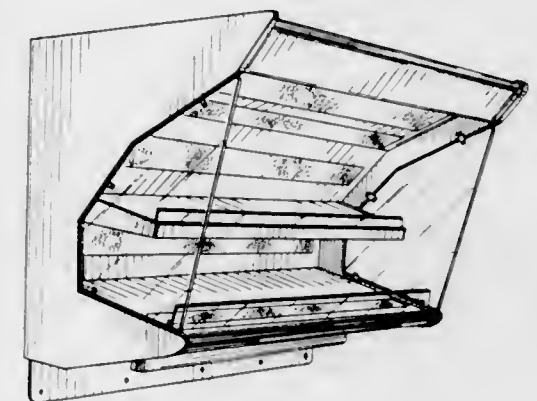
236,245
LETTER HOLDER
Donald R. Fude, and Vilas A. Fude, Rt. #1,
Ripon, Wis. 54971
Filed Oct. 31, 1973, Ser. No. 411,479
Term of patent 14 years
Int. Cl. D19—02

U.S. Cl. D6—114



236,246
AUXILIARY DISPLAY CASE
William H. Fredrick, North Hollywood, Calif., assignor
of a fractional part interest to Nathan-Gilbert
Filed Nov. 9, 1973, Ser. No. 414,320
Term of patent 14 years
Int. Cl. D20—02

U.S. Cl. D6—130



236,247
BARBECUE
Leo Michel, Toronto, Ontario, Canada, assignor to
Diwalt Industries Limited, Toronto, Ontario, Canada
Filed Jan. 14, 1974, Ser. No. 433,139
Term of patent 14 years
Int. Cl. D7—02

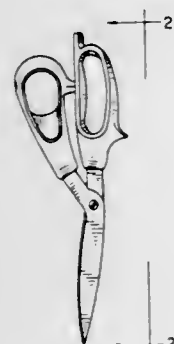
U.S. Cl. D7—107



236,248
SCISSORS

Lee S. Wolff, 500 N. 3rd St., Marquette, Mich. 49855
Filed June 5, 1974, Ser. No. 476,697
Term of patent 14 years
Int. Cl. D8—03

U.S. Cl. D8—57



236,249
LUGGAGE HANDLE

Edward M. Stolarz, Yorktown Heights, N.Y., assignor to
Airway Industries, Inc., West Pittsburgh, Pa.
Filed Jan. 9, 1974, Ser. No. 431,891
Term of patent 3½ years
Int. Cl. D8—06

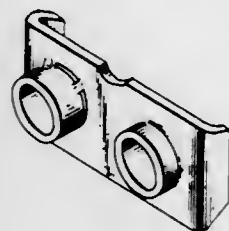
U.S. Cl. D8—154



236,250
GROUND PLATE FOR A SHEATHED, ELECTRIC
SURFACE UNIT

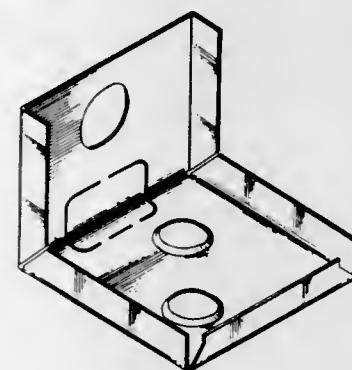
Frank T. Walton, 656 13th St.,
Oakmont, Pa. 15139
Filed Apr. 5, 1974, Ser. No. 439,223
Term of patent 14 years
Int. Cl. D8—08

U.S. Cl. D8—229



236,251
BRACKET FOR A TERMINAL HOUSING OF AN
ELECTRIC STRIP HEATER
Donald M. Cunningham, 2507 Greensburg Pike,
Pittsburgh, Pa. 15221
Filed Apr. 5, 1974, Ser. No. 439,224
Term of patent 14 years
Int. Cl. D8—08

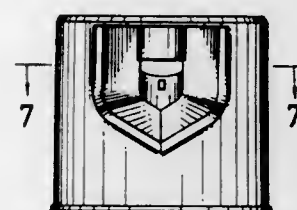
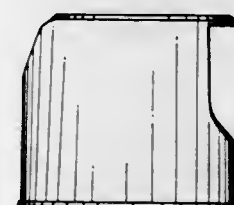
U.S. Cl. D8—230



236,252
OVERCAP FOR A PRESSURIZED CONTAINER

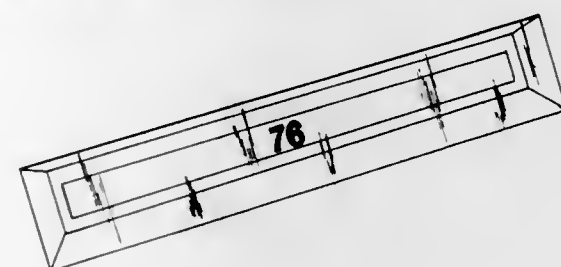
James J. Sette, Morristown, N.J.
(% Design Molded Products, 879 Rahway Ave.,
Union, N.J. 07083)
Filed Mar. 4, 1974, Ser. No. 447,565
Term of patent 14 years
Int. Cl. D9—07

U.S. Cl. D9—258



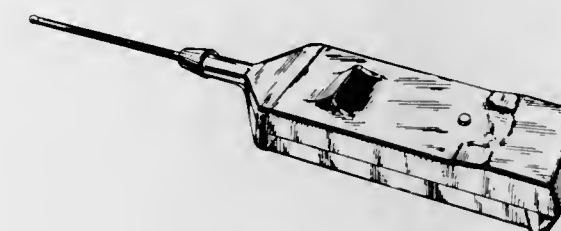
236,253
DIGITAL THERMOMETER
Robert Parker, Danville, Calif., assignor to
RPR, Inc., Dublin, Calif.
Filed Sept. 13, 1973, Ser. No. 397,204
Term of patent 14 years
Int. Cl. D10—04

U.S. Cl. D10—57



236,254
ELECTRONIC THERMOMETER
Phillip E. Ray, 4080 W. 66th St.,
Arvada, Colo. 80003
Filed Oct. 3, 1973, Ser. No. 403,157
Term of patent 14 years
Int. Cl. D10—04

U.S. Cl. D10—57



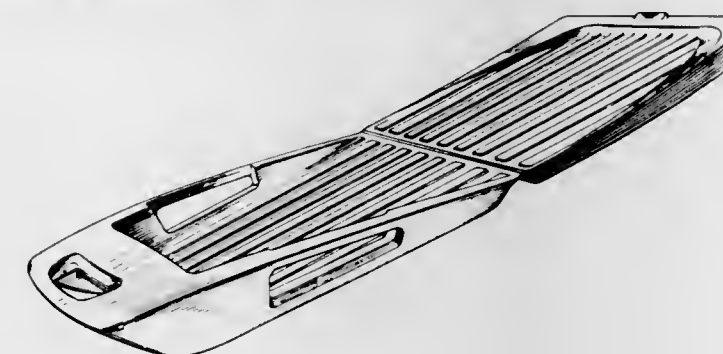
236,255
ELECTRICAL SHORT CIRCUIT TESTER
Raymond P. Smith, Jr., Williamsport, Pa., assignor to
Craftmaster, Inc., Williamsport, Pa.
Filed Oct. 30, 1973, Ser. No. 411,138
Term of patent 14 years
Int. Cl. D10—04

U.S. Cl. D10—78



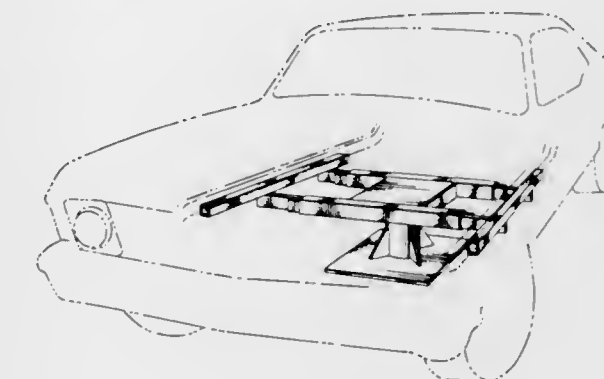
236,256
FOLDING SLED
Werner Hellman, 716 12th St.,
Baraboo, Wis. 53913
Filed Sept. 24, 1973, Ser. No. 400,333
Term of patent 14 years
Int. Cl. D12—14

U.S. Cl. D12—11



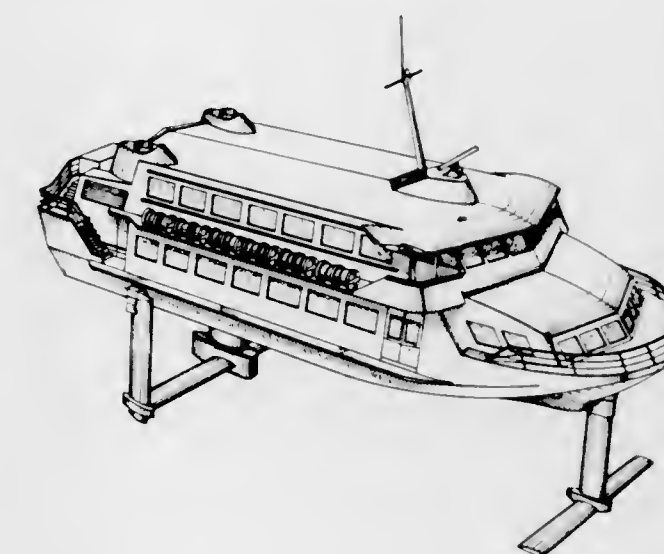
236,257
VEHICLE DISPLAY PORTABLE TURNTABLE
Norman F. Ficke, Birmingham, Mich., assignor to
General Motors Corporation, Detroit, Mich.
Filed July 12, 1973, Ser. No. 378,650
Term of patent 3½ years
Int. Cl. D12—05

U.S. Cl. D12—55



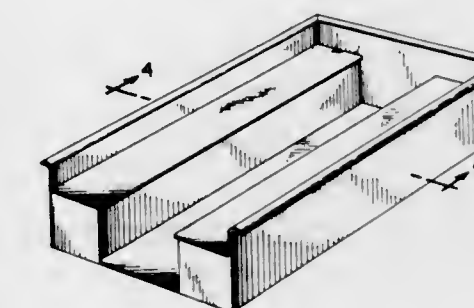
236,258
HYDROFOIL CRAFT
Charles S. Coffey, Mercer Island, and John J. Olson,
Seattle, Wash., assignors to The Boeing Company
Filed Nov. 8, 1973, Ser. No. 414,068
Term of patent 14 years
Int. Cl. D12—06

U.S. Cl. D12—66



236,259
PICKUP TRUCK LINER
Irvin V. Hefner, 1429 Huron St.,
Metairie, La. 70005
Filed Oct. 29, 1973, Ser. No. 410,460
Term of patent 14 years
Int. Cl. D12—16

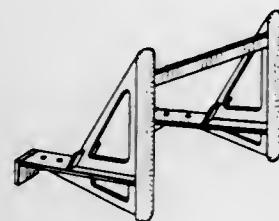
U.S. Cl. D12—156



236,260

VEHICLE ATTACHED PUSH BUMPER
John H. Allmand, 21253 Woodhill Drive,
Farmington Township, Mich. 48024
Filed Sept. 21, 1973, Ser. No. 399,414
Term of patent 14 years
Int. Cl. D12—16

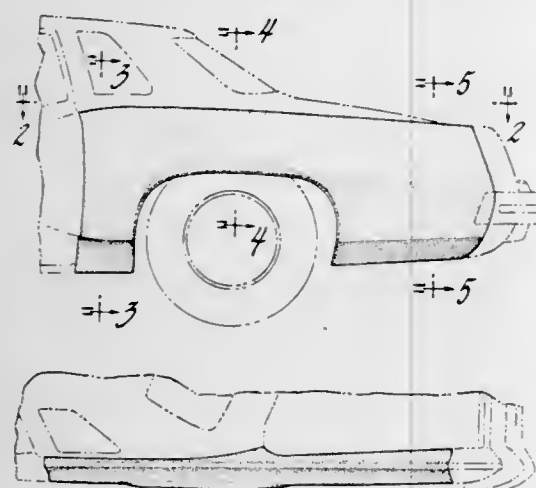
U.S. Cl. D12—169



236,261

REAR FENDER FOR AN AUTOMOBILE
Gordon M. Brown, West Bloomfield, Mich., assignor to
General Motors Corporation, Detroit, Mich.
Filed Aug. 29, 1973, Ser. No. 392,423
Term of patent 3½ years
Int. Cl. D12—08

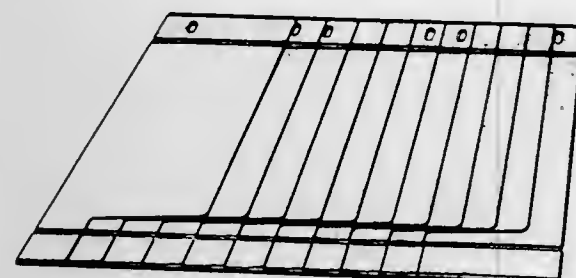
U.S. Cl. D12—196



236,262

POCKETED LEAF FOLDER
Arne G. Fredriksson, Sabbatsvagen 3, S-175 40
Jarfalla, Sweden
Filed Sept. 19, 1973, Ser. No. 399,251
Claims priority, application Sweden Mar. 27, 1973
Term of patent 14 years
Int. Cl. D19—04

U.S. Cl. D19—33

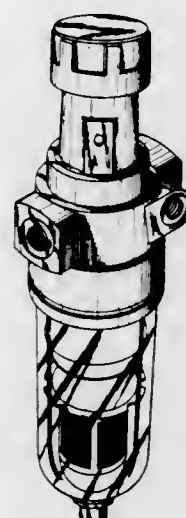


236,263

COMBINED FILTER AND REGULATOR FOR PRESSURIZED FLUID
Claude J. Dussardier, Littleton, and John G. Pousma,
Denver, Colo., assignors to C. A. Norgren Co., Little-
ton, Colo.

Filed Oct. 4, 1973, Ser. No. 403,544
Term of patent 14 years
Int. Cl. D23—01

U.S. Cl. D23—04



236,264

LUBRICATOR FOR PRESSURIZED FLUID
John C. Taylor, Denver, Colo., assignor to
C. A. Norgren Co., Littleton, Colo.
Filed Oct. 4, 1973, Ser. No. 403,546
Term of patent 14 years
Int. Cl. D23—01

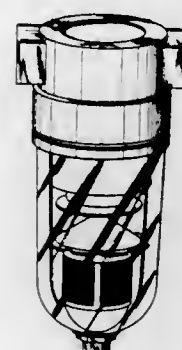
U.S. Cl. D23—3



236,265

FILTER FOR PRESSURIZED FLUID
Claude J. Dussardier, Littleton, Colo., assignor to
C. A. Norgren Co., Littleton, Colo.
Filed Oct. 4, 1973, Ser. No. 403,545
Term of patent 14 years
Int. Cl. D23—01

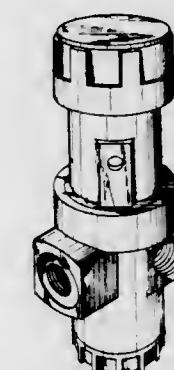
U.S. Cl. D23—4



236,266

REGULATOR FOR PRESSURIZED FLUID
Clair Dean Holben, Denver, Colo., assignor to
C. A. Norgren Co., Littleton, Colo.
Filed Oct. 4, 1973, Ser. No. 403,547
Term of patent 14 years
Int. Cl. D23—01

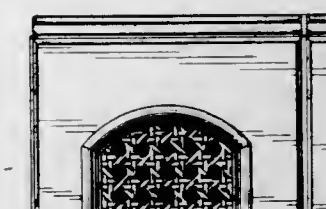
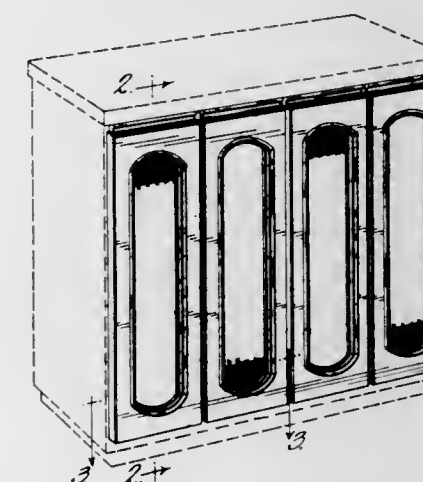
U.S. Cl. D23—21



236,267

FACADE FOR AN ELECTRIC HUMIDIFIER
Ronald B. Kemnitz, East Lansing, Mich., assignor to
Sunbeam Corporation, Chicago, Ill.
Filed Jan. 10, 1974, Ser. No. 432,413
Term of patent 14 years
Int. Cl. D23—04

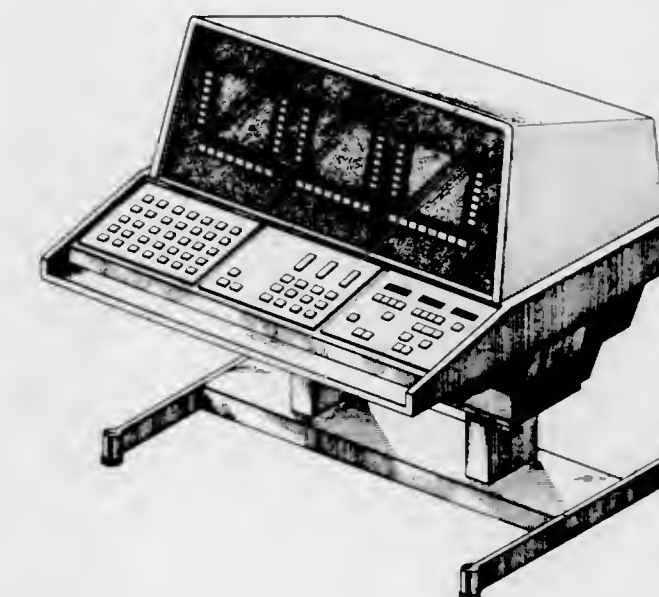
U.S. Cl. D23—146



236,268

CONTROL AND DISPLAY CONSOLE
Renzo Dallimonti, Ambler, Pa., and Samuel Joseph
Levinson, Cherry Hill, N.J., assignors to Honeywell
Inc., Minneapolis, Minn.
Filed Aug. 16, 1973, Ser. No. 388,950
Term of patent 14 years
Int. Cl. D14—02

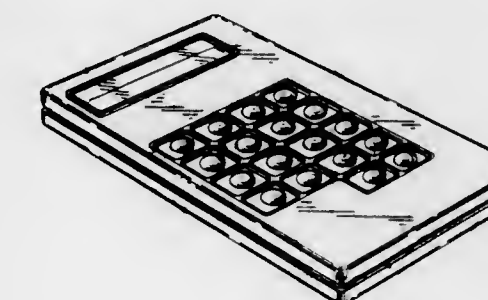
U.S. Cl. D26—5 C



236,269

CASE FOR AN ELECTRONIC CALCULATOR
Robert Li Shu-Keung, 108 Robinson Road, 8th Floor,
Hong Kong
Filed Jan. 23, 1974, Ser. No. 435,945
Claims priority, Great Britain Oct. 29, 1973
Term of patent 14 years
Int. Cl. D18—01

U.S. Cl. D26—5 C

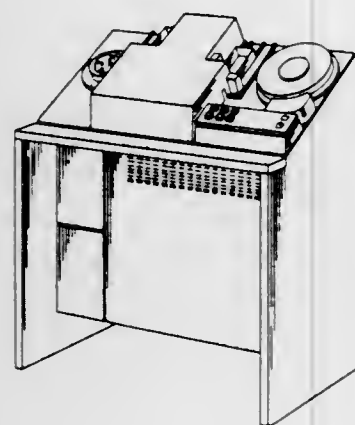


236,270

TICKET ENCODER FOR DATA PROCESSING
Wayne L. Aderman, Zumbro Falls, Minn., assignor to
International Business Machines Corporation, Armonk,
N.Y.

Filed Mar. 13, 1974, Ser. No. 450,645
Term of patent 14 years
Int. Cl. D14—02

U.S. Cl. D26—5 C



236,271

PORTABLE CALCULATOR OR THE LIKE
Andrew Herczog, Painted Post, N.Y., assignor to
Corning Glass Works, Corning, N.Y.
Filed Apr. 8, 1974, Ser. No. 458,649
Term of patent 14 years
Int. Cl. D18—01

U.S. Cl. D26—5 C



236,272

CHRISTMAS TREE
Vincent J. Aquilante, Providence, R.I., assignor of frac-
tional part interest to George E. Reilly, Woonsocket,
R.I.

Filed Jan. 28, 1974, Ser. No. 437,485
Term of patent 7 years
Int. Cl. D11—02

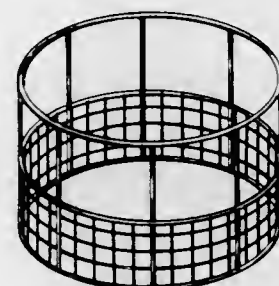
U.S. Cl. D29—1 A



236,273

HAY FEED BUNK FOR CATTLE
Leonard R. Peak, Lacona, Iowa 50139
Filed Aug. 17, 1973, Ser. No. 389,389
Term of patent 14 years
Int. Cl. D30—03

U.S. Cl. D30—13

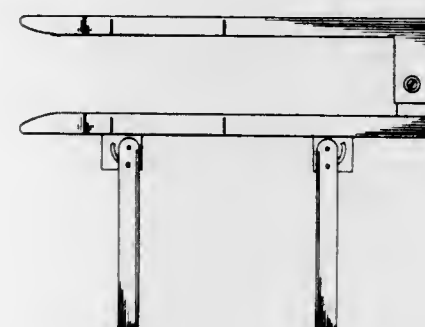


236,274

GOLF PRACTICE DEVICE
Douglas M. Ford, 3 Hartman Place, Tuckahoe, N.Y.
10707, and Richard C. Schluter, 2420 Newton St.,
Vienna, Va. 22180

Filed Dec. 10, 1973, Ser. No. 423,230
Term of patent 14 years
Int. Cl. D16—02

U.S. Cl. D34—5 GC



236,275

PLAYGROUND CLIMBER
Richard Rudy, Reedsville, Pa., assignor to
Kilgore Corporation, Toone, Tenn.
Filed Feb. 4, 1974, Ser. No. 439,247
Term of patent 14 years
Int. Cl. D21—03

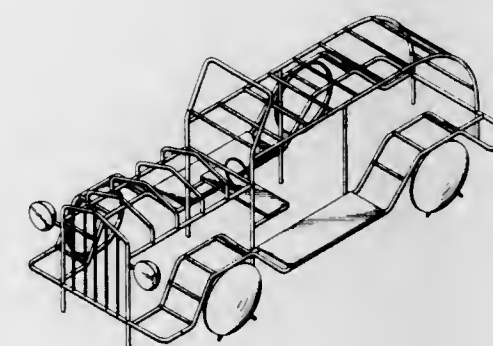
U.S. Cl. D34—5 H



236,276

ANTIQUE CAR PLAYGROUND CLIMBER
Richard Rudy, Reedsville, Pa., assignor to
Kilgore Corporation, Toone, Tenn.
Filed Apr. 15, 1974, Ser. No. 461,239
Term of patent 14 years
Int. Cl. D21—03

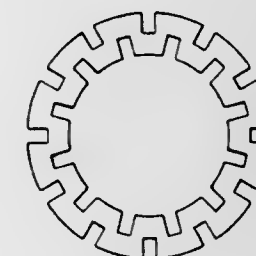
U.S. Cl. D34—5 H



236,277

TOY CONSTRUCTION PIECE
Jack G. McAllister, 2701 N. Douglas Drive, 55422, and
Richard O. Bartz, 7017 Mark Terrace Drive, 55435,
both of Minneapolis, Minn.
Filed Feb. 12, 1973, Ser. No. 331,503
Term of patent 14 years
Int. Cl. D21—01

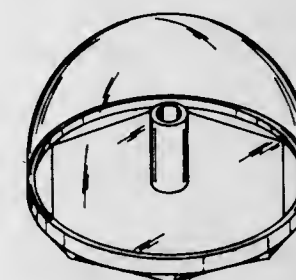
U.S. Cl. D34—15 GG



236,278

SPINNING TOY
Kenneth Jack McPhail, 33 Meadowlea Road,
Chatham, Ontario, Canada
Filed Dec. 19, 1973, Ser. No. 426,304
Term of patent 14 years
Int. Cl. D21—01

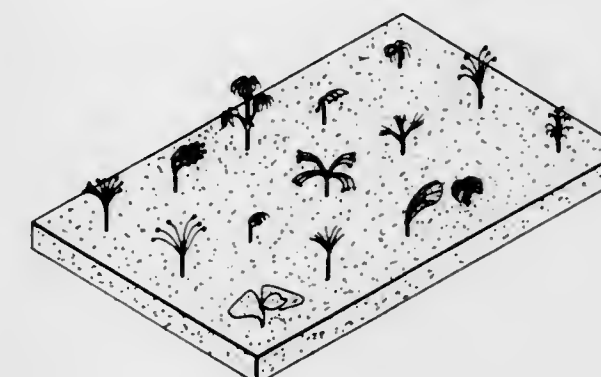
U.S. Cl. D34—15 W



236,279

LIGHT EMITTING OPTICAL FIBRE DISPLAY
Dennis K. Bingaman, R.D. #1,
Dalmatia, Pa. 17017
Filed Sept. 7, 1972, Ser. No. 276,884
Term of patent 14 years
Int. Cl. 26—05

U.S. Cl. D48—20 C



236,280

LIGHTER
Yoichi Ohsawa, Tokyo, Japan, assignor to
Win Lighter Corporation, Tokyo, Japan
Filed July 9, 1973, Ser. No. 377,599
Claims priority, application Japan May 2, 1973
Term of patent 14 years
Int. Cl. D27—05

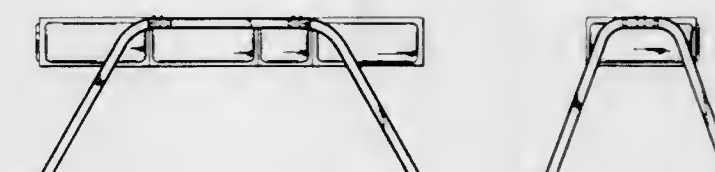
U.S. Cl. D27—42



236,281

FRAME FOR OVERHEAD CAR WASH UNIT
Daniel C. Hanna, 1133 SW. Rivington Drive,
Portland, Oreg. 97201
Filed June 14, 1974, Ser. No. 479,308
Term of patent 14 years
Int. Cl. D15—05

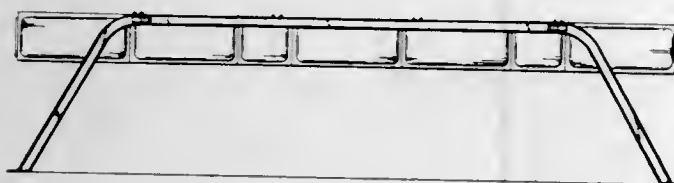
U.S. Cl. D49—12



236,282

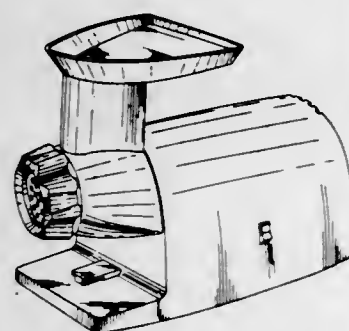
FRAME FOR OVERHEAD CAR WASH
 Daniel C. Hanna, 1133 SW. Rivington Drive,
 Portland, Oreg. 97201
 Filed June 14, 1974, Ser. No. 479,309
 Term of patent 14 years
 Int. Cl. D15—05

U.S. Cl. D49—12



236,283

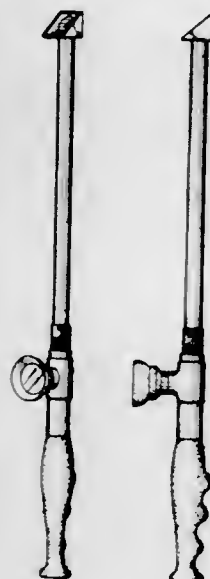
ELECTRICALLY POWERED MEAT GRINDER
 Daniel E. McCue, Santa Barbara, Calif., assignor to
 Rival Manufacturing Company, Kansas City, Mo.
 Filed Dec. 3, 1973, Ser. No. 420,949
 Term of patent 14 years
 Int. Cl. D7—04; D15—08
 U.S. Cl. D55—1 B



236,284

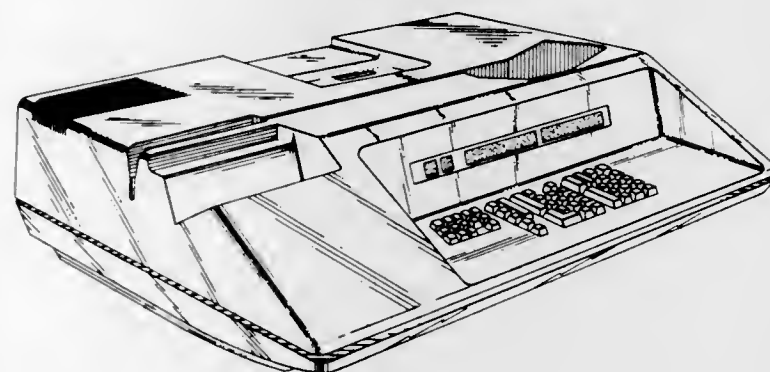
PORTABLE PERISCOPE
 George E. Miller, 415 Costa Rica,
 San Mateo, Calif. 94402
 Filed May 7, 1973, Ser. No. 358,249
 Term of patent 14 years
 Int. Cl. D16—06

U.S. Cl. D57—1 E



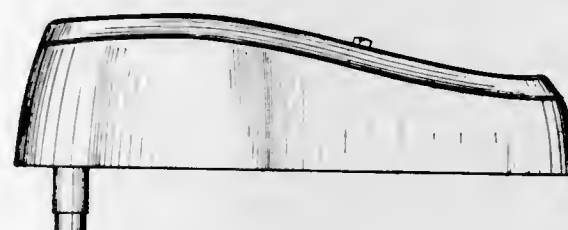
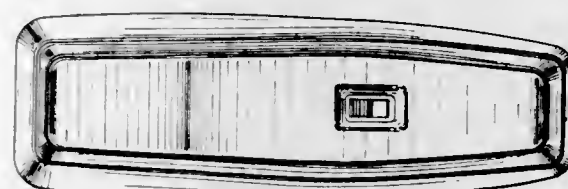
236,285

CASE FOR A CHECK ENCODER
 James W. Jacobson, St.-Nom-La-Breteche, France, and
 Richard G. Clayton, Detroit, and Jerry J. Sims, South-
 field, Mich., assignors to Burroughs Corporation,
 Detroit, Mich.
 Filed Sept. 7, 1973, Ser. No. 395,234
 Claims priority, application France Aug. 30, 1973
 Term of patent 14 years
 Int. Cl. D14—02
 U.S. Cl. D64—11 C



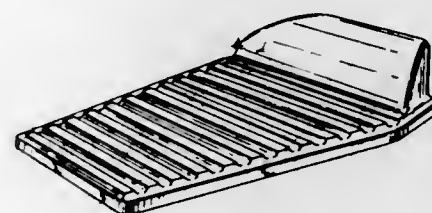
236,286

**HAND HELD POWER UNIT FOR
 MASSAGING DEVICES**
 Samuel L. McNair, Overland Park, Kans., assignor to
 Dazey Products Co., Kansas City, Mo.
 Filed Oct. 24, 1973, Ser. No. 409,281
 Term of patent 14 years
 Int. Cl. D24—99; D28—03
 U.S. Cl. D83—1



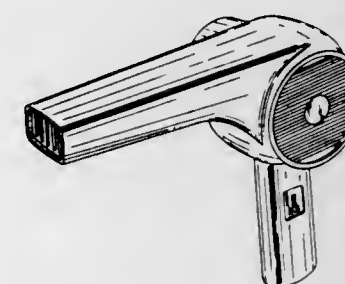
236,287

ELECTRICAL VIBRATING BACK MASSAGER
 Samuel L. McNair, Overland Park, Kans., assignor to
 Dazey Products Co., Kansas City, Mo.
 Filed Mar. 13, 1974, Ser. No. 450,821
 Term of patent 14 years
 Int. Cl. D6—09; D28—03
 U.S. Cl. D83—1 S



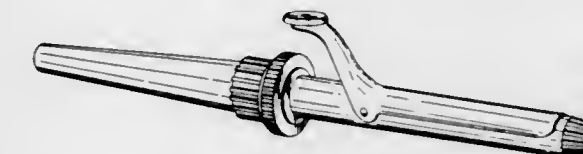
236,288

MANUALLY HELD ELECTRIC HAIR DRYER
 Samuel L. McNair, and Henry J. Talge, Overland,
 Park, Kans., assignors to Dazey Products Co., Kansas
 City, Mo.
 Filed Mar. 4, 1974, Ser. No. 448,014
 Term of patent 14 years
 Int. Cl. D28—03
 U.S. Cl. D86—10 F



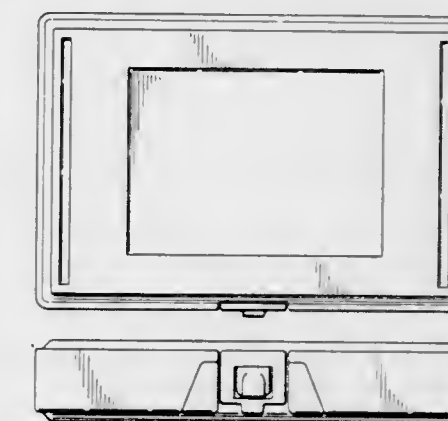
236,290

ELECTRIC HAIR CURLING IRON
 Samuel L. McNair, Overland Park, Kans., assignor to
 Dazey Products Co., Kansas City, Mo.
 Filed Apr. 25, 1974, Ser. No. 463,863
 Term of patent 14 years
 Int. Cl. D28—03
 U.S. Cl. D86—10 E



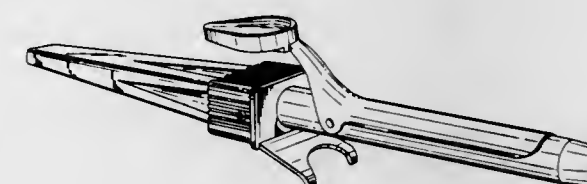
236,291

**STORAGE AND CARRYING CASE FOR VIDEO
 TAPE CASSETTES OR THE LIKE**
 Peter T. Schurman, Woodbridge, Conn., assignor to The
 Plastic Forming Company, Inc., Woodbridge, Conn.
 Filed Jun. 25, 1973, Ser. No. 373,472
 Term of patent 14 years
 Int. Cl. D3—02
 U.S. Cl. D87—10



236,289

ELECTRIC HAIR CURLING IRON
 Samuel L. McNair, Overland Park, Kans., assignor to
 Dazey Products Co., Kansas City, Mo.
 Filed Apr. 5, 1974, Ser. No. 458,245
 Term of patent 14 years
 Int. Cl. D28—03
 U.S. Cl. D86—10 E



LIST OF PATENTEEES

TO WHOM

PATENTS WERE ISSUED ON THE 12TH DAY OF AUGUST, 1975

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- A. Johnson & Co. Inc.: *See—*
Knopp, Walter V.; and Cascone, Paul J., 3,899,306.
- AB Inventing: *See—*
Wallsten, Hans Ivar, 3,899,615.
- AB Modern Modell: *See—*
Johansson, Gert Arne, 3,898,754.
- AB Pellerin/Zenith: *See—*
Hoffmann, Yngve Birger Lowenhaupt, 3,899,440.
- Aktiebolaget Tudor: *See—*
Sundberg, Erik G., 3,899,358.
- Abe, Satoshi: *See—*
Takao, Hiroshi; Togawa, Kinmochi; Abe, Satoshi; and Nakagawa, Sigeyosi, 3,899,555.
- Aber, Henry S.; Riggs, Dean D.; and Lamantia, John, to Water Technology Service, Inc. Water treatment device. 3,899,410, Cl. 204-302.000.
- Abex Corporation: *See—*
Adams, Cecil E.; Born, Ellis H.; and Smith, Gary C., Jr., 3,898,917.
Huntress, Howard B.; and Novotny, Raymond J., 3,899,054.
- Abram, Stewart J.; Denis, David R.; Heinze, Alex E.; Johnson, Leonard M.; and Taylor, Edward, to R. R. Donnelley & Sons Co. Signature collating and binding system. 3,899,165, Cl. 270-54.000.
- Accornero, Louis: *See—*
Kirby, James S.; and Accornero, Louis, 3,898,723.
- ACF Industries, Incorporated: *See—*
Korte, Alfred C., 3,899,551.
- Ackeret, Peter, to IDN Inventions and Development of Novelties AG. Container for tape cassettes. 3,899,229, Cl. 312-319.000.
- Acme-Cleveland Corporation: *See—*
Langne, Bengt I., 3,899,019.
- Acme Highway Products Corporation: *See—*
Kerschner, James J., 3,899,260.
- Adachi, Tetsuro: *See—*
Masai, Tadahisa; Adachi, Tetsuro; Sasaki, Shigeru; and Moriyama, Kazuyoshi, 3,899,266.
- Adamchick, John T.: *See—*
Sicko, John S.; Hodsoll, Raymond J., Jr.; and Adamchick, John T., 3,899,776.
- Adams, Cecil E.; Born, Ellis H.; and Smith, Gary C., Jr., to Abex Corporation. Variable displacement fluid translating device. 3,898,917, Cl. 91-488.000.
- Adcock, J. O.: *See—*
Winter, Gordon; and Adcock, J. O., 3,898,835.
- Addressograph-Multigraph Corporation: *See—*
Andrako, Thomas E., 3,898,956.
- Aeronutronic Ford Corporation: *See—*
Bray, Ralph, 3,899,231.
- Agback, Karl Hubert: *See—*
Swanbeck, Gunnar P. E.; Zetterberg, Gosta L.; and Agback, Karl Hubert, 3,899,591.
- Agusti, Agustin, to J. Uriach & Cia S.A. Triamcinolone acetonide derivative. 3,899,581, Cl. 424-241.000.
- Ahrens, James R.: *See—*
Tonnelli, Gerald J.; Epiling, Karol E.; and Ahrens, James R., 3,899,024.
- Aichinger, Dietmar, to Albert Obrist & Co. Plastic closure cap for a container. 3,899,097, Cl. 215-253.000.
- Aincough, Anthony Norbert: *See—*
Evans, Albert Edward John; Aincough, Anthony Norbert; and Verschoore, Koen, 3,899,364.
- Air Products and Chemicals, Inc.: *See—*
Cebalo, Tony, 3,899,505.
- Airey, Harold Edwin: *See—*
Blackburn, Reginald Mayman; and Airey, Harold Edwin, 3,898,712.
- Aker, John L.: *See—*
Mead, Alan B.; Aker, John L.; Malan, David A.; and Alden, John R., 3,899,772.
- Alaimo, Robert J.; and Goldenberg, Marvin M., to Morton-Norwich Products, Inc. 2-(p-Phenylazoanilino)quinolinizinium bromide. 3,899,479, Cl. 260-156.000.
- Alaimo, Robert J.; and Storrin, Ronald J., to Morton-Norwich Products, Inc. Process for preparing 2-(2')-furyl-, 2-(2')-thienyl-, 2-(4')-thiazolyl- or 2-(2')-pyrrol-5 (or 6) nitrobenzimidazole. 3,899,503, Cl. 260-302.00H.
- Albany International Corporation: *See—*
Haller, Herbert C., 3,899,171.
- Albert Obrist & Co.: *See—*
Aichinger, Dietmar, 3,899,097.
- Albright & Wilson Ltd.: *See—*
Messenger, Edward Tunstall; and Mather, Douglas Edward, 3,899,448.
- Alden, John R.: *See—*
Mead, Alan B.; Aker, John L.; Malan, David A.; and Alden, John R., 3,899,772.
- Alexander, Donald R. Die embossing apparatus. 3,898,925, Cl. 101-18.000.
- Alexandrov, Alexander Damyanov; Trifonov, Todor Kostov; Stefanov, Stefan Ivanov; Apostolov, Paskal Spasov; and Deshev, Mincho Boris-lavov, to Nipki "Leyarska Technika". Machine for casting metals under gas pressure. 3,899,021, Cl. 164-306.000.
- Alfa Romeo S.p.A.: *See—*
Volontieri, Aldo, 3,899,730.
- Allard, Frank L., to United States of America, Navy. Integrated circuit test clamp. 3,899,239, Cl. 339-255.00P.
- Allegheny Ludlum Industries, Inc.: *See—*
Osborn, Merlin L.; Crytzer, Layton D.; and Stewart, Donald M., 3,899,733.
- Allegret, Francois: *See—*
Patrie, Jos; Lefebvre, Jacques; and Allegret, Francois, 3,899,400.
- Allen, James B.: *See—*
Shepherd, Glen C.; Allen, James B.; and Bryant, Samuel T., 3,898,860.
- Allen, Jan K., to Caterpillar Tractor Co. Anti-tipping log skidder. 3,899,093, Cl. 214-85.500.
- Alley, Robert P., to Construction Materials Division General Electric Company. Retrofit emergency lighting package. 3,899,632, Cl. 174-52.00R.
- Alliance Machine Company, The: *See—*
Polen, Karl; and Otte, J. C., 3,899,034.
- Allied Chemical Corporation: *See—*
Frick, Douglas G.; Morgan, Thomas R.; and Streeter, Terry L., 3,899,568.
Linares, Robert C., 3,899,304.
Nychka, Henry R., 3,899,541.
Oxenrider, Bryce C.; and Woolf, Cyril, 3,899,563.
Tajkowski, Edward George, 3,899,366.
- Allied Steel & Tractor Products, Incorporated: *See—*
Myeress, Rudolph S., 3,898,743.
- Allis-Chalmers Corporation: *See—*
Colloton, Marcus J., 3,898,891.
- Allister Manufacturing Company, Inc.: *See—*
Ellmore, John W., 3,899,726.
- Alps Electric Co., Ltd.: *See—*
Murata, Taneo, 3,899,648.
- Altmore, Joseph M.; and Ort, Morris R., to Monsanto Company. Polymerization of ethylene. 3,899,477, Cl. 260-94.90B.
- Aluma Building Systems Incorporated: *See—*
Avery, Peter J., 3,899,152.
- Aluminum Company of America: *See—*
Hawkins, Ronald G., 3,899,629.
- Alza Corporation: *See—*
Zaffaroni, Alejandro, 3,898,986.
- Amagi, Yasuo; and Yusa, Haruhiko, to Kureha Kogaku Kogyo Kabushiki Kaisha. Process for preparing vinyl chloride compositions containing butadiene and butadiene-styrene copolymers. 3,899,547, Cl. 260-876.00R.
- Ambrozets, James P.; and Diehl, Homer R., to American Bilrite Inc. Merchandise packaging and display device. 3,899,078, Cl. 206-491.000.
- Amerace Corporation: *See—*
Santos, Anthony J., 3,899,236.
- American Air Filter Company, Inc.: *See—*
Kelley, Wilson E., Jr.; and Wright, Robert, 3,898,997.
- American Aniline Products, Inc.: *See—*
Renfrew, Edgar E.; and Botros, Raouf, 3,899,519.
- American Bilrite Inc.: *See—*
Ambrozets, James P.; and Diehl, Homer R., 3,899,078.
- American Can Company: *See—*
Cassai, Eugene; Halasz, Andrew; and Hanke, Edward Herman, 3,898,828.
Rohowetz, Stanley Edward, 3,898,945.
- American Cyanamid Company: *See—*
Fead, William A.; Glynn, Thomas M.; Sbarra, Joseph F.; and Bower, Alfred L., 3,899,278.
Spicer, Larry Dean; and Hand, John James, 3,899,583.
- American Home Products Corporation: *See—*
McCaully, Ronald J., 3,899,527.
- American Optical Corporation: *See—*
Sigmund, Walter P., 3,899,314.
Sigmund, Walter P., 3,899,315.
- American Packaging Corporation: *See—*
Watts, Ridley, Jr., 3,899,122.
- American Seating Company: *See—*
Barecki, Chester J., 3,899,211.
- AMF Incorporated: *See—*
Neville, Richard Ernest Gartside; and Garrett, John Austin, 3,898,996.
- Amiad, Mutzareli Yiul-1972: *See—*
Kohner, Gabriel, 3,899,104.
- Amick, James L. Wind-launched sailplane. 3,899,146, Cl. 244-16.000.

AMP Incorporated: See—
Yeager, Marvin Leo; Henschen, Homer Ernst; and Harwood, Robert George, 3,899,234.

Ancker-Johnson, Betsy, to Boeing Company, The. Detector-modulator for an optical communications system. 3,899,430, Cl. 250-199.000.

Anderson, Eric C. Treatment of emphysema, polyarthritis syndrome and pectin related diseases in ruminants. 3,899,579, Cl. 424-128.000.

Anderson, Benkt Reino: See—
Andersson, Bror Gustav; and Andersson, Benkt Reino, 3,898,867.

Andersson, Bror Gustav; and Andersson, Benkt Reino. Condenser for condensing a refrigerant. 3,898,867, Cl. 62-507.000.

Andrako, Thomas E., to Addressograph-Multigraph Corporation. Toner replenisher. 3,898,956, Cl. 118-637.000.

Andrews, Richard E.; Desmond, John D.; and Hart, Joseph J., to Container Corporation of America. Flip top carton. 3,899,125, Cl. 229-44.00B.

Angier, Derek J.: See—
Shaw, Henry; and Angier, Derek J., 3,899,573.

Anthony, Thomas R.: See—
Cline, Harvey E.; and Anthony, Thomas R., 3,899,361.

Cline, Harvey E.; and Anthony, Thomas R., 3,899,362.

Antipov, Igor, to International Business Machines Corporation. Method for forming a field effect device. 3,899,373, Cl. 148-187.000.

Aono, Shigeo; and Mizuguchi, Norio, to Nissan Motor Company Limited. Engine ignition timing control. 3,898,894, Cl. 74-866.000.

Aoshima, Yasuo: See—
Takahashi, Toshiro; Nagano, Toshihiro; Aoshima, Yasuo; Suzuki, Matsuo; Suzuki, Shozo; and Asahina, Teruo, 3,899,370.

Apollon Plastics, Inc.: See—
Tracy, Charles W., 3,898,779.

Apostolov, Paskal Spasov: See—
Alexandrov, Alexander Damyanov; Trifonov, Todor Kostov; Stefanov, Stefan Ivanov; Apostolov, Paskal Spasov; and Deshev, Mincho Borislov, 3,899,021.

Arbstedt, Per Gunnar: See—
Lindskog, Per Folke; Arbstedt, Per Gunnar; and Wastenson, Erik Goran, 3,899,319.

Arco Nuclear Company: See—
Kolenik, Steve A.; and Johnson, William L., 3,898,994.

Ariga, Hajime, to Nissan Motor Company Limited. Power plant. 3,898,794, Cl. 60-39.18R.

Arild, Tor; and Gehres, Thomas. Hickey picking device for letter press or offset printing presses. 3,898,929, Cl. 101-147.000.

Armarco Marketing Company Inc.: See—
Rosette, Alan S.; and Tepper, Barry J., 3,898,955.

Amaud, Jacques Alexis; and Marcatili, Enrique Alfredo Jose, to Bell Telephone Laboratories, Incorporated. Slab-coupled optical waveguide. 3,899,235, Cl. 350-96.0WG.

Arrowhead Puritas Waters, Inc.: See—
Martin, Ernest Newell, 3,899,064.

Arteche Instrumentacion Y Sistemas Electronicos, S.A.: See—
Gomez Llonja, Jose Luis; and Di Pietro Elizaran, Rodolfo, 3,899,690.

Arzi, Friedrich; Hofert, Paul; and Sudler, Roland, to VDO Adolf Schindling AG. Electric clock. 3,898,789, Cl. 58-23.00R.

Asahina, Teruo: See—
Takahashi, Toshiro; Nagano, Toshihiro; Aoshima, Yasuo; Suzuki, Matsuo; Suzuki, Shozo; and Asahina, Teruo, 3,899,370.

Ashiura, Takeo: See—
Izumi, Soichi; Ashiura, Takeo; Ito, Yoshiji; and Miura, Nobutaka, 3,899,625.

Aspro-Nicholas Limited: See—
Corne, Seymour Jeffrey, 3,899,590.

Associated Electrical Industries Limited: See—
Croft, Edward Francis Beverley, 3,899,017.

Aston, Owen, to Haueter, Carl R., a part interest. Apparatus for testing alternator diodes. 3,899,737, Cl. 324-158.00D.

Atlantic Richfield Company: See—
Ohlswager, Stanley; Edison, Robert R.; and Dresser, Thorpe, 3,899,000.

Rosenthal, Rudolph; and Kieras, Joseph A., 3,899,576.

Atos Oleodinamica S.p.A.: See—
Tirelli, Paolo, 3,899,003.

Atwood, Harold T. Rounder for dough. 3,899,275, Cl. 425-333.000.

Ault, Robert T.: See—
Waid, George M.; and Ault, Robert T., 3,899,368.

Aurora Products Corporation: See—
Kirby, James S.; and Accornero, Louis, 3,898,723.

Auston, David Henry; and Glass, Alastair Malcolm, to Bell Telephone Laboratories, Incorporated. Millimeter wave devices utilizing electrically polarized media. 3,899,428, Cl. 250-199.000.

Auto Steering Trailers Limited: See—
Curry, Norman Royce, 3,899,188.

Automation Industries, Inc.: See—
McElroy, Jerry T., 3,898,840.

White, Allwyn M., 3,898,839.

Automobiles Peugeot: See—
Godart, Jean; and Faure, Guy, 3,898,726.

Vidberg, Marcel, 3,898,973.

Avco Corporation: See—
Sellers, David J.; Rhodes, William H.; and Vasilos, Thomas, 3,899,560.

Avery, Peter J., to Aluma Building Systems Incorporated. Concrete form including extruded aluminum support structure. 3,899,152, Cl. 249-18.000.

Aya, Norimoto: See—
Maeda, Teruo; Shimoe, Hideo; Fujiwara, Yasuhiko; Aya, Norimoto; Marumo, Nagayuki; Tsuji, Heigo; and Sakamoto, Yuzo, 3,899,047.

Aya, Toshihiko; Chiba, Kazumasa; and Izumi, Zenji, to Toray Industries, Inc. Chelating resin and process for preparing the same. 3,899,472, Cl. 260-80.780.

Ayabe, Masaaki: See—
Watanabe, Naoto; Morizane, Kenji; and Ayabe, Masaaki, 3,899,572.

Aylott, John F., to Dzus Fastener Co. Inc. Rotatable stop fastener. 3,898,716, Cl. 24-221.00K.

Bach, Lloyd G.: See—
Hendrickson, Richard T.; Lewis, Richard L.; Ewald, Jerome T.; Bach, Lloyd G.; and Hickner, George B., 3,898,913.

Badische Anilin- & Soda-Fabrik Aktiengesellschaft: See—
Baumann, Hans; and Oberlinner, Andreas, 3,899,514.

Baermann, Max. Magnetic bearing. 3,899,223, Cl. 308-10.000.

Bailey, John M.; and Longfellow, Richard C., to Cretex Companies, Inc., The. Swaging unit for thermoplastic pipe. 3,899,280, Cl. 425-393.000.

Baker, James P., to Weatherhead Company, The. Motor vehicle open-center series hydraulic circuit with accumulator. 3,898,809, Cl. 60-404.000.

Baker, Richard H., to Massachusetts Institute of Technology. Electric power source. 3,899,689, Cl. 307-117.000.

Bakken, Maynard Martin. Doorway sealing device. 3,899,016, Cl. 160-368.00G.

Balamuth, Lewis, to Ultrasonic Systems, Inc. Ultrasonic surgical methods. 3,898,992, Cl. 128-334.000.

Balder, Arnold, to Klippan GmbH Hamburg. Fitting for adjusting a safety belt. 3,898,715, Cl. 24-196.000.

Ball Brothers Research Corporation: See—
Bamberg, Jack A.; Bucher, Hans R.; and Bultena, John G., 3,899,250.

Ball, Geoffrey William. Particle multipliers. 3,899,706, Cl. 313-105.000.

Balleis, Peter. Toy spinning top. 3,898,762, Cl. 46-67.000.

Bamberg, Jack A.; Bucher, Hans R.; and Bultena, John G., to Ball Brothers Research Corporation. Active-gated television automatic range sweep technique. 3,899,250, Cl. 356-5.000.

Banner, Robert G.: See—
Huba, Francis; and Banner, Robert G., 3,899,501.

Barabas, Eugene S.; and Fein, Marvin M., to GAF Corporation. Copolymers of an N-vinyl lactam and a branched chain aliphatic carboxylic acid ester. 3,899,461, Cl. 260-29.6HN.

Bardone, Maria Rosa: See—
Coronelli, Carolina; Bardone, Maria Rosa; and Pagani, Hermes, 3,899,396.

Barecki, Chester J., to American Seating Company. Cantilevered seat for motorcoach vehicles or the like. 3,899,211, Cl. 297-451.000.

Barkan, Harold; Brayman, George E.; and Swartz, Jerome, to Hall-Barkan Instruments, Inc. Touch lamp, latching AC solid state touch switch usable with such lamp, and circuits for the same. 3,899,713, Cl. 315-34.000.

Barker, Barrie Gilbert, to Simms Group Research & Development Ltd. Fuel supply systems for engines. 3,898,795, Cl. 60-39.28R.

Barone, Bruno J., to Petro-Tex Chemical Corporation. Preparation of oxirane compounds by autoxidation. 3,899,518, Cl. 260-348.50V.

Barr, Katie H. Soap container. 3,899,073, Cl. 206-77.100.

BASF Aktiengesellschaft: See—
Nohe, Heinz; and Beck, Fritz, 3,899,401.

Petersen, Harro; Fuchs, Friedrich; and Scharwaechter, Peter, 3,899,548.

Petersen, Harro; Fuchs, Friedrich; and Scharwaechter, Peter, 3,899,549.

BASF Wyandotte Corporation: See—
Unterstenhoefer, Leo; and Krieger, Wilhelm, 3,899,455.

Basham, Raymond B., to Electronic Monitors, Inc. Respiration monitoring apparatus. 3,898,981, Cl. 128-2.00R.

Batt, Robert Stanley, to Torrington Company, Limited, The. Thrust bearings. 3,899,221, Cl. 308-3.00R.

Battelle Development Corporation: See—
Van Slyke, William Jan, 3,899,323.

Bauer, Carl F., to Universal Oil Products Company. Carburetor with automatic air-fuel ratio adjustment control. 3,899,552, Cl. 261-44.00R.

Baumann, Hans; and Oberlinner, Andreas, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Novel spirodipyrans and chromogenic materials for copying processes. 3,899,514, Cl. 260-345.200.

Baxter Laboratories, Inc.: See—
Moskowitz, Gerard J.; Como, John J.; and Feldman, Louis I., 3,899,395.

Bayer Aktiengesellschaft: See—
Horst, Jager, 3,899,486.

Immel, Otto; and Schwarz, Hans Helmut, 3,899,485.

Scholl, Hans-Joachim; Klauke, Erich; Grewe, Ferdinand; and Hammann, Ingeborg, 3,899,584.

Wagner, Kuno; Dietrich, Werner; Kraft, Karl-Josef; and Conrad, Horst, 3,899,454.

Wessling, Diether; Leister, Heinrich; and Degener, Eberhart, 3,899,504.

BBC Aktiengesellschaft Brown Boveri & Cie.: See—
Heil, Werner, 3,899,705.

BBC Brown Boveri & Company Limited: See—
Cadez, August; and Schaumann, Rolf, 3,899,722.

Beam, Robert James: See—
Vaughn, Walter Lee; and Beam, Robert James, 3,899,389.

Bean, Lloyd F.; and Gundlach, Robert W., to Xerox Corporation. Mixture of photoconductors in an active matrix. 3,899,329, Cl. 96-1.500.

Beare, Robert B.: See—
Conrath, Richard L.; and Beare, Robert B., 3,899,230.

Beatrice Foods Co.: See—
Binding, Kenneth W.; and Laberis, George A., 3,899,110.

Binding, Kenneth W.; and Laberis, George A., 3,899,111.

Keyes, Richard M.; and Nelson, Bertel S., 3,898,866.

Beaver, Ruby C.; Clasen, Theodor; Henning, Wolfgang; and Johnson, Emil S., to Vetco Offshore Industries, Inc. Magnetic flux leakage inspection method and apparatus including magnetic diodes. 3,899,734, Cl. 324-37.000.

Beck, Fritz: See—
Nohe, Heinz; and Beck, Fritz, 3,899,401.

Beckner, Everett H.; and Clauser, Milton J., to United States of America, Energy Research and Development Administration. Electron beam device. 3,899,681, Cl. 250-502.000.

Bedwell, Thomas A.; and Call, Bruce L., to Hesston Corporation. Liquid manure loading apparatus. 3,899,066, Cl. 198-7.00R.

Beer, Fred Albert, to Beer Precast Concrete Limited. Rainscreen wall panel. 3,898,780, Cl. 52-303.000.

Beer Precast Concrete Limited: See—
Beer, Fred Albert, 3,898,780.

Begg Cousland & Co. Ltd.: See—
Connelly, Thomas Macfarlane; Rowe, Ian George; and Morrison, Douglas Stewart, 3,899,427.

Behn, Sheldon P., to Super Laundry Machinery Company, Inc. Laundry folding machine. 3,899,166, Cl. 270-83.000.

Behrendt, Wilhelm A.: See—
Oelschlager, Herbert; Matthiesen, Uwe; and Behrendt, Wilhelm A., 3,899,488.

Bekker, Kunibert: See—
Plevak, Lubomir; Bekker, Kunibert; Wojacek, Egon; and Holken, Norbert, 3,898,845.

Bell, Frank S., Jr., to Sonic Development Corporation. Atomizer with graduated liquid feed and manufacturing method. 3,899,130, Cl. 239-102.000.

Bell & Howell Company: See—
Edelstein, Arthur, 3,899,246.

Tiger, Emil, 3,899,248.

Bell Telephone Laboratories, Incorporated: See—
Arnaud, Jacques Alexis; and Marcatili, Enrique Alfredo Jose, 3,899,235.

Auston, David Henry; and Glass, Alastair Malcolm, 3,899,428.

Borchard, Edwin Harley; and Pohl, Karl-Heinz, 3,899,721.

Briggs, Paul Raymond, Jr., 3,899,237.

Brolin, Stephen Joseph, 3,899,754.

Chandross, Edwin Arthur; Pryde, Coralie Anne; and Salmon, Warren Allen, 3,899,678.

Cobb, Douglas Romain; Holtz, Roger Edward; and Trimble, David Carlaw, 3,899,646.

Conorich, Theodore Alan, 3,898,724.

Etra, Richard Henry, 3,899,641.

Maurer, Dean William; and Schull, Leona Louise, 3,899,351.

Tompsett, Michael Francis, 3,899,694.

Yamell, Charles Frederick, 3,899,349.

Beloit Corporation: See—
Sokolow, Nickolas, 3,899,276.

Beltone Electronics Corporation: See—
Yum, Dooho; Mercola, Peter A.; and Jacobs, William R., 3,899,742.

Benaim, Carlos: See—
Mookherjee, Braja Dulal; Vock, Manfred Hugo; Benaim, Carlos; and Shuster, Edward J., 3,899,597.

Bencini, Mario; and Fantacchiotti, Massimo, to Consiglio Nazionale Delle Ricerche. Apparatus for determining the course of stroke, speed, and acceleration on a cam profile. 3,899,664, Cl. 235-151.320.

Bendix Corporation, The: See—
Burnett, Richard T.; and Colpaert, James J., 3,899,052.

Ewald, Jerome T.; and Lewis, Richard L., 3,898,808.

Hendrickson, Richard T.; Lewis, Richard L.; Ewald, Jerome T.; Bach, Lloyd G.; and Hickner, George B., 3,898,913.

Orme, Myrl E., 3,899,001.

Benecke, Theodor; Wiebke, Gunter; and Pfannenschmidt, Carl, to Elektroschmelzwerk Kempen GmbH. Process for making iron sponge pellets containing silicon carbide. 3,899,320, Cl. 75-33.000.

Bennett, John E.; Jayne, Max L.; and Orbanic, Robert S., to GTE Sylvia Incorporated. Automatic choke assembly. 3,898,967, Cl. 123-119.00F.

Benson, Carl F.: See—
Elmore, J. Russell; and Benson, Carl F., 3,899,225.

Benz, Ernest A.; and Keefe, James V., to Speedfam Corporation. Lapping fixture reference plate assembly. 3,898,770, Cl. 51-129.000.

Benz, Konrad K.: See—
Hines, Marion E.; and Benz, Konrad K., 3,899,759.

Berarducci, James P. Football game. 3,899,174, Cl. 273-94.00R.

Berg, Francis H., co-executor: See—
Berg, Quentin, deceased; Berg, Francis H., co-executor; and Daphin Deposit Trust Co., co-executor, 3,899,232.

Berg, Quentin, deceased; by Berg, Francis H., co-executor; and Daphin Deposit Trust Co., co-executor, to du Pont de Nemours, E. I., and Company. Circuit board socket. 3,899,232, Cl. 339-17.00C.

Bergersen, Earl O. Orthodontic appliance and method of using same. 3,898,736, Cl. 32-14.00B.

Berk, Charles W.: See—
Sitek, George J.; and Berk, Charles W., 3,899,627.

Berman, Elliot; and Ekman, Carl F. W., to Itek Corporation. Photosensitive composition containing TiO₂ having a particle size of about 25 millimicrons and the use thereof in physical development. 3,899,333, Cl. 96-48.00D.

Bernhardt, Helmut, to Jos. Schneider & Co. Optische Werke Kreuznach. Testing device for cinematographic cameras. 3,899,245, Cl. 352-72.000.

Berni, Ralph J.; and Harris, James A., to United States of America, Agriculture. Treatment of cotton with glycidyl methacrylate using ionizing radiation. 3,899,289, Cl. 8-120.000.

Bertellini, Gianfranco: See—
Butti, Adriano; Prino, Giuseppe; and Bertellini, Gianfranco, 3,899,481.

Bertram, August H.: See—
Griffith, Bobby D.; and Bertram, August H., 3,899,038.

Beschke, Helmut; Schaefer, Hans; and Schuler, Wilhelm Alfons, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for the production of 2,6-dichloropyridine. 3,899,495, Cl. 260-290.0HL.

Beshere, Stella. Umbrella puppet stage. 3,899,168, Cl. 272-21.000.

Bethlehem Steel Corporation: See—
Oliver, Evan M.; and Marsilio, Joseph V., 3,899,321.

Beyers, Marvin E.: See—
Grawey, Charles E.; Untz, Robert W.; and Beyers, Marvin E., 3,899,220.

Bickman, Bernard F., to United States of America, Army. Gas-operated uncaging mechanism. 3,898,889, Cl. 74-5.120.

Billberg, Alfred, to Lisnave-Estaleiros Navais de Lisboa, S.A.R.L. Device to compensate pressure and losses of inert gas. 3,898,998, Cl. 137-113.000.

Binding, Kenneth W.; and Laberis, George A., to Beatrice Foods Co. Foldable car top carrier. 3,899,110, Cl. 224-42.10F.

Binding, Kenneth W.; and Laberis, George A., to Beatrice Foods Co. Car top carrier for gutterless car tops. 3,899,111, Cl. 224-42.10F.

Binnie, Alexander J.; Bowdell, Kenneth; and Clark, Philip James, to George Kent Ltd. Interrogation of remote stations. 3,899,774, Cl. 340-163.000.

Bio-Medical Sciences, Inc.: See—
Halpern, Donald F., 3,899,295.

Birchall, James Derek; Cassidy, John Edward; Rolfe, Nicholas; and Miles, Clifford Granville, to Imperial Chemical Industries Limited. Complex phosphates. 3,899,342, Cl. 106-65.000.

Bird, Margaret Ellen; and Senior, Norman, to Imperial Chemical Industries Limited. Griseofulvin compositions. 3,899,578, Cl. 424-81.000.

Bittner, Emil: See—
Jovanovics, Karolina; Szasz, Kalman; Fekete, Gyorgy; Bittner, Emil; Dezseri, Eszter; and Eles, Janos, 3,899,493.

Blackburn, Reginald Mayman; and Airey, Harold Edwin, to Platt International Limited. Fibre control arrangements for textile drafting systems. 3,898,712, Cl. 19-244.000.

Blackwell, Philip A., Jr.: See—
Miller, Jacob I.; Dudley, Gaston E.; Blackwell, Philip A., Jr.; and Owens, Omer O., 3,899,497.

Block Engineering, Inc.: See—
Hirschfeld, Tomas, 3,899,297.

Blomstrom, Gary D.; Miller, Lindell L.; and York, Lyle E., to Caterpillar Tractor Co. Combined integral component enclosure and track roller frame. 3,899,218, Cl. 305-9.000.

Bloom, Stanley M.; and Hadzeczyriakides, Nicholas S., to Polaroid Corporation. Multicolor dye developer diffusion transfer processes with pyrazolo-[3,4d] pyrimidines. 3,899,331, Cl. 96-3.000.

Bloom, Stanley M.; and Garcia, Paulina P., to Polaroid Corporation. Photographic processes and products employing benzindole phthalins as optical filter agents. 3,899,511, Cl. 260-326.130.

Blundell, Thomas: See—
Colchester, John Edward; and Blundell, Thomas, 3,899,499.

Colchester, John Edward; and Blundell, Thomas, 3,899,500.

Bobalek, Edward G.: See—
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- Container Corporation of America: See—
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- Esteron, Maurice; and Weaver, Francis James, to English Electric Valve Company Limited. Quick starting magnetron with shielded cathode. 3,899,714, Cl. 315-39.510.
 Ethyl Corporation: See—
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 Etra, Richard Henry, to Bell Telephone Laboratories, Incorporated. Four-wire backup facility using DDD lines. 3,899,641, Cl. 179-18.0EA.
 Eubank, Marcus P. Apparatus facilitating burial in the vertical position. 3,898,718, Cl. 27-35.000.
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 Newbould, John; Eusebi, Elio; and Bobalek, Edward G., 3,899,462.
 Evans, Albert Edward John; Aincough, Anthony Norbert; and Verschoore, Koen, to Koninklijke Emballage Industrie Van Leer B.V. Method of pretreating metal surfaces. 3,899,364, Cl. 148-6.15R.
 Evans, James P. Mud flap mounting assembly. 3,899,193, Cl. 280-154.50R.
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 Evans Products Company: See—
 Jesse, Edwin L., 3,899,282.
 Evers, Walter. Complex compounds of aspartic acid with a rare earth metal and zinc. 3,899,521, Cl. 260-429.200.
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 Hendrickson, Richard T.; Lewis, Richard L.; Ewald, Jerome T.; Bach, Lloyd G.; and Hickner, George B., 3,898,913.
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 Ezra C. Lundahl, Inc.: See—
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 Famolare, Joseph P., Jr., 3,898,749.
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 Fantasia, John F.; and Ingraio, Hector C., to United States of America, Transportation. Airborne laser remote sensing system for the detection and identification of oil spills. 3,899,213, Cl. 250-301.000.
 Farelli, Mario. Cylindrical tubular union provided with an integral pressing formed thread for the engagement with a screw cap. 3,899,004, Cl. 138-89.000.
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 Willard, Frank G.; and Farley, Earl T., 3,899,637.
 Farrington, Gregory C.; Will, Fritz G.; and Lord, Peter C., to General Electric Company. Sealed primary sodium-halogen cell. 3,899,352, Cl. 136-83.00R.
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 Fead, William A.; Glynn, Thomas M.; Sbarra, Joseph F.; and Bower, Alfred L., to American Cyanamid Company. Blow molding apparatus. 3,899,278, Cl. 425-387.00B.
 Fedders Corporation: See—
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 Fehrer, Ernst. Process of spinning textile fibers. 3,898,788, Cl. 57-156.000.
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 Fein, Marvin M.: See—
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 Ferrigno, Thomas Howard. Opacity modified pigmentary compositions. 3,899,346, Cl. 106-288.000.
 Ferro Manufacturing Corporation: See—
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 Maier, Gerhard; and Fischer, Bertram, 3,899,758.
 Fischer, Francis A. Auxiliary fluid injection system for internal combustion engine. 3,898,965, Cl. 123-75.00B.
 Fischer, Hugo J. Multi-load self-centering work holding vise. 3,899,162, Cl. 269-25.000.
 Fischer, Valentine J.; Ponzone, George Bernard; and Tressler, Charles J., to General Foods Corporation. Fortified gelating dessert powder and process. 3,899,598, Cl. 426-73.000.
 Flanders, Robert George. Teaching or like devices. 3,898,748, Cl. 35-48.00A.
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 Fleming, Alva H. Antenna mounting bracket for a truck cab. 3,899,148, Cl. 248-43.000.
 Fleming, Gordon R.; and Ovshinsky, Stanford R., to Energy Conversion Devices, Inc. Method of making a current controlling device including VO₂. 3,899,558, Cl. 264-104.000.
 Flessner, Hinrich; and Hoffmeister, Bernhard, to Fried. Krupp Gesellschaft mit beschränkter Haftung. Device of damping pendulum movements. 3,899,083, Cl. 212-14.000.
 Florian, John, to Mobil Oil Corporation. Bottle carrier. 3,899,076, Cl. 206-427.000.
 Floyd, Roger F., to Cleon Corporation. Whole body imaging. 3,899,675, Cl. 250-369.000.
 FMC Corporation: See—
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 Foley, Kevin M.; and Vigo, Francesco M., to Owens-Corning Fiberglass Corporation. Complex organo silicon compounds. 3,899,524, Cl. 260-448.80R.
 Foote, D. Paul, to Xerox Corporation. Process for forming an electrode. 3,898,722, Cl. 29-25.420.
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 Francis, Peter Douglas; Redford, Ronald Albert; Gale, Philip Franklin; and Hillis, Maurice Raymond, to Electricity Council, The. Ozonisers. 3,899,685, Cl. 250-536.000.
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Friedl, Krupp Gesellschaft mit beschränkter Haftung: See—
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Friedrich, John P., to United States of America, Agriculture. Recovery and reactivation of rhodium hydroformylation catalysts. 3,899,442, Cl. 252-416.000.

Friedrich, Robert: See—
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Frost, Charles C.; Van Der Meulen, Douglas J.; and Weis, Siegfried K., to C. L. Frost & Son, Inc. Pulley construction. 3,898,888, Cl. 74-230.800.

Frost, Rodney I.; and Holleran, Louis M., to Corning Glass Works. Method of making monolithic honeycombed structures. 3,899,326, Cl. 75-214.000.

Frost, Ruben E.; and Van Der Meulen, Douglas J., to C. L. Frost & Son, Inc. Bearing assembly. 3,899,226, Cl. 308-187.100.

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Fukuta, Norikiko; and Paik, Young H., to United States of America, Interior. Apparatus for generating ice nuclei smoke particles for weather modification. 3,899,129, Cl. 239-14.000.

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Furlong, Donn B.; and Ovard, John C., to Ecodyne Corporation. Cooling tower plume control. 3,899,553, Cl. 261-109.000.

Furuya, Shoji; Takahashi, Masaaki; and Matsushima, Masatoshi, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Furnace charging apparatus. 3,899,088, Cl. 214-35.00R.

G. Methven & Co., Limited: See—
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Galerne, Jean. Keratinic fibres oxidation dyeing compositions containing a carbonate of an alkali metal amino acid. 3,899,288, Cl. 8-10.200.

Galitz, Raymond F., to Continental Can Company, Inc. Compound applying machine. 3,898,954, Cl. 118-315.000.

Gallaher, William C.; Stephens, Jerome P.; Testa, Phillip J.; and Wein, James E., to McDonnell Douglas Corporation. Convertible seat-bed equipment. 3,898,704, Cl. 5-2.00R.

Gamble, Kenneth H., to Scovill Manufacturing Company. Fluid conduits. 3,899,200, Cl. 285-93.000.

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Gaon, David E., to GTE Automatic Electric Laboratories Incorporated. Timing error detection circuit. 3,899,665, Cl. 235-153.00A.

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Gayso, Donald W. Vibrating dental packer. 3,898,739, Cl. 32-53.000.

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Geret, Adeline, born Torcheux, heir: See—
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Gilbert, Neal J.; and Horton, Edward L., to Enviro-Blast International. Sandblasting apparatus. 3,898,768, Cl. 51-15.000.

Gilchrist, Timothy Michael. Apparatus for feeding animals. 3,898,960, Cl. 119-51.00R.

Giles, Olin S.; and Lafferty, Edwin C., to General Electric Company. Arrangement for providing radio equipment with a plurality of oscillators. 3,899,747, Cl. 331-2.000.

Girardon, Hubert; and Emeury, Jean Marie, to Societe Nationale des Poudres et Explosifs. Preparation of 2,4,6,2',4',6'-hexanitrodiphenylamine. 3,899,536, Cl. 260-576.000.

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Glanvall, Rune, to Stal Refrigeration AB. Sliding vane rotary compressor. 3,899,271, Cl. 418-82.000.

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Godart, Jean; and Faure, Guy, to Regie Nationale des Usines Renault; and Automobiles Peugeot. Methods and device for positioning and assembling free-fitting parts. 3,898,726, Cl. 29-213.000.

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Goldenberg, Emmanuel; Dawans, Francois; Durand, Jean-Pierre; and Martino, Germain, to Institut Francais du Petrole des Carburants et Lubrifiants. Process for manufacturing hydrogenated polymers from conjugated diolefins. 3,899,474, Cl. 260-94.300.

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Goldstaub, Jacques B. Combination planting device. 3,898,766, Cl. 47-38.100.

Goldstein, Norman P.; and Sun, Kuan H., to Westinghouse Electric Corporation. Apparatus for power and breeding distribution measurements in breeder reactors. 3,899,676, Cl. 250-390.000.

Gomez Llona, Jose Luis; and Di Pietro Elizaran, Rodolfo, to Artech Instrumentacion Y Sistemas Electronicos, S.A. Control device detecting signal deviations from threshold values. 3,899,690, Cl. 307-215.000.

Good, Lewis B., Jr. Pump and intensifier unit arrangement for powered tools. 3,898,805, Cl. 60-325.000.

Goodman, Robert, to RCA Corporation. Adjustable bed. 3,898,702, Cl. 5-68.000.

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Gorman, Gerald W. Method of manufacturing dynamic pressure seal. 3,899,567, Cl. 264-318.000.

Grabmaier, Josef; and Plactner, Rolf, to Siemens Aktiengesellschaft. Method of producing a light conducting fiber having a core and a casing. 3,899,313, Cl. 65-3.000.

Grachten, Erich, to Burris Industries, Inc. Shelf assembly. 3,898,939, Cl. 108-109.000.

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Greenberg, Gerald H. Straddle fastening device. 3,898,906, Cl. 85-11.000.

Greene, Charles H., to Ohio Knife Company. Method of making drill proof plate for safes. 3,898,729, Cl. 228-122.000.

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Grethe, Guenter; and Uskokovic, Milan Radoje, to Hoffmann-La Roche Inc. Quinuclidine-2-carboxaldehydes. 3,899,498, Cl. 260-293.530.

Greubel, Waldemar; Krueger, Hans; and Wolff, Ulrich, to Siemens Aktiengesellschaft. Liquid crystal color display system. 3,899,786, Cl. 340-336.000.

Grewe, Ferdinand: See—
Scholl, Hans-Joachim; Klauke, Erich; Grewe, Ferdinand; and Hammann, Ingeborg, 3,899,584.

Griffin, Robert M.: See—
Tartakoff, Alexander; Gutta, John J.; and Griffin, Robert M., 3,899,708.

Griffing, Brandt Mead, to International Business Machines Corporation. Brushless linear DC motor actuator. 3,899,699, Cl. 310-13.000.

Griffith, Bobby D.; and Bertram, August H., to Caterpillar Tractor Co. Gauge width adjustment means for track-type vehicles. 3,899,038, Cl. 180-9.480.

Grimaldi, David, Jr. Sheet perforator having means for reinforcing the sheet at the holes. 3,898,919, Cl. 93-1.00A.

Grimm, Hermann: See—
Trube, Hans; Grimm, Hermann; and Karioth, Gernot, 3,898,921.

Grobbelaar, Christian. Irrigation apparatus. 3,899,132, Cl. 239-199.000.

Groff, Richard T., to United States of America, Air Force. Paddle wheel diffuser. 3,898,910, Cl. 89-14.00C.

Grosjean, Henri: See—
Sigel, Pierre Louis; and Grosjean, Henri, 3,899,233.

Grosseau, Albert, to Societe Anonyme Automobiles Citroen. Disc brakes especially for automobiles. 3,899,051, Cl. 188-73.500.

Grossman, Leonard N.; and Levin, Harry A., to General Electric Company. Nuclear fuel element containing particles of an alloyed Zr, Ti and Ni getter material. 3,899,392, Cl. 176-68.000.

Groult, Pierre; Hubert, Francois; Daunay, Jacques; and Bono, Pierre, to Societe Generale de Constructions Electriques et Mecaniques Alsthom & Cie. Porous electrode for a fuel cell and method of making same. 3,899,356, Cl. 136-120.0FC.

Grow, Harlow B. Reaction motor employing intermittent explosive combustion and impulse turbine. 3,898,801, Cl. 60-247.000.

Gruppo Lepetit S.p.A.: See—
Coronelli, Carolina; Bardone, Maria Rosa; and Pagani, Hermes, 3,899,396.

GTE Automatic Electric Laboratories Incorporated: See—
Gaon, David E., 3,899,665.

GTE International: See—
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GTE Sylvania Incorporated: See—
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Decker, John J.; and Kerstetter, Donald R., 3,898,721.

Funston, David Lee, 3,899,760.

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Gundlach, Robert W.: See—
Bean, Lloyd F.; and Gundlach, Robert W., 3,899,329.

Gurtner, S.A.: See—
Iung, Jacques, 3,898,853.

Gustafsson, Sven G.: See—
Unkauf, Manfred G.; Harris, Derek V.; and Gustafsson, Sven G., 3,899,740.

Gustin, Paul R. Athletic shoe cleat. 3,898,751, Cl. 36-67.00D.

Guth, Christian: See—
Buhler, Arthur; Schutz, Hans Ulrich; Mausezahl, Dieter; Harris, Melvin; and Guth, Christian, 3,899,469.

Gutta, John J.: See—
Tartakoff, Alexander; Gutta, John J.; and Griffin, Robert M., 3,899,708.

Guy, Raymond, to Bridon Limited. Treatment of steel roping wire. 3,899,365, Cl. 148-6.15R.

Gwozdz, Joseph W., to McKinney Manufacturing Company. Door hinge adjustable closing spring. 3,898,708, Cl. 16-72.000.

H. B. Zachary Co.: See—
Cox, Elmer Adrian; Tiner, Wayne Douglas; and Woods, Ritchey Paul, Jr., 3,898,776.

H. C. Duke & Son, Inc.: See—
Duke, Gene S., 3,898,859.

H.S.M. Americas Ltd.: See—
Lewis, Kenneth, 3,899,425.

Habiger, Cyril W., to Caterpillar Tractor Co. Hydrostatic transmission control system. 3,898,807, Cl. 60-391.000.

Haddad, George S. Brake for a snow ski. 3,899,184, Cl. 280-11.13B.

Hadzkyriakides, Nicholas S.: See—
Bloom, Stanley M.; and Hadzkyriakides, Nicholas S., 3,899,331.

Hahn, James H., to Interface Technology, Inc. Portable tone data transmitter. 3,899,638, Cl. 179-2.0DP.

Halasz, Andrew: See—
Cassai, Eugene; Halasz, Andrew; and Hanke, Edward Herman, 3,898,828.

Hall-Barkan Instruments, Inc.: See—
Barkan, Harold; Brayman, George E.; and Swartz, Jerome, 3,899,713.

Hall, Guy E., to Steadley Company, Inc. Machine cover. 3,899,043, Cl. 181-33.00K.

Hall, Joseph J.; and Lamb, Leo M., to Johnson & Johnson. Adhesive tape. 3,899,075, Cl. 206-411.000.

Hall, Roger P., to SCM Corporation. Curing by actinic radiation. 3,899,611, Cl. 427-54.000.

Haller, Herbert C., to Albany International Corporation. Bowling ball decelerator. 3,899,171, Cl. 273-47.000.

Haller, Jordan D. Valve having axially separable members. 3,898,999, Cl. 137-512.100.

Halpern, Donald F., to Bio-Medical Sciences, Inc. Integrity indicator. 3,899,295, Cl. 23-253.0TP.

Halvorson, George C. Duck retrieving device. 3,898,755, Cl. 43-1.000.

Hama, Tetsuro, to Kabushiki Kaisha Suwa Seikosha. Driving circuits for electronic watches. 3,899,691, Cl. 307-223.00C.

Hamm, Alton B., to Hamm Systems, Inc. Leg mounted distance measuring device and guidance system. 3,898,886, Cl. 73-432.000.

Hamm Systems, Inc.: See—
Hamm, Alton B., 3,898,886.

Hammann, Ingeborg: See—
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Hammond Corporation: See—
Schreier, Wilford Rayburn, 3,898,905.

Hammond, John E.; and Streckfus, Thomas K., to General Foods Corporation. Xylitol chewing gum. 3,899,593, Cl. 426-3.000.

Hammond, Trevor John: See—
Simmons, John Richard; and Hammond, Trevor John, 3,898,890.

Hamrin, Bo Goran; and Peterson, Rune, to Granges Engineering Aktiebolag. Method of heating metallic material. 3,899,287, Cl. 432-23.000.

Hand, John James: See—
Spicer, Larry Dean; and Hand, John James, 3,899,583.

Hanke, Edward Herman: See—
Cassai, Eugene; Halasz, Andrew; and Hanke, Edward Herman, 3,898,828.

Hanna, Samuel C.; and Krupick, Walter J., to Singer Company, The. Torquer armature. 3,899,702, Cl. 310-67.000.

Hansen, Carlo J.: See—
Miller, Timothy A.; and Hansen, Carlo J., 3,899,607.

Hansen, Howard C., to Clark Equipment Company. Coupling electric line inside of fluid conduit. 3,899,046, Cl. 187-9.00E.

Hansen, Leslie T., to Sweco, Inc. Drilling mud separation system. 3,899,414, Cl. 209-17.000.

Hansford, Rowland C., to Union Oil Company of California. Rejuvenation of damaged zeolite-supported metal catalysts. 3,899,441, Cl. 252-41.00R.

Haraway, William H., Jr.; Dale, Walter J.; and McErlean, Edwin A., to United States of America, General Counsel-Code GP. Bonding method in the manufacture of continuous regression rate sensor devices. 3,898,730, Cl. 29-613.000.

Hardtmann, Goetz E., to Sandoz, Inc. Process for preparing imidazo-[2,1-a]isoindoles. 3,899,507, Cl. 260-309.600.

Hargrave, Richard D.: See—
Vaughn, George A.; and Hargrave, Richard D., 3,899,172.

Harig, Friedrich, to Pampus KG, Firma. Metal lining. 3,899,227, Cl. 308-237.00R.

Harman, Marion W., to Monsanto Company. 1,2,4-Thiadiazol-3,5-diyl-sulfenamides. 3,899,502, Cl. 260-302.0SD.

Harmony Emitter Company, Inc.: See—
Harmony, Richard C., 3,899,136.

Harmony, Richard C., to Harmony Emitter Company, Inc. Emitter for irrigation systems. 3,899,136, Cl. 239-534.000.

Harris, Deane F.: See—
Byrd, David J.; and Harris, Deane F., 3,898,698.

Harris, Derek V.: See—
Unkauf, Manfred G.; Harris, Derek V.; and Gustafsson, Sven G., 3,899,740.

Harris, James A.: See—
Berni, Ralph J.; and Harris, James A., 3,899,289.

Harris, Melvin: See—
Buhler, Arthur; Schutz, Hans Ulrich; Mauezahl, Dieter; Harris, Melvin; and Guth, Christian, 3,899,469.

Harrison, Brian G., to Minnesota Mining and Manufacturing Company. Method of making a closed end tube. 3,899,325, Cl. 75-208.00R.

Harrison, John R.: See—
Bredeson, Dean K.; Harrison, John R.; and Johnson, Earl A. N., 3,899,301.

Harsco Corporation: See—
Lang, David, 3,899,265.

Hart, Joseph J.: See—
Andrews, Richard E.; Desmond, John D.; and Hart, Joseph J., 3,899,125.

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Hartley, Robert R.: See—
Stallworth, Lewis A.; and Hartley, Robert R., 3,898,878.

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Rothert, Kenneth; Dexter, Donald D.; and Hartmann, Lester M., 3,899,432.

Harwood, Robert George: See—
Yeager, Marvin Leo; Henschen, Homer Ernst; and Harwood, Robert George, 3,899,234.

Harzer, Peter, to Wandel u. Goltermann. System for measuring group delay and/or attenuation in closed signal-transmission loop. 3,899,738, Cl. 325-2.000.

Hashimoto, Akio: See—
Miya, Bunji; Kasutani, Katsuji; Matsuda, Morio; Hashimoto, Akio; Nisigawa, Shiyozo; and Sawamoto, Youzi, 3,899,446.

Hashimoto, Masanao; and Ohnuma, Kiyoshi, to Director-General of the Agency of Industrial Science and Technology. Speed change controlling device in an automatic transmission for an electric car. 3,898,893, Cl. 74-859.000.

Hashimoto, Tadanori: See—
Yamada, Koichi; Hashimoto, Tadanori; and Nakano, Kazuhiko, 3,899,571.

Hatanaka, Kazunari: See—
Nakagami, Takakiyo; Hatanaka, Kazunari; and Ishizaki, Masayuki, 3,899,757.

Haubner, Georg, to Robert Bosch G.m.b.H. Ignition system for an internal combustion engine with automatic timing shift. 3,898,972, Cl. 123-148.00E.

Haueter, Carl R.: See—
Aston, Owen, 3,899,737.

Haug, Werner Otto: See—
Feicht, Erwin; Haug, Werner Otto; Remshardt, Rolf; and Schettler, Helmut, 3,899,777.

Haverkamp, Wilhelm, to Heinrich Koppers Gesellschaft mit beschränkter Haftung. Arrangement for viewing the interior of a pressure vessel. 3,899,243, Cl. 350-319.000.

Hawkins, Jerry D.: See—
Holk, Albert J., Jr.; and Hawkins, Jerry D., 3,898,944.

Hawkins, Ronald G., to Aluminum Company of America. Preshaped wire rod and spacer having increased leverage and gripping force. 3,899,629, Cl. 174-40.00R.

Haws, Gerald W.: See—
Hayes, John B.; Haws, Gerald W.; and Gogarty, William B., 3,899,431.

Hayashibara Company: See—
Miyake, Toshio; and Sato, Yoshinori, 3,899,604.

Hayes, John B.; Haws, Gerald W.; and Gogarty, William B., to Marathon Oil Company. Oil-in-water microemulsion drilling fluids. 3,899,431, Cl. 252-8.50P.

Hayner, Paul F., to Sanders Associates, Inc. Open center, pressure demand flow control valve. 3,899,002, Cl. 137-625.620.

Heaviside, Robert D.: See—
Peyser, Harry A.; and Heaviside, Robert D., 3,899,117.

Hebert, Joseph M.: See—
Keilin, Bertram; and Hebert, Joseph M., 3,899,421.

Hecht, Stephen S.: See—
Rothman, Edward S.; Hecht, Stephen S.; and Moore, Gordon G., 3,899,290.

Hehn, Anthony H.: See—
Lanigan, John J.; Glickman, Myron; and Hehn, Anthony H., 3,899,205.

Heide, Helmut; Hoffmann, Ulrich; Brotz, Gunther; and Poeschel, Eva, to German Federal Republic, represented by the Minister for Research and Technology. Process for producing implantable, porous, ceramic, bone substitution, bone connection or prosthesis anchoring materials. 3,899,556, Cl. 264-44.000.

Heil, Werner, to BBC Aktiengesellschaft Brown Boveri & Cie. Shrinking commutator segment assembly. 3,899,705, Cl. 310-235.000.

Heilmayr, Peter F., to Certain-teed Products Corporation. Method of making plastic siding. 3,899,561, Cl. 264-151.000.

Heinrich, Ernst: See—
Fleckenstein, Erwin; Mohr, Reinhard; and Heinrich, Ernst, 3,899,478.

Heinrich Koppers Gesellschaft mit beschränkter Haftung: See—
Coenders, Willi; and Trockel, Franz, 3,899,197.

Haverkamp, Wilhelm, 3,899,243.

Heinze, Alex E.: See—
Abram, Stewart J.; Denis, David R.; Heinze, Alex E.; Johnson, Leonard M.; and Taylor, Edward, 3,899,165.

Heinzer, Hans, to Sig Schweizerische Industrie-Gesellschaft. Rotary transfer apparatus for grouping articles. 3,899,069, Cl. 198-25.000.

Heithoff, Robert B., to PPG Industries, Inc. Glass batch log control device and method for using. 3,899,317, Cl. 65-135.000.

Heitz, Walter Helmut. Door lock. 3,899,203, Cl. 292-335.000.

Helka S.A.: See—
Mieville, Andre, 3,899,261.

Hemphill, Geoffrey: See—
Skov, Ebbe R.; Judge, Roderick B.; and Hemphill, Geoffrey, 3,899,588.

Hendrickson, Richard T.; Lewis, Richard L.; Ewald, Jerome T.; Bach, Lloyd G.; and Hickner, George B., to Bendix Corporation, The. Solenoid control valve for hydraulic brake booster. 3,898,913, Cl. 91-31.000.

Henkel & Cie GmbH: See—
Schindler, Norbert; and Ploger, Walter, 3,899,496.

Henning, Wolfgang: See—
Beaver, Ruby C.; Clasen, Theodor; Henning, Wolfgang; and Johnson, Emil S., 3,899,734.

Henry, Donald E. Means for preparing cells for inspection. 3,899,610, Cl. 427-2.000.

Henschen, Homer Ernst: See—
Yeager, Marvin Leo; Henschen, Homer Ernst; and Harwood, Robert George, 3,899,234.

Herbetko, Stephen A., to Connelly Containers, Inc. Interlocking container. 3,899,121, Cl. 229-34.00R.

Hercules Incorporated: See—
Mahlman, Bert H., 3,899,439.

Herman, Arthur L., to General Electric Company. Decode squelch circuit for a continuous tone control radio receiver. 3,899,739, Cl. 325-319.000.

Hess, Howard V.: See—
Cole, Edward L.; and Hess, Howard V., 3,899,398.

Hesston Corporation: See—
Bedwell, Thomas A.; and Call, Bruce L., 3,899,066.

Hickner, George B.: See—
Hendrickson, Richard T.; Lewis, Richard L.; Ewald, Jerome T.; Bach, Lloyd G.; and Hickner, George B., 3,898,913.

Higashida, Susumu: See—
Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Toda, Toshimasa; Mori, Eiko; Horiuchi, Hideo; Higashida, Susumu; Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; and Osawa, Hisayou, 3,899,464.

Hikota, Toyohiko: See—
Okazaki, Kaoru; Yagi, Kenkichi; Okamoto, Miyoshi; Watanabe, Koji; Hikota, Toyohiko; and Kubo, Masayoshi, 3,899,292.

Hilgers, Raymond H.; and Liautaud, James P., to Capsonic Group, Inc. Insert frame for insert molding. 3,899,305, Cl. 29-193.000.

Hill, Roland John; and Jewell, Norman Thomas, to Rolls-Royce Limited. Gas dynamic lasers. 3,899,749, Cl. 331-94.50P.

Hillis, Maurice Raymond: See—
Francis, Peter Douglas; Redford, Ronald Albert; Gale, Philip Franklin; and Hillis, Maurice Raymond, 3,899,685.

Hillman, Edwin K. Wind-driven motive apparatus. 3,899,268, Cl. 416-117.000.

Himeno, Shohachi, to Conde Kabushiki Kaisha. Knife for cutting out clippings. 3,898,735, Cl. 30-294.000.

Hines, Marion E.; and Benz, Konrad K., to Microwave Associates, Inc. Electric wave resonators. 3,899,759, Cl. 333-73.00W.

Hino, Naganori: See—
Tanaka, Shizuya; Ozaki, Toshiaki; Mine, Akihiko; Tanaka, Katsutoshi; Yamamoto, Sigeo; Oishi, Tadashi; Hino, Naganori; and Satomi, Takeo, 3,899,582.

Hioki Electric Works Co., Ltd.: See—
Sakaguchi, Takehiko, 3,899,736.

Hirano, Masachika: See—
Okuno, Yoshitoshi; and Hirano, Masachika, 3,899,586.

Hirose, Masao: See—
Syoji, Masaaki; Ishihara, Goro; Hirose, Masao; Kubota, Hidenobu; and Mitani, Naoyuki, 3,899,530.

Hirs, Gene, to Hydromotion Filter Company. Apparatus and method for filter seal. 3,899,426, Cl. 210-387.000.

Hirschfeld, Tomas, to Block Engineering, Inc. Biological staining technique and mixture thereof. 3,899,297, Cl. 23-230.00B.

Hirt, John H., to Southern California Gas Co. Electric arc furnace with auxiliary burners. 3,899,628, Cl. 13-2.000.

Hitachi, Ltd.: See—
Kishi, Tunes; and Nakano, Seizo, 3,899,650.

Kominami, Yasuo, 3,899,744.

Komiyama, Shigeo; Matsubara, Ichiro; and Shiraishi, Masatake, 3,899,386.

Masai, Tadahisa; Adachi, Tetsuro; Sasaki, Shigeru; and Moriyama, Kazuyoshi, 3,899,266.

Yamauchi, Masaaki, 3,899,761.

Hitachi Metals, Ltd.: See—
Sekimoto, Yasuhiro; and Miura, Yoshitada, 3,899,020.

Hochuli, Urs E. Long life gas laser system and method. 3,899,750, Cl. 331-94.50G.

Hochuli, Urs E. Long life molecular gas laser. 3,899,751, Cl. 331-94.50T.

Hodges, James T., Jr.; Braddock, John B.; and Dishman, George C., to Sonoco Products Company. Roll tightener. 3,899,142, Cl. 242-67.10R.

Hodsoll, Raymond J., Jr.: See—
Sicko, John S.; Hodsoll, Raymond J., Jr.; and Adamchick, John T., 3,899,776.

Hoechst Aktiengesellschaft: See—
Fernholz, Hans; Wunder, Friedrich; and Schmidt, Hans-Joachim, 3,899,539.

Fleckenstein, Erwin; Mohr, Reinhard; and Heinrich, Ernst, 3,899,478.

Horlein, Gerhard; Langeluddeke, Peter; Schonowsky, Hubert; and Studeneer, Adolf, 3,899,489.

Riemenschneider, Wilhelm, 3,899,509.

Schwartz, Gunther; and Frank, Klaus, 3,899,416.

Siegmund, Gunter, 3,899,531.

von der Elitz, Hans-Ulrich, 3,899,291.

Hoehn, Harvey Herbert; and Richter, John W., to du Pont de Nemours & Co., Inc. Aromatic polyimide, polyester and polyamide separation membranes. 3,899,309, Cl. 29-16.000.

Hoerner Waldorf Corporation: See—
Roccaforte, Harry I., 3,899,119.

Seiter, George M., 3,899,079.

Hofert, Paul: See—
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Hoffer, Max, to Hoffmann-La Roche Inc. 2,2'-Anhydro-1- β -D-arabinofuranosyl-5-fluorocytosine salts and process. 3,899,482, Cl. 260-211.50R.

Hoffmann-La Roche Inc.: See—
Grethe, Guenter; and Uskokovic, Milan Radoje, 3,899,498.

Hoffer, Max, 3,899,482.

Hoffmann, Ulrich: See—
Heide, Helmut; Hoffmann, Ulrich; Brotz, Gunther; and Poeschel, Eva, 3,899,556.

Hoffmann, Yngve Birger Lowenhaupt, to AB Pellerin/Zenith. Apparatus for continuous acid treatment of soapstock. 3,899,440, Cl. 252-371.000.

Hoffmeister, Bernhard: See—
Flessner, Hinrich; and Hoffmeister, Bernhard, 3,899,083.

Hoganas AB, Fack: See—
Lindskog, Per Folke; Arbstedt, Per Gunnar; and Wastenson, Erik Goran, 3,899,319.

Holk, Albert J., Jr.; and Hawkins, Jerry D., to Continental Can Company, Inc. Score and tool for forming the score. 3,898,944, Cl. 113-1.00F.

Holken, Norbert: See—
Plevak, Lubomir; Bekcer, Kunibert; Wojaczek, Egon; and Holken, Norbert, 3,898,845.

Holleran, Louis M.: See—
Frost, Rodney I.; and Holleran, Louis M., 3,899,326.

Hollinger, Paul, to Maryland Cup Corporation. Self-dispensing dispenser. 3,899,118, Cl. 229-17.00B.

Hollister Incorporated: See—
Nolan, John L., 3,898,990.

Hollnagel, Harold E. Snowmobile ski suspension assembly. 3,899,036, Cl. 180-5.00R.

Hollymatic Corporation: See—
Wagner, Richard C., 3,898,863.

Holtz, Hans D., to Phillips Petroleum Company. Producing benzophenone and related products. 3,899,537, Cl. 260-591.000.

Holtz, Roger Edward: See—
Cobb, Douglas Romain; Holtz, Roger Edward; and Trimble, David Carlaw, 3,899,646.

Homma, Yasuo: See—
Misato, Tomomasa; Huang, Keng Tang; Homma, Yasuo; Yoshida, Ryonosuke; Saito, Tadaomi; and Shimizu, Akira, 3,899,585.

Honig, Gunther; and Kiencke, Uwe, to Robert Bosch G.m.b.H. Control system and devices for internal combustion engines. 3,898,962, Cl. 123-32.0EA.

Honnell, Martial A.: See—
United States of America, National Aeronautics and Space Administration; and Honnell, Martial A., 3,899,745.

Honore, Etienne Augustin Henri; Torcheux, Emile Leon Gabriel, deceased; by Torcheux, Micheline Marie, born Deloffre, heir; Torcheux, Alain, heir; and Geret, Adeline, born Torcheux, heir, to Societe d'Etude et d'Application des Techniques Nouvelles NEO-TEC. Method of and apparatus for representing the movement of a moving body in a two-dimensional space. 3,899,769, Cl. 340-24.000.

Hooker Chemicals & Plastics Corporation: See—
Cook, Edward H., Jr.; and Emery, Alvin T., 3,899,403.

Evans, Leo G.; and Ruthel, Walter W., 3,899,408.

Schultz, Robert F.; and Cook, Edward H., Jr., 3,899,409.

Hoover Ball and Bearing Company: See—
Wiese, Delmar R., 3,899,095.

Hopkins, Evan Lloyd; and Hopkins, Ross Eugene, to Hopkins Manufacturing Company. Indoor/outdoor thermometer. 3,898,884, Cl. 73-339.00C.

Hopkins Manufacturing Company: See—
Hopkins, Evan Lloyd; and Hopkins, Ross Eugene, 3,898,884.

Hopkins, Ross Eugene: See—
Hopkins, Evan Lloyd; and Hopkins, Ross Eugene, 3,898,884.

Hoppe, Walter, to Max-Planck-Gesellschaft ZUR Forderung der Wissenschaften e.V. Apparatus for maintaining high precision in a rotating device used with optical apparatus. 3,899,728, Cl. 318-687.000.

Hori, Yutaka; Yoshikawa, Nobuharu; and Ohmori, Saburo, to Nitto Electric Industrial Co., Ltd. Plastic for indicating a radiation dose. 3,899,677, Cl. 250-474.000.

Horiuchi, Hideo: See—
Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Toda, Toshimasa; Mori, Eiko; Horiuchi, Hideo; Higashida, Susumu; Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; and Osawa, Hisayou, 3,899,464.

Horizons Incorporated: See—
Lewis, James M., 3,899,338.

Horlein, Gerhard; Langeluddeke, Peter; Schonowsky, Hubert; and Studeneer, Adolf, to Hoechst Aktiengesellschaft. Hexahydrotriazine derivatives. 3,899,489, Cl. 260-248.0NS.

Horst, Jager, to Bayer Aktiengesellschaft. Water-soluble phthalocyanine reactive dyestuffs containing an ethylsulfonfyl substituent. 3,899,486, Cl. 260-239.600.

Horton, Edward L.: See—
Gilbert, Neal J.; and Horton, Edward L., 3,898,768.

Hotten, Bruce W., to Chevron Research Company. Extreme pressure lubrication additive. 3,899,475, Cl. 260-97.500.

Huang, Keng Tang: See—
Misato, Tomomasa; Huang, Keng Tang; Homma, Yasuo; Yoshida, Ryonosuke; Saito, Tadaomi; and Shimizu, Akira, 3,899,585.

Huang, Patrick Chin-Sheng: See—
Esch, Ronald Philip; and Huang, Patrick Chin-Sheng, 3,899,372.

Huba, Francis; and Banner, Robert G., to Diamond Shamrock Corporation. Continuous saccharin process. 3,899,501, Cl. 260-301.000.

Hubert, Francois: See—
Groult, Pierre; Hubert, Francois; Daunay, Jacques; and Bono, Pierre, 3,899,356.

Hudson, Jimmie E.; and Dean, Jimmie L., to Phillips Petroleum Company. Blow molding apparatus. 3,899,279, Cl. 425-387.00B.

Hudson Pulp & Paper Corporation: See—
Zucker, Jerry, 3,898,920.
Huff, Thomas R. Mast handling device. 3,898,948, Cl. 114-91.000.
Hughes, Francis H.: See—
Crawford, Douglas J.; LeMere, Roger; and Hughes, Francis H., 3,898,941.
Hunnicut, Wayne E. Headlight testing apparatus. 3,898,742, Cl. 33-288.000.
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- Newman, Raymond. Adjustable floor support for needlecraft and art frames. 3,899,164, Cl. 269-71.000.
- Nickerson, John T. R.; and Darack, John R., to Dirigo Corporation. Food preservation. 3,899,594, Cl. 426-9.000.
- Nihon Kensetsu Kikai Sangyo Kabushiki Kaisha: See—
Yamamoto, Shinzo, 3,899,262.
- Nipki "Leyarska Technika": See—
Alexandrov, Alexander Damyanov; Trifonov, Todor Kostov; Stefanov, Stefan Ivanov; Apostolov, Paskal Spasov; and Deshev, Mincho Borislovov, 3,899,021.
- Nippon Electric Company, Limited: See—
Ueno, Yoshito; Kajitani, Mitsuo; and Ohgushi, Yoshio, 3,899,429.
- Nippon Gakki Seizo Kabushiki Kaisha: See—
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- Nippon Kogaku K.K.: See—
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- Nippon Steel Corporation: See—
Izumi, Soichi; Ashiura, Takeo; Ito, Yoshiji; and Miura, Nobutaka, 3,899,625.
- Murata, Yuuji; Sato, Kuniaki; and Yonejima, Sigeru, 3,898,927.
- Nisigawa, Shiyozo: See—
Miya, Bunji; Kasutani, Katsuji; Matsuda, Morio; Hashimoto, Akio; Nisigawa, Shiyozo; and Sawamoto, Youzi, to Kao Soap Co., Ltd. Process for preparing copper-chromium catalysts. 3,899,446, Cl. 252-467.000.
- Aono, Shigeo; and Mizuguchi, Norio, 3,898,894.
- Ariga, Hajime, 3,898,794.
- Iwata, Hiroyoshi; Sekiguchi, Koichi; and Ishikawa, Yoshikazu, 3,898,963.
- Maeda, Teruo; Shimoe, Hideo; Fujiwara, Yasuhiko; Aya, Norimoto; Marumo, Nagayuki; Tsuji, Heigo; and Sakamoto, Yuzo, 3,899,047.
- Ohba, Motoichi; and Chiba, Keiichi, 3,898,810.
- Takao, Hiroshi; Togawa, Kinmochi; Abe, Satoshi; and Nakagawa, Sigeoyosi, 3,899,555.
- Nitto Electric Industrial Co., Ltd.: See—
Hori, Yutaka; Yoshikawa, Nobuharu; and Ohmori, Saburo, 3,899,677.
- NL Industries, Inc.: See—
Bush, Harley E., 3,899,293.
Loeffler, Otto Ernest, 3,899,522.
- Nohe, Heinz; and Beck, Fritz, to BASF Aktiengesellschaft. Electrochemical production of pinacols. 3,899,401, Cl. 204-59.00R.
- Noice, Frank M. Backpack frame with handles. 3,899,109, Cl. 224-25.00A.
- Nolan, John L., to Hollister Incorporated. Ostomy seal and method of making the same. 3,898,990, Cl. 128-283.000.
- Noranda Mines Limited: See—
Stanley, Robert W., 3,899,284.
- Nordstrom, Arnold B. Cargo-carrying structural modules. 3,899,092, Cl. 214-84.000.
- Norlie, Bruce; and Bradbury, Bernard G., to Rexnord Inc. Car turner. 3,898,935, Cl. 104-37.000.
- Normbau GmbH Maschinen-Papier-Apparate-Werkzeuge & Co.: See—
Frauendorf, Manfred, 3,899,108.
- Norton, Michael George: See—
Rowe, Frederick; Norton, Michael George; and Fairweather, John Anthony, 3,899,412.
- Noval, Barry A.: See—
Eastwood, H. Keith; and Noval, Barry A., 3,899,407.
- Novotny, Raymond J.: See—
Huntress, Howard B.; and Novotny, Raymond J., 3,899,054.
- Nozawa, Masao; Yasuno, Takehiko; Yamaguchi, Takashi; and Uenoyama, Hiroshi, to Japan Atomic Energy Research Institute; and Japan Gasoline Co., Ltd. Steam reformer for hydrocarbons. 3,899,420, Cl. 196-129.000.
- Nufer, Robert W.: See—
Kaiser, Harold D.; and Nufer, Robert W., 3,899,554.
- Nychka, Henry R., to Allied Chemical Corporation. Process for coupling iodoperhalo compounds. 3,899,541, Cl. 260-648.00F.
- Nystuen, Arne M.: See—
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- Oak Industries, Inc.: See—
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- Oberlinner, Andreas: See—
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- O'Brien, Edward D. Water emitter. 3,899,135, Cl. 239-534.000.
- O'Brien, William J.; and Sakai, John, to Standard Register Company. The. Direct mail advertising booklet and method of production. 3,899,381, Cl. 156-204.000.
- Oda, Osamu; Sakai, Kiyoshi; Yusa, Takashi; and Katano, Hamako, to Sankyo Company Limited. 9 β ,15 β -Dihydroxy-11 α -hydroxymethylprost-13(trans)-enoic acid derivatives. 3,899,525, Cl. 260-463.000.

Oelschlager, Herbert; Matthiesen, Uwe; and Behrendt, Wilhelm A., to Temmler-Werke, Firma. 2H-indazolone compound. 3,899,488, Cl. 260-247.5EP.

Ogasawara, Tatsuo: See—
Sasaki, Rentaro; Watanabe, Akinori; Ikegame, Mamoru; and Ogasawara, Tatsuo, 3,899,707.

Ogawa, Takashi; Sugiyama, Shunichi; and Kida, Kiyonori, to Fuji Denki Seizo Kabushiki Kaisha. Small A.C. electric motor. 3,899,701, Cl. 310-40.0MM.

Ohba, Motoichi; and Chiba, Keiichi, to Nissan Motor Company Limited. Tandem pump unit. 3,898,810, Cl. 60-413.000.

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Ueno, Yoshito; Kajitani, Mitsuo; and Ohgushi, Yoshio, 3,899,429.

Ohio Knife Company: See—
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Ohlswager, Stanley; Edison, Robert R.; and Dresser, Thorpe, to Atlantic Richfield Company. Liquid-vapor distributor. 3,899,000, Cl. 137-561.00A.

Ohmori, Saburo: See—
Hori, Yutaka; Yoshikawa, Nobuharu; and Ohmori, Saburo, 3,899,677.

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Ohr, Karl-Heinz: See—
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Ohta, Noriyuki: See—
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Ohta, Yoshimoto, to Tokico Limited. Hydraulic brake pressure control valve unit. 3,899,217, Cl. 303-24.00C.

Oiestad, Andrew, to Tank Sapp (UK) Ltd. Inert gas system and method for tankers. 3,899,099, Cl. 220-88.00B.

Okada, Nobuhiko; and Suzuki, Teruaki, to Osaka Gas Kabushiki Kaisha; and Kabushiki Kaisha Hosokawa Funtai Kogaku Kenkyusho. Crushing apparatus. 3,899,139, Cl. 241-68.000.

Okamoto, Miyoshi: See—
Okazaki, Kaoru; Yagi, Kenkichi; Okamoto, Miyoshi; Watanabe, Koji; Hikota, Toyohiko; and Kubo, Masayoshi, 3,899,292.

Okamoto, Takanori: See—
Matsuda, Hideaki; and Okamoto, Takanori, 3,899,382.

Okamoto, Tsuyoshi; Kawaguchi, Yoichi; and Kai, Takayuki, to Toyo Boseki Kabushiki Kaisha. Method of producing bundled multifilament yarn. 3,899,614, Cl. 427-175.000.

Okaya Electric Industry Co., Ltd.: See—
Sasaki, Rentaro; Watanabe, Akinori; Ikegame, Mamoru; and Ogasawara, Tatsuo, 3,899,707.

Okazaki, Kaoru; Yagi, Kenkichi; Okamoto, Miyoshi; Watanabe, Koji; Hikota, Toyohiko; and Kubo, Masayoshi, to Toray Industries, Inc. Process for crumpling synthetic suede. 3,899,292, Cl. 8-17.000.

Okazaki, Kaoru; Yagi, Kenkichi; Ichimura, Akira; and Masubuchi, Yoshinori, to Toray Industries, Inc. Synthetic leather combination of needle-punched fabric and polyetherester polyurethane. 3,899,623, Cl. 428-290.000.

Oki Electric Industry Co., Ltd.: See—
Sasaki, Rentaro; Watanabe, Akinori; Ikegame, Mamoru; and Ogasawara, Tatsuo, 3,899,707.

Okimoto, Takeyoshi: See—
Kondo, Kyoze; and Okimoto, Takeyoshi, 3,899,067.

Okochi, Kenji: See—
Minai, Kiichi; Inada, Isamu; Ozawa, Kenji; and Okochi, Kenji, 3,899,435.

Okuno, Yoshitoshi; and Hirano, Masachika, to Sumitomo Chemical Company, Limited. Synergistic chrysanthemate insecticides. 3,899,586, Cl. 424-274.000.

Olin Corporation: See—
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Sieckhaus, John F.; Scott, Robert N.; and Larchar, Trescott B., 3,899,456.

van Leuwen, Bruce G.; and Pitts, James J., 3,899,520.

Olin Ski AG: See—
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Oliver, Evan M.; and Marsilio, Joseph V., to Bethlehem Steel Corporation. Method of producing a vacuum treated effervescing boron steel. 3,899,321, Cl. 75-49.000.

Olsen, Frederick C.: See—
Tamble, George D.; and Olsen, Frederick C., 3,899,087.

Olson, Donald N.: See—
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Olympus Optical Co., Ltd.: See—
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Omni Spectra, Inc.: See—
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O'Neill, Joseph L.; and Bondi, Joseph V., to Merck & Co., Inc. Anti-inflammatory topical gel. 3,899,580, Cl. 424-241.000.

Ong, Algernon M.: See—
Mandel, Louis; Ong, Algernon M.; and Singer, Paul, 3,898,984.

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Tanaka, Shizuya; Ozaki, Toshiaki; Mine, Akihiko; Tanaka, Katsutoshi; Yamamoto, Sigeo; Ooishi, Tadashi; Hino, Naganori; and Satomi, Takeo, 3,899,582.

Oraltechnic Anstalt: See—
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Ore-Ida Foods, Inc.: See—
Green, Glen R., 3,899,273.

Orme, Myrl E., to Bendix Corporation. The. Multi-path valve structure. 3,899,001, Cl. 137-625.300.

Ort, Morris R.: See—
Altmore, Joseph M.; and Ort, Morris R., 3,899,477.

Osaka Gas Kabushiki Kaisha: See—
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Osawa, Hisayou: See—
Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Toda, Toshimasa; Mori, Eiko; Horiuchi, Hideo; Higashida, Susumu; Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; and Osawa, Hisayou, 3,899,464.

Osborn, Merlin L.; Crytzer, Layton D.; and Stewart, Donald M., to Allegheny Ludlum Industries, Inc. Apparatus for compensating for instrumentation loss. 3,899,733, Cl. 324-34.00R.

Otala, Matti Niilo Tapani, to U.S. Philips Corporation. Magnetic bubble store having optical centering apparatus. 3,899,780, Cl. 340-174.0YC.

Ott, Hans; and Suess, Rudolf, to Sandoz Ltd. Substituted 6-phenyl benzothiazolines. 3,899,494, Cl. 260-287.00R.

Ottle, J. C.: See—
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Ovard, John C.: See—
Furlong, Donn B.; and Ovard, John C., 3,899,553.

Overhoff, Mario W. Apparatus and method for automatic cross correlation interferometry. 3,899,253, Cl. 356-108.000.

Ovshinsky, Stanford R.: See—
Fleming, Gordon R.; and Ovshinsky, Stanford R., 3,899,558.

Owens-Corning Fiberglass Corporation: See—
Foley, Kevin M.; and Vigo, Francesco M., 3,899,524.

Owens-Illinois, Inc.: See—
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Owens, Omer O.: See—
Miller, Jacob I.; Dudley, Gaston E.; Blackwell, Philip A., Jr.; and Owens, Omer O., 3,899,497.

Oxenrider, Bryce C.; and Woolf, Cyril, to Allied Chemical Corporation. Synthetic fibers having improved soil and stain repellency. 3,899,563, Cl. 264-211.000.

Ozaki, Toshiaki: See—
Tanaka, Shizuya; Ozaki, Toshiaki; Mine, Akihiko; Tanaka, Katsutoshi; Yamamoto, Sigeo; Ooishi, Tadashi; Hino, Naganori; and Satomi, Takeo, 3,899,582.

Ozawa, Kenji: See—
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Ozone Incorporated: See—
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Packard Instrument Company Inc.: See—
Packard, Lyle E., 3,899,673.

Packard, Lyle E., to Packard Instrument Company Inc. Data processing system employing quench simulation for enabling accurate computation of sample activity levels in liquid scintillation spectrometry. 3,899,673, Cl. 250-328.000.

Padgett, John, Jr. Spindle adapter. 3,899,141, Cl. 242-46.400.

Pagani, Hermes: See—
Coronelli, Carolina; Bardone, Maria Rosa; and Pagani, Hermes, 3,899,396.

Paik, Young H.: See—
Fukuta, Norikiko; and Paik, Young H., 3,899,129.

Paiolletti, Jose. Lock-structures. 3,899,201, Cl. 292-25.000.

Palmer, Malcolm George, to Erco Industries Ltd. Metallic phosphide composition for use in aquatic flares. 3,899,375, Cl. 149-29.000.

Palmer, Richard F. Combination doll and marionette. 3,898,764, Cl. 46-126.000.

Palmer, William Edward, to Vibixa Limited. Cartons and blanks for forming cartons. 3,899,126, Cl. 229-51.0TC.

Pampus KG, Firma: See—
Harig, Friedrich, 3,899,227.

Pantier, Earl A.: See—
Jackovitz, John F.; and Pantier, Earl A., 3,899,350.

Parks, Lloyd, deceased; and Brown, Dwight C. Game apparatus with spinnable target. 3,899,170, Cl. 273-38.000.

Pasquini, Daniel, to Caterpillar Tractor Co. Combined tractor steering clutch and brake control system. 3,899,058, Cl. 192-13.00R.

Patrie, Jos; Lefebvre, Jacques; and Allegret, Francois, to Produits Chimiques Ugine Kuhlmann. Surface treatment of aluminum and its alloys. 3,899,400, Cl. 204-33.000.

Paukert, Miloslav; and Schwarzova, Libuse, to Meopta, narodni podnik. Reproduction lens system. 3,899,242, Cl. 350-216.000.

Paver, Roger: See—
Fleck, Fritz; Mercer, Alec Victor; Paver, Roger; and Schmid, Horst, 3,899,487.

Paweck AG: See—
Eckold, Gerd-Jurgen; and Maass, Hans, 3,898,832.

Payakov, Stefan Georgiev: See—
Makedonski, Boris Georgiev; Kochemidov, Atanas Dimitrov; Dumanov, Ivan Minkov; and Payakov, Stefan Georgiev, 3,898,769.

Payne, Peter R. Heat engine in the form of a water pulse-jet. 3,898,800, Cl. 60-227.000.

Pennig, Gregor: See—
Pollert, Wolfgang; Kraft, Eckhard; and Pennig, Gregor, 3,898,799.

Pennwalt Corporation: See—
Walter, Gerald Joseph, 3,899,484.

Pepperman, Armand B., Jr.: See—
Daigle, Donald J.; Pepperman, Armand B., Jr.; and Boudreaux, Gordon J., 3,899,618.

Daigle, Donald J.; Pepperman, Armand B., Jr.; and Vail, Sidney L., 3,899,619.

Peres, Anthony R., to Peres Electronic Machines, Inc. Method and apparatus for opening barrels. 3,898,898, Cl. 82-47.000.

Peres, Anthony R., to Peres Electronic Machines, Inc. Automatic random case coder. 3,898,926, Cl. 101-37.000.

Peres Electronic Machines, Inc.: See—
Peres, Anthony R., 3,898,898.

Peres, Anthony R., 3,898,926.

Perieres, Jacques A. Device for checking the content of hydrocarbons in a mixture of water and hydrocarbons. 3,899,688, Cl. 250-576.000.

Perkins, James B.: See—
Malobicky, Rudolph L., Jr.; Perkins, James B.; and Taylor, Robert H., 3,899,241.

Permag Magnetics Corporation: See—
Studders, Robert J., 3,899,762.

Persson, Sixten Ismael, to Luftkonditionering AB. Method and plant for regulating temperature by means of a subtempered air flow. 3,899,022, Cl. 165-22.000.

Peter, Hartmut: See—
Dannert, Dietmar; Ihlenburg, Rainer; Nackmayr, Dietrich; Goetze, Rudolf; Kruger, Wolfgang; Peter, Hartmut; Westphal, Klaus; and Thuy, Hans-Joachim, 3,899,181.

Peterkofsky, Alan L.; Tracy, James E.; and Schumacher, Paul M., to Celanese Corporation. Etherified methylolated 2,7-dioxo-4,5-dimethyl-decahydro-pyrimido-[4,5-D]-pyrimidine and its use in alkyl resin coating compositions. 3,899,457, Cl. 260-21.000.

Peterkofsky, Alan L.; Tracy, James E.; and Schumacher, Paul M., to Celanese Corporation. Etherified trimethylolated crotonylidenedurea and its use in alkyl resin coating compositions. 3,899,458, Cl. 260-21.000.

Peters, Henry G., Jr.; and Schuessler, Philipp W. H., to International Business Machines Corporation. Water soluble solder resist. 3,899,339, Cl. 106-2.000.

Petersen, Harro; Fuchs, Friedrich; and Scharwaechter, Peter, to BASF Aktiengesellschaft. N-(dialkylphosphonoalkyl)-carbamate acid alkyl esters. 3,899,548, Cl. 260-932.000.

Petersen, Harro; Fuchs, Friedrich; and Scharwaechter, Peter, to BASF Aktiengesellschaft. Poly(dialkylphosphonoalkyl)carbamates. 3,899,549, Cl. 260-932.000.

Peterson, Noel C., to Westinghouse Electric Corporation. Package for microwave integrated circuits. 3,899,720, Cl. 317-101.00D.

Peterson, Rune: See—
Hamrin, Bo Goran; and Peterson, Rune, 3,899,287.

Petersson, Stig Arvid, to Boliden Aktiebolag. Gas purification method. 3,899,308, Cl. 55-8.000.

Petro-Tex Chemical Corporation: See—
Barone, Bruno J., 3,899,518.

Petrovich, John P.; and Taylor, David L., to Monsanto Company. Treating compositions. 3,899,388, Cl. 162-164.000.

Petty-Ray Geophysical, Inc.: See—
Coddling, Elias H.; and King, Hoyd S., Jr., 3,899,415.

Quay, Roy Gibson; and Ray, Clifford Harvey, 3,899,768.

Peyer, Siegfried: See—
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Peyser, Harry A.; and Heaviside, Robert D., to Continental Can Company, Inc. Plastic end cap and paper body attachment. 3,899,117, Cl. 229-5.000.

Pfannenschmidt, Carl: See—
Benecke, Theodor; Wiebke, Gunter; and Pfannenschmidt, Carl, 3,899,320.

Pfizer Inc.: See—
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Richards, Hugh C., 3,899,490.

Pfleger, Frederick W.: See—
Samson, Marvin S.; and Pfeleger, Frederick W., 3,899,010.

Pharmacia Aktiebolag: See—
Swanbeck, Gunnar P. E.; Zetterberg, Gosta L.; and Agback, Karl Hubert, 3,899,591.

Pharriss, Bruce B., to Upjohn Company. The. Use of prostaglandins E and F for abortion. 3,899,587, Cl. 424-305.000.

Phillips Petroleum Company: See—
Holtz, Hans D., 3,899,537.

Hudson, Jimmie E.; and Dean, Jimmie L., 3,899,279.

Myers, John W., 3,899,413.

Piacente, Luigi; and Capannini, Sanzio, to Societa Italiana Telecomunicazioni Siemens S.p.A. Device for blocking toll calls from subscriber telephones. 3,899,640, Cl. 179-18.0DA.

Pickles, Joseph, to Ferro Manufacturing Corporation. Automotive side door latch. 3,899,202, Cl. 292-216.000.

Pietruszynski, Leonard J.: See—
Montone, Liber J.; and Pietruszynski, Leonard J., 3,899,634.

Pigott, George M.: See—
Lonnecker, Neal A.; Miller, Herman H., Jr.; and Pigott, George M., 3,899,609.

Pihlstrom, Lance W., to Minnesota Mining and Manufacturing Company. Method of making acoustical material. 3,899,380, Cl. 156-181.000.

Pillsbury Company, The: See—
Forkner, John H., 3,899,606.

Pirlet, Robert Alfred, to Centre de Recherches Metallurgiques-Centrum voor Research in de Metallurgie. Measuring dimensions of sections. 3,899,663, Cl. 235-151.320.

Pittman Products, Inc.: See—
Schuler, Manfred, 3,898,705.

Pitts, James J.: See—
van Leuwen, Bruce G.; and Pitts, James J., 3,899,520.

Plaettner, Rolf: See—
Grabmaier, Josef; and Plaettner, Rolf, 3,899,313.

Plante, Franklin T.: See—
Craig, David R.; Lederle, George M.; and Plante, Franklin T., 3,899,369.

Platt International Limited: See—
Blackburn, Reginald Mayman; and Airey, Harold Edwin, 3,898,712.

Plevak, Lubomir; Bekcer, Kunibert; Wojacek, Egon; and Holken, Norbert, to Gewerkschaft Eisenhutte Westfalen. Mineral mining installations. 3,898,845, Cl. 61-45.00D.

Ploger, Walter: See—
Schindler, Norbert; and Ploger, Walter, 3,899,496.

Plunkett, Allan B., to General Electric Company. Braking effort control. 3,899,725, Cl. 318-227.000.

Pneumatiques, Caoutchouc Manufacture et Plastiques Kleber-Colombes: See—
Champleboux, Jacques; and Delaux, Robert, 3,899,006.

Pobegailo, Grigory Gavrilovich: See—
Borisenko, Gleb Pavlovich; Chernobrynenko, Jury Sergeevich; Kutsov, Jury Georgievich; Gorbanev, Arkady Alexeevich; Kuskushkin, Oleg Nikolaevich; Krivobokov, Vladimir Nikolaevich; Pobegailo, Grigory Gavrilovich; and Nashivanko, Vitaly Dmitrievich, 3,898,830.

Pocachard, Alain, to Le Nickel; Centre National pour l'Exploitation des Oceans; and Erji, part interest to each. Apparatus for taking underwater pictures. 3,899,790, Cl. 354-64.000.

Poeschel, Eva: See—
Heide, Helmut; Hoffmann, Ulrich; Brotz, Gunther; and Poeschel, Eva, 3,899,556.

Pohl, Karl-Heinz: See—
Borchard, Edwin Harley; and Pohl, Karl-Heinz, 3,899,721.

Polaroid Corporation: See—
Bloom, Stanley M.; and Hadzeczyriakides, Nicholas S., 3,899,331.

Bloom, Stanley M.; and Garcia, Paulina P., 3,899,511.

Chiklis, Charles K., 3,899,355.

Land, Edwin H., 3,899,336.

Nestor, John W., Jr., 3,899,337.

Polen, Karl; and Ottle, J. C., to Alliance Machine Company, The. Weighing system. 3,899,034, Cl. 177-151.000.

Pollard, Oray R. Roller mechanism for conveying systems. 3,899,063, Cl. 193-35.00A.

Pollert, Wolfgang; Kraft, Eckhard; and Pennig, Gregor, to Motoren- und Turbinen-Union Munchen GmbH. Device for bleeding-off compressor air in turbine jet engine. 3,898,799, Cl. 60-226.00R.

Ponzoni, George Bernard: See—
Fischer, Valentine J.; Ponzoni, George Bernard; and Tressler, Charles J., 3,899,598.

Poole, Charles W., to Westinghouse Electric Corporation. Dual mode electric vehicle for road or rail track operation. 3,898,938, Cl. 105-215.00C.

Posselt, Heinz, to VEB Polygraph Leipzig Kombinat fur Polygraphische Maschinen und Ausrustungen. Doctor blade multiple-point control. 3,898,931, Cl. 101-365.000.

Povarov, Leonard Sergeevich; and Mikhailov, Boris Mikhailovich. Process for the production of substituted 1,2-dihydroquinolines. 3,899,492, Cl. 260-283.05Y.

PPG Industries, Inc.: See—
Heithoff, Robert B., 3,899,317.

Malobicky, Rudolph L., Jr.; Perkins, James B.; and Taylor, Robert H., 3,899,241.

Pranis, Peter P., Jr. Open water fish farming apparatus. 3,898,958, Cl. 119-3.000.

Pratt, Winthrop B., to Curtiss-Wright Corporation. Rotary mechanism having apex seals with low contact pressure. 3,899,272, Cl. 418-113.000.

Premiere AG, Instrumente fur Prazisions-Messung: See—
Meier, Johann, 3,899,255.

Press, Robert J., to Sargent Industries, Inc. Noise reduction apparatus. 3,898,806, Cl. 60-330.000.

Pressman, D. R.: See—
Loe, James M., 3,899,175.

Priebe, Frank D.: See—
Rees, Thomas E.; and Priebe, Frank D., 3,899,032.

Priebe, Frank D.: See—
Kelseaux, Ray M.; Dobbs, Harold J.; and Priebe, Frank D., 3,898,880.

Prino, Giuseppe: See—
Butti, Adriano; Prino, Giuseppe; and Bertellini, Gianfranco, 3,899,481.

Procter & Gamble Company, The: See—
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Production Data Inc.: See—
Tonelli, Gerald J.; Epiling, Karol E.; and Ahrens, James R., 3,899,024.

Produits Chimiques Ugine Kuhlmann: See—
Demarcq, Michel, 3,899,550.

Patrie, Jos; Lefebvre, Jacques; and Allegret, Francois, 3,899,400.

Prokopius, Paul R., to United States of America, National Aeronautics and Space Administration. Flow measuring apparatus. 3,898,882, Cl. 73-194.00M.

Promecam Sisson-Lehmann: See—
Cailloux, Paul, 3,898,902.

Prox, Jerome R.: See—
Morin, Leo G.; and Prox, Jerome R., 3,899,397.

Pryde, Coralie Anne: See—
Chandross, Edwin Arthur; Pryde, Coralie Anne; and Salmon, Warren Allen, 3,899,678.

Przedziecki, Wojciech Maria, to Eastman Kodak Company. Diazo-type elements and processes with carbodiimide dehydrating agents to generator couplers. 3,899,335, Cl. 96-49.000.

Puck, Alfred, to Ciba-Geigy Corporation. High voltage insulator assembly fitted with pivotal mounting means for said insulator. 3,899,630, Cl. 174-43.000.

Pudlo, Zygmunt: See—
Wills, Peter; and Pudlo, Zygmunt, 3,898,912.

Pukaite, Clifford Joseph, to Globe-Union Inc. Low temperature coefficient of resistivity cermet resistors. 3,899,449, Cl. 252-518.000.

Pullman Incorporated: See—
Glassmeyer, John J., 3,898,873.

Purification Sciences Inc.: See—
Lowther, Frank E., 3,899,683.

Lowther, Frank Eugene, 3,899,682.

Putman, Thomas H., to Westinghouse Electric Corporation. Braking system for a multi-car vehicle. 3,899,216, Cl. 303-21.00A.

Quay, Roy Gibson; and Ray, Clifford Harvey, to Petty-Ray Geophysical, Inc. Method of seismic surveying by extracting and displaying seismic properties. 3,899,768, Cl. 340-15.5DS.

R. R. Donnelley & Sons Co.: See—
Abram, Stewart J.; Denis, David R.; Heinze, Alex E.; Johnson, Leonard M.; and Taylor, Edward, 3,899,165.

Racquet, Herschel J. Self-righting mailbox support. 3,899,150, Cl. 248-145.000.

Rader Companies, Inc.: See—
Stupfel, Clifford L., 3,899,214.

Ralston Purina Company: See—
Miller, Timothy A.; and Hansen, Carlo J., 3,899,607.

Rambold, Adolf. Infusion bag, particularly for tea. 3,899,599, Cl. 426-82.000.

Ramey, Chester E.; and Luzzi, John J., to Ciba-Geigy Corporation. Alkyl alkanoate derivatives of substituted piperazines and polymer compositions stabilized thereby. 3,899,491, Cl. 260-268.0TR.

Rami Art, Corporation: See—
Zohar, Rami, 3,898,761.

Rampe, John F., to Rampe Research. Continuous feed vibratory finishing method with discharge rate controlled by operation of tub discharge closure. 3,898,774, Cl. 51-313.000.

Rampe Research: See—
Rampe, John F., 3,898,774.

Rapp, Herbert. Recovery of powder in an electrostatic powder spraying operation. 3,899,311, Cl. 55-283.000.

Rau, Peter: See—
Klein, Klaus-Wilhelm; and Rau, Peter, 3,899,390.

Ravera, Giovanni; and Siletto, Giorgio, to Ing. C. Olivetti & C., S.p.A. Copy sheet drying and delivering device for reprographic machine. 3,899,792, Cl. 354-320.000.

Ray, Clifford Harvey: See—
Quay, Roy Gibson; and Ray, Clifford Harvey, 3,899,768.

Raybestos-Manhattan, Inc.: See—
D'Olier, George, 3,899,300.

Raytheon Company: See—
Kemp, Wayne T., 3,898,975.

Simone, Joseph D., 3,899,667.

Unkauf, Manfred G.; Harris, Derek V.; and Gustafsson, Sven G., 3,899,740.

RCA Corporation: See—
Bolger, Thomas Vincent, 3,899,666.

Goodman, Robert, 3,898,702.

Ladany, Ivan; and Cannuli, Vincent Michael, 3,899,371.

Steckler, Steven Alan; and Limberg, Allen Leroy, 3,899,635.

Readhead, Michael John: See—
Lewis, John William; and Readhead, Michael John, 3,899,510.

Reckitt & Colman Products Limited: See—
Lewis, John William; and Readhead, Michael John, 3,899,510.

Reddaway, Walter W. Splash and spray reducing device for a vehicle. 3,899,192, Cl. 280-154.50R.

Redford, Ronald Albert: See—
Francis, Peter Douglas; Redford, Ronald Albert; Gale, Philip Franklin; and Hillis, Maurice Raymond, 3,899,685.

Reed, Robert T.: See—
Gobrecht, George W.; and Reed, Robert T., 3,899,084.

Rees, Thomas E.; and Priebe, Frank D., to Cities Service Oil Company. Method and apparatus for deviating conductor casing. 3,899,032, Cl. 175-9.000.

Regan, Barrie F.; and Regan, Glen B. Denture cleaning composition containing phosphoric acid. 3,899,437, Cl. 252-106.000.

Regan, Glen B.: See—
Regan, Barrie F.; and Regan, Glen B., 3,899,437.

Regie Nationale des Usines Renault: See—
Godard, Jean; and Faure, Guy, 3,898,726.

Vidberg, Marcel, 3,898,973.

Regulla, Dieter, to Gesellschaft für Strahlen-und Umweltforschung mbH. Manganese activated phosphate glass for dosimetry. 3,899,679, Cl. 250-484.000.

Reichel, Lee E.: See—
Briggs, Eugene C.; and Reichel, Lee E., 3,899,263.

Reijonen, Olavi; and Kostainen, Lauri, to MKT-Techtaat OY. Apparatus for removing cheeses from cheese moulds. 3,899,086, Cl. 214-1.00Q.

Reimann, Paul Eldren. Outdoor cooking apparatus. 3,898,980, Cl. 126-274.000.

Reinhart, Douglass M., to Schick Incorporated. Nest for a caddy. 3,899,072, Cl. 206-45.190.

Rembaum, Alan; and Yen, Shiao-Ping S., to California Institute of Technology. Cross-linked polyelectrolytes. 3,899,534, Cl. 260-567.60P.

Remshardt, Rolf: See—
Feicht, Erwin; Haug, Werner Otto; Remshardt, Rolf; and Schettler, Helmut, 3,899,777.

Renner, George R., to Star Engraving Company. Ring with sealed mounting containing mirror surface. 3,898,869, Cl. 63-15.000.

Renfrew, Edgar E.; and Botros, Raouf, to American Aniline Products, Inc. 6-Arylthio-1, 4,5-trihydroxyanthraquinones. 3,899,519, Cl. 260-383.000.

Renner, Eckhart; and Linnenbecker, Udo, to Vereinigte Flugtechnische Werke-Fokker GmbH. Supervision of several electro-hydraulic actuators operating on a common output. 3,898,916, Cl. 91-411.00R.

Republic of France: See—
Mercier, Jacques; and Lancon, Bernard, 3,898,934.

Republic Steel Corporation: See—
Waid, George M.; and Ault, Robert T., 3,899,368.

Resources Conservation Co.: See—
Emanuel, Carl F., 3,899,419.

Reuchlein, Gunter: See—
Kanzler, Hans-Joachim; and Reuchlein, Gunter, 3,898,841.

Rexnord Inc.: See—
Norlie, Bruce; and Bradbury, Bernard G., 3,898,935.

Reymore, Harold E., Jr.; and Zane, John K., to Upjohn Company. The Novel cocatalyst system for trimerizing polyisocyanates. 3,899,443, Cl. 252-431.00C.

Rheinstahl AG: See—
Wild, Max; Schneider, Wolf-Dieter; Sennlaub, Friedel; and Winter, Rudolf, 3,899,183.

Rhodes, Timothy L.; and Wagner, John L. Building game. 3,899,169, Cl. 273-1.00R.

Rhodes, William H.: See—
Sellers, David J.; Rhodes, William H.; and Vasilos, Thomas, 3,899,560.

Rhone-Poulenc, S.A.: See—
Steffen, Joseph, 3,899,626.

Rhone-Progil: See—
Lanet, Jean-Claude, 3,899,532.

Rice, Richard B.: See—
Brandt, Randy; and Rice, Richard B., 3,899,741.

Richards, Hugh C., to Pfizer Inc. Hexahydro pyrazinoquinolines. 3,899,490, Cl. 260-268.0TR.

Richardson, Russell F., to Textron Inc. Air-hydraulic rivet gun. 3,898,833, Cl. 72-391.000.

Richelmann, Bernd H.: See—
Chaparro, John J.; Ellis, Lowell V.; Meanor, Doyle W.; Morton, William D., Jr.; Richelmann, Bernd H.; Ross, George B.; and Toth, John E., 3,899,085.

Richmond, William, to National Research Development Corporation. Cholesterol oxidase and method of extracting from nocardia. 3,899,376, Cl. 195-62.000.

Richter Gedeon Vegyeszeti Gyar R.T.: See—
Jovanovics, Karolina; Szasz, Kalman; Fekete, Gyorgy; Bittner, Emil; Dezseri, Eszter; and Eles, Janos, 3,899,493.

Richter, John W.: See—
Hoehn, Harvey Herbert; and Richter, John W., 3,899,309.

Ricoh Co., Ltd.: See—
Masumura, Masao, 3,898,957.

Rideout, Vincent L.: See—
Dennard, Robert H.; Rideout, Vincent L.; and Walker, Edward J., 3,899,363.

Riemenschneider, Wilhelm, to Hoechst Aktiengesellschaft. Process for the manufacture of maleic acid imide. 3,899,509, Cl. 260-326.5FM.

Rigaud, Raymond L., to Tiros Plastics Corporation. Container for packaging an object. 3,899,100, Cl. 220-229.000.

Riggs, Dean D.: See—
Aber, Henry S.; Riggs, Dean D.; and Lamantia, John, 3,899,410.

Rikagaku Kenkyusho Ajinomoto Co. Ltd.: See—
Misato, Tomomasa; Huang, Keng Tang; Homma, Yasuo; Yoshida, Ryonosuke; Saito, Tadaomi; and Shimizu, Akira, 3,899,585.

Riken Light Metal Industries Co., Ltd.: See—
Takahashi, Toshiro; Nagano, Toshihiro; Aoshima, Yasuo; Suzuki, Matsuo; Suzuki, Shozo; and Asahina, Teruo, 3,899,370.

Rinaldi, Rose V.; and Wynn, James E., to United States of America, Army. Electrodes including mixed transition metal oxides. 3,899,357, Cl. 136-121.000.

Ring, Russell K.: See—
Ring, Sandiford; and Ring, Russell K., 3,898,731.

Ring, Sandiford; and Ring, Russell K. Method of making electrical connectors. 3,898,731, Cl. 29-629.000.

Rittmannsberger, Norbert: See—
Werner, Peter; Drews, Ulrich; Rittmannsberger, Norbert; Busse, Wolfgang; Moder, Helmut; and Ohr, Karl-Heinz, 3,898,964.

Rivalland, Louis France; and McGarry, Aubrey Richard, to Utility Products (Proprietary) Limited. Method of forming a recess in a fastening element head. 3,898,706, Cl. 10-10.00R.

Rizzo, Earl, to Cosmo, Inc. Model aircraft. 3,898,763, Cl. 46-79.000.

Robecchi, Edoardo; and Tavazza, Giuseppe, to Industrie Pirelli S.p.A. Pneumatic tire. 3,899,014, Cl. 152-353.00C.

Robert Bosch G.m.b.H.: See—
Haubner, Georg, 3,898,972.

Honig, Gunther; and Kiencke, Uwe, 3,898,962.

Werner, Peter; Drews, Ulrich; Rittmannsberger, Norbert; Busse, Wolfgang; Moder, Helmut; and Ohr, Karl-Heinz, 3,898,964.

Roberts, Donald L., to NCR Corporation. Means employing a multiple lens array for reading from a high density optical memory storage. 3,899,778, Cl. 340-173.0LM.

Roblin Hope's Industries, Inc.: See—
Sauer, Gale E.; and Christel, Conrad, 3,898,784.

Roccaforte, Harry I., to Hoerner Waldorf Corporation. Snack tray carton. 3,899,119, Cl. 229-29.00F.

Rockwell International Corporation: See—
Budzyra, Edward S., 3,899,008.

Caswell, Robert L., 3,899,692.

Iverson, Marlowe L., 3,899,404.

Iverson, Marlowe L.; and McCoy, Lowell R., 3,899,405.

Molina, Orlando G., 3,899,450.

Yosim, Samuel J.; and Grantham, LeRoy F., 3,899,322.

Rodman, John J. Putting practice game. 3,899,180, Cl. 273-183.00R.

Roeloffzen, Johannes Franciscus, to Spectrum N.V. Camouflage netting. 3,899,620, Cl. 428-112.000.

Rohowetz, Stanley Edward, to American Can Company. Method for making a lap side seam on a metal tubular body. 3,898,945, Cl. 113-120.00A.

Rohowsky, Bohdan: See—
Geisel, Anthony; and Rohowsky, Bohdan, 3,899,045.

Rolfe, Nicholas: See—
Birchall, James Derek; Cassidy, John Edward; Rolfe, Nicholas; and Miles, Clifford Granville, 3,899,342.

Rolls-Royce Limited: See—
Hill, Roland John; and Jewell, Norman Thomas, 3,899,749.

Wood, Robert David, 3,898,797.

Ronson Products Limited: See—
Christmas, Ronald Jack, 3,899,285.

Roodvoets, Mark R., to Firestone Tire and Rubber Company. The Antioxidants for ultraviolet curable high vinyl polybutadienes. 3,899,406, Cl. 204-159.200.

Rosenthal, Rudolph; and Kieras, Joseph A., to Atlantic Richfield Company. Cyclic process for the production of hydrogen peroxide. 3,899,576, Cl. 423-586.000.

Rosette, Alan S.; and Tepper, Barry J., to Armarco Marketing Company Inc. Adhesive binding apparatus. 3,898,955, Cl. 118-603.000.

Ross, George B.: See—
Chaparro, John J.; Ellis, Lowell V.; Meanor, Doyle W.; Morton, William D., Jr.; Richelmann, Bernd H.; Ross, George B.; and Toth, John E., 3,899,085.

Roth, Christian: See—
Muhlhauser, Martin; and Roth, Christian, 3,899,723.

Roth, Shirley H., to Cities Service Company. Novel interpolymer of amine, aldehyde and sulfanilamide. 3,899,468, Cl. 260-67.60R.

Roth, Shirley H.: See—
Stoy, William S.; and Roth, Shirley H., 3,899,546.

Rothert, Kenneth; Dexter, Donald D.; and Hartmann, Lester M., to Chevron Research Company. All-purpose lubricating oil composition with anti-chatter characteristics for wet disc brakes. 3,899,432, Cl. 252-32.70E.

Rothgordt, Ulf, to U.S. Philips Corporation. Facsimile transmitting receiving system with fibres having a conductive coating. 3,899,035, Cl. 178-6.60A.

Rothman, Edward S.; Hecht, Stephen S.; and Moore, Gordon G., to United States of America, Agriculture. Fabric waterproofing process. 3,899,290, Cl. 8-120.000.

Rousseau, Paul E., to Sadacem Societe Anonyme. Joining of tubular sections. 3,898,728, Cl. 29-446.000.

Rowe, Frederick; Norton, Michael George; and Fairweather, John Anthony, to Imperial Chemical Industries Limited. Aromatics extraction process. 3,899,412, Cl. 208-92.000.

Rowe, Ian George: See—
Connelly, Thomas Macfarlane; Rowe, Ian George; and Morrison, Douglas Stewart, 3,899,427.

Royce, Robert E. Vehicle-mounted seat belt assembly. 3,899,191, Cl. 280-150.0SB.

Rudder, Robert C., Jr. Front mounted vehicle hitch. 3,899,195, Cl. 280-481.000.

Rue, Larry M.: See—
Freis, Richard E.; and Rue, Larry M., 3,899,387.

Russell, Michael Frederick, to C.A.V. Limited. Transducers. 3,898,885, Cl. 73-398.0AR.

Rutenberg, Morton W.; Tessler, Martin M.; and Kruger, Leo, to National Starch and Chemical Corporation. Inhibited starch products containing labile and non-labile cross-links. 3,899,602, Cl. 426-578.000.

Ruthel, Walter W.: See—
Evans, Leo G.; and Ruthel, Walter W., 3,899,408.

Ryser, Kurt, to Greiner Electronic AG. Apparatus for controlling and monitoring the operation of a load device. 3,899,785, Cl. 340-309.100.

S.S.S. Patents Limited: See—
Clements, Herbert Arthur, 3,899,060.

Sadacem Societe Anonyme: See—
Rousseau, Paul E., 3,898,728.

Saito, Tadaomi: See—
Misato, Tomomasa; Huang, Keng Tang; Homma, Yasuo; Yoshida, Ryonosuke; Saito, Tadaomi; and Shimizu, Akira, 3,899,585.

Sakaguchi, Takehiko, to Hioki Electric Works Co., Ltd. Vibration-resistant device for taut band suspension type indicating instrument. 3,899,736, Cl. 324-154.00R.

Sakai, Kiyoshi: See—
Oda, Osamu; Sakai, Kiyoshi; Yusa, Takashi; and Katano, Hamako, 3,899,525.

Sakal, John: See—
O'Brien, William J.; and Sakal, John, 3,899,381.

Sakamoto, Yuzo: See—
Maeda, Teruo; Shimoe, Hideo; Fujiwara, Yasuhiko; Aya, Norimoto; Marumo, Nagayuki; Tsuji, Heigo; and Sakamoto, Yuzo, 3,899,047.

Salmon, Warren Allen: See—
Chandross, Edwin Arthur; Pryde, Coralie Anne; and Salmon, Warren Allen, 3,899,678.

Salve S.A.: See—
Spiegelberg, Hans, 3,899,077.

Samhammer, Clair A.; and Lederman, Steven N., to Lederman's Incorporated. Bean-bag chair. 3,899,210, Cl. 297-445.000.

Samson, Marvin S.; and Pfeiffer, Frederick W. Volume control system for liquid packaging apparatus. 3,899,010, Cl. 141-250.000.

Sanders Associates, Inc.: See—
Hayner, Paul F., 3,899,002.

Sandoz, Inc.: See—
Hardtmann, Goetz E., 3,899,507.

Sandoz Ltd.: See—
Fleck, Fritz; Mercer, Alec Victor; Paver, Roger; and Schmid, Horst, 3,899,487.

Ott, Hans; and Suess, Rudolf, 3,899,494.

Sankyo Co., Ltd.: See—
Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Toda, Toshimasa; Mori, Eiko; Horiuchi, Hideo; Higashida, Susumu; Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; and Osawa, Hisayou, 3,899,464.

Oda, Osamu; Sakai, Kiyoshi; Yusa, Takashi; and Katano, Hamako, 3,899,525.

Santos, Anthony J., to Amerace Corporation. Electrical connector. 3,899,236, Cl. 339-98.000.

Sanyo Electric Company, Ltd.: See—
Yamauchi, Seizo; and Shimomura, Kazuo, 3,899,773.

Saraga, Peter; and Wavish, Peter Roy, to U.S. Philips Corporation. Method of character recognition by linear traverse employing shifted edge lines. 3,899,771, Cl. 340-146.3AE.

Sargent Industries, Inc.: See—
Press, Robert J., 3,898,806.

Smith, Fred T., 3,899,091.

Sasaki, Rentaro; Watanabe, Akinori; Ikegame, Mamoru; and Ogasawara, Tatsuo, to Oki Electric Industry Co., Ltd.; and Okaya Electric Industry Co., Ltd. Cold cathode discharge type display device. 3,899,707, Cl. 313-197.000.

Sasaki, Shigeru: See—
Masai, Tadahisa; Adachi, Tetsuro; Sasaki, Shigeru; and Moriyama, Kazuyoshi, 3,899,266.

Sasaki, Yoshio; and Morita, Minoru, to Toyota Jidosha Kogyo Kabushiki Kaisha. Exhaust gas recombination assembly for an internal combustion engine. 3,898,803, Cl. 60-305.000.

Sather, Kenneth E. Stay clean funnel. 3,899,012, Cl. 141-331.000.

Sato, Akira: See—
Nakamura, Kenya; and Sato, Akira, 3,898,793.

Sato, Kuniaki: See—
Murata, Yuuji; Sato, Kuniaki; and Yonejima, Sigeru, 3,898,927.

Sato, Yoshinori: See—
Miyake, Toshio; and Sato, Yoshinori, 3,899,604.

Satomi, Takeo: See—
Tanaka, Shizuya; Ozaki, Toshiaki; Mine, Akihiko; Tanaka, Katsutoshi; Yamamoto, Sigeo; Oishi, Tadashi; Hino, Naganori; and Satomi, Takeo, 3,899,582.

Sauer, Gale E.; and Christel, Conrad, to Roblin Hope's Industries, Inc. Beam splice connection. 3,898,784, Cl. 52-758.00A.

Savage, Donald D. Log separation system. 3,898,901, Cl. 83-343.000.

Savage, Jack Mark Charles, to Burger Boy Red Top Refreshment Kosks Limited. Deodorisation unit. 3,898,922, Cl. 98-115.00R.

Savary, Wolf; and Soennecken, Hartmut, to Textar GmbH. Lining for brake shoes. 3,899,050, Cl. 188-73.100.

Sawamoto, Youzi: See—
Miya, Bunji; Kasutani, Katsuji; Matsuda, Morio; Hashimoto, Akio; Nisigawa, Shiyozo; and Sawamoto, Youzi, 3,899,446.

Sawluk, Wlodzimierz, to Ernst Winter & Sohn. Material removal tool with multiple cutting edges. 3,898,772, Cl. 51-206.00P.

Sbarra, Joseph F.: See—
Fead, William A.; Glynn, Thomas M.; Sbarra, Joseph F.; and Bower, Alfred L., 3,899,278.

Scanzani, Robert M.: See—
Georgiev, Tancho D.; and Scanzani, Robert M., 3,898,777.

Schaap, Johannes Emmus, to Stichting Bedrijven van het Nederlands Instituut voor Zuivelonderzoek. Process of preparing a fat emulsion. 3,899,605, Cl. 426-582.000.

Schaefer, Hans: See—
Beschke, Helmut; Schaefer, Hans; and Schuler, Wilhelm Alfons, 3,899,495.

- Schafe, Ulrich, to Siemens Aktiengesellschaft. Method and arrangement for limiting the power dissipated in electronic components. 3,899,718, Cl. 317-33.00R.
- Schalm, Wolfgang, to Schuco Heinz Schurmann & Co. Mortise lock. 3,898,822, Cl. 70-143.000.
- Scharwaechter, Peter: See—
Petersen, Harro; Fuchs, Friedrich; and Scharwaechter, Peter, 3,899,548.
- Petersen, Harro; Fuchs, Friedrich; and Scharwaechter, Peter, 3,899,549.
- Schaumann, Rolf: See—
Cadez, August; and Schaumann, Rolf, 3,899,722.
- Schettler, Helmut: See—
Feicht, Erwin; Haug, Werner Otto; Remshardt, Rolf; and Schettler, Helmut, 3,899,777.
- Schick Incorporated: See—
Reinhart, Douglass M., 3,899,072.
- Schindler, Donald G.: See—
Bowman, Howard J.; and Schindler, Donald G., 3,899,651.
- Schindler, Norbert; and Ploger, Walter, to Henkel & Cie GmbH. Production of 1-aminoalkane-1,1-diphosphonic acids. 3,899,496, Cl. 260-293.510.
- Schlanzky, Manfred P. H., to General Motors Corporation. Differential mounted single stage diaphragm operated pump. 3,898,892, Cl. 74-710.000.
- Schmermund, Alfred. Web cutting device. 3,898,900, Cl. 83-152.000.
- Schmid, Horst: See—
Fleck, Fritz; Mercer, Alec Victor; Paver, Roger; and Schmid, Horst, 3,899,487.
- Schmidt, Gerhard, to Franz Morat GmbH, Firma. Pattern means for circular knitting machines and method for operating same. 3,898,818, Cl. 66-50.00B.
- Schmidt, Hans-Joachim: See—
Fermholz, Hans; Wunder, Friedrich; and Schmidt, Hans-Joachim, 3,899,539.
- Schmitt, Otto: See—
Gebert, Karl; and Schmitt, Otto, 3,899,015.
- Schneider, William H. Bed drainage tube holder. 3,899,149, Cl. 248-75.000.
- Schneider, William P., to Upjohn Company. The. Extract containing prostaglandins. 3,899,526, Cl. 260-468.00D.
- Schneider, Wolf-Dieter: See—
Wild, Max; Schneider, Wolf-Dieter; Sennlaub, Friedel; and Winter, Rudolf, 3,899,183.
- Scholl, Hans-Joachim; Klauke, Erich; Grewe, Ferdinand; and Hammann, Ingeborg, to Bayer Aktiengesellschaft. 4,5-Bis-(trifluoromethylimino)-thiazolidines as fungicidal, insecticidal and acaricidal agents. 3,899,584, Cl. 424-270.000.
- Scholz, Manfred: See—
Dorner, Heinrich; Scholz, Manfred; and Jungmann, Axel, 3,899,393.
- Schonowsky, Hubert: See—
Horlein, Gerhard; Langeluddeke, Peter; Schonowsky, Hubert; and Studeneer, Adolf, 3,899,489.
- Schreiber, Victor M. Storage units. 3,899,228, Cl. 312-257.00R.
- Schreiber, Wilford Rayburn, to Hammond Corporation. Monophonic electronic musical instrument. 3,898,905, Cl. 84-1.010.
- Schroder, Heinz-Jurgen: See—
Mayer, Hans; and Schroder, Heinz-Jurgen, 3,898,961.
- Schuchardt, Peter W.: See—
Schultz, Thomas E.; and Schuchardt, Peter W., 3,899,383.
- Schuco Heinz Schurmann & Co.: See—
Schalm, Wolfgang, 3,898,822.
- Schuessler, Philipp W. H.: See—
Peters, Henry G., Jr.; and Schuessler, Philipp W. H., 3,899,339.
- Schuler, Manfred, to Pitman Products, Inc. Convertible inflation control for underwater diving vests. 3,898,705, Cl. 9-313.000.
- Schuler, Wilhelm Alfons: See—
Beschke, Helmut; Schaefer, Hans; and Schuler, Wilhelm Alfons, 3,899,495.
- Schull, Leona Louise: See—
Maurer, Dean William; and Schull, Leona Louise, 3,899,351.
- Schuller, Fredrick T.; and Moore, Warren A., to United States of America, General Counsel-Code GP. Lubricated journal bearing. 3,899,224, Cl. 308-121.000.
- Schultz, Robert F.; and Cook, Edward H., Jr., to Hooker Chemicals & Plastics Corporation. Bipolar electrode. 3,899,409, Cl. 204-290.00F.
- Schultz, Thomas E.; and Schuchardt, Peter W., to Minnesota Mining and Manufacturing Company. Strip applying device. 3,899,383, Cl. 156-394.000.
- Schulz, Richard H. Adjustable motorcycle backrest. 3,899,209, Cl. 297-383.000.
- Schumacher, Paul M.: See—
Peterkofsky, Alan L.; Tracy, James E.; and Schumacher, Paul M., 3,899,457.
- Peterkofsky, Alan L.; Tracy, James E.; and Schumacher, Paul M., 3,899,458.
- Schutz, Hans Ulrich: See—
Buhler, Arthur; Schutz, Hans Ulrich; Mausezahl, Dieter; Harris, Melvin; and Guth, Christian, 3,899,469.
- Schwartz, Gunther; and Frank, Klaus, to Hoechst Aktiengesellschaft. Sorting device separating a powder mixture into spheroidal and sharp-edged particles. 3,899,416, Cl. 209-118.000.
- Schwartz, Hermann, to Peyer, Siegfried. Releasable paper clip. 3,898,717, Cl. 24-259.000.
- Schwartz, Joseph M.: See—
Marcus, Douglas Larry, 3,898,978.
- Schwarz, Hans Georg, to Didier-Werke AG. Refractory fired shaped element and process of its manufacture. 3,899,341, Cl. 106-57.000.
- Schwarz, Hans Helmut: See—
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- Schwarz, Wilhelm, to Fried. Krupp Gesellschaft mit beschränkter Haftung. Buffer. 3,899,160, Cl. 267-152.000.
- Schwarzova, Libuse: See—
Paukert, Miloslav; and Schwarzova, Libuse, 3,899,242.
- Schweizer, Gottfried; and Smolka, Thomas Gordon, to Gertsch AG. Ski boot having internal binding components. 3,899,190, Cl. 280-11.35R.
- Schwelberger, Hubert: See—
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- SCM Corporation: See—
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- Hall, Roger P., 3,899,611.
- Scott, Robert N.: See—
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- Scovill Manufacturing Company: See—
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- Scripto, Inc.: See—
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- Seaberg, David H., to J. I. Case Company. Control linkage for dual path hydraulic drive. 3,898,811, Cl. 60-421.000.
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- Seidle, Norman R., to Singer Company, The. Driver trainer system. 3,898,746, Cl. 35-11.000.
- Seiter, George M., to Hoerner Waldorf Corporation. Easy opening dispenser for barrier carton or container. 3,899,079, Cl. 206-498.000.
- Sekiguchi, Koichi: See—
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- Sekimoto, Yasuhiro; and Miura, Yoshitada, to Hitachi Metals, Ltd. Metal casting mold for centrifugal casting machine. 3,899,020, Cl. 164-286.000.
- Sellers, David J.; Rhodes, William H.; and Vasilos, Thomas, to Avco Corporation. Method of preparing transparent alumina. 3,899,560, Cl. 264-65.000.
- Sells, Bertram C. Automobile racing board game apparatus. 3,899,177, Cl. 273-134.0AD.
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- Senior, Norman: See—
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- Shade, Ray W.: See—
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- Shah, Tilak M.: See—
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- Shannahan, Robert Thomas: See—
Waxman, Burton Harvey; Shannahan, Robert Thomas; and Viro, Felix, 3,899,330.
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- Shaw, Henry; and Angier, Derek J., to Exxon Research and Engineering Company. Production of fine powders. 3,899,573, Cl. 423-337.000.
- Shellhouse, Ronald L., to General Motors Corporation. Hydraulic brake booster assembly. 3,898,914, Cl. 91-375.00R.
- Shen, Tsung-Ying; Dorn, Conrad P., Jr.; and Li, Jorge P., to Merck & Co., Inc. 4-(Benzoxazol-2-yl)-phenylacetic acids and derivatives thereof. 3,899,506, Cl. 260-307.00D.
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- Shenker, Martin. Cleaning device for photo-slides. 3,899,137, Cl. 239-545.000.
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- Shikishima Tipton Mfg. Co., Ltd.: See—
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- Shimada, Katsunori: See—
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- Shimizu, Akira: See—
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- Shimizu, Mahito: See—
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- Shimoe, Hideo: See—
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- Shimomura, Kazuo: See—
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- Shirai, Kikuo: See—
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- Shotbolt, Keith; Eastwood, Alan; and Gait, John Henry, to W. R. Gwace & Co. Closure sorting method and apparatus. 3,899,081, Cl. 209-73.000.
- Shreve, Russell L. Brake actuating mechanism. 3,899,055, Cl. 188-344.000.
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Chou, Albert S.; Tong, Yang Hu; Medley, Harold C.; and Dalziel, Warren L., 3,898,814.
- Shure, Lloyd I.: See—
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- Shuster, Edward J.: See—
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- Sieckhaus, John F.; Scott, Robert N.; and Larchar, Trescott B., to Olin Corporation. Siloxane vulcanizates and a method for the preparation thereof. 3,899,456, Cl. 260-18.00S.
- Siegmund, Gunter, to Hoechst Aktiengesellschaft. Process for the preparation of fluorine containing carbonyl dihalides. 3,899,531, Cl. 260-544.00F.
- Siegmund, Walter P., to American Optical Corporation. Lens manufacturing process. 3,899,314, Cl. 65-23.000.
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- Dietze, Wolfgang, 3,899,557.
- Dorner, Heinrich; Scholz, Manfred; and Jungmann, Axel, 3,899,393.
- Gammel, Josef Engelbert, 3,899,746.
- Grabmaier, Josef; and Plaettner, Rolf, 3,899,313.
- Greubel, Waldemar; Krueger, Hans; and Wolff, Ulrich, 3,899,786.
- Klein, Klaus-Wilhelm; and Rau, Peter, 3,899,390.
- Kleinschmidt, Peter, 3,899,698.
- Leistner, Werner, 3,899,704.
- Mayer, Hans; and Schroder, Heinz-Jurgen, 3,898,961.
- Schafe, Ulrich, 3,899,718.
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- Sigel, Pierre Louis; and Grosjean, Henri, to Compagnie Honeywell Bull. Contact head for electrically monitoring a plurality of points in a circuit. 3,899,233, Cl. 339-59.00M.
- Sigott, Siegfried; and Schwelberger, Hubert, to Vereinigte Österreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft. Dividing cutting machine having means for rotating the jib arm. 3,899,212, Cl. 299-75.000.
- Sigworth, Frederick J.: See—
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- Simjian, Luther G. Exercise and massaging apparatus. 3,899,115, Cl. 128-58.000.
- Simmons, John Richard; and Hammond, Trevor John, to Joseph Lucas (Industries) Limited. Screw-type actuators. 3,898,890, Cl. 74-89.150.
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- Simonelli, Frank A. Fungistatic fabric treatment. 3,899,616, Cl. 427-242.000.
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- Seidle, Norman R., 3,898,746.
- Singer, Edouard. Voltage detector for detecting AC voltages. 3,899,735, Cl. 324-122.000.
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- Sitek, George J.; and Berk, Charles W., to Leco Corporation. Crucible. 3,899,627, Cl. 13-22.000.
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Brown, Patrick Harold; and Sivyer, Raymond Frank, 3,899,709.
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- Skaling, Whitney: See—
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- Skinner, Charles Arthur, to Electro-Therm, Inc. Oven, heating element and socket assembly. 3,899,655, Cl. 219-404.000.
- Skov, Ebbe R.; Judge, Roderick B.; and Hemphill, Geoffrey, to W. R. Grace & Co. Rot and mildew prevention employing certain alkanolic acid salts. 3,899,588, Cl. 424-317.000.
- Slezak, Raymond J. Tension control device. 3,899,143, Cl. 242-156.200.
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- Smith, Charles L.: See—
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- Smith, Forest D., to Electric Machinery Mfg. Company. Voltage regulator with controlled current. 3,899,731, Cl. 322-25.000.
- Smith, Fred T., to Sargent Industries, Inc. Refuse collection apparatus. 3,899,091, Cl. 214-83.300.
- Smith, Gary C., Jr.: See—
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- Smith, Roy R., to General Motors Corporation. Self-cleaning oven with temperature limiting protection system for bake and clean. 3,899,656, Cl. 219-413.000.
- Smolka, Thomas Gordon: See—
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- Societe Anonyme Automobiles Citroen: See—
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- Societe Anonyme D.B.A.: See—
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- Societe Anonyme dite Orsymonde: See—
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- Societe Civile Textile dite Socitex: See—
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- Societe d'Etude et d'Application des Techniques Nouvelles NEO-TEC: See—
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- Societe Generale de Constructions Electriques et Mecaniques Alstom & Cie: See—
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- Societe Nationale des Poudres et Explosifs: See—
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- Societe Nationale d'Etude et de Construction de Moteurs d'Aviation de France: See—
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- Soennecken, Hartmut: See—
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- Soilmoisture Equipment Corporation: See—
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- Sokolow, Nickolas, to Beloit Corporation. Annular extrusion die with back pressure control. 3,899,276, Cl. 425-380.000.
- Soler, Salvador Forroll, to Etablissements du Paroy. Method for chemically peeling fruits and vegetables. 3,899,608, Cl. 426-287.000.
- Solomon, James E.; and Zias, Arthur R., to National Semiconductor Corporation. Semiconductor pressure transducer employing novel temperature compensation means. 3,899,695, Cl. 307-310.000.
- Sonic Development Corporation: See—
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- Sonoco Products Company: See—
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- Sony Corporation: See—
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- Wakamiya, Kinji; and Kobayashi, Isamu, 3,899,793.
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- Spectrum N.V.: See—
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- Speedfam Corporation: See—
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- Spencer, Harvey G. Ski tram loading system and carriers therefor. 3,898,936, Cl. 104-173.000.
- Sperry Rand Corporation: See—
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- Sperry-Sun Well Surveying Company: See—
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- Spicer, John William: *See—*
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- Spinnato, Gaetano Emanuele, to Oraltechnic Anstalt. Electrical resistance weld method and apparatus. 3,899,653, Cl. 219-113.000.
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- Staby, Paul A., to Statitrol Corporation. Method and apparatus for monitoring battery energy level. 3,899,732, Cl. 324-29.500.
- Stachurski, John Z. O. Thermoelectric generator. 3,899,359, Cl. 136-205.000.
- Stal Refrigeration AB: *See—*
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- Stallworth, Lewis A.; and Hartley, Robert R., to United States of America, Navy. Ship speed indicator. 3,898,878, Cl. 73-181.000.
- Stamberger, Paul. Method and means for increasing the air pressure within self-inflated hollow bodies for use as cushions and for like purposes. 3,898,703, Cl. 5-348.00R.
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- Standard Register Company, The: *See—*
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- Standun, Inc.: *See—*
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- Stanley Drug Products, Inc.: *See—*
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- Stanley, Robert W., to Noranda Mines Limited. Form of ammonium tetramolybdate and method of preparation. 3,899,284, Cl. 423-593.000.
- Stapfer, Christian H., to Cincinnati Milacron Chemicals, Incorporated. Synergistic organotin stabilizer compositions and resins stabilized therewith. 3,899,465, Cl. 260-45.75S.
- Star Engraving Company: *See—*
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- Stark, Sven Olof Soren; and Ljungberg, Per Allan, to Tetra Pak Development S.A. Apparatus for treating webs of material. 3,899,112, Cl. 226-90.000.
- Starks, Charles M.; and Gordon, Ronnie D., to Continental Oil Company. Preparation of alkyl halides. 3,899,542, Cl. 260-658.00R.
- Statitrol Corporation: *See—*
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- Stauffer Chemical Company: *See—*
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- Steadley Company, Inc.: *See—*
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- Steckler, Steven Alan; and Limberg, Allen Leroy, to RCA Corporation. Dual mode deflection synchronizing system. 3,899,635, Cl. 178-69.5TV.
- Steelman, Melvin W., to Clark Equipment Company. Refrigeration evaporator coil. 3,898,864, Cl. 62-272.000.
- Stefanov, Stefan Ivanov: *See—*
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- Steffen, Joseph, to Rhone-Poulenc, S.A. Composite articles based on heat-resistant resins. 3,899,626, Cl. 428-474.000.
- Stenne, Pierre, to Claudel S.A. Process and apparatus for the continuous production of curds. 3,899,595, Cl. 426-36.000.
- Stenne, Pierre, to Claudel S.A. Method for the manufacture of cheeses. 3,899,596, Cl. 426-40.000.
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- Stephens, Ruth E., to Ethyl Corporation. Exhaust gas catalyst support. 3,899,444, Cl. 252-455.00R.
- Stephenson, Andrew N., to United States of America, Navy. Laser transmitting and receiving lens optics. 3,899,145, Cl. 244-3.130.
- Stewart, Donald M.: *See—*
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- Stewart, Richard F.; and Gasparini, Francis A., to Westinghouse Electric Corporation. Condensate disposal apparatus for an air conditioner. 3,898,865, Cl. 62-280.000.
- Stichting Bedrijven van het Nederlands Instituut voor Zuivelonderzoek: *See—*
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- Stickney, William A.: *See—*
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- Stollberg, Ray H.; and Leaky, Joseph W., to Crown Zellerbach Corporation. Collapsible blis-type container. 3,899,123, Cl. 229-41.00R.
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- Storin, Ronald J.: *See—*
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- Stover, Harris A. Communication systems. 3,899,671, Cl. 235-150.200.
- Stoy, William S.; and Roth, Shirley H., to Cities Service Company. Intumescent compositions containing an amino benzenesulfonamide resin and an epoxy resin. 3,899,546, Cl. 260-834.000.
- Streckfus, Thomas K.: *See—*
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- Streeter, Terry L.: *See—*
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- Structural Systems, Inc.: *See—*
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- Studders, Robert J., to Permag Magnetics Corporation. Permanent magnetic structure. 3,899,762, Cl. 335-302.000.
- Studeneer, Adolf: *See—*
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- Stumpf, Elmer J.; and Mockabee, Allan D., to Michaud, Inc. Music stethoscope. 3,899,044, Cl. 181-135.000.
- Stupecky, Joseph Jaromir: *See—*
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- Stupfel, Clifford L., to Rader Companies, Inc. Anti-dusting baffle for feeder. 3,899,214, Cl. 302-49.000.
- Suarez, Tulio; Kornfeld, Edmund C.; and Sheneman, Jack M., to Eli Lilly and Company. Sweetening agent. 3,899,592, Cl. 426-2.000.
- Sudler, Roland: *See—*
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- Suess, Rudolf: *See—*
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- Sugier, Andre, to Institut Francais du Petrole des Carburants et Lubrifiants. Carbon monoxide conversion catalysts. 3,899,577, Cl. 423-656.000.
- Sugiyama, Shunichi: *See—*
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- Suhay, Laszlo. Light bulb base extractor. 3,898,896, Cl. 81-72.000.
- Sulzer, Hans D.; and Coletti, Joseph L., to Stone & Webster Engineering Corporation. Containment vessel construction for nuclear power reactors. 3,899,391, Cl. 176-37.000.
- Sumitomo Chemical Company, Limited: *See—*
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- Tanaka, Shizuya; Ozaki, Toshiaki; Mine, Akihiko; Tanaka, Katsutoshi; Yamamoto, Sigeo; Oishi, Tadashi; Hino, Naganori; and Satomi, Takeo, 3,899,582.
- Tokushige, Toshio; and Nagayasu, Motokiyo, 3,899,575.
- Yamada, Koichi; Hashimoto, Tadanori; and Nakano, Kazuhiko, 3,899,571.
- Sun, Kuan H.: *See—*
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- Sun Ventures, Inc.: *See—*
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- Turner, John O.; and Deno, Norman C., 3,899,538.
- Sundberg, Erik G., to Aktiebolaget Tudor. Filter cap for storage batteries. 3,899,358, Cl. 136-179.000.
- Super Laundry Machinery Company, Inc.: *See—*
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- Superior Electric Company, The: *See—*
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- Surgical Appliance Industries, Inc.: *See—*
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- Sutherland, William M., to General Dynamics Corporation. Method for protecting surfaces against environmental damage and the resultant products. 3,899,624, Cl. 428-327.000.
- Sutton, Christopher John, to Lucas Electrical Company Limited. The Road vehicle braking system incorporating wheel slide protection. 3,899,215, Cl. 303-21.0AF.
- Suzuki, Masaaki: *See—*
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- Suzuki, Matsuo: *See—*
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- Suzuki, Takashi; and Naito, Susumu, to Mitsubishi Gas Chemical Company, Ltd. Hydroxylation process. 3,899,540, Cl. 260-621.00G.
- Suzuki, Teruaki: *See—*
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- Swanbeck, Gunnar P. E.; Zetterberg, Gosta L.; and Agback, Karl Hubert, to Pharmacia Aktiebolag. Preparation for treating psoriasis. 3,899,591, Cl. 424-346.000.
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- Swanson, Colin John, to ISC Alloys Limited. Forming of superplastic alloy sheet. 3,898,827, Cl. 72-60.000.
- Swartz, Jerome: *See—*
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- Sweco, Inc.: *See—*
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- Swedberg, Nils Einar, to Eaton Corporation. Drive connection means for a hydraulic device. 3,899,270, Cl. 418-61.00B.
- Sweet, Clyde W., to Eastman Kodak Company. Additive composition for reduced particle size meats in the curing thereof. 3,899,600, Cl. 426-532.000.
- Swidler, Ronald: *See—*
Brown, Louise H.; and Swidler, Ronald, 3,899,535.
- Swingline, Inc.: *See—*
Young, Raymond R.; and Malcik, Frank J., 3,899,082.
- Swiss Aluminium Ltd.: *See—*
Chaudhuri, Kiranendu B., 3,899,402.
- Muhlhauser, Martin; and Roth, Christian, 3,899,723.

- Sydow, Richard M. Spark plug adjusting tool. 3,898,829, Cl. 72-125.000.
- Sylkhus, Thomas E., to Dow Chemical Company. The Calcium nitrate explosive composition. 3,899,374, Cl. 149-2.000.
- Syoji, Masaaki; Ishihara, Goro; Hirose, Masao; Kubota, Hidenobu; and Mitani, Naoyuki, to Toray Industries, Inc. Continuous crystallization. 3,899,530, Cl. 260-525.000.
- Syston Donner Corporation: *See—*
Morris, Harold D.; and Sigworth, Frederick J., 3,899,028.
- Szasz, Kalman: *See—*
Jovanovics, Karolina; Szasz, Kalman; Fekete, Gyorgy; Bittner, Emil; Dezseri, Eszter; and Eles, Janos, 3,899,493.
- Szczesniak, Raymond A., to E. R. Squibb & Sons, Inc. Method and apparatus for angiotensin I determination. 3,899,298, Cl. 23-253.00R.
- Tabalba, Camilo Manansala, to International Standard Electric Corporation. Telephone subset circuit. 3,899,643, Cl. 179-81.00B.
- Tadokoro, Tomoo; and Kawata, Masayuki, to Toyo Kogyo Co., Ltd. Exhaust gas purifying reactor. 3,898,802, Cl. 60-282.000.
- Taguchi, Tatsuya; Uchiyama, Takashi; Nakamoto, Soichi; and Ito, Tadashi, to Canon Kabushiki Kaisha. Exposure control system in a photographic camera. 3,899,789, Cl. 354-30.000.
- Tajkowski, Edward George, to Allied Chemical Corporation. Treated substrate for the formation of drop-wise condensates and the process for preparing same. 3,899,366, Cl. 148-6.160.
- Takahashi, Masaaki: *See—*
Furuya, Shoji; Takahashi, Masaaki; and Matsushima, Masatoshi, 3,899,088.
- Takahashi, Toru, to Canon Kabushiki Kaisha. Electrophotographic apparatus. 3,899,249, Cl. 355-10.000.
- Takahashi, Toshiro; Nagano, Toshihiro; Aoshima, Yasuo; Suzuki, Matsuo; Suzuki, Shozo; and Asahina, Teruo, to Riken Light Metal Industries Co., Ltd.; and Kuboko Paint Co., Ltd. Method for producing coated and age hardened aluminum or aluminum-based alloy molded materials. 3,899,370, Cl. 148-159.000.
- Takamune, Hiroto; and Ishida, Fujio, to Citizen Watch Company, Limited. Battery-driven watch with battery consumption display alarm. 3,898,790, Cl. 58-23.0BA.
- Takao, Hiroshi; Togawa, Kinmochi; Abe, Satoshi; and Nakagawa, Sigeoyosi, to Nissan Motor Company Limited. Method of preparing ceramic structures. 3,899,555, Cl. 264-44.000.
- Takeda Chemical Industries, Ltd.: *See—*
Kimura, Hiroshi; Kusakabe, Kensuke; Tokuda, Katsuhiko; Miyawaki, Masaru; and Nakatani, Hiromi, 3,899,480.
- Tallow Company: *See—*
Brown, Louise H.; and Swidler, Ronald, 3,899,535.
- Tamble, George D.; and Olsen, Frederick C., to Standun, Inc. Article positioning mechanism incorporating vacuum holding and pressure ejection. 3,899,087, Cl. 214-1.0BT.
- Tanaka, Katsutoshi: *See—*
Tanaka, Shizuya; Ozaki, Toshiaki; Mine, Akihiko; Tanaka, Katsutoshi; Yamamoto, Sigeo; Oishi, Tadashi; Hino, Naganori; and Satomi, Takeo, 3,899,582.
- Tanaka, Kinji: *See—*
Cook, Elton S.; and Tanaka, Kinji, 3,899,589.
- Tanaka, Morimasa, to Ichiko Industries Limited. Light reflector mold. 3,899,154, Cl. 249-117.000.
- Tanaka, Shizuya; Ozaki, Toshiaki; Mine, Akihiko; Tanaka, Katsutoshi; Yamamoto, Sigeo; Oishi, Tadashi; Hino, Naganori; and Satomi, Takeo, to Sumitomo Chemical Company, Limited. Aromatic imido-carbonate composition and method of use for combating fungi. 3,899,582, Cl. 424-263.000.
- Taniguchi, Tokuso. Lubricated catheter. 3,898,993, Cl. 128-349.00R.
- Tank Sapp (UK) Ltd.: *See—*
Oiestad, Andrew, 3,899,099.
- Tap, Henry H.: *See—*
Cappelle, Norman D.; Meyer, Walter; and Tap, Henry H., 3,898,879.
- Tartakoff, Alexander; Gutta, John J.; and Griffin, Robert M., to GTE Sylvania Incorporated. Noise free incandescent lamp. 3,899,708, Cl. 313-315.000.
- Tavazza, Giuseppe: *See—*
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- Taylor, David L.: *See—*
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- Taylor, Edward: *See—*
Abram, Stewart J.; Denis, David R.; Heinze, Alex E.; Johnson, Leonard M.; and Taylor, Edward, 3,899,165.
- Taylor, Frank E. Key ring. 3,898,825, Cl. 70-456.00R.
- Taylor, John C. Fuel nozzle vapor return adaptor. 3,899,009, Cl. 141-59.000.
- Taylor, Robert H.: *See—*
Malobicky, Rudolph L., Jr.; Perkins, James B.; and Taylor, Robert H., 3,899,241.
- Taylor, Thomas L. Method of attaching teeth to an earth drilling tool. 3,898,895, Cl. 76-102.000.
- Teal, Societe des Procédes L'Air Liquide et Technip de Liquefaction des Gaz Naturels: *See—*
Bourguet, Jean; and Gaubertier, Joseph, 3,898,857.
- Tecnomare S.p.A.: *See—*
Magnanini, Umberto, 3,898,847.
- TED Bildplatten Aktiengesellschaft: *See—*
Dannert, Dietmar; Ihlenburg, Rainer; Nackmayr, Dietrich; Goetze, Rudolf; Wolfgang; Peter, Hartmut; Westphal, Klaus; and Thuy, Hans-Joachim, 3,899,181.
- Tedden, Erhard. Method for automatically cleaning reusable foodstuff containers with reduced quantities of fresh water and chemicals. 3,899,348, Cl. 134-12.000.
- Telesio, George O. Packer plate guide for refuse collection vehicles. 3,899,090, Cl. 214-82.000.
- Temmler-Werke, Firma: *See—*
Oelschlaeger, Herbert; Matthiesen, Uwe; and Behrendt, Wilhelm A., 3,899,488.
- Tenney, Robert L., to Ozone Incorporated. Control system for corona discharge ozone generating unit. 3,899,684, Cl. 250-535.000.
- Tepper, Barry J.: *See—*
Rosette, Alan S.; and Tepper, Barry J., 3,898,955.
- Terry, Stanley M., deceased; and by Third National Bank of Hampden County, executor, the, to Maremont Corporation. Extended range inductor alternator arc welder. 3,899,652, Cl. 219-133.000.
- Tessler, Martin M.: *See—*
Rutenberg, Morton W.; Tessler, Martin M.; and Kruger, Leo, 3,899,602.
- Testa, Phillip J.: *See—*
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- Tetra Pak Development S.A.: *See—*
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- Texaco Inc.: *See—*
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- Texas Instruments Incorporated: *See—*
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- Shepherd, Glen C.; Allen, James B.; and Bryant, Samuel T., 3,898,860.
- Textar GmbH: *See—*
Savary, Wolf; and Soennecken, Hartmut, 3,899,050.
- Textron Inc.: *See—*
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- Thayer, John R., to Diamond Power Specialty Corporation. Plural motor control system for control rod drive mechanisms. 3,899,727, Cl. 318-564.000.
- Theta Industries, Inc.: *See—*
Clusener, Gerhard R., 3,898,836.
- Third National Bank of Hampden County, executor, the: *See—*
Terry, Stanley M., deceased; and Third National Bank of Hampden County, executor, the, 3,899,652.
- Thomas, Robert. Tack fastener and stripper. 3,899,157, Cl. 254-18.000.
- Thompson, John R., to Dresser Industries, Inc. Resin bonded diamond wheels with copper and silicon carbide fillers. 3,899,307, Cl. 51-298.000.
- Thuy, Hans-Joachim: *See—*
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- Tiger, Emil, to Bell & Howell Company. Microfiche reader-printer. 3,899,248, Cl. 355-5.000.
- Timex Corporation: *See—*
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- Tiner, Wayne Douglas: *See—*
Cox, Elmer Adrian; Tiner, Wayne Douglas; and Woods, Ritchey Paul, Jr., 3,898,776.
- Tirelli, Paolo, to Atos Oleodinamica S.p.A. Fluid dynamic valve with direct electromagnetic control with slider-latching device. 3,899,003, Cl. 137-625.650.
- Tiros Plastics Corporation: *See—*
Rigaud, Raymond L., 3,899,100.
- Tobias, Philip E. Hole cutter device for graphic arts activity. 3,899,264, Cl. 408-14.000.
- Toda, Toshimasa: *See—*
Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Toda, Toshimasa; Mori, Eiko; Horiuchi, Hideo; Higashida, Susumu; Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; and Osawa, Hisayasu, 3,899,464.
- Togawa, Kinmochi: *See—*
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- Tokico Limited: *See—*
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- Tokuda, Katsuhiko: *See—*
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- Tokushige, Toshio; and Nagayasu, Motokiyo, to Sumitomo Chemical Company Limited. Process of baking or graphitizing carbon moldings. 3,899,575, Cl. 423-448.000.
- Tokyo Shibaura Electric Co., Ltd.: *See—*
Ichinose, Noboru; and Yokomizo, Yuhji, 3,899,451.
- Tolle, Denver V. Fishing rod holder. 3,898,756, Cl. 43-21.200.
- Tomita, Masao, to Yuasa Battery Company Limited. Thermal battery. 3,899,353, Cl. 136-83.00T.
- Tomlinson, Frederica W. Combined tiara and earrings with detachable earring devices. 3,898,868, Cl. 63-2.000.
- Tompsett, Michael Francis, to Bell Telephone Laboratories, Incorporated. Compensating reference voltage circuit for semiconductor apparatus. 3,899,694, Cl. 307-304.000.
- Tong, Yang Hu: *See—*
Chou, Albert S.; Tong, Yang Hu; Medley, Harold C.; and Dalziel, Warren L., 3,898,814.
- Tonnelli, Gerald J.; Epiling, Karol E.; and Ahrens, James R., to Production Data Inc. Auxiliary oil well tubing shut-off assembly. 3,899,024, Cl. 166-72.000.

- Toray Industries, Inc.: See—
Aya, Toshihiko; Chiba, Kazumasa; and Izumi, Zenji, 3,899,472.
Kajimoto, Tsunesuke; and Wakamatsu, Shigeru, 3,899,445.
Okazaki, Kaoru; Yagi, Kenkichi; Okamoto, Miyoshi; Watanabe, Koji; Hikota, Toyohiko; and Kubo, Masayoshi, 3,899,292.
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Syoji, Masaaki; Ishihara, Goro; Hirose, Masao; Kubota, Hidenobu; and Mitani, Naoyuki, 3,899,530.
- Torcheux, Alain, heir: See—
Honore, Etienne Augustin Henri; Torcheux, Emile Leon Gabriel, deceased; Torcheux, Micheline Marie, born Deloffre, heir; Torcheux, Alain, heir; and Geret, Adeline, born Torcheux, heir, 3,899,769.
- Torcheux, Emile Leon Gabriel, deceased: See—
Honore, Etienne Augustin Henri; Torcheux, Emile Leon Gabriel, deceased; Torcheux, Micheline Marie, born Deloffre, heir; Torcheux, Alain, heir; and Geret, Adeline, born Torcheux, heir, 3,899,769.
- Torcheux, Micheline Marie, born Deloffre, heir: See—
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- Torrington Company, The: See—
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- Torrington Company, Limited, The: See—
Batt, Robert Stanley, 3,899,221.
- Toth, John E.: See—
Chaparro, John J.; Ellis, Lowell V.; Meanor, Doyle W.; Morton, William D., Jr.; Richelmann, Bernd H.; Ross, George B.; and Toth, John E., 3,899,085.
- Townsend Engineering Company: See—
Greider, Charles Austin, 3,898,923.
- Toyo Boseki Kabushiki Kaisha: See—
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- Toyo Kogyo Co., Ltd.: See—
Tadokoro, Tomoo; and Kawata, Masayuki, 3,898,802.
- Toyoda, Kenji, to Nippon Kogaku K.K. Light metering systems and exposure control systems for cameras. 3,899,788, Cl. 354-23.00D.
- Toyota Jidosha Kogyo Kabushiki Kaisha: See—
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Nakamura, Kenya; and Sato, Akira, 3,898,793.
Sasaki, Yoshio; and Morita, Minoru, 3,898,803.
- Tracy, Charles W., to Apollo Plastics, Inc. Modular building panels and enclosures. 3,898,779, Cl. 52-264.000.
- Tracy, James E.: See—
Peterkofsky, Alan L.; Tracy, James E.; and Schumacher, Paul M., 3,899,457.
Peterkofsky, Alan L.; Tracy, James E.; and Schumacher, Paul M., 3,899,458.
- Trageser, James J., to United States Steel Corporation. Low balanced reactance delta closure for electric arc furnace transformers. 3,898,707, Cl. 13-12.000.
- Traskos, Richard T., to Lith-Kem Corporation. Printing plate and method of making the same. 3,899,332, Cl. 96-33.000.
- Tree-Mate Corporation: See—
Ulve, Gene A., 3,898,752.
- Treece, William D.: See—
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- Tressler, Charles J.: See—
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- Trifonov, Todor Kostov: See—
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- Trimble, David Carl: See—
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- Triplex Safety Glass Company Limited: See—
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- Trockel, Franz: See—
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- Trube, Hans; Grimm, Hermann; and Karioth, Gernot, to Daimler-Benz Aktiengesellschaft. Air nozzle for venting systems. 3,898,921, Cl. 98-40.00A.
- Tsao, Utah, to Lummus Company, The. Recovery of hydrogen chloride in an alkylation process. 3,899,545, Cl. 260-671.00R.
- Tsuji, Heigo: See—
Maeda, Tetsuo; Shimoe, Hideo; Fujiwara, Yasuhiko; Aya, Norimoto; Marumo, Nagayuki; Tsuji, Heigo; and Sakamoto, Yuzo, 3,899,047.
- Tucker, Robert B., Jr., to Continental Oil Company. Electronic wave analysis. 3,899,668, Cl. 235-193.000.
- Turiot, Andre: See—
Masclat, Jean; and Turiot, Andre, 3,899,147.
- Turner, John O.; and Deno, Norman C., to Sun Ventures, Inc. Acid-catalyzed decomposition of aliphatic hydroperoxides. 3,899,538, Cl. 260-593.00R.
- Tyco Laboratories, Inc.: See—
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- Tyrolit-Schleifmittelwerke Swarovski K.G.: See—
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- Uchida, Teiji. Frequency modulator including a clapp-type oscillator. 3,899,755, Cl. 332-30.000.
- Uchiyama, Takashi: See—
Taguchi, Tatsuya; Uchiyama, Takashi; Nakamoto, Soichi; and Ito, Tadashi, 3,899,789.
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- Ueno, Yoshito; Kajitani, Mitsuo; and Ohgushi, Yoshio, to Nippon Electric Company, Limited. Pulse-frequency-modulation signal transmission system. 3,899,429, Cl. 250-199.000.
- Uenoyama, Hiroshi: See—
Nozawa, Masao; Yasuno, Takehiko; Yamaguchi, Takashi; and Uenoyama, Hiroshi, 3,899,420.
- Ulrich, Carl. Washing machine and door latch. 3,899,204, Cl. 292-336.300.
- Ultrasonic Systems, Inc.: See—
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- Ulve, Gene A., to Tree-Mate Corporation. Tree stump pulling machine. 3,898,752, Cl. 37-2.00R.
- Unger, Harold: See—
Long, Raymond H.; and Unger, Harold, 3,899,399.
- Unick, Alvin J.; and Gault, Kenneth W., to Ethyl Corporation. Method of metalworking utilizing a particular lubricant composition. 3,899,433, Cl. 252-52.00R.
- Union Carbide Corporation: See—
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- Union Oil Company of California: See—
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- U.S. Amada, Ltd.: See—
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- United States of America
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- Agriculture: See—
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- Air Force: See—
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- Army: See—
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- General Counsel-Code GP: See—
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Honnell, Martial A. Isolated output system for a class D switching-mode amplifier. 3,899,745, Cl. 330-207.00A.
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Webster, James A. Perfluoro alkylene dioxy-bis-(4-phthalic anhydrides and oxy-bis-(perfluoroalkyleneoxy-phthalic anhydrides. 3,899,517, Cl. 260-346.300.
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- U.S. Philips Corporation: See—
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- United States Steel Corporation: See—
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- Universal Oil Products Company: See—
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- University of Chicago, The: See—
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- Unkauf, Manfred G.; Harris, Derek V.; and Gustafsson, Sven G., to Raytheon Company. FM Sidetone phase comparison system. 3,899,740, Cl. 325-349.000.
- Unterstenhoefer, Leo; and Krieger, Wilhelm, to BASF Wyandotte Corporation. Process for preparing lightweight concrete. 3,899,455, Cl. 260-2.50B.
- Untz, Robert W.: See—
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- Upjohn Company, The: See—
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- Utility Products (Proprietary) Limited: See—
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- Vail, Sidney L.: See—
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- Vaistub, Mikhail Efimovich: See—
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- Van Der Meulen, Douglas J.: See—
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- Van Huisen, Allen T. Pneumatic-kinetic drilling system. 3,899,033, Cl. 175-97.000.
- van Leuwen, Bruce G.; and Pitts, James J., to Olin Corporation. Stannous catechol derivatives and process for preparing them. 3,899,520, Cl. 260-414.000.
- Van Nice, Robert I., to Westinghouse Electric Corporation. Interleaved winding for electrical inductive apparatus. 3,899,763, Cl. 336-70.000.
- Van Nice, Robert I., to Westinghouse Electric Corporation. Four-strand interleaved-turn transformer winding. 3,899,764, Cl. 336-70.000.
- Van Slyke, William Jan, to Battelle Development Corporation. Silver recovery process. 3,899,323, Cl. 75-83.000.
- Van Vliet, Raymond August, to Weyerhaeuser Company. Continuous soft mat perforator. 3,898,711, Cl. 19-161.00P.
- Vasilos, Thomas: See—
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- Vaughan, Harry L.: See—
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- Vaughn, George A.; and Hargrave, Richard D., to Maark Corporation. Tennis racket having improved strength factor. 3,899,172, Cl. 273-73.00C.
- Vaughn, Walter Lee; and Beam, Robert James, to Dow Chemical Company, The. Cellulosic materials internally sized with copolymers of alpha beta-ethylenically unsaturated hydrophobic monomers and ammoniated carboxylic acid comonomers. 3,899,389, Cl. 162-168.000.
- VDO Adolf Schindling AG: See—
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- VEB Polygraph Leipzig Kombinat fur Polygraphische Maschinen und Ausrustungen: See—
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- Vereinigte Flugtechnische Werke-Fokker GmbH: See—
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- Vereinigte Osterreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft: See—
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- Verschoore, Koen: See—
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- Vetco Offshore Industries, Inc.: See—
Beaver, Ruby C.; Clasen, Theodor; Henning, Wolfgang; and Johnson, Emil S., 3,899,734.
- VIA Gesellschaft fur Verfahrenstechnik: See—
Zander, Bernd; Borggrafe, Bernd; and Wortmann, Horst, 3,899,023.
- Vibixa Limited: See—
Palmer, William Edward, 3,899,126.
- Vickers-Zimmer Aktiengesellschaft: See—
Seidl, Anton, 3,899,562.
- Vidberg, Marcel, to Automobiles Peugeot; and Regie Nationale des Usines Renault. Device for controlling the feeding of fuel to an internal combustion engine. 3,898,973, Cl. 123-198.00B.
- Vigo, Francesco M.: See—
Foley, Kevin M.; and Vigo, Francesco M., 3,899,524.
- Vinje, Gunnar. Cable lock connector. 3,899,238, Cl. 339-245.000.
- Viro, Felix: See—
Waxman, Burton Harvey; Shannahan, Robert Thomas; and Viro, Felix, 3,899,330.
- Vlach, Anthony R. Golfer's training aid. 3,899,179, Cl. 273-183.00A.
- Vock, Manfred Hugo: See—
Mookherjee, Braja Dulal; Vock, Manfred Hugo; Benaim, Carlos; and Shuster, Edward J., 3,899,597.
- Volontieri, Aldo, to Alfa Romeo S.p.A. Method of eliminating risk of discharge of a battery in an electrical installation for a motor vehicle and an apparatus for effecting the same. 3,899,730, Cl. 320-61.000.
- von der Elitz, Hans-Ulrich, to Hoechst Aktiengesellschaft. Process for the semi-continuous dyeing of synthetic textile articles. 3,899,291, Cl. 8-174.000.
- von der Gonna, Rudiger: See—
de Ahna, Heinz-Dieter; and von der Gonna, Rudiger, 3,899,347.
- Voytko, John D.: See—
Dixon, George D.; Davies, David H.; and Voytko, John D., 3,899,254.
- VS-Schulmoebel Verwaltungs-GmbH: See—
Mueller, Falk, 3,899,207.
- W. R. Grace & Co.: See—
Chi, Donald G.; and Lee, Hanju, 3,899,310.
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- W. R. Gwace & Co.: See—
Shotbolt, Keith; Eastwood, Alan; and Gait, John Henry, 3,899,081.
- Wadkin Limited: See—
Colton, Peter Malcolm, 3,899,724.
- Wagner, John L.: See—
Rhodes, Timothy L.; and Wagner, John L., 3,899,169.
- Wagner, Josef. Spray gun. 3,899,134, Cl. 239-332.000.
- Wagner, Kuno; Dietrich, Werner; Kraft, Karl-Josef; and Conrad, Horst, to Bayer Aktiengesellschaft. Process for the production of synthetic plastics comprising urethane groups and biuret groups. 3,899,454, Cl. 260-2.5AT.
- Wagner, Melvin H., to Universal Oil Products Company. Catalytic converter housing. 3,899,302, Cl. 23-288.00F.
- Wagner, Richard C., to Holymatic Corporation. Cryogenic refrigeration apparatus with automatic temperature control and automatic gas balance control. 3,898,863, Cl. 62-208.000.
- Wahl Clipper Corporation: See—
Walton, William M., 3,899,654.
- Waid, George M.; and Ault, Robert T., to Republic Steel Corporation. Low alloy, high strength, age hardenable steel. 3,899,368, Cl. 148-36.000.
- Wakamatsu, Shigeru: See—
Kajimoto, Tsunesuke; and Wakamatsu, Shigeru, 3,899,445.
- Wakamiya, Kinji; and Kobayashi, Isamu, to Sony Corporation. Integrated circuit with carrier killer selectively diffused therein and method of making same. 3,899,793, Cl. 357-48.000.
- Walker, Edward J.: See—
Dennard, Robert H.; Rideout, Vincent L.; and Walker, Edward J., 3,899,363.
- Wallace, Gary Leonard; Linehan, John J.; and Marshall, Robert Howard, to Chemetron Corporation. Feeding apparatus. 3,899,068, Cl. 198-27.000.
- Wallis, Marvin E. Apparatus for extruding resin film with weakened tear lines. 3,899,283, Cl. 425-461.000.
- Wallsten, Hans Ivar, to AB Inventing. Method of coating paper or other sheet material with surface layers of different coating compositions. 3,899,615, Cl. 427-211.000.
- Walsh, Edward N., to Stauffer Chemical Company. Hydroxyalkylcarbamylalkylphosphonate flame retardants for polyurethanes. 3,899,453, Cl. 260-2.5AJ.
- Walter, Gerald Joseph, to Pennwalt Corporation. Fluorinated phosphates. 3,899,484, Cl. 260-239.00P.
- Walton, Erlen Busch, to Eaton Corporation. Hydrostatic transmission control system. 3,898,812, Cl. 60-431.000.
- Walton Products, Inc.: See—
Gobrecht, George W.; and Reed, Robert T., 3,899,084.
- Walton, William M., to Wahl Clipper Corporation. Soldering iron tip assembly and cordless soldering iron embodying same. 3,899,654, Cl. 219-229.000.
- Wandel u. Goltermann: See—
Harzer, Peter, 3,899,738.
- Wanesky, William R., to Western Electric Company, Incorporated. Releasable mounting and method of placing an oriented array of devices on the mounting. 3,899,379, Cl. 156-80.000.
- Wangco Incorporated: See—
Brown, Leon Henry, Jr., 3,899,794.
- Ward, Benjamin F., to Westvaco Corporation. Process for making a methacrylic acid adduct of linoleic acid and product. 3,899,476, Cl. 260-97.500.
- Ward, Edward B. Concrete form panels with hollow reinforcing ribs. 3,899,155, Cl. 249-189.000.
- Ward, Raymond L. Fail-safe disengagement mechanism. 3,899,062, Cl. 192-129.00R.
- Wardlaw, N. J. Removable mounted hoist for pick-up truck. 3,899,089, Cl. 214-75.00H.
- Warner Electric Brake & Clutch Company: See—
Krug, William H., 3,899,061.
- Warren, Brian Thomas; and Spicer, John William, to Miles Laboratories, Inc. 1-(2-substituted-chromonyloxy)-2-hydroxy-3-(substituted-phenoxy)propanes. 3,899,513, Cl. 260-345.200.

- Wastenson, Erik Goran: *See—*
Lindskog, Per Folke; Arbstedt, Per Gunnar; and Wastenson, Erik Goran, 3,899,319.
- Watanabe, Akinori: *See—*
Sasaki, Rentaro; Watanabe, Akinori; Ikegame, Mamoru; and Ogasawara, Tatsuo, 3,899,707.
- Watanabe, Hideo. Automatic game block shuffling, aligning and table top arraying machine. 3,899,178, Cl. 273-136.00A.
- Watanabe, Koji: *See—*
Okazaki, Kaoru; Yagi, Kenkichi; Okamoto, Miyoshi; Watanabe, Koji; Hikota, Toyohiko; and Kubo, Masayoshi, 3,899,292.
- Watanabe, Kunitake, to Sony Corporation. Cassette tape recording and/or reproducing apparatus having molded chassis and molded head carriage. 3,899,795, Cl. 360-137.000.
- Watanabe, Naoto; Morizane, Kenji; and Ayabe, Masaaki, to Sony Corporation. Process for producing phosphides. 3,899,572, Cl. 423-299.000.
- Watanabe, Teruji; and Ishihara, Hideo, to Kokusai Denshin Denwa Kabushiki Kaisha. Magnetic bubble transmission system using a rotating magnetic field. 3,899,781, Cl. 340-174.0TF.
- Water Technology Service, Inc.: *See—*
Aber, Henry S.; Riggs, Dean D.; and Lamantia, John, 3,899,410.
- Waterston, William, to G. Methven & Co., Limited. On-off flow control device and irrigation system incorporating same. 3,898,843, Cl. 61-13.000.
- Watkins, Mervyn M. Universal manual drive for a wheeled vehicle. 3,899,189, Cl. 280-211.000.
- Watkins, William L.: *See—*
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- Watts, Ridley, Jr., to American Packaging Corporation. Package with tear element. 3,899,122, Cl. 229-41.00B.
- Wavin B. V.: *See—*
de Putter, Warner Jan; and den Hertog, Willem Cornelis, 3,899,565.
- Wavish, Peter Roy: *See—*
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- Wawra, Carl Martin, to Carl Schenck AG, Firma. Control input switching apparatus. 3,898,874, Cl. 73-90.000.
- Waxman, Burton Harvey; Shannahan, Robert Thomas; and Viro, Felix, to GAF Corporation. Color screens for diffusion transfer processes containing color formers. 3,899,330, Cl. 96-3.000.
- Weatherhead Company, The: *See—*
Baker, James P., 3,898,809.
- Weaver, Francis James: *See—*
Esterson, Maurice; and Weaver, Francis James, 3,899,714.
- Webb, William B. Inflatable arena structure. 3,898,775, Cl. 52-2.000.
- Webster, James A.: *See—*
United States of America, National Aeronautics and Space Administration; and Webster, James A., 3,899,517.
- Webster, William C.: *See—*
Minnick, Leonard John; Webster, William C.; and Smith, Charles L., 3,899,345.
- Wehling, Rolf; and Neubert, Rolf, to Fried. Krupp Gesellschaft mit beschränkter Haftung. Housing for open-end spinning turbine. 3,898,787, Cl. 57-58.890.
- Wein, James E.: *See—*
Gallaher, William C.; Stephens, Jerome P.; Testa, Phillip J.; and Wein, James E., 3,898,704.
- Weinstein, David, to Maryland Cup Corporation. Method of making package liners having starburst patterns cut therethrough. 3,898,899, Cl. 83-29.000.
- Weis, Siegfried K.: *See—*
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- Werle, Donald K.; Kasparas, Romas; and Katz, Sidney, to United States of America, Navy. Powder contrail generation. 3,899,144, Cl. 244-136.000.
- Werner, Peter; Drews, Ulrich; Rittmannsberger, Norbert; Busse, Wolfgang; Moder, Helmut; and Ohr, Karl-Heinz, to Robert Bosch G.m.b.H. Fuel-injection arrangement controlled in dependence upon the air inflow rate. 3,898,964, Cl. 123-32.0EA.
- Wessling, Diether; Leister, Heinrich; and Degener, Eberhart, to Bayer Aktiengesellschaft. Certain benzazolyamino-anthraquinones. 3,899,504, Cl. 260-303.000.
- Western Electric Company, Incorporated: *See—*
Montone, Liber J.; and Pietruszynski, Leonard J., 3,899,634.
- Wanesky, William R., 3,899,379.
- Westinghouse Electric Corporation: *See—*
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- Garey, Robert B., 3,899,199.
- Goldstein, Norman P.; and Sun, Kuan H., 3,899,676.
- Jackovitz, John F.; and Pantier, Earl A., 3,899,350.
- Jones, Charles H., 3,899,767.
- Luongo, Michael C., 3,898,842.
- Morehead, Chalmers, 3,898,720.
- Peterson, Noel C., 3,899,720.
- Poole, Charles W., 3,898,938.
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- Westphal, Klaus: *See—*
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- Westvaco Corporation: *See—*
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- Weyerhaeuser Company: *See—*
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- Whirlpool Corporation: *See—*
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- White, Allwyn M., to Automation Industries, Inc. Ultrasonic testing system for a test piece. 3,898,839, Cl. 73-67.80R.
- White, Jack C.: *See—*
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- White-Westinghouse Corporation: *See—*
Draper, Robert, 3,898,977.
- Millett, Bradburne L., 3,899,187.
- Whitehead, Charles C. Knee protective gear. 3,898,697, Cl. 2-22.000.
- Whiteman, Frank L.: *See—*
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- Wiebke, Gunter: *See—*
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- Wielicki, Edward A.: *See—*
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- Wiese, Delmar R., to Hoover Ball and Bearing Company. Door closing assembly for material handling systems. 3,899,095, Cl. 214-302.000.
- Wikel, James H., to Eli Lilly and Company. 5-(2-Aminophenyl)pyrazole-3-carboxylic acids and esters thereof. 3,899,508, Cl. 260-310.00R.
- Wild, Daniel: *See—*
Jones, Ivor; Muller, Hans Rudolf; Wild, Daniel; and Zafiropolo, Pitro Alois, 3,899,642.
- Wild, Max; Schneider, Wolf-Dieter; Sennlaub, Friedel; and Winter, Rudolf, to Rheinstahl AG. Slide-proof bell and spigot joint for pipes and tubular elements. 3,899,183, Cl. 277-101.000.
- Will, Fritz G.: *See—*
Farrington, Gregory C.; Will, Fritz G.; and Lord, Peter C., 3,899,352.
- Willard, Frank G.; and Farley, Earl T., to Westinghouse Electric Corporation. Frequency shift keyed communications device. 3,899,637, Cl. 178-59.000.
- Willdorf, Michael E., to Material Distributors Corporation. Security film for shatter-proofing windows. 3,899,621, Cl. 428-216.000.
- Williams, Earl P.: *See—*
Lorenz, Donald H.; and Williams, Earl P., 3,899,471.
- Williams, James L. Recirculating resin cleaning chemical feeder system for water softeners. 3,899,422, Cl. 210-108.000.
- Williams, Laurence O., to Martin Marietta Corporation. Subliming solids bipropellant fuel system power generator. 3,898,798, Cl. 60-207.000.
- Williams, Malcolm; Jones, Christopher Robin; and Crookes, Richard William, to C.A.V. Limited. Fuel supply systems for engines. 3,898,969, Cl. 123-139.00E.
- Willner, David; and Crast, Leonard Bruce, Jr., to Bristol-Myers Company. Production of antibacterial agents. 3,899,394, Cl. 195-29.000.
- Wills, Peter; and Pudlo, Zygmunt. Pneumatic actuators. 3,898,912, Cl. 91-1.000.
- Wilmer, Reginald B.: *See—*
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- Wilson, Joan L., to Goodyear Tire & Rubber Company, The. 2-(Piperidinodithio)benzothiazoles. 3,899,460, Cl. 260-293.570.
- Windmoller & Holscher: *See—*
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- Winter, Alan William, to Bower Packaging Limited. Moulding machines. 3,899,277, Cl. 425-383.000.
- Winter, Gordon; and Adcock, J. O., to Lockheed Aircraft Corporation. Backup tool. 3,898,835, Cl. 72-465.000.
- Winter, Rudolf: *See—*
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- Wisconsin Alumni Research Foundation: *See—*
Chapman, Thomas W.; and Caban, Reinaldo, 3,899,570.
- Witting, Harald L., to General Electric Company. Tapered helical compact fluorescent lamp. 3,899,712, Cl. 313-493.000.
- Witzel, Bruce E., to Merck & Co., Inc. Aroyl substituted naphthalene acetic acids. 3,899,529, Cl. 260-517.000.
- Wojaczek, Egon: *See—*
Plevak, Lubomir; Bekker, Kunibert; Wojaczek, Egon; and Holken, Norbert, 3,898,845.
- Wolber, Robert, to Gebrüder Junghans GmbH. Electrically driven timers. 3,898,791, Cl. 58-28.00A.
- Wolff, Ulrich: *See—*
Greubel, Waldemar; Krueger, Hans; and Wolff, Ulrich, 3,899,786.
- Wood, Robert David, to Rolls-Royce Limited. Cooling arrangements for duct walls. 3,898,797, Cl. 60-39.660.
- Woods, Ritchey Paul, Jr.: *See—*
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- Woolf, Cyril: *See—*
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- Wortmann, Horst: *See—*
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- Wragg, Reginald Trevor; and Yardley, James Frank, to Dunlop Limited. Method of producing rubber-plastics composites. 3,899,378, Cl. 156-73.500.
- Wright, Robert: *See—*
Kelley, Wilson E., Jr.; and Wright, Robert, 3,898,997.
- Wunder, Friedrich: *See—*
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- Wuthrich, Paul, to Timex Corporation. Indexing mechanism for electric watch. 3,899,700, Cl. 310-37.000.
- Wyant, Reece E. Method of grouting a pile in a hole involving the optimized frequency of vibration of the grouting material. 3,898,848, Cl. 61-53.520.
- Wyant, Reece E., to Dresser Industries, Inc. Method of packing heat pipes within a pipe pile involving the optimized frequency of vibration of the packing material. 3,898,849, Cl. 61-53.520.
- Wyant, Reece E., to Dresser Industries, Inc. Method of packing heat pipes within a pipe pile involving the optimized vibration of the packing material. 3,898,850, Cl. 61-53.520.
- Wyant, Reece E., to Dresser Industries, Inc. Method of packing heat pipes within a pipe pile involving the vibration of the packing material. 3,898,851, Cl. 61-53.520.
- Wynn, James E.: *See—*
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- Xerox Corporation: *See—*
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- Foot, D. Paul, 3,898,722.
- Limburg, William W., 3,899,328.
- Yagi, Kenkichi: *See—*
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- Okazaki, Kaoru; Yagi, Kenkichi; Ichimura, Akira; and Masubuchi, Yoshinori, 3,899,623.
- Yamada, Koichi; Hashimoto, Tadanori; and Nakano, Kazuhiko, to Sumitomo Chemical Company, Limited. Method for the removal of organic substances from sodium aluminate solution. 3,899,571, Cl. 423-127.000.
- Yamaguchi, Noboru: *See—*
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- Yamaguchi, Takashi: *See—*
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- Yamamoto, Shinzo, to Nihon Kensetsu Kikai Sangyo Kabushiki Kaisha. Earth tamper. 3,899,262, Cl. 404-133.000.
- Yamamoto, Sigeo: *See—*
Tanaka, Shizuya; Ozaki, Toshiaki; Mine, Akihiko; Tanaka, Katsutoshi; Yamamoto, Sigeo; Oishi, Tadashi; Hino, Naganori; and Satomi, Takeo, 3,899,582.
- Yamauchi, Masaaki, to Hitachi, Ltd. Colour picture tubes containing an in-line type electron gun assemblies. 3,899,761, Cl. 335-211.000.
- Yamauchi, Seizo; and Shimomura, Kazuo, to Sanyo Electric Company, Ltd. Remote control signal generator which operates to individually control a plurality of controlled circuits. 3,899,773, Cl. 340-167.00R.
- Yardley, James Frank: *See—*
Wragg, Reginald Trevor; and Yardley, James Frank, 3,899,378.
- Yarnell, Charles Frederick, to Bell Telephone Laboratories, Incorporated. Carbon dioxide curing of plates for lead-acid batteries. 3,899,349, Cl. 136-27.000.
- Yartz, Johnny W., to General Electric Company. Sheathed heating element installation. 3,899,658, Cl. 219-536.000.
- Yasuno, Takehiko: *See—*
Nozawa, Masao; Yasuno, Takehiko; Yamaguchi, Takashi; and Uenoyama, Hiroshi, 3,899,420.
- Yeager, Marvin Leo; Henschen, Homer Ernst; and Harwood, Robert George, to AMP Incorporated. Low insertion force cam actuated printed circuit board connector. 3,899,234, Cl. 339-74.00R.
- Yeda Research and Development Company Incorporated: *See—*
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- Yen, Shiao-Ping S.: *See—*
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- Yokomizo, Yuhji: *See—*
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- Yonejima, Sigeru: *See—*
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- York, Lyle E.: *See—*
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- Yoshida, Ryonosuke: *See—*
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- Yoshikawa, Nobuharu: *See—*
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- Yoshioka, Takao: *See—*
Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; Toda, Toshimasa; Mori, Eiko; Horiuchi, Hideo; Higashida, Susumu; Matsui, Katsuaki; Kurumada, Tomoyuki; Ohta, Noriyuki; and Osawa, Hisayou, 3,899,464.
- Yosim, Samuel J.; and Grantham, LeRoy F., to Rockwell International Corporation. Noble-type metal recovery process by use of molten salt bath. 3,899,322, Cl. 75-65.00R.
- Youl, John Charles. Material handling apparatus. 3,899,094, Cl. 214-147.00G.
- Young, James Whitehurst, to Dresser Industries, Inc. Pressure and volume compensating system for reciprocating oil field drilling tools. 3,898,815, Cl. 64-23.700.
- Young, Raymond R.; and Malcik, Frank J., to Swingline, Inc. Binder storage arrangement including removable flexible hangers. 3,899,082, Cl. 211-46.000.
- Yusa Battery Company Limited: *See—*
Tomita, Masao, 3,899,353.
- Yuker, Paul A. Chassis apparatus for all terrain vehicles. 3,899,037, Cl. 180-6.480.
- Yum, Dooho; Mercola, Peter A.; and Jacobs, William R., to Beltone Electronics Corporation. Amplifier apparatus having combined DC and AC degenerative feedback. 3,899,742, Cl. 330-19.000.
- Yusa, Haruhiko: *See—*
Amagi, Yasuo; and Yusa, Haruhiko, 3,899,547.
- Yusa, Takashi: *See—*
Oda, Osamu; Sakai, Kiyoshi; Yusa, Takashi; and Katano, Hamako, 3,899,525.
- Zadrozny, Jan; Kobylinski, Lech; and Jaworski, Stefan. Sea-going high-commercial-speed displacement vessel. 3,898,946, Cl. 114-61.000.
- Zaffaroni, Alejandro, to Alza Corporation. Biotransformable intrauterine device. 3,898,986, Cl. 128-130.000.
- Zafiropolo, Pitro Alois: *See—*
Jones, Ivor; Muller, Hans Rudolf; Wild, Daniel; and Zafiropolo, Pitro Alois, 3,899,642.
- Zander, Bernd; Borggrafe, Bernd; and Wortmann, Horst, to VIA Gesellschaft für Verfahrenstechnik. Equipment for drying gas, in particular air, by refrigeration. 3,899,023, Cl. 165-111.000.
- Zane, John K.: *See—*
Reymore, Harold E., Jr.; and Zane, John K., 3,899,443.
- Zaris, Louis. Simulated basketball game. 3,899,173, Cl. 273-85.00E.
- Zenith Radio Corporation: *See—*
Chodil, Gerald J.; and De Jule, Michael C., 3,899,636.
- Zetterberg, Gosta L.: *See—*
Swanbeck, Gunnar P. E.; Zetterberg, Gosta L.; and Agback, Karl Hubert, 3,899,591.
- Zias, Arthur R.: *See—*
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- Zibette, Bernard Arthur: *See—*
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- Ziegler, Leo D.: *See—*
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- Zientara, Donald; and Smith, Richard A., to Zwicker Knitting Mills. Cap having knitted crown and crocheted brim and method for making the same. 3,898,699, Cl. 2-192.000.
- Zirconal Processes Limited: *See—*
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- Zniitnash: *See—*
Makedonski, Boris Georgiev; Kochemidov, Atanas Dimitrov; Dumanov, Ivan Minkov; and Payakov, Stefan Georgiev, 3,898,769.
- Zohar, Rami, to Rami Art, Corporation. Interlocking construction elements. 3,898,761, Cl. 46-25.000.
- Zorger, Abraham: *See—*
Nachsi, Zolman; and Zorger, Abraham, 3,899,647.
- Zucker, Jerry, to Hudson Pulp & Paper Corporation. Tail tie system. 3,898,920, Cl. 93-1.100.
- Zwicker Knitting Mills: *See—*
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LIST OF REISSUE PATENTEEES

TO WHOM

PATENTS WERE ISSUED ON THE 12TH DAY OF AUGUST, 1975

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- Altman, Gerald. Photographic products for direct observation and optical projection, and photographic processes for their production and utilization. Re. 28,515, Cl. 96-67.000.
- Anderson, Gordon C.; and Page, John D., to Maremont Corporation. Spindle assembly. Re. 28,510, Cl. 57-88.000.
- Avitzur, Betzalel. Shaping of hollow workpieces. Re. 28,511, Cl. 72-347.000.
- Container Corporation of America: See—
- Neebel, Richard R.; Harms, Clarence L.; Neebel, James D.; and Doerfer, Richard E., Re. 28,508.
- Doerfer, Richard E.: See—
- Neebel, Richard R.; Harms, Clarence L.; Neebel, James D.; and Doerfer, Richard E., Re. 28,508.
- Eastman Kodak Company: See—
- Lu, Chen-I; and Morrison, Edward D., Re. 28,516.
- Enneking, Heinrich; and Jahrig, Gunter, to Industrie Werke Karlsruhe-Ausburg Aktiengesellschaft. Device for winding textile threads. Re. 28,514, Cl. 242-18.0DD.
- Fletcher, Stephen H.: See—
- Piechocki, Benjamin, deceased; and Fletcher, Stephen H., Re. 28,509.
- General Electric Company: See—
- Weiser, Earnest F., Re. 28,517.
- Harms, Clarence L.: See—
- Neebel, Richard R.; Harms, Clarence L.; Neebel, James D.; and Doerfer, Richard E., Re. 28,508.
- Hitachi Limited: See—
- Suzuki, Takaji; Wada, Sunao; and Nishimoto, Yukio, Re. 28,513.
- Industrie Werke Karlsruhe-Ausburg Aktiengesellschaft: See—
- Enneking, Heinrich; and Jahrig, Gunter, Re. 28,514.
- Jahrig, Gunter: See—
- Enneking, Heinrich; and Jahrig, Gunter, Re. 28,514.
- Kinoshita, Haruo, to Yamaha Hatsudoki Kabushiki Haisha. Recipro-
- cating piston type engines having weights for balancing primary inertial forces. Re. 28,512, Cl. 74-604.000.
- Lu, Chen-I; and Morrison, Edward D., to Eastman Kodak Company. Polymeric rear projection screens. Re. 28,516, Cl. 428-213.000.
- Maremont Corporation: See—
- Anderson, Gordon C.; and Page, John D., Re. 28,510.
- Morrison, Edward D.: See—
- Lu, Chen-I; and Morrison, Edward D., Re. 28,516.
- Neebel, James D.: See—
- Neebel, Richard R.; Harms, Clarence L.; Neebel, James D.; and Doerfer, Richard E., Re. 28,508.
- Neebel, Richard R.; Harms, Clarence L.; Neebel, James D.; and Doerfer, Richard E., to Container Corporation of America. Loin pull and rib cut machine. Re. 28,508, Cl. 17-1.00G.
- Nishimoto, Yukio: See—
- Suzuki, Takaji; Wada, Sunao; and Nishimoto, Yukio, Re. 28,513.
- Page, John D.: See—
- Anderson, Gordon C.; and Page, John D., Re. 28,510.
- Piechocki, Benjamin, deceased; and by Fletcher, Stephen H., to Western Electric Company, Incorporated. Compensating base for lead-frame bonding. Re. 28,509, Cl. 228-180.000.
- Suzuki, Takaji; Wada, Sunao; and Nishimoto, Yukio, to Hitachi Limited. Apparatus for automatically testing pulmonary functions. Re. 28,513, Cl. 128-2.080.
- Wada, Sunao: See—
- Suzuki, Takaji; Wada, Sunao; and Nishimoto, Yukio, Re. 28,513.
- Weiser, Earnest F., to General Electric Company. Filter-to-line transient isolator. Re. 28,517, Cl. 317-20.000.
- Western Electric Company, Incorporated: See—
- Piechocki, Benjamin, deceased; and Fletcher, Stephen H., Re. 28,509.
- Yamaha Hatsudoki Kabushiki Haisha: See—
- Kinoshita, Haruo, Re. 28,512.

LIST OF PLANT PATENTEEES

- Ecke, Paul, Jr.: See—
- Keefer, Ned, 3,761.
- Grotum, Rolf, 3,763.
- Hegg, Thormod, 3,764.
- Grotum, Rolf, to Paul Ecke, Jr. Poinsettia plant, 3,763, 8-12-75, Cl. 86.
- Hegg, Thormod, to Paul Ecke, Jr. Poinsettia plant, 3,764, 8-12-75, Cl. 86.
- Keefer, Ned, to Paul Ecke, Jr. Poinsettia plant, 3,761, 8-12-75, Cl. 86.
- Nakano, Grace Y. Chrysanthemum plant entitled bronze pinacle, 3,760, 8-12-75, Cl. 79.
- Wandell, Willet N. White ash tree, 3,762, 8-12-75, Cl. 51.

LIST OF DESIGN PATENTEEES

- Aderman, Wayne L., to International Business Machines Corp. Ticket encoder for data processing. 236,270, 8-12-75, Cl. D26-5.
- Airway Industries, Inc.: See—
- Stolarz, Edward M., 236,249.
- Allmand, John H. Vehicle attached push bumpers. 236,260, 8-12-75, Cl. D12-169.
- Aquilante, Vincent J. Christmas tree. 236,272, 8-12-75, Cl. D29-1.
- Bartz, Richard O.: See—
- McAllister, Jack G., and Bartz, 236,277.
- Bingaman, Dennis K. Light emitting optical fibre display. 236,279, 8-12-75, Cl. D48-20.
- Boeing Co., The: See—
- Coffey, Charles S., and Olson, 236,258.
- Brown, Gordon M., to General Motors Corp. Rear fender for an automobile. 236,261, pub. 8-12-75, Cl. D12-196.
- Burroughs Corp.: See—
- Jacobson, James W., Clayton, and Sims, 236,285.
- Coffey, Charles S., and J. J. Olson, to The Boeing Co. Hydrofoil craft. 236,258, 8-12-75, Cl. D12-66.
- Corning Glass Works: See—
- Herczog, Andrej, 236,271.
- Craftmaster, Inc.: See—
- Smith, Raymond P., Jr., 236,255.
- Cunningham, Donald N. Bracket for a terminal housing of an electric strip heater. 236,251, 8-12-75, Cl. D8-230.
- Dallimonti, Renzo, and S. J. Levinson. Control and display console. 236,268, 8-12-75, Cl. D26-5.
- Dazey Products Co.: See—
- McNair, Samuel L., 236,286-287.
- McNair, Samuel L., and Tolge, 236,288.
- McNair, Samuel L., 236,289-236,290.
- Diwalt Industries Ltd.: See—
- Michel, Leo, 236,247.
- Dussardier, Claude J., and J. G. Pousma, to C. A. Norgren Co. Combined filter and regulator for pressurized fluid. 236,263, 8-12-75, Cl. D23.
- Dussardier, Claude J., to C. A. Norgren Co. Filter for pressurized fluid. 236,265, 8-12-75, Cl. D23-4.
- Electromedics, Inc.: See—
- Ray, Phillip E., 236,254.
- Ficke, Norman F., to General Motors Corp. Vehicle display portable turntable. 236,257, 8-12-75, Cl. D12-55.
- Ford, Douglas M., and R. C. Schluter. Golf practice device. 236,274, 8-12-75, Cl. D34-5.
- Fredrick, William H., to Nathan Gilbert, 1/2 interest. Auxiliary display case. 236,246, 8-12-75, Cl. D6-130.
- Fredriksson, Arne G. Pocketed leaf folder. 236,262, 8-12-75, Cl. D19-33.

- Froehlich, Harry W. Combined dickey & bra. 236,242, 8-12-75, Cl. D2-211.
- Froehlich, Harry W. Halter. 236,243, 8-12-75, Cl. D2-353.
- Fude, Donald R., and V. A. Letter holder. 236,245, 8-12-75, Cl. D6-114.
- Fude, Vilas A.: See—
- Fude, Donald R., and V. A. 236,245.
- General Motors Corp.: See—
- Brown, Gordon M., 236,261.
- Ficke, Norman F., 236,257.
- Gilbert, Nathan: See—
- Fredrick, William H., 236,246.
- Hanna, Daniel C. Frame for overhead car wash unit. 236,281, 8-12-75, Cl. D49-12.
- Hanna, Daniel C. Frame for overhead car wash unit. 236,282, 8-12-75, Cl. D49-12.
- Hefner, Irvin V. Pickup truck liner. 236,259, 8-12-75, Cl. D12-156.
- Hellman, Werner. Folding sled. 236,256, 8-12-75, Cl. D12-11.
- Herczog, Andrej, to Corning Glass Works. Portable calculator. 236,271, 8-12-75, Cl. D26-5.
- Holben, Clair D., to C. A. Norgren Co. Regulator for pressurized fluid. 236,266, 8-12-75, Cl. D23-21.
- International Business Machines Corp.: See—
- Aderman, Wayne L., 236,270.
- Jacobson, James W., R. G. Clayton, and J. J. Sims, to Burroughs Corp. Case for a check encoder. 236,285, 8-12-75, Cl. D64-11.
- Kemnitzner, Ronald B., to Sunbeam Corp. Facade for electric humidifier. 236,267, 8-12-75, Cl. D23-146.
- Kilgore Corp.: See—
- Rudy, Richard, 236,275.
- Rudy, Richard, 236,276.
- Lay, Ralph B. Step stool. 236,244, 8-12-75, Cl. D6-35.
- Levinson, Samuel J.: See—
- Dallimonti, Renzo, 236,268.
- McAllister, Jack G., and R. O. Bartz. Closed geometric structure. 236,277, 8-12-75, Cl. D34-15.
- McCue, Daniel, to Rival Mfg. Co. Electrically powered meat grinder. 236,283, 8-12-75, Cl. D55-1.
- McNair, Samuel L., to Dazey Products Co. Hand held power unit for massaging devices. 236,286, 8-12-75, Cl. D83-1.
- McNair, Samuel L., to Dazey Products Co. Electrical vibrating back massager. 236,287, 8-12-75, Cl. D83-1.
- McNair, Samuel L., and H. J. Talge, to Dazey Products Co. Manually held electric hair dryer. 236,288, 8-12-75, Cl. D86-10.
- McNair, Samuel L., to Dazey Products Co. Electric hair cutting iron. 236,289, 8-12-75, Cl. D86-10.
- McNair, Samuel L., to Dazey Products Co. Electric hair curling iron. 236,290, 8-12-75, Cl. D86-10.
- McPhall, Kenneth J. Spinning toy. 236,278, 8-12-75, Cl. D34-15.
- Michel, Leo, to Diwalt Industries Ltd. Barbecue. 236,247, 8-12-75, Cl. D7-107.
- Miller, George E. Portable periscope. 236,284, 8-12-75, Cl. D57-1.
- Norgren, C. A. Co.: See—
- Dussardier, Claude J., and Pousma, 236,263.
- Taylor, John C., 236,264.
- Dussardier, Claude J., 236,265.
- Holben, Clair D., 236,266.
- Ohsawa, Yoichi, to Win Lighter Corp. Lighter. 236,280, 8-12-75, Cl. D48-27.
- Olson, John J.: See—
- Coffey, Charles S., and Olson, 236,258.
- Parker, Robert, to RPR, Inc. Digital thermometer. 236,253, 8-12-75, Cl. D10-57.
- Peak, Leonard R. Hay feed bunk for cattle. 236,273, 8-12-75, Cl. D30-13.
- Plastic Forming Co., Inc.: See—
- Schurman, Peter T., 236,291.
- Pousma, John G.: See—
- Dussardier, Claude J., and Pousma, 236,263.
- RPR, Inc.: See—
- Parker, Robert, 236,253.
- Ray, Phillip E., to Electromedics, Inc. Electronic thermometer. 236,254, 8-12-75, Cl. D10-57.
- Rival Mfg. Co.: See—
- McCue, Daniel, 236,283.
- Rudy, Richard, to Kilgore Corp. Playground climber. 236,275, 8-12-75, Cl. D34-5.
- Rudy, Richard, to Kilgore Corp. Antique car playground climber. 236,276, 8-12-75, Cl. D34-5.
- Schluter, Richard C.: See—
- Ford, Douglas M., and Schluter, 236,274.
- Schurman, Peter T., to Plastic Forming Co., Inc. Storage and carrying case for video tape cassettes or the like. 236,291, 8-12-75, Cl. D87-10.
- Sette, James J. Overcap for a pressurized container. 236,252, 8-12-75, Cl. D9-258.
- Shu-Keung, Robert. Case for an electronic calculator. 236,269, 8-12-75, Cl. D26-5.
- Sims, Jerry J.: See—
- Jacobson, James W., Clayton, and Sims, 236,285.
- Smith, Raymond P., Jr., to Craftmaster, Inc. Electrical short circuit tester. 236,255, 8-12-75, Cl. D10-78.
- Sunbeam Corp.: See—
- Kemnitzner, Ronald B., 236,267.
- Stolarz, Edward M., to Airway Industries, Inc. Luggage handle. 236,249, 8-12-75, Cl. D8-154.
- Talge, Henry J.: See—
- McNair, Samuel L., and Talge, 236,288.
- Taylor, John C., to C. A. Norgren Co. Lubricator for pressurized fluid. 236,264, 8-12-75, Cl. D23-3.
- Walton, Frank T. Ground plate for a sheathed, electric surface unit. 236,250, 8-12-75, Cl. D8-229.
- Win Lighter Corp.: See—
- Ohsawa, Yoichi, 236,280.
- Wolf, Lee S. Scissors. 236,248, 8-12-75, Cl. D8-57.

ISSUED AUGUST 12, 1975

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2		CLASS 33		CLASS 61		CLASS 74		CLASS 98		CLASS 126	
19	3,898,696	142	3,898,740	305	3,898,802	67.85	3,898,838	67	Re.28,515	198DB	3,898,973
22	3,898,697	178F	3,898,741	323	3,898,803	67.9	3,898,840	76C	3,899,337	CLASS 127	
150	3,898,698	288	3,898,742	325	3,898,804	73	3,898,872	115P	3,899,338	35A	3,898,974
192	3,898,699	293	3,898,743	330	3,898,806	88R	3,898,873	CLASS 100			
209	3,898,700	324	3,898,744	391	3,898,807	90	3,898,874	40A	3,898,921	42	3,898,975
CLASS 3		CLASS 34		CLASS 62		CLASS 75		CLASS 101		CLASS 128	
1.5	3,898,701	9	3,898,745	13	3,898,843	339C	3,898,884	18	3,898,925	2F	3,898,982
CLASS 5		CLASS 35		CLASS 63		CLASS 76		CLASS 102		CLASS 131	
2R	3,898,704	11	3,898,746	35	3,898,844	5.12	3,898,889	37	3,898,926	2N	3,898,983
68	3,898,702	25	3,898,747	45D	3,898,845	10.15	3,898,879	110	3,898,927	2R	3,898,981
348R	3,898,703	48A	3,898,748	46	3,898,846	29	3,898,887	132.5	3,898,928	2.08	Re.28,513
CLASS 8		CLASS 36		CLASS 64		CLASS 77		CLASS 103		CLASS 132	
10.2	3,899,288	2.5R	3,898,749	13	3,898,847	89.15	3,898,890	147	3,898,929	2.1A	3,898,984
17	3,899,292	49	3,898,750	46.5	3,898,847	230.8	3,898,888	316	3,898,930	58	3,899,115
120	3,899,289	67D	3,898,751	53.52	3,898,848	474	3,898,891	365	3,898,931	63	3,898,985
	3,899,290				3,898,849	604	Re.28,512	CLASS 104			
174	3,899,291	2R	3,898,752	72.4	3,898,850	710	3,898,892	66	3,898,932	130	3,898,986
313	3,898,705	46	3,898,753	17	3,898,851	859	3,898,893	92.7	3,898,933	145.8	3,898,987
CLASS 10		CLASS 40		CLASS 65		CLASS 78		CLASS 105		CLASS 133	
10R	3,898,706	322	3,898,754	55	3,898,852	866	3,898,894	100	3,898,934	214R	3,898,988
CLASS 13		CLASS 43		CLASS 66		CLASS 79		CLASS 106		CLASS 134	
2	3,899,628	1	3,898,755	62	3,898,853	5BA	3,899,319	61	3,898,937	232	3,898,989
12	3,898,707	21.2	3,898,756	75	3,898,855	33	3,899,320	215C	3,898,938	283	3,898,990
22	3,899,627	42.06	3,898,757	98	3,898,856	49	3,899,321	61	3,898,937	303.14	3,898,991
CLASS 16		CLASS 46		CLASS 67		CLASS 80		CLASS 107		CLASS 135	
72	3,898,708	25	3,898,761	62	3,898,854	65R	3,899,322	61	3,898,937	334	3,898,992
145	3,898,709	67	3,898,762	78	3,898,855	45R	3,899,323	215C	3,898,938	349R	3,898,993
CLASS 17		CLASS 47		CLASS 68		CLASS 81		CLASS 108		CLASS 136	
1G	Re.28,508	79	3,898,763	155	3,898,859	83	3,899,323	2	3,899,339	136	3,898,996

361FP	3,899,015	67A	3,899,060	229	3,899,654	301	3,899,213	326.SFM	3,899,509	481	3,899,195
CLASS 156		84PM	3,899,061	404	3,899,655	328	3,899,673	326.SM	3,899,510	CLASS 285	
73.5	3,899,377	129R	3,899,062	413	3,899,656	352	3,899,674	343.2R	3,899,512	2	3,899,196
80	3,899,378	CLASS 193		523	3,899,657	369	3,899,675	345.2	3,899,513	14	3,899,197
181	3,899,379	35A	3,899,063	536	3,899,658	390	3,899,676		3,899,514	27	3,899,198
204	3,899,380	CLASS 194				474	3,899,677	346.3	3,899,515	93	3,899,199
327	3,899,381	9T	3,899,064	48A	3,899,098	484	3,899,678		3,899,517	25	3,899,200
394	3,899,382	CLASS 195		88B	3,899,099	496	3,899,679	346.8A	3,899,516	CLASS 292	
433	3,899,383	28R	3,898,959	229	3,899,100	502	3,899,681	348.5V	3,899,519	216	3,899,201
521	3,899,384	29	3,899,394	241	3,899,101	532	3,899,682	383	3,899,520	335	3,899,202
47R	3,899,385	62	3,899,376	CLASS 221		535	3,899,683	414	3,899,522	336.3	3,899,204
CLASS 159		66R	3,899,395	6	3,899,102	536	3,899,684	429.2	3,899,521	CLASS 294	
CLASS 160		80R	3,899,396	10	3,899,103	555	3,899,685	448.2D	3,899,523	74	3,899,206
368G	3,899,016	103.5	3,899,397	197	3,899,104	568	3,899,686	448.8R	3,899,524	81R	3,899,205
CLASS 162		CLASS 196		5	3,899,105	576	3,899,687	463	3,899,525	CLASS 297	
158	3,899,387	129	3,899,420	177	3,899,106	CLASS 251		468D	3,899,526	239	3,899,207
164	3,899,388	CLASS 197		570	3,899,107	303	3,899,156	488GM	3,899,527	258	3,899,208
168	3,899,389	151	3,899,065	CLASS 223		CLASS 252		488J	3,899,528	283	3,899,209
CLASS 164		CLASS 198		51	3,899,108	8.5P	3,899,431	517	3,899,529	445	3,899,210
52	3,899,017	7R	3,899,066	CLASS 224		525	3,899,432	544F	3,899,531	451	3,899,211
82	3,899,018	16MS	3,899,067	25A	3,899,109	544F	3,899,433	544M	3,899,532	CLASS 299	
201	3,899,019	25	3,899,069	42.1F	3,899,110	564G	3,899,434	564G	3,899,533	75	3,899,212
286	3,899,020	27	3,899,068	127R	3,899,111	567.6P	3,899,435	567.6P	3,899,534	CLASS 302	
306	3,899,021	232	3,899,071	CLASS 226		570.8R	3,899,436	570.8R	3,899,535	49	3,899,214
CLASS 165		90	3,899,112	106	3,899,112	576	3,899,437	576	3,899,536	CLASS 303	
22	3,899,022	CLASS 200		182	3,899,117	591	3,899,438	591	3,899,537	21AF	3,899,215
111	3,899,023	5R	3,899,648	301.2P	3,899,118	593R	3,899,439	593R	3,899,538	21A	3,899,216
CLASS 166		61.51	3,899,649	10	3,899,113	601R	3,899,440	601R	3,899,539	21A	3,899,217
72	3,899,024	148A	3,899,650	CLASS 228		621G	3,899,441	621G	3,899,540	24C	3,899,217
117.5	3,899,025	CLASS 201		55	3,899,114	648F	3,899,442	648F	3,899,541	CLASS 305	
302	3,899,026	2.5	3,899,398	110	3,899,116	658R	3,899,443	658R	3,899,542	9	3,899,218
CLASS 172		CLASS 203		122	3,898,729	667	3,899,444	667	3,899,543	13	3,899,219
4.5	3,899,028	77	3,899,399	180	Re.28,509	668C	3,899,445	668C	3,899,544	19	3,899,220
50	3,899,029	CLASS 204		462	3,899,117	671R	3,899,446	671R	3,899,545	CLASS 307	
68	3,899,030	59R	3,899,401	467	3,899,118	834	3,899,447	834	3,899,546	117	3,899,689
CLASS 174		67	3,899,402	518	3,899,119	876R	3,899,448	876R	3,899,547	215	3,899,690
40R	3,899,629	98	3,899,403	520	3,899,120	932	3,899,449	932	3,899,548	223C	3,899,691
43	3,899,630	146	3,899,404	539	3,899,121	977	3,899,450	977	3,899,549	228	3,899,692
47	3,899,631	149	3,899,405	551	3,899,122	CLASS 254		39A	3,899,551	297	3,899,693
52R	3,899,632	159.2	3,899,406	41R	3,899,123	18	3,899,157	44R	3,899,552	304	3,899,694
CLASS 175		192	3,899,407	44CB	3,899,124	194	3,899,158	109	3,899,553	310	3,899,695
9	3,899,032	286	3,899,408	51TC	3,899,125	CLASS 259		CLASS 264		3R	3,899,221
97	3,899,033	290F	3,899,409	73	3,899,127	21	3,899,159	41	3,899,554	5R	3,899,222
CLASS 176		302	3,899,410	CLASS 233		2.5A	3,899,453	44	3,899,555	10	3,899,223
19R	3,899,390	45.19	3,899,072	32	3,899,128	2.5AT	3,899,454	65	3,899,556	121	3,899,224
37	3,899,391	77.1	3,899,073	CLASS 235		2.5B	3,899,455	81	3,899,557	174	3,899,225
68	3,899,392	343	3,899,074	61.11D	3,899,659	185	3,899,456	104	3,899,558	187.1	3,899,226
87	3,899,393	411	3,899,075	103	3,899,660	21	3,899,457	115	3,899,559	237R	3,899,227
CLASS 177		427	3,899,076	150.2	3,899,661	27BB	3,899,458	151	3,899,561	CLASS 310	
151	3,899,034	441	3,899,077	151	3,899,662	29.6HN	3,899,459	210F	3,899,562	4	3,899,696
CLASS 178		491	3,899,078	151.32	3,899,663	37N	3,899,460	211	3,899,563	8	3,899,697
5.1	3,899,633	498	3,899,079	153A	3,899,664	45.7R	3,899,461	245	3,899,564	9.5	3,899,698
6.6A	3,899,035	531	3,899,080	156	3,899,665	45.75S	3,899,462	255	3,899,565	13	3,899,699
6.8	3,899,634	CLASS 208		181	3,899,666	45.8NZ	3,899,463	296	3,899,566	37	3,899,700
7.3D	3,899,636	66	3,899,411	193	3,899,668	45.95L	3,899,464	318	3,899,567	40MM	3,899,701
59	3,899,637	138	3,899,413	CLASS 239		47CB	3,899,467	CLASS 267		67	3,899,702
69.5TV	3,899,635	CLASS 209		14	3,899,129	47CB	3,899,467	152	3,899,160	103	3,899,703
CLASS 179		17	3,899,414	67.5	3,899,469	67.5	3,899,469	235	3,899,705	183	3,899,704
2DP	3,899,638	73	3,899,081	67.6R	3,899,468	67.6R	3,899,468	CLASS 269		235	3,899,705
2A	3,899,639	102	3,899,130	75S	3,899,470	75S	3,899,470	CLASS 312		257R	3,899,228
18DA	3,899,640	123	3,899,131	80.73	3,899,471	80.73	3,899,471	319	3,899,229	CLASS 313	
18EA	3,899,641	199	3,899,132	80.78	3,899,472	80.78	3,899,472	CLASS 310		105	3,899,706
18J	3,899,642	265.39	3,899,133	92.8W	3,899,473	92.8W	3,899,473	CLASS 313		197	3,899,707
81B	3,899,643	332	3,899,134	94.3	3,899,474	94.3	3,899,474	105	3,899,706	315	3,899,708
84R	3,899,644	534	3,899,135	94.9B	3,899,477	94.9B	3,899,477	197	3,899,707	369	3,899,709
90AD	3,899,645	545	3,899,137	97.5	3,899,475	97.5	3,899,475	315	3,899,708	412	3,899,710
170NC	3,899,646	661	3,899,138	156	3,899,478	156	3,899,478	412	3,899,710	458	3,899,711
189D	3,899,647	10.6R	3,899,669	209R	3,899,480	209R	3,899,480	493	3,899,712	CLASS 317	
CLASS 180		10.65	3,899,670	211.5R	3,899,481	211.5R	3,899,481	CLASS 315		5	3,899,716
5R	3,899,036	68	3,899,139	231A	3,899,483	231A	3,899,483	34	3,899,713	18D	3,899,717
6.48	3,899,037	CLASS 241		239EP	3,899,484	239EP	3,899,484	39.51	3,899,714	20	Re.28,517
9.48	3,899,038	18DD	Re.28,514	239.3A	3,899,485	239.3A	3,899,485	39.61	3,899,715	33R	3,899,718
11	3,899,039	18PW	3,899,140	73C	3,899,172	73C	3,899,172	CLASS 317		101CC	3,899,719
27	3,899,040	240C	3,899,487	85E	3,899,173	85E	3,899,173	CLASS 318		101DH	3,899,721
65R	3,899,041	247.5EP	3,899,488	94R	3,899,174	94R	3,899,174	CLASS 319		101D	3,899,722
82C	3,899,042	248NS	3,899,489	102.1C	3,899,175	102.1C	3,899,175	CLASS 320		230	3,899,723
CLASS 181		268TR	3,899,490	130R	3,899,176	130R	3,899,176	CLASS 321		162	3,899,724
33K	3,899,043	283SY	3,899,491	134AD	3,899,177	134AD	3,899,177	CLASS 322		227	3,899,725
135	3,899,044	287P	3,899,492	136A	3,899,178	136A	3,899,178	CLASS 323		472	3,899,726
CLASS 182		287R	3,899,493	183A	3,899,179	183A	3,899,179	CLASS 324		564	3,899,727
9E	3,899,046	290HL	3,899,495	183R	3,899,180	183R	3,899,180	CLASS 325		687	3,899,728
CLASS 188		293.51	3,899,496	CLASS 274		CLASS 277		CLASS 326		696	3,899,729
1C	3,899,047	293.53	3,899,497	96R	3,899,182	96R	3,899,182	CLASS 327		61	3,899,730
16	3,899,048	293.57	3,899,498	101	3,899,183	101	3,899,183	CLASS 328		25	3,899,731
18A	3,899,049	293.57	3,899,498	CLASS 280		CLASS 280		CLASS 329		29.5	3,899,732
73.1	3,899,050	295AM	3,899,499	11.13B	3,899,184	11.13B	3,899,184	CLASS 330		34R	3,899,733
73.5	3,899,051	301	3,899,501	11.13W	3,899,186	11.13W	3,899,186	CLASS 331			
73.6	3,899,052	302SD	3,899,502	11.35R	3,899,190	11.35R	3,899,190	CLASS 332			
203	3,899,053	302H	3,899,503	43.24	3,899,187	43.24	3,899,187	CLASS 333			
218XL	3,899,054	306.8D	3,899,505	81A	3,899,188	81A	3,899,188	CLASS 334			
344	3,899,055	307D	3,899,506	150SB	3,899,191	150SB	3,899,191	CLASS 335			
CLASS 192		309.6	3,899,507	154.5R	3,899,192	154.5R	3,899,192	CLASS 336			
13R	3,899,058	310R	3,899,508	211	3,899,193	211	3,899,193	CLASS 337			
57	3,899,059	326.13	3,899,511	438R	3,899,194	438R	3,899,194	CLASS 338			

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1 : 3,898,714	3,899,092	3,899,250	3,898,770	3,899,636	3,899,497
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3,898,744	3,899,123	3,898,805	3,899,665	3,899,683	3,899,683
3,899,007	3,899,135	3,899,528	3,899,672	3,899,720	3,899,720
3,899,745	3,899,145	3,899,703	3,899,673	3,899,750	3,899,751
4 : 3,898,908	3,899,164	3,899,732	3,898,838	3,899,684	Re.28,515
3,898,951	3,899,189	3,898,839	3,898,846	3,899,742	3,898,733
3,899,136	3,899,199	3,898,840	3,898,859	3,899,743	3,898,771
3,899,268	3,899,209	3,898,863	3,898,866	3,899,783	3,898,777
3,899,662	3,899,210	3,898,878	3,898,879	3,899,808	3,899,008
5 : 3,898,925	3,899,239	3,898,965	3,898,893	3,898,816	3,899,049
3,898,696	3,899,252	3,899,011	3,898,903	3,898,913	3,899,062
3,898,704	3,899,283	3,899,065	3,898,905	3,898,953	3,899,110
3,898,705	3,899,283	3,899,115	3,898,937	3,898,913	3,899,111
3,898,713	3,899,318	3,899,116	3,898,944	3,899,052	3,899,114
3,898,722	3,899,322	3,899,208	3,898,945	3,899,058	3,899,128
3,898,766	3,899,344	3,899,225	3,898,954	3,899,592	3,899,297
3,898,768	3,899,392	3,899,300	3,898,983	3,899,592	3,899,307
3,898,778	3,899,404	3,899,314	3,898,987	Re.28,508	3,899,331
3,898,801	3,899,405	3,899,315	3,898,987	3,898,811	3,899,333
3,898,806	3,899,414	3,899,332	3,898,990	3,898,891	3,899,336
3,898,814	3,899,421	3,899,332	3,899,000	3,898,923	3,899,337
3,898,829	3,899,421	3,899,367	3,899,019	3,899,923	3,899,355
3,898,835	3,899,423	3,899,443	3,899,038	3,899,194	3,899,511
3,898,870	3,899,424	3,899,456	3,899,045	3,899,561	3,899,523
3,898,872	3,899,425	3,899,467	3,899,058	3,899,661	3,899,560
3,898,883	3,899,432	3,899,520	3,899,068	3,899,772	3,899,594
3,898,906	3,899,437	3,899,657	3,899,082	3,899,772	3,899,610
3,898,911	3,899,441	3,899,700	3,899,093	3,898,873	3,899,621
3,898,929	3,899,447	3,899,729	3,899,096	3,898,997	3,899,667
3,898,935	3,899,450	3,899,750	3,899,117	3,899,658	3,899,687
3,898,938	3,899,475	3,899,438	3,899,119	3,898,947	3,899,689
3,898,984	3,899,534	3,898,734	3,899,124	3,899,289	3,899,708
3,898,985	3,899,535	3,898,747	3,899,144	3,899,384	3,899,740
3,898,986	3,899,553	3,898,779	3,899,157	3,899,433	3,899,759
3,898,989	3,899,606	3,898,785	3,899,162	3,899,619	3,899,765
3,898,999	3,899,618	3,898,799	3,899,165	3,899,668	3,899,766
3,899,001	3,899,624	3,898,820	3,899,166	3,899,652	3,898,800
3,899,009	3,899,628	3,898,979	3,899,166	3,898,697	3,898,813
3,899,012	3,899,633	3,899,161	3,899,205	3,898,703	3,898,881
3,899,024	3,899,692	3,899,397	3,899,218	3,898,703	3,898,899
3,899,028	3,899,695	3,899,699	3,899,219	3,898,751	3,898,932
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3,899,044	3,899,741	3,898,738	3,899,230	3,898,812	3,898,864
3,899,056	3,899,775	3,898,901	3,899,248	3,898,824	3,898,875
3,899,063	3,899,778	3,898,943	3,899,258	3,898,824	3,898,888
3,899,064	3,899,794	3,898,932	3,899,275	3,898,824	3,898,892
3,899,076	3,898,760	3,899,286	3,899,276	3,898,864	3,898,915
3,899,085	3,898,798	3,899,286	3,899,302	3,898,875	3,898,995
3,899,087	3,898,988	3,899,646	3,899,305	3,898,888	3,899,046
3,899,090	3,899,043	3,898,993	3,899,395	3,898,892	
	3,899,129	3,898,736	3,899,442	3,898,915	
	3,899,191	3,898,756	3,899,552	3,898,995	
		3,898,764	3,899,632		

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3,899,059	3,899,075	3,898,876	3,898,854	3,898,707	3,898,765
3,899,091	3,899,080	3,898,898	3,898,709	3,898,708	3,898,776
3,899,120	3,899,101	3,898,926	3,898,729	3,898,721	3,898,783
3,899,146	3,899,172	3,898,941	3,898,743	3,898,743	3,898,815
3,899,151	3,899,173	3,898,955	3,898,763	3,898,842	3,898,848
3,899,182	3,899,235	3,898,968	3,898,774	3,898,848	3,898,849
3,899,202	3,899,236	3,898,992	3,898,865	3,898,867	3,898,850
3,899,211	3,899,237	3,899,042	3,898,882	3,898,875	3,898,851
3,899,226	3,899,272	3,899,054	3,898,896	3,898,876	3,898,860
3,899,269	3,899,278	3,899,099	3,898,914	3,898,877	3,898,869
3,899,374	3,899,282	3,899,100	3,898,917	3,899,031	3,898,877
3,899,426	3,899,298	3,899,125	3,898,956	3,899,041	3,898,886
3,899,444	3,899,299	3,899,130	3,898,958	3,899,072	3,898,895
3,899,462	3,899,304	3,899,150	3,898,980	3,899,078	3,898,918
3,899,466	3,899,306	3,899,167	3,899,034	3,899,084	3,898,981
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3,899,558	3,899,349	3,899,204	3,899,143	3,899,131	3,899,089
3,899,587	3,899,351	3,899,246	3,899,148	3,899,149	3,899,265
3,899,600	3,899,357	3,899,260	3,899,169	3,899,156	3,899,293
3,899,627	3,899,371	3,899,295	3,899,174	3,899,176	3,899,294
3,899,770	3,899,399	3,899,326	3,899,187	3,899,175	3,899,389
3,899,782	3,899,411	3,899,328	3,899,224	3,899,180	3,899,415
3,899,784	3,899,428	3,899,329	3,899,253	3,899,216	3,899,477
27 : 3,898,755	3,899,434	3,899,330	3,899,263	3,899,231	3,899,518
3,898,775	3,899,457	3,899,335	3,899,267	3,899,232	3,899,567
3,898,833	3,899,458	3,899,339	3,899,234	3,899,234	3,899,631
3,898,861	3,899,461	3,899,340	3,899,338	3,899,241	3,899,734
3,898,889	3,899,463	3,899,352	3,899,352	3,899,254	3,899,768
3,899,079	3,899,468	3,899,359	3,899,368	3,899,259	49 : 3,898,786
3,899,184	3,899,482	3,899,361	3,899,406	3,899,264	3,899,066
3,899,270	3,899,498	3,899,362	3,899,410	3,899,274	3,899,737
3,899,280	3,899,506	3,899,363	3,899,417	3,899,290	51 : 3,898,698
3,899,380	3,899,507	3,899,366	3,899,422	3,899,321	3,898,730
3,899,383	3,899,522	3,899,373	3,899,460	3,899,325	3,899,073
3,899,387	3,899,529	3,899,381	3,899,501	3,899,345	3,899,170
3,899,436	3,899,544	3,899,394	3,899,517	3,899,350	3,899,372
3,899,601	3,899,545	3,899,398	3,899,524	3,899,379	3,899,430
3,899,693	3,899,546	3,899,403	3,899,564	3,899,439	3,899,671
3,899,731	3,899,563	3,899,408	3,899,589	3,899,452	3,899,739
29 : 3,898,910	3,899,573	3,899,409	3,899,611	3,899,471	3,899,747
3,899,155	3,899,583	3,899,453	3,899,616	3,899,484	53 : 3,898,711
3,899,334	3,899,588	3,899,479	3,899,656	3,899,505	3,898,904
3,899,388	3,899,593	3,899,491	3,899,680	3,899,516	3,898,936
3,899,551	3,899,597	3,899,503	3,899,697	3,899,519	3,898,974
3,899,607	3,899,602	3,899,541	3,899,716	3,899,527	3,899,070
3,899,638	3,899,635	3,899,554	3,899,727	3,899,538	3,899,109
30 : 3,899,071	3,899,641	3,899,568	3,899,762	3,899,576	3,899,158
3,899,579	3,899,649	3,899,598	3,899,740	3,899,580	3,899,168
31 : 3,898,757	3,899,666	3,899,603	3,898,880	3,899,634	3,899,323
3,899,095	3,899,678	3,899,622	3,899,032	3,899,637	3,899,419
3,899,179	3,899,702	3,899,629	3,899,193	3,899,651	3,899,609
32 : 3,899,418	3,899,721	3,899,647	3,899,279	3,899,676	3,899,502
33 : 3,898,971	3,899,752	3,899,669	3,899,413	3,899,725	54 : 3,898,699
3,899,002	3,899,754	3,899,682	3,899,537	3,899,726	3,898,742
3,899,195	3,899,787	3,899,694	3,899,542	3,899,733	3,898,752
3,899,675	3,899,791	3,899,711	3,898,759	3,899,763	3,898,753
34 : Re.28,509	3,899,681	3,899,712	3,898,809	3,899,764	3,898,758
3,898,720	3,899,681	3,899,713	3,898,858	3,899,767	3,899,036
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3,898,828	3,898,746	3,899,776	3,899,214	3,899,273	3,899,061
3,898,834	3,898,784	3,899,779	3,899,273	3,899,569	3,899,074
3,898,871	3,898,819	3,898,710	3,899,644	42 : Re.28,511	3,899,177
3,898,919	3,898,820	3,898,725	3,899,644	47 : 3,898,739	3,899,449
3,898,959	3,898,826	3,898,970	Re.28,517	3,899,296	3,899,512
3,899,005	3,898,836	3,899,026	3,898,700	48 : 3,898,718	3,899,570
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PATENTS

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August 19, 1975

Volume 937

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,685,536, Ransburg and Starkey, METHOD FOR ELECTROSTATICALLY COATING ARTICLES; 2,794,417, same, APPARATUS FOR ELECTROSTATICALLY COATING ARTICLES; 2,693,893, W. W. Crouse, METHOD AND APPARATUS FOR ELECTROSTATIC COATING; 2,693,894, E. M. Ransburg, METHOD AND APPARATUS FOR ELECTROSTATICALLY COATING, filed Mar. 27, 1974, D.C.N.J. (Newark), Doc. C-74-435, *Ransburg Corporation v. Ducane Heating Corporation*. Stipulation of dismissal of action, Mar. 17, 1975.

2,794,417. (See 2,685,536.)

2,693,893. (See 2,685,536.)

2,693,894. (See 2,685,536.)

2,697,641, Simon and Thomas, PACKAGING METHODS, filed Feb. 13, 1975, D.C., N.D. Ill. (Chicago), Doc. 75c492, *Instapak Corporation v. Miller Fluid Power Corp.* Same, filed Mar. 10, 1975, D.C., N.D. Ill. (Chicago), Doc. 75c0770, *Instapak Corporation v. Haeger Potteries, Inc.*

2,964,879, D. L. Johnson, WOOD FLAKING AND SURFACING MACHINE, filed Mar. 21, 1975, D.C., W.D. Wash. (Seattle), Doc. C75-58T, *Donald L. Johnson v. Kockum Industries, Inc. et al.*

3,275,316, G. V. Cleary, Jr., INSERT FOR NEWSPAPERS, filed Apr. 25, 1975, D.C., S.D.N.Y., Doc. 75-C-1985, *ITT Community Development Corp. v. Free Standing Stuffer Inc.*

3,349,426, R. S. Haydock, HOODED CASTER WHEEL ASSEMBLY, filed Apr. 23, 1975, D.C., N.D. Ill. (Chicago), Doc. 75c1288, *Raymond Haydock, Jr. and Sandra Haydock Neuman v. Slidematic Products Co.*

3,358,793, Hollnagel and Hollnagel, COMPACT FLOATING DISC BRAKE, filed Apr. 14, 1975, D.C. Minn. (Minneapolis), Doc. 4-75-C 167, *Kelsey-Hayes Company v. Tol-O-Matic, Inc.* Plaintiff's dismissal of case, Apr. 21, 1975.

3,406,033, C. D. Burgess, SEAMING TAPE, filed Sept. 11, 1968, D.C. Del. (Wilmington), Doc. 3608, *Montgomery Mills Inc. and Consolidated Foods Corp. v. Giffen-Burgess Corp., Giffen Industries, Inc. and Giffen Corp.* It is hereby stipulated that all of the above action and claims are dismissed with prejudice against the plaintiffs as to the complaint and with prejudice against the defendants as to the counterclaims, Apr. 18, 1975.

3,406,245, C. D. Burgess, SADIRON; 3,415,703, same, PROCESS FOR FACE-SEAMING CARPETING, filed Dec. 16, 1968, D.C. Del. (Wilmington), Doc. 3644, *Montgomery Mills Inc. and Consolidated Foods v. Giffen-Burgess Corp.* It is hereby stipulated that all of the above action and claims are dismissed with prejudice against the plaintiffs as to the complaint and with prejudice against the defendant as to the counterclaims, Apr. 18, 1975.

3,415,703. (See 3,406,245.)

3,429,022, E. A. Oster, SCRAP RECOVERY PROCESS, filed May 9, 1972, D.C., E.D. Mich. (Detroit), Doc. 38273, *Earl A. Oster v. Grant-Southern Iron & Metal Company*. Complaints are hereby dismissed with prejudice without adjudicating any issues, Apr. 17, 1975. Same, filed May 9, 1972, D.C., E.D. Mich. (Detroit), Doc. 38274, *Earl A. Oster v. Sam Allen & Son, Inc.* Complaints are hereby dismissed with prejudice without adjudicating any issues, Apr. 17, 1975.

3,444,214, P. Buecheler, 1-AMINO-4-ANILINO-2-NITRO-ANTHRAQUINONES AND DERIVATIVES, filed Dec. 17, 1974, U.S. Court of Claims (District of Columbia), Doc. 343-72, *Weather Engineering Corporation of America and Weather Engineering Corporation of Canada, Ltd. v. The United States and The University of Wyoming*. Order that the motion for summary judgment by the third-party defendant, University of Wyoming, be granted and the said third-party is dismissed as a party to this case, Mar. 21, 1975.

3,485,234, R. C. Stevens, TUBULAR PRODUCTS AND METHOD OF MAKING SAME, filed Dec. 9, 1971, D.C., S.D. Ind. (Indianapolis), Doc. IP71-C-892, *Cordis Corporation v. Cook Incorporated*. Pursuant to Rule 41(a)(1) and (c) of FRCP, the above cause is dismissed with prejudice as to plaintiff's claims in complaint and with prejudice as to defendant's claims in counterclaims, Apr. 17, 1975.

3,506,385, Weber and Cressman, PHOTOFLASH LAMP; 3,598,984, S. L. Slomski, PHOTOFLASH LAMP ARRAY; 3,598,985, Harnden and Kornrumpf, CONSTRUCTION OF DISPOSABLE PHOTOFLASH LAMP ARRAY; 3,600,332, D. R. Schindler, PHOTOFLASH LAMP ARRAY WITH REFLECTOR-LAMP MODULE; 3,725,693, Anderson, Hanson, Lecrone and Landgraf, LINEAR PHOTOFLASH LAMP ARRAY AND REFLECTOR UNIT THEREFOR, filed Apr. 4, 1975, D.C., N.D. Ill. (Chicago), Doc. 75c1083, *General Electric Company v. GTE Sylvania Inc.*

3,512,594, Grusin and Logan, BATHROOM SCALE, filed Apr. 29, 1975, D.C., N.D. Ill. (Chicago), Doc. 75c1385, *Gerald M. Grusin et al. v. Terrillon et al.*

3,516,692, D. E. Albrecht, BRANCH PIPE CONNECTION, filed Apr. 3, 1975, D.C., N.D. Tex. (Dallas), Doc. CA3-75-0400-C, *Allied Piping Products Company, Inc. v. Interstate Fittings, Inc.*

3,598,984. (See 3,506,385.)

3,598,985. (See 3,506,385.)

3,600,332. (See 3,506,385.)

3,610,512, H. J. Hermalin, HAND-HELD FOOD HOLDER, filed Apr. 17, 1975, D.C., C.D. Calif. (Los Angeles), Doc. CV-75-1329, *Harry J. Hermalin et al. v. Franchise Realty Interstate Corp. et al.*

3,617,066, King and Burton, FOLDABLE AND TRANSPORTABLE HOME; 3,738,678, same, FLOOR FRAME STRUCTURE; D. 225,216, same, MODULAR HOME, filed Apr. 15, 1975, D.C., N.D. Ind. (South Bend), Doc. C-75-79, *Burkin Homes Corporation v. Chalet Homes, Inc. and Fred Tenorio*.

3,678,151, Horonick and Munschy, BIOLOGICAL STAINING METHOD, filed Dec. 20, 1974, D.C.N.J. (Newark), Doc. 74-1992, *Gugol Science Corp. v. Lemmon Pharmacal Company*. Stipulation and order of dismissal of action, Apr. 22, 1975.

3,685,128, Sharp and Hull, MACHINE AND METHOD FOR REMOVING ENGINES FROM VEHICLES, filed Apr. 10, 1975, D.C., N.D. Tex. (Dallas), Doc. CA3-75-0438-C, *Al-Jon Incorporated v. Mobile Auto Crushers Corporation of America*.

3,700,792, Harrison III, Honey and Tajchman, COMPUTER ANIMATION GENERATING SYSTEM, filed Aug. 20, 1974, D.C., S.D.N.Y., Doc. 74-C-3603, *Computer Image Corp. v. Rutt Instruments Corp. and Rutt/Etra Video Systems, Inc.* Stipulation and order of dismissal dismissing complaint as to defendant and defendant's counterclaims without prejudice, Mar. 25, 1975.

3,725,693. (See 3,506,385.)

3,732,633, Margolis and Saunders, SLIDING PANEL DISPLAY, filed Sept. 17, 1974, D.C.N.J. (Trenton), Doc. 74-1453, *Ply-Gem Industries, Inc. v. Hunterdon Home Center Inc. and Robert Fischer*. Consent judgment for permanent injunction, etc. without costs, Apr. 22, 1975.

3,733,230, A. R. Prittle, LABEL INSPECTION SLITTER/REWINDER, filed Apr. 25, 1975, D.C. E.D. Mo. (St. Louis), Doc. 75-391C(4), *Arpeco Engineering Limited v. Allied Gear and Machine Company*.

3,738,678. (See 3,617,066.)

3,835,292, Walter, Kronheim and Levine, STEAM CURLING IRON, filed Apr. 11, 1975, D.C., S.D.N.Y., Doc. 75-C-1773, *Clairol Incorporated v. North American Phillips Corporation*.

3,841,932, Forler and Heins, METHOD AND APPARATUS FOR REPAIRING CRACKS IN WINDSHIELDS, filed Feb. 21, 1975, D.C., N.D. Tex. (Dallas), Doc. CA3-75-208-D, *Bevan Enterprises, Inc. v. The Glass Doctor, Inc., J. F. Harmon and Robert J. Owens*.

D. 225,216. (See 3,617,066.)

ERRATA

In the notices of Defensive Publications appearing on pages 9-12 in the Official Gazette of June 3, 1975, the names of the assignees were omitted and should be added as indicated below:

- T935,001. E. I. du Pont de Nemours and Company, Wilmington, Del.
- T935,002. Pacific Lighting Service Co., Los Angeles, Calif.
- T935,003. International Business Machines Corporation, Armonk, N.Y.
- T935,004. International Business Machines Corporation, Armonk, N.Y.
- T935,005. International Business Machines Corporation, Armonk, N.Y.
- T935,006. E. I. du Pont de Nemours and Company, Wilmington, Del.

In the notices of Defensive Publications appearing on pages 7 and 8 in the Official Gazette of July 1, 1975, the following names of assignees were omitted and should be added:

- T936,001. E. I. du Pont de Nemours and Company, Wilmington, Del.
- T936,002. E. I. du Pont de Nemours and Company, Wilmington, Del.
- T936,005. Du Pont of Canada Limited, Quebec, Canada

Certificates of Correction for the Week of Aug. 19, 1975

P.P. 3,727	3,856,935	3,874,494	3,881,863
D. 234,478	3,857,807	3,874,541	3,882,083
D. 234,652	3,858,520	3,875,195	3,882,459
D. 234,771	3,858,670	3,875,770	3,882,738
3,530,192	3,858,756	3,875,856	3,882,831
3,634,428	3,859,023	3,875,884	3,883,002
3,701,554	3,860,319	3,876,422	3,883,546
3,751,138	3,862,239	3,876,980	3,883,596
3,788,206	3,862,799	3,877,103	3,883,657
3,806,906	3,864,177	3,877,129	3,883,672
3,808,898	3,864,745	3,877,133	3,884,349
3,815,148	3,864,875	3,877,155	3,884,359
3,817,239	3,865,098	3,877,915	3,884,453
3,824,969	3,865,162	3,877,939	3,884,905
3,831,927	3,865,704	3,877,953	3,885,052
3,832,425	3,865,784	3,878,270	3,885,168
3,833,512	3,866,638	3,879,334	3,885,407
3,841,597	3,867,120	3,879,362	3,885,742
3,843,552	3,867,574	3,879,363	3,885,808
3,845,528	3,868,258	3,879,525	3,886,403
3,846,152	3,868,332	3,879,625	3,886,495
3,847,911	3,869,001	3,879,717	3,886,998
3,847,921	3,870,212	3,880,134	3,887,643
3,848,039	3,870,733	3,880,156	3,887,763
3,850,841	3,871,184	3,880,236	3,887,800
3,852,140	3,871,904	3,880,753	3,887,992
3,852,237	3,872,364	3,880,781	3,888,444
3,852,488	3,872,400	3,880,889	3,888,551
3,853,943	3,872,830	3,881,143	3,888,989
3,855,197	3,873,335	3,881,474	3,889,027
3,855,235	3,873,354	3,881,505	3,889,033
3,855,335	3,873,404	3,881,641	
3,856,914	3,874,377	3,881,835	

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF JULY 19, 1975

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	10-23-74
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director..... Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	10-18-74
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director..... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	12-17-74
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director..... Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	10-23-74
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director.... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	11-7-74
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director.... Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	12-4-74
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director..... Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	7-3-75
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director..... Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	10-15-74
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director.. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	12-26-74
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-2-74
DESIGNS, GROUP 290—C. D. QUARFORTH, Director..... Industrial Arts; Household, Personal and Fine Arts.	5-13-74
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—D. J. STOCKING, Director..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	1-2-75
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director..... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	1-2-75
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—G. M. FORLENZA, Director.. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	1-2-75
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gear- ing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	11-6-74
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director..... Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	1-8-75

Expiration of patents: The patents within the range of numbers indicated below expire during August 1975, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,845,625 to 2,849,713 inclusive
Plant Patents..... Numbers 1,740 to 1,745 inclusive

REISSUES

AUGUST 19, 1975

Matter enclosed in heavy brackets [] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

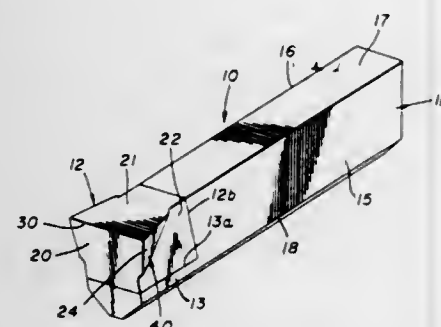
Re. 28,518

CUTOFF TOOL HAVING IMPROVED CUTTING TIP
William B. Stein, Barberton, Ohio, assignor to The Warner & Swasey Company, Cleveland, Ohio
Original No. 3,660,877, dated May 9, 1972, Ser. No. 30,682, Apr. 22, 1970. Application for reissue Dec. 5, 1974, Ser. No. 529,612

Int. Cl.² B26D 1/00

U.S. Cl. 29—95 R

8 Claims



1. An improved cutting tip for use on cutting tools, comprising:
 - A. at least one hardened tip adapted to be supported on said cutting tool and having an integral enlarged transverse cutting portion extending transversely across said cutting tool; and
 - B. said cutting portion being
 1. integral with said hardened body and
 2. having opposed side surfaces that are respectively disposed at equal compound angles with respect to the remaining opposed side surfaces of said hardened body portion and
 3. projecting transversely beyond said remaining opposed side surfaces
 - a. whereby said compound surfaces provide side and back clearance areas for said cutting edge in a localized area of said hardened body [];
 - C. the plane of said side surfaces having compound angles being transversely offset with respect to the plane of said remaining side surfaces.

Re. 28,519

CIRCULAR KNITTING MACHINE WITH PATTERN WHEELS

Lester Mishcon, New York, N.Y., assignor to The Singer Company, New York, N.Y.
Original No. 3,513,666, dated May 26, 1970, Ser. No. 670,097, Sept. 25, 1967. Continuation of Ser. No. 99,465, Dec. 18, 1970, abandoned. Application for reissue July 19, 1973, Ser. No. 380,633

Int. Cl.² D04B 15/76

U.S. Cl. 66—50 A

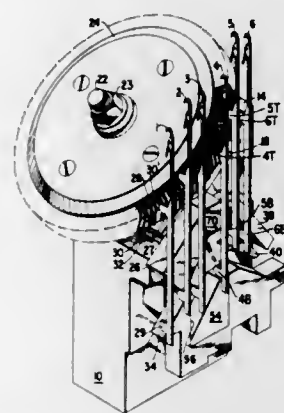
11 Claims

9. A circular knitting machine of the type having a cylinder provided with peripheral slots for accommodating latch type knitting instrumentalities, and at least three relatively rotatable serially adjacent cam sections cooperative with said cylinder, said adjacent cam sections being provided with respective pattern wheels, each of said pattern wheels being of the type having its plane of rotation at an angle with respect to the direction of relative cylinder travel and being provided with skewed jack accommodating slots for use in raising certain of said instrumentalities of said cylinder to various predetermined heights, said machines being characterized in that:

- a. the total space requirements of said three serially adjacent cam sections peripherally of the cylinder is not substantially greater than that occupied by the needle butt contacting

surfaces of the raise cams, the pattern wheels and the stitch cams which act to change the elevation of the needles of said three adjacent cam sections.

- b. at least each of some of said knitting instrumentalities are provided with first and second butts,
- c. said adjacent cam sections with pattern wheels are further provided with a low raise cam adapted to raise the first butts of knitting instrumentalities to a pattern wheel introduction elevation in which the second butts thereof are positioned for accommodation into mesh with the pattern wheel slots, a stitch cam to lower knitting instrumentalities to a stitch making position, a placer cam between the raise and stitch cam underlying an effective portion of the pattern wheel of the cam section, a wing cam to lower knitting instrumentalities other than the knitting instrumentalities raised by the pattern wheel from said pattern wheel introduction elevation to a well position, and a guard cam disposed to restrict the upward movement of knitting instrumentalities from the raise cam and placer cam, the pattern wheels of said



adjacent cam sections being closely nested with a non-working portion of the pattern wheel of one cam section overlying the plane of a working portion of the stitch cam of the adjacent cam section encountered by the knitting instrumentalities before entering said one cam section.

- d. each of the raise, placer and stitch cams being disposed for cooperation only with said first butt of each of those knitting instrumentalities with first and second butts, and each of said pattern wheels being disposed for cooperation only with said second butt of each of said knitting instrumentalities with first and second butts, said raise cam being effective to raise said knitting instrumentalities less than one third of the maximum total stroke capable of being imparted to said needles by the combined effect of the raise cam and the pattern wheel, the raise and stitch cams in each cam section being spaced apart a distance not substantially greater than that required to have interposed between working portions thereof the working edge portion of the overlying pattern wheel.

Re. 28,520

SAFETY VALVE ASSEMBLY FOR CONTROLLING CLUTCH AND BRAKE IN POWER PRESS OR THE LIKE

Kenneth R. Mahorney, deceased, by Ardith Mahorney, legal representative, Bartlett, Ill., assignors to Ross Operating Valve Company, Detroit, Mich.

Original No. 3,670,767, dated June 20, 1972, Ser. No. 122,008, Mar. 8, 1971. Application for reissue Sept. 14, 1973, Ser. No. 397,306

Int. Cl. F16k 11/10

U.S. Cl. 137—596

14 Claims

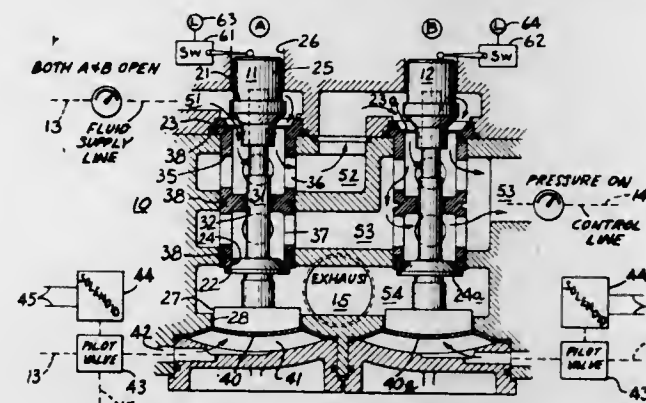
1. A safety valve assembly for supplying pressurized fluid from a supply line to a clutch and brake control line to ener-

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U.S. PATENT AND TRADEMARK OFFICE

759

gize the clutch and de-energize the brake and for alternatively exhausting fluid from the control line to an exhaust line to de-energize the clutch and energize the brake which comprises means defining a fluid supply line chamber and an intermediate chamber as well as a control line chamber and an exhaust line chamber, a first valve having a movable valve member cooperating with first and second seats, the first seat being normally closed and the second seat being normally open and having an actuator for activating such valve member, a second valve having a movable valve member cooperating with third and fourth seats, the third seat being normally closed and the fourth seat being normally open and having an actuator for activating such valve member, the first seat being interposed between the supply line chamber and the intermediate chamber and the third seat being interposed between the intermedi-



ate chamber and the control line chamber so that such seats are effectively in series with one another with pressurized fluid being passed successively through the first and third seats from the supply line chamber to the control line chamber when the valve members are simultaneously activated by the actuators, the second and fourth seats being both interposed between the control line chamber and the exhaust line chamber with such seats being effectively in parallel with one another so that in the event either one of the movable valve members, upon deactuation, sticks in its activated position (a) flow of pressurized fluid from the supply line will be cut off and (b) [] direct access [] a direct path for exhausted fluid will be provided from the control line to the exhaust line which bypasses said first and third seats for insuring that the clutch and brake are in a safe condition.

Re. 28,521

CONTAINER CONSTRUCTION

Wilhelm Hammes, Much, Germany, assignor to Mauser Kommanditgesellschaft, Cologne, Germany

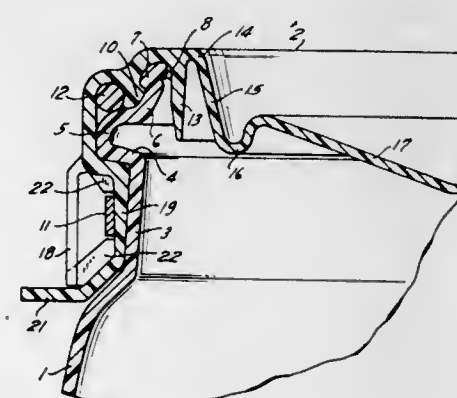
Original No. 3,664,544, dated May 23, 1972, Ser. No. 116,797, Feb. 19, 1971. Application for reissue Feb. 25, 1974, Ser. No. 445,486

Claims priority, application Germany, Feb. 21, 1970, 2008111

Int. Cl. B65d 41/16, 45/32

U.S. Cl. 220—306

30 Claims



1. A container, comprising a barrel of synthetic plastic material including a substantially cylindrical main body por-

tion having a longitudinal axis, and a head portion at one axial end and of one piece with said main body portion, said head portion comprising a circumferential wall including a first annular section substantially parallel with said axis, a second annular section inclined inwardly towards said axis at a greater angle and a third annular section projecting axially from said second section and inclined inwardly towards said axis at a lesser angle, said third section having an outer free edge provided with a radially outwardly projecting circumferential bead and an inner free edge bounding an opening communicating with the interior of said barrel; a cover of synthetic plastic material overlying said head portion and comprising a one-piece annular rim including an outer annular rim portion exteriorly surrounding said head portion and having a circumferential rib abutting said second and third sections and engaging beneath said bead, an inner annular rim portion projecting into said opening proximal to said inner free edge, and a transverse portion of one piece with said inner annular rim portion and spanning said opening; a sealing element sealingly confined intermediate and in abutment with said second annular section, said outer rim portion and said rib; and at least one strap element encircling said outer rim portion and tightly urging the same into contact with said first annular section.

Re. 28,522

APPARATUS FOR A RIGID ROAD WHICH HAS A TEXTURED SURFACE

David Payne Maynard, Slough, and John Weaver, Beaconsfield, both of England, assignors to The Cement and Concrete Association Terminal House, London, England

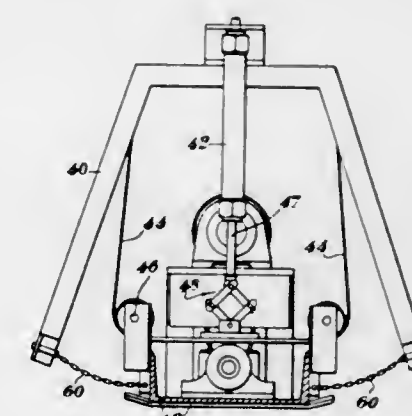
Original No. 3,683,762, dated Aug. 15, 1972, Ser. No. 63,867, Aug. 14, 1970. Application for reissue Apr. 12, 1974, Ser. No. 460,476

Claims priority, application United Kingdom, Aug. 15, 1969, 40, 840/69

Int. Cl. E01c 23/16

U.S. Cl. 404—93

14 Claims



1. Apparatus for making a textured-surface rigid road of concrete or the like, comprising a gantry adapted to span at least a portion of a newly laid plastic concrete road, means supporting said gantry on a subgrade, a frame movably supported on said gantry, a profile beam having a groove-forming working surface suspended by tension springs from said frame, said groove-forming surface having rib means extending in the direction of movement of said frame and suspended profile beam, piston means between said frame and said profile beam for raising and lowering said beam relative to the frame, a flexible connection between said piston means and said profile beam, and vibrator means directly connected to said profile beam, whereby upon actuation of said vibrator means the profile beam fluidizes the underlying concrete and molds at least one groove therein while being floatingly supported by said tension springs.

Re. 28,523

HIGH STRENGTH ALLOY STEEL COMPOSITIONS AND PROCESS OF PRODUCING HIGH STRENGTH STEEL INCLUDING HOT-COLD WORKING

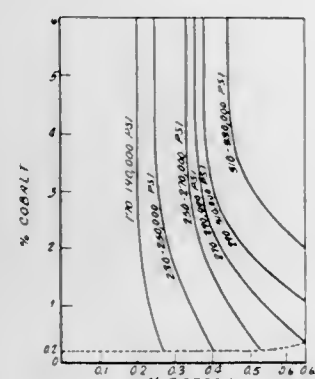
Morse Hill, Berea, and Stephen J. Matas, Independence, both of Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio

Original No. 3,366,471, dated Jan. 30, 1968, Ser. No. 323,026, Nov. 12, 1963. Continuation-in-part of Ser. No. 169,076, Jan. 26, 1962, abandoned. Application for reissue Aug. 28, 1968, Ser. No. 771,681

Int. Cl.² C22C 38/08, 38/52

U.S. Cl. 75—123 K

19 Claims



1. An alloy steel consisting essentially of about: 3 to 12% of metal of the group consisting of nickel and copper, copper when present not exceeding one-half the nickel content, 0.2 to 7% cobalt, up to 2% each of manganese, chromium and aluminum, up to 1.5% silicon, up to 3.5% molybdenum, up to 0.5% vanadium, up to 0.4% columbium, up to 0.25% tantalum, up to 0.75% tungsten, up to 0.1% boron, [up] 0.1 to 0.3% carbon, and the balance substantially all iron.

Re. 28,524

APPARATUS FOR TREATING A LIQUID WITH A GAS, NOTABLY FOR DEODORIZING EDIBLE OIL

Robert Brebant, Sainte-Mande, France, assignor to Chemetron Corporation, Chicago, Ill.

Original No. 3,517,732, dated June 30, 1970, Ser. No. 692,921, Dec. 22, 1967. Application for reissue June 8, 1972, Ser. No. 150,856

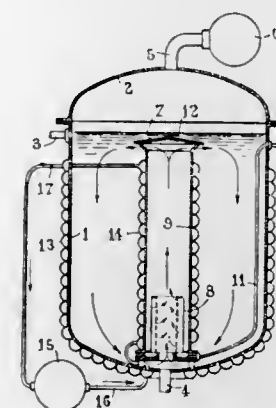
Int. Cl. B01d 3/00, 3/10

U.S. Cl. 202—175

9 Claims

1. An apparatus for processing a liquid by means of a gas, notably for deodorizing edible oil, comprising a vessel for containing said liquid, said vessel being connected to a source of vacuum, pipe line means for introducing liquid into said vessel to fill said vessel to a selected liquid level and means for discharging processed liquid from said vessel, at least one vertically extending chimney open at its bottom and top ends and centrally positioned in said vessel and extending upwardly from near the bottom of said vessel to above said liquid level, said chimney having a cross sectional area which is a minor part of the cross sectional area of said vessel, said chimney comprising a hollow wall, said hollow wall formed by a plurality of coaxial turns of coiled tubing, said tubing having a circular cross section and said turns in abutting relation to one another, means connected to said tubing at the bottom of said chimney

for supplying to and circulating in said hollow wall to said top of said chimney a fluid at a temperature other than that of said liquid whereby said hollow wall constitutes heat transfer means, at least one steam injector immersed in said liquid and discharging in said chimney to produce upward flow of liquid in said chimney, said liquid being drawn into the bottom end of said chimney and discharged from the top end of said chimney



ney, and deflecting baffle means spaced above the top end of said chimney, said baffle means being of a diameter substantially greater than said chimney and having a peripheral surface portion which extends radially outwardly beyond said chimney and is directed outwardly and downwardly to direct outwardly and downwardly liquid discharged from the top end of said chimney.

Re. 28,525

PROCESS FOR HYDROLYZING NITRILES

Janice L. Greene, Warrensville Heights, and Murrell Godfrey, Cleveland, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Original No. 3,381,034, dated Apr. 30, 1968, Ser. No. 468,546, June 30, 1965. Application for reissue Apr. 26, 1974, Ser. No. 464,650

Int. Cl. C07c 103/08

U.S. Cl. 260—557 R

12 Claims

2. The process for hydrolyzing a nitrile selected from the group consisting of acetonitrile, propionitrile, butyronitrile, acrylonitrile, methacrylonitrile, crotononitrile, maleic dinitrile, glutaronitrile, succinonitrile, adiponitrile, and cyclobutane-1,2-dicyanide [and benzonitrile] comprising contacting said nitrile with water at a pH of from about 1 to about 12.5 in the presence of a copper ion, said copper ion being at least partially soluble in water, the nitrile or in both water and nitrile and said copper ion being composed of copper in a combined valence state of $\text{Cu}^0 + \text{Cu}^+$, $\text{Cu}^0 + \text{Cu}^{++}$, $\text{Cu}^+ + \text{Cu}^{++}$, or $\text{Cu}^0 + \text{Cu}^+ + \text{Cu}^{++}$ at a temperature of from about 25°C to about 220°C at from about atmospheric pressure up to about 2000 psig.

PLANT PATENTS

AUGUST 19, 1975

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,765

KALANCHOE PLANT

Lawrence T. Irwin, Amarillo, Tex., assignor to J and L Plants, Incorporated, Canyon, Tex.

Filed May 13, 1974, Ser. No. 469,699

Int. Cl. A01h 5/00

U.S. Cl. Plt.—68

1 Claim

1. A new and distinct variety of kalanchoe plant, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of an extremely dwarf habit of growth as compared with the normal growth habit of its parent "Exotic Gold" and other kalanchoe varieties; a much more self-branching habit; an earlier blooming habit ranging from about 7 to 10 days earlier than "Exotic Gold"; and a foliage and flower color basically similar to those of "Exotic Gold."

temperature than prior varieties to produce large luxury-type plants for the commercial trade.

3,767

CARNATION PLANT

Takeshi Yoichi Yonemoto, 1328 Henderson Ave., Santa Clara, Calif. 95051

Filed Aug. 12, 1974, Ser. No. 497,127

Int. Cl. A01h 5/00

U.S. Cl. Plt.—70

1. A new and distinct variety of carnation plant, substantially as herein shown and described, characterized by the deep purple color and narrow white edging of the outer petals of its flowers, by the miniature size of the flowers, and by its profusely blooming perennial growth habit.

3,768

CARNATION PLANT

Takeshi Yoichi Yonemoto, 1328 Henderson Ave., Santa Clara, Calif. 95051

Filed Aug. 12, 1974, Ser. No. 497,128

Int. Cl. A01h 5/00

U.S. Cl. Plt.—70

1 Claim

1. The new and distinct variety of carnation plant, substantially as herein shown and described, characterized by its large orange-red blossoms and its profuse and continuous production as a greenhouse plant.

PATENTS

GRANTED AUGUST 19, 1975

ERRATA

For CLASS	See PATENT NO.
228-107.....	3,899,825
351-113.....	3,899,840
197-127.....	3,900,098
197-159.....	3,900,099
285-004.....	3,900,223
250-199.....	3,900,404
250-468.....	3,900,405
427-038.....	3,900,636
427-034.....	3,900,639
427-055.....	3,900,646
427-248.....	3,900,660
427-386.....	3,900,682
357-007.....	3,900,771
273-102.....	3,900,778
325-396.....	3,900,798
335-052.....	3,900,820
329-122.....	3,900,821
330-149.....	3,900,823
346-001.....	3,900,866
343-006.5 LC.....	3,900,867
343-073.....	3,900,868
343-077.....	3,990,869
343-007 A.....	3,990,870
343-008.....	3,990,871
343-009.....	3,990,872
343-012 R.....	3,900,873
343-016.....	3,900,874
343-007.....	3,900,875
343-105 R.....	3,900,876
343-108.....	3,900,877
343-112.....	3,900,878
343-113.....	3,900,879
343-228.....	3,900,880

PATENTS

GRANTED AUGUST 19, 1975

GENERAL AND MECHANICAL

3,899,796

METACARPOPHALANGEAL JOINT

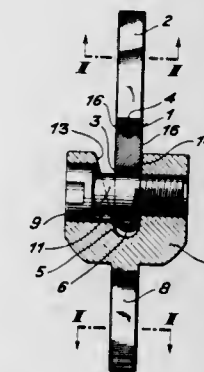
Andre Bahler; Norbert Gschwend, and Heinrich Scheier, all of Zurich, Switzerland, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

Filed June 27, 1974, Ser. No. 483,528

Claims priority, application Switzerland, July 19, 1973, 10544/73

Int. Cl.² A61F 1/24

U.S. Cl. 3—1.91



1. A hinging metacarpophalangeal joint comprising a first joint part having a pair of opposed side walls defining a slot-like aperture therein and an intramedullary stem extending therefrom;
- a pivot pin secured in said first joint part across said aperture from one side wall to the other side wall;
- a second joint part pivotally mounted on said pivot pin for pivoting in a plane transverse to said pivot pin through an approximately right angle, said second joint part having an intramedullary stem extending therefrom and a pair of opposite sides each facing a respective one of said side walls of said first joint part, said sides and said side walls being shaped to permit pivoting of said second joint part towards only one of said side walls in a first direction transverse to said plane with said stem of said second joint part extended in a direction axial of said stem of said first joint part.

3,899,797

INFLATABLE STRUCTURAL COMPONENT

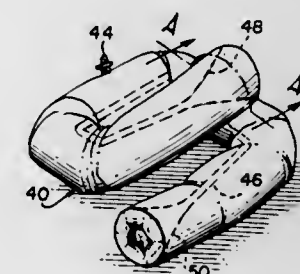
Dennis Gunst, Los Angeles, Calif., assignor to Morris Schwartzman, Los Angeles, Calif., a part interest

Continuation-in-part of Ser. No. 349,404, April 9, 1973, abandoned. This application July 15, 1974, Ser. No. 488,471

Int. Cl.² A47C 27/08

U.S. Cl. 5—350

12 Claims



1. An inflatable structural component comprising:
 - a. a tubular envelope; and
 - b. a flexible tensile member within said envelope, two spaced points along said tensile member being secured to the ends of said envelope, the length of said tensile mem-

ber between said spaced points being shorter than the distance along said envelope between said ends, whereby the longitudinal axis of said tubular envelope may be made to assume and maintain a bent configuration.

3,899,798

METHOD FOR MANUFACTURING INSOLE FOR A SHOE

Sueo Kihara, Osaka, Japan, assignor to Kureha Kagaku Kogyo K.K. and Kihara Sangyo Kabushiki Kaisha, both of Tokyo, Japan

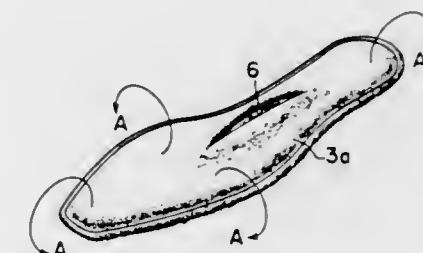
Filed May 24, 1974, Ser. No. 473,199

Claims priority, application Japan, June 8, 1973, 48-65240

Int. Cl. A43d

U.S. Cl. 12—146 B

5 Claims



1. Method for manufacturing insole for a shoe comprising in sequential combination: formation of a material sheet from a base layer and one or more sets of surface layers of extensible nature by superimposing said layers on each other; formation of material insole by application of thermal fusion cutting to said material sheet, said material insole being patterned after a given standard foot style; formation of a slit in the uppermost surface layer of said material insole; overturning of said uppermost surface layer utilizing said slit formed in said uppermost surface layer; closing of said slit by application of thermal fusion embossing; and formation of a decorative pattern on said uppermost surface layer of said material insole by application of thermal fusion embossing.

3,899,799

PIT MOUNTED BRUSH ASSEMBLY

Daniel C. Hanna, 1133 S.W. Rivington Dr., Portland, Oreg. 97201

Filed Jan. 2, 1974, Ser. No. 429,931

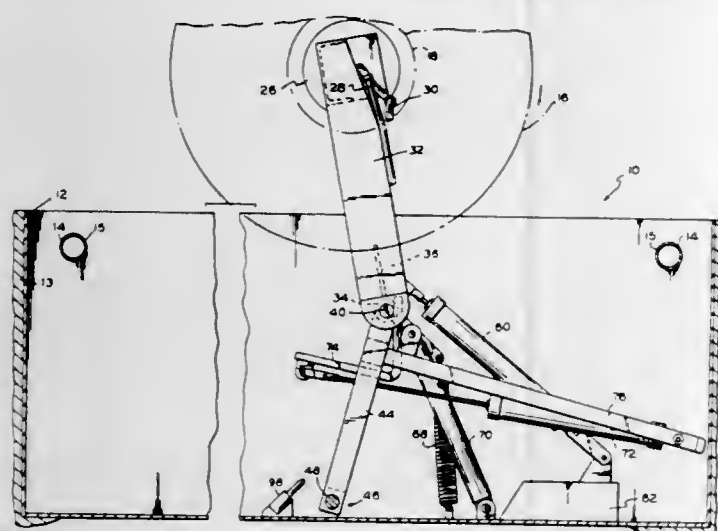
Int. Cl.² B60S 3/06

U.S. Cl. 15—21 D

10 Claims

1. In a brushing device, a brush, carrier means normally holding the brush in a path of a car to be washed and permitting the brush to be moved by the car to an edge of the path, and control means actuated by the car when the car reaches a predetermined position for moving the carrier means to cause the brush to move forwardly with the car to prolong contact of the brush and the car, means for moving the carrier means to move the brush out

of contact with the car after the front end portion of the car has passed the brush and for moving the carrier means



to move the brush back into contact with the car as the rear end portion comes abreast of the brush.

3,899,800

WINDSHIELD WIPER BLADE

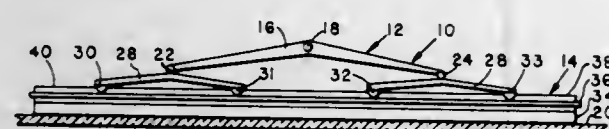
Robert O. Wittwer, Portage, and William H. Harbison, Merrillville, both of Ind., assignors to The Anderson Company, Gary, Ind.

Filed Aug. 22, 1974, Ser. No. 499,971

Int. Cl. B60s 1/02

U.S. Cl. 15—250.42

8 Claims



2. A wiper blade having a resilient wiping element, a flexible backing strip nested in said wiping element, and a superstructure operatively connected to said backing strip and to a wiper arm, said superstructure having at least two articulated members for dividing pressure received from the wiper arm into four equally spaced apart pressure points on said backing strip, the two remote pressure points engage said backing strip one-eighth the length of said wiping element in from each end of said backing strip.

3,899,801

CASTOR FOR USE WITH PILE CARPET

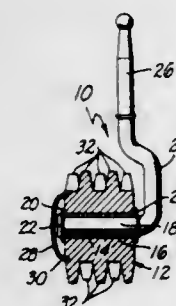
Vernon J. Carrier, 25830 Viana St., Lomita, Calif. 90717

Filed Aug. 19, 1974, Ser. No. 498,380

Int. Cl. A47B 91/00

U.S. Cl. 16—45

6 Claims



1. A castor for use on a pile carpet, said castor having a cylindrical wheel and means for mounting said wheel so that said wheel can rotate about its axis in which the improvement comprises:

a plurality of separate bosses located on the surface of said wheel so as to extend therefrom, said bosses being spaced

from one another and being located adjacent to one another, said bosses being the only projections from the surface of said wheel capable of contacting a carpet, said bosses being shaped so as to have ends remote from said wheel of a non-pointed configuration and being shaped so that said ends are of smaller dimensions than the portions of said bosses at the periphery of said wheel.

3,899,802

FASTENER MEANS FOR AN ARTICLE OF JEWELRY

Joachim Koehle, Pforzheim, Germany, assignor to J. Koehle KG, Pforzheim, Germany

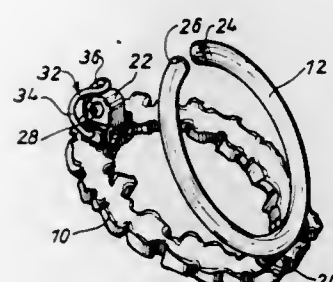
Filed Feb. 5, 1974, Ser. No. 439,697

Claims priority, application Germany, Feb. 27, 1973, 2309681

Int. Cl. A44B 13/00, 21/00

U.S. Cl. 24—73 HR

9 Claims



1. An article of jewelry, comprising
 - a. a first member (10) having a rear surface and a decorative front surface;
 - b. a resilient generally C-shaped split ring member (12) having a pair of arm portions between the extremities (24, 26) of which is defined an opening;
 - c. hinge means (20) pivotally connecting the split ring member to the rear surface of said first member for pivotal movement between parallel closed and angularly arranged open positions relative to said first member,
 - 1 said hinge means being arranged between said first and split ring members to cause the same to be spaced when said members are in the parallel closed position,
 - 2 said hinge means being diametrically opposed to the opening contained in said split ring member; and
 - d. a bridge member (22) secured to and extending axially rearwardly from the rear surface of said first member opposite said split ring opening, said bridge member having a width dimension slightly greater than the spacing distance between the ends of said split ring member, whereby when said bridge member is inserted into the opening in the split ring member, the split ring member is locked in the closed position by the resilient force of the split ring arm portions.

3,899,803

SELF-GRIPPING DEVICE WITH PREFORMED GRIPPING ELEMENTS

George C. Brumlik, Montclair, N.J., assignor to Ingrid Fasteners, Inc., New York, N.Y.

Continuation of Ser. No. 179,880, Sept. 13, 1971, abandoned.

This application Dec. 10, 1973, Ser. No. 423,611

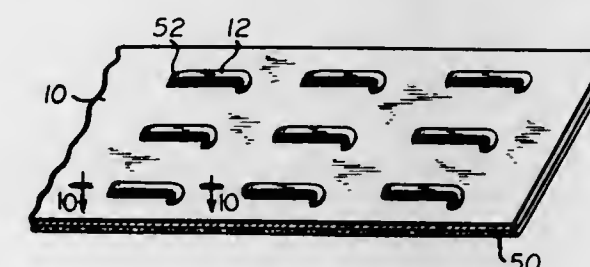
Int. Cl. A44B 17/00

U.S. Cl. 24—204

8 Claims

1. Self gripping device comprising a sheet member containing a multiplicity of gripping elements distributed in all directions over said sheet member, said gripping elements having distinct gripping means integrally formed therein within a frame said gripping means being oriented transverse to the longitudinal axis of said sheet member, said gripping elements and the distinct gripping means being bent parallel and generally in a common plane and out of plane to the sheet, said gripping elements being adapted to be positioned in a gener-

ally upright position from one side of said sheet for self gripping engagement with a receiving layer, the opposite side of



said sheet having an adhesive layer applied thereto without coating the parallel out of plane gripping elements.

3,899,804

SLIDER

Teruaki Kawashima, Namerikawa, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Tokyo, Japan

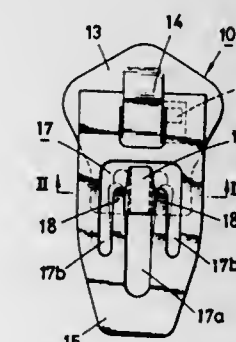
Filed Aug. 31, 1973, Ser. No. 393,640

Claims priority, application Japan, Sept. 5, 1972, 47-103540

Int. Cl. A44b 19/26

U.S. Cl. 24—205.15 R

3 Claims



1. A slider for a slide fastener, which comprises a top wing; a bottom wing; a post integral with said top and bottom wings and connecting them together at one end which constitutes the front end of the slider; a front lug disposed at said front end of the slider and projecting away from said top wing; a rear lug disposed at the end of the slider opposite said front end and projecting away from said top wing; a generally planar pull tab pivotally connected to said front lug and having catch means engagable with said rear lug, said catch means including means defining an opening in the pull tab and a pair of parallel spaced-apart elastically flexible tongues integrally formed with and lying in the plane of the pull tab and projecting into said opening, said rear lug having a tapered portion, a central barrel portion and a reduced neck portion having surfaces disposed for resilient snap-action engagement with said tongues to releasably secure the pull tab in lock position against the top wing.

3,899,805

INDENTED SHEET

William J. McMillan, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

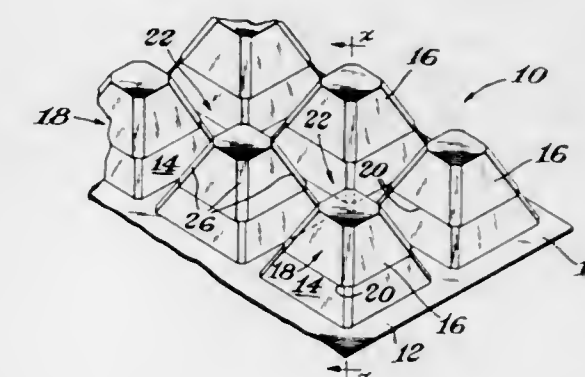
Filed July 13, 1973, Ser. No. 379,147

Int. Cl. B32b 3/30

U.S. Cl. 24—213 B

7 Claims

1. An indented sheet describing at a surface portion thereof, repeating, regularly distributed, hollow projections, a like distribution of repeating pocket areas, at least certain of such projections including enlarged head portions, respectively, restricted neck regions defined in said pocket areas through means of said enlarged head portions, said enlarged head portions comprising cap elements affixed to said projections, such indented sheet being comprised of sufficiently resilient mate-



3,899,806

SAFETY HOOK

Bengt Frans Allan Berg, Gemla, Sweden, assignor to K A Bergs Smide AB, Gemla, Sweden

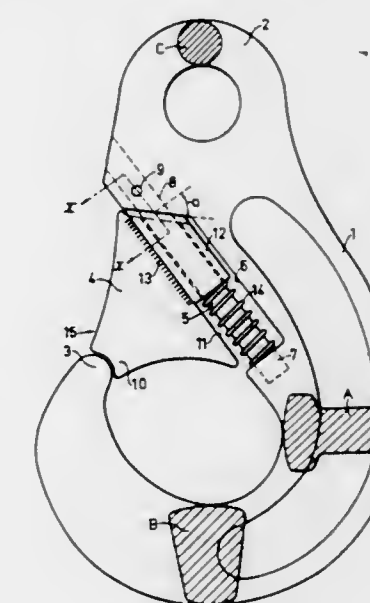
Filed Sept. 27, 1973, Ser. No. 401,359

Claims priority, application Sweden, Oct. 25, 1972, 13761/72; Mar. 13, 1973, 7334/73

Int. Cl. B64D 17/38; A44B 13/00

U.S. Cl. 24—241 PL

15 Claims



1. A hook having a normal vertical axis when freely suspended, said hook comprising a suspension end portion, a hook tip, and an arcuate hook shank which connects said suspension end portion with said hook tip and defines a median plane through said suspension end portion and said hook tip; said suspension end portion, said hook tip and a portion of said shank defining a throat through which attachment means can be introduced and brought into engagement with said hook; at least one safety latch means pivotally mounted for movement about an axis which forms a substantial angle with said normal vertical axis of said hook, said pivotal axis being located substantially in said median plane, said safety latch member being pivotally movable between a first stable position in which it blocks said throat and a second position out of blocking relation with said throat; and resilient means for urging said safety latch member to its first stable position.

3,899,807

HEAT RECOVERABLE ARTICLES AND METHOD OF MAKING SAME

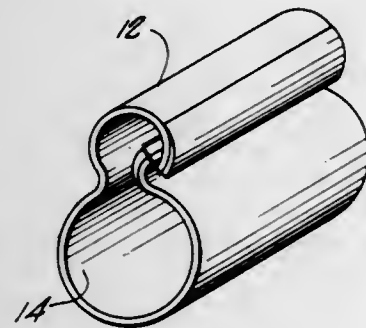
Richard C. Sovish, Los Altos; Michael B. Sullivan, Cupertino, and Judson D. Wetmore, San Mateo, all of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Division of Ser. No. 130,678, April 2, 1971, abandoned. This application Apr. 5, 1973, Ser. No. 348,348

Int. Cl. B32b 3/02

U.S. Cl. 24-255 C

4 Claims



1. A laminar article having two primary faces and comprising first, second and third thermoplastic laminae which have been crosslinked chemically or by irradiation, said second and third laminae being laminated respectively to opposite edge portions of the opposite faces of said first lamina, said first lamina having been rendered heat recoverable by expansion in its crosslinked state whereas relative to said first lamina said second and third laminae lack heat recoverability, said article being heat recoverable to a configuration describing an elongate S in cross section.

4. A method of forming a heat recoverable wrap-around closure having first, second and third laminae of thermoplastic material which has been crosslinked chemically or by irradiation, which method comprises laminating second and third laminae respectively to opposite edge portions of the opposite faces of a first lamina which has been rendered heat recoverable by expansion in its crosslinked state and before or following the step of lamination, crosslinking the second and third laminae, said second and third laminae being non-heat recoverable relative to said first lamina such that the resulting closure is heat recoverable to an elongate S in cross-section and, upon interlocking the arcuate end-portion of said S is further heat recoverable in interspiraling fashion to form a separation resistant closure.

3,899,808

APPARATUS FOR UNCURLING SELVEDGE

Richard A. Ryan, Eddington, Pa., assignor to Butterworth Manufacturing Company, Inc., Bethayres, Pa.

Continuation of Ser. No. 206,647, Dec. 10, 1971, abandoned.

This application Jan. 22, 1974, Ser. No. 435,431

Int. Cl. D06c 3/06

U.S. Cl. 26-54

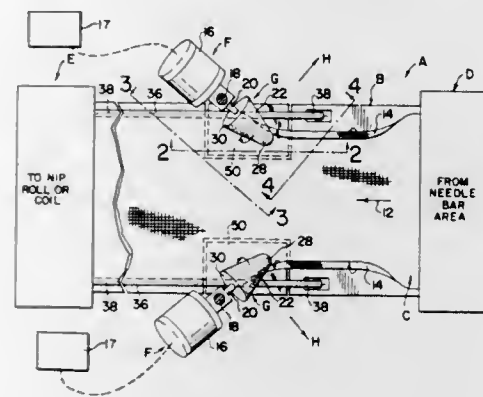
12 Claims

1. Apparatus for removing curls from opposite longitudinal curled selvages of a fabric comprising: support means for supporting elongated fabric moving as a continuous strip in a longitudinal direction and having curled selvages and longitudinal edges along said selvages;

a pair of uncurling members, said uncurling members being positioned above said support means adjacent said selvages, said uncurling members having substantially conical outer surface portions, said substantially conical outer surface portions having free small diameter ends and driven large diameter ends, each of said conical outer surface portions making line contact with one of said selvages along lines intersecting said longitudinal selvages at included acute angles, but with substantially no contact with the fabric between selvages;

independent drive means for rotating said uncurling members in a direction for applying uncurling forces to said

selvages in directions rearwardly of said longitudinal direction of movement of said fabric without appreciably stretching the body of said fabric between selvages by said uncurling means;



and adjustment means for adjusting the included angles between the lines of contact of the uncurling members on the fabric and said longitudinal edges of said fabric.

3,899,809

YARN CLAMPING DEVICE

Klaus Haberkern, Uster, Switzerland, assignor to Zellweger, Ltd., Uster, Switzerland

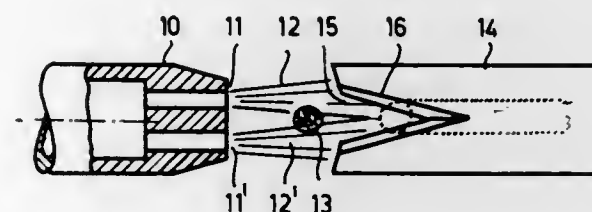
Filed Sept. 5, 1973, Ser. No. 394,455

Claims priority, application Switzerland, Dec. 19, 1972, 18478/72

Int. Cl. D01H 13/16

U.S. Cl. 28-64

4 Claims



1. A yarn clamping device for holding the end of a running yarn in place in a textile machine, comprising,

means disposed adjacent the running yarn for projecting at least one stream of compressed air at the yarn, and

a yarn holder including at least one plate having an edge disposed adjacent said running yarn on the opposite side thereof from said means projecting said compressed air stream, said plate having a wedge-shaped notch along which the loose end of a broken or severed yarn is urged by said compressed air stream around said edge, said notch acting as a guide for enabling said loose end to be held in place in a direction transverse to the direction of the running yarn, wherein

said means for projecting at least one stream of compressed air comprises a nozzle having two air passages to which compressed air is supplied to provide two streams of compressed air, said nozzle being disposed with said running yarn positioned at a point between said air streams so as to intercept a portion of each stream, said wedge-shaped notch facing said running yarn and said plate lying in a plane transverse to said running yarn.

3,899,810

METHOD OF MAKING CHEMICALLY PROTECTED OFF-THE-LOOM FABRICS

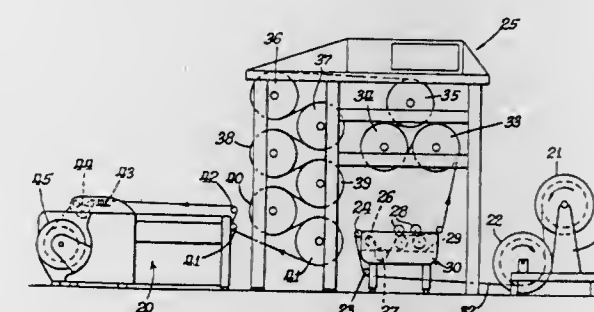
Leonard A. Stanley, Charlotte, N.C., and Glynn E. Fouche, Jr., Rock Hill, S.C., assignors to The Kendall Company, Walpole, Mass.

Continuation-in-part of Ser. No. 221,308, Jan. 27, 1972, abandoned, which is a continuation-in-part of Ser. Nos. 36,037, May 11, 1970, abandoned, and Ser. No. 36,038, May 11, 1970, abandoned. This application Feb. 14, 1974, Ser. No. 442,603

Int. Cl. D02G 3/36; D06M 13/00

U.S. Cl. 28-72.6

4 Claims



1. A method of making chemically protected off-the-loom fabrics comprising

treating unsized cellulosic warp yarns in a water bath with a water compatible size containing a non-volatile substantially cold water insoluble chemical protecting material drying the sized and chemically protected warp yarns and interweaving said warp yarns with unsized and untreated cellulosic filling yarns to provide an off-the-loom fabric exposing said fabric to moisture to cause partial transfer of said chemical protecting material from said warp yarns to said filling yarns to chemically protect the entire fabric without further treatment thereof.

3,899,811

CRIMPING OF SYNTHETIC PLASTIC FILAMENTS

Ernst Bauch, Bordesheim, Germany, assignor to Neumunster-sche Maschinen-und Apparatebau GmbH, Neumunster, Germany

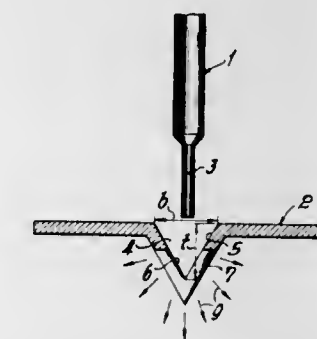
Division of Ser. No. 381,493, July 23, 1973. This application July 3, 1974, Ser. No. 485,735

Claims priority, application Germany, July 22, 1972, 2236024

Int. Cl. D02G 1/16

U.S. Cl. 28-72.12

7 Claims



1. In a method of crimping a synthetic plastic filament, the steps of moving a synthetic plastic filament in plastic state in a predetermined first path; advancing an apertured contact element in a second path which is located in a plane extending transverse to and intersecting said first path; and intercepting the moving filament in a recess formed in said advancing contact element, to confine said filament in said recess of the advancing contact element and thereby effect crimping of said filament.

3,899,812

AUTOMATIC APPARATUS FOR INSERTING A CRT MASK INTO ITS MATING PANEL

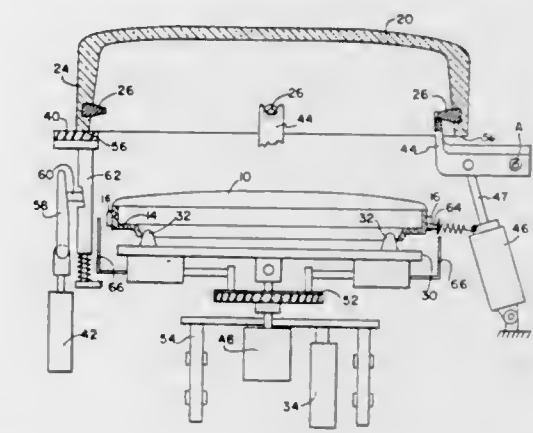
Ronald S. Baranski, Round Lake, and Leslie L. Baur, Glen Ellyn Countryside, both of Ill., assignors to Zenith Radio Corporation, Chicago, Ill.

Division of Ser. No. 410,142, Oct. 26, 1973, Pat. No. 3,838,483. This application June 27, 1974, Ser. No. 483,729

Int. Cl. H01J 9/00

U.S. Cl. 29-25.19

2 Claims



1. Mask insertion apparatus for inserting a cathode ray tube mask assembly into a cathode ray tube front panel having alignment studs for engagement with alignment holes formed in leaf-type springs mounted on the mask assembly, comprising:

a mask assembly platen for receiving and supporting a mask assembly at a predetermined rough location on the platen with its convex side facing upwardly;

means for lowering the platen from a first operating location where it receives a mask assembly to a second lower operating location;

means positioned at said second operating location for precisely positioning and aligning the mask assembly so that the alignment holes are forced to lie in a substantially horizontal reference plane, each hole positioned at a predetermined location;

first panel support means for receiving and supporting a panel in a roughly horizontal position above and in rough vertical alignment with the mask assembly with the convex panel surface facing upwardly;

stud alignment means for placing the panel studs in a substantially horizontal stud reference plane such that each stud is in vertical alignment with its corresponding mask alignment hole and at a common predetermined vertical height above said hole;

second panel support means for supporting the panel in its precisely aligned position;

compressing means for compressing the mask springs and holding the mask assembly in its aligned position;

means for elevating the mask assembly platen said predetermined height to its first operating location where the panel studs and mask alignment holes lie in substantially horizontal alignment; and

means for releasing said compressing means to allow the mask springs to deflect outwardly and cause engagement of the panel studs with the mask alignment holes.

3,899,813

SLOTING CUTTER APPARATUS

Norman H. Lovendahl, 814 N. Clinton, River Forest, Ill. 60305

Filed Dec. 13, 1973, Ser. No. 424,376

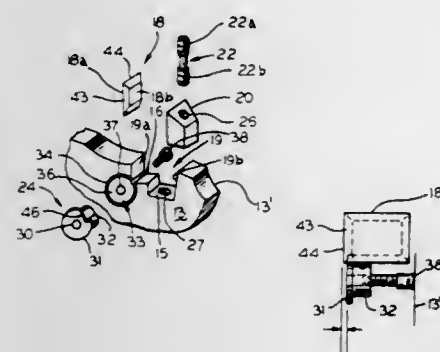
Int. Cl. B26D 1/12

U.S. Cl. 29-105 R

17 Claims

1. Slotting cutter apparatus, said apparatus comprising a cutter body, said cutter body having oppositely disposed end faces and a plurality of peripheral slots extending through said body and end faces to receive insert blades therein.

retaining means for retaining said insert blades in said peripheral slots with said insert blades protruding beyond said end faces on at least one side to effect a machine cut, and



locator means mounted into the cutter body proximate to said peripheral slots abutting said insert blades on said protruding side for setting the said blades to extend beyond the end faces a desired distance.

3,899,814

TOOL FOR MACHINING ROUND SECTIONS

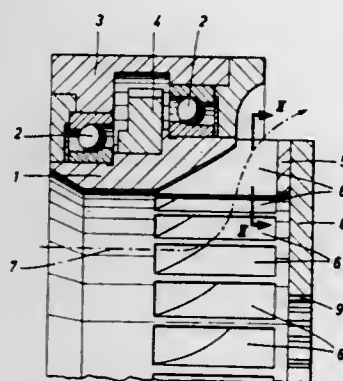
Bruno Kralowetz, St. Ulrich 142, Steyr, Austria
Filed May 22, 1974, Ser. No. 472,493

Claims priority, application Austria, June 25, 1973, 5571/73

Int. Cl.² B26D 1/12

U.S. Cl. 29-105 R

3 Claims



1. A tool arrangement comprising:

- a drum member having an axis and formed with an axially open cavity, said drum member having an axially terminal portion;
- a bearing engaging an axial portion of said drum member spaced from said terminal portion for rotation of said drum member about said axis,
 - the portion of said drum member axially intermediate said engaged portion and said terminal portion being formed with a plurality of openings extending radially therethrough;
- an annular cutter mounted on said terminal portion and including a plurality of cutting edges directed in a radially inward direction; and
- fan means on said drum member for drawing a stream of air from said cavity radially outward through said openings when said drum member rotates about said axis.

3,899,815

THERMAL BED SCREEN PACK

James P. Maddox, Sherman Oaks, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Sept. 28, 1973, Ser. No. 401,922

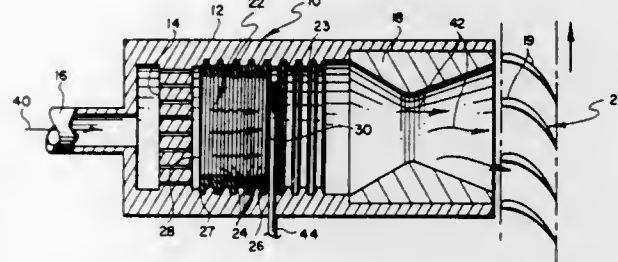
Int. Cl. B23k 31/02

U.S. Cl. 29-163.5 R

8 Claims

1. A method to fabricate a thermal bed screen pack comprising the steps of:

stacking a multiplicity of individual wire mesh discs; compressing said stack of wire mesh discs to form said pack; forming, metallurgically, a solid rim portion around the peripheral edges of said compressed stacked discs to trap each individual disc within said metallurgically formed rim; and



machining said metallurgically formed rim to form threads therein to enable said threaded compressed screen pack to be threadably engaged with threads machined in the interior wall of a gas generator device.

3,899,816

PRESS FOR PALLET DISASSEMBLY

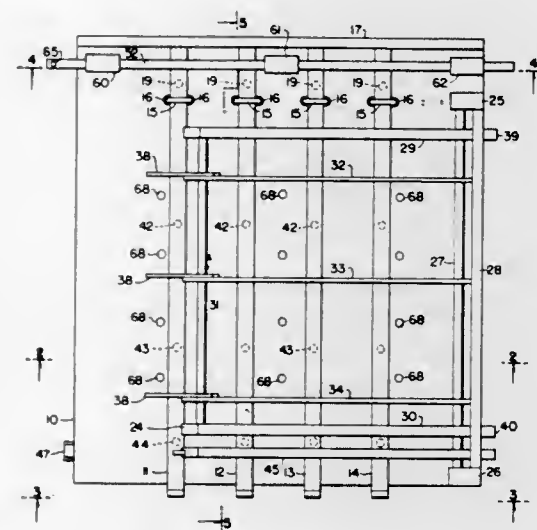
Donald G. Jennings, Staten Island, N.Y., assignor to Distribution Supply Corporation, Westfield, N.J.

Filed July 12, 1974, Ser. No. 483,304

Int. Cl.² B23P 19/00

U.S. Cl. 29-200 D

8 Claims



1. A press for the disassembly of pallets having stringers to which top and bottom boards are fixed, said press comprising, in combination,

- a base having a back and a front,
- fingers extending from the back of said base over said base so that a pallet may be placed about said fingers with the fingers extending above the pallet bottom boards and below the pallet top boards,
- stringer hold downs having downward projections to extend between top boards of a pallet and to engage stringers of a pallet,
- means removably mounting said stringer hold downs,
- means locking said stringer hold downs in a stringer engaging lower position,
- a first set of cylinders mounted under said base along the lengths of said fingers,
- means activating said first set of cylinders raising said fingers removing top boards of a pallet while said stringer hold downs secure the stringers of a pallet,
- front and back finger hold downs securing said fingers in a lower position,
 - a second set of cylinders under said base, and
- means activating said second set of cylinders to raise stringers of a pallet while said front and back finger hold

downs secure said fingers in a lower position to remove the stringers from bottom boards of a pallet.

malleable metallic sleeve and for impressing at least one pair of crimps in the sleeve so formed and the enveloped tape ends

3,899,817

MEANS FOR TRANSFERRING YARN PACKAGES FROM A WINDING TUBE TO A CORE FOR DYEING

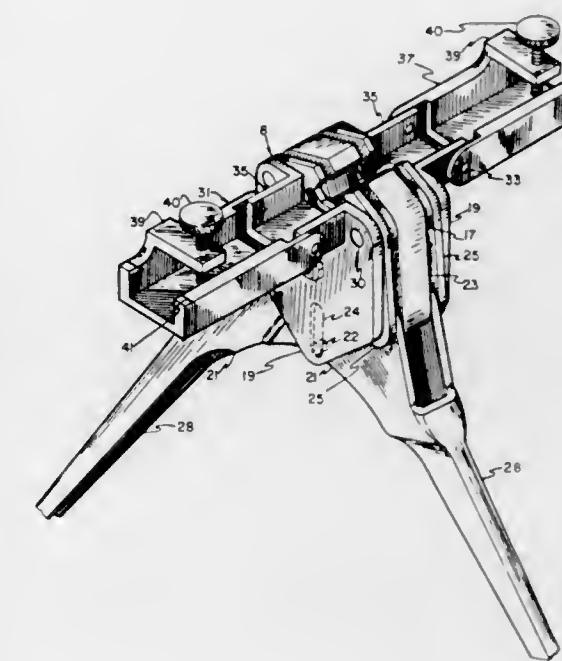
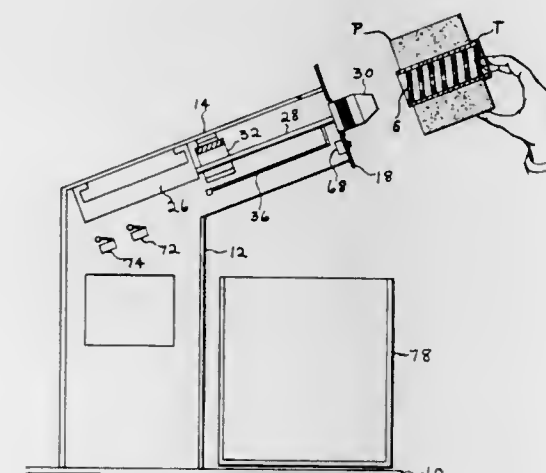
Graham F. Clifford, Stanley, N.C., and Mack W. Spurrier, Clover, S.C., assignors to Gaston County Dyeing Machine Co., Mount Holly, N.C.

Filed Feb. 19, 1974, Ser. No. 443,629

Int. Cl. B23p 19/02

U.S. Cl. 29-234

7 Claims



at right angles to the direction of elongation of the tape, on each side of the broken tape ends.

3,899,819

METHOD FOR MANUFACTURING CURVED TUBE SECTIONS

John David Bertil Ostbo, Byvagen 38, S-151 52 Sodertalje, Sweden

Continuation of Ser. No. 137,160, April 26, 1971, abandoned.

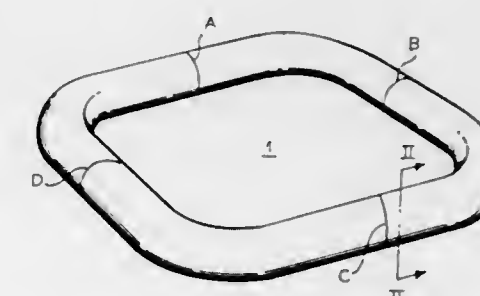
This application Apr. 2, 1973, Ser. No. 347,030

Claims priority, application Sweden, July 16, 1970, 9881/70

Int. Cl. B23k 31/02

U.S. Cl. 29-407

5 Claims



1. Apparatus adapted particularly for transferring a yarn package from a core tube on which it has been wound to a core suitable for supporting the package for dyeing, said apparatus comprising a plate member proportioned for endwise support of said wound yarn package while being apertured for clearing the core tube on which said package is wound, an expandable chuck mounted for reciprocation perpendicularly in relation to said plate member between an initial position at which said chuck is extended through said plate member aperture sufficiently for receiving and interiorly gripping an adjacent end portion of the core tube carrying a yarn package supported on said plate member and a retracted position at which said chuck is withdrawn from such extension sufficiently to space it from said plate member in excess of the axial length of said core tube, and means for selectively expanding said chuck and causing the same to move between said initial and retracted positions, said means including an element positioned on said plate member for displacement by a yarn package placed for support on said plate member, and said element operating upon said displacement to trigger sequential expansion and retraction of said chuck.

3,899,818

SURVEYORS TAPE REPAIR TOOL

Ben Castaneda, 849 Camino Consuelo, and Norbert A. Staab, 1130 Camino Delora, both of, Santa Fe, N. Mex. 87501

Filed Aug. 21, 1974, Ser. No. 499,218

Int. Cl.² B23P 11/00

U.S. Cl. 29-243.56

4 Claims

1. A manually operated portable surveyors metal tape repair tool comprising means for confining, and means for clamping, the broken ends of the tape respectively in longitudinal alignment and in selected longitudinal non-overlapping position within a malleable metal trough, two-handled plier-like means for straddling the metallic metal trough when open, and for upsetting when closed, the malleable metal trough for tightly enclosing the broken end portions of the tape in a

1. A method of manufacturing curved tube sections of a rigid material, comprising in sequence the steps of,
a. manufacturing by plastic deformation of flat sheet metal stock a plurality of tube segments, each of said tube segments having a cross-section which comprises a portion of a circle,
b. joining by welding said segments into a tubular loop completely closed in both longitudinal and circumferential directions, each tube segment corresponding to a portion of the cross-section of said loop, and said loop being circular in cross-section, and then
c. dividing said loop into a plurality of tube sections by cutting along planes transverse to said longitudinal direction.

3,899,820

METHOD OF PRODUCING A DISPERSION-STRENGTHENED ALUMINUM ALLOY ARTICLE

Peter John Read, South Newington, near Banbury; Keith Graham Latimer, Greatworth; Terence David Warren Reynolds, Daventry, all of England; David Munson, deceased, late of Wuxton, England, and by George Munson, administrator, Rochester, England, assignors to Alcan Research and Development Limited, Montreal, Canada

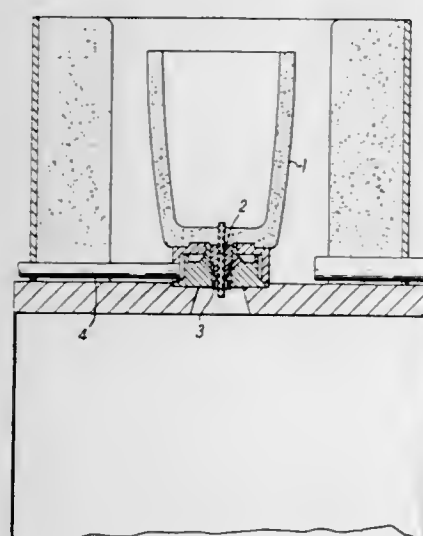
Filed June 21, 1973, Ser. No. 372,204

Claims priority, application United Kingdom, June 30, 1972, 30876/72

Int. Cl. B22f 3/24

U.S. Cl. 29—420.5

8 Claims



1. A method of producing an aluminium alloy article having a high hot strength comprising establishing a substantially homogeneous body of molten metal comprising aluminium and 0.05 to 25 percent of alloying constituent, the amount of said alloying constituent being in excess of the equilibrium solid solubility, the maximum value of the equilibrium solid solubility being 2 percent, said alloying constituent having a low diffusion rate in aluminium, establishing a stream of droplets of said molten metal in a stream of unheated gas, said droplets having an average diameter in the range of 50 μ m to 1 mm, projecting said droplets against a substrate, undercooling said droplets of molten metal by at least 50°C during flight so that on striking the substrate they are very rapidly solidified to maintain said alloying constituent in supersaturated solid solution or in the form of particles of a size not greater than 1 μ m in said aluminium, and compacting the mass of droplets by hot working at a temperature in the range of 200° to 500°C.

3,899,821

METHOD OF MAKING METAL PIECE HAVING HIGH DENSITY FROM METAL POWDER

Sunji Ito; Yasuaki Morioka; Yoshihiro Kajinaga; Ichio Sakurada, Chiba, and Minoru Nitta, all of Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Aug. 8, 1974, Ser. No. 495,631

Claims priority, application Japan, Aug. 9, 1973, 48-88775

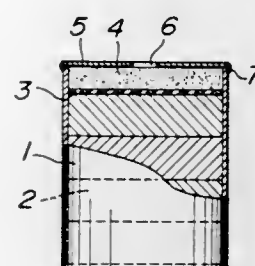
Int. Cl. B22f 3/24

U.S. Cl. 29—420.5

7 Claims

1. A method of making a macroscopically homogeneous metal piece having a high density from metal powder, comprising the steps of compacting metal powder to obtain compacts, stacking said compacts one upon the other in a metallic container having an upper open end, disposing a perforated carburizing protecting plate and a solid reducing agent in succession on said stacked compacts so that said solid reducing agent does not directly touch said metal compacts, said solid reducing agent upon heating generates and maintains an oxidation protecting atmosphere, closing said upper open

end of said container by means of a cover plate made of metal and having a degassing gap so that the container is otherwise sealed, heating said stacked compacts together with said con-



tainer at a temperature from 1,000°C. to 1,300°C in atmospheric air, hot forging said stacked compacts together with said container in atmospheric air to deform them, and finally cutting off said deformed container to obtain the metal piece.

3,899,822

METHOD OF ATTACHMENT OF A PROSTHESIS TO A MEMBRANE

Beverly W. Armstrong, Charlotte, N.C., assignor to Richards Manufacturing Company, Inc., Memphis, Tenn.

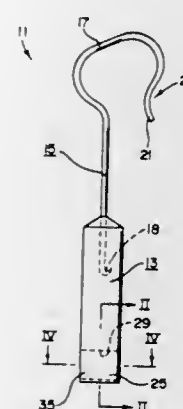
Division of Ser. No. 323,940, Jan. 15, 1973, Pat. No.

3,838,468. This application Mar. 20, 1974, Ser. No. 452,827

Int. Cl. B23P 11/02

U.S. Cl. 29—450

1 Claim



1. A method of attaching the distal end of a prosthesis to membrane structure for use in otological surgery to replace the stapes of the middle ear comprising the steps of providing a jig fixture having an upwardly directed ridge, providing the distal end of the prosthesis with a pair of leg means for gripping the membrane structure, placing the membrane structure over said ridge of said fixture with said ridge restingly supporting a portion of the membrane structure intermediate remote edges thereof, placing the distal end of said prosthesis upon said jig fixture with the membrane structure being sandwiched therebetween, thrusting said prosthesis downwardly while being supported in a substantially upright position to drive said ridge and a bight portion of the membrane structure between said pair of legs of said prosthesis, and withdrawing said prosthesis from said jig fixture with the bight portion of the membrane structure being grippingly attached to said prosthesis.

3,899,823

AIR CONDUIT AND DIFFUSER ASSEMBLY

Robert R. Lambert, Glendora, Calif., assignor to Wehr Corporation, Milwaukee, Wis.

Division of Ser. No. 2,112, Jan. 12, 1970, Pat. No. 3,823,652.

This application Mar. 25, 1974, Ser. No. 454,099

Int. Cl. F24f 7/06

U.S. Cl. 29—455

5 Claims

1. A method of assembling and mounting an air conduit and

3,899,825

METHOD AND MEANS FOR CONNECTING ELECTRICAL CONDUCTORS TO RAILROAD RAILS

Peter Hofer, Hofen, Switzerland, assignor to Georg Fischer Aktiengesellschaft, Schaffhausen, Switzerland

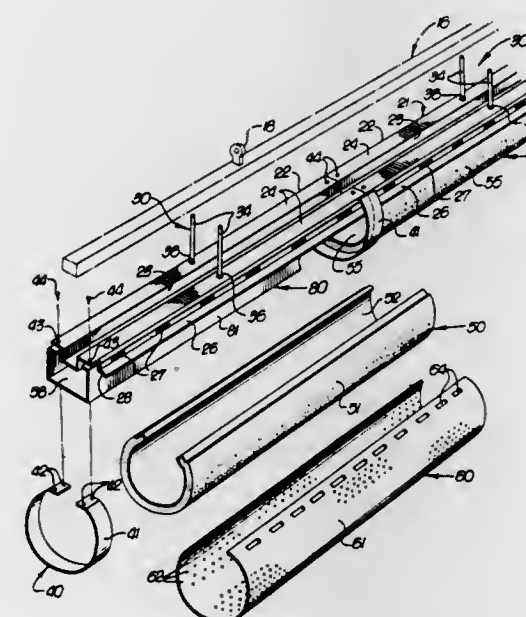
Filed Oct. 4, 1972, Ser. No. 294,922

Claims priority, application Switzerland, Oct. 8, 1971, 14701/71

Int. Cl. B23K 21/00

U.S. Cl. 228—107

22 Claims



securing an alignment band between the adjacent ends of adjacent support panel sections to form a support panel; inserting tubular duct sections between the alignment bands and under the support panels to form a tubular duct having a central cavity for carrying air from a supply to be diffused throughout the rooms.

3,899,824

METHOD AND APPARATUS FOR SHEATHING CABLE CORES

Shirley M. Beach, North Vancouver, Canada, assignor to Phillips Cables Limited, Brockville, Canada

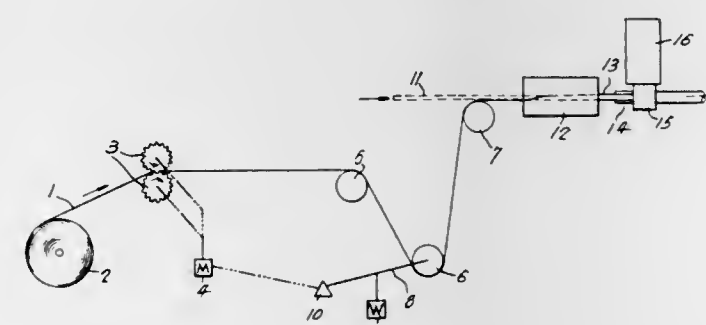
Filed July 2, 1973, Ser. No. 375,646

Claims priority, application Canada, July 6, 1972, 146559

Int. Cl. B23p 3/00

U.S. Cl. 29—458

12 Claims



1. A method of sheathing a cable core advanced longitudinally, with a flat strip of sheathing material, comprising: advancing said strip and advancing said cable core, crimping said strip to give it inherent longitudinal stretchability, the crimps extending inwardly from the longitudinal edges of the strip, stretching the crimped strip longitudinally to the point where the crimp is removed to substantially the maximum where the longitudinal edges of the strip are of substantially equal effective length and wrapping the strip longitudinally about the cable core to form a sheath in which the longitudinal edges of the strip overlap.

3,899,826

SCANNABLE LIGHT EMITTING DIODE ARRAY AND METHOD

Malcolm J. Russ, Scottsdale, Ariz., assignor to Motorola, Inc., Chicago, Ill.

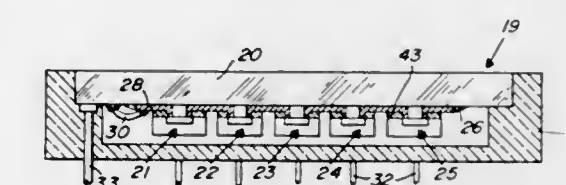
Division of Ser. No. 209,838, Dec. 20, 1971, Pat. No.

3,800,177. This application Nov. 1, 1973, Ser. No. 411,614

Int. Cl. B01j 17/00

U.S. Cl. 29—583

5 Claims



1. A method of manufacturing an integrated light display comprising the steps of:
a. forming one electrode of a plurality of light emitting diodes in a first surface of a semiconductor substrate of the type opposite to that forming the conductivity of the formed electrode;
b. electrically interconnecting rows of said electrodes by interconnection means having an annular opening over each of said electrodes;

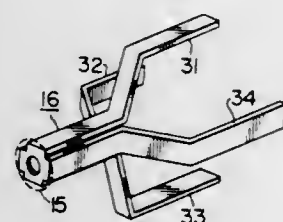
- c. securing said first surface of the semiconductor substrate and the electrical interconnecting means to a plate of transparent dielectric material; and
- d. separating the opposite surface of the substrate into a plurality of sections to electrically isolate the other electrode of the light emitting diodes from like other electrodes.

3,899,827

METHOD OF MANUFACTURING POLE PIECE ASSEMBLY FOR ELECTROMAGNETIC TYPE PICKUP
 Norihiko Takami, Osamu Hattori, and Manabu Wakabayashi, all of Toyokawa, Japan, assignors to Hitachi, Ltd., Japan
 Filed May 9, 1974, Ser. No. 468,575
 Claims priority, application Japan, May 11, 1973, 48-51738
 Int. Cl. G11b 5/42

U.S. Cl. 29-603

4 Claims



1. A method of manufacturing a pole piece assembly for an electromagnetic-type pickup, said pole piece assembly being the type having two pairs of facing pole pieces, comprising the steps of:

- stamping a pole piece unit from a thin plate of magnetic material, said pole piece unit having four arms extending outwardly from a joint portion with opposite ones of said arms from said joint portion being joined symmetrically with said joint portion,
- bending said four arms into a predetermined shape with said opposing ones of said arms being maintained in opposing relationship across said joint portion with respect to each other,
- subjecting said pole piece unit bent in said predetermined shape to magnetic annealing,
- thereafter inserting said bent pole piece unit into a fixing member of non-magnetic material, said fixing member having a hollow recess for receiving said joint portion and the bent arms of said pole piece unit thereinto,
- securing said bent pole piece unit in said fixing member such that said opposing ones of said arms adjacent said joint portion are maintained in position with respect to said fixing member, and
- severing said joint portion from said pole piece unit to separate said opposing ones of said arms from said joint portion, thereby forming two pairs of spaced pole pieces from said opposing ones of said arms.

3,899,828

UTILITY BLADE HOLDER

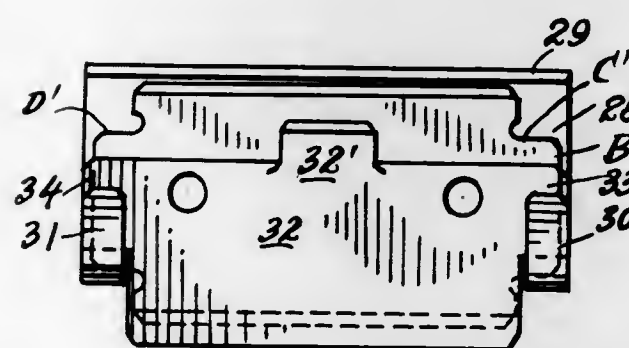
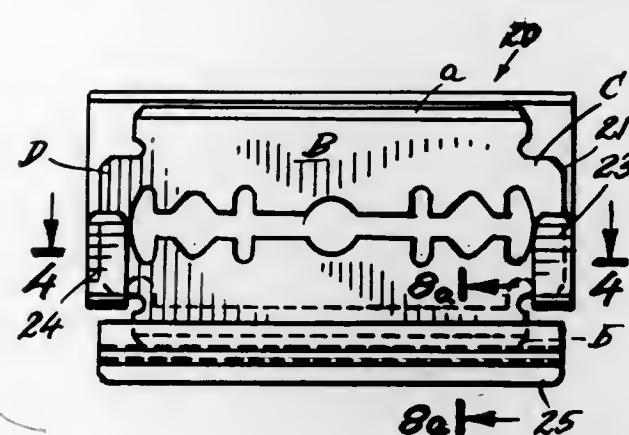
Joseph Bosco, 33 Summer St., Everett, Mass. 02149
 Filed Jan. 2, 1974, Ser. No. 430,096
 Int. Cl. B26B 5/00, 29/00

U.S. Cl. 30-151

2 Claims

1. In a device to be used as a cutting tool, comprising, in combination, a vertical flat wall, and means to support a razor blade against said flat wall, a blade having cutting edge, said supporting means including a pair of inverted vertical extensions mounted on either side of said flat wall and extending beyond said wall, said extensions formed in such a manner as to hold and to support securely said razor blade against said flat wall; and including an elongated bar, said bar having a pair of grooves running the entire length of said bar, one groove in said pair located over the other groove and running parallel to the first groove, by means of the first groove said bar being

mounted over the cutting edge of said blade for safety purposes when said device is not being utilized as a cutting tool, the other groove in said pair having a tapered cross-section, said bar being removed from the cutting edge of said blade to



expose said cutting edge when said device is being utilized as a cutting tool, said bar, by means of said tapered groove being anchored stationary to said device away from the cutting edge of the razor blade aforesaid.

3,899,829

HOLDER AND ACTUATOR MEANS FOR SURGICAL INSTRUMENTS

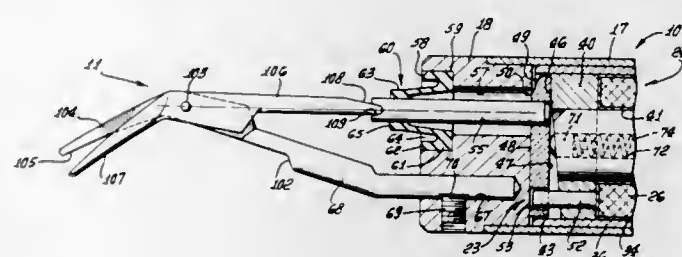
Fred K. Storm, Glendale, and Eldridge H. Smiley, Rosemead, both of Calif., assignors to Fred Storm Industrial Designs, Inc., Los Angeles, Calif.

Filed Feb. 7, 1974, Ser. No. 440,498

Int. Cl. B26B 7/00, 15/00

U.S. Cl. 30-228

8 Claims



1. In an actuator and holder means for a cutting instrument useful in microsurgery and including a cutting member, the combination of:

- holder means including a housing having a chamber therein;
- actuator means for imparting cutting motion to said cutting member including
- a pin adapted to be operably connected at one end with said cutting member,
- a transversely disposed element connected to said pin in spaced relation to said one end and located within said chamber and movable with the pin,
- said transversely disposed element being mounted for pivotal movement about an axis spaced from the axis of the pin,
- said transversely disposed element comprising a disc-like element,

one face of said disc-like element being beveled from a chord line spaced from the center of the element and spaced from the axis of the pin member to provide clearance for said pivotal movement,

said disc-like element including a planar face opposite to said face having said bevel,

spring means in contact with said planar face biasing said disc-like element in the direction of said pin,

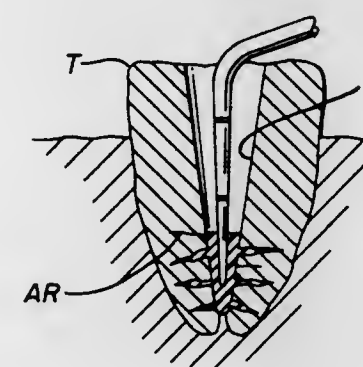
and means carried by the housing and cooperable with said transversely disposed element to impart forward and backward motion to said pin and element whereby a cutting edge on said cutting member is imparted cutting motion of restricted scope.

3,899,830

ENDODONTIC SEALING SYSTEM AND APPARATUS
 Oscar Malmin, 127 E. Wayne Ave., Akron, Ohio 44301
 Filed Dec. 30, 1971, Ser. No. 213,993
 Int. Cl. A61k 5/02

U.S. Cl. 32-15

10 Claims



1. A sealing plug intended to be grasped by a dental instrument and inserted into a root canal for sealing said root canals, comprising:

- A. an elongate shank having first and second ends with said first end being adapted to engage said instrument; and
- B. a projecting substantially conically shaped solid enlarged end of substantially compressible material having its base secured to said second end of said shank and adapted to be inserted into said canal.

3,899,831

PLATE LENGTH MEASURING GAGE

Walter L. DeLeon, Pasadena, Tex., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Sept. 12, 1973, Ser. No. 396,640

Int. Cl. G01b 7/04

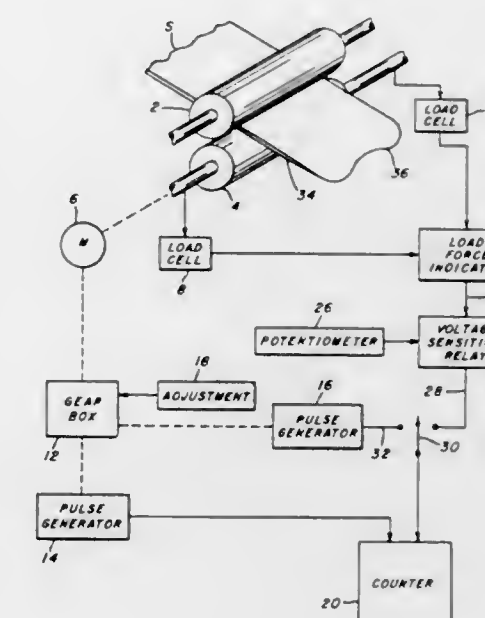
U.S. Cl. 33-141 B

2 Claims

1. In a rolling mill, a pair of opposed work rolls, means for measuring the force separating said work rolls when a workpiece is displaced therebetween, and a gage for measuring usable lengths of a workpiece as it passes between the work rolls comprising,

- means connected to a work roll for providing pulses representative of increments of length of the circumference of the work roll as the work roll rotates,
- means connected to said means for providing pulses for counting said pulses,
- a voltage sensitive relay and signal source connected to the means for measuring the force separating said rolls and the means for counting the pulses for supplying a signal to said means for counting the pulses whenever the means for measuring the force separating said rolls indicates that the workpiece is entirely between said rolls, and
- a potentiometer connected to said means for counting pulses and said voltage sensitive relay and signal source whereby when the force of the rolls upon the workpiece

causes the means for measuring the force separating the work rolls to measure an increase in force to a value



determined by a setting of said potentiometer said signal source is connected to said means for counting pulses.

3,899,832

PHONOGRAPH RECORD PROFILE TRACER

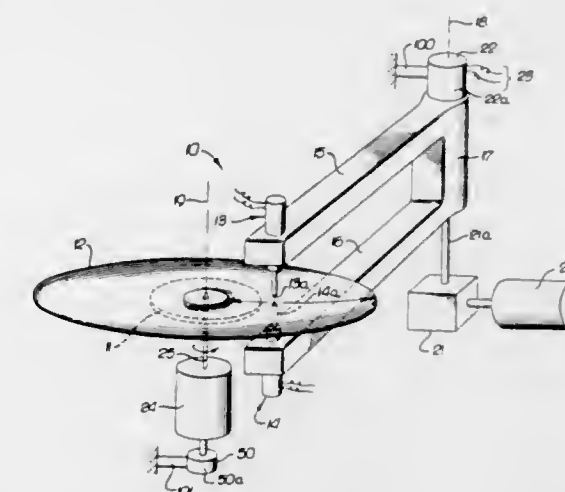
Csaba K. Hunyar, Sunland, Calif., assignor to United Artists Music and Records Group, Inc., Los Angeles, Calif.

Filed Mar. 11, 1974, Ser. No. 450,049

Int. Cl. G01b 5/20

U.S. Cl. 33-174 P

6 Claims



1. In combination with a phonograph record, record profile testing apparatus comprising

- a. a turntable substantially undersized relative to the record overall diameter for supporting the record with opposite sides thereof exposed,
- b. a pair of transducers including sensors at locations spaced to receive the turntable supported record therebetween, to simultaneously engage opposite sides of the record and to produce electrical signals which vary in response to movement relative to the sensors of record surface portions engaged by the sensors and generally normal to the plane of the record, the sensors having record engaging tips at locations spaced apart along a direction which is generally normal to said plane, and
- c. structure carrying said transducers at said locations, and means to displace said structure to carry the transducer tips generally radially across the record.

3,899,833

METHOD AND APPARATUS FOR ALIGNING A DRILL BIT OVER A PREDETERMINED POINT

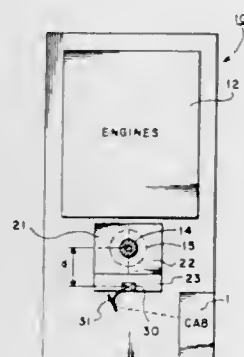
Reece E. Wyant, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Aug. 9, 1974, Ser. No. 495,942

Int. Cl. G01b 11/27

U.S. Cl. 33—228

7 Claims



1. Apparatus for aligning the drilling axis of a mobile drilling rig with a stake in the earth's surface indicative of the desired drilling location, comprising:

- a sight board adjacent the earth's surface and pivotally attached to said stake, the location of said pivot being between the first and second ends of said board, said board having a sight mark on a first end displaced from said pivot by a predetermined amount;
- a line attached at its first end to the second end of said sight board and anchored at its second end at a remote point stretched out along the length of said line;
- a sight tube mounted on said drilling rig, the projection of the longitudinal axis of said sight tube intersecting the earth's surface at a point displaced from the drilling axis of said drilling rig by the said predetermined amount; and
- means to drive said drilling rig along said line until said sight tube is aligned with said sight mark on said sight board.

3,899,834

ELECTRONIC COMPASS SYSTEM

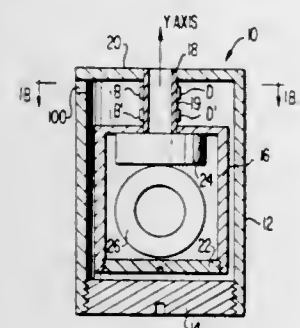
Earnest R. Harrison, Jr., Glen Burnie, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 2, 1972, Ser. No. 294,134

Int. Cl. G01c 21/20, 9/06, 17/30

U.S. Cl. 33—352

12 Claims



1. A compass assembly powered from an electrical driver circuit, comprising in combination:

- non-magnetic support means including a fixed reference axis;
- a cantilever beam member having one end rigidly attached to said support means;
- a weight under the influence of the earth's gravitational field attached to the other end of said beam member;
- an electrical accelerometer assembly mounted on said beam member and responsive to the stress upon said beam member caused by said weight for a specific orientation in space to provide a first plurality of output signals corre-

sponding to the three components of the earth's gravitational field relative to a predetermined coordinate system of said support means including said fixed reference axis; a flux gate magnetometer assembly supported from said support means and energized from said driver circuit, providing a second plurality of output signals corresponding to the three components of the earth's magnetic field with respect to said predetermined coordinate system; and

data processor means coupled to said accelerometer and magnetometer assemblies for computing the heading of the projection of said reference axis onto the horizontal plane with respect to the projection of the earth's magnetic field onto the horizontal plane from said first and second plurality of output signals.

3,899,835

DEWATERING APPARATUS

Arnfried Meyer, Neckargartachertrasse, 7101 Frankenbach, Germany

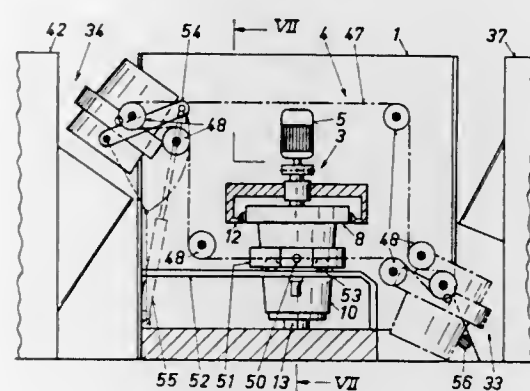
Filed Nov. 13, 1973, Ser. No. 415,325

Claims priority, application Austria, Nov. 13, 1972, 9642

Int. Cl. F26b 17/24

U.S. Cl. 34—58

33 Claims



1. An apparatus for the cyclic extraction of a liquid from articles, which includes a loading station means and an unloading station means, comprising: a plurality of container means for receiving the articles from which the liquid is to be extracted, means for extracting the liquid from the articles disposed in said container means, means operatively connected with said container means for selectively guiding said container means from the loading station means to said extracting means and from said extracting means to the unloading station means, and transporting means independent of said extracting means for transporting one of said plurality of container means from said extracting means to the unloading station means during the extraction of another of said plurality of container means disposed in said extracting means.

3,899,836

MODULAR TOBACCO HANDLING AND CURING SYSTEM AND METHOD

William H. Johnson, Raleigh, N.C., assignor to Research Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 288,028, Sept. 11, 1972, abandoned. This application Aug. 15, 1973, Ser. No. 388,590

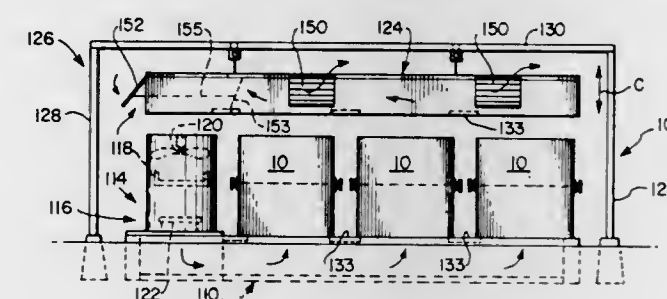
Int. Cl. F26b 19/00

U.S. Cl. 34—225

12 Claims

1. A curing station for tobacco curing modules, the modules having closed sidewalls and top and bottom walls open for the passage of gas through the modules substantially from sidewall to sidewall thereof, comprising a generally horizontal foundation, plural openings in the upper surface thereof each sized to edge support a curing module thereover, and said plural openings in said upper surface being coextensive with the open top and bottom walls of the tobacco curing modules, a further opening in the upper surface, a hot air furnace means supported over the said further opening, gas passages in the

foundation connecting the plural openings and the said further opening for the passage of heated gases there-between, a top plenum chamber substantially coextensive with the horizontal foundation, means associated with the top plenum chamber providing sealing engagement with the top of the hot air furnace and the tops of modules supported on the foundation and air passages in the top plenum chamber connecting the hot air



furnace and the tops of the modules, plural openings in the top plenum chamber coextensive in number with the number of curing modules and coextensive in size with the top openings in the modules, whereby air from the hot air furnace flows through the gas passages then uniformly substantially vertically from sidewall to sidewall through each of said modules and said top plenum chamber.

3,899,837

EDUCATIONAL APPARATUS

Rodney David Harnett, 13 Kenmore Close Kew Green, Richmond, England

Continuation of Ser. No. 200,863, Nov. 22, 1971, abandoned.

This application July 10, 1973, Ser. No. 377,920

Claims priority, application United Kingdom, Nov. 27, 1970, 56409/70; Mar. 29, 1971, 8063/71

Int. Cl. G09b 19/22

U.S. Cl. 35—8 B

2 Claims



1. Bridge teaching apparatus comprising in combination: a four-sided card table providing the North, South, East and West playing positions required in the game of Bridge; a pack of playing cards having the usual suit and value markings on the faces thereof and, on their backs, deal marks dividing the pack into four hands, North, South, East and West by indicating to which of said playing positions each card is to be dealt; a four-track tape recording having mutually isolated North, South, East and West commentaries in parallel thereon, correlated with said pack by having said commentaries corresponding to a game of Bridge played with said pack dealt according to said deal marks;

four-track tape playback means mounted on said table for playing said recording to provide mutually isolated parallel playbacks of said commentaries; four separate personal sound transducers, North, South East and West, each provided at a respective one of said playing positions; and four separate signal paths connected from said tape playback means to respective ones of said sound transducers, whereby said North commentary is hearable only in said North transducer, said South commentary is hearable only in said South transducer, said East commentary is hearable only in said East transducer, and said West commentary is hearable only in said West transducer.

3,899,838

TEACHING AID

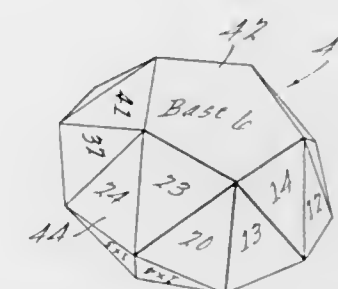
John J. Lalley, and Laurel E. Lalley, both of 3971 Causeway Dr. N.E., Lowell, Mich. 49331

Filed Dec. 13, 1973, Ser. No. 424,295

Int. Cl. G09B 19/02; A63F 9/04

U.S. Cl. 35—31 G

9 Claims



1. A teaching aid comprising a plurality of polyhedrally shaped blocks, said blocks comprising differing numbers of sets of parallel side surfaces, each of said sets of surfaces including a first surface having first display means located thereon and defining a problem to be solved, and a second surface having second display means located thereon and providing an answer to said problem.

3,899,839

WRITING IMPLEMENT FOR PERSONS WITH GREATLY IMPAIRED OR LOST EYESIGHT

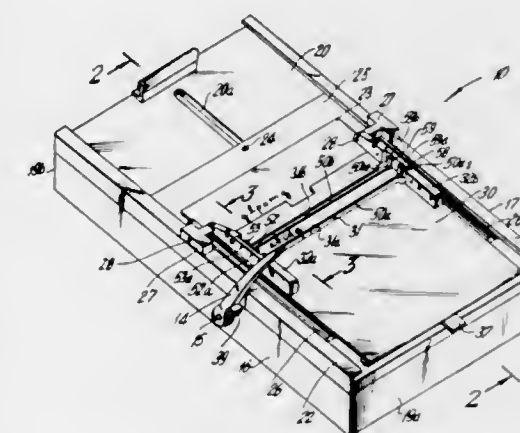
Carl J. Essmann, 82-38 235th St., Queens Village, N.Y. 11427

Filed June 20, 1974, Ser. No. 481,135

Int. Cl. G09B 21/00

U.S. Cl. 35—38

21 Claims



1. A writing implement for persons with partially or totally impaired eyesight comprising, a guide plate overlaying a writing surface and having a transversely disposed slot, a pair of spaced parallel guide bars disposed within said slot and transversely disposed to said plate, and wherein the bar spacing is sufficient for the insertion of a handwriting instrument there-between, and means for retractably moving at least one of said guide bars toward a transverse edge of said slot upon exertion

of the pressure of the handwriting instrument on said one of said guide bars, wherein said means for retractably moving one of said guides comprises means to retain said bars in fixed spaced relationship, means connected to the retainer means to permit movement of said retainer means, towards and away from the transverse slot edge, and spring means operatively connected to said retainer means so that both of said guides retractably move toward one of said transverse slot edges with exerted pressure of a handwriting instrument on one of said guides.

3,899,840

FRAMES FOR SPECTACLES

Rene Louis Maillat, 1 rue Saint Nicolas, Redon, France

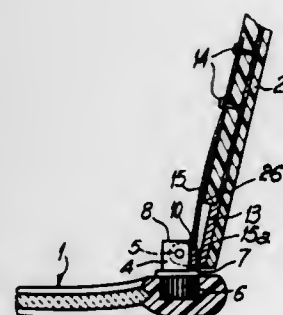
Filed July 30, 1973, Ser. No. 383,543

Claims priority, application France, Aug. 2, 1972, 72.27844

Int. Cl. G02c 5/16, 5/22

U.S. Cl. 351-113

13 Claims



1. A spectacles frame comprising a face side pieces each connected to said face, first hinge knuckles on said face and second hinge knuckles on said side pieces, said first hinge knuckles on said face each being a facet carrying block and said second hinge knuckles on said side pieces each being a forked member having at least two prongs joined by a bridging portion, a hinge pin connecting each second hinge knuckle forked member to a first hinge knuckle facet carrying block, said first hinge knuckle having two facets disposed parallel to the axis of said hinge pin, a resilient strip secured to each of said side pieces and having a free end bearing against one or the other of said two facets of said first hinge knuckle depending upon the relative angular orientation of said face and said side piece about said hinge pin, said free end of said resilient strip engaged between one of said facets of said first hinge knuckle and said bridging portion of said second hinge knuckle to limit pivoting movement of each of said side pieces away from said face.

3,899,841

COUPON DISPLAY AND CLIP THEREFOR

Sol J. Berger, 310 Melvin Dr., Northbrook, Ill. 60062

Filed Mar. 4, 1974, Ser. No. 447,731

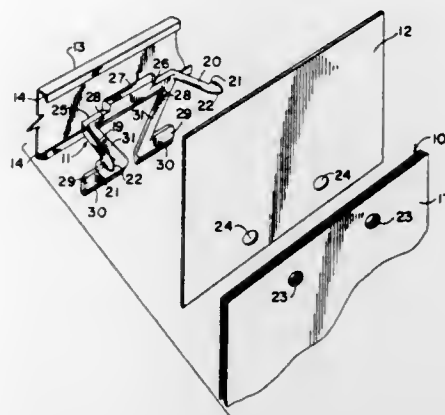
Int. Cl. G09f 3/18

U.S. Cl. 40-11

10 Claims

1. A display assembly of a stack of coupons on a supporting clip for mounting substantially vertically by insertion into a supporting edging having upper and lower flanges, said assembly comprising a plastic clip which is a one piece molded article, said clip having means for securing it to supporting edging by a spring action and to that effect said clip having a base the back surface of which terminates in a top edge and a bottom edge, said edges being parallel to one another and located at the topmost and the bottommost portions of the clip respectively when the base is in a vertical position, and said base being sufficiently flexible to permit flexing of the base to reduce the distance between the topmost edge and the bot-

tommost edge of the base for insertion of the base of the clip between the flanges of a supporting edging by a frontal movement and upon a release of the flexing force said base of the clip snaps back under the natural resiliency of the material of said base to snap the top and bottom edges of the base into position between the flanges of the edging for releasably hold-



3,899,842

CARD POCKET SUPPORTING MEANS

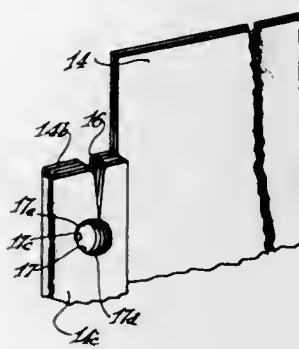
Aaron H. Shneider, 2835 N. Western Ave., Chicago, Ill. 60618

Filed Mar. 29, 1974, Ser. No. 456,149

Int. Cl. B42F 15/00

U.S. Cl. 40-104.18

2 Claims



1. A pocket for records, cards or pictures comprising a sheet of transparent material folded over itself to form a first closed end of said pocket, the free edges of said sheet opposite to said first closed end being closed by a double return folding to form a second closed end and reinforced region, said first and second closed ends being connected by a pair of opposed open ends at right angles thereto, said double return folded edges being fastened together to impart stiffness and strength to said second closed end and reinforced region, the opposed lateral portions of said region each having a portion thereof removed to form a rectangular step having an edge parallel to said adjacent open end, said region having a circular opening formed therein adjacent each parallel edge, each of said steps having a key-slot cut therein from said parallel edge into said circular opening adjacent thereto in a non-radial relationship to said opening, said key-slot being wedge-shaped with the base of the wedge on said parallel edge and the tip of the wedge being positioned at said non-radial juncture of said key-slot and said opening, so that the periphery of said opening continues substantially complete whereby the support elements co-act with portions of said opening periphery remote from said juncture.

3,899,843

SIGNALLING DEVICE WITH A SIGN HAVING PROVISION FOR SPILLING OF WIND AND WITH A SUPPORT

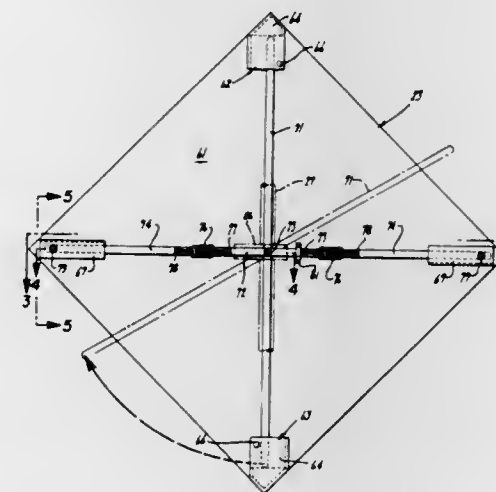
Robert L. Doyle, and Montgomery C. Swezy, both of Palo Alto, Calif., assignors to Western Progress, Inc., Mountain View, Calif.

Continuation-in-part of Ser. No. 689,514, Dec. 11, 1967, abandoned. This application May 8, 1969, Ser. No. 830,908

Int. Cl. G09f 07/18

U.S. Cl. 40-125 G

5 Claims



1. In a signalling device, a flexible sheet-like member, first and second arms, means pivotally interconnecting said first and second arms intermediate the ends of the same, said second arm having a length substantially less than the length of said first arm, first and second extension arms, means yieldably mounting said first and second extension arms on said second arm so that said first and second extension arms are normally disposed in alignment with said second arm, and means securing said sheet-like member to said first arm and to said first and second extension arms to support said sheet-like member in a relatively taut condition and so that at least portions of the sheet-like member are carried by the extension arms, said yieldable means permitting bending of portions of the sheet-like member when a predetermined wind load is placed on the sheet-like member to permit spilling of wind by the sheet-like member.

3,899,844

JOINT MEMBER AND RAIL WITH CLIPS FOR PICTURE FRAMING

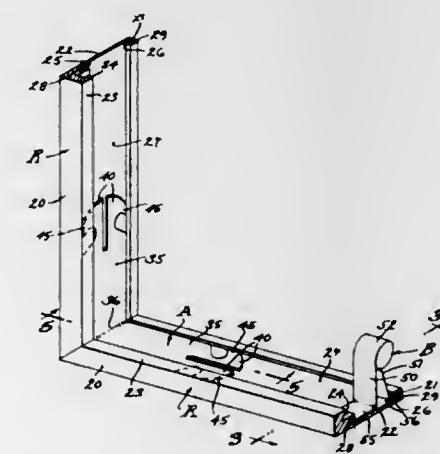
Ben Munn, 8218 DeLongpre Ave., West Hollywood, Calif. 90046

Filed Sept. 21, 1973, Ser. No. 399,457

Int. Cl. G09f 1/12

U.S. Cl. 40-156

3 Claims



1. The combination of picture framing rails and a picture mounting clip therefor: said rail comprising, an elongated body of uniform cross section with a decorative front and

outside contour, a rearwardly disposed face at the inside to engageably receive a picture mounting, and an inside recess rearward of said face, said recess being defined by spaced and opposed front and back channels; a picture mounting of nominal thickness to engage upon said rearwardly disposed face; and said mounting clip comprising a continuous strip of spring material yieldingly separating a pair of mounting means and each of a tongue releasably engageable in one of said front and back channels respectively, one mounting means being offset by its tongue to releasably engage a thick picture mounting and reversely the other mounting means being offset by its tongue to releasably engage a thin picture mounting thereby engaging with a thick or thin picture mounting to secure it to the said rearwardly disposed face.

3,899,845

RECOILLESS WEAPON

Hermann Wild, Ulm, and Arthur Rau, Westerstetten, both of Germany, assignors to J. G. Anschütz GmbH, Ulm, Danube, Germany

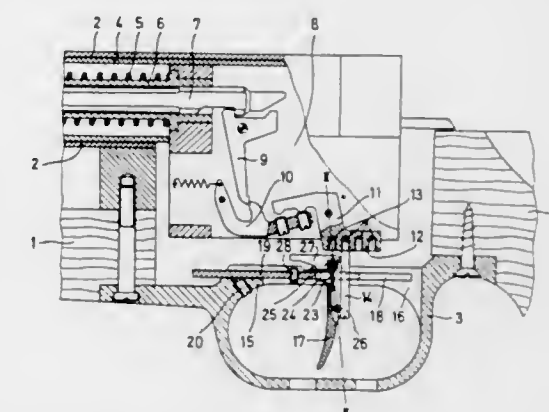
Filed Dec. 11, 1973, Ser. No. 423,865

Claims priority, application Germany, Dec. 15, 1972, 2261476

Int. Cl. F41c 19/00; F41b 11/00

U.S. Cl. 42-69 A

12 Claims



1. A gun comprising a stock, a sear-like element operable to release a projectile discharging mechanism, a trigger and a recoil absorbing mass movable in an opposite direction to that in which a projectile is to be discharged, said trigger being pivotally mounted for movement about an axis fixed relative to the stock and said sear-like element being mounted upon and movable with said recoil absorbing mass, and a coupling element connecting said trigger and sear in a ready to fire position of the projectile discharging mechanism, said coupling element comprising an intermediate lever pivotally mounted on said recoil absorbing mass and operatively connected to the sear-like element and comprising an operating element which, in the ready to fire condition of the gun, lies within the path of movement of the trigger, said operating element comprising a pin adjustably secured to said intermediate lever.

3,899,846

REMOVABLE CONVERTER FOR A FISHING POLE WITH AUTOMATIC RELEASE FOR FISHING LINE

George R. Sanchez, 502 Berry Ave., Hayward, Calif. 94544

Filed Sept. 9, 1974, Ser. No. 504,448

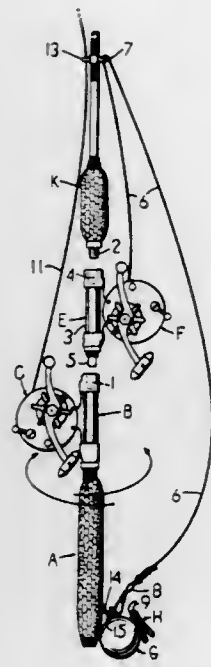
Int. Cl. A01k 87/00

U.S. Cl. 43-25

3 Claims

1. In combination:
a. a fishing pole having a handle and fishing reel removably connected to the pole;
b. said fishing reel having a fish line adapted to be wound on the reel;
c. a converter having a weight retrieving reel mounted thereon and having a weight retrieving line adapted to be wound thereon;

- d. a weight connected to the weight retrieving line and having a quick release catch thereon for gripping the fishing line adjacent to the baited hook on the line;



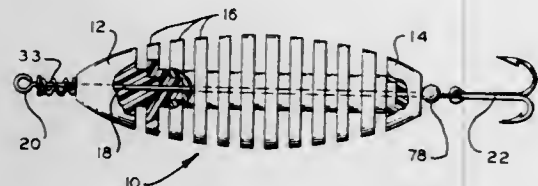
- e. and means for removably connecting said converter to said handle and to said pole.

3,899,847 FISH LURE

Michael Dworski, 4708 Kane Pl., Jupiter, Fla. 33458
Continuation-in-part of Ser. Nos. 255,401, May 22, 1972, abandoned, and Ser. No. 260,112, June 6, 1972, abandoned.
This application Jan. 2, 1974, Ser. No. 429,572
Int. Cl. A01k 85/00

U.S. Cl. 43-42.09

24 Claims



1. An artificial minnow for association with the hooked end of a fishing line or leader, said minnow comprising:
a. a body having head and tail ends and a central portion;
b. said body being symmetrically arranged about a central, longitudinal axis curved in plan view and having an opening extending therethrough for loose passage of a line or leader; and
c. said central portion including a plurality of longitudinally spaced rib elements extending radially from said axis.

3,899,848

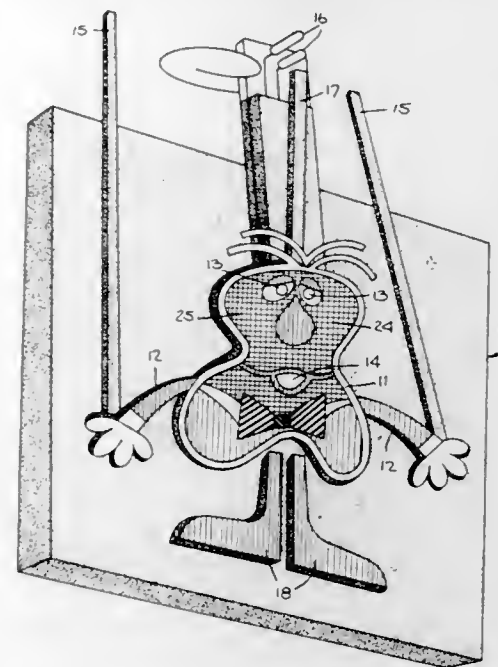
ANIMATED CARTOON CHARACTER AND METHOD
Morey Bunin, New York, N.Y., assignor to Aniforms, Inc., New York, N.Y.

Filed Jan. 20, 1975, Ser. No. 542,451
Int. Cl. A63H 7/00; G03B 19/18

U.S. Cl. 46-126

4 Claims

1. In apparatus for continuous production of movingline type animated characterizations for use in television or moving picture techniques of the type wherein the apparatus comprises in combination at least one essentially two-dimensional open outline primary form fabricated from readily deformable material in the shape of an outline of an object, and at least one secondary two-dimensional form fabricated in the shape of a feature of said object, and means connected to



side of the area defined by said primary form with an opaque, flexible material normally showing as a black color on television.

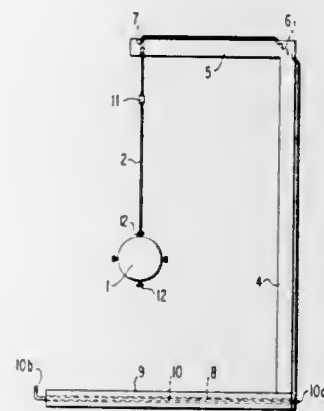
3,899,849

REMOTE-CONTROL DEVICE FOR SPINNING TOPS
John D. Witiak, 8648 Piney Branch Rd., Silver Spring, Md. 10901

Filed May 16, 1973, Ser. No. 360,798
Int. Cl. A63h 27/12, 33/26

U.S. Cl. 46-241

13 Claims



1. A device for remotely controlling one or more spinning tops, including at least one spinning top, having at least a portion thereof fabricated from a paramagnetic material, a drawstring secured at one end thereof to said spinning top to permit winding of said top on said drawstring, remote control means for actuating one or more of said tops, magnetic means cooperating with said paramagnetic portion for selectively engaging said spinning top, the improvement comprising: a support means for mounting one or more spinning tops including, a base member, a vertical support member having one end thereof fixed to said base member; a horizontal support member, spaced from and disposed in parallel relationship to said base member, said horizontal support member having one end thereof fixed to the other end of said vertical support member; a first bore disposed in said horizontal support member extending substantially perpendicular to said base member at an end remote from said vertical support member; passage means provided in said horizontal support member and said vertical support member, said passage means being angularly disposed with respect to said horizontal support member and said vertical support member; and a second bore provided in said base member extending substantially parallel to said horizontal support member, said drawstring passing through at least one

of said bores and said passage means and said remote control means being operable through at least one of said bores whereby said one or more spinning tops may be selectively operated.

3,899,850

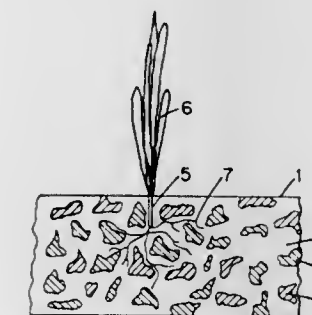
CARRIER BODIES FOR PLANTS

Maternus Gflick, Linz-Hart; Bernhard Eder, and Walter Kriegner, both of Linz, all of Austria, assignors to Semperit AG, Vienna, Austria

Continuation-in-part of Ser. No. 166,831, July 28, 1971, abandoned. This application Apr. 8, 1974, Ser. No. 459,066
Int. Cl. A01G 9/10

U.S. Cl. 47-37

18 Claims



1. A carrier body for a plant, comprising a mixture of foam flakes and nutritives, said foam flakes embodying foam flakes including at least 80% open pores, a foam binder of open cell configuration for binding together said foam flakes and nutritives to form a foamed body, said foam binder being water insoluble, said foamed body possessing a density value of between 60 and 200 kg per m³.

3,899,851

MACHINES FOR EDGE-TRIMMING AND BEVELLING SPECTACLE LENSES

Robert Raymond Maurice Asselin, 10, rue Magenta, and Pierre Henri Léon Asselin, 61, rue Poussin, both of Elbenf, France

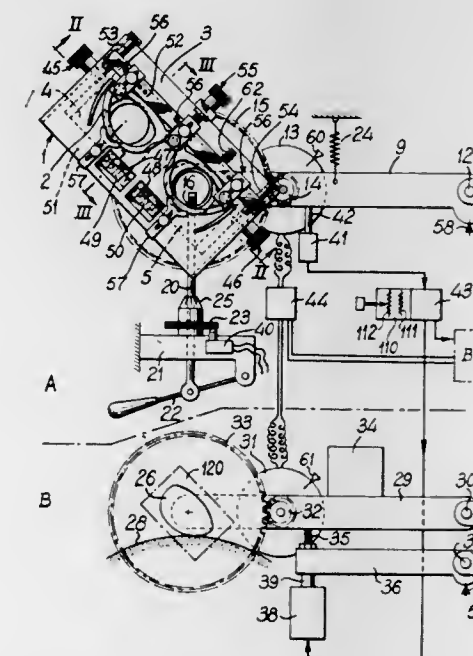
Filed June 25, 1973, Ser. No. 372,996

Claims priority, application France, June 28, 1972, 72.23305; May 9, 1973, 73.16695

Int. Cl. B24B 9/14

U.S. Cl. 51-101 LG

31 Claims



1. Apparatus for beveling the edges of a lens in conformance with a predetermined bezel contour comprising a support for holding a member having a bezel contour, means for rotating said bezel support about an axis perpendicular to the

mean plane of the bezel member, means for following the contour of said bezel member to sense the shape thereof, a grinding machine having a grinding wheel, a support for holding a lens, means for rotating said lens support, each of the bezel member support and lens support being carried on an individually pivotable arm, said means for rotating the corresponding support being mounted on the respective arm and means for copying the shape of said bezel on said lens comprising means interconnecting said means for rotating said lens support and said means for rotating said bezel support rotating said lens synchronously with the rotation of said bezel member, means for simultaneously moving said lens support and said grinding wheel relatively toward each other in response to the sensing of the shape of said contour to cause said grinding wheel to grind said lens into the shape of said bezel and means for controlling the relative pressure between said lens and said grinding wheel independently of the means for following said bezel.

3,899,852

SPINDLE DRIVE ASSEMBLY FOR A SURFACE-TREATING MACHINE

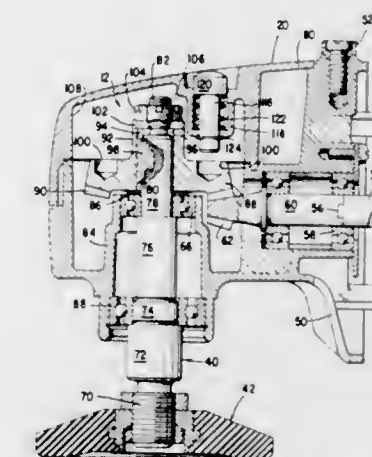
William A. Batson, Pickens, S.C., assignor to The Singer Company, New York, N.Y.

Filed Aug. 23, 1974, Ser. No. 499,814

Int. Cl. B24B 23/00; G05G 5/06

U.S. Cl. 51-170 T

7 Claims



1. A spindle drive assembly for a surface-treating machine driven by a portable electric motor mounted in a housing and having a drive pinion engaging said assembly, said assembly comprising:

- a spindle journaled in the housing perpendicular to the drive pinion,
- a driven gear affixed to the spindle in superposition to and in operative engagement with the drive pinion,
- face apertures formed on the side of the driven gear opposite the drive pinion,
- a pin carried by the housing for engaging any one of the face apertures,
- means connected to the pin to normally bias the pin in the direction away from the face apertures, and
- manually operated means formed on the pin for operator actuation in overcoming the bias means to urge the pin to engage one of the face apertures to lock the driven gear and the spindle against rotation.

3,899,853

TENT STRUCTURE

Charles D. Wertman, Kirkland Lake, Canada, assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Apr. 8, 1974, Ser. No. 458,662

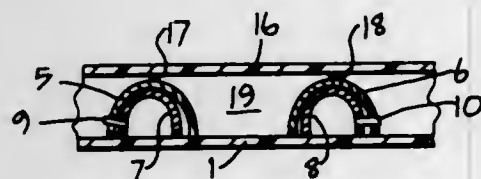
Int. Cl. E04B 1/34; E04G 11/04

U.S. Cl. 52-2

2 Claims

1. A tent structure, comprising

a first sheet of material functioning as a tent cover, said sheet having a plurality of spaced substantially parallel pockets formed on one surface thereof;
a plurality of independently inflatable tubes, each housed in a corresponding one of the pockets of the sheet and each having a valve device selectively inflating and deflating it whereby in inflated condition the tubes stand upright as



a plurality of substantially parallel arches supporting the sheet therein; and
a second sheet of material functioning as a tent cover and fastening means on the second sheet and on pockets formed in the first sheet for removably fastening the second sheet on the outside of the arches with an air space determined by the thickness of the inflated tubes between the first and second sheets.

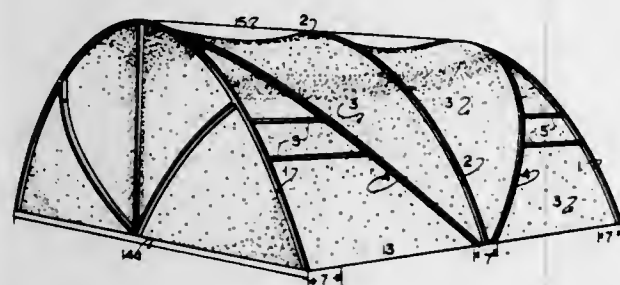
3,899,854

METHOD OF ERECTION FOR A PRETENSIONED MEMBRANE STRUCTURE

Carl F. Huddle, Pleasant Ridge, Mich., assignor to Jon Vredevoogd, Mason, Mich. and Tension Structures Co., Pleasant Ridge, Mich., part interest to each
Division of Ser. No. 359,892, May 14, 1973. This application
Feb. 19, 1974, Ser. No. 434,077
Int. Cl.² E04B 1/32

U.S. Cl. 52-80

5 Claims



1. In the construction of a tensioned membrane structure supported by a multiplicity of prestressed upright arches with curved bights, consecutively spaced apart and mounted on a base that includes at least one intermediate arch interposed between two upright arches, at least one shallow longitudinal arch, attached to and extending between said two upright arches that bridges at least one intermediate arch to form a vaulted frame in space, a flexible membrane operatively attached to and extending between said upright arches which has a definite concave inward curve between said arches and is tensioned longitudinally and transversely to form a roof for the structure; a method of assembly and erection of said structure that includes:

- the assembly of said support arch members, in their flat state, on a base in a pre-erection pattern
- attaching said membrane to said flat support arch members
- attaching each end of a shallow longitudinal arch to a support arch member, said longitudinal arch bridging at least one intermediate support arch
- Attaching optional safety tension members between support arch members
- Moving the opposite ends of the support arch members towards each other thus causing the prestressed support arches to be formed by bowing them from their flat position which raises the structure to a selected position

- Adjusting membrane tensions by moving the arches horizontally
- Securing the structure to the supporting base
- Installing optional tension members between the opposite ends of said support arches.

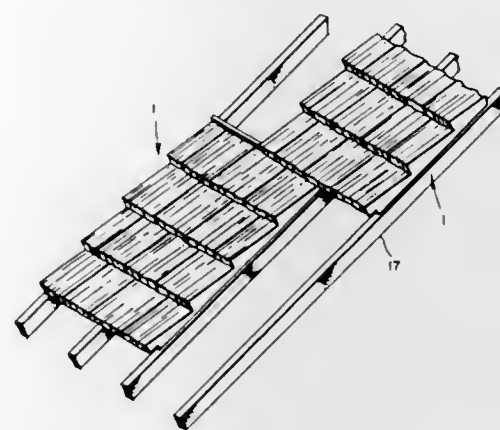
3,899,855

PEAKED ROOF STRUCTURE OF POLYURETHANE MOLDED BUILDING PANELS WITH INTEGRAL, BONDED, LOW-DENSITY URETHANE INSULATION BACKING

William Gadsby, Seattle, Wash., assignor to Nathaniel G. Kanrich, Seattle, Wash.
Continuation-in-part of Ser. No. 225,548, Feb. 11, 1972, abandoned. This application May 25, 1973, Ser. No. 364,089
Int. Cl. E04b 7/02

U.S. Cl. 52-90

4 Claims



1. A roof structure comprising: spaced rafters extending from the peak of the roof, rows of side-by-side, prefabricated, durable, fire-retardant building panels bridging the gaps between the rafters and secured thereto, each roof panel comprising a unitary, variable-density, closed-cell, polyurethane foam panel having an outer, variegated skin surface resembling a hand-split shake roof of natural wood with a density from 25 to 60 pounds per cubic foot and an inner, integral, insulating, low-density, polyurethane foam with a density ranging 4 to 12 pounds per cubic foot, an ultra-violet stabilized sealant coating over the exterior surface of each panel, a continuous recessed portion along the lower edge of each panel extending the entire length of the lower edge for mating and keying with the upper edge of an abutting roof panel,

means for securing the panels to the rafters, such means including (1) clips cast into each of the upper corners of each panel, each clip provided with an inwardly extending slot and tab portion extending beyond the terminating upper edge of the panel through which means are driven into the rafter to secure the panel to the rafter, and (2) clips cast into each of the lower corners of the panel within the recessed portion, each clip having a tab extending outwardly into the recessed portion mating with the slot of the clips in the upper edges of an abutting panel, and

a sealant between the abutting edges of each panel.

3,899,856

PROPERTY BOUNDARY MARKER

John David Johnson, 1435 3rd Ave. South, Anoka, Minn. 55303

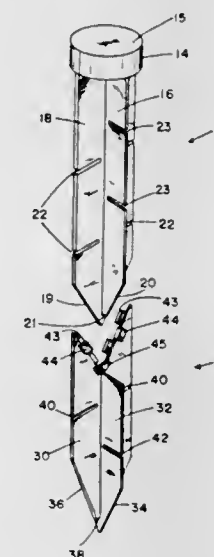
Filed June 3, 1974, Ser. No. 475,746
Int. Cl.² E04F 9/02

U.S. Cl. 52-98

8 Claims

1. A property boundary marker adapted to be driven into the ground comprising a main column with a driving head at one end and a point at the other end, said main column being formed from at least two generally planar members intersect-

ing each other generally along the axis of said main column, which axis extends from said head to said point, and at least one secondary column also formed from intersecting planar members and having a point at one end and interlocking means at the other end, said interlocking means comprising tabs extending from the ends of some of the planar members



of the secondary column generally along said axis so as to lay alongside the planar members of said main column adapted to receive the point of said main column therein with the planar members of the main column generally in alignment with the planar members of said secondary column, at least one of said secondary column planar members being cut in at an angle to receive the pointed end of the other column.

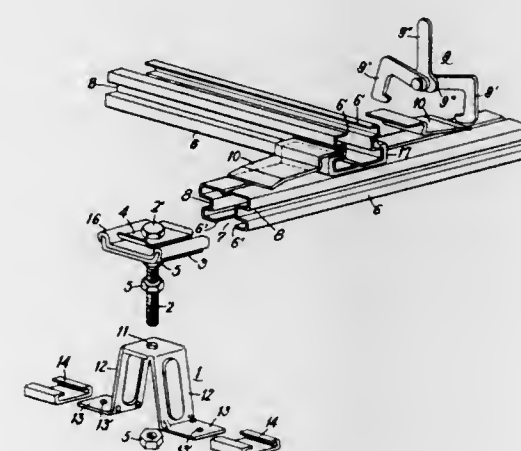
3,899,857

FRAMING ELEMENT AND ITS SUPPORTING DEVICE FOR LAYING INTERIOR BOARDING ON FOUNDATION STRUCTURE

Mitsuo Mochizuki, 3-chome, Higashi-Osaka, Japan
Filed Dec. 12, 1973, Ser. No. 424,077
Int. Cl.² E04F 15/024

U.S. Cl. 52-126

9 Claims



1. A supporting device comprising a metal supporting stand having an upper end provided with a central hole and a leg portions having ground-contacting plates for attachment to a slab surface, a framing element provided with a longitudinal under-groove on its under-side and supported by the stand at a desired height above the slab's surface, an adjusting bolt accommodated in the central hole of the upper end and rigidly fixed to the stand, supporting the framing element by means of a set of nuts contacting said upper end about said central hole from both above and below, another nut member disposed on said bolt fastening the under-side of said framing element between the head end of said bolt, which is accommodated in the under-groove of the framing element, and a supporting plate disposed on said bolt underneath said bolt head,

and said supporting plate coacting with the framing element to support the framing element from below.

3,899,858
WINDOW

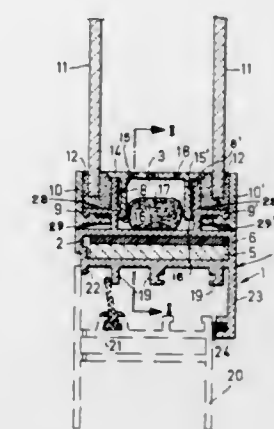
Paul Zanker, Tubingen, Germany, assignor to Saint-Gobain Industries, France

Filed Oct. 23, 1973, Ser. No. 409,015
Claims priority, application Germany, Oct. 21, 1972, 2251790

U.S. Cl. 52-172

Int. Cl. E06b 3/24

5 Claims



1. A moveable double-glazed window including a frame comprising, along each side of the window, a plurality of linear elements assembled together into a frame side member defining

- inner and outer tubular channels,
- at least two flanges extending from the exterior of said inner channel for the reception on each of a fillet of mastic, and
- at least one flange extending from the exterior of said outer channel for engagement with a stationary window casing,

said frame comprising, at the corners thereof where adjacent of said frame side members intersect, fastening means engaging the outer channels of said intersecting frame side members, said window further comprising absorbent means disposed in the inner tubular channel of at least one of the said frame side members, and two panes each having its edges embedded in one of said fillets, the inner tubular channel of at least one frame side member being apertured to the space between said panes.

3,899,859

SKIRTING BOARDS AND FACIA COVERS THEREFOR

Ronald Smith, 73 Hampton Road, Manchester, Lancaster, England
Filed Mar. 4, 1974, Ser. No. 447,641
Claims priority, application United Kingdom, May 18, 1973, 23864/73

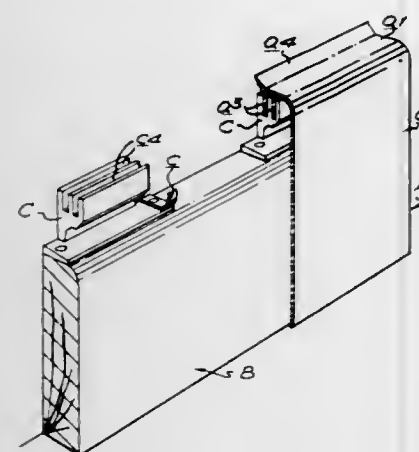
Int. Cl.² E04F 19/04

U.S. Cl. 52-287

6 Claims

1. Means for the detachable covering of an existing skirting board extending along the wall of a room at the floor and having a top extending away from the wall comprising a fascia cover and means for mounting said cover on the board, said cover comprising a vertical portion adapted for extending upward from adjacent the floor and having an integral upper end portion adapted for extending over said top portion of the board to the wall, said upper end portion having a longitudinal resilient edge for engaging the wall with a substantially dust tight fit, and a plurality of integral longitudinal internal ribs on said cover projecting toward said board, and said mounting means comprising a plurality of brackets adapted to be secured upon said top portion of the board, each of said brack-

ets having a plurality of longitudinal slots adapted to receive in interfitting relation the ribs on said cover, and said brackets



comprising the sole connections between said cover and the skirting board.

3,899,860

ENTRANCE DOOR AND METHOD OF CONSTRUCTION
Norman M. Newell, 14508 Carmenita Rd., Norwalk, Calif. 90650

Filed July 10, 1974, Ser. No. 487,170

Int. Cl. B32b 21/14

U.S. Cl. 52—313

6 Claims

1. A method of constructing a door with paneling on the surface thereof, including the steps of

cutting a thin sheet of hardboard having a grain structure embossed on the upper surface thereof to provide a plurality of panel members,

laying said panel members down side-by-side on a flat working surface to form a rectangular composite sheet of paneling with the adjacent panel members in at least the central section of the composite sheet grouped and arranged in patterns of diverse grain direction,

laying strips of adhesive tape along the cracks of adjacent panel members to hold them together,

applying glue to a surface of an understructure for the door, placing said composite sheet of paneling on said surface of the understructure,

pressing said composite sheet of paneling and understructure together until the glue dries, and

forming grooves along the horizontal and vertical side edges of said plurality of panel members in at least the central section of the composite sheet.

3,899,861

SOUND INSULATING WINDOW

R. G. Brown, London, England, assignor to The Council of the London Borough of Hounslow, London, England

Filed Feb. 4, 1974, Ser. No. 439,547

Claims priority, application United Kingdom, Feb. 3, 1973, 5473/73

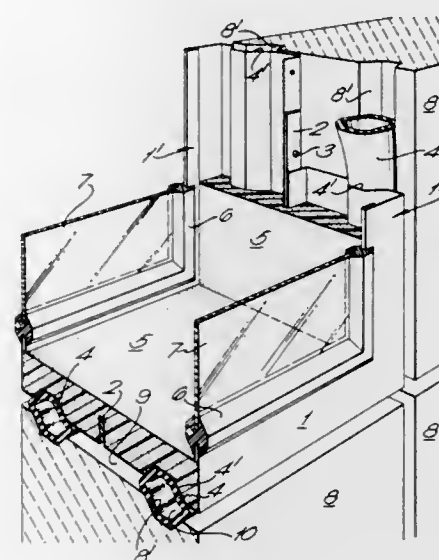
Int. Cl.² E04B 2/28; E06B 1/18

U.S. Cl. 52—616

8 Claims

1. A sound insulating window structure comprising two frame members constructed from sheet material, each frame member in transverse cross-section being of a generally U-shaped configuration defined by a pair of flanges joined by a web, said frame members being positioned in coextensive side-by-side relationship with a first flange of each frame member being adjacent each other and a second flange of each frame member being remote from each other, said first flanges being disposed between said second flanges, resilient sound insulating means located between said first flanges, means connecting said two frame members in their coextensive side-by-side relationship, a peripheral outwardly opening recess formed in each of said webs bounding the respective

frame members, sound insulating material located within said U-shaped frame members, a resilient glazing strip peripherally extending about and secured to said second flanges, glazing material secured by said resilient glazing strips to each of said



3,899,862

STERILIZATION OF CONTAINERS

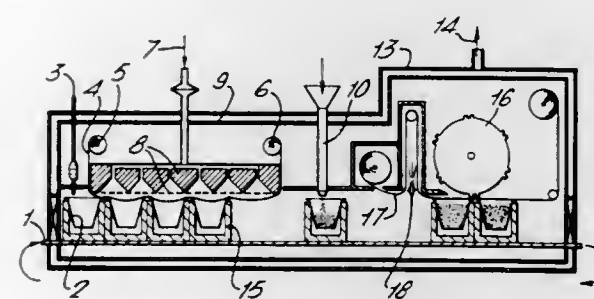
Gerard Tuynenburg Muys, Rotterdam; Hubertus Leonardus Maria Lelieveld, Maassluis, and Robert van der Hulst, Vlaardingen, all of Netherlands, assignors to Lever Brothers Company, New York, N.Y.

Continuation-in-part of Ser. No. 131,626, April 6, 1971, abandoned. This application June 12, 1973, Ser. No. 369,348

Int. Cl. B65b 55/10

U.S. Cl. 53—21 FC

12 Claims



10. A process for continuously sterilizing, aseptically filling and closing containers in a low moisture environment maintained at substantially ambient conditions comprising the steps of placing the containers on a moving conveyor; moving the containers past a sterilising agent dosing device; dosing the containers with a sterilising agent which does not substantially increase the temperature of the container; temporarily sealing the container; retaining the sterilising agent in the container for a time sufficient for sterilisation to take place; moving the containers into a sterile tunnel within which a gaseous environment is maintained at slight over pressure; removing the temporary seal; filling the container; applying a sterile lid to the container; and moving the closed container out of the tunnel.

3,899,863

APPARATUS FOR THE EXITING OF PRODUCTS, PARTICULARLY PACKETS OF CIGARETTES AND SIMILAR, FROM A WRAPPING PACKING LINE FOR THE SAID PRODUCTS

Ariosto Seragnoli, deceased, late of Bologna, Italy, and by Elazar Romano, legal representative, Bologna, Italy, assignors to G. D. Societa in Accomandita Semplice di Enzo Seragnoli e Ariosto Seragnoli, Italy

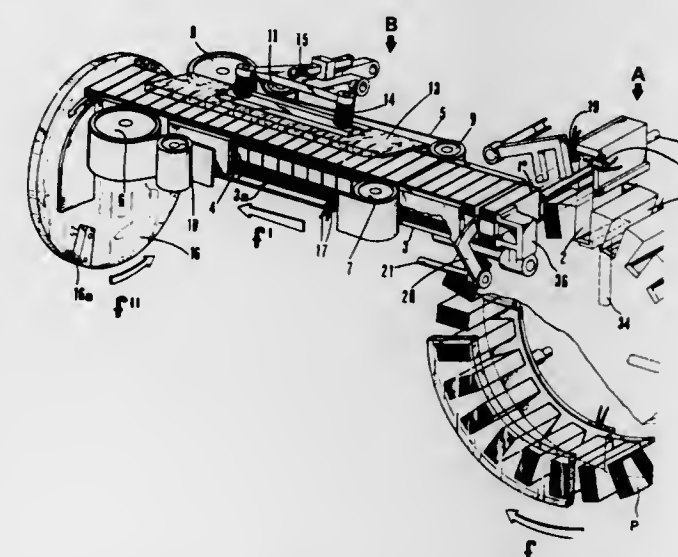
Filed Dec. 10, 1973, Ser. No. 423,180

Claims priority, application Italy, Mar. 5, 1973, 3345/73

Int. Cl. B65b 57/00

U.S. Cl. 53—53

5 Claims



1. Apparatus for controlled exiting of packaged products from an intermittently operable packaging machine, comprising:

channel means for receiving packaged products, one at a time, from an intermittently operable packaging machine and for providing a flow path for such products, the channel means having mutually opposite ends providing respectively an entry portion and an exit portion of the flow path; transporting means for effecting intermittent transporting of packaged products onto and along the channel means, toward the exit portion;

retainer means disposed adjacent to and upstream of said entry portion; means for effecting intermittent moving of the retainer means between a first position thereof, in which the retainer means is enabled to close said entry portion and to retain the received packaged products, and a second position of the retainer means, in which — pursuant to said transporting of products by the transporting means — a packaged product, if presented for entry is enabled to enter said entry portion;

first sensing means, disposed adjacent to and upstream of said retainer means for effecting intermittent sensing of whether or not a packaged product is presented for entry into said entry portion; second sensing means, disposed downstream of said retainer means and upstream of said exit portion for effecting intermittent sensing to test received products as to whether or not each of them has been properly packaged;

ejector means at the exit portion of the channel means; means for effecting intermittent moving of the ejector means to eject successive received products from the channel means; deviator means for selective directing of ejected products along different paths in response to the sensing of said second sensing means; control means for controlling the selective directing of ejected products by the deviator means in response to the sensing of the second sensing means;

means for synchronizing the intermittent transporting, moving, controlling and sensing, with intermittent operations of the machine for packaging products; and means for interrupting the synchronized intermittent transporting and moving and the synchronized intermittent sensing of

the second sensing means, in response to sensing by the first sensing means that a packaged product is not presented for entry, and until said first sensing means senses that a packaged product is presented for entry; whereby the apparatus effects selective exiting of properly packaged products along one path, and of other products along a different path, whenever a packaged product is presented to enter the entry portion of the channel means.

3,899,864

COIN WRAPPING APPARATUS

Isamu Uchida, Tokyo; Kenkichi Watanabe, Kawasaki, and Hideshi Sentoku, Tokyo, all of Japan, assignors to Laurel Bank Machine Co., Ltd., Tokyo, Japan

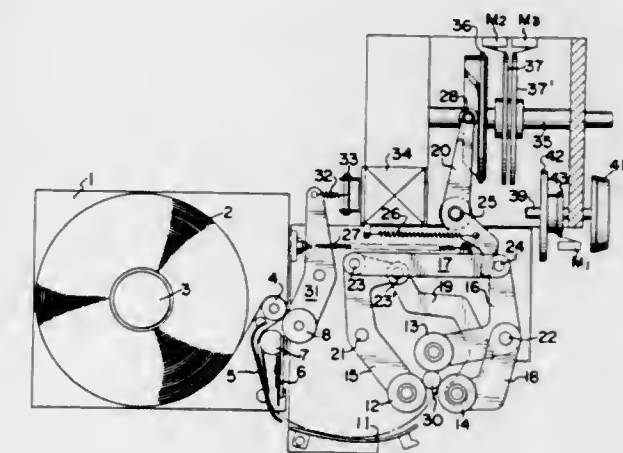
Filed Dec. 10, 1973, Ser. No. 423,518

Claims priority, application Japan, Dec. 15, 1972, 47-12602

Int. Cl. B65b 11/04

U.S. Cl. 53—212

11 Claims



10. A coin wrapping apparatus comprising a coin wrapping station adapted to receive and support a cylindrical stack of coins therein; and

means at said wrapping station for selectively guiding and wrapping a coin wrapping tape about a stack of coins at the station;

said wrapping means including:

three wrapping rolls respectively located in a predetermined array at the vertexes of an equilateral triangle;

two connecting levers, each having one of said wrapping rolls mounted at one end thereof and each being pivotally mounted in said apparatus at their mid-portion of fixed pivot points;

a connecting rod having opposite ends pivotally connected to the ends of said connecting levers remote from said one ends thereof, said connecting rod and said connecting levers being disposed with respect to each other such that the opposite ends of said connecting rod and said fixed pivot points always are located at the corners of a parallelogram;

a first arm having the other of said wrapping rolls mounted at one end thereof and pivotally mounted at its other end on one of said first pivot points;

a second arm, said other of said wrapping rolls also being mounted, at one end of said second arm, and said second arm being pivotally connected to said remote end of one of said levers.

3,899,865

WRAPPING APPARATUS

Leon Revaz, Bienne, Switzerland, assignor to Otto Hansel GmbH, Hannover, Germany

Filed Oct. 3, 1973, Ser. No. 403,336

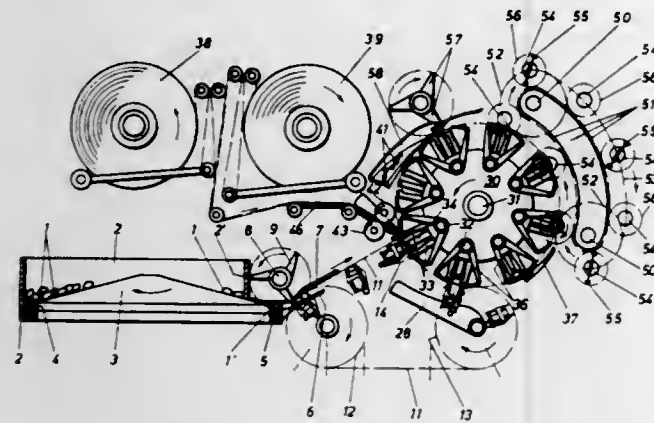
Int. Cl.² B65B 11/34

U.S. Cl. 53—234

13 Claims

1. Apparatus for continuously wrapping sweets or like small objects, said apparatus comprising a continuously revolving wrapping head carrying a plurality of gripping and folding

devices positioned about its circumference, a feed conveyor carrying a plurality of sweet carrying devices for feeding sweets consecutively to the wrapping head, feed means for feeding wrappers to the wrapping head, means for guiding the feed conveyor from a sweet receiving station towards the wrapping head and then around part of the circumference of the wrapping head where the feed conveyor travels in synchronism with the wrapping head and where each sweet car-



ried by a sweet carrying device is transferred therefrom to a corresponding gripping and folding device for holding and partially wrapping each sweet transferred thereto in a wrapper from the feed means, and closure means positioned adjacent to the wrapping head for closing each partially wrapped sweet held by the gripping and folding devices on the wrapping head within its wrapper.

3,899,866

LAWN MOWER

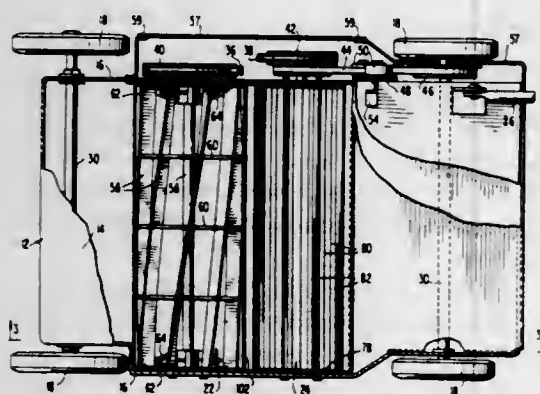
Werner Adolph Klier, 200 E. Bonner, San Antonio, Tex. 78214

Filed June 6, 1974, Ser. No. 477,474

Int. Cl. A01d 35/24

U.S. Cl. 56-13.8

12 Claims



1. A lawn mower comprising:

a housing supported by a plurality of wheels, said housing having a top wall and depending side walls, power means mounted on said top wall of said housing, reel-type cutting means disposed within said housing, said cutting means extending substantially transversely to the direction of travel of said mower and being rotatably mounted on opposite side walls of said housing, shredder means disposed within said housing rearwardly of said cutting means, said shredder means being rotatably mounted on opposite side walls of said housing and having vane means for creating a rearward air flow during rotation of said shredder means, means for drivingly connecting said cutting means and said shredder means to said power means, subhousing means mounted within said housing and substantially enclosing said cutting means and said shredder means, and discharge means mounted within said housing for guiding shredded grass cuttings rearwardly from said shredder member to the exterior of said housing.

whereby rotation of said cutting means and said shredder means serves to create a rearward air flow in said subhousing means to lift grass for uniform cutting by said cutting means and to move the grass cuttings rearwardly to said shredder means and then rearwardly through said discharge means.

3,899,867

METHOD AND APPARATUS FOR FORMING HELICALLY WRAPPED YARNS

Francis B. Northup, and Donald R. Hart, both of Sanford, N.C., assignors to Spanco Yarns, Inc., Sanford, N.C.

Continuation-in-part of Ser. No. 279,944, Aug. 11, 1972, Pat.

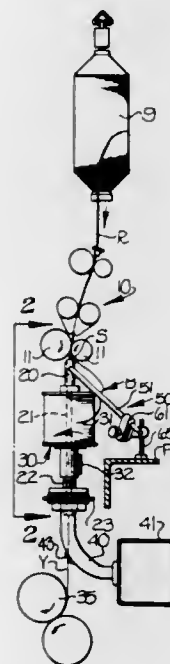
No. 3,831,369. This application July 15, 1974, Ser. No.

488,810

Int. Cl. D02g 3/28; D01h 7/18

U.S. Cl. 57-18

20 Claims



10. In a machine for making a higher quality wrapped yarn from a core strand and a binder strand, said machine comprising a hollow spindle having a package of binder strand mounted for rotation thereon and adapted to be wrapped around the core strand as the core strand is moving into one end of and through the hollow spindle and wherein the binder strand inherently balloons outwardly in its path of travel from the package to the core strand being wrapped, the combination therewith of means positioned in the path of travel of the ballooning binder strand for intermittently and repeatedly interrupting the path of travel of the ballooning binder strand and imparting an undulating movement thereto to cause fiber waste picked up by the binder strand to be cast off the same and to thus improve the quality of the wrapped yarn being formed.

3,899,868

CONTROL ARRANGEMENT FOR YARN PIECING APPARATUS

Charles D. Lee, Jr., and William L. Mulligan, both of Charlotte, N.C., assignors to Parks-Cramer Company, Fitchburg, Mass.

Filed July 17, 1974, Ser. No. 489,432

Int. Cl. D01h 15/00

U.S. Cl. 57-34 R

7 Claims

1. In combination with a textile yarn forming machine having a plurality of drafting systems arranged at a series of locations for normally receiving a corresponding series of supply strands and normally delivering a corresponding series of attenuated strands and a plurality of stop members, each mounted adjacent a corresponding one of said drafting systems and selectively actuatable for movement between a retracted

position spaced from a corresponding supply strand and a strand interrupting position engaging and restraining the corresponding supply strand and thereby for interrupting passage of the restrained supply strand into the corresponding drafting system, and

a traveling unit traversing the machine and having instrumentalities for reinstituting attenuated strand formation at a drafting system where an attenuated strand is absent, an arrangement for facilitating reduction in the number of ineffective attempts at reinstitution of strand formation and comprising:

active sonic detector means mounted on said traveling unit for movement therewith along said machine and for electrically signaling traversal of a drafting system location at which the corresponding one of said stop members is in the retracted position,

attenuated strand detector means mounted on said traveling unit for movement therewith along said machine and responsive to electrostatic charges normally present at drafting system locations during attenuated strand formation for electrically signaling traversal of a drafting system

generally straight central passage formed therein extending longitudinally of said spindle and opening endwise outwardly at one end through said one end of said spindle, the other end of said passage curving slightly outwardly and opening through one side of said spindle at the minor diameter end of said head, and a longitudinal slot formed in said head communicating the full length of said passage with the external sur-



faces of said head on said one side of said spindle, said slot opening through said one side of said spindle along a sine wave path extending longitudinally of said head, said slot, at any point therealong, opening inwardly along a straight generally radial path into said passage, said sine wave path including alternate centerline crests spaced circumferentially about said one side of said head a distance greater than the width of said slot.

3,899,870

SPOOL CHANGING DEVICE FOR SPINNING MACHINES
Siegfried Roller, Fellbach, and Gustav Idler, Strumpfelbach, both of Germany, assignors to C. Eugen Maier Metalverarbeitung GmbH, Fellbach, Germany

Filed Dec. 3, 1973, Ser. No. 421,218

Claims priority, application Germany, Dec. 29, 1972, 2263933

Int. Cl. D01h 9/10, 15/00

U.S. Cl. 57-53

8 Claims

location at which normal attenuated strand formation is occurring,

logic circuit means electrically connected with said sonic detector means and said strand detector means for distinguishing among signaled traversal of a location at which said corresponding member is in the retracted position and strand formation is occurring, signaled traversal of a location at which said corresponding member is in the retracted position and strand formation has been interrupted, and traversal of a location at which said corresponding member is in the strand interrupting position, and

control means for responding to said logic circuit means distinguishing signaled traversal of a location at which said corresponding member is retracted and strand formation has been interrupted by stopping traversal of said machine by said traveling unit and initiating operation of said instrumentalities for reinstituting attenuated strand formation and for responding to said logic circuit distinguishing either of the other traversals by continuing traversal of said machine by said traveling unit.

3,899,869

SHANK HEAD FOR DROP SPINDLE

Walter C. Easton, Route No. 1, Oakland, Maine 04763

Filed Mar. 11, 1974, Ser. No. 450,044

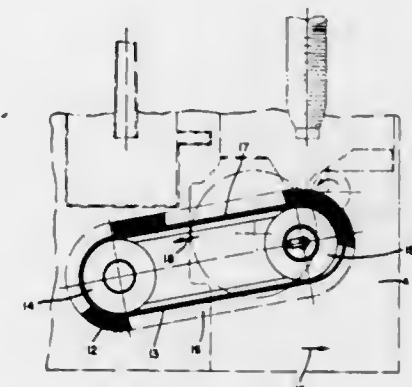
Int. Cl. D01H 7/04

U.S. Cl. 57-37

3 Claims

1. In combination with a drop spindle including opposite ends, one end of said spindle including a shank portion having a gradually flaring head on one end, said head including a

1. A package-changing apparatus for spinning and twisting machines in which packages in the form of a fully wound yarn tube are removed from a spindle and a fresh yarn tube placed on the spindle, the apparatus comprising movable support means arranged to move past the spindle, cutting means located on said movable support means and retaining means movably mounted on the movable support means in a position



located between the cutting means and the spindle so that upon removal of a package from the spindle the end of the yarn on the package is held by the retaining means prior to the cutting of the yarn, and after cutting of the yarn turns of yarn formed on the spindle are held in position thereon by the retaining means until a new yarn tube is placed on the spindle.

3,899,871

CLOCK WITH DIAL ILLUMINATION

Kiyoshi Kitai, Tokyo, Japan, assignor to Seiko Koki Kabushiki Kaisha, Japan

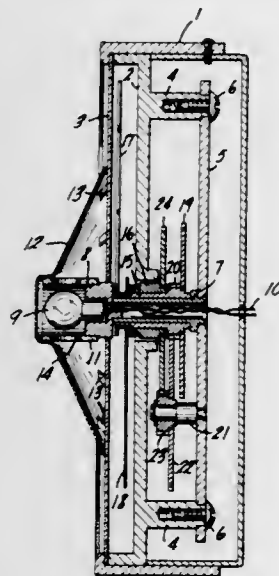
Filed May 7, 1974, Ser. No. 467,748

Claims priority, application Japan, May 9, 1973, 48-53570; May 9, 1973, 48-53571

Int. Cl. G04b 19/30

U.S. Cl. 58—50 R

4 Claims



1. A clock comprising, a case, a dial internally thereof having time indicia on a face thereof, a tubular element coaxial with the dial and extending axially rearwardly of the backside of the dial, an electric bulb socket mounted coaxial with said tubular element forwardly of the face of the dial for receiving an electric bulb therein, electrical lead connections to said socket extending through said tubular element to said socket and out of a rear end of said tubular element, a reflector spaced from said socket and having inner surfaces for reflecting light from said bulb rearwardly of the reflector onto said face of the dial and over said time indicia, means mounting said reflector, said reflector comprising angularly spaced peripheral notches on the base thereof for passing rays of light in registry with a corresponding time indicium.

3,899,872

DIGITAL TIMER AND TIME INDICATOR DRUMS THEREFOR

Paul T. Flumm, Oakville, and Vernon B. Harris, Waterbury, both of Conn., assignors to Robertshaw Controls Company, Richmond, Va.

Filed Apr. 30, 1974, Ser. No. 465,707

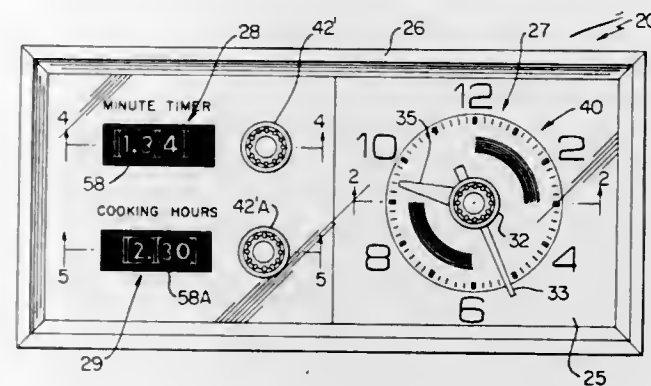
Int. Cl. G04f 3/06; G04b 19/02

U.S. Cl. 58—125 C

9 Claims

1. In combination, a frame means, shaft means carried by said frame means, and a pair of digital time indicating drums rotatably mounted to said frame means by said shaft means, said drums having means cooperating together so that one of said drums will cause incremental movement of the other drum in a timed relation to incremental movement of said one drum, said cooperating means comprising a pinion-like gear means rotatably mounted to said frame means intermediate said drums, said one drum having drive means operatively associated with said gear means to drive the same as said one drum is rotated, said other drum having driven means operatively associated with said gear means to be driven thereby in

a timed relation to the incremental movement of said one drum, said one drum having driven means to be driven by drive means when interconnected thereto, said driven means of said one drum comprising a plurality of pins extending in a circular array from said one drum substantially parallel to the



axis of rotation of said one drum, said drive means that drives said pins of said one drum comprising a gear rotatably mounted to said frame means to rotate about an axis substantially transverse to said axis of rotation of said one drum and meshing with certain of said pins.

3,899,873

COUPLING LINK FOR CHAIN AND THE LIKE

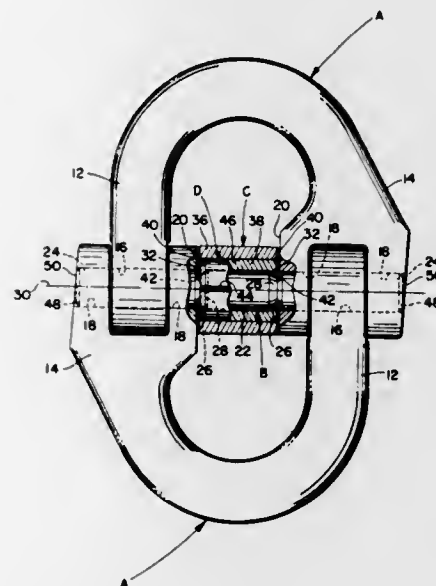
Richard H. Fink, York, Pa., assignor to Campbell Chain Company, York, Pa.

Filed Jan. 7, 1974, Ser. No. 431,214

Int. Cl. F16g 13/06

U.S. Cl. 59—85

6 Claims



1. A coupling link for joining chains or the like comprising two U-shape half links having interdigitated ends with aligned holes therethrough, a pin extending through said holes for hingedly joining the half links, said pin having two axially spaced grooves intermediate its ends, and a retaining means interposed between and being substantially axially coextensive with the interconnected link ends, said retaining means having a hollow body portion of greater outer diameter than the diameter of the holes through the link ends and having radially inwardly bent arcuate spring members at opposite ends of said body portion, said spring members being selectively resiliently received in said spaced grooves to hold said pin in a predetermined axial position.

3,899,874

TURBINE ENGINE

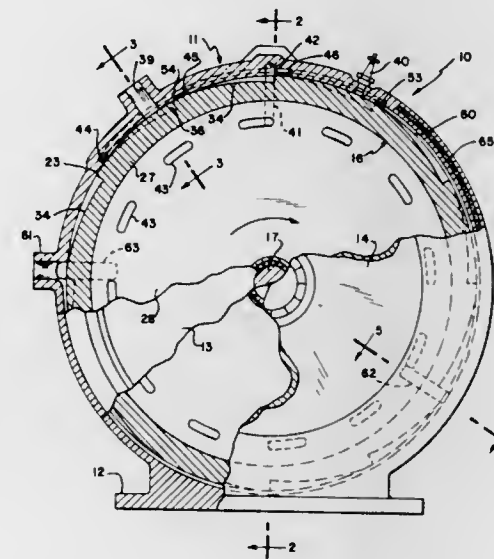
Henry E. Bailey, P.O. Box 350, Walnut Creek, Calif. 94579; Dennis H. Bailey, and Richard E. Bailey, both of P.O. Box AL, Clearlake Highlands, Calif. 95422

Filed Sept. 11, 1974, Ser. No. 505,053

Int. Cl. F02C 5/04

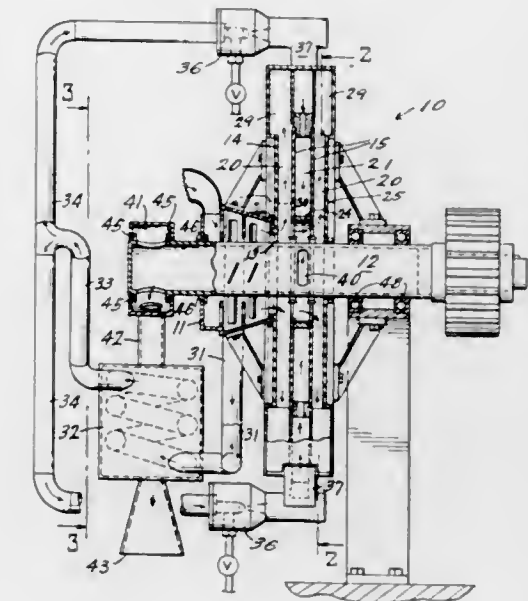
U.S. Cl. 60—39.34

8 Claims



1. A turbine engine comprising the combination of a housing, a rotor mounted for rotation within the housing, said rotor being formed about its outer periphery with a plurality of circumferentially spaced recesses which define with the housing combustible charge chambers and air chambers with the charge chambers alternating with the air chambers, means forming a compression chamber within the rotor, air compression means driven by the rotor for directing air under pressure into the compression chamber, first passage means for communicating compressed air from the compression chamber to the recesses, inlet means for directing a combustible charge into the charge chambers, means for igniting the combustible charge in each charge chamber whereby the charge undergoes constant volume combustion in the charge chambers, means on the housing for sealing the charge chambers during combustion, means forming an expansion channel on the inner periphery of the housing extending from past the sealing means in the direction of rotation of the rotor so that upon communication of the charge chambers with the expansion channel, the combustion gases expand into the expansion channel and impinge on the surfaces of the rotor recesses to thereby impart torque to the rotor, and outlet means in the housing for exhausting spent gases from the expansion channel.

spaces whereby each of said blades receiving the working fluid across one side thereof correspondingly receives a cooling



3,899,876

FLAME TUBE FOR A GAS TURBINE COMBUSTION EQUIPMENT

Douglas H. Williamson, Derby, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

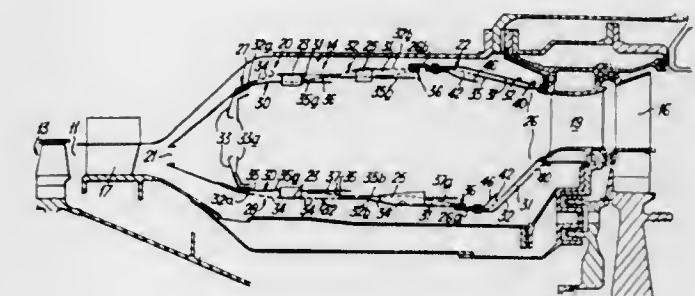
Filed Nov. 13, 1969, Ser. No. 876,504

Claims priority, application United Kingdom, Nov. 15, 1968, 54398/68

Int. Cl. F02c 7/18; F23r 1/10

U.S. Cl. 60—39.66

14 Claims



1. A flame tube for gas turbine combustion equipment, the flame tube including at least one wall of double-skinned construction having internal and external skins throughout the major part of its longitudinal and peripheral extent, the internal skin comprising a plurality of axially consecutive peripherally extending sections, means attaching each section by its upstream end only to the external skin, each section being spaced from the external skin to define respective passages therebetween, each section except the most downstream section extending downstream to the upstream end of the next section, the external skin having apertures therein, said apertures directing jets of cooling air onto the internal skin sections for impingement cooling thereof, the passages accommodating a flow of said cooling air which has cooled the internal skin sections.

3,899,875

GAS REGENERATION TESLA-TYPE TURBINE

Robert A. Oklejas, and Eli Oklejas, Jr., both of 3311 Lakeview Dr., Baycrest Beach, Monroe, Mich. 48161

Filed Jan. 16, 1974, Ser. No. 433,672

Int. Cl. F02c 7/10, 7/12

U.S. Cl. 60—39.51 R

13 Claims

9. A turbine comprising a casing and a rotor within said casing, said rotor comprising a rotatable shaft and blades connected circumferentially to said shaft, said blades defining first and second pluralities of alternating spaces therebetween, said first plurality of alternate spaces having means for generally centrally receiving a low temperature cooling fluid and said second plurality of alternate spaces having means for peripherally receiving a high temperature working fluid, means on said casing for peripherally collecting the cooling fluid from said first plurality of spaces, means on said rotor for exhausting the working fluid from said second plurality of spaces, and means on said casing and on said rotor for isolating said first plurality of spaces from said second plurality of

3,899,877

GAS TURBINE ENGINE POWER SHIFT TRANSMISSION POWER TRAIN

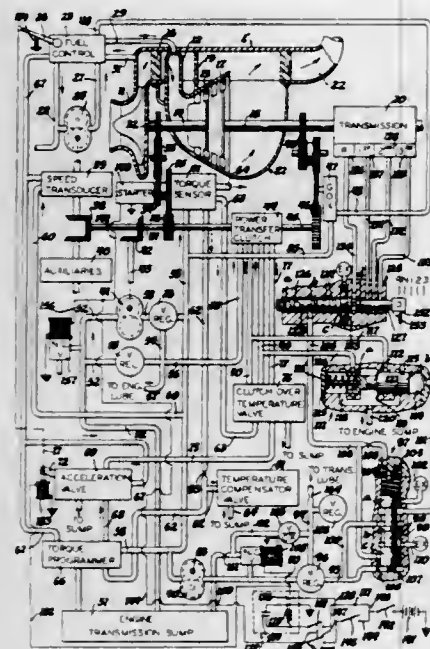
Eugene E. Flanigan, Carmel; Quinton L. Heintzelman, Indianapolis, and James M. Ricketts, Oxford, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed July 2, 1973, Ser. No. 375,917

Int. Cl. F02c 7/26

U.S. Cl. 60—39.14

24 Claims



1. A power train comprising in combination; a power plant having fuel feed means, fuel feed control means for varying power plant power, combustion apparatus, power generating means including power turbine means and power plant control means controlling the power generating means of said power plant to provide increased power for increasing output power in an output power range; a power shift transmission having an input operatively connected to said power turbine means, a load output, a plurality of fluid operated drive establishing devices for establishing and maintaining established a plurality of ratio drives between said input and output; source means providing a source of fluid under pressure driven by said power plant and connected to said power plant control means; shift control means operatively connected to said source means and said fluid operated drive establishing devices and operative to selectively control the connection of said source means to said devices for selectively maintaining the drives established and selectively providing a disconnect condition; overcontrol means operatively connected to said shift control means and said power plant control means operative in response to said shift control means maintaining a drive established controlling said power plant control means for controlling said power plant for transmitting normal power under the control of said power plant control means and in response to the establishing of said disconnect condition by said shift control means overcontrolling said power plant control means to reduce power plant power.

3,899,878

APPARATUS FOR INDICATING GAS TEMPERATURES

William A. Compton; Thomas E. Duffy, and Manfred I. Seegall, all of San Diego, Calif., assignors to International Harvester Company, San Diego, Calif.

Continuation-in-part of Ser. No. 273,335, July 19, 1972, abandoned, which is a division of Ser. No. 88,670, Nov. 12, 1970, abandoned. This application Feb. 23, 1973, Ser. No. 335,146

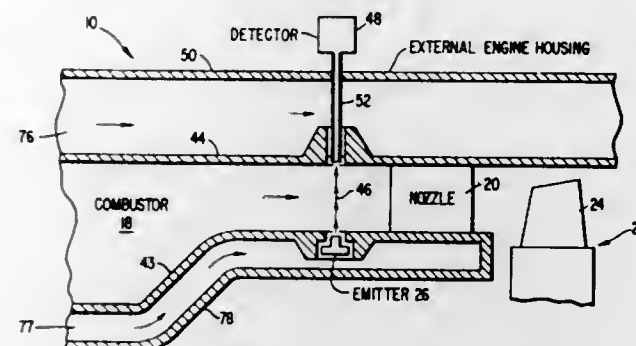
Int. Cl. F02c 9/04

U.S. Cl. 60—39.28 T

41 Claims

1. The combination of a turbine engine including a combustor and a turbine adapted to be driven by gases generated in said combustor with apparatus for indicating the temperature

of said gases, said temperature indicating apparatus comprising a beta particle source oriented to emit beta particles through said gases, whereby said particles will be attenuated at a rate varying with the density of the gases; detector means aligned with and spaced from said beta particle source for



intercepting the beta particles which are not attenuated by the gases and generating an output signal indicative of the number of intercepted particles; means for measuring the pressure on said gases and generating a pressure signal; and means for converting said pressure and output signals into a signal indicative of the temperature of said gases.

3,899,879

TURBINE ENGINE FUEL CONTROL

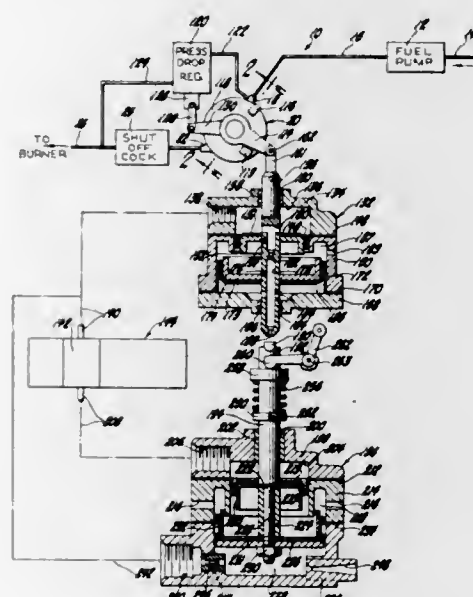
Noel L. Downing, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 5, 1973, Ser. No. 412,748

Int. Cl. F02c 9/08

U.S. Cl. 60—39.28 R

2 Claims



1. A turbine engine fuel supply system comprising: a fuel metering valve having an inlet adapted to be connected to the outlet of a fuel pump and an outlet adapted to supply fuel to a burner assembly of the engine, said fuel metering valve including an orifice plate therein and a movable valve element including means thereon slidable across said orifice plate for varying flow through said orifice plate between the inlet and outlet of said valve, a shaft connected to said movable valve element, a lever connected to one end of said shaft, means for limiting arcuate movement of said lever and said valve element between minimum flow stop and maximum flow stop positions, metering valve servo means having a first axially movable stem and differential piston means therein connected to said first axially movable stem, said first differential piston means responsive to compressor discharge pressure, means including an orifice for bleeding pressure from said first differential piston means to condition said servo means to position said first axially movable stem to cause said lever to assume a maximum flow stop position where said movable valve ele-

3,899,881

COMBUSTION APPARATUS WITH SECONDARY AIR TO VAPORIZATION CHAMBER AND CONCURRENT VARIATION OF SECONDARY AIR AND DILUTION AIR IN A REVERSE SENSE

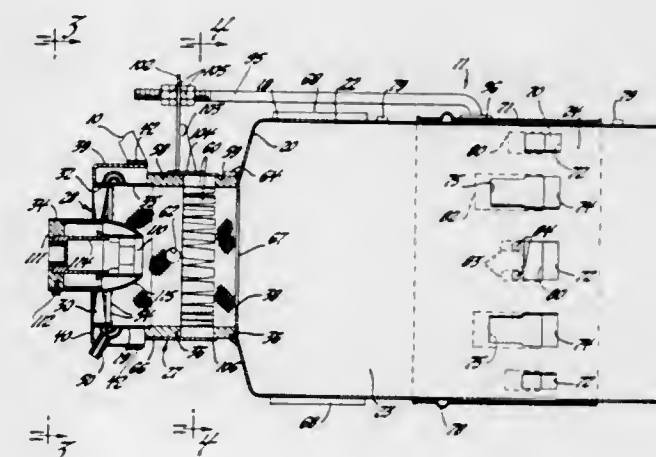
John R. Arvin, Indianapolis; Robert E. Sullivan; Dennis L. Troth, both of Speedway, and Albert J. Verdouw, Indianapolis, all of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 4, 1974, Ser. No. 439,644

Int. Cl. F02g 3/00; F02c 3/00

U.S. Cl. 60—39.65

3 Claims



ment is moved a fixed arcuate amount with respect to said orifice plate, valve means for closing said bleed port to condition said differential piston means to position said movable valve element toward its minimum flow stop position, a pressure ratio sensor means having second differential piston means therein selectively responsive to a regulated pressure proportional to compressor discharge pressure and an intermediate pressure of the compressor, a second axially movable stem aligned coaxially of said first stem operated by the second differential piston means and connected to said valve means, means including a power lever for biasing the second axially movable stem against the control action of said sensor means, said power lever being positioned to establish a predetermined engine thrust, said sensor means being responsive to a reduced compressor discharge pressure produced by a change in engine thrust less than that set by the power lever to position said valve means to open said servo means bleed port thereby to condition said servo means to move said movable valve element towards its maximum stop position to increase fuel supply to a burner thereby to increase engine thrust to a level as preset by the power lever, said sensor means being responsive to an increased compressor discharge pressure produced by an engine thrust above a preset power level to move said valve means to close said servo means bleed port thereby to condition said servo means to shift said movable valve element toward the minimum flow stop position to reduce fuel supply to the engine burner thereby to return engine operation to a desired thrust level as preset by said power level.

3,899,880

SEALING OF CYLINDER HEAD FOR AN INTERNAL COMBUSTION ENGINE

Ulrich Rohs, Roonstr. 11, D-516 Duren, Germany

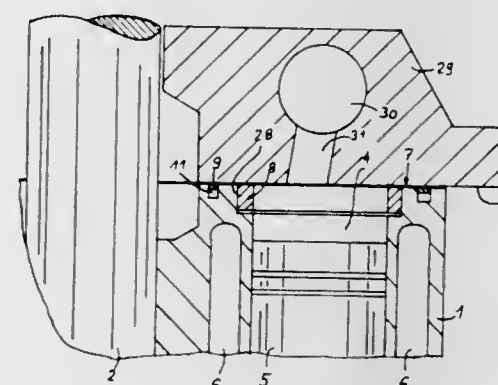
Filed May 3, 1974, Ser. No. 466,716

Claims priority, application Germany, May 14, 1973, 2324322

Int. Cl. F02g 1/00; F02b 57/00; F01b 3/00

U.S. Cl. 60—39.61

8 Claims



1. A cylinder head sealing arrangement for an internal combustion engine comprising a cylinder head, a revolving drum having a plurality of cylinder bores whose axes are parallel to each other and generally to the axis of rotation of said drum, combustion chamber means in said cylinder head with which said cylinder bores are placed in communication during the rotation of said drum, sealing means between opposing surfaces of said drum and cylinder head, said drum surface including a pair of generally annular grooves surrounding each cylinder bore, said sealing means is a sealing ring seated in each groove and bearing against the opposing surface of said cylinder head, and at least an outermost one of a first pair of sealing rings has a portion which is peripherally recessed and receives therein a portion of an outermost one of another of said pair of sealing rings.

1. A combustion apparatus adapted for use in a gas turbine engine characterized by substantially complete combustion of liquid hydrocarbon fuel and by a low output of nitrogen oxides, the apparatus comprising a combustion liner having a discharge outlet for combustion products at the downstream end of the liner; the liner having an upstream end and liner wall means extending from the upstream end to the downstream end, the wall means enclosing, in sequence from the upstream end to the downstream end, a prechamber, a reaction zone, and a dilution zone; the prechamber being of significantly smaller cross-sectional area than the reaction zone and being joined to the reaction zone by an abruptly diverging wall portion; the prechamber including first air entrance means defined by swirler means at its upstream end effective to direct combustion air with a substantial transverse velocity component downstream over the inner surface of the prechamber wall means, liquid fuel introduction means downstream of the swirler means disposed to lay a film of liquid fuel on the said inner surface for evaporation by and mixture with the said combustion air, second air entrance means through the prechamber wall near the downstream end of the prechamber adapted to introduce air to dilute the fuel-air mixture, and means for varying the flow capacity of the second air entrance means; the reaction zone providing turbulent recirculating flow of burning fuel-air mixture and combustion products resulting from the swirl of the entering mixture and the abrupt divergence of the wall means; the dilution zone including dilution air entrance means to admit air for mixture with recirculating gas in the reaction zone and dilution of the combustion products flowing from the reaction zone to the discharge outlet; means for varying the flow capacity of the dilution air entrance means; and actuating means connected to both said flow capacity varying means effective to vary the flow capacity of both said air entrance means concurrently and in reverse sense; the range of variation of the entrance means being sufficient to maintain an equivalence ratio of about 0.25 to 0.5 in the fuel-air mixture flowing from the prechamber into the reaction zone throughout the normal range of operation of the combustion apparatus.

3,899,882

GAS TURBINE COMBUSTOR BASKET COOLING

Stephen R. Parker, Media, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 27, 1974, Ser. No. 455,161

Int. Cl. F02c 3/00, 7/18

U.S. Cl. 60—39.65

5 Claims



1. A combustor for a gas turbine comprising:

- a generally cylindrical combustor basket;
- a fuel spray nozzle disposed generally at the upstream end of said generally cylindrical combustor basket;
- an ignitor member disposed near the upstream end of said generally cylindrical combustor basket;
- annular arrays of air inlets comprising:
 - annular arrays of air scoops disposed in said generally cylindrical combustor basket;
 - annular arrays of air orifices disposed in said generally cylindrical combustor basket;
- said air scoops being comprised of generally tubular members extending inwardly through holes in said combustor basket, said tubular members each having a generally annular flange on its radially outermost portion, said generally annular flange being disposed generally radially outwardly of the wall of said generally cylindrical combustor basket;
- an intermediate generally annular spacer member disposed between said generally annular flange and said combustor basket;
- said generally annular flange and said intermediate generally annular spacer member being fixedly attached to each other and said combustor basket;
- said intermediate generally annular spacer member between said generally annular flange and said combustor basket having at least one arcuate gap disposed therein;
- said air orifices being comprised of:
 - a disc member having an air passage hole therethrough, said hole in said disc member being disposed generally radially outwardly of its respective adjacent hole in said combustor basket;
 - a second intermediate generally annular spacer member disposed between each of said disc members and said combustor basket;
 - said disc members and said second intermediate annular spacer members being fixedly attached to each other and said combustor basket;
 - said second intermediate generally annular spacer member between said disc member and said combustor basket having at least one generally arcuate gap disposed therein.

3,899,883

AFTER BURNER

Ratko Stakic, Sucy-en-Brie; Marc Francois Bernard Buisson, Le Mee-sur-Seine, and Gilbert James Rousseau, Brie-Comte-Robert, all of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, Paris, France

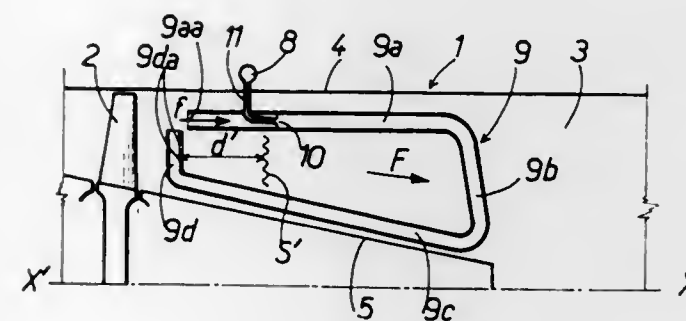
Filed May 31, 1973, Ser. No. 365,402

Claims priority, application France, June 1, 1972, 72.19731

Int. Cl. F02c 7/22

U.S. Cl. 60—39.71

7 Claims



1. In and for a gas turbine engine comprising an expansion turbine discharging a high-velocity, high-temperature exhaust gas flow, an afterburner installation comprising means bounding an afterburner duct located downstream of said expansion turbine and through which duct said exhaust gas flow passes, a source of afterburner fuel, and a system for supplying the afterburner duct with afterburner fuel from said fuel source to bring about combustion of said fuel in said afterburner duct and for stabilizing said combustion, said supplying and stabilizing system consisting of a plurality of hollow tubular structures each distinct from said means bounding the afterburner duct and arranged totally within said afterburner duct, so as to be immersed in said high-velocity, high-temperature exhaust gas flow, each said tubular structure comprising four portions arranged in series relationship including:

- a first entry portion extending peripherally in the longitudinal direction of the afterburner duct and having one intake orifice which faces upstream relative to the direction of said exhaust gas flow, and through which a fraction from said exhaust gas flow is collected and penetrates into the interior of said tubular structure; the interior of said entry portion being further connected, in the vicinity of said intake orifice, with said source of afterburner fuel;
- a second portion extending generally transversely of the longitudinal direction of the afterburner duct;
- a third portion extending generally in the longitudinal direction of the afterburner duct, upstream of said second portion relative to said exhaust gas flow direction; and
- a fourth discharge portion extending generally transversely of the longitudinal direction of said duct, and having a plurality of exit orifices each of which faces downstream relative to said exhaust gas flow direction; whereby, in operation, each tubular structure is traversed, along substantially its whole length extending from its first portion to its fourth portion, by a mixture of gas and fuel which is preheated by heat-transfer from the high-velocity, high-temperature exhaust gas flow in which said structure is immersed, which preheated mixture escapes in the form of a plurality of preheated jets which spontaneously ignite after entering the afterburner duct and form a stabilized flame front, without any necessity for recourse to any other film stabilizing means.

3,899,884

COMBUSTOR SYSTEMS

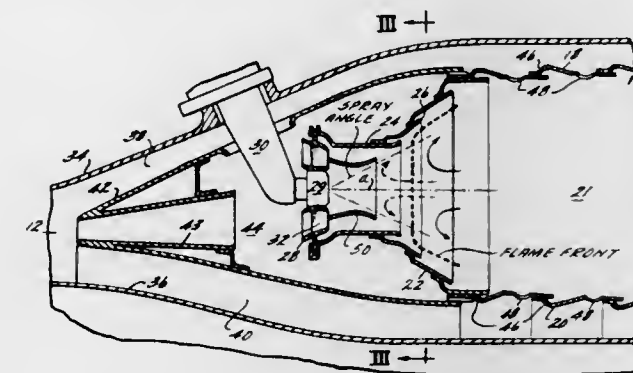
Edward E. Ekstedt, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Dec. 2, 1970, Ser. No. 94,289

Int. Cl. F02c 7/22

U.S. Cl. 60—39.74 R

3 Claims



1. A combustor system comprising:

- a combustion chamber,
- a mixing chamber opening into the upstream end of the combustion chamber,
- a spray nozzle for discharging fuel as an atomized cone into said mixing chamber, the axis of said spray cone extending lengthwise of said mixing chamber toward said combustion chamber,
- means for introducing pressurized air into the upstream end of said mixing chamber and producing an axial flow field for dispersing the fuel in fine droplets,
- venturi means surrounding said spray cone and through which at least a portion of the axially flowing air passes, and wherein
- the air introducing means additionally provide a vortical component to the air flow field,
- the venturi means comprise a venturi tube mounted within said mixing chamber,
- a cylindrical conduit and an axial swirler at the upstream end of the conduit define said mixing chamber,
- said air introducing means includes an annular row of generally radially oriented passageways angled through said swirler,
- said axial swirler has a central opening through which the discharge end of the spray nozzle projects, and
- the inlet end of the venturi tube has a diameter intermediate the minimum and maximum diameters of the annular row of swirler passageways and is bonded to said swirler.

3,899,885

ELECTRO-MAGNETIC ENERGIZER

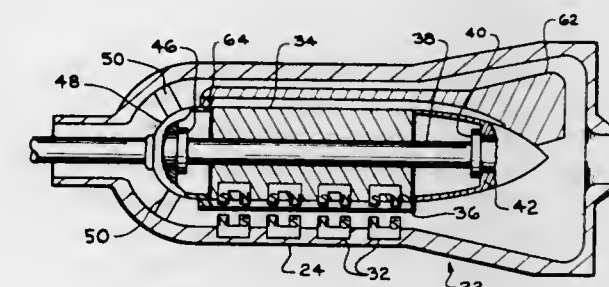
John P. Hagerty, Prescott, Ariz., assignor to Hagerty Research and Development Co., Inc., Prescott, Ariz.

Division of Ser. No. 353,646, April 23, 1973, Pat. No. 3,821,508. This application Dec. 3, 1973, Ser. No. 420,854

Int. Cl. F02k 9/00

U.S. Cl. 60—203

1 Claim



1. Apparatus for heating a fluid comprising a housing, a first plurality of magnets mounted in a pattern with a circular transverse cross section in said housing, a rotatable member

with an outer circular configuration, a second plurality of magnets held by said rotatable member, means for rotating said rotatable member, a conductive member between said first and said second pluralities of magnets, means for establishing a flow of fluid past said conductive member, and a high velocity nozzle positioned downstream of said conductive member to receive the heated fluid flowing past said conductive member.

3,899,886

GAS TURBINE ENGINE CONTROL

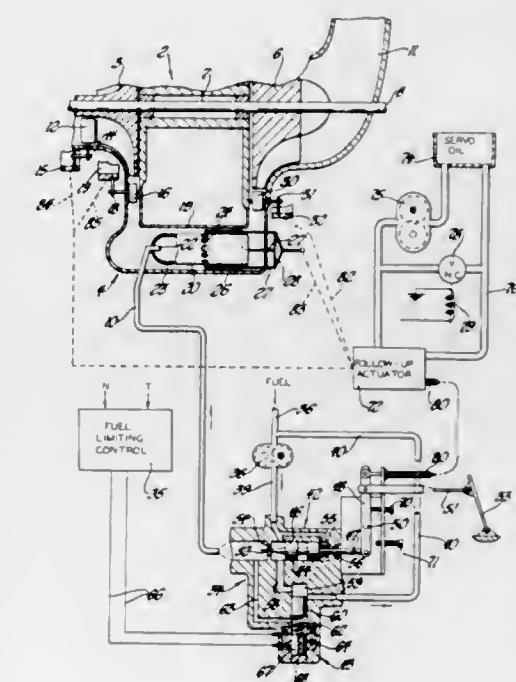
Robert M. Swick, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 19, 1973, Ser. No. 417,257

Int. Cl. F02k 11/00; F02c 9/02

U.S. Cl. 60—223

5 Claims



1. A control system for a gas turbine engine having as controlling inputs an operator-operable power control and limiting inputs such as from engine speed responsive means and from engine temperature responsive means; the system comprising, in combination, a throttling valve for controlling fuel flow to the engine operated directly by the power control so that the flow area of the throttling valve is substantially a single-valued function of power control position, a head regulating valve controlling the pressure head across the throttling valve, and fuel limiting control means for controlling the head regulating valve normally effective to vary the said pressure head in response to such limiting inputs, the fuel limiting control means being effective to regulate the head so as not to exceed a maximum value allowable for safe engine operation as determined by the said limiting inputs, and being effective to cause the head to drop to a value insufficient to overfuel the engine with the throttling valve fully open in the event of failure of the head regulating valve controlling means.

3,899,887

HYDRAULIC COUPLING WITH RESERVOIR

John E. Becker, Bowmanville, Canada, assignor to Cluarn Associates Ltd., Oshawa, Canada

Filed Sept. 11, 1974, Ser. No. 504,886

Claims priority, application United Kingdom, Sept. 18, 1973, 43632/73

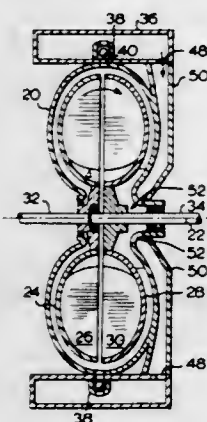
Int. Cl. F16D 33/06

U.S. Cl. 60—347

10 Claims

1. A hydraulic coupling comprising cooperating pump and turbine elements each having radial vortex-producing vanes and together forming a working chamber, a reservoir for working fluid operative with at least one of the pump and

turbine elements, the reservoir being movable between a coupling emptying position in which coupling working liquid



can flow thereto from the working chamber under gravity and a coupling filling position in which coupling working liquid can flow therefrom to the working chamber under gravity.

3,899,888

OSCILLATING PISTON APPARATUS

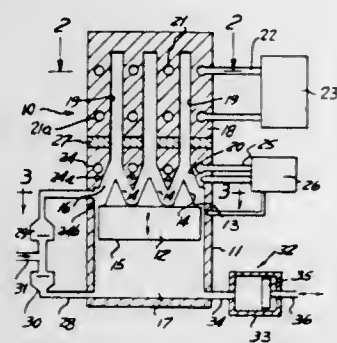
Mark Schuman, 101 G St., S.W., Apt. No. 516, Washington, D.C. 20024

Continuation of Ser. No. 227,514, Feb. 18, 1972, Pat. No. 3,807,904, which is a continuation-in-part of Ser. No. 121,371, March 5, 1971, abandoned. This application Apr. 29, 1974, Ser. No. 465,138. The portion of the term of this patent subsequent to Apr. 30, 1991 has been disclaimed.

Int. Cl. F03g 7/06

U.S. Cl. 60—519

88 Claims



1. An oscillating piston apparatus comprising a cylinder, a free piston in the cylinder, said cylinder having a side wall with a port therein, a rebound chamber containing compressible fluid for reversing the motion of the piston, said rebound chamber having as a moving wall portion a face of the piston, means including said rebound chamber for sustaining oscillatory motion of the piston in the cylinder and means for controlling the location of the center of oscillation of the piston in the cylinder, said controlling means including said rebound chamber and a passageway communicating with the cylinder via the port, said passageway by-passing a portion, and only a portion of the axial length of the cylinder, said passageway having a fluid flow impedance which is substantially the same for fluid flow in either direction through the passageway, wherein said port, said by-passed portion of the cylinder, and an unby-passed portion of the cylinder are all at least partially traversed by the piston.

3,899,889

PEDAL RATIO CONTROL FOR HYDRAULIC BOOSTER
Kenneth B. Swanson, Bannister, and Herman M. Huffman,
Owosso, both of Mich., assignors to Midland-Ross Corporation, Cleveland, Ohio

Filed Apr. 15, 1974, Ser. No. 461,003

Int. Cl. F15b 7/00

U.S. Cl. 60—547

10 Claims

1. A booster brake mechanism operated by a source of hydraulic pressure and capable of being manually operated

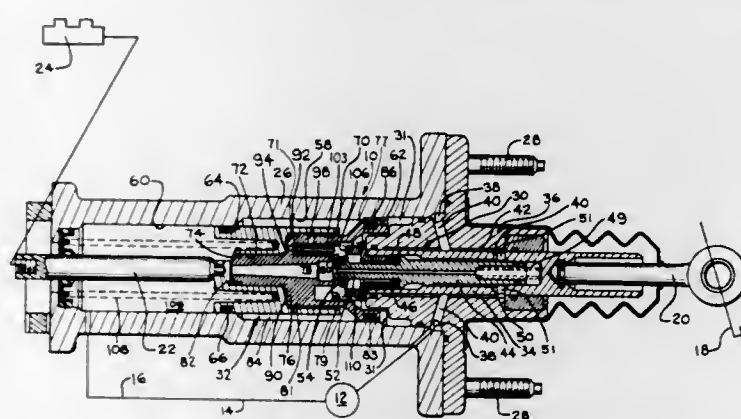
when said source of hydraulic pressure is insufficient to achieve desired braking, said booster comprising:

a housing having a large bore portion and a smaller bore portion contiguous therewith;

a power piston movable in said large bore portion and forming at one side thereof and within a portion of said large bore portion a power chamber;

an output piston movable in said smaller bore portion and extending into said large bore portion to form between the other side of said power piston, the remaining portion of said large bore portion and said output piston a fluid-containing, sealable ratio control cavity;

said output piston having a generally cylindrically-stepped hollow interior configuration, said power piston having a generally cylindrically-stepped exterior configuration received at least in part within said interior configuration of said output piston to define a fluid-containing, sealed piston chamber therebetween;



pilot valve means extending within said power piston providing fluid communication between said ratio cavity and said piston chamber in a normal unactuated position of said booster and movable to a second position to provide fluid communication between said ratio control cavity and said power chamber while trapping said fluid within said piston chamber;

inlet and outlet valve means between said source and said power chamber operative to pressurize said power chamber for moving said power piston thereby pressurizing at approximately equal pressure said ratio cavity and said piston chamber, such movement of said power piston simultaneously effecting a greater movement of said output piston; and

manually actuable valve means associated with said inlet and outlet valve means operable to actuate said pilot valve means to said second position for effecting approximately equal movements of said power piston and said output piston.

3,899,890

SERVO ASSEMBLIES AND SYSTEMS

Frederick John Adams, Campton, England, assignor to Cam Gears Limited, Hitchin, England

Filed Nov. 26, 1973, Ser. No. 419,110

Claims priority, application United Kingdom, Dec. 15, 1972, 58125/72

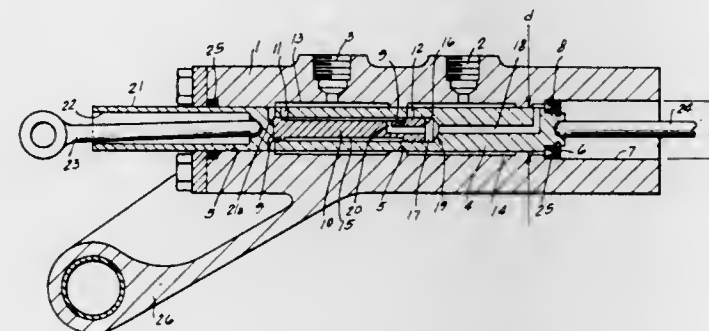
Int. Cl. F15b 7/00

U.S. Cl. 60—552

25 Claims

1. A servo assembly for transmitting motive force from an input to an output thereof and which comprises, a valve housing having a fluid pressure inlet port and a fluid outlet port; a working spool in the housing and axially slidable in a working cylinder; a control spool in the housing and axially slidable in a control cylinder; a reaction chamber formed between the control spool and the working spool; the working spool having an effective pressure area in the reaction chamber which is greater than the effective pressure area of the control spool in the reaction chamber; axial movement of the control spool being responsive to the input and the output being responsive to axial movement of the working spool; means communicat-

ing the reaction chamber to the outlet port in a neutral condition of the assembly and in the absence of axial pressure on the control spool, and wherein the control spool is arranged in response to axial pressure thereon, to close off communication of the reaction chamber with the outlet port and to com-



municate the reaction chamber to the inlet port whereby fluid pressure in the reaction chamber provides power assistance for applying pressure to the working spool in one axial direction, and provides a reactive force on the control spool in the opposite axial direction.

3,899,891

POST-TENSIONED PRESTRESSED PILE ASSEMBLY

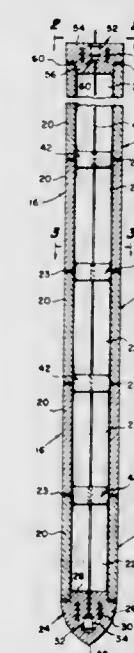
William F. Kelly, 100 Bellaire Dr., and Robert B. Anderson, 5920 Memphis St., both of New Orleans, La. 70124

Filed Jan. 22, 1974, Ser. No. 435,446

Int. Cl. E02D 5/30, 5/58

U.S. Cl. 61—56

14 Claims



1. A post-tensioned prestressed pile assembly comprising:
a. a plurality of like, tubular shell sections arranged in vertical end-to-end relationship,
b. each of said shell sections comprising a wall of uniform thickness and a bore of uniform cross-sectional area,
c. the diameter of the bore of each of said tubular shell sections being substantially greater than the wall thickness,
d. a combination pile driving point and anchoring plug,
e. said pile driving point and anchoring plug including a main body section, the upper portion of which is reduced for insertion into an end of the lowermost shell section and the lower extremity being pointed for facility and driving the pile unit into the ground,
f. an anchor positioned in said main body section,
g. a head including a main body section, the lower portion of which is reduced for insertion into an end of the top-most shell section,

h. a live end anchor set in the main body section of said head,
i. tendon means extending longitudinally and centrally of the bores of said shell sections,
j. one end of said tendon means being connected to said anchor positioned in the main body section of said pile driving point and anchoring plug,
k. the opposite end of said tendon means extending through said live end anchor of said head, whereby said tendon means may be jacked for placing said tendon means under tension and said pile sections under compression, and
l. spaced alignment members disposed within the bore of the shell sections and spanning the joints between adjacent shell sections,
m. each of said spaced alignment members including an outer portion in frictional engagement with the walls of said shell section,
n. each of said spaced alignment members further including an inner portion having bore means through which said tendon means extend,
o. each of said spaced alignment members further including means connecting said outer and inner portions.

3,899,892

STEEL CABLE ANCHOR AND METHOD FOR WITHDRAWING THE SAME

Hiroomi Yokota, Tokyo, and Taizo Masuda, Chiba, both of Japan, assignors to Yoshio Ichise, Tokyo, Japan

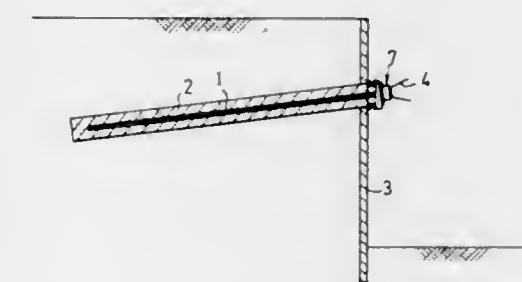
Filed Jan. 3, 1974, Ser. No. 430,548

Claims priority, application Japan, Feb. 8, 1973, 48-16032

Int. Cl. E02B 3/12

U.S. Cl. 61—39

5 Claims



1. A method for withdrawing a steel tension cable anchor embedded within hardening material in the ground, said cable anchor including a plurality of individual tension steel cables assembled in a bundle of cables, some but not all of said cables having their surfaces coated along at least the effective length thereof with an anti-friction material, the method comprising the steps of first withdrawing from said hardening material at least one individual cable whose surface is coated with said anti-friction material, and thereafter withdrawing the remaining individual steel tension cables.

3,899,893

ANCHORING PIN AND METHOD FOR STRUCTURES SUCH AS MINE AND TUNNEL ROOFS AND SIDE WALLS

Bani R. Banerjee, Skillman; Mukund D. Gangal, Plainsboro, and Sigmund Black, Belle Mead, all of N.J., assignors to Lee-Norse Company, Charleroi, Pa.

Filed Jan. 3, 1974, Ser. No. 430,407

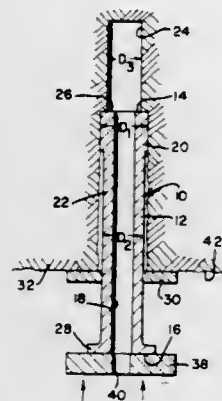
Int. Cl. E21D 21/00, 20/00

U.S. Cl. 61—45 B

5 Claims

1. An anchoring pin for anchoring structures such as mine and tunnel roofs and side walls, comprising an elongated body having a leading end and a trailing end, said body adjacent its said leading end including a leading portion of peripheral dimension greater than that of a thereafter following portion of said body, said leading portion being of outer diameter larger than the outer diameter of said following portion of said

body, said leading portion having an annular leading face extending transversely of the axis of said body capable of breaking-up and displacing material to cause lateral enlargement of a smaller diameter hole during driven insertion of the



pin, leading end first, therein, and said body having an axial bore which opens through its said leading and trailing ends for discharge of material broken-up and displaced by said leading face during such pin driven insertion.

3,899,894

APPARATUS FOR CONNECTION BETWEEN SUBMARINE CONDUITS

Jean A. Liautaud, Paris, France, assignor to Subsea Equipment Associates Limited, Hamilton, Bermuda

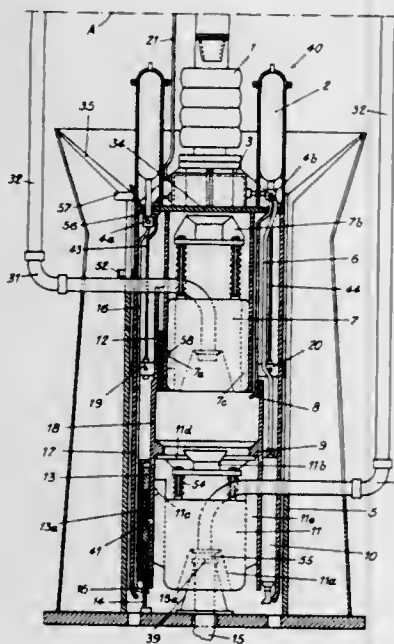
Filed Apr. 3, 1973, Ser. No. 347,513

Claims priority, application France, Apr. 10, 1972, 72.12485

Int. Cl. B63c 11/00; F16l 35/00

U.S. Cl. 61-72.3

13 Claims



1. Apparatus for providing a connection between a pair of conduits on the bed of a body of water without lifting the apparatus to the surface after effecting the first connection and before effecting the second connection even though the spacing between the conduits is not predetermined said apparatus comprising:

- a flexible pipe having a first end and a second end remote from the first end;
- a first connector means for attaching said flexible pipe to a first submarine conduit having an open face solely by an external force applied from the surface of the body of water in the direction perpendicular to the open face of the first conduit, said first connector means being attached to said flexible pipe at the first end thereof;

- a second connector means for attaching said flexible pipe to a second submarine conduit having an open face solely by an external force applied from the surface of the body of water in the direction perpendicular to the open face of the second conduit, said second connector means being attached to said flexible pipe at the second end thereof;
- a laying device;
- a first means for detachably mounting said first connector means to said laying device;
- a second means for detachably mounting said second connector means to said laying device independently of said first connector means; and
- a third means for connecting said laying device to the underwater end of a string of rods.

3,899,895

AUTOMATIC DEFROSTING CONTROL SYSTEM

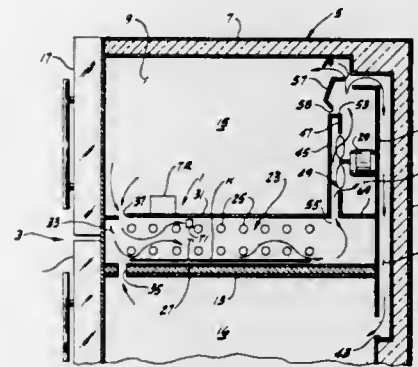
Bobby D. Blanton, Hurst, and Glen C. Shepherd, Garland, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 15, 1974, Ser. No. 514,864

Int. Cl. F25d 21/06

U.S. Cl. 62-155

7 Claims



1. An automatic defrosting control system for a refrigeration system having cooling means for absorbing heat from a zone to be cooled to a predetermined temperature level, said cooling means being subject to the accretion of frost thereon, said control system comprising:

- means for causing defrosting of said cooling means;
- a thermostat adapted to be positioned in heat-exchange relation with both said cooling means and said defrosting means and adapted for connection in a control circuit for said refrigeration system and having a first switching position for terminating operation of said defrosting means and a second switching position for enabling operation thereof, said thermostat switching from its first to its second position in response to its temperature falling to a lower predetermined level and switching to its first position in response to its temperature rising to a higher predetermined level;
 - a thermal time-delay relay adapted to be positioned in heat-exchange relation with said cooling means and adapted for connection in said control circuit and having a first switching position for permitting operation of said cooling means and a second switching position for energizing said defrosting means and preventing operation of said cooling means, said relay switching from its first switching position to its second position in response to its temperature falling to a lower predetermined level and switching to its first position in response to its temperature rising to a higher predetermined level; and
- heating means adapted for connection in said control circuit for energization during at least a portion of the period that said relay is in its second position thereby to heat said relay to its higher predetermined temperature level whereby upon the temperature of said thermostat falling to its lower predetermined level and said relay cooling to its lower predetermined temperature level said thermo-

stat and relay will switch to their second positions thereby initiating defrosting.

3,899,896

AUTOMATIC DEFROSTING CONTROL SYSTEM

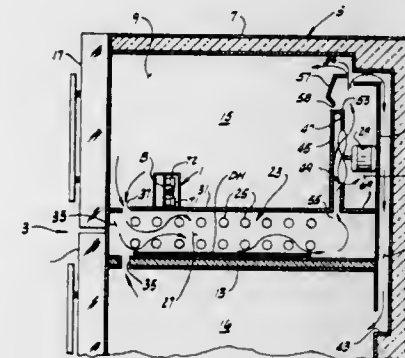
Samuel T. Bryant, Louisville, Ky., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 15, 1974, Ser. No. 514,860

Int. Cl. F25d 21/06

U.S. Cl. 62-155

14 Claims



1. An automatic defrosting control system for a refrigeration system having cooling means for absorbing heat from a zone to be cooled and thermostatic means for periodically energizing the cooling means to maintain the zone substantially at a preselected temperature, said cooling means being subject to the accretion of frost thereon, said control system comprising:

- means for causing defrosting of said cooling means;
- a first thermostat adapted to be positioned adjacent and in heat-exchange relation with both said defrosting and said cooling means and adapted for connection in a control circuit, said first thermostat having a first switching position for terminating operation of said defrosting means and a second switching position for enabling operation of said defrosting means, said first thermostat switching from its first to its second position in response to its temperature falling to a predetermined level and switching to its first position in response to its temperature rising to a predetermined level; and a second thermostat adapted to be positioned adjacent said cooling means but in a poorer heat-exchange relation therewith than is said first thermostat, said second thermostat adapted for connection in said control circuit, said second thermostat having a first switching position for permitting energization of said cooling means and a second switching position for energizing said defrost means and preventing operation of the cooling means, said second thermostat switching from its first to its second switching position in response to its temperature falling to a predetermined level whereby as frost tends to build up on the cooling means the temperatures of both thermostats are reduced until after a first time delay due to the thermal lag between the temperature of said cooling means and that of the first thermostat the latter is cooled sufficiently to switch to its second position and after a second and longer time delay, due to the greater thermal lag between the temperature of the cooling means and that of the second thermostat, the second thermostat thereafter cools sufficiently to switch to its second position thereby energizing the defrosting means.

3,899,897

BY-PASS SUCTION THROTTLING VALVE IN A REFRIGERATION SYSTEM

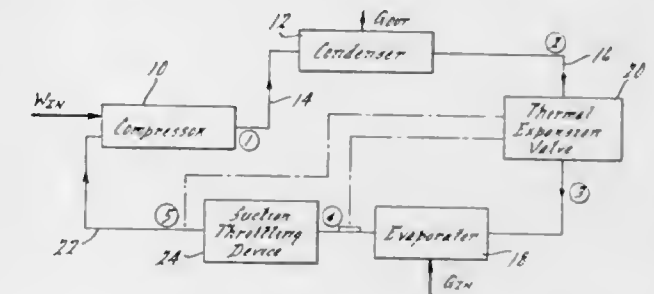
David H. Boerger, Inkster; Allen D. Krugler, Jr., Plymouth, and Donald A. Willoughby, Northville, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Apr. 3, 1974, Ser. No. 457,535

Int. Cl. F25b 41/00

U.S. Cl. 62-196

6 Claims



1. An air conditioning system comprising a fluid refrigerant in a closed circuit, said circuit including a compressor, a condenser and an evaporator located in series relationship, a thermal expansion valve in the circuit between the condenser outlet and the evaporator inlet, a suction throttling device located between the evaporator outlet and the compressor inlet, said thermal expansion valve comprising a variable flow restriction and a valve means for controlling the degree of restriction to refrigerant flow, said suction throttling device including a refrigerant flow restriction and valve means for controlling the flow through said restriction whereby the pressure differential across the suction throttling device for any given pressure on the outlet side of the evaporator is greater at low evaporator outlet pressures than at high evaporator outlet pressure, a controlled bypass flow passage from a point downstream of the thermal expansion valve to a point downstream of the suction throttling device including flow restricting means therein for determining the effective signal pressure in said bypass passage, said thermal expansion valve means including means responding to the temperature at the outlet of the evaporator and including means responding to the signal pressure in said bypass passage to vary the degree of flow restriction for the refrigerant entering the evaporator.

3,899,898

UNIVERSAL JOINT

Koichi Takahashi, Yokohama; Nobuteru Hitomi, Yokosuka, and Taisuke Kizu, Fujisawa, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

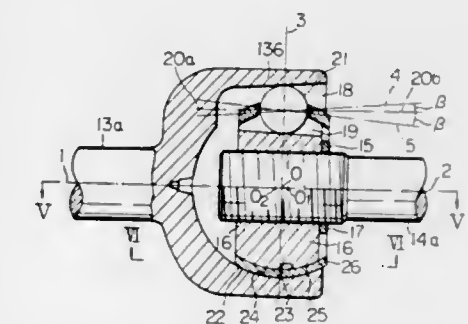
Filed June 21, 1974, Ser. No. 481,783

Claims priority, application Japan, June 26, 1973, 48-72093

Int. Cl. F16d 3/30

U.S. Cl. 64-21

2 Claims



1. A universal joint comprising an outer member having circumferentially uniformly spaced oblique grooves on its inner surface, an inner member disposable within said outer member, having circumferentially uniformly spaced oblique grooves on its outer surface equal in number to the grooves in said outer member, a plurality of power transmitting balls movably engaging the corresponding grooves of said members for transmitting torque from one of said members to the other

of said members, a ball retaining cage for maintaining said balls in a first plane which bisects the obtuse angle formed by the axes of said members, said cage being disposable between said inner and outer members, each of the grooves in said outer member having its axis skewed on a second plane parallel to the axis of said outer member at a first angle relative to said axis of said outer member and further skewed on a third plane normal to said second plane at a second angle relative to said axis of said outer member, and each of the grooves in said inner member having its axis extending in symmetrical relationship to the axis of the corresponding grooves in said outer member with respect to said first plane.

3,899,899

DEVICE FOR AUTOMATIC SELECTION OF THE KNITTING NEEDLES IN A HAND-OPERATED KNITTING MACHINE

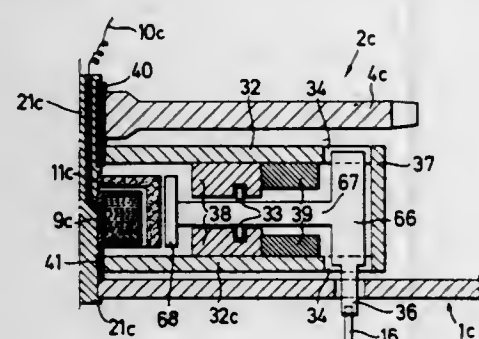
Manfred Bartels, Cologne, Germany, assignor to Empisal Knit-
master Luxembourg S.A., Luxembourg
Filed Oct. 7, 1974, Ser. No. 512,878

Claims priority, application Germany, Oct. 9, 1973,
7336353; Jan. 30, 1974, 2404307 [U]

Int. Cl.² D04B 7/00

U.S. Cl. 66—75

24 Claims



1. A device for use in a hand operated knitting machine for automatic selection of knitting needles thereof, said device comprising a rotary pattern wheel, means for mounting said pattern wheel on a machine member for movement therewith, said pattern wheel including a plurality of circumferentially spaced control members arranged in a ring, said control members being of the rocker arm type, means mounting said control members for movement between a rest position and a work position for effecting selected predetermined positioning of knitting needles to reproduce a knitting pattern, electromagnetic means fixedly mounted within and concentrically of said ring of control members for timed excitation by an electrical pulse to selectively sequentially react on said control members and effect the positioning thereof, said pattern wheel being in axially symmetrical relation to said electromagnetic means.

3,899,900

WARP KNITTED GARMENTS AND APPARATUS AND METHOD FOR MAKING THE SAME

George Edward Jackson, Charleston, W. Va., assignor to
Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 776,938, Nov. 19, 1968, Pat. No.
3,656,324. This application Feb. 24, 1971, Ser. No. 117,925

Int. Cl.² D04B 23/02

U.S. Cl. 66—87

7 Claims

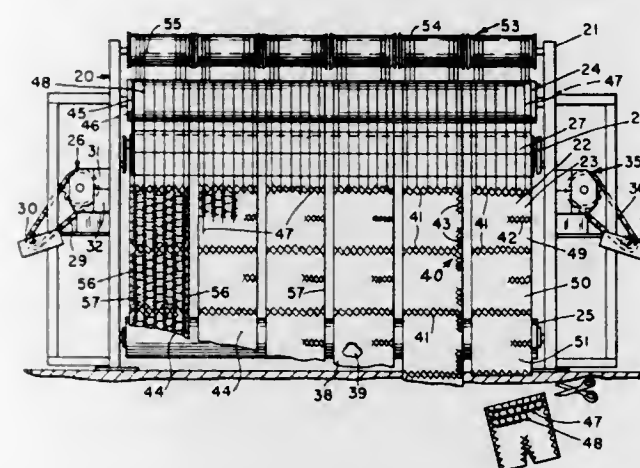
1. The process of knitting a generally tubular garment adapted to conform to, and fit the human body, on a double needle bed, warp knitting machine, said process comprising the steps of:

knitting two superposed, single knit fabrics on said machine to form a two ply web advancing continuously in a walewise direction thereon;

periodically, after a predetermined number of stitches, cross interlooping said single knit fabrics to connect the same in a narrow, full width, substantially continuous band extending in a course-wise direction, thereby form-

ing a succession of course-wise extending, open-ended tubes;

between said course-wise extending bands, at one end of each said tube, discontinuously cross interlooping said single knit fabrics to connect the same in predetermined areas thereof for a predetermined number of stitches extending in a walewise direction, and then single fabric knitting the same in other predetermined areas thereof



for a predetermined number of stitches in a walewise direction, thereby forming a shoulder, or crotch, partial closure associated with at least one limb, or neck, opening at said one end; and

between said course-wise extending bands, at the other end of each said tube, single fabric knitting said end to maintain a full opening, free of any partial closure, cross interlooping or interconnection to serve as a waist opening of a garment.

3,899,901

SELVAGE GUIDE AND BREAK-OUT PREVENTOR FOR KNITTING MACHINES

Bascum G. Lesley, Pickens, S.C., assignor to Deering Milliken
Research Corporation, Spartanburg, S.C.

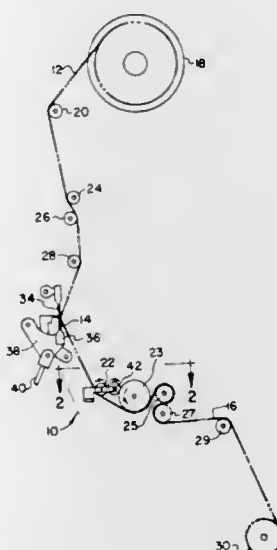
Continuation of Ser. No. 100,184, Dec. 21, 1970, abandoned.

This application Dec. 10, 1973, Ser. No. 423,022

Int. Cl.² D04B 27/34

U.S. Cl. 66—149 R

1 Claim



1. A knitting machine comprising: needle means knitting yarn into fabric, fabric take-up means taking up the knit fabric, a first elongated roll means mounted on said knitting machine between said needle means and said take-up means to guide fabric from said needle means to said take-up means, a first pair of rolls each substantially shorter in length than said first elongated roll means and in nip forming relationship mounted between said means knitting yarn and said first elongated roll means with one roll of said pair of rolls being in engagement with one of the ends of said first elongated roll

means, a second pair of rolls each substantially shorter in length than said first elongated roll means and in nip forming relationship mounted between said means knitting yarn and said first elongated roll means with one roll of said second pair of rolls being in engagement with the other end of said first elongated roll means, each of said rolls of said pairs of rolls having means to allow rotation in only one direction with the roll of said pairs of rolls not in engagement with said first elongated roll being adapted to contact the fabric being knit to prevent said needle means from jerking the knit fabric back toward said needle means, and means to drive said elongated rolls means to cause said each one roll of said first and second pairs of rolls in engagement with said elongated roll means to rotate in a direction to guide the fabric under said first and second pairs of rolls and said elongated roll means to said fabric take-up means.

3,899,902

PLANT FOR STEAMING AND FIXING DYES AT HIGH OR LOW TEMPERATURE ON PRINTED OR DYED FABRICS

Fulvio Conti, via Carnovali 88, Bergamo, Italy (24100)

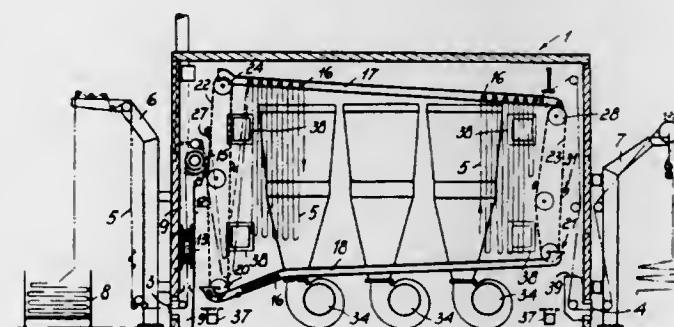
Filed Dec. 26, 1973, Ser. No. 428,634

Claims priority, application Italy, May 29, 1973, 24669/73

Int. Cl. D06c 1/08; B65h 17/06

U.S. Cl. 68—5 D

2 Claims



1. A plant for steaming and fixing dyes at high or low temperature on printed or dyed fabrics, comprising a storage chamber having an inlet zone and outlet zone for the fabric, means for disposing the fabric inside said chamber in the form of suspended folds side by side and for moving said folds from said inlet zone to said outlet zone, means for maintaining the atmosphere inside said chamber at controlled humidity and temperature conditions, and means for preheating and humidifying the fabric before its introduction into the zone of controlled atmospheric conditions and wherein said means for disposing the fabric in the form of folds and for moving said folds comprise a plurality of rod elements mobile along a perimetral closed loop path maintaining the longitudinal axis of said rod elements substantially horizontal and orthogonal to the direction of forward movement of the fabric, each of said rod elements being arranged to support a fold of fabric through the upper portion of said path between said inlet zone and said outlet zone, guides for supporting said rod elements disposed in the lower and upper portions of said path and extending in the direction of forward movement of the fabric, and a pair of devices comprising members mobile in a substantially vertical direction disposed in said inlet and outlet zones between the corresponding ends of said upper and lower guides, and arranged to successively take a single rod element at the terminal ends of the upper and lower portions of said path and to deposit it at the initial ends of said upper and lower portions and wherein said upper and lower guides are inclined downwards in the direction of forward movement of the fabric and in the opposite direction, respectively.

3,899,903

APPARATUS FOR THE LOCAL TREATMENT OF YARNS, FOR EXAMPLE THE NON-CONTINUOUS DYEING OF TEXTILE YARNS

Philippe D. Lapierre, Saint Quentin, France, assignor to So-
ciete Anonyme dite: Omnium de Prospective Industrielle
S.A., Neuville Saint-Amand, France

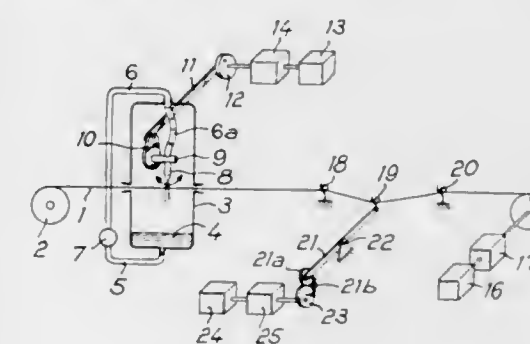
Filed Mar. 26, 1973, Ser. No. 344,998

Claims priority, application France, Mar. 28, 1972,
72.10915

Int. Cl. B05c 5/00; B05b 13/04

U.S. Cl. 68—205 R

6 Claims



1. An apparatus for the irregular treatment of at least one yarn including a treatment station, first drive means for moving the yarn to be treated continuously through said station in an axial and relatively fixed direction; at least one fluid supply nozzle movably mounted in said treatment station in a plane extending generally perpendicular to the yarn passing there-through; means for supplying fluid to said nozzles; second drive means for reciprocating said nozzle transversely to the direction of travel of yarn through said treatment station; and regulating means for varying at least one of the speed of movement of the yarn or the speed of reciprocation of the nozzle during treatment of said yarn whereby irregular treatment of the yarn is effected; wherein said regulating means comprises at least three successive guides located between said first drive means and said nozzle at the treatment station; the outer two of said guides being fixed and a middle one being movably mounted and displaceable relative to the other two guides.

3,899,904

SKI POLE LOCKING ASSEMBLY

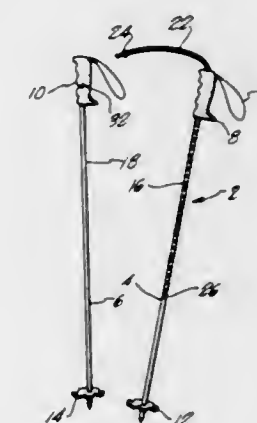
George Henry Brimhall, II, P.O. Box 733, Sunset Beach, Calif.
90650

Filed July 9, 1973, Ser. No. 377,616

Int. Cl.² E05B 73/00

U.S. Cl. 70—58

3 Claims



1. A set of ski poles wherein each ski pole has a handle portion and a bracket portion interconnected by a hollow pole member to assist a skier in protecting his equipment, comprising:

at least one handle portion having a bore therethrough;
an elongated flexible member having a locking head portion connected for limited relative movement to one of the ski

poles and movable into and out of the hollow pole member through the bore in the first handle portion; means on the handle portion for covering the opening of the bore on the handle portion when the elongated flexible member is retracted into the pole for storage and coacting with the locking head portion to facilitate the withdrawal of the elongated flexible member from the hollow pole member;

a key member having camming portions;
a locking apparatus mounted in the handle portion of the other ski pole, including a casing member having a longitudinal axis and at least one side wall adapted to be connected to the handle, the side wall having at least one bore therein, a keeper member having a key guideway and at least one passageway, the keeper member movable only along the longitudinal axis and positioned in the casing member for fastening and releasing the locking head portion, a tumbler pin positioned in the passageway and relatively movable with respect to the keeper member;

resilient means operatively positioned in the bore for biasing the tumbler pin relative to the key guideway; and bias means operatively biasing the keeper member relative to the casing member along the longitudinal axis whereby the cam portions of the key member are capable of depressing the tumbler pin against the resilient means to permit the keeper member to move relative to the casing member for fastening or releasing the locking head portion whereby the elongated flexible member can be utilized to secure skis and the like and to further interconnect both ski poles against unauthorized removal.

3,899,905

LOCKING BAR ASSEMBLY

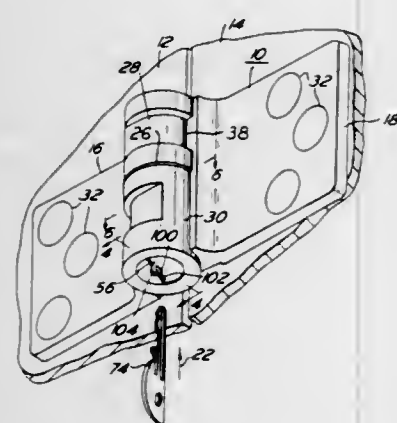
Russell W. Walters, Reading, Pa., assignor to BMR Security Products Corporation, Reading, Pa.

Continuation-in-part of Ser. No. 277,565, Aug. 3, 1972, Pat. No. 3,827,266. This application May 30, 1973, Ser. No. 365,099. The portion of the term of this patent subsequent to Aug. 6, 1991, has been disclaimed.

Int. Cl.² E05B 63/00

U.S. Cl. 70-91

8 Claims



1. An improved locking bar assembly including a pair of strike plates having lug members, tubular means insertable through a bore formed within each of said lug members, a cylindrical key lock within said tubular means for displacing a locking pin through an opening in said tubular means into and out of engagement with at least one detent formed in one of said lug members, where the improvement comprises:

each said lug member having an upper surface, a lower surface and an outer side surface, said upper and lower surfaces formed transverse of said bore within said lug member, said outer side surface having at least one larger diameter section and at least one smaller diameter section, said outer side surface formed between said upper and lower surfaces;

at least one first mating means formed by at least one of said strike plates; the different diameter sections of said outer

side surface forming second mating means, said first mating means of one of strike plates and said second mating means of said lug member of the other of said strike plates being received one in the other when said bores are aligned;

lock securing means formed substantially near one end of said tubular means for securing said key lock within said tubular means independent of said locking pin.

3,899,906

LOCK MECHANISM

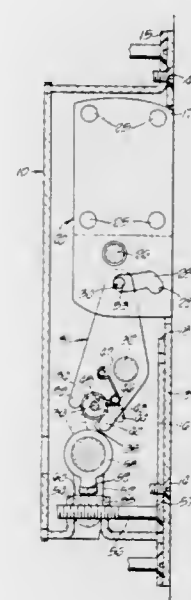
Richard L. Bradstock, Burbank, Calif., assignor to Adams Rite Manufacturing Company, Glendale, Calif.

Filed Feb. 22, 1974, Ser. No. 444,955

Int. Cl.² E05B 65/06

U.S. Cl. 70-139

6 Claims



1. A locking mechanism for a movably mounted door having a relatively narrow stile, comprising:

a. a casing structure positionable in said stile, said structure having an opening adapted to be positioned adjacent a vertical edge face of said stile;

b. a bolt pivotally supported in said casing for swinging selective movement to a retracted unlocked position within said casing and to an extended locked position projecting through said opening;

c. a bolt actuating lever pivotally supported between its ends in said casing for rocking movement, one end of said actuating lever being connected with said bolt,

the other end of said actuating lever having an open ended slot with a relatively wide outer end portion extending between spaced end abutment projections, and an axially aligned relatively narrow inner end portion;

d. latching means carried by said other end of said lever for releasably latching said bolt in its extended and retracted positions, including:

a spring-urged roller having a portion of reduced diameter between its ends supported for outward and inward movements in said narrow inner portion of said slot, said roller being normally biased to a latching position extending into the relatively wide outer portion of said slot; and

e. manually operable means including an element swingably rotatable in opposite directions to initially release said latching means in both the extended and retracted positions of said bolt and thereafter rock said lever to selectively move the bolt from one of said positions to the other of said positions, said element being engageable with said roller and operative to move it to a non-latching position prior to engagement with one of said abutment projections.

3,899,907

CYLINDER LOCK ASSEMBLY

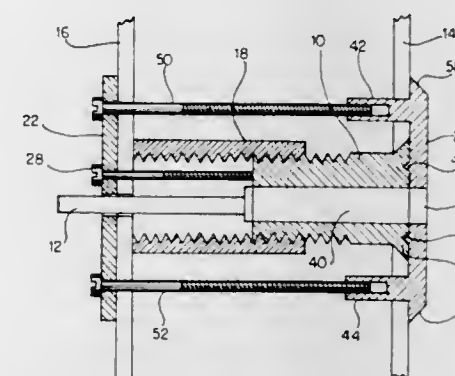
Herman Prahl, 48-38 Fifty-eighth Ln., Woodside, N.Y. 11377

Filed June 18, 1973, Ser. No. 370,934

Int. Cl.² E05B 9/08

U.S. Cl. 70-370

4 Claims



1. A cylinder lock assembly, comprising:

a cylinder lock having an externally threaded housing having front and rear surfaces and having a key plug extending through said housing, said key plug having a key slot therein and a key hole exposed at the front surface of said housing;

adjustable extension means having an internally threaded aperture therein for threadedly mating with said externally threaded housing for adjusting the combined length of said cylinder lock and extension means to approximately the width of a door in which said cylinder lock assembly is to be installed;

a plurality of threaded bores in said rear surface of said housing;

a plurality of screws of a length greater than the difference between the length of said housing and said combined length for securing said assembly to a door; and

end plate means having a plurality of apertures therein in alignment with said threaded bores in said rear surface of said housing for receiving said screws and securing said assembly to a door.

3,899,908

DEVICE FOR BENDING PIPES WITH SIMULTANEOUS UPSETTING

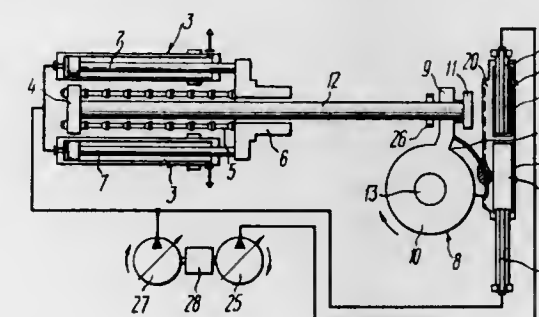
Boris Stepanovich Somov, partizan, 3, kv.22; Alexandr Ilich Mamin, skaya, 69a, kv.5; Andrei Porfirievich Novikov, ulitsa Sotsialisticheskaya, 7, kv.13; Vyacheslav Ivanovich Filippov, ulitsa Polzunova, 24, kv.1; Sergei Grigorievich Khirdzhiev, ulitsa Bakinskikh komissarov, 58, kv.48, all of Sverdlovsk; Vladimir Zakharovich Gurevich, Yasny proezd, 4, korpus 1, kv.20, Moscow; Nikolai Stefanovich Voronov, ulitsa Bogdana Khmel'nitskogo, 68, kv.18, and Ivan Fedorovich Agafonov, ulitsa Bogdana Khmel'nitskogo, 101, kv.69, both of Belgorod, all of U.S.S.R.

Filed Sept. 12, 1974, Ser. No. 505,596

Int. Cl. B21b 37/06

U.S. Cl. 72-28

3 Claims



1. A device for bending pipes comprising a bed in which the pipe to be bent is set with a provision for longitudinal movement; power cylinders for moving the pipe longitudinally on

the bed; a bending head mounted on the bed rotatably in the bending plane; another power cylinder whose movable portion is connected with the bending head and which builds up a braking moment while said head is turned in the course of bending; one more power cylinder whose body is rigidly connected with the body of the braking power cylinder which is linked by its movable body with the bending head; a controllable source of pressure communicating with the power cylinder which is connected to the braking power cylinder.

3,899,909

TOOL HEAD ASSEMBLY FOR IMPARTING ROTARY ROCKING MOTION TO A TOOL

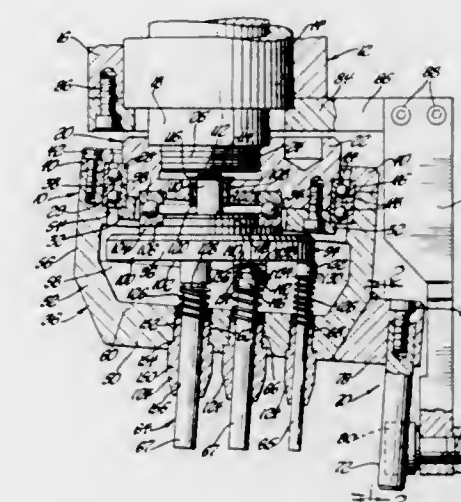
Vladimir Taruntaev, Davison, Mich., assignor to VSI Automation Assembly, Inc., Troy, Mich.

Filed June 17, 1974, Ser. No. 480,122

Int. Cl.² B21J 15/12

U.S. Cl. 72-112

58 Claims



1. A tool head assembly comprising: a circular drive member adapted for attachment to a rotatably driven member for rotatable movement about an axis of rotation extending through said drive member, the central axis of said drive member being parallel to, but nonconcentric with respect to the axis of rotation; tool support means including means for axially slidably supporting a tool member; connecting means for connecting said tool support means to said drive member, said connecting means including a bearing set canted with respect to the axis of rotation such that the central axis of said tool support means is angularly offset from the axis of rotation; means for preventing rotation of said tool support means with said circular drive member; and thrust transmitting means carried by said rotatable circular drive member and in thrust transmitting relationship therewith for transmitting thrust to a tool member, the central axis of said thrust transmitting means being coincident with the axis of rotation.

3,899,910

PRESTRESS TYPE ROLLING MILL

Keiichi Aramaki, Fukuyama, Japan, assignor to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed May 30, 1974, Ser. No. 474,403

Claims priority, application Japan, June 19, 1973, 48-68277

Int. Cl.² B21B 31/08

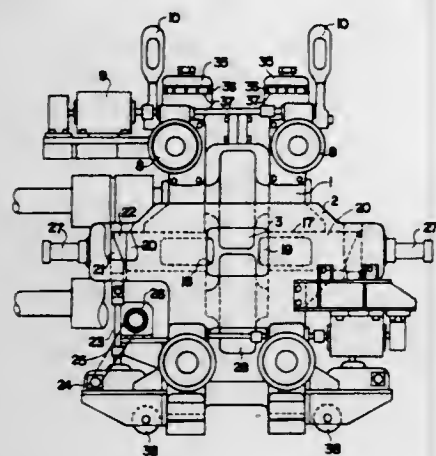
U.S. Cl. 72-239

7 Claims

1. A prestress type universal rolling mill, comprising:

a lower housing;
a bottom horizontal roll mounted to said lower housing;
an upper housing removably coupled to said lower housing;
a top horizontal roll mounted to said upper housing;
a pair of vertical rolls directly supported on said lower housing and being removably mounted to said lower housing, said vertical rolls being removable by lifting thereof substantially in the vertical direction when said upper and lower housings are separated; and

mounting and joining means including generally vertically oriented side tapered guide surface means on said upper and lower housing for removably mounting and joining said upper housing to said lower housing, whereby a



horizontal force exerted on said top horizontal roll is transmitted from said upper housing through said side tapered guide surface means and is borne by said lower housing.

3,899,911

SHEETMETAL ROLLING MACHINE

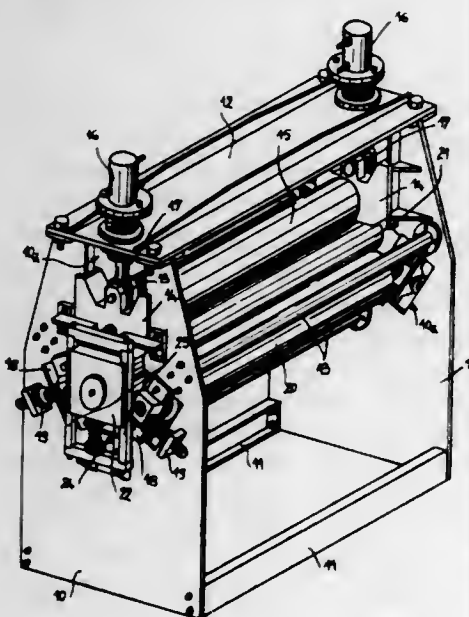
Paul Ogier, Vaugneray, and Christian Queyrolx, Lyon, both of France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), France

Filed Mar. 27, 1974, Ser. No. 455,191

Int. Cl. B21d 5/14

U.S. Cl. 72-169

3 Claims



1. A machine for the curving and rolling of sheet metal, and comprising:

a rigid forming roller;

means for mounting one end of the forming roller to allow free floating of the forming roller during operation of the machine and to allow for easy removal of the sheet metal from the unmounted end after rolling;

a plurality of curving rollers disposed at arcuately spaced locations around the forming roller, the curving rollers having a cover fabricated from a pliable elastic material; movable pillow block mount means, the curving rollers being mounted in said movable pillow block mount to permit radial adjustment of the curving rollers with respect to the forming roller; and

means carried by the pillow block mount means for locking the curving rollers into desired radial positions with respect to said forming roller to allow the curving rollers to rotate about a fixed axis during the sheet metal rolling operation.

3,899,912 METHOD AND DEVICE FOR COLD-FORMING ROLLING ELEMENTS

Michel Orain, Conflans-Sainte-Honorine, France, assignor to Societe Anonyme: Glaenger Spicer, Poissy, France

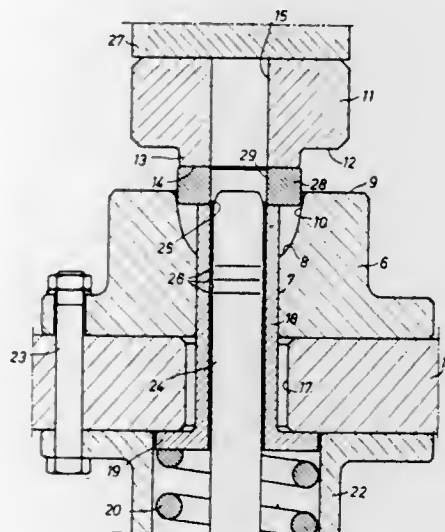
Filed June 29, 1973, Ser. No. 375,122

Claims priority, application France, July 10, 1972, 72.24973

Int. Cl.² B21J 13/02, 13/14

U.S. Cl. 72-344

6 Claims



1. Apparatus for carrying out a method for cold-forming a rolling element comprising a body of revolution with an external rolling surface having straight or curved generatrices extending between a portion of relatively large diameter, and a portion of relatively small diameter, in which method a cylindrical blank, the diameter of which is substantially equal to the maximum diameter of the element, is compressed in a cup whose internal profile is identical to the external profile of the element by overcoming an increasing counter-pressure exerted on the blank; the forcing of the blank into the cup being halted at a predetermined stage, said apparatus comprising a die formed with a cup having an internal wall the profile of which is identical to the external profile of said rolling surface of said element, a plane bearing face of said die perpendicular to the revolution axis of said cup, a conical extension of said wall in communication with said plane bearing face of the die, a passage in said die extending from said cup surface remote from said plane bearing face and having a diameter substantially equal to the smallest diameter of said element, a sliding ejector disposed in said bore, counter-pressure means arranged to provide a force resisting movement of said ejector into said passage and which increases with the degree of penetration, a plunger having a first bearing face adapted to engage said bearing face of the die and a circular second bearing face projecting from said first bearing face, said second bearing face having the same form as the greatest diameter face of said element and being of a size to enter said conical extension of said cup wall, said die and said plunger being mounted for relative displacement so that said second bearing face of said plunger enters said cup, while being maintained strictly coaxial with said cup, until said first bearing face of said plunger engages said bearing face of said die.

3,899,913

SHEET WRAPPER

James A. Schlosser, Essexville, and Walter A. Trumbull, Midland, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 10, 1974, Ser. No. 469,142

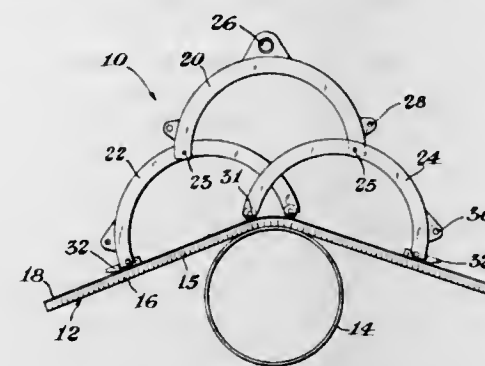
Int. Cl. B21d 5/02

U.S. Cl. 72-383

13 Claims

1. A sheet wrapper for wrapping relatively flat sheets about the circumference of an article, said wrapper comprising a multiple component yoke assembly including a central yoke

arm and yoke-shaped end rocker arms having center pivots, each of said arms presenting substantially similar inside curvilinear configurations which configurations are about the same as the outside curvilinear configuration of the sheet when



wrapped about the article, the central yoke arm supporting adjacent each of its ends a center pivot of one of said rocker arms thereby keeping the same substantially equidistant from the longitudinal centerline of the article.

3,899,914

APPARATUS FOR CLOSING A CUT END OF A BLOOD VESSEL

Taichiro Akiyama, 19-23, Shimoochiai 2-chome, Shinjuku-ku, Tokyo, Japan

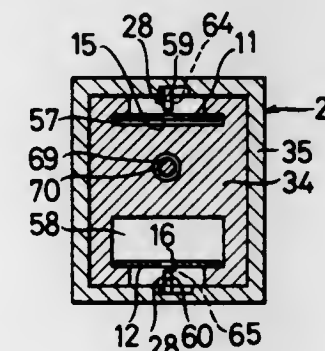
Filed Jan. 9, 1974, Ser. No. 432,052

Claims priority, application Japan, Jan. 20, 1973, 48-8875; Jan. 20, 1973, 48-8876; Jan. 20, 1973, 48-8878

Int. Cl. B21d 9/08

U.S. Cl. 72-410

16 Claims



1. An apparatus for closing a cut end of a blood vessel with a pair of closing members, comprising means for supporting and guiding a pair of strips with each strip being formed of a series of closing members, a pair of actuating members to press successive pairs of closing members against one another with the cut end of a blood vessel therebetween, said actuating members operating to concurrently fasten said pair of closing members together, feeding means for feeding intermittently said strips to provide successive pairs of closing members at said actuating members, and cutting means for automatically cutting one pair of closing members from said pair of strips during each pressing and fastening operation.

3,899,915

CONVEYOR SCALE CALIBRATION

Roger B. Williams, Jr., Sylvania, Ohio; Richard C. Loshbough, Temperance, Mich., and Richard A. Cherry, Toledo, Ohio, assignors to Reliance Electric Company, Toledo, Ohio

Filed Nov. 7, 1973, Ser. No. 413,657

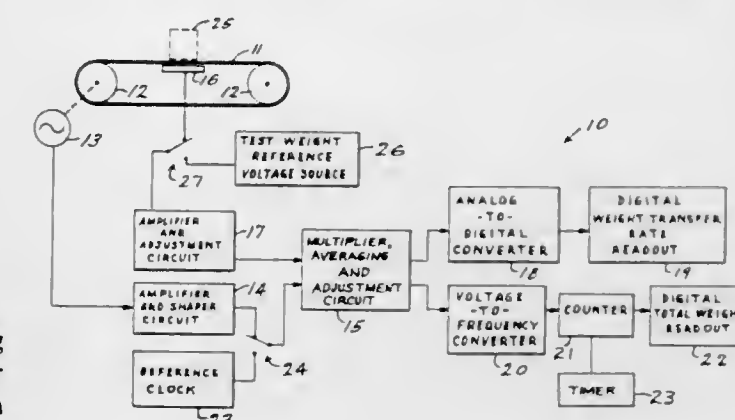
Int. Cl.² G01G 11/00, 23/00

U.S. Cl. 73-1 R

13 Claims

1. Measuring apparatus for use with a conveyor for moving material through a region comprising, in combination, means for generating an electric speed signal corresponding to the speed of the conveyor, means for generating an electric weight signal corresponding to the weight of material in the region, multiplying means responsive to said speed and weight signals

for generating an electric signal which is a measure of the weight transfer rate, and means for calibrating said measuring apparatus, said calibrating means including means for applying to said multiplying means a weight signal corresponding to a predetermined weight, means for generating an electric signal for simulating said speed signal at a predetermined constant conveyor speed, switch means for selectively apply-



ing said simulated speed signal to said multiplying means in place of said conveyor speed signal whereby said weight transfer rate signal is generated in response to said simulated speed signal and said predetermined weight signal, and means for adjusting said measuring apparatus to eliminate any deviation in said weight transfer rate signal from a true weight transfer rate signal for such predetermined constant conveyor speed and predetermined weight in the region.

3,899,916

RECORDER AND COMPUTER TYPE BRAKE ANALYZER AND METHOD

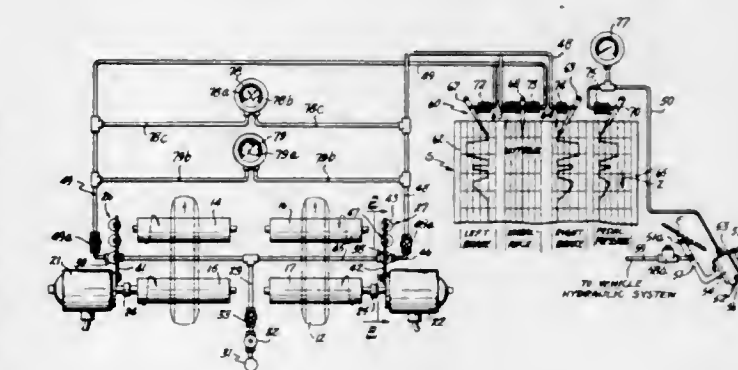
Edwin Lee Cline, Pasadena, Calif., assignor to Clayton Manufacturing Company, El Monte, Calif.

Continuation-in-part of Ser. No. 811,168, March 27, 1969, abandoned. This application July 25, 1973, Ser. No. 382,538

Int. Cl. G011 1/28

U.S. Cl. 73-126

147 Claims



1. Apparatus for analyzing the performance of the brakes on the wheels of a vehicle while force is being applied thereto by a brake actuator, comprising:

test means for rotating at least one pair of wheels of the vehicle;

means for separately and continuously measuring the brake effort of each of the brakes of said wheels as the brake actuator is operated;

recording means actuated by said measuring means and including means for simultaneously and continuously recording the variations, if any, in brake effort on each wheel, the imbalance in brake effort, if any between the wheel brakes, and the degree of brake actuator operation; a computer connected in circuit with said recorder for comparing the recorder values with pre-established standard values for the test being conducted; and a printer connected with the computer, for printing the variations in the test values from the standard values.

3,899,917

LABORATORY WEAR RESISTANCE TEST MACHINE FOR TIRES

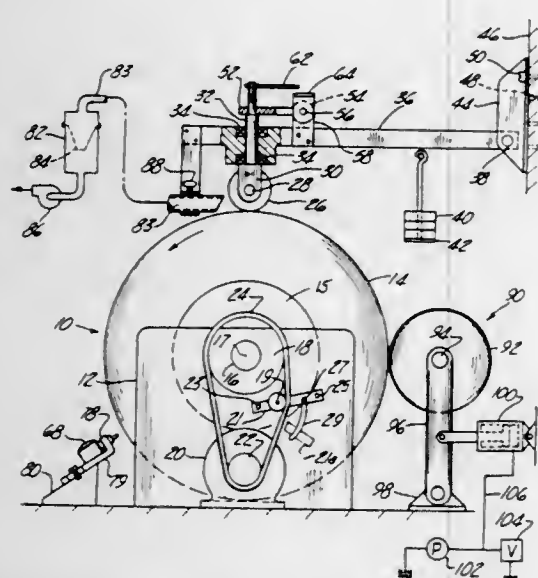
Frederick N. Kisbany, 464 Lexington Rd., Gross Pt. Farms, Mich. 48236

Filed Dec. 6, 1973, Ser. No. 422,459

Int. Cl. G01n 3/56

U.S. Cl. 73-8

8 Claims



1. A tire wear tester comprising power means for rotating a tire under test; a non-powered abrasive wheel freely rotatably mounted so that its peripheral edge rolls on the tire tread surface, to thereby generate tire tread particulates; means for selectively adjusting and positioning the abrasive wheel with its rotational axis slightly askew of the tire axis, whereby the tire tread is required to skid on the abrasive wheel surface; and means to measure tread wear generated by the abrasive wheel.

3,899,918

DIFFERENTIAL MICROCALORIMETER

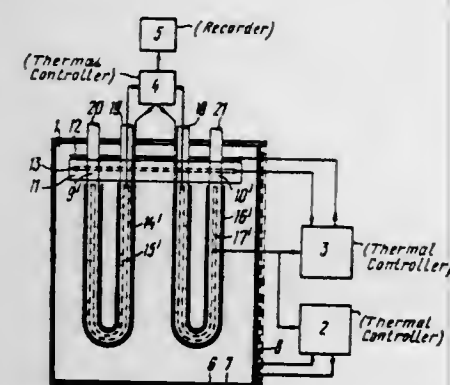
Petr Leonidovich Privalov, mikroraion V, 29, kv. 38; Pavel Semenovich Makurin, mikroraion V, 22, kv. 46; Valerian Valerievich Plotnikov, mikroraion G, 9, kv. 47; Vladimir Vasilievich Koryagin, mikroraion V, 8, kv. 23; Viktor Sergeevich Polpudnikov, mikroraion V, 24, kv. 5, and Georgy Pavlovich Stepanjuk, mikroraion V, 25, kv. 16, all of Puschino Moskovskoi oblasti, U.S.S.R.

Filed Mar. 5, 1973, Ser. No. 338,229

Int. Cl. G01k 17/00; G01h 25/20

U.S. Cl. 73-15 B

1 Claim



1. A differential microcalorimeter comprising: a calorimetric unit including a shield; a sample calorimetric chamber provided with a heating element and a heat sensing element, and made as a capillary tube inserted inside said shield so that the inlet and outlet of said capillary tube, through which said chamber is respectively filled and emptied are located outside said shield; a reference calorimetric chamber provided with a heating element and a heat sensing element, and made as a capillary tube inserted inside said shield so that the inlet and outlet of said capillary tube, through which said chamber is respectively filled and emptied, are located outside said shield;

at least one heat shunt comprising an element made of a material having a high heat conductivity and having a heater, said capillary tubes extending through said shunt and having good thermal contact therewith, each of said capillary tubes being divided by said shunt into a non-working portion extending beyond the shunt to form said inlets and outlets of said capillary tubes through which each of said chambers are filled and emptied, and a working volume portion that is not enclosed by said shunt and is a continuation of said non-working portion, said heating element and said heat sensing element of each calorimetric chamber being disposed on the surface of its respective said working volume portion; a heat sensing element of said heat shunt; a heat sensing element of said shield; a heating element of said shield; a first thermoregulator with two inputs and one output, said inputs being connected to at least one of said heat sensing elements of said calorimetric chambers and to said heat sensing element of said shield, and the output being connected to said heating element of said shield; a second thermoregulator with two inputs and one output, one of the inputs being connected to the same heat sensing elements of said calorimetric chambers as the first thermoregulator, the other input being connected to said heat sensing element of said heat shunt, and the output being connected to said heating element of said heat shunt; a third thermoregulator with two inputs and three outputs, said inputs being connected to the respective heat sensing elements of said chambers, and two of said three outputs being connected to said heating elements of said chambers, and a recorder connected to said third output of said third thermoregulator for recording the results of measurements.

3,899,919

ACOUSTIC EMISSION SYSTEM FOR SOLID PROPELLANT BURN RATE MEASUREMENTS

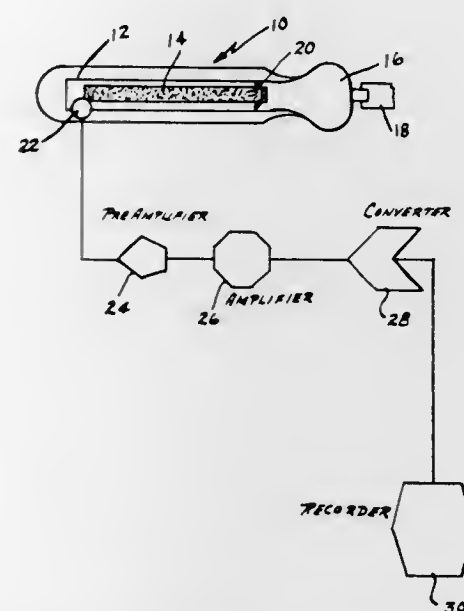
Robert L. Geisler, Tehachapi; James L. Koury, and Arch D. Johnston, both of Lancaster, all of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 21, 1973, Ser. No. 427,159

Int. Cl. G01n 33/22

U.S. Cl. 73-35

1 Claim



1. A system for measuring the rate time of burn of solid propellants in a solid strand burn rate analyzer comprising: A propellant strand secured in an analyzing means; a piezoelectric pick-up transducing means affixed to said propellant strand for measuring thermal fracture and deflagration of the solid oxidizer; means connected to said transducing means for amplifying the output signal thereof; means connected to the amplifying means for converting an AC signal to a DC signal and providing a root mean squared wave form distribution signal, and graphic recording means connected to said converting means for presenting a visual display of the propellant burning rate.

3,899,920

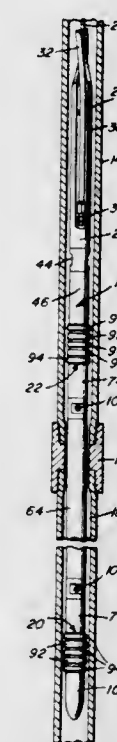
TUBING TESTING TOOLCarrol J. Matherne, P.O. Box 763, Houma, La. 70360
Filed Mar. 27, 1974, Ser. No. 455,324

Int. Cl. G01m 3/08

U.S. Cl. 73-40.5 R

14 Claims

1. A tool for pressure testing tubing, pipe and the like comprising an upper packer and a lower packer, each packer including a mandrel, means extending between the mandrels to retain the packers in longitudinally spaced relation, each packer including a deformable packing means expansible into sealing contact with the interior of the tubing to isolate a test space, each mandrel extending throughout the length of the packing means, said tool including passage means for packer setting fluid communicating with the periphery of each mandrel adjacent a peripheral shoulder thereon, a sleeve slidable on each mandrel and including an internal flange in spaced,



opposed relation to the shoulder to define a setting chamber for receiving setting fluid for moving the sleeve longitudinally on the mandrel, said packing means including at least one resilient, deformable annular packing member in encircling relation to the mandrel with an end portion of the sleeve engaged therewith for compressing the packing member and expanding it circumferentially toward the tubing surface, said passage means also including a portion for discharging test fluid into the test space, each of said mandrels being unitary and identical in construction.

3,899,921

METHOD AND APPARATUS FOR TESTING AN OBJECT
Bernard Spencer Hockley, Ambergate, England, assignor to Rolls-Royce (1971) Limited, London, England

Filed Oct. 30, 1973, Ser. No. 411,093

Claims priority, application United Kingdom, Nov. 2, 1972, 50634/72

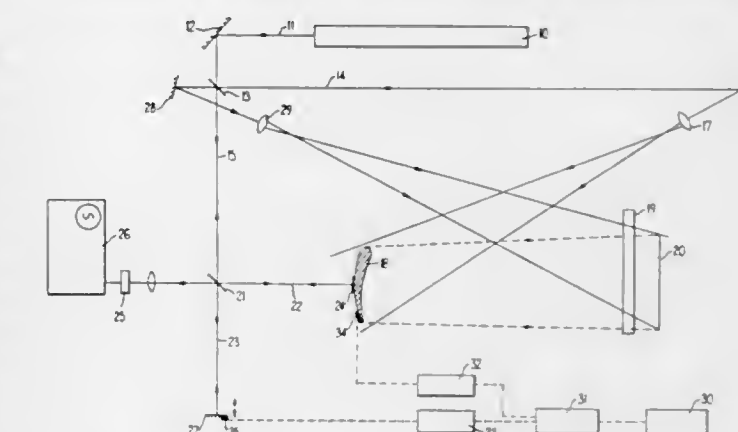
Int. Cl. G01n 21/00

U.S. Cl. 73-67.2

16 Claims

1. A method of testing an object comprising the steps of: splitting a beam of laser radiation into a first and second portion, illuminating the object with the first beam portion, vibrating the object, modulating the phase of one beam portion in a first predetermined phase relationship with the vibration of the object, combining the radiation scattered from the object with the second beam portion to form a hologram, altering the modulation of the phase of the modulated beam

portion to a second predetermined phase relationship, and combining the radiation scattered from the object with the



second beam portion to modify said hologram to contain information from said conditions of phase modulation.

3,899,922

DOUBLE LEVER STRAIN MULTIPLIER APPARATUS AND METHOD

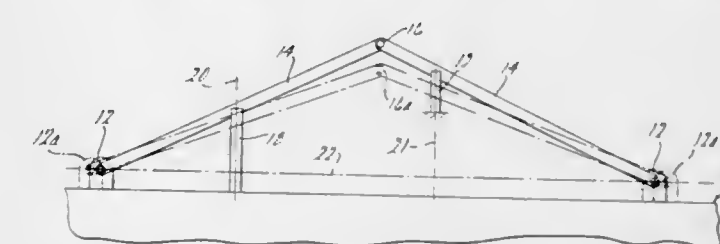
Nelson M. Mercer, Jr., Detroit, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 5, 1973, Ser. No. 422,111

Int. Cl. G01B 7/16

U.S. Cl. 73-88.5 R

7 Claims



1. Apparatus for multiplying the strain produced in a structural component comprising:

a pair of pivotally interconnected lever arm members including means for pivotally attaching the free ends of said lever arm members to a structural component; and at least one strain gauge means having one end attached to at least one of said pair of lever arm members and attachable at an opposite end to the structural component so that an imaginary line drawn between the structural component attachment ends of the pair of lever arm members will pass through the end of the strain gauge means which is attachable to the structural component.

3,899,923

TEST PROCESS AND APPARATUS FOR TREATMENT OF JET ENGINE EXHAUST

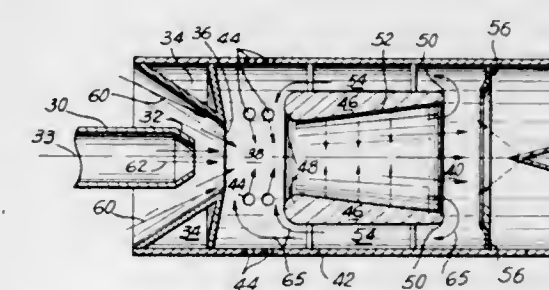
Aaron J. Teller, Great Neck, N.Y., assignor to Teller Environmental Systems, Inc., Worcester, Mass.

Filed May 13, 1971, Ser. No. 143,066

Int. Cl. G01m 15/00; F01n 33/04

U.S. Cl. 73-116

35 Claims



1. A process for treating the hot exhaust gases from a jet engine mounted on a test stand comprising the steps of: intro-

ducting water to said exhaust gas in a mixing zone together with augmentation air; passing the mixture formed through an augmentation zone; and recycling a portion thereof back to the said mixing zone.

3,899,924

STRAIN GAUGE SYSTEM

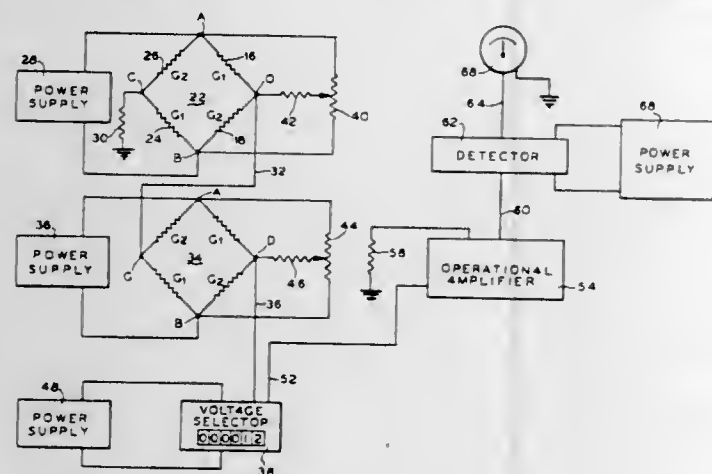
Richard Edward Klein, Des Plaines, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Filed June 7, 1973, Ser. No. 367,828

Int. Cl. G011 1/22; G01g 19/08

U.S. Cl. 73-141 A

6 Claims



1. A strain gauge load measuring system comprising a pair of strain gauges mounted on a load-supporting member, each of said strain gauges being located at a different predetermined distance from a supported end of said member, bridge circuit means interconnected with said strain gauges for deriving a signal having an amplitude dependent upon an actual load supported by said member, manually settable voltage divider means for setting a first reference signal to represent a first reference load, detector means connected with said bridge circuit means and with said voltage divider means for producing a signal indicating a net difference between said actual load signal and said first reference signal, means for producing a second manually adjustable reference level to represent a partial load, and comparator means for comparing said net difference signal and said second reference level and operative to produce a binary signal indicating the polarity of said net difference signal relative to said second reference level, whereby said binary signal is in a first binary state when said net difference signal is one side of said second reference level and in a second binary state when said net difference signal is on the other side of said second reference level.

3,899,925

VALVE SYSTEM FOR CONFINED VORTEX FLOW SYSTEM

Brian A. Hausfeld, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 17, 1974, Ser. No. 434,154

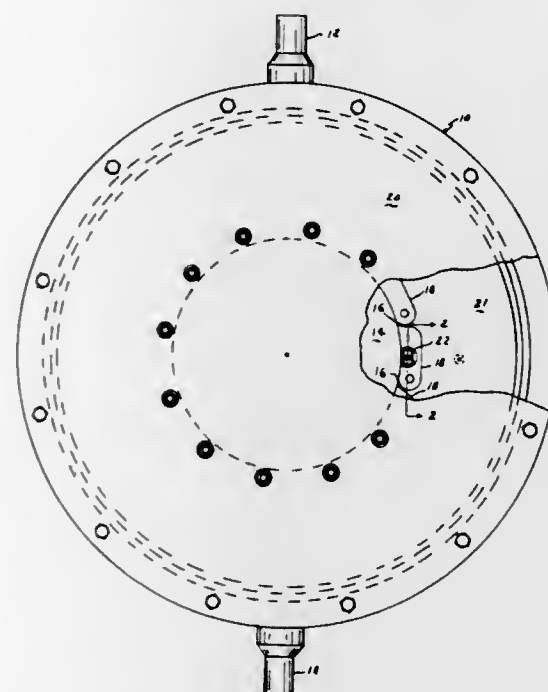
Int. Cl. G01m 9/00; G01n 1/04

U.S. Cl. 73-147

3 Claims

1. A three position valve system for use in a confined vortex flow system having a vortex chamber formed between a pair of wall members with means for forming a circumferential wall for said chamber and including means for providing a vortex flow of a low molecular weight gas in a flow path around the central axis of said chamber, comprising: a cylindrical shaped chamber in said circumferential wall and having an elongated opening on the side adjacent said vortex chamber; said cylindrical shaped chamber having its axis parallel to the axis of the vortex flow path within said chamber; a hollow elongated tubular member positioned within said cylindrical shaped chamber; said tubular member having a first means, in

a first circumferential position of the valve, for directing particle flow into said vortex chamber in the direction of gas flow within the vortex chamber; said tubular member having a second means, in a second circumferential position of the valve, for intercepting the flow of particles within the vortex chamber to remove particles from the chamber; said tubular



3,899,926

METHOD AND APPARATUS FOR CONTINUAL COMPILATION OF A WELL DATA LOG

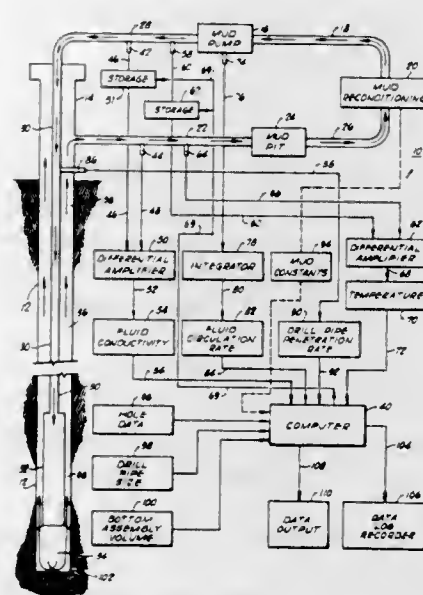
Elard L. Haden, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed July 3, 1972, Ser. No. 268,399

Int. Cl. E21b 47/00

U.S. Cl. 73-153

8 Claims



1. A method for deriving a continuous pseudo-resistivity log indication of selected sub-strata through which a bore hole is being formed utilizing drilling equipment with drilling fluid circulation equipment, comprising the steps of:

continually deriving first electrical resistivity measurements from the drilling fluid entering said bore hole; storing said first electrical resistivity measurements for a duration equal to circulation time of a drilling fluid; continually deriving second electrical resistivity measurements from the drilling fluid out-coming from said bore hole;

whereby the crimp contraction may be determined directly as a percentage of said predetermined interval between said two clamping points.

3,899,927

METHOD AND APPARATUS FOR THE MEASUREMENT OF CRIMP CONTRACTION

Hans-Joachim A. Brassard, and Andreas Erkens, both of Heinsberg, Germany, assignors to Akzona Incorporated, Asheville, N.C.

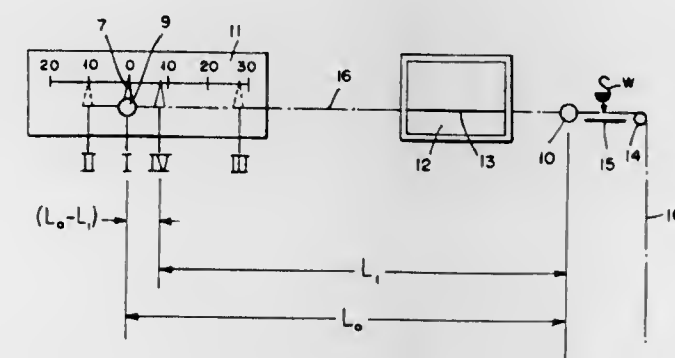
Filed Oct. 29, 1973, Ser. No. 410,422

Claims priority, application Germany, Nov. 4, 1972, 2254026

Int. Cl. G01n 3/28

U.S. Cl. 73-160

7 Claims



1. A method for the rapid measurement of the crimp contraction of a texturized yarn which comprises:

clamping a length of said texturized yarn in a straight line path between two points spaced at a predetermined interval while said yarn is under an initial tensional load sufficient to remove slack from the yarn and to draw out at least part of its normal crimp;

briefly extending the yarn longitudinally through movement of a first clamped point thereof by an amount of about 5 to 20% and sufficient to ensure the complete drawing out of the normal crimp and to temporarily stress said yarn without imparting any substantial permanent extension thereto;

immediately thereafter completely relaxing said yarn through movement of said first clamped point in the longitudinal direction of the yarn opposite that of the preceding extension step in order to redevelop the normal crimp of the yarn; and

then extending the yarn again only until it is brought back approximately to said straight line path between the two clamping points through another movement of said first clamped point in the same longitudinal direction of the yarn as said preceding extension step,

deriving a difference resistivity between said stored first electrical resistivity and the second electrical resistivity measurements;

continually deriving an indication of drilling penetration depth, and periodically deriving an indication of penetration depth change;

generating an indication of the total drilling fluid volume in the bore hole as well as the drilling fluid circulation rate as a function of time to determine the amount of time for

a unit portion of drilling fluid to circulate from the bore hole bottom to the bore hole top; and recording said differential resistivity measurement on a time base delayed by said amount of time for a given portion of fluid to circulate from bore hole bottom to bore hole top in order to provide an output display of electrical resistivity versus bore hole depth.

3,899,928

ATTITUDE MEASUREMENT SYSTEM FOR SATELLITE

Luc F. Fraiture, Darmstadt, Germany, assignor to Organisation Européenne de Recherches Spatiales, Neuilly-sur-Seine, France

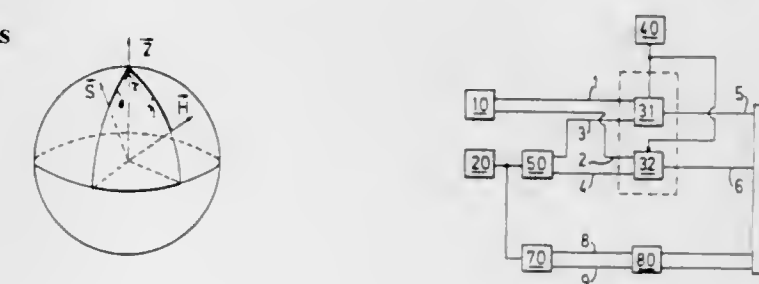
Filed Oct. 11, 1973, Ser. No. 405,396

Claims priority, application Belgium, Mar. 29, 1973, 129421

Int. Cl. G01c 21/00

U.S. Cl. 73-178 R

5 Claims



1. In an earth satellite stabilized by rotation about a spin axis and travelling along an earth orbit, an attitude measurement apparatus comprising a slit sun sensor having its slit in a plane containing said spin axis for providing a first signal every time said plane crosses a line satellite-sun, a magnetometer disposed substantially perpendicular to said spin axis to provide a second signal being substantially sinusoidal about an axis centered at zero and having a first positive going zero crossing and a first negative going zero crossing, said second signal representing the intensity of the magnetic field at the satellite position on said orbit, first means responsive to the first positive going zero crossing of said second signal to produce a third signal representing said positive going zero crossing, and further responsive to the first negative going zero crossing of said second signal to produce a fourth signal representing said first negative going zero crossing, and second means responsive to said first, third and fourth signals for producing a fifth signal representing the time interval between the occurrence times of said first and third signals and for producing a sixth signal representing the time interval between the occurrence times of said first and fourth signals, the said fifth and sixth signals being available to be coupled to a suitable telemetering apparatus.

3,899,929

APPARATUS FOR INDICATING WIND DIRECTIONS AND VELOCITY

Jack B. Slimp, Jr., 8700 Artillery Rd., Manassas, Va. 22110

Filed Mar. 18, 1974, Ser. No. 452,219

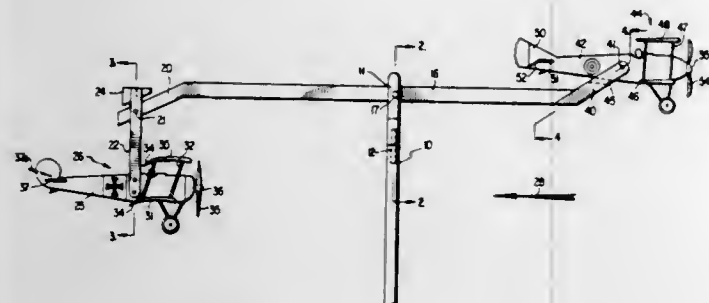
Int. Cl. G01w 1/02

U.S. Cl. 73-189

19 Claims

18. Apparatus which indicates the direction of the relative wind comprising support means, a bar turnably mounted on said support means whereby it is rotatable about a substantially vertical axis, and a pair of model aircraft mounted on said bar on each side of said support means, the airfoils included in said model aircraft causing said bar to be generally aligned with the relative direction of the wind at least one of said aircraft being freely pivotable at least within limits about

a horizontal connection provided in its mountings on said bar whereby the vertical angle between said bar and said airfoil of



said one aircraft is variable irrespective of said bar's position relative to the horizontal.

3,899,930

COUPLING DEVICE FOR FLUIDS AND ITS APPLICATION TO THE MEASUREMENT OF LEVELS AND THE STORAGE OF LIQUIDS

Gerard Sermet, Yerres, France, assignor to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procédés Georges Claude, Paris, France

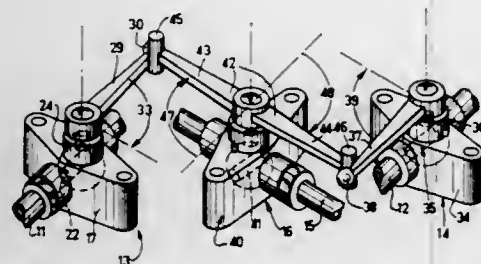
Filed Aug. 5, 1974, Ser. No. 495,104

Claims priority, application France, Aug. 17, 1973, 73.29991

Int. Cl.² G01G 23/14

U.S. Cl. 73-299

17 Claims



1. A coupling device for fluids, the device comprising a first conduit with a first input and a first outlet, a first isolating cock having a first operating device for opening and closing the first conduit, a second conduit with a second input and a second outlet, a second isolating cock having a second operating device for opening and closing the second conduit, a third conduit connected between said first and second conduits, a balancing cock having a third operating device for opening and closing the third conduit, and closure-preventing means comprising mobile abutment members respectively fixed on the operating devices of each of said cocks, the closure-preventing means preventing the closure of said balancing cock when at least one of said isolating cocks is closed and further preventing the closure of each said isolating cock when said balancing cock is closed,

3,899,931

DIAL INDICATOR FOR SENSING SURFACE VARIATIONS

Shozo Iwasaki, Ebina, Japan, assignor to Kabushiki Kaisha Akashi Seisakusho, Japan

Filed Dec. 27, 1973, Ser. No. 428,871

Claims priority, application Japan, Dec. 30, 1972, 48-1369

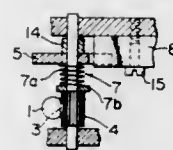
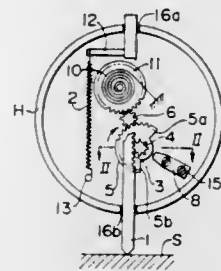
Int. Cl. F16H 19/08

U.S. Cl. 74-34

4 Claims

1. An indicator comprising, a sensing spindle for sensing variations of a surface to be sensed and movable axially in opposite directions in response to variations in the surface being sensed, rotatable means responsive to the axial movement of the sensing spindle, an indicating pointer actuated angularly by said rotatable means, a slip clutch coupling the

pointer to said rotatable means and having means to declutch the pointer from said rotatable means when said pointer is disposed at a reference position, an auxiliary pointer connected to said rotatable means continuously movable in response to the axial movement of said sensing spindle and movable proportionately to said axial movement for establish-



ing and indicating a reference sensing axial position of said sensing spindle from which indicated sensing of said sensing spindle is indicated by said indicating pointer, means biasing said spindle in a direction for sensing said surface, and said indicating pointer indicating a variation of said sensing spindle from said reference position thereof.

3,899,932

CHAIN RETENTION DEVICE FOR ELLIPTICAL SPROCKETS

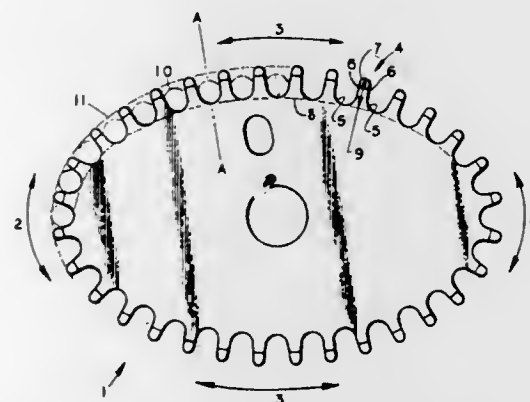
Roger Owen Durham, 3944 Marathon St., Los Angeles, Calif. 90029

Filed Dec. 19, 1973, Ser. No. 425,991

Int. Cl.² F16H 55/30, 55/04

U.S. Cl. 74-243 NC

6 Claims



1. A non-round sprocket having tips and flat sides wherein the teeth along the flat sides are of greater height than those at the tips.

3,899,933

TRANSMISSION WITH ANTIBACKLASH MEANS

Dexter V. Wright, Pittsburgh, Pa., and John M. Hague, III, Buffalo, N.Y., assignors to White-Westingshouse Corporation, Cleveland, Ohio

Filed Jan. 2, 1974, Ser. No. 430,108

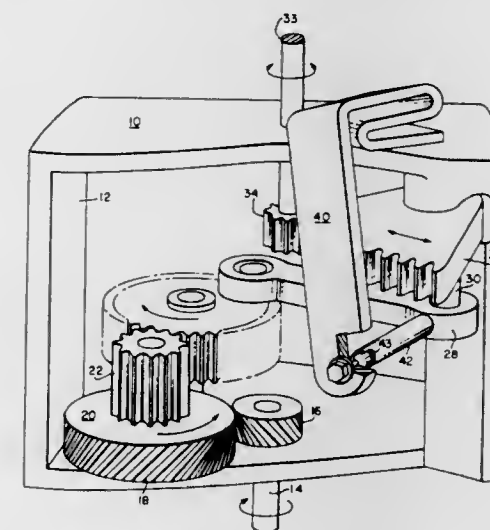
Int. Cl.² F16H 55/18

U.S. Cl. 74-440

8 Claims

1. Antibacklash means for transmission having support structure for mounting a rotating input shaft and an output means for driving a relatively high-inertia load, said output

means having a repetitive cyclical movement defining opposed extreme positions and means also mounted on said support structure for providing positive driving engagement between said input shaft and said output means, said engagement means including a rotatively driven crank gear coupled to said input shaft for a driving force therebetween and a connecting rod rotationally connected at one end to said crank gear, the opposed end of said connecting rod pivotally coupled to said output means, and wherein said antibacklash means comprises:



means including a yieldable member for applying a rotational force to said crank gear, the direction and magnitude of said rotational force being related to the relative position of said output means in said output cycle such that at least during the portion of the output cycle in which said output means is in or adjacent either said extreme positions, said rotational force is greater in magnitude than the inertial force transmitted to the crank gear by said load and in a direction opposing the direction of rotation of said crank gear, whereby, the crank gear is maintained free of torque reversals caused by the inertia of said load.

3,899,934

CONTROL DEVICE FOR A GEARBOX OF A VEHICLE

Armand Froumajou, Pontoise, France, assignor to Automobiles Peugeot, Paris and Regie Nationale des Usines Renault, Boulogne-Billancourt, both of, France

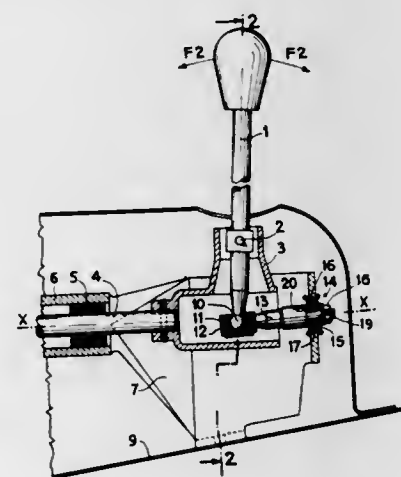
Filed Feb. 4, 1974, Ser. No. 439,283

Claims priority, application France, Feb. 8, 1973, 73.04455

Int. Cl.² G05G 9/02

U.S. Cl. 74-471 XY

6 Claims



1. A control device for a gearbox for a vehicle comprising means defining a support for securing to the floor of the vehicle, a control shaft rotatable and slidable about and along a fixed axis relative to the support, a cage integral with or attached to the control shaft, a manually-shiftable gear lever

pivoted to the cage, a ball joint substantially centered on said axis and having a male part and a female part, and a member connected to the support to be capable of a limited pivoting movement relative to the support and carrying the female part of the ball joint, the lever carrying the male part of the ball joint, the female part of the ball joint being a bushing in which the male part is engaged without clearance.

3,899,935

TRANSMISSION CONTROL APPARATUS FOR A VEHICLE OR THE LIKE

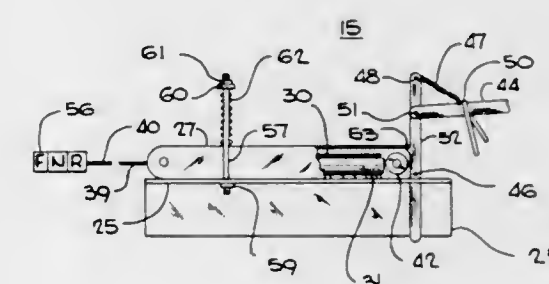
Overton Jackson Jiles, 5250 Auburn Folsom Rd., Loomis, Calif. 95650

Filed Dec. 28, 1973, Ser. No. 429,190

Int. Cl.² B60K 20/00; B60R 21/02

U.S. Cl. 74-473 R

13 Claims



1. Transmission control apparatus for the transmission of a vehicle or the like wherein said transmission is movable between gears and includes transmission control means for controlling said movement, said apparatus comprising:

a sensor bar pivotally connected to said vehicle and movable inwardly toward said vehicle;

cylinder housing means mounted on said vehicle, and housing a cylinder therein, said cylinder having a piston slidably mounted therein, wherein said housing means includes a bracket fixedly secured to said vehicle and a first housing fixedly secured to said bracket and a second housing telescopically fitting with said first housing and pivotally connected thereto forming an elongated channel therebetween, said cylinder being mounted in said channel,

said cylinder also having piston biasing means therein normally biasing said piston in a direction away from said transmission control means;

transmission movement means operatively connected to both said piston and said transmission control means for moving said transmission control means between its gears upon release of said piston from its normally biased position; and

piston releasing means associated with both said housing means and said bar for releasing said piston from its normally biased position upon movement of said sensor bar.

3,899,936

MECHANICAL LINKAGE

Geoffrey Arthur Lewis, Solihull, England, assignor to Lucas Aerospace Limited, Birmingham, England

Filed Apr. 8, 1974, Ser. No. 458,896

Claims priority, application United Kingdom, May 3, 1973, 21025/73

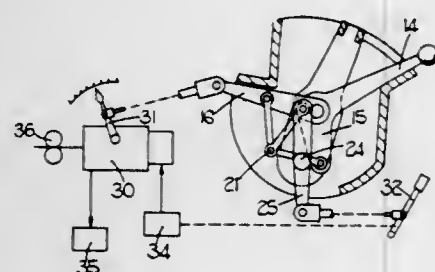
Int. Cl.² G05G 11/00

U.S. Cl. 74-479

9 Claims

1. A mechanical linkage comprising a carrier, a first input member pivotally supported on said carrier, an output member supported on said carrier for movement about the pivotal axis of said first input member, six links of substantially equal effective lengths, arranged as follows:

- a. one end of a first one of said links is secured to said first input member for movement about the pivotal axis thereof,
- b. a second one of said links is mounted at one end thereof for pivotal movement about the axis of said first input member,
- c. said second link is drivingly engaged with said output member,
- d. one end of each of the third, fourth and fifth ones of said links are pivotally interconnected,
- e. the other ends of the third and fourth links are respectively pivotally connected to the other ends of said first and second links,



- f. one end of the sixth of said links is pivotally connected to the other end of the fifth link,
- a second input member supported on said carrier for pivotal movement about an axis parallel to the pivotal axis of the first input member, and spaced therefrom by the effective length of one of said links, the other end of said sixth link being secured to said second input member, a support structure upon which said carrier is mounted for pivotal movement about an axis which is aligned with the pivotal axis of said second input member, and means for interengaging said first input member and said carrier in a fixed relative position.

3,899,937

COLLAPSIBLE STEERING COLUMN ASSEMBLY

Yasuo Nagazumi, Tokyo, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

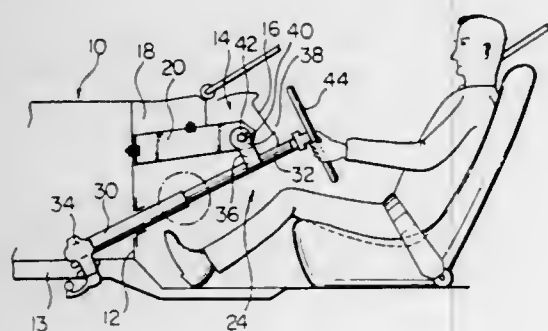
Filed July 13, 1973, Ser. No. 378,872

Claims priority, application Japan, July 14, 1972, 47-69994

Int. Cl. B62d 1/18

U.S. Cl. 74-492

2 Claims



1. In a vehicle, a steering gear assembly;
- a collapsible frame member having mounted thereon said steering gear assembly, said collapsible frame member being so constructed and arranged that during the initial stage of a frontal collision of the vehicle it deforms and causes said steering gear assembly to displace rearwardly of the vehicle;
- a collapsible steering column having first and second jacket tubes, said first jacket tube being connected to said steering gear assembly and said second jacket tube being telescopically related to said first jacket tube;
- means for supporting said second jacket tube from another frame member of the vehicle in a manner permitting

telescopical movement against said first jacket tube but preventing movement away from said first jacket tube; said first and second jacket tubes being so constructed and telescopically connected with each other, such that when said steering gear assembly is displaced rearwardly of the vehicle by deformation of said collapsible frame member during the initial stage of a frontal collision of the vehicle, application of an axial load by said steering gear assembly to said first jacket tube tending to urge said first jacket tube against said second jacket tube causes said first jacket tube to telescopically move relative to said second jacket tube and renders said second jacket tube telescopically movable against said first jacket tube, and wherein said first jacket tube has a reduced profile sleeve portion and said second jacket tube has an expanded profile sleeve portion press fitted into said reduced profile sleeve portion.

3,899,938

PLANETARY TORQUE PROPORTIONAL DIFFERENTIAL

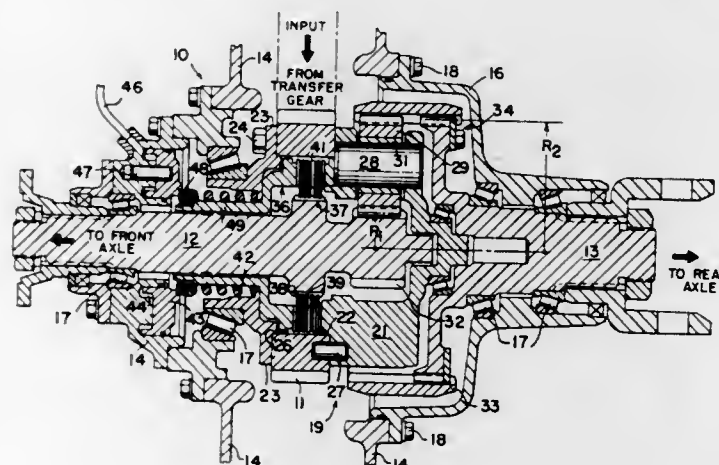
Elmer R. Crabb, Pekin, Ill., assignor to Caterpillar Tractor Company, Peoria, Ill.

Filed May 8, 1974, Ser. No. 468,014

Int. Cl. F16H 1/44, 1/42

U.S. Cl. 74-710.5

9 Claims



1. A torque transfer system for a vehicle having first and second drive axles comprising: first output shaft means for transmitting drive torque to said first axle, second output shaft means for transmitting drive torque to said second axle, said second output shaft means being disposed coaxially with respect to said first output shaft means, first input means for transmitting torque from an external source to said torque transfer system, differential gear means for selectively transmitting torque to said first and second output shaft means to normally concurrently rotate each of said output shaft means at a different angular speed, manually actuated clutch means for selectively overriding said differential gear means and locking said first and second output shaft means together for concurrent rotation of said first output shaft means and said second output shaft means at the same angular speed, said manually actuated clutch means, when actuated, permitting the rotation of said first and second drive axles of said vehicle.

3,899,939

SELF-LOCKING DIFFERENTIAL FOR MOTOR VEHICLES

Alfonso Hilado, P.O. Box 3130, Manila, Philippines

Filed Dec. 18, 1972, Ser. No. 316,241

Int. Cl. F16h 1/38; F16h 1/20

U.S. Cl. 74-715

5 Claims

1. In a differential mechanism, a rotatable gearing box or carrier, drivable members extending from opposite ends of said carrier, a worm element splined to each member respectively and lying within said carrier, each worm element abutting with the opposite element having spiral threads thereon,

3,899,941

CONTINUOUSLY-VARIABLE-GEAR-RATIO AUTOMATIC TRANSMISSION

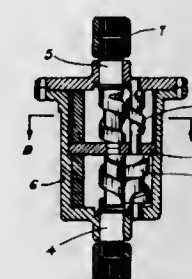
John F. Cook, 810 E. Brown Deer Rd., Milwaukee, Wis. 53217

Filed Jan. 2, 1974, Ser. No. 430,156

Int. Cl. F16h 57/10, 3/74

U.S. Cl. 74-781 R

10 Claims



the other portion right handed, and one worm element slightly larger in diameter than is called for by the ratio of revolutions between it and the meshing planetary worm, the whole mechanism being constrained from moving longitudinally along their axes.

3,899,940

CHANGE-SPEED TRANSMISSION FOR PASSENGER AUTOMOBILE

Tetsuya Iijima, Tokyo, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

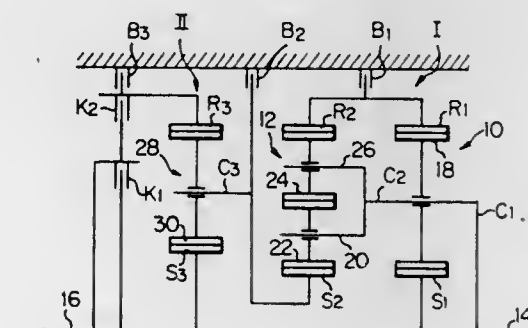
Filed June 18, 1974, Ser. No. 480,471

Claims priority, application Japan, June 29, 1973, 48-72863

Int. Cl. F16H 57/10

U.S. Cl. 74-759

5 Claims



1. A change-speed transmission for a passenger automobile, comprising a first planetary gear train group having a basic planetary gear unit, the carrier of which serves as an output, the sun wheel of which is connectable to an input by a first clutch, and the annular wheel of which is brakeable by a first brake; and a dual-pinions planetary gear unit, the carrier of which is connected to the carrier of said basic planetary gear unit of said first planetary gear train group for simultaneous rotation therewith, the sun wheel of which is brakeable by a second brake; and a second planetary gear train group having a second basic planetary gear unit, the annular wheel of which is connectable to the input by a second clutch and brakeable by a third brake, the carrier of which is connected to the sun wheel of the dual-pinions planetary gear unit of said first planetary gear train group and is brakeable by the second brake, and the sun wheel of which is connected to the sun wheel of the basic planetary gear unit of said first planetary gear train group and is connectable by the first clutch to the input.

1. An automatic continuously-variable-gear-ratio transmission comprising:

- a. input shaft means (10) having an orbital gear carrier means (12) fixed thereto;
 - b. orbital gear means (14,16) carried by the orbital gear carrier means (12);
 - c. intermediate shaft means including an intermediate shaft (50) having intermediate driven gear means (52) fixed thereto;
 - d. said intermediate driven gear means (52) being driven by the orbital gear means (16);
 - e. torque means (54) connected to the intermediate shaft means for resisting rotation of the intermediate shaft (50);
 - f. output gear means (22) engaging the orbital gear means (16);
 - g. output shaft means (20) driven by the output gear means (22);
 - h. gear train means including an intermediate drive gear (60) drivable by the intermediate shaft (50) and one way drive means (62); and whereby
 - i. said gear train means (60) being driven by the intermediate shaft (50) and driving the output gear means (22) when the one way drive means (62) is engaged.
5. An automatically continuously variable gear ratio transmission comprising:
- a. an input shaft means (10) having an orbital gear carrier means (12) fixed thereto;
 - b. orbital gear means (14,16) carried by the orbital gear carrier means (12);
 - c. intermediate shaft means including an intermediate shaft (50) having intermediate driven gear means (52) fixed thereto;
 - d. said intermediate driven gear means (52) being driven by the orbital gear means (16);
 - e. intermediate drive gear means including intermediate drive gear (81) coupled to the intermediate shaft (50);
 - f. torque means (54) fixed to the intermediate shaft means for resisting rotation of the intermediate shaft (50);
 - g. gear train means (82-88) engaging the intermediate drive gear (81);
 - h. output ring gear means (22) engaging the orbital gear means (16) and the gear train means (82-88);
 - i. one way drive means (86 or 98) for allowing said intermediate shaft (50) to rotate in only one direction; and,
 - j. an output shaft (20) fixed to the output ring gear (22).

3,899,942

SKI EDGE SHARPENER

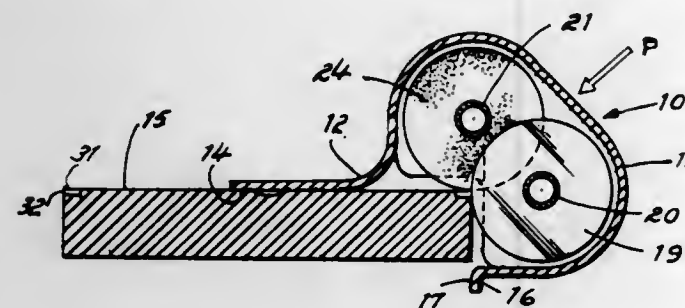
Wilburn F. Bradbury, 1234 Ridgewood Dr., Northbrook, Cook, Ill. 60062

Filed June 14, 1974, Ser. No. 479,432

Int. Cl.² B21K 17/00

U.S. Cl. 76—89

7 Claims



1. A tool for sharpening metallic edge members marginally bordering the bottom running surface of a snow ski comprising in combination:

- A. a hollow body having elongated guide means adapted to operatively engage the bottom running surface of the ski;
- B. first and second shafts mounted parallel in said body, the axes of which parallel said edge member in the operating position of the tool;
- C. at least one cutting disk mounted on the first of said shafts, said shaft having its axis in the plane of the bottom running surface of the ski;
- D. at least one abrasive wheel mounted on the second shaft having its axis spaced above the plane of the bottom running surface of the ski a distance of one-half the diameter of said abrasive wheel;
- E. the peripheries of said cutting disk and said abrasive wheel overlappingly intersect to provide tangential engagement with opposing intersecting surfaces of said edge member, whereby, to-and-from motion of the tool longitudinally of said ski simultaneously shaves the side surface and abrades the bottom surface of said edge member to form a sharp snow engaging corner at the intersection thereof.

3,899,943

HIGH SPEED BAR PEELER

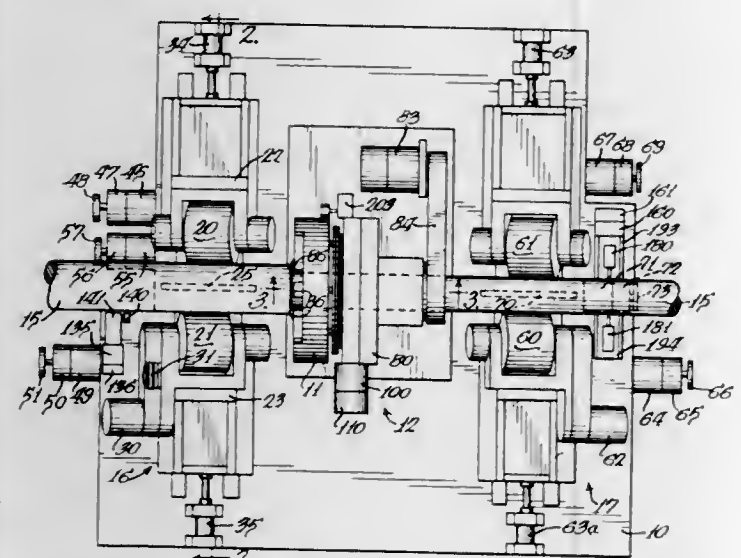
Robert L. Schaller, Baldwinsville, N.Y., assignor to Sundstrand Syracuse, Inc., Syracuse, N.Y.

Filed Feb. 4, 1974, Ser. No. 439,250

Int. Cl.² B23D 5/12

U.S. Cl. 82—20

5 Claims



1. A bar peeler positionable in a process line for removing material from a bar rotating at a high speed comprising, a frame having a cutting station, a bar feed-in station in advance of said cutting station, a bar feed-out station beyond said

cutting station, means at each of the last two stations for rotating and linearly advancing a bar, a tubular cutting head at the cutting station having a central passage through which the bar travels and a plurality of cutting tools for travel circumferentially of the bar, means for rotating said cutting head about an axis concentric with said bar and in the same direction as bar rotation, means for setting said cutting tools to machine the bar to a predetermined diameter, means for gaging bar diameter after cutting, means responsive to the gaging means determining a size variation in the bar for adjusting the cutting tools, and means for maintaining a pre-set relative speed between said bar and cutting tools.

3,899,944

TOOLPOST STRUCTURE

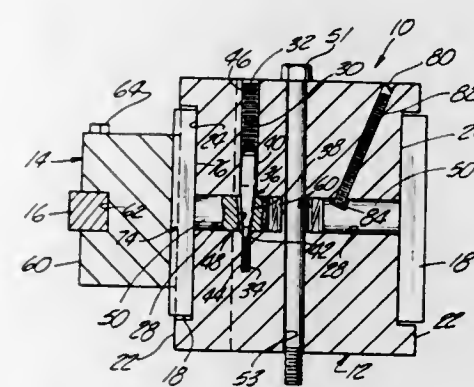
Hank Frechtling, 236-2 Prescott, E. Quad Hall, 701 E. University, Ann Arbor, Mich. 48104

Filed Mar. 12, 1974, Ser. No. 450,301

Int. Cl. B23b 29/00

U.S. Cl. 82—36

4 Claims



1. A toolpost structure for a lathe or the like, said toolpost structure comprising a block having a generally rectangularly shaped cross section with four perpendicular outer working surfaces, one of the lengthwise corners of said block having a longitudinal slot through which one end of a horizontally disposed bore opens;

- a coupling member comprising a base plate and a laterally disposed plunger extending from said base plate, said plunger being received in said horizontally disposed bore and adapted for limited movement therewithin;
- a tool holder having perpendicular working surfaces separated by a longitudinal slot sized to snugly and slidably receive said base plate of said coupling member;
- clamping means in said toolpost block movable for engagement with said plunger to laterally move said plunger inwardly and draw said working surfaces of said tool holder into an abutting contact with the two adjacent working surfaces of said toolpost block, said clamping means for moving said plunger inwardly into said toolpost block comprising first and second axially aligned vertically disposed bores intersecting said horizontally disposed bore and respectively disposed above and below said horizontal bore;

said plunger having a tapered bore and positionable between said first and second bores when said plunger is within said horizontal bore;

- a clamping pin movable within said first and second bores and having a tapered surface complementary to said plunger tapered bore and means for moving said tapered clamping pin inwardly to engage the wall of said plunger tapered bore to exert a force on said plunger to move the same laterally inwardly into said horizontal bore;
- said first bore disposed above said horizontal bore having a cross-sectional area greater than said second bore, said tapered pin having an upper portion slidably disposed in said first bore and a lower portion of a smaller cross-sectional area which is slidably disposed in said second bore, said tapered clamping pin engaging said tapered bore of said plunger while said upper and lower portions are

respectively engaged with said first and second bores and laterally supported thereby;

a threaded member engaging said first bore and abutting the upper portion of said clamping pin for moving said clamping pin toward said second bore; and

spring means disposed in said second bore for restraining said downward movement of said pin and for urging said clamping pin upwardly toward said first bore when said threaded member is moved away from said plunger

3,899,945

METHOD AND APPARATUS FOR ACCURATE DIE-CUTTING

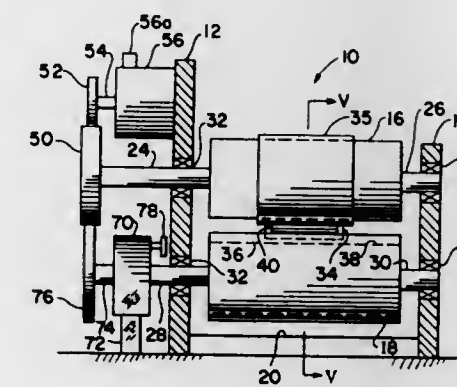
Clyde Barner Garrett, Lanham, and William Stansbury Thayer, Lutherville, both of Md., assignors to Koppers Company, Inc., Pittsburgh, Pa.

Division of Ser. No. 319,163, Dec. 29, 1972. This application Nov. 1, 1973, Ser. No. 411,941

Int. Cl.² B23D 25/12; B26D 1/56

U.S. Cl. 83—38

16 Claims



1. A method of controlling the accuracy of cuts made in a paperboard blank passing between a pair of cooperating die and anvil cylinders comprising the steps of:

driving said die cylinder at a first angular velocity;

driving said anvil cylinder at a second angular velocity; and

selectively changing and maintaining said second angular velocity equal to, faster, or slower than said first angular velocity,

for controlling the velocity of said blank.

3,899,946

DEVICE FOR THE PRINT-REFERENCED CUTTING OF A PRINTED WEB

Otto Niepmann, Gevelsberg, Germany, assignor to Maschinenfabrik Fr. Niepmann & Co., Gevelsberg, Germany

Filed July 26, 1974, Ser. No. 492,205

Claims priority, application Germany, July 27, 1973, 2338109

Int. Cl. B65h 25/10

U.S. Cl. 83—75

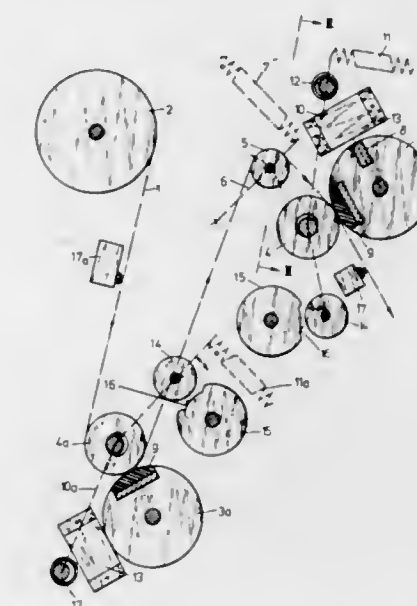
14 Claims

1. In an apparatus for cutting a continuous web, having regularly spaced printed patterns or other readable markings thereon, into a series of blanks whose cuts are positioned substantially at the same distance with reference to the printed pattern, regardless of cumulative deviations in the web advance and/or in the pattern spacing on the web, a device for varying the web advance per cutting cycle in reference to the position of the printed pattern on the web, the device comprising in combination:

- a pair of web advancing rollers, engaging the printed web from opposite sides, one roller being a feed drum, rotating at constant speed, the other roller serving as a counter roller;
- a radially oriented cutting knife on the periphery of the feed drum, cutting the web once during each drum revolution so as to obtain, with each cut, a printed blank of a length corresponding to the circumference of the feed drum;
- a deformable circumference portion on the feed drum de-

fined by a radially depressible member of the feed drum; a circumference on the feed drum with, in the absence of deformation of said circumference portion, advances a blank length which is slightly less than the distance at which the printed patterns are spaced on the web;

means for forcibly approaching the counter roller against the feed drum during that angle of drum revolution in which the roller faces the deformable circumference portion of the drum, thereby depressing said member of the drum and temporarily increasing its effective circum-



ference, so as to advance a blank length which is longer than that which would be advanced without such depression; and

means for selectively controlling the approaching means to execute, or not to execute, said approach motion during any given drum revolution, in response to the position of the printed pattern on the web in relation to the angular position of the cutting knife on the drum.

3,899,947

AUXILIARY TRIM-OUT UNIT FOR PRINTED WEBS

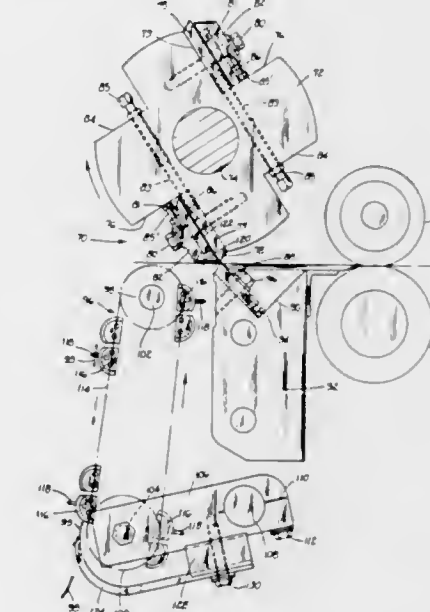
Hans G. Faltin, York, Pa., assignor to Advance Enterprises, Inc., York, Pa.

Filed July 29, 1974, Ser. No. 492,398

Int. Cl.² B26D 7/18, 1/56; B41F 13/56

U.S. Cl. 83—113

14 Claims



1. An auxiliary trim-out unit adapted to receive from a web printing press a longitudinally folded or unfolded web comprising a series of similar pre-printed pieces having short lengths of excess waste web material between the opposite

ends of successive pieces which must be trimmed therefrom, said trim-out unit comprising in combination, a frame, a pair of feed rolls supported by said frame, means connected to said rolls and adapted to drive the same at press speed, a rotary knife holder supported and driven by a shaft rotatable in bearings upon said frame, at least one pair of cutting and trimming knives having shearing edges extending across said holder substantially between the opposite ends thereof and spaced circumferentially of said holder a distance equal to the length of the strip of web to be trimmed out from between successive pre-printed pieces, a stationary bed knife supported by said frame and extending across the path of said web, said stationary knife having a shearing edge positioned for shearing engagement by said pair of knives on said rotary knife holder as the same is driven rotatably simultaneously to cut said webs to separate said pre-printed pieces and trim the excess strips therefrom, and means adjacent said stationary knife operable to remove from between said pair of knives the waste strips of the web trimmed from between said adjacent pre-printed pieces and discharge the same from said unit.

3,899,948

ADJUSTMENT ARRANGEMENT FOR CIRCULAR SLITTING KNIVES

Hans Jakob, Darmstadt-Eberstadt, Germany, assignor to Maschinenfabrik Goebel, GmbH, Darmstadt, Germany

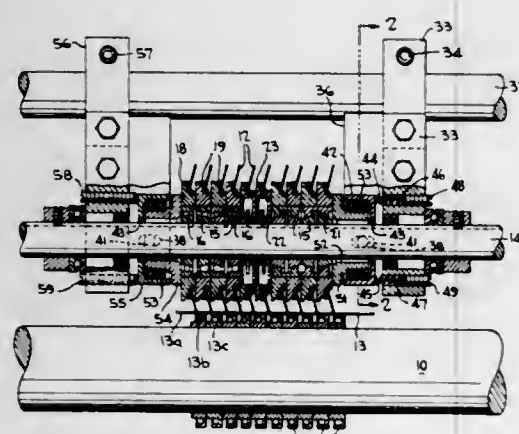
Filed Apr. 8, 1974, Ser. No. 459,174

Claims priority, application Germany, Apr. 6, 1973, 2317215

Int. Cl.² B26D 1/24

U.S. Cl. 83—497

5 Claims



1. In a web slitting apparatus, an arrangement for the uniform angular adjustment of upper circular cutting blades against their respective lower cutting blades cooperating therewith, for longitudinally cutting webs of paper, foil, and the like, including a rotatable shaft along which a plurality of said upper blades are disposed adjacent one another, first rings surrounding said shaft, second rings surrounding respective ones of said first rings and supporting said upper blades, the outer peripheral surfaces of said first rings and the inner peripheral surfaces of said second rings defining mating spherical surfaces, sleeves surrounding said shaft respectively bearing against opposite ends of said second rings, and means for moving said sleeve along said shaft a predetermined amount, whereby each of said upper blades is likewise moved with respect to said shaft by substantially the same amount as said second rings shift relative to said first rings along said mating spherical surfaces thereof, to thereby uniformly adjust the angularity of said upper blades bearing against their cooperating lower blades.

3,899,949 APPARATUS FOR AUTOMATICALLY CUTTING GARMENTS

Bruno Bystron, Ingolstadt; W. Gerhard Hoeber, Ingolstadt-Oberhaunstadt, and Georg Goldammer, Ingolstadt-Friedrichshofen, all of Germany, assignors to Schubert & Salzer Maschinenfabrik Aktiengesellschaft, Ingolstadt, Germany

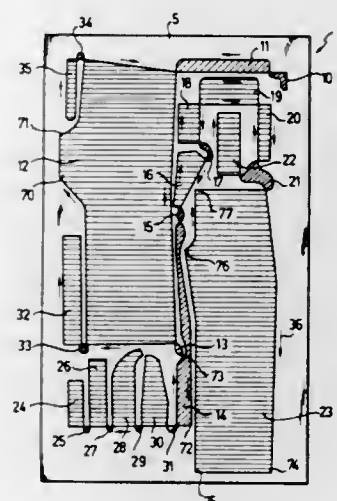
Filed Sept. 28, 1973, Ser. No. 401,658

Claims priority, application Germany, Sept. 30, 1972, 2248043

Int. Cl. D06h 7/24

U.S. Cl. 83—565

17 Claims



1. Apparatus for automatically controlling a garment component cutting device having drive means, the apparatus including a program carrier bearing a pattern layout defining a sensing line, means for sensing the sensing line and for operating the cutting device drive means for cutting garment components from flat material, the pattern layout having pattern components, including pattern pieces, having peripheries defining sensing lines forming an endless sensing line to be sensed by the sensing means, the improvement comprising each pattern component having at least one peripheral salient angle, the pattern components being laid out with adjoining components being joined at the apexes of salient angles, the sides of each joining salient angle forming substantially continuous crossing sensing lines with the sides of its adjoining salient angle.

3,899,950
BAR SHEAR

Jim Dvorak, Cosmos, Minn. 56228

Filed Sept. 6, 1974, Ser. No. 503,966

Int. Cl.² B26D 5/08, 9/00

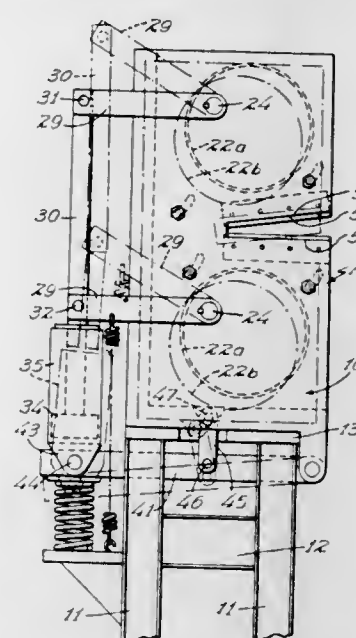
U.S. Cl. 83—588

11 Claims

1. A bar shear including:

- a slide plate having a notch in one side thereof,
- a moveable plate having a cooperable notch in one side thereof registrable with said notch in said side plate in one position thereof,
- said moveable plate having a circular aperture extending therein,
- a disc pivotally moveable in said aperture,
- a pivot shaft fixed on said disc offset from the center thereof and extending through said side plate,

means for pivoting said pivot to move said moveable plate relative to said fixed plate and to move the notch in said



moveable plate out of registry with said notch in said side plate to shear off a member inserted in said notch.

3,899,951

KEY SWITCH SCANNING AND ENCODING SYSTEM

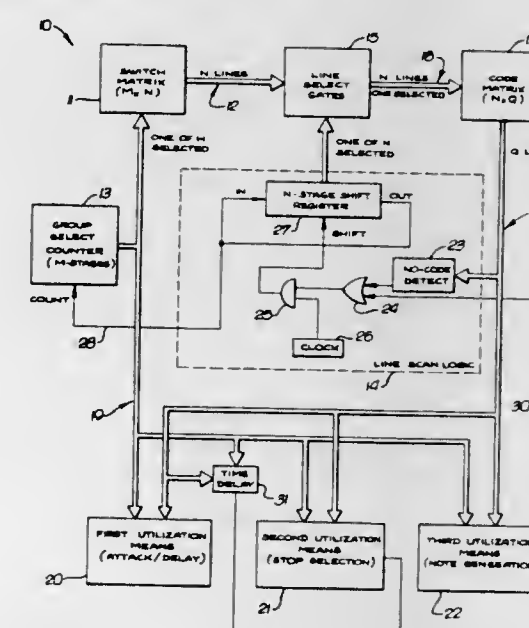
Glen R. Griffith, Westminster, and Ralph Deutsch, Sherman Oaks, both of Calif., assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Aug. 9, 1973, Ser. No. 386,968

Int. Cl. G10h 1/00

U.S. Cl. 84—1.01

4 Claims



1. A switch scanning and encoding system in an electronic musical instrument, said instrument including a plurality of key-controlled switches arranged in a matrix of M columns and N rows, each column of switches being separately enableable, the switches in each row being connected to N corresponding row output lines, and musical tone generation circuitry responsive to said encoded signals, the improvement comprising:

- encoding circuitry,
- scanning means for sequentially gating each of said N output lines to said encoding circuitry, said encoding circuitry providing a coded signal identifying the gated line if the switch in the enabled matrix column connected to that gated line is closed and providing no coded signal if that switch is open,
- first skip means for causing said scanning means to gate the next output line to said encoding circuitry if no coded signal is provided, and

second skip means, operative if a coded signal is provided from said encoding circuitry, for causing said scanning means to dwell for a period of time sufficient to permit utilization of said coded signal.

3,899,952

ADAPTOR FOR COMMON PIANOS

Lance Regan, 191 Vernon Ave., Kamloops, British Columbia, Canada

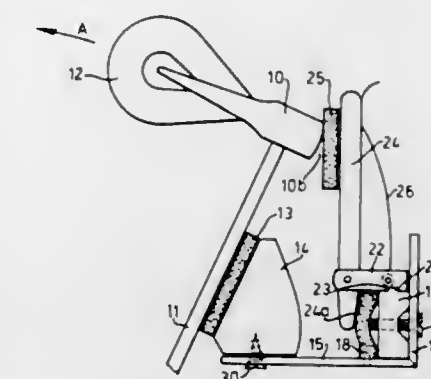
Filed June 20, 1974, Ser. No. 481,316

Claims priority, application Canada, Mar. 11, 1974, 194611

Int. Cl. G10c 3/18

U.S. Cl. 84—236

16 Claims



1. A musical instrument comprising a plurality of vibratile members capable of vibration to produce notes of selected frequencies, percussive means for each said vibratile member for causing vibration thereof, actuating means for selectively moving each said percussive means from a rest position, to strike a vibratile member associated therewith, return means for returning said percussive means to said rest position, a stop member for said percussive means in said rest position, and a control mechanism for said percussive means including inertial means movable in the direction of motion of said percussive means towards said stop member and active upon said percussive means when struck thereby to absorb the kinetic energy of said percussive means moving towards said stop member and thereby exert a decelerative force upon said percussive means said stop member having a surface of resiliently deformable material which said percussive means abuts in said rest position thereof, and said inertial means being located for striking by said percussive means moving towards said stop member substantially at the moment of initial contact of said percussive means with said resiliently deformable material.

3,899,953

SELF-PROPELLED FIN STABILIZED PROJECTILES AND LAUNCHERS THEREFOR

Jean Edmond Labruyere, Paris, France, assignor to Constructions Navales et Industrielles de la Mediterranee (C.N.I.M.), Paris, France

Continuation-in-part of Ser. No. 236,612, March 21, 1972, abandoned. This application Dec. 10, 1973, Ser. No. 423,241

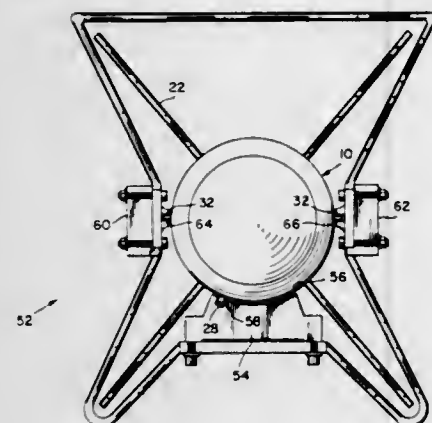
Int. Cl. F41f 7/00

U.S. Cl. 89—1.819

14 Claims

1. A self-propelled, fin stabilized projectile comprising an elongated, generally cylindrical projectile body, a plurality of rigid first studs symmetrically spaced about the periphery of said body, the proximate end of said first studs being directly affixed to said body to prevent relative movement between said first studs and said body, said first studs having a first length in the radial direction of said body such that the distal end of said first studs is adjacent to said body, a fin unit including a plurality of fins symmetrically spaced about the periphery of said body and extending outwardly therefrom such that the distal end of said fins is remote from said body, said fin unit being mounted on said body for rotational movement relative to said body about the longitudinal axis of said body and having a plurality of rigid second studs symmetrically

spaced about the periphery of said body, said second studs having a second length in the radial direction of said body such that the distal end of said second studs is adjacent to said body and a plurality of rigid third studs symmetrically spaced about the periphery of said body and mounted for rotational movement relative to said body about said longitudinal axis,



said third studs having a third length in the radial direction of said body such that the distal end of said third studs is adjacent to said body, said fins having a fourth length in the radial direction of said body measured to the distal end of said fins, said fourth length being significantly greater than said first, second and third lengths.

3,899,954

EMPTY CARTRIDGE FORWARD EJECTION MECHANISM FOR RAPID FIRE WEAPON

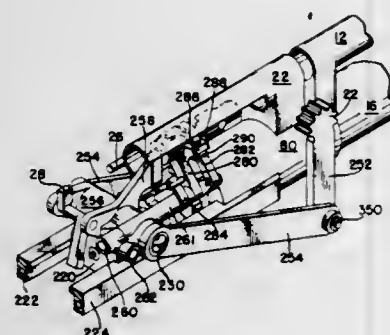
Laurence I. Jayne, Renton, and Roland A. Magnuson, Seattle, both of Wash., assignors to Pacific Car and Foundry Company, Bellevue, Wash.

Division of Ser. No. 377,322, July 9, 1973, which is a division of Ser. No. 185,139, Sept. 30, 1971, abandoned. This application Jan. 16, 1974, Ser. No. 433,745

Int. Cl. F41d 9/02

U.S. Cl. 89—33 F

4 Claims



1. An empty cartridge ejection system for a weapon wherein the empty cartridge is ejected forwardly from the weapon, comprising:

- a barrel;
- a breech affixed to the rear end of the barrel;
- a bolt containing a firing pin and adapted to move in axial alignment with the barrel;
- a grasping arm pivotally attached to the bolt and adapted to secure the empty cartridge;
- means for moving the bolt forward and backward in axial alignment with the barrel;
- means for pivoting the grasping arm to a first position to secure the empty cartridge and for pivoting the grasping arm to a second position which is radially outward from the breech;
- guide means in axial alignment with the empty cartridge when the grasping arm is in its second position; and

means for releasing the empty cartridge from the grasping arm at a predetermined point when the grasping arm is in its second position and moving forward with the bolt, thereby allowing the momentum of the cartridge to propel the cartridge through the guide means.

3,899,955

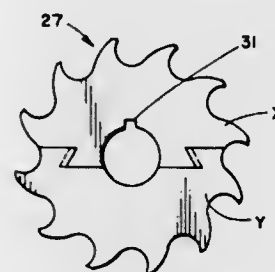
MACHINE TOOL CONSTRUCTION

Howard I. Selch, Canal Fulton, Ohio, assignor to James I. Selch, Canal Fulton, Ohio; Joseph J. Mullane, Denver, Colo. and T. D. Copeland, Garland, Tex., part interest to each Division of Ser. No. 135,706, April 20, 1971, Pat. No. 3,799,026. This application Feb. 22, 1974, Ser. No. 444,861

Int. Cl. B23C 5/26

U.S. Cl. 90—11 A

4 Claims



1. In a machine tool comprising:

- a drive shaft being partially threaded and having a reduced diameter at the ends thereof and said ends being received in support bearings for rotation of said shaft;
- cutter wheel means having a circular central bore for being received on said drive shaft,
- means between the cutter wheel means and the shaft to prevent relative rotation therebetween;
- spacer means having a smooth central bore and located on said shaft at each side of said cutter wheel means;
- nut means threadingly received on threaded portions of said shaft for tightening said spacer means against the cutter wheel to secure said cutter wheel means at a selected axial location on said shaft;
- each of said cutter wheel means, spacer means and nut means comprising a pair of separable members located on opposite sides of the drive shaft, each pair of said separable members having interengaging means for connecting and disconnecting said members from each other by relative lateral movement, whereby the cutter wheel means, spacer means and nut means are mountable on said drive shaft for a cutting operation without removal of said drive shaft from said support bearings.

3,899,956

LINEAR ELECTROHYDRAULIC PULSE DRIVE ACTUATOR

Zenny Olsen, Southington, Conn., assignor to Olsen Controls, Inc., Plantsville, Conn.

Filed Nov. 5, 1973, Ser. No. 412,634

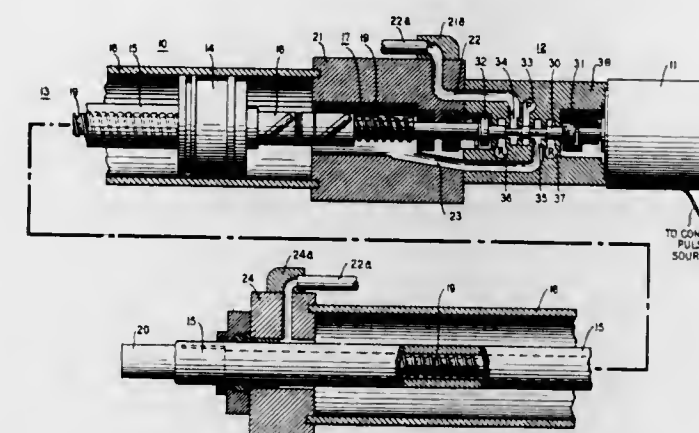
Int. Cl. F15b 9/10

U.S. Cl. 91—368

3 Claims

1. An electrohydraulic pulse drive actuator comprising in combination an electrical stepping motor having an output shaft, a servo valve having a rotary input shaft and a rotary feedback shaft, means connecting the output shaft of said motor to the input shaft of said valve, a hydraulic actuator controlled by said valve, said actuator comprising a cylinder and a piston moveable therein, means for integrating said actuator and said valve into a unitary housing, and feedback means within said housing and operating therein for providing feedback control from said actuator to the feedback shaft of said valve, said feedback means comprising a ball-screw drive for translating linear movement of said piston into rotary movement of said feedback

shaft, said ball-screw drive comprising a ball carrier secured to said piston and a screw connected to said feedback shaft and wherein said ball carrier comprises two



ball nuts, loading means for loading one ball nut against the other on said screw to reduce backlash and adjusting means for continuously and automatically adjusting said loading to compensate for bearing wear.

3,899,957

RADIAL PISTON FLUID TRANSLATING DEVICE WITH CYLINDER POSITIONING MEANS

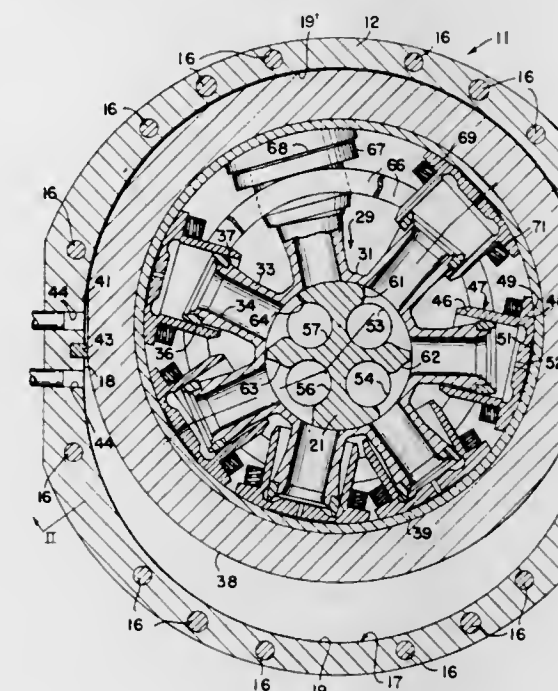
Guy C. Carlson, Jr., East Peoria, and Willard J. Haak, Peoria, both of Ill., assignors to Caterpillar Tractor Company, Peoria, Ill.

Filed Oct. 23, 1973, Ser. No. 408,823

Int. Cl. F01B 13/06

U.S. Cl. 91—490

5 Claims



1. In a fluid translating device, the combination comprising: an annular race;

- a rotor journaled for rotation within said race about an axis which is eccentric relative thereto, said rotor having hollow piston spokes extending radially towards the inner surface of said race and having means for admitting fluid to said spokes during a first portion of the angular movement thereof and for releasing fluid from said spokes during another portion of the angular movement thereof;
- a plurality of cylinders each having an open inner end into which an associated one of said spokes is received and having an outer end which rides against said inner surface of said race as said rotor turns, said outer ends of said cylinders having flanges thereon,
- a guide ring disposed coaxially within said race in radially spaced relationship therefrom, and

resilient means for urging each of said cylinders outwardly from the rotational axis of said rotor and towards said inner surface of said race, said resilient means being disposed between said flanges and said guide ring to act against said flanges and to react against said guide ring.

3,899,958

FLUID-PRESSURE ROTARY MACHINES

Kenneth Morgan Spencer, Coventry, England, assignor to Newage Engineers Limited, Lincolnshire, England

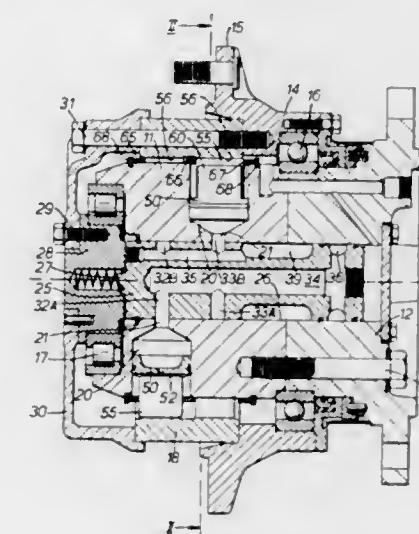
Filed Aug. 15, 1973, Ser. No. 388,622

Claims priority, application United Kingdom, Aug. 16, 1972, 38265/72; Aug. 16, 1972, 38264/72

Int. Cl. F01b 13/06

U.S. Cl. 91—492

5 Claims



1. A rotary hydrostatic-pressure piston machine comprising a cylinder block and an annular cam track surrounding the cylinder block, one of which is rotatable relatively to the other, and reciprocating pistons slidable in generally radial directions in cooperating cylinders in the block and coacting with the cam track, in which each piston carries at its outer end a generally cylindrical cam follower roller rotatably housed in a bearing recess in the outer end of the associated piston in rolling engagement with the surrounding cam track, said cylinders and their associated pistons and follower rollers being arranged in two axially spaced banks in the cylinder block,

means for providing positive endwise location for each of said rollers, said means comprising a pair of axially spaced guide rings which coaxially surround said cylinder block and are freely rotatable thereon, and a third guide ring freely rotatable on said cylinder block, said third guide ring being disposed between said axially spaced pluralities of rollers and said pair of rings being positioned on either side of said rollers and third guide ring arrangement, and

means for axially retaining said guide rings on said block, said means comprising a pair of spring circlips disposed outside of said pair of guide rings on either side of said rollers and third guide ring arrangement, whereby said rollers and said third ring axially retain each other.

3,899,959

PNEUMATIC CONTROLLERS

Pierre Bertrand, Billere, and Maurice Nony, Jouy-En-Josas, both of France, assignors to Compteurs Schlumberger, Montrouge, France

Division of Ser. No. 270,120, July 10, 1972. This application Dec. 18, 1973, Ser. No. 425,869

Claims priority, application France, July 12, 1971, 71.25472

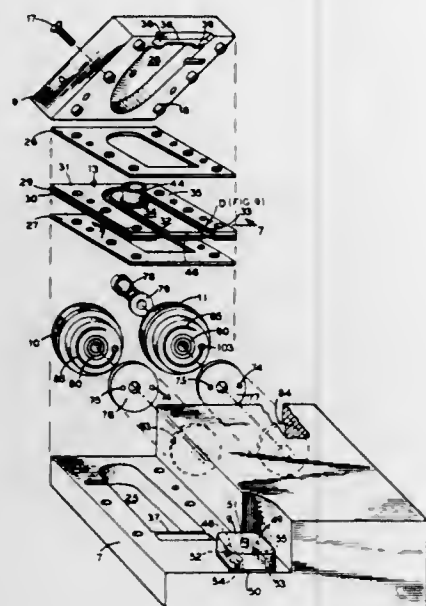
Int. Cl. F01b 19/00; F16j 3/00

U.S. Cl. 92—100

1 Claim

1. In a pneumatic controller of the type having a split housing and a beam structure wherein the individual portions of housing include means defining two cavities separated by

inwardly protruding wall member having an edge which extends along the pivot axis of the beam, and fastener means extending through openings in the housing portions for clamping the portions thereof together, and wherein the beam structure includes a flexible diaphragm clamped between the portions of the split housing and separating it into four chambers, metal plates having outer and inner plate portions adjacent said diaphragm to render portions thereof substantially inflexible, and narrow bridge portions adjacent said edge to interconnect said outer and inner plate portions along the pivot axis, the improvements comprising thinned portions in said narrow bridge portions, in a dimension perpendicular to the



major plane of the diaphragm to improve the hinge characteristics thereof; and

a plurality of bosses on the surface of one of said housing portions facing the other housing portion, said beam structure having a plurality of openings and the surface of said other housing portion facing said surface of said one housing portion having a plurality of recesses, said bosses respectively protruding and mating said openings and said recesses when said pneumatic controller is assembled and the height of said bosses and the depth of said recesses being adapted to limit the crushing of said diaphragm, improving said hinge characteristics.

3,899,960

WIND-NEUTRALIZING PASSAGE

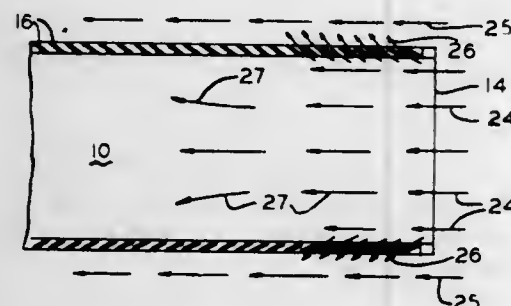
Paul W. Howells, Morrisville, N.Y., assignor to Syracuse University Research Corporation, Syracuse, N.Y.

Filed May 10, 1974, Ser. No. 468,754

Int. Cl. F24f 13/02

U.S. Cl. 98—32

6 Claims



1. In a structure having oppositely facing entrances and exits each terminating in a passage having one end permanently open to the outdoors, whereby wind blowing toward one outdoor opening is unobstructed from blowing through the structure, at least one passage being a wind-neutralizing passage having at least one sidewall including a plurality of

longitudinally successive vertically-extending louvers, each louver comprising an elongated narrow strip of sheet material, the successive strips being spaced longitudinally of the passage and each strip being of curved airfoil-shaped cross section, the leading edge of each louver strip facing the outdoors opening, each louver strip being curved from a portion extending substantially along the line of the inner side of the sidewall and curving away from the leading edge toward the outer side of the sidewall to a trailing edge facing away from the outdoor opening for aspiration of wind-blown air from the passage through the spaces between the louver strips.

3,899,961

PORTABLE COOKING APPLIANCE

Pierre J. Tanguy, Pontoise, France, assignor to Etud S.A., Dijon, France

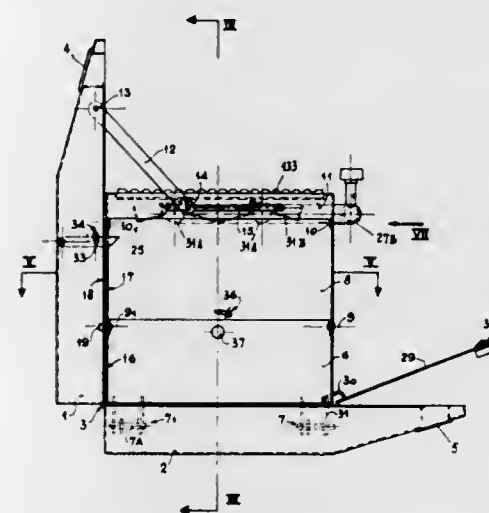
Filed July 3, 1973, Ser. No. 376,240

Claims priority, application France, July 6, 1972, 72.24595

Int. Cl. A47J 33/00, 37/07; F24C 5/20

U.S. Cl. 99—340

12 Claims



1. In a portable and folding cooking appliance having a bottom and a cover which in folded position appear as a closed case, said appliance comprising an oven having a base and a rear wall respectively adjacent to the bottom and to the cover of said case, said oven moreover comprising collapsible side walls and a top portion associated with an external hot-plate, and connecting means between said cover of the case and the top portion for an automatic unfolding operation of the structure of the oven when the case is opened; the improvement wherein said connecting means comprise at least one rod having a pivot linkage on one of its ends and a slidable pivot linkage on the other end, each side wall of the oven comprising two substantially flat portions which are pivotally linked to each other and pivotally linked to the base and to the top portion of the oven respectively, said three pivot linkages comprising parallel axes which are horizontal in the service position of the appliance, on each side of the unfolded oven.

3,899,962

PASTRY BAKING APPARATUS

Arthur Federico, 4 Explorer Rd., Brigantine, N.J. 08203

Filed Jan. 24, 1974, Ser. No. 436,106

Int. Cl. A47J 37/01

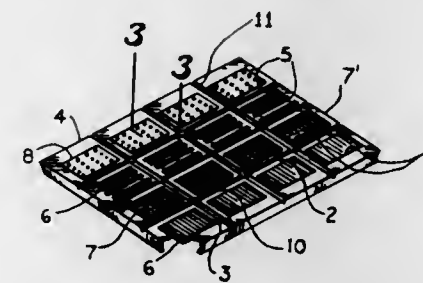
U.S. Cl. 99—447

1 Claim

1. Pastry baking apparatus comprising a substantially rectangular frame element having a raised peripheral flange provided with longitudinally spaced openings, an inwardly directed ledge and integral reinforcing elements extending diagonally between opposite corners of the frame element, and a tray element substantially coextensive with the frame element adapted to be disposed within said peripheral flange providing a plurality of substantially identical rectangular cells separated by elongated ribs having substantially V-shaped longitudinal grooves in their upper surfaces aligned with said flange open-

ings when the tray element is disposed within said flange and reticulate pastry supporting means extending across said cells

being provided with antifriction guide members thereon which are slidable in said tracks, guide means disposed between said channel and article for directing said length of strapping endwise into the proximate end of a projected portion of the chute, and means for selectively projecting and retracting said chute.



3,899,964

ROTARY HAY-BRIQUETING MACHINE FOR COMPACTING FIBROUS MATERIAL

Joseph Molitorisz, 624 81st Ave. N.E., Bellevue, Wash. 98004

Filed Jan. 29, 1973, Ser. No. 327,678

Int. Cl. B30b 3/04

U.S. Cl. 100—89

9 Claims

(between) and connected with said ribs for supporting pastry in uniformly spaced relation to said frame element.

3,899,963

ARTICULATED STRAP CHUTE AND GUIDE MEANS THEREFOR

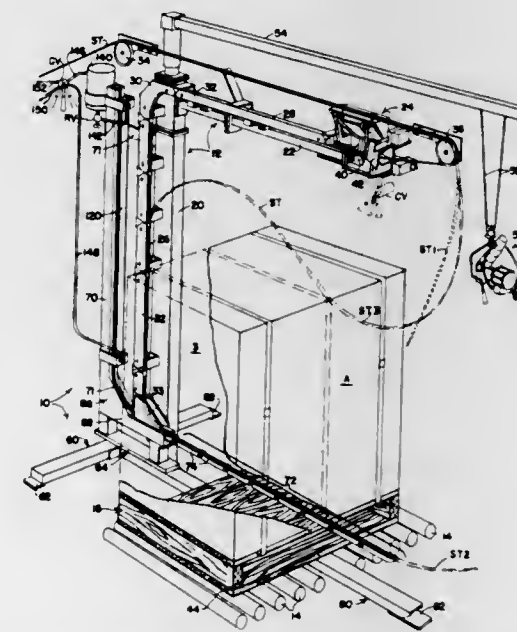
Donald R. Tremper, Mount Prospect, Ill., assignor to Signode Corporation, Glenview, Ill.

Filed Dec. 11, 1973, Ser. No. 423,700

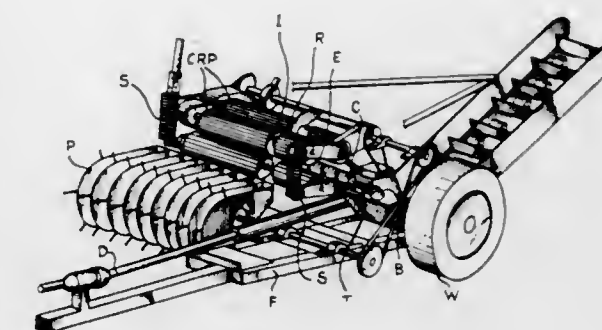
Int. Cl. B65B 13/04

U.S. Cl. 100—25

7 Claims



1. In a strapping installation of the character described, in combination, means defining a strapping station, a flexible strap chute for guiding a length of strapping endwise and forwardly across the strapping station and beneath an article disposed at said station, a guide channel for said chute and within which the latter is slidable endwise between a retracted position wherein the chute is disposed substantially wholly within the confines of the channel and a projected position wherein at least a major portion of the chute is projected forwardly from the channel, said channel embodying a relatively short horizontal distal section the forward end of which is disposed below the level of the article and a relatively long proximate vertical storage section which extends upwardly alongside the article and in close proximity thereto, internal tracks coextensive with said guide channel, said chute being unidirectionally flexible so that it may follow the contour of the guide channel during retraction thereinto and projection therefrom and so that the projected portion thereof is self-supporting in cantilever, said strap chute being of an articulated nature and consisting of a series of relatively short chute bodies hingedly connected together in end-to-end fashion and having cooperating abutments on the opposed ends of each adjacent pair of chute bodies, said abutments being effective when in engagement with each other to maintain such adjacent pair of chute bodies in linear alignment, said chute bodies



1. A rolling-compacting machine for forming loose fibrous material, such as hay, into a dense cylindrical core which is cut into briquets, comprising: both a primary roller system and a secondary roller system of an overall core forming channel, said overall core forming channel confined by and having a plurality of at least four circumferentially spaced skewed power driven compression rollers, there being at least four sets of aligned rollers each set having a primary and one secondary compression roller of each system arranged in aligned pairs and mounted on a common shaft, said primary and secondary rollers of each set being distinctly separated by an interspace, a cutting mechanism located in said interspace to sever the oncoming continuous dense core of fibrous material after it is formed in the primary roller system, into desired length briquets, said briquets remaining close together and receiving additional rolling compressing by performing a plurality of revolutions in said secondary roller system of the core forming channel, before the briquets are discharged at the exit of the overall core forming channel, said primary roller system having an axial extending material inlet between two adjacent primary skewed power driven compression rollers, the primary and secondary roller systems being coaxial.

3,899,965

ROLL PRESS

Friedhelm Koch, Bergstrasse 1b, and Walter Siepermann, Königsteiner Strasse 90, both of 432 Hattingen, Ruhr, Germany

Filed Feb. 6, 1974, Ser. No. 439,891

Claims priority, application Germany, Feb. 6, 1973, 2305626

Int. Cl. B30b 3/00, 3/04

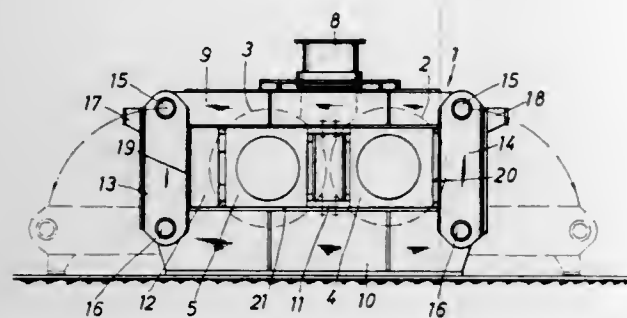
U.S. Cl. 100—155

3 Claims

1. In a roll press in which roll bearings rest in bearing housings movably kept in parallel guides in the press frame, and wherein the bearing housings bridge the parallel guides and are fixed in these guides by means of lateral top pieces, at the ends of said guides, the improvement wherein:

at least one of said top pieces is pivotally connected about a lower horizontal axis to said press frame and wherein the inside surface of said pivotally mounted top piece is designed as a gliding surface and wherein said pivoting

axis is so trued that said gliding surface forms an extension of said parallel guide when said top piece is pivoted



into a horizontal position whereby the rollers may be easily removed by sliding therealong.

3,899,966

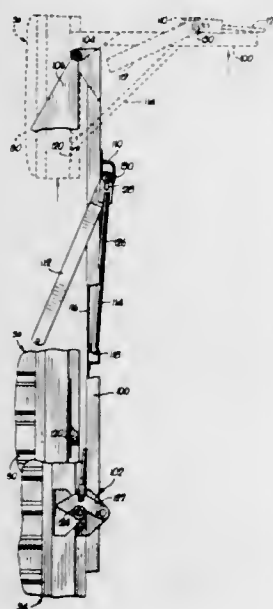
MACHINE FOR LOADING, STACKING AND UNLOADING CROPS

Allen A. White, Peabody; Harold Keith Garrison, Newton, and Dean P. Brooks, Hesston, all of Kans., assignors to Hesston Corporation, Inc., Hesston, Kans.

Division of Ser. No. 261,346, June 9, 1972, Pat. No. 3,842,730, which is a division of Ser. No. 139,391, May 3, 1971, Pat. No. 3,691,741. This application Oct. 11, 1973, Ser. No. 405,556 Int. Cl.² B30B 9/30

U.S. Cl. 100—255

8 Claims



8. A stacker including:
a container adapted to receive a crop to be stacked and provided with a shiftable endgate element;
a vertically reciprocable press element carried by the container for forming the crop in the container into a compact stack; and
mechanism including a selectively shiftable member on one of said elements movable to and from a position operably intercoupling the elements for opening the endgate element as the press element is moved toward one end of its path of travel.

3,899,967

TRASH COMPACTOR

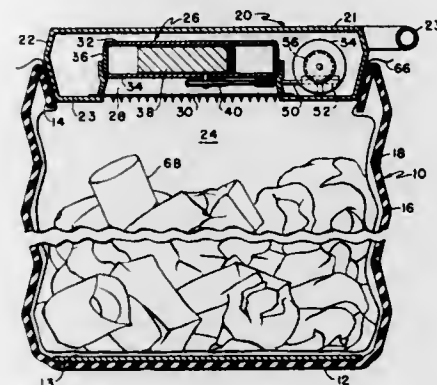
Richard T. Powers, 3623 Herschel Ave., Cincinnati, Ohio 45208

Filed Aug. 20, 1973, Ser. No. 389,576

Int. Cl.² B30B 1/23

U.S. Cl. 100—269 R

5 Claims



1. A trash compactor comprising:
means for forming a variable volume trash-receiving chamber, said chamber-forming means including first and second opposed end walls relatively displaceable toward one another to reduce the volume of said chamber, said chamber-forming means comprising:
an open-ended cylindrical chamber having a bottom wall defining said first wall and a cylindrical side wall comprised of flexible material in a bellows form yieldable to reduce the axial height thereof, and
a plug received in the open end of said cylindrical chamber thereby forming said second end wall; and
pressure-reducing means connected to said chamber for reducing the pressure therein below atmospheric to establish a pressure differential across said end walls to force them toward one another, thus compacting the trash in said chamber, said pressure-reducing means being carried by said plug.

3,899,968

PRINT MEDIA IDENTIFICATION CODE

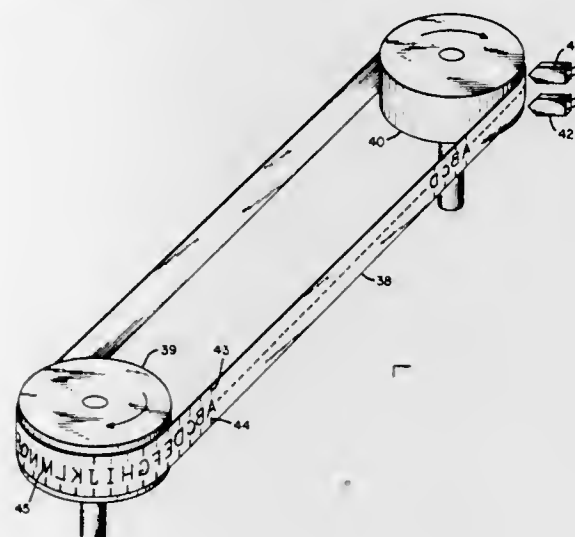
Bernard J. McDevitt, Norristown, Pa., assignor to Sperry Rand Corporation, Blue Bell, Pa.

Filed Jan. 16, 1974, Ser. No. 433,624

Int. Cl.² B41J 1/20

U.S. Cl. 101—111

4 Claims



1. A high speed printer which utilizes an interchangeable print member and in which each said member carries a unique character set thereon; the improvement which comprises, a set of synchronizing marks disposed on each of said members, said set of synchronizing marks being coded to identify the character set carried by the associated member, each of said print members further containing a series of timing marks, a

shift register having a data input terminal and a shift input terminal, first reading means in the printer for reading the coded synchronizing marks contained on the print member utilized by the printer and for applying the marks so read to the data input terminal of said shift register, second reading means in the printer for reading the timing marks on the print member being utilized by the printer and for applying the timing marks so read to the shift terminal of said shift register to thus shift the signal read by said first reading means into said shift register, a first storage register, means transferring the contents of said shift register into said first storage register, a second storage register, means for storing in said second storage register a coded signal representing a preselected print member, and means for enabling a printing operation when the codes stored in said storage registers correspond and for inhibiting a printing operation when the codes stored in said storage registers do not correspond.

3,899,969

PRINTING USING PYROELECTRIC FILM

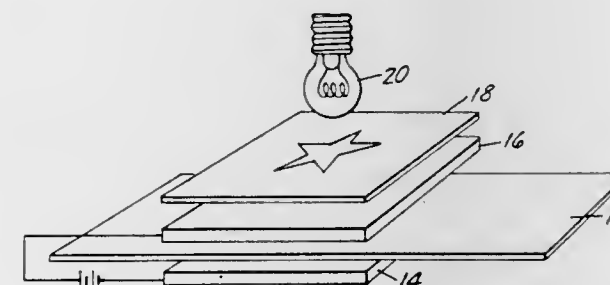
Allen L. Taylor, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 6, 1973, Ser. No. 385,847

Int. Cl. G03g 5/00, 13/08, 13/10

U.S. Cl. 101—130

11 Claims



1. A method for printing an image pattern using a permanent master provided by a selectively, permanently poled pyroelectric material comprising the steps of:

1. heating a pyroelectric material to a poling temperature and exposing the heated material to an electric field, the combination of electric field and heat being applied to only selected portions of the pyroelectric material in accordance with an image pattern to be printed;
2. cooling said pyroelectric material to a temperature below said poling temperature while maintaining said electric field whereby the pyroelectric material is selectively, permanently poled in accordance with the image pattern to be printed;
3. heating the poled material uniformly to develop a charge pattern in accordance with the selective poling present in the material;
4. contacting the heated film with charged toner particles which are attracted to the pyroelectric material in accordance with the charge pattern;
5. placing a suitable copy substrate in registry on the material and toner to transfer said toner from said material to said copy substrate;
6. fusing said toner to said copy substrate; and repeating the steps after step 2 to form the desired number of copies.

3,899,970

APPARATUS FOR TRANSFERRING PAPER SHEETS BETWEEN SUCCESSIVE PRINTING UNITS

Josef Jurny, Sebranice, and Vaclav Sedlak, Jedovnice, both of Czechoslovakia, assignors to Adamovske Strajirny, narodni podnik, Adamov, Czechoslovakia

Continuation of Ser. No. 267,546, June 29, 1972, abandoned.

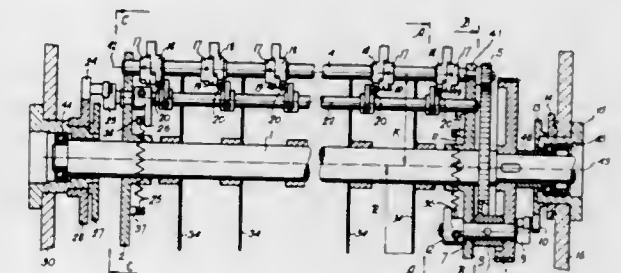
This application June 10, 1974, Ser. No. 477,862

Claims priority, application Czechoslovakia, July 2, 1971, 4869-71

Int. Cl. B41f 21/04

U.S. Cl. 101—230

8 Claims



1. Apparatus for use in a multicolor and perfecting printing press to transfer paper sheet from a first rotating drum to a second rotating drum, comprising a rotatable cylinder disposed between said drums for supporting said sheets during the transfer, projecting support means located on said cylinder and extending radially beyond the periphery of said cylinder, a carrier shaft journaled in the outer ends of said support means and rotatable about its own longitudinal axis and movable conjointly with said cylinder, a plurality of gripper means for gripping and transferring said sheet from said first to said second drum spaced along said carrier shaft, said gripper means comprising a first gripper member fixed on said carrier shaft and a second gripper member rotatable thereabout, a pinion secured at one end of the carrier shaft, said pinion engaging a swingable toothed segment, said segment being journaled on said cylinder for rotation about an axis eccentric of the cylinder axis, a lever arm fixed at one end to said segment and extending therefrom parallel to the cylinder axis, a first cam follower transversally mounted at the end of said lever and a first pair of cams each having a contour adapted to be selectively engaged by said first cam follower to reciprocate said segment thus causing said carrier shaft to rotate about its longitudinal axis and thus orienting said first and second gripper members to selectively engage the leading or trailing edge of said paper sheet on said first drum, and means for activating said second gripper member in either orientation to cause said gripper members to grasp said paper sheet and carry the same on rotation of said cylinder between said first drum and said second drum, said paper sheet being selectively transferred to said second drum without turning over for multicolor printing or with turning over for perfecting printing.

3,899,971

LABEL PRINTER

John S. Dudley, Douglas, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.

Continuation of Ser. No. 357,873, May 7, 1973, abandoned, which is a continuation of Ser. No. 187,732, Oct. 8, 1971, abandoned. This application Mar. 11, 1974, Ser. No. 449,926

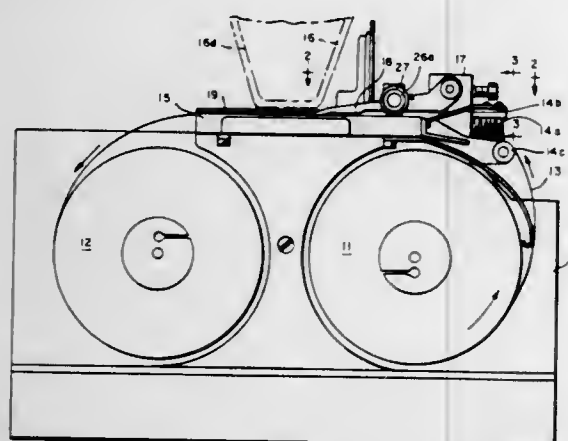
Int. Cl. B41f 1/08

U.S. Cl. 101—292

2 Claims

1. A label printing apparatus in which label stock in strip form are fed to the apparatus for applying print to the label stock, said label printing apparatus comprising a base, a platen supported by the base, a printing head movable back and forth between a printing position adjacent to the platen and a retracted position, means for intermittently feeding the stock over the platen, means for moving the print head to print on the stock and then retract the head, edge side wall guide means supported by the apparatus for guiding one edge of the

stock, and a roller unit supported by an arm supported by the apparatus including a roller means for engaging the stock and rotating with the movement of the stock, the axis of the roller being positioned at an angle with respect to a line at 90° to the side wall of the edge side wall guide means to urge the stock towards said edge side wall guides means, and said roller unit comprises an outer race, and an inner race supported by said arm, said roller being of a high coefficient of friction material and being supported by said outer race, a plurality of wedging rollers positioned between the inner and outer races and in



rolling contact with both of said races, a plurality of cut outs formed in the outer race which are of a dimension to permit the roller to freely rotate while positioned therein and a plurality of springs supported by the outer race, each spring urging a different one of said plurality of wedging rollers away from one of said cut outs, said rollers wedging themselves between the races when the outer race is rotated in one direction to prevent the stock from moving away from the edge guiding means and along the platen, spring means supported by the apparatus for urging said roller against said stock, and means for adjusting the pressure applied by said spring.

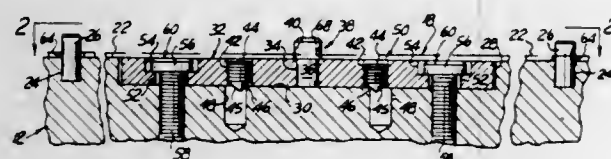
3,899,972

REGISTRATION-ADJUSTING PRINTING PLATE SADDLE
William H. Albright, 305 Ivanhoe Blvd., Orlando, Fla. 32804
Filed Aug. 27, 1973, Ser. No. 392,030

Int. Cl. B41f 27/12

U.S. Cl. 101-415.1

9 Claims



1. A registration-adjustment saddle for adjustably moving a flexible printing plate laterally relative thereto, said saddle comprising

a saddle body of partially-cylindrical extent having essentially-cylindrical outer and inner surfaces and having circumferentially-spaced leading and trailing end faces, means on one of said end faces for securing thereto one end of the printing plate,

an elongated movable plate-attachment support movably mounted on and extending along the central portion only of the other of said end faces for adjustment motion laterally along said central portion thereof,

means connected to said other end face for restricting said adjustment motion to lateral motion relatively to said central portion of said other end face,

and adjustably-movable plate-attachment means mounted on said movable support for adjustment motion unitarily therewith laterally along and relatively to said other end face,

said plate-attachment means on said plate-attachment support including a movable plate-attachment element

mounted on said support for motion unitarily therewith, said movable plate-attachment element being of such a size that it is snugly received by said plate, said plate-attachment means also including fixed plate-attachment elements stationarily mounted on said other end face of said saddle body in laterally-spaced relationship to said movable element, said fixed attachment elements being of such a size that they are loosely received by said plate.

3,899,973

IGNITION DEVICE FOR EXPLOSIVE CHARGES
Alain Brocart, Bergerac, France, assignor to Societe Nationale des Poudres et Explosifs, Paris, France

Filed May 7, 1969, Ser. No. 822,413

Claims priority, application France, May 17, 1968, 68.152244

Int. Cl. F42b 7/00

U.S. Cl. 102-27 R

6 Claims



1. An ignition device which comprises a low-energy energy detonating fuse, a casing about said detonating fuse, said casing consisting of a substantially rigid tubular body of a rigid combustible material of high burning velocity, said body of combustible material surrounding said detonating fuse such that said combustible material forms the sole encasement for said detonating fuse, said tubular body being self-supporting and being adapted to be disposed within a cartridge case or missile in direct contact with an explosive charge to be ignited, a base member fixedly engaged with said body, and priming means disposed within said base member in contact with said fuse.

3,899,974

ELECTRIC PROPULSIVE CHARGE IGNITER
Hans-Dieter Harnau, Wuppertal-Barmen, Germany, assignor to Rheinmetall GmbH, Dusseldorf, Germany

Filed July 31, 1973, Ser. No. 384,389

Claims priority, application Germany, Aug. 10, 1972, 2239325

Int. Cl. F42b 9/08

U.S. Cl. 102-46

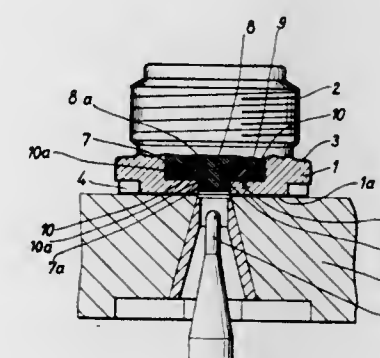
1 Claim

1. An electric primer for a weapon having a breechblock with a passage for a firing pin and for mounting in a cartridge, the primer comprising:

a primer body formed at one end with an external thread receivable in said cartridge, an external shoulder at the other end forming a stop for said body, and a end face at said other end adapted to rest against said breechblock, said body being formed with an axially extending chamber and with an internal shoulder defining said chamber at said other end, said other end being provided with an axially extending bore terminating at said internal shoulder and said face communicating with said chamber;

a steel annular supporting disc received in said chamber and overlying said internal shoulder while being formed with a boss extending axially into said bore and terminating short of said end face;

a central contact axially engageable with said pin and having a projection substantially filling said boss, said contact being formed with a body portion resting against a surface of said disc turned away from said internal shoulder, said projection terminating flush with said boss;



an ignition piece surrounding said contact and bearing against said surface of said disc within said chamber; a layer of insulation on said surface of said disc, around the periphery thereof, between said disc and said internal shoulder and surrounding said boss for insulating said ignition piece and said body from said disc; and reinforcing means for said insulation at least along the periphery of said disc for providing a sealing action.

3,899,975

DISPENSING APPARATUS
John Charles Lawrence, London, England, assignor to F. Bender Limited, London, England

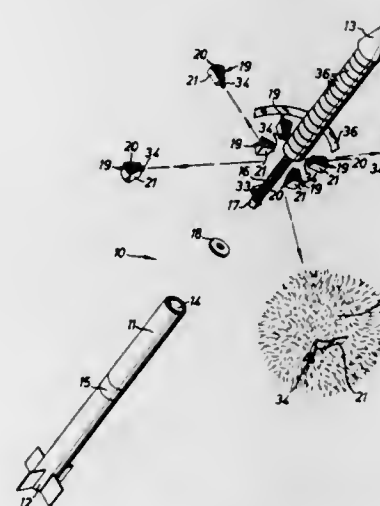
Filed July 9, 1973, Ser. No. 377,214

Claims priority, application United Kingdom, July 11, 1972, 32388/72

Int. Cl. F42b 13/50

U.S. Cl. 102-63

21 Claims



1. Apparatus for forming, from a projectile in flight, a radar reflecting chaff cloud having a predetermined form, said apparatus comprising:

a plurality of bundles of radar reflecting chaff; ejection means, suitable for being carried by a projectile in flight, for ejecting said plurality of bundles of radar reflecting chaff from said projectile when said projectile is in flight; and,

bundle disintegration means forming a portion of each bundle for disintegrating each bundle subsequent to its being ejected from said projectile and scattering the chaff forming the bundle, each of said bundle disintegrating

means including a timing mechanism for controlling the time interval between bundle ejection and bundle disintegration, said timing mechanisms controlling the bundle disintegration of their related bundles in a manner such that the time intervals between bundle ejection and bundle disintegration vary between selected ones of said bundles, said variations being controlled such that once all of the bundles have been disintegrated the scattered chaff forms a radar reflecting chaff cloud having a predetermined form, said form being determined by the controlled, variable time intervals occurring between bundle ejection and bundle disintegration.

3,899,976

CELL COOLING

Richard John Arthur Harding, St. Albans, and Colin Roy Moss, North Mimms, both of England, assignors to Hawker Siddeley Dynamics Ltd., England

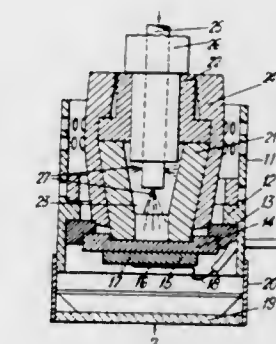
Filed Apr. 25, 1967, Ser. No. 635,953

Claims priority, application United Kingdom, Apr. 29, 1966, 19071/66

Int. Cl. F42C 11/00; F25B 19/00

U.S. Cl. 102-70.2 R

10 Claims



1. Apparatus for the rapid two-phase cooling of a small mass, such as a semi-conductor cell in a fuse, comprising a boil-off chamber so arranged in relation to the mass to be cooled that the mass will partake of a temperature reduction in said chamber, a normally sealed reservoir containing liquid refrigerant, a supply passage extending between said reservoir and said chamber, a separate source of gas under pressure, means operable to release liquid from said reservoir through said supply passage into said boil-off chamber at a selected time, and means conducting gas from said gas source into said boil-off chamber a predetermined time period after said release of liquid refrigerant to promote the evaporation of the refrigerant liquid and thereby reduce the temperature below the free boiling refrigerant temperature.

3,899,977

DEMOLITION CHARGES

Alois Schiessl, Bad Reichenhall, Germany, assignor to Firma Buck K. G., Bad Uberkingen, Germany

Filed Dec. 14, 1973, Ser. No. 424,742

Claims priority, application Germany, Dec. 14, 1972, 2261223

Int. Cl. F42b 11/24, 13/14

U.S. Cl. 102-90

6 Claims

1. A demolition charge assembly for being mounted on equipment such as machines and telecommunication mechanism and destroying such equipment, said charge assembly comprising:

a plurality of interconnected charges, each charge comprising a cube-shaped housing containing an aluminothermic mixture which, when activated, is operable to produce a molten reaction product for destroying said equipment, at least four of the sides of said housing each including:

one of a dovetail tongue portion and dovetail groove portion coupled to a mating one of a dovetail tongue portion and dovetail groove portion of an adjoining side of an adjacently disposed charge to establish a dovetail connection therebetween, and

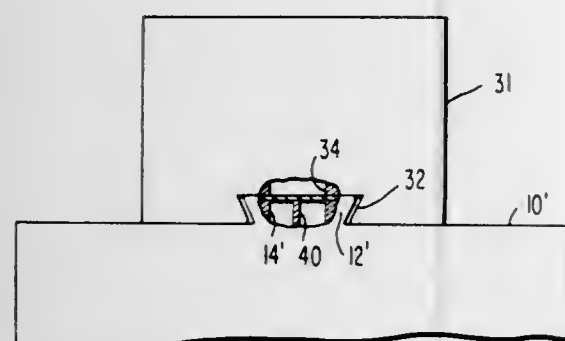
an ignition-transmission opening extending through the dovetail connection portion of each associated housing side such that the ignition-transmission openings of adjoining sides of adjacently connected charges are mutually aligned;

a dovetail connection portion of a selected charge of said charge assembly being arranged to receive a mating dovetail connection portion of a fuse such that an ignition-transmission opening of the fuse is mutually aligned with an ignition-transmission opening of said selected charge so that ignition of said fuse is transmitted to said selected charge and to adjacent charges through said mutually aligned ignition-transmission openings;

each charge being arranged to connectably receive a plurality of charges to form charge assemblies of diverse sizes and shapes to destroy equipment of diverse sizes and shapes.

6. A demolition charge assembly for being mounted on equipment such as machines and telecommunication mechanism and destroying such equipment, said charge assembly comprising:

a plurality of interconnected charges, each charge comprising a cube-shaped housing containing an alumino-thermic



mixture which, when activated, is operable to produce a molten reaction product for destroying said equipment, at least four of the sides of said housing each including:

a dovetail groove portion aligned with a mating one of a dovetail groove portion of an adjoining side of an adjacently disposed charge to define a recess therebetween, an ignition-transmitting dovetail double tongue disposed in said recess to define a dovetail connection between said charges to define a dovetail connection therebetween, and

an ignition-transmission opening extending through each dovetail groove of each associated housing side such that the ignition-transmission openings of adjoining sides of adjacently connected charges are mutually aligned;

a dovetail groove of a selected charge of said charge assembly being arranged to be aligned with a mating dovetail groove of a fuse and receive a dovetail double tongue within a recess defined thereby such that an ignition-transmission opening of the fuse is mutually aligned with an ignition-transmission opening of said selected charge so that ignition of said fuse is transmitted to said selected charge and to adjacent charges through said mutually aligned ignition-transmission openings;

each charge being arranged to be connected to a plurality of charges to form charge assemblies of diverse sizes and shapes to destroy equipment of diverse sizes and shapes.

3,899,978

FIN-STABILIZED SUBCALIBER PROJECTILE

Hans Werner Luther, Holzuttgen; Rudolf Romer, Kaarst; Jurgen Winkelmann, Kaarst, and Winfried Rossmann, Kaarst, all of Germany, assignors to Rheinmetall GmbH, Dusseldorf, Germany

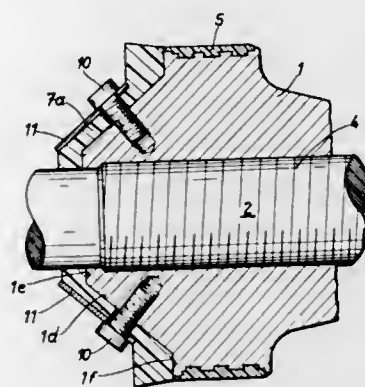
Filed July 17, 1973, Ser. No. 379,970

Claims priority, application Germany, July 22, 1972, 2236142

Int. Cl. F42b 31/00, 13/16

U.S. Cl. 102-93

1 Claim



1. In combination with a fin-stabilized subcaliber projectile having a projectile body with a central portion provided with a multiplicity of formations in the configuration of a screw thread and an end portion provided with stabilizing fins, the improvement which comprises:

a drive cage surrounding said central portion and formed with a plurality of segments configured with internal threads to engage said formations and adapted to spread apart from said body in flight;

a ring surrounding said segments at an end of said cage turned toward said fins for retaining said segments temporarily together and against said body, said cage being formed at said end turned toward said fins and adjacent said ring with a frustoconical portion tapered toward said fins,

a frustoconical sealing disk overlying said frustoconical portion and adapted to apply radially inward force to said segments to retain them against said body upon the application of gas pressure to said disk; and means for securing said disk to said segments, and including screws threaded into said segments through said disk and having heads outwardly of said disk and respective washers interposed between said screw head and said disk.

3,899,979

MAGNETIC SUSPENSION SYSTEMS FOR VEHICLES

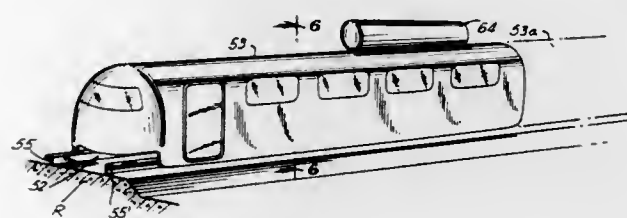
Frank W. Godsey, Jr., St. Petersburg, Fla., assignor to Buryan Associates, Scarsdale, N.Y.

Filed Feb. 22, 1973, Ser. No. 334,887

Int. Cl. B61b 13/08

U.S. Cl. 104-148 MS

7 Claims



1. In a vehicle for magnetic suspension: a number of permanent magnets secured to the vehicle, with a number of electromagnets secured endwise to the permanent magnets; the combined magnets having poles spaced along a track and facing upwardly for attraction to the track, each said electromagnet having a core comprising a substantially vertical bar with one end surface facing the track and a surface of another end portion secured to the permanent magnet.

3,899,980

HOPPER CLOSURE ASSEMBLY

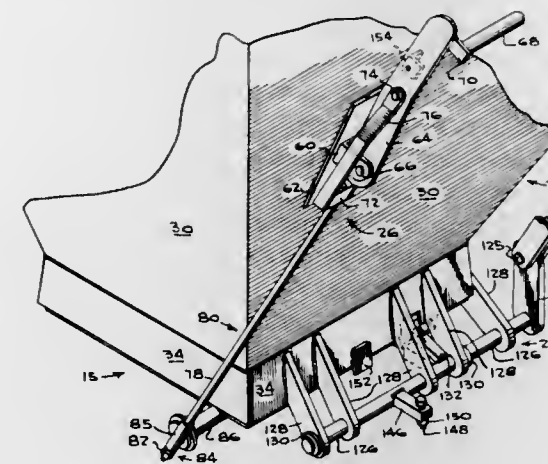
Albert J. Florig, Norristown, Pa., assignor to Florig Equipment Company, Inc., Conshohocken, Pa.

Filed July 29, 1974, Ser. No. 492,861

Int. Cl. B61d 7/02

U.S. Cl. 105-299

10 Claims



1. A hopper gate assembly for closing a discharge outlet in a hopper comprising a hinge supported on the hopper adjacent the discharge outlet, a discharge door pivoted on the hinge, a toggle closing means between the hopper and the discharge door for pivoting the discharge door from a wide open position to a near closed position over the discharge outlet, and a toggle locking and opening means fixedly supported with respect to the hopper and engageable with the discharge door for closing and locking the discharge door in the closed position when operated in a first direction and for applying force to open the discharge door when operated in a second direction.

3,899,981

BAFFLED BULK SHIPMENT OF PERISHABLE LADING IN INSULATING BOX CARS AND REFRIGERATOR CARS

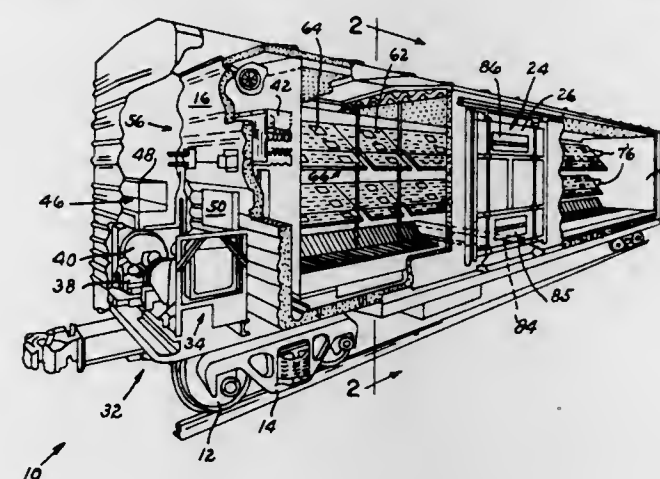
Edgar F. Josephson, St. Charles, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Oct. 31, 1973, Ser. No. 411,364

Int. Cl. B61D 3/00

U.S. Cl. 105-355

53 Claims



1. An insulated railway box car for transporting perishable lading comprising:

generally vertically extending spaced apart railway car sides having insulation provided thereon at least through a substantial portion of the vertical extent; generally spaced apart railway car ends joined to said car sides, said ends having insulation provided on at least a substantial portion of the vertical extent, an insulated roof joining said sides and ends; and at least one layer of baffles in said car making an angle of from about 30° to about 50° with respect to the horizontal and adapted to reduce the

weight that the upper lading would normally exert upon the lower lading in the absence of the baffles; and wherein lading openings are provided in said baffles whereby the lading passes through said openings to assume positions below said baffles whereby full utilization of the car volume can be obtained.

3,899,982

PULL OUT TABLE FOR ATTACHMENT BENEATH AN AUTOMOBILE DASHBOARD

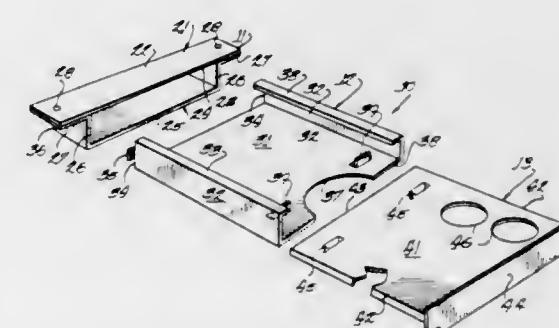
Richard J. Fetzek, 2615-B Magnolia Ln., Minneapolis, Minn. 55441

Filed Jan. 28, 1974, Ser. No. 437,751

Int. Cl. A47B 37/00

U.S. Cl. 108-25

9 Claims



1. A pull out table adapted for attachment beneath the dashboard of an automobile and movable between a retracted position disposed beneath the dashboard and an extended position projecting outwardly of the dashboard into the passenger compartment for convenient use thereof by occupants of the automobile, the apparatus comprising:

a supporting bracket adapted to be attached to the under-surface of said dashboard in a manner extending transversely of said vehicle, said supporting bracket having a rectangularly shaped compartment defined therein and open at the front and back ends thereof;

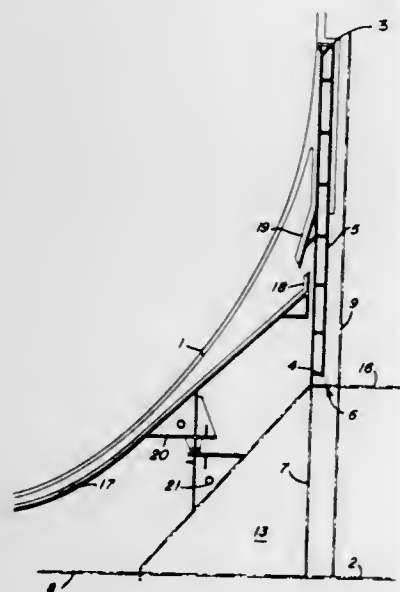
a table holder including a substantially flat rectangularly shaped bottom surface, vertically extending side wall surfaces disposed along each side edge of said bottom surface, and an inwardly directed flange formed integrally with the top edge of each bottom surface side wall surface and extending outwardly therefrom in confronting relationship in a manner substantially parallel to the plane of said bottom surface, said table holder having a back edge and a front edge, said bottom surface and said side wall surfaces of said table holder being of a size and configuration adapted to be slidably received in said supporting bracket compartment for reciprocal sliding movement relative thereto;

means operatively associated with said table holder to limit the forward movement of said table holder relative to said supporting bracket;

a table member comprised of a substantially flat rectangularly shaped platform having a pair of downwardly projecting side rails disposed along opposite side edges thereof, said platform having a back edge and a front edge, said table adapted to be slidably inserted and received in said table holder with said platform overlying said table holder bottom surface and with said platform side rails in juxtaposition with adjacent table holder side wall surfaces with the bottom edges of said side rails in sliding engagement with the top surface of said table holder bottom surface whereby said table is reciprocally slidable in a telescopic manner from a position overlying said table holder bottom surface to a position projecting forwardly thereof; and

means on said table holder and cooperating means on said platform operative to limit the forwardmost projection of said table relative to said table holder.

welded by their internal and upper edges to said skirt and said platform, respectively, and by their bottom edge to the top of said double bottom, the external edges of said plates being welded to the inner shell of the ship, with the plates facing the floors, and to the skirt of an adjacent tank or to the end transverse bulkhead of the cargo tank zone, with the plates facing the longitudinal girders, a tray positioned under the tank



independent of the structure of the ship and of the structure of the support, said tray having an insulating layer and a stiffening ring and being designed to catch possible small leaks of transported liquid, and a continuous leak deflection plate joined by its external edge to the inner shell of the tank support, the free edge of said tray being positioned next to the inner shell of the tank support below said deflection plate.

3,899,989

MARINE PANEL HANGING ASSEMBLY

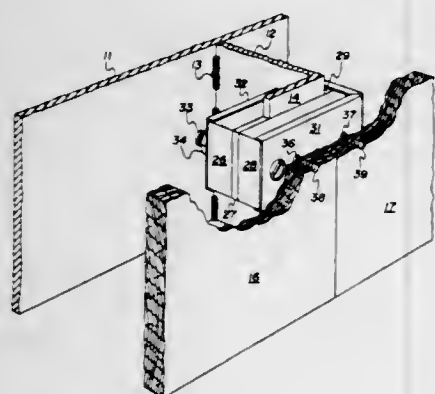
Gerald L. Glazebrook, El Cajon, Calif., assignor to National Building Industries, National City, Calif.

Filed Oct. 10, 1973, Ser. No. 405,017

Int. Cl.² B63B 3/68

U.S. Cl. 114—84

3 Claims



1. A panel hanging assembly for coupling insulative panels to a vertically disposed metallic member comprising:
an insulative block having one surface abutting a vertical metallic member, said vertical metallic member being fixedly attached to a structure and has one section thereof substantially at right angles to said structure and another section thereof substantially parallel to said structure, said insulative block having one surface abutting an outside surface of said another section of said metallic member;
a metallic bracket;
first coupling means coupling said metallic bracket to said insulative block to a surface opposite said abutting surface;

a second insulative block abutting a back surface of said another section;
said first coupling means comprises a clamp screw and nut, said clamp screw passing through said metallic bracket, said insulative block, and said second insulative block, spatially disposed from said metallic member and in threadable engagement with said clamp nut; and
second coupling means for coupling a panel to said metallic bracket.

3,899,990

SYSTEMS FOR ANCHORING SHIPS AT SEA

Claude Lecomte, Fontenay-aux-Roses, France, assignor to Entreprise d'Equipements Mecaniques et Hydrauliques E.M.H., France

Continuation of Ser. No. 146,127, May 24, 1971, abandoned.

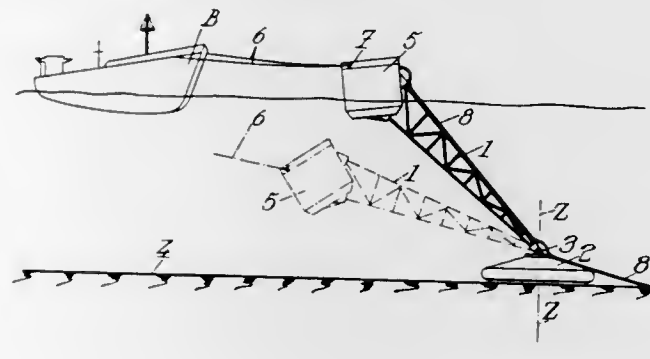
This application July 16, 1973, Ser. No. 379,817

Claims priority, application France, June 10, 1970, 70.21365

Int. Cl. B63b 21/04

U.S. Cl. 114—230

3 Claims



1. A device for the surface mooring of a ship on a body of water comprising:

- a base anchored to the bottom of the body of water;
- an arm having a free end with the other end pivotally connected to the base;
- a hollow interior buoy secured to the free end of the arm so that when the buoy is floating at the surface of the water substantially all of the arm is normally below the surface and extends diagonally to the base, said buoy and arm having means for mooring a ship thereto;
- means on the buoy and arm for ballasting and deballasting the buoy so as to arcuately move the free end of the arm from an upper position near the surface of the water to a lower position near the bottom;
- said means for the ballasting and deballasting comprising: a pipe for fluid coming from a distant control station and capable of being pressurized or discharged, said pipe extending along the arm and connected to the buoy to be in communication with its interior, a hole formed in the bottom of the buoy to establish communication between the interior of the buoy and the body of water, at least one normally open valve at the upper part of the buoy positioned to form a communication between the buoy interior and the ambience, this valve being connected to the pipe to be actuated by said pressure so as to be closed when the pipe is pressurized and to open when the pipe is not pressurized.

3,899,991

WEATHER RESISTANT SEGMENTED FAIRING FOR A TOW CABLE

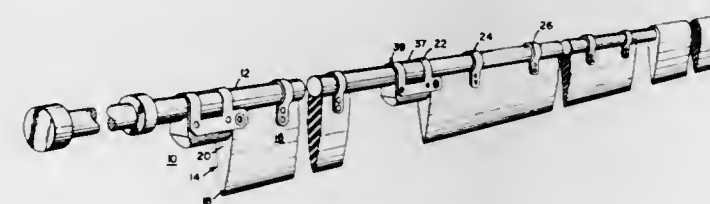
Clarence K. Chatten, Mesa, Ariz.; Saul A. Eller, Whitestone, N.Y.; Reece Folb, Laytonville, and Arthur P. Brisbane, Gaithersburg, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 17, 1973, Ser. No. 425,434

Int. Cl.² B63B 21/10

U.S. Cl. 114—235 F

2 Claims



1. A towing system for a variable depth sonar comprising: a substantially long tow cable;

- means for securing a plurality of spaced fairing sections to said tow cable, said plurality of fairing sections having an axis of symmetry substantially normal to the longitudinal axis of said tow cable and having longitudinal axis substantially parallel to the longitudinal axis of said tow cable, each of said plurality of fairing sections having a leading edge and a trailing edge;
- a plurality of support rings vulcanized to said tow cable along the longitudinal axis thereof;
- a plurality of clips connected to said tow cable and to said plurality of fairing sections; and
- the trailing edge of each of said plurality of fairing sections being made from a first butyl rubber compound essentially of the following ingredients:

Ingredients	Parts by weight
Butyl-035	100
Elastopar	1
Phiblack-E (SAF)	15
Zinc Oxide	3
Stearic Acid	2
Dioctyl Sebacate	10
Sulfur	1.25
Methyl Tuads	1.5
Captax	1

3,899,992

MARINE STEERING DEVICE

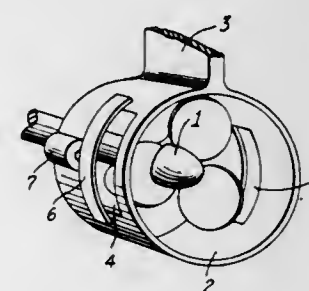
Ronald George Fuller, P.O. Box 337, Hudson Heights, Quebec, Canada

Filed July 20, 1972, Ser. No. 273,494

Int. Cl. B63h 5/14

U.S. Cl. 115—42

9 Claims



1. A marine steering device comprising a submerged duct, a propeller rotationally mounted on the axis within the duct and adapted to propel fluid through the duct, passages through both sides of the duct wall normal to the duct axis,

means for selectively opening and closing, or partially opening and closing said passages through one side of the duct wall relative to the passages through the other side of the duct wall for the purpose of generating a pressure imbalance normal to the duct axis to thereby develop a steering force. Penetrating the walls of duct, one passage of each pair located in one side of the duct coequal about an axis intersecting the centerline of the duct, the other passage located in the other side of duct coequal about said axis intersecting the centerline of the duct, means for selectively opening and closing or partially opening and closing one passage of each pair of passages relative to the other passage of said pair to thereby produce a steering thrust.

3,899,993

TOW BAR ASSEMBLY FOR WATER-SKI TOWING DEVICE

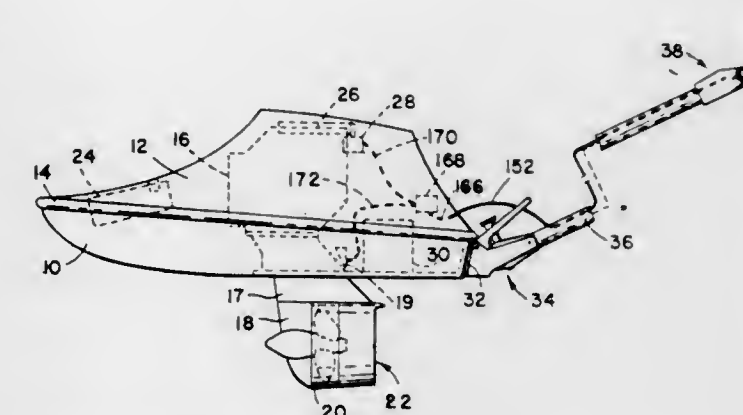
Richard T. Powers, 3623 Herschel Ave., Cincinnati, Ohio 45208

Filed Oct. 12, 1973, Ser. No. 405,896

Int. Cl.² B63B 21/56

U.S. Cl. 115—6.1

15 Claims



1. A water-ski towing device comprising:
a buoyant hull having a motor and a propeller assembly driven by said motor to provide a propulsive thrust;
a tow bar extending aft for towing a water skier; and
connecting means for connecting said tow bar to said hull, said connecting means providing a rigid connection in a first position between said tow bar and said hull during normal operation of said device, and being pivotal upwardly in a vertical plane from a second position to said first position during initial operation of said device, said connecting means comprising:
mounting means secured to said hull
the lower end of said tow bar being pivotally mounted on said mounting means for movement in said vertical plane; and
latching means for releasably latching said tow bar in said first position.

3,899,994

APPARATUS FOR APPLICATION OF LACQUER COATING TO CATHODE RAY TUBE PANELS

Charles A. Cook, Buffalo Grove, and Thaddeus J. Hajduk, Chicago, both of Ill., assignors to Zenith Radio Corporation, Chicago, Ill.

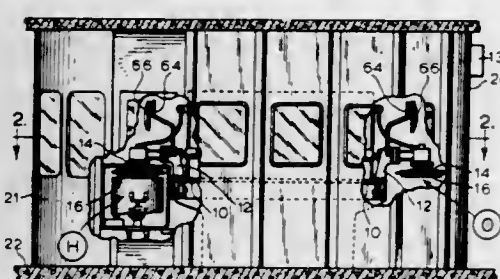
Division of Ser. No. 319,970, Dec. 29, 1972, Pat. No. 3,832,211. This application Feb. 4, 1974, Ser. No. 438,964
Int. Cl.² B05C 7/02

U.S. Cl. 118—6

14 Claims

1. Rotary apparatus for automatically applying a lacquer coating over a phosphor coating on partially processed front panels of cathode ray tubes in a continuous step-by-step fashion while said panels are continuously maintained in a front-side-up attitude so that the phosphor coated surfaces of said panels are continuously directed downwardly, comprising:
an annular endless conveyor defining a predetermined processing path;

a plurality of workpiece holding means serially attached to said conveyor for each receiving and supporting a panel front side up such that the phosphor coated surface of said panel is directed downwardly during its processing; a plurality of discrete work stations disposed around the perimeter of said conveyor for receiving said workpiece holding means and panels; indexing means for effecting step-by-step movement of said conveyor between said work stations; spray applicator means situated on at least one of said work stations for spraying a lacquer coating onto the downwardly directed phosphor coating of a received panel;



moveable shroud means situated at the work station at which the lacquer coating is applied and means for positioning said shroud means over a panel to be coated in order to minimize undesirable air currents which might cause unwanted disturbances on the surface of the lacquer coating and to help contain lacquer vapors within the lacquer application work station; drying means situated at at least one of said work stations for drying said lacquer coating; and loading and unloading means for receiving panels to be conveyed to a first of said work stations and for presenting for removal lacquered panels conveyed from a final work station.

3,899,995

FINGERPRINTING ARRANGEMENT

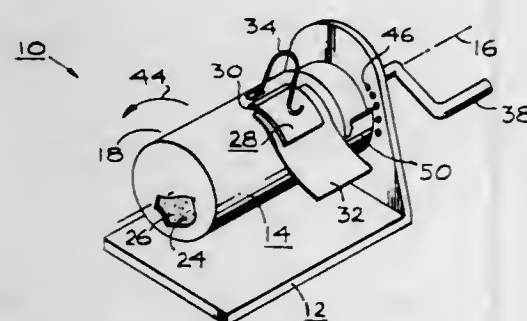
Edward H. Robinson, 16704 Elgar Ave., Torrance, Calif. 95004

Filed Oct. 29, 1973, Ser. No. 410,798

Int. Cl. A61b 5/10

U.S. Cl. 118—31.5

6 Claims



1. An improved fingerprint developing arrangement for providing a visually detectable fingerprint image on a pre-selected surface having a fingerprint thereon, comprising, in combination:

a frame means; a drum means movably mounted on said frame means and having peripheral walls defining a powder containing cavity, and said peripheral walls having a first portion defining an aperture therethrough providing communication with said powder containing cavity; fingerprint powder in said powder containing cavity; closure means coupled to said peripheral walls of said drum means adjacent said aperture and movable thereon from an open position allowing access to said aperture to a closed position removably clamping the pre-selected

surface having the fingerprint thereon over said aperture in powder sealing relationship to said first portion of said peripheral walls;

latch means coupled to said drum means for detachably clamping said closure means in said closed position to prevent said fingerprint powder from leaving said powder containing cavity for the condition of said closure means in said closed position thereof, said latch means comprising:

a spring loaded hinge means for coupling said closure means to said drum means, and said spring loaded hinge means resiliently biasing said closure means into said closed position thereof;

motion producing means for moving said drum means to provide contact between the pre-selected surface in said aperture and said fingerprint powder in said powder containing cavity, said motion producing means comprising:

a rotation producing means for rotating said drum means in a preselected arc of rotation about a pre-determined axis, and said fingerprint powder contacting the pre-selected surface in said aperture at least once during each movement in said preselected arc of rotation thereof; said drum means rotatably mounted on said frame means;

interlock means operatively connected between said frame means and said drum means for preventing said closure means from moving from said closed position to said open position thereof for a predetermined portion of said pre-selected arc of rotation of said drum means;

vibration producing means for inducing a vibration of said drum means to jar said fingerprint powder loose from regions adjacent said first portion of said peripheral walls, said vibration inducing means comprising:

a plurality of protuberances coupled to said frame means in a preselected spaced relationship thereon adjacent said drum means;

a striker bar means mounted on said drum means in protuberance engaging relationship to said plurality of protuberances for sticking said protuberances and vibrating said drum means during predesigned portions of said pre-selected arc of rotation of said drum means.

3,899,996

APPARATUS FOR MAKING LIGHT ATTENUATING FILTERS

Yong S. Park, Roselle, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed June 10, 1974, Ser. No. 478,007

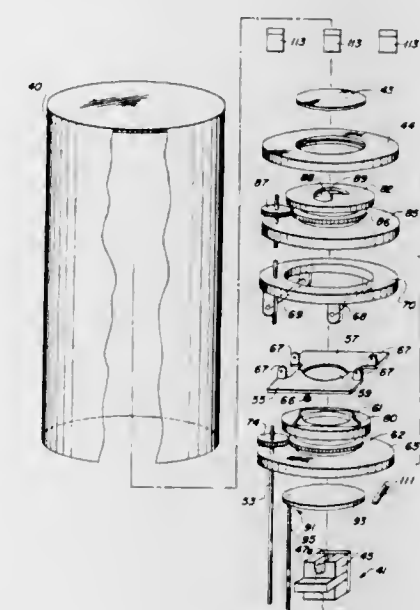
Int. Cl. C23C 13/08

U.S. Cl. 118—49.1

6 Claims

1. In a light attenuating filter coating apparatus of the type wherein a patterned coating of light attenuating material is deposited on a transparent substrate from a vapor beam emitted by a source of appropriately vaporized, light attenuating material, the improvement comprising means defining a non-circular aperture of time-varying size between said vapor source and said transparent substrate for controlling the impingement of the beam on the substrate, means for varying the size of said aperture as a predetermined function of time, so that the resulting light attenuating filter is characterized by iso-attenuation contours of which at least portions thereof are non-circular, said means for defining said aperture of time-

varying size comprising a pair of templates which are movable rectilinearly toward and away from each other along a path



3,899,997

THERMOGRAPHIC APPARATUS

Ronald Frederick Ayers, 15-19 Church St., Twickenham, Middlesex, England

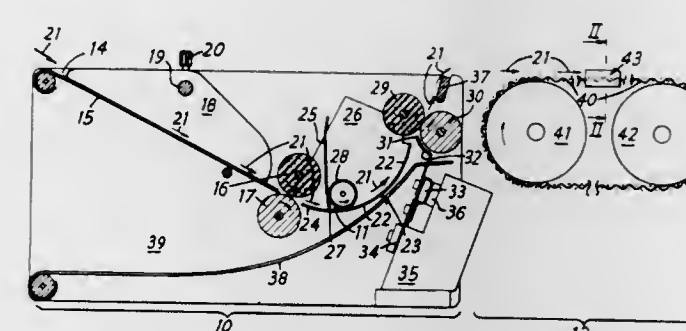
Continuation of Ser. No. 288,939, Sept. 14, 1972, abandoned.

This application Sept. 13, 1974, Ser. No. 506,188

Int. Cl. B05C 3/02; G03G 13/08

U.S. Cl. 118—68

9 Claims



1. Thermographic apparatus for the application of thermographic powder to a workpiece bearing freshly-printed matter, comprising: a trough of generally V-shaped transverse cross-section for said thermographic powder, the transverse powder retaining walls of said trough being defined by an upwardly concave, workpiece support surface and a plate extending upwardly from a lower region of said upwardly concave surface, and the upper transverse extremities of the trough's transverse powder-retaining walls being defined by the upper transverse edges of said plate and surface; feeding means to feed a workpiece bearing freshly-printed matter into the trough between the lower transverse edge of said plate and said lower surface region and along at least part of said workpiece support surface; withdrawal means to withdraw the workpiece with thermographic powder adhering to said freshly-printed matter from the trough along at least part of said workpiece support surface and past the latter's upper transverse edge defining one of said upper transverse extremities of the trough; a floating roller disposed within said trough in the region of said workpiece infeed and beneath which the workpiece passes; and vibrator means to vibrate the workpiece free of surplus powder as it leaves the trough.

3,899,998

ROTARY COATING APPLYING NOZZLES

John Davies, Leicester, and Dennis E. Skinner, Syston, both of England, assignors to USM Corporation, Boston, Mass.

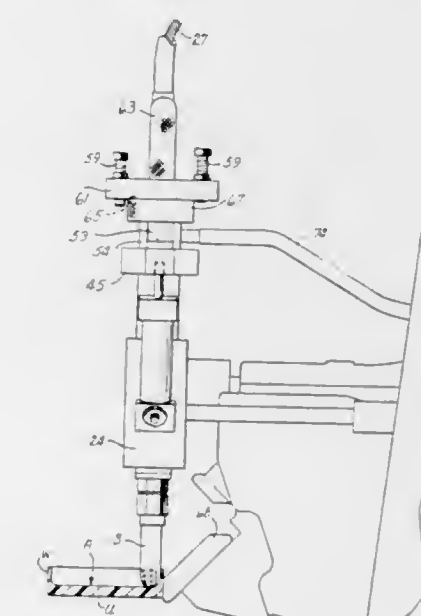
Filed Oct. 3, 1974, Ser. No. 511,504

Claims priority, application United Kingdom, Oct. 23, 1973, 49317/73

Int. Cl. B05B 3/02

U.S. Cl. 118—323

12 Claims



1. Apparatus for applying a coating to surface portions of a workpiece comprising: a rotatable nozzle having an outlet port opening into a longitudinal bore in the nozzle; a tube slidably mounted in said bore; means for effecting relative movement between said nozzle and said tube lengthwise of said bore from a condition wherein said outlet port is uncovered such that coating material passes therethrough to a condition wherein said outlet port is closed by said tube to block it against the passage of coating material; means for feeding coating material to said nozzle; and means for rotating said nozzle about a longitudinal axis thereof during operation of said coating apparatus.

3,899,999

BLADE FOR APPLYING A FLOWABLE SUBSTANCE TO A MOVING ARTICLE

Alfred Christ; Sergio Tognola, both of Zurich, and Rolf Lehmann, Mutschellen, all of Switzerland, assignors to Escher Wyss GmbH, Zurich, Switzerland

Filed June 12, 1973, Ser. No. 369,194

Claims priority, application Germany, June 13, 1972, 2228685

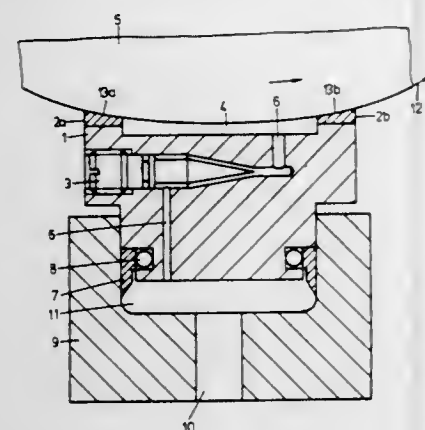
Int. Cl. B05C 5/02

U.S. Cl. 118—405

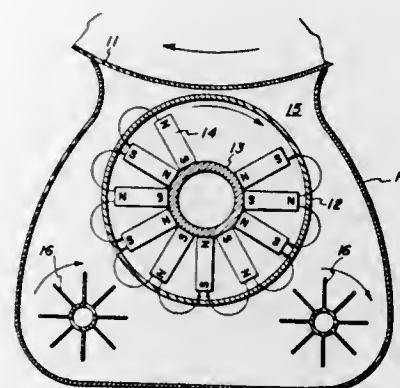
26 Claims

1. In combination, a blade for applying a flowable substance onto a moving article having at least one chamber for containing the flowable substance disposed transversely of the direction of the moving article and facing the moving article, and means for pressing said blade towards the moving article under a force opposed to the pressure of the flowable substance in said chamber to cause said blade to float on a cushion of the flowable substance on the moving article, said means including a fixedly mounted support member slidably

receiving said blade therein for movement perpendicularly of the moving article, said member and blade defining at least



netically attractable developer material in a magnetic brush configuration in a region extending from a developer supply to a development zone formed adjacent the developer receiving surface; means to transport the dry magnetically attractable developer material in the magnetic brush configuration from the developer supply to the development zone, said



one thrust chamber therebetween for receiving a pressurized medium.

3,900,000

APPARATUS FOR SPRAY COATING ARTICLES

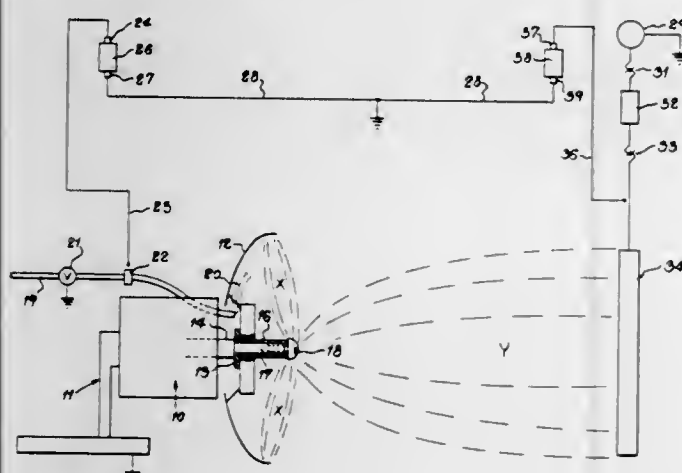
Thomas J. Gallen, 1516 Buck Rd., Feasterville, Pa. 19047

Filed Nov. 28, 1973, Ser. No. 419,569

Int. Cl.² B05B 5/02; B05C 5/04

U.S. Cl. 118—630

10 Claims



1. A sub-ionization spray coating system comprising, in combination, a grounded spray gun, a disc rotated by said spray gun for atomizing coating material, means for insulating said disc from said spray gun, a non-conductive hose for supplying said coating material to said disc, means for applying inductively a voltage of one polarity to said coating material while in said hose, whereby said coating material voltage is imparted to said disc to create an electrostatic field between said disc and said spray gun upon discharge of said coating material from said spray gun, a work piece to be coated with said coating material, and means for applying inductively a voltage of opposite polarity to said work piece, whereby an electrostatic field is created between said work piece and said spray gun.

3,900,001

DEVELOPING APPARATUS

Lawrence J. Fraser, and Delmer G. Parker, both of Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 146,704, May 25, 1971, abandoned. This application Mar. 27, 1973, Ser. No. 345,424

Int. Cl. G03g 13/00

U.S. Cl. 118—637

11 Claims

1. Electrostatic developing apparatus for applying developer material to a developer receiving surface in conformity with an electrostatic charge pattern, said apparatus comprising stationary multipole magnet means to form dry mag-

netically attractable developer material in a magnetic brush configuration in a region extending from a developer supply to a development zone formed adjacent the developer receiving surface; means to transport said developer through said development zone in magnetically unconstrained blanket contact with said charge pattern; and means to discharge unused developer from said development zone.

3,900,002

DONOR APPARATUS

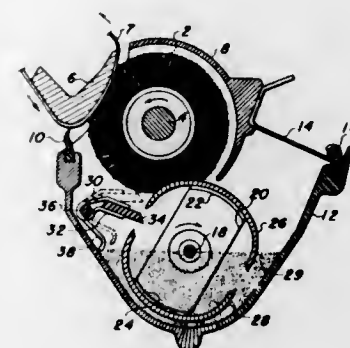
Klaus K. Stange, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 251,954, May 10, 1972, Pat. No. 3,848,566, which is a division of Ser. No. 864,265, Sept. 24, 1969, Pat. No. 3,687,106, which is a continuation-in-part of Ser. No. 840,967, July 11, 1969, abandoned. This application Aug. 30, 1973, Ser. No. 393,248

Int. Cl. G03g 13/06

U.S. Cl. 118—637

3 Claims



1. In a development system for developing latent patterns employing electrostatic marking particles:

a plurality of elongated donor members each having a surface portion capable of holding marking particles thereon;

support means for maintaining adjacent ones of said donor members substantially in parallel and spaced apart, said support means including flexible linking means for coupling adjacent ones of said elongated donor members to each other;

means coupled to said support means for moving said donor members through a path which defines a volume having one dimension substantially equal to the elongation of said donor members, said means coupled to said support means including at least two drive gears spaced apart in the direction of elongation of said donor members each having gear teeth spaced to accommodate the spacing between said adjacent donor members, said linking

means and said coupled donor members being entrained about said drive gears; and

a housing containing a quantity of marking particles and supported relative to said support means to position a portion of said quantity of marking particles within said volume.

3,900,003

LIQUID DEVELOPING DEVICE FOR ELECTROPHOTOGRAPHY

Tadashi Sato, and Shunichi Kubo, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

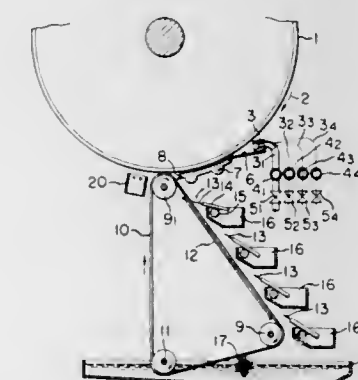
Filed June 13, 1974, Ser. No. 478,976

Claims priority, application Japan, June 15, 1973, 48-67438

Int. Cl. G03g 13/06

U.S. Cl. 118—637

19 Claims



1. A liquid developing device for electrophotography comprising:

a selective developing solution supply means whereby a developing solution of any designated color is selected from developing solutions of different colors and supplied to an electrophotographic sensitive member in successive relation with the developing solutions of other colors;

a common developing means disposed in a developing position to retain sequentially each said supplied developing solution on the surface of said sensitive member; movable means separate from said common developing means for transporting excess developing solution flowing out from said developing means; and means for recovering the developing solutions of respective colors separately from each other during transportation by said movable transporting means.

3,900,004

AUTOMATIC CIRCULATING HATCHERY

Marvin A. Goldman, Great Neck, and Jerome N. Goldman, New York, both of N.Y., assignors to Penn-Plax Plastics, Inc., Garden City, N.Y.

Filed Apr. 1, 1974, Ser. No. 457,541

Int. Cl.² A01K 63/00

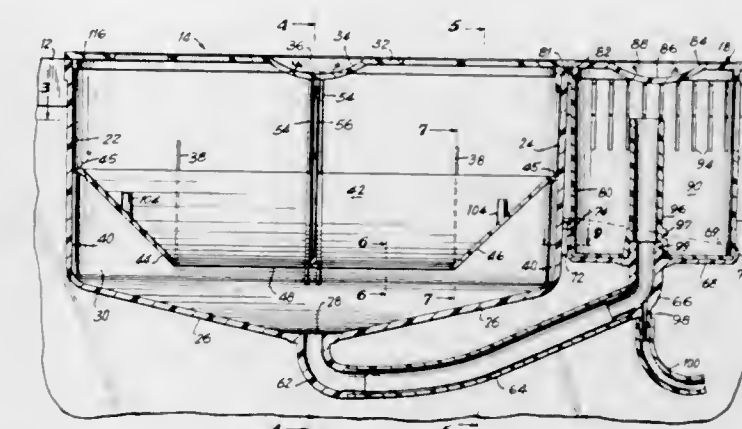
U.S. Cl. 119—3

6 Claims

1. In a hatchery assembly for an aquarium and having a hatchery tank for separating and accommodating adult pregnant fish, and a source of compressed air, the combination which comprises

- a separable nursery tank for disposal on said hatchery tank;
- means dividing said hatchery tank into a separate adult pregnant fish retention area, said dividing means allowing passage of hatched baby fish therethrough;
- flow communication means between said source and said hatchery and nursery tanks;
- openings in said hatchery tank allowing water flow from an aquarium into said tank;
- means in said flow communication means causing continuous flow of water through said hatchery tank to said nursery tank;

- openings in said nursery tank spaced from the bottom thereof, allowing continuous circulation and water over-flow therethrough, said openings being dimensioned to prevent the passage of baby fish therethrough;
- an opening in the bottom of said hatchery tank below said dividing means;
- a first nipple integral with said hatchery tank defining said opening;



- a second nipple disposed adjacent said nursery tank defining an opening thereto;
- said second nipple having an opening connected to said source;
- an annular stack centrally of said nursery tank and integral therewith;
- said stack being in flow communication with said second nipple; and
- a flexible line joining said first and second nipple.

3,900,005

MILKING MACHINE

Frank Edward Goldsmith, Cwmbran, England, assignor to Alfa-Laval AB, Tumba, Sweden

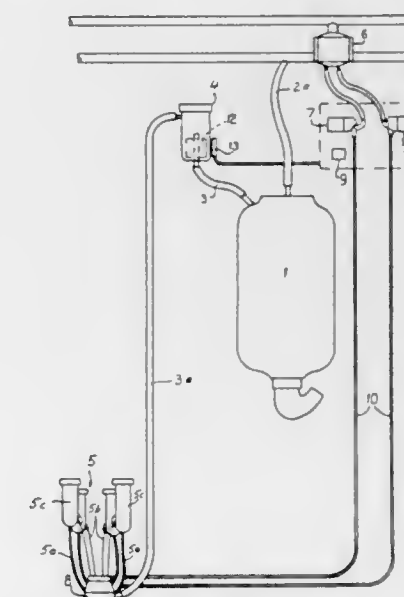
Filed May 21, 1974, Ser. No. 471,853

Claims priority, application United Kingdom, May 21, 1973, 24118/73

Int. Cl. A01j 5/04

U.S. Cl. 119—14.41

3 Claims



1. A milking machine including teat cups each having a shell and a liner, the pulse space between the shell and the liner being subjected alternately to atmospheric pressure and a vacuum to expand and contract the liner while the space within the liner is subjected to a milking vacuum, a milk flow indicator associated with the teat cups for detecting changes in the flow rate of milk from the teat cups, and means operable in response to changes in the flow rate of milk as detected by said indicator for regulating the flow of air from the pulse space to effect gradual opening of the liner when the milk flow

rate is below a predetermined level, said regulating means comprising a solenoid valve having a valve seat, a valve member, resilient means biasing the valve member toward the valve seat to close the valve, and a solenoid operable to open the valve against the action of said resilient means when the milk flow rate exceeds said predetermined level, the force of said resilient means being sufficient to move said valve member to its closed position when said solenoid is deenergized.

3,900,006

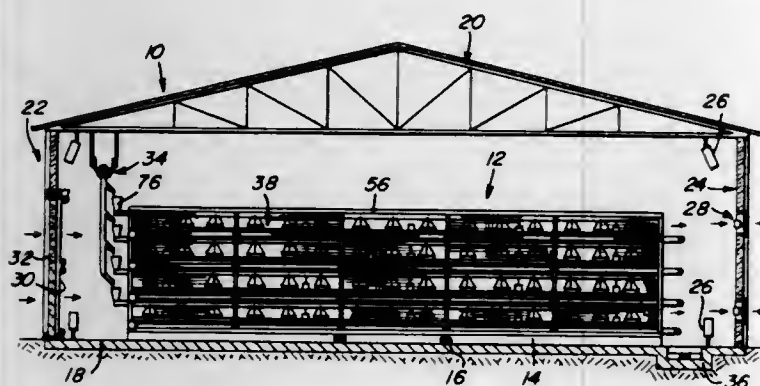
CONTAINERIZED CAGE SYSTEM FOR CHICKENS
Walter I. Shockley, Jr., Box 180, Dagsboro Rd., Salisbury, Md. 21801

Filed July 27, 1973, Ser. No. 383,311

Int. Cl. A01k 31/18

U.S. Cl. 119-18

11 Claims



1. A poultry cage adapted to be transported from an environmentally controlled enclosure, comprising a box-like frame, foraminous walls supported by the frame, a flexible, trampoline-like floor made of a resilient sheet of material having perforations formed therein, means securing the floor only peripherally to the frame for elastic deformation under load, and conveyor belt means supported by the frame in spaced underlying relation to the floor for receiving and conveying droppings.

3,900,007

AUTOMATIC ANIMAL FOOD DISPENSER

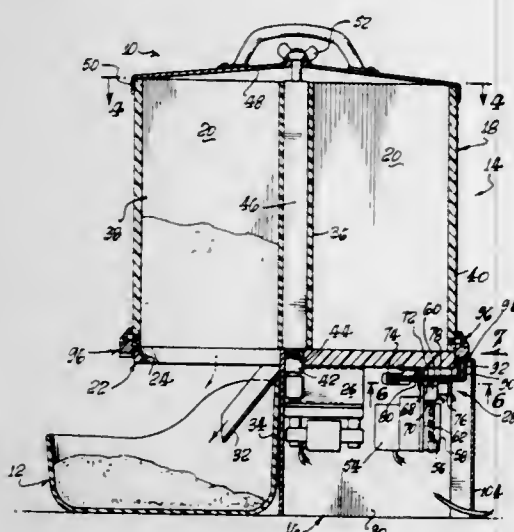
Fenter Willie Smith, 1133 Coronado Ave., West Covina, Calif. 91790

Filed Jan. 11, 1974, Ser. No. 432,753

Int. Cl. A01K 5/02

U.S. Cl. 119-51.13

7 Claims



1. The automatic animal food dispenser comprising:
a frame having a normally generally horizontal wall member containing a food dispensing opening,
a food container above said wall member having separate food compartments for receiving food to be dispensed,

and each having a bottom opening closed by said wall member,
means mounting said container on said frame for movement of said compartments in succession through a dispensing position wherein the bottom opening of each compartment registers with said dispensing opening to effect emptying of the compartment contents through said dispensing opening into a feeding receptacle positioned below said dispensing opening,
a motor for driving said container in said movement, and means for periodically energizing said motor to effect movement of said compartments to said dispensing position in succession at predetermined time intervals, said energizing means comprising switch means adapted to be actuated to energize and de-energize said motor, first switch actuating means for periodically actuating said switch means at preset time intervals to energize said motor at said intervals, and second switch actuating means movable in unison with said container for actuating said switch means to de-energize said motor upon arrival of each compartment at its dispensing position.

3,900,008

AUTOMATIC SEQUENCE UNIT FOR PRODUCT FEEDING TO LIVE STOCK

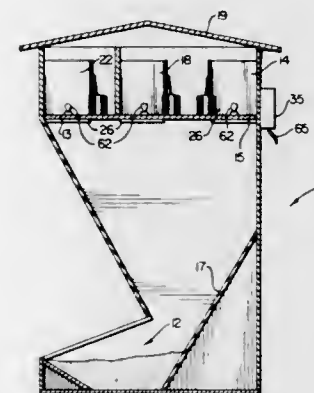
Jimmy Gray Jinnette, 2137 Sunset River Dr., Jacksonville, Fla. 32211

Filed May 16, 1974, Ser. No. 470,641

Int. Cl. A01k 5/02

U.S. Cl. 119-51.13

6 Claims



1. An electric time clock with a set point contact control connected to a power source for sequentially timed product discharge at set desired periods according to manually set periods of the said clock set point control comprising a housing having a feed area, a plurality of feed storage boxes in said housing, door means for each of said boxes, said boxes containing predetermined quantities of a product to be dispensed to the feed area of the housing, door operating solenoid and switch means connected in said timer circuit, whereby said set point contact control sequentially produces electric current to arm and release each solenoid to open said storage doors at the desired set period of the electric time clock.

3,900,009

RESTRAINING DEVICE

Antonio A. Rodrigues, 8302 18th Ave., Lemoore, Calif. 93245
Filed May 23, 1974, Ser. No. 472,845

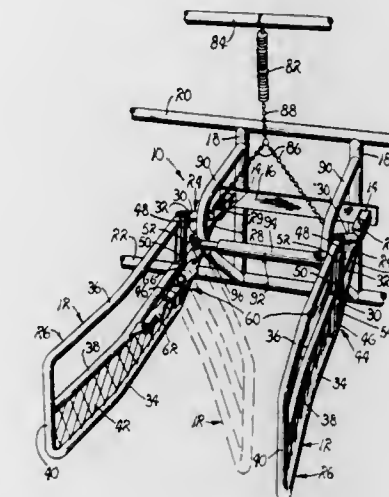
Int. Cl. A01K 3/00

U.S. Cl. 119-96

9 Claims

1. In a restraining device for substantially confining a milch cow during milking operations, the improvement comprising: at least one elongated restraining rail for imparting lateral support for a milch cow, including a base end portion and a distal end portion, said distal end portion being pivotally supported by said base end portion for oscillatory motion about a pivotal axis interposed between the opposite ends of the rail and orthogonally related to the longitudinal axis

thereof; and
manually operable locking means for releasably securing



the distal end portion of said rail against oscillatory motion about said pivotal axis.

3,900,010

METHOD AND APPARATUS FOR REVERSE CIRCULATING NUCLEAR STEAM GENERATOR SECONDARY FLUID

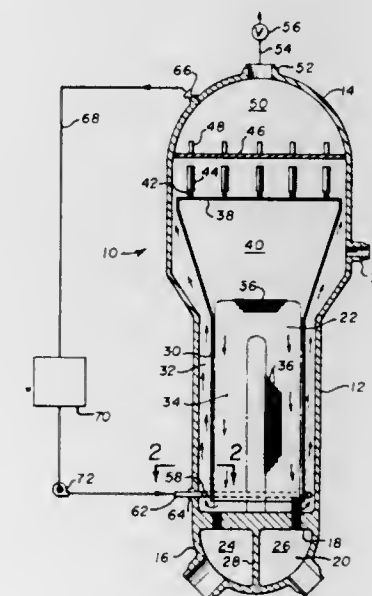
Fred Zwald Stiteler, New Hartford, and Ronald Louis Honigmann, Ellington, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Apr. 19, 1974, Ser. No. 462,270

Int. Cl. F22b 1/06, 37/48

U.S. Cl. 122-32

10 Claims



1. A method of inducing fluid circulation on the secondary side of a steam generator of the type including an outer vessel and a vapor generation chamber having an annular baffle means dividing the chamber into an outer annular downcomer passage and an inner riser section, wherein the fluid level is said steam generator is above said annular baffle means, comprising the step of: introducing gas into the lower end of the annular downcomer passage, whereby said gas bubbles up the downcomer passage creating a region of fluid density in the downcomer passage less than the fluid density in the inner riser section, the density differential therebetween inducing a natural circulation of the fluid down the inner riser section and into and up through the downcomer passage.

6. Apparatus for inducing fluid circulation on the secondary side of a steam generator of the type including an outer vessel and a vapor generation chamber having an annular baffle means dividing the chamber into an outer annular downcomer passage and an inner riser section, wherein the fluid level is

above said annular baffle means, comprising: means for introducing gas into the lower end of the annular downcomer passage, whereby said gas bubbles up the downcomer passage creating a region of fluid density in the annular downcomer passage less than the fluid density in the inner riser section, the density differential therebetween inducing a natural circulation of the fluid down the inner riser section and into and up through the downcomer passage.

3,900,011

AIR SUPPLY MEANS FOR A FURNACE

Hans Stenlund, Molndal, Sweden, assignor to Gotaverken Angteknik AB, Goteborg, Sweden

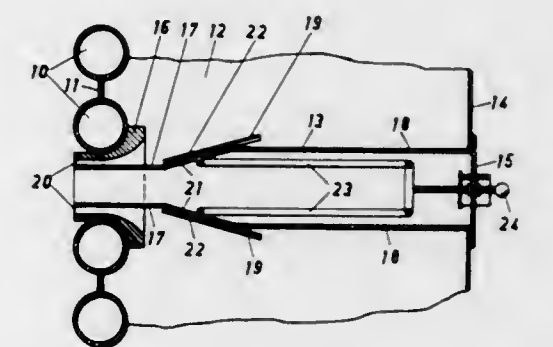
Filed May 2, 1974, Ser. No. 466,503

Claims priority, application Sweden, May 25, 1973, 73073678

Int. Cl. F22b 37/00

U.S. Cl. 122-235 B

1 Claim



1. In an air supply means for a furnace defined by walls having air passages, at least one air box fitted outside one of said walls and defined by at least one wall remote from the said one furnace wall for supplying air to a number of said passages, a control means at each of said passages including a sleeve having an end portion extending into the passage and having a narrower cross sectional area than that of the passage, to leave an annular clearance around its perimeter through which the air box communicates with the furnace, each of said sleeves extending from the said furnace wall to the said one air box wall, means for hermetically attaching each of the sleeves to the associated air box wall, an inspection opening being provided in the said one air box wall within the location where a sleeve is attached as well as means to close said inspection opening, air passage openings being provided in respective walls of each of said sleeves, adjustable closure means provided on each of the sleeves for cooperating therewith for regulating the flow of air to the furnace by way of the sleeve, wherein each passage is elongated, being considerably higher than wide, and two of its side walls defining a mating sleeve being substantially

parallel, said substantially parallel side walls including inward, parallel portions located at a distance corresponding to the width of the passage, less the clearance, as well as two outward portions located within the air box, and spaced a distance considerably bigger than the distance between the first mentioned portions, said inward and outward portions of each side wall being joined by an intermediate wall portion located at an angle to the said inward and outward portions an air passage opening of the sleeve being located in each of said inclined wall portions, the inclination of said intermediate wall portions being sufficient to permit a cleaning tool insertable through the pertaining inspection opening in the said air box wall to reach the clearance between the sleeve and the passage from inside the sleeve.

3,900,012

FUEL-AIR MIXTURE PROPORTIONING CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

Josef Wahl, Stuttgart, and Peter-Jürgen Schmidt, Schwiebendingen, both of Germany, assignors to Robert Bosch G.m.b.H., Gerlingen-Schillerhohe, Germany

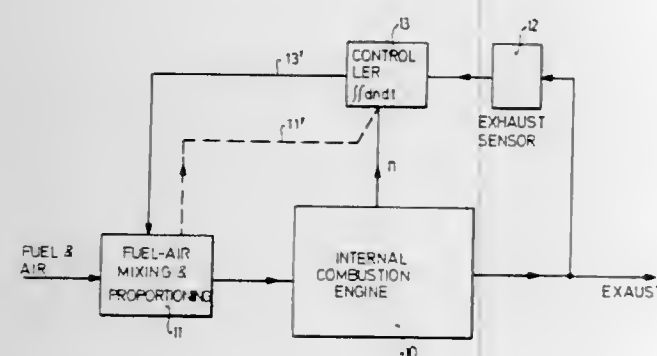
Filed Feb. 21, 1974, Ser. No. 444,486

Claims priority, application Germany, Apr. 28, 1973, 2321721

Int. Cl.² F02D 35/00

U.S. Cl. 123—32 EA

11 Claims



1. Proportioning control of fuel-air mixture composition applied to an internal combustion engine having means (12) sensing the composition of exhaust gases and providing an electrical signal; controllable means (11) applying fuel and air to the engine and controlling the relative proportion of fuel and air components of the resulting mixture; an integral controller (13) having an integrator (16) connected to and controlled by the sensor (12) and being connected to and controlling said controllable means (11) to process the electrical signal and controlling operation of said controllable means to provide a mixture resulting in minimum noxious components in the exhaust of the engine, wherein the improvement comprises means (36) providing an electrical pulse signal having a pulse repetition rate representative of engine speed, the pulses being of a predetermined pulse time duration, switching means (15) connected to the integrator (16) and controlled by said engine speed signal to command the integrator to integrate in steps in synchronism with engine speed during the pulse time; and wherein the integration rate of said integration steps occurring during said predetermined pulse time is high with respect to the integration rate during pulse gaps.

3,900,013

ELECTRONIC SYSTEM TO CONTROL OPERATOR CIRCUITS AS A FUNCTION OF SPEED OF MACHINE ROTATING MEMBER

Pietro Vignozzi, Rome, and Paolo Cerioli, Bologna, both of Italy, assignors to Fabbrica Italiana Magneti Marelli S.p.A., Milan, Italy

Filed Mar. 28, 1973, Ser. No. 345,675

Claims priority, application Italy, Mar. 28, 1972, 22461/72

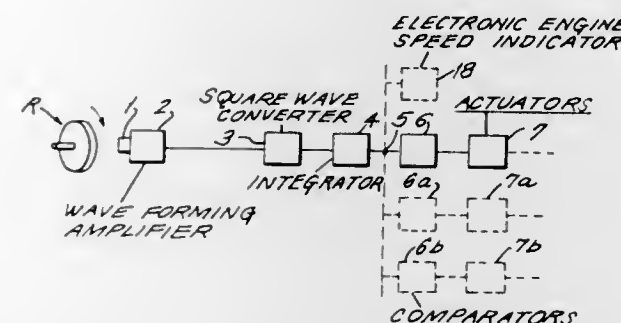
Int. Cl. F02p 11/00

U.S. Cl. 123—102

15 Claims

1. An electronic apparatus for controlling at least one operating circuit according to the revolving speed in r.p.m. of a rotating member coupled to a machine, said rotating member being rotated at a speed which varies as a rotational speed in r.p.m. of the machine varies, characterized by comprising in combination: pulsing means, cooperating with the rotating member, for providing square wave signals at first and second outputs, said signals having a constant average value and a frequency which varies as the revolving speed of said rotating member varies; converter means for receiving said signals from one of said first and second outputs, which signals have

a constant average value and converting said signals to square wave signals having the same frequency, but variable average value; integrator means for receiving said signals having a variable average value from said converter and converting these signals to a continuous signal which varies linearly with the frequency of the converter output signal; at least one comparator means for comparing said variable continuous signal from said integrator with at least one reference (threshold) signal having a value equal to a signal from said integrator



corresponding to a given r.p.m. of the machine (or given r.p.m. of the rotating member), each of said comparator means adapted to provide a control signal at an output thereof when the variable signal exceeds the reference signal associated with that comparator means; control means for acting on each of the operating circuits when energized by at least one of the control signal outputs of the comparator means; said control means being adapted to short-circuit the remaining of the first and second outputs of said pulsing means coupled to one of said operating circuits.

3,900,014

FUEL METERING DEVICE FOR INTERNAL COMBUSTION ENGINES

Lorenz Bundesen, Munchingen; Johannes Brettschneider, Ludwigsburg-Pflugfelden, and Heinrich Knapp, Leonberg-Silberberg, all of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

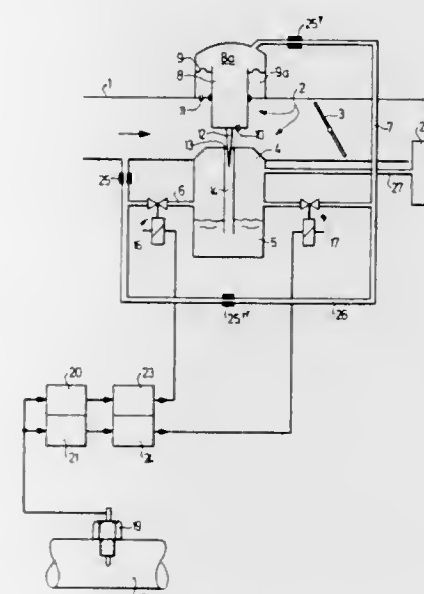
Filed July 25, 1973, Ser. No. 382,368

Claims priority, application Germany, Sept. 15, 1972, 2245418

Int. Cl. F02m 7/00; F02d 33/00

U.S. Cl. 123—119 R

6 Claims



1. In a fuel metering device for an internal combustion engine having an air-intake suction tube and an exhaust pipe, the device comprising, a carburetor having a fuel reservoir within which an air space is defined and including a fuel line leading from the fuel reservoir to the air-intake suction tube, and a measuring sensor located within the exhaust pipe and adapted for detecting the composition of the exhaust gas

produced by the engine and emitting corresponding intermittent output signals, wherein the amount of fuel metered into a given amount of air flowing through the suction tube is determined by the air pressures in the air space of a fuel reservoir and in said suction tube as well as by the output signal of the measuring sensor, the improvement comprising, in combination,

- a. air pressure measuring sources connected at least at two locations to the suction tube for detecting differences in air pressure in said suction tube,
- b. communicating means connected between said sources and to said air space,
- c. means connected to said measuring sensor and to said communicating means for controlling air flow from said sources through said communicating means as well as the air pressure in said air space in said fuel reservoir by means of intermittent output signals emitted by said sensor,
- d. means defining an air chamber, and
- e. means connecting the air chamber to said air space, wherein said air chamber serves to smoothen the air fluctuations in said air space.

3,900,015

SPARK IGNITION SYSTEMS FOR INTERNAL COMBUSTION ENGINES

David Mainprize, Polesworth, England, assignor to Lucas Electrical Company Limited, Birmingham, England

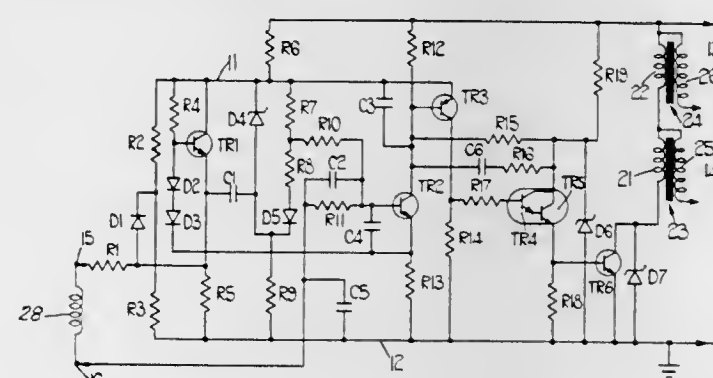
Filed May 30, 1973, Ser. No. 365,153

Claims priority, application United Kingdom, June 14, 1972, 27788/72

Int. Cl.² F02P 3/06

U.S. Cl. 123—148 E

8 Claims



1. A spark ignition system for an internal combustion engine comprising a pick-up driven by said engine which produces an output voltage waveform, a trigger circuit controlled by said pick-up to produce sparks when triggered, means for applying a bias to said output waveform, means for varying said bias up to a predetermined maximum in accordance with the amplitude of said waveform produced by said pick-up, said bias applying means and bias varying means further causing said trigger circuit to be triggered at a substantially constant point in said pick-up waveform up to a predetermined speed of said engine and for causing an advance in timing in proportion to increasing engine speed above said predetermined speed.

3,900,016

CAPACITOR DISCHARGE IGNITION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Georg Haubner, Berg; Walter Hofer, Schwabach, and Peter Schmaldienst, Nurnberg, all of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Feb. 4, 1974, Ser. No. 439,011

Claims priority, application Germany, Mar. 16, 1973, 2313273

Int. Cl.² F02P 1/17

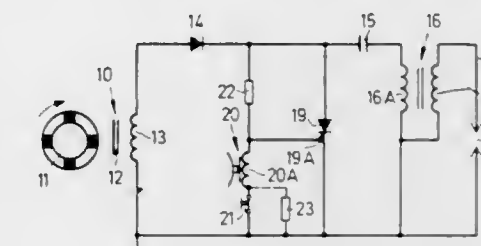
U.S. Cl. 123—148 CC

13 Claims

1. Electronically controlled ignition system of the capacitor-discharge type for an internal combustion engine, comprising,

in combination with a magneto generator (10), an ignition transformer (16) having low and high voltage windings, spark-timing pulse generator means (20), at least one spark plug (18) in circuit with said high-voltage winding, and control circuit means including the following:

- a capacitor (15) and a controlled semiconductor switch (19) arranged in circuit, so that said capacitor may be charged by said magneto generator (10) and discharged through said semiconductor switch (19) and said low-voltage winding (16A) of said transformer, said con-



trolled semiconductor switch having a control electrode, and ignition disabling means (21) in circuit both with said spark-timing pulse generator and with the control electrode of said controlled semiconductor switch, so connected as to produce, when said disabling means is put into disabling position, a voltage on said control electrode that, by the time the next charging halfwave of said magneto generator begins, at the latest, causes said controlled semiconductor switch to short-circuit the discharge circuit of said capacitor (15).

3,900,017

SPARK IGNITION SYSTEMS FOR INTERNAL COMBUSTION ENGINES

Keith Douglas Collins, Watford, England, assignor to Lucas Aerospace Limited, Birmingham, England

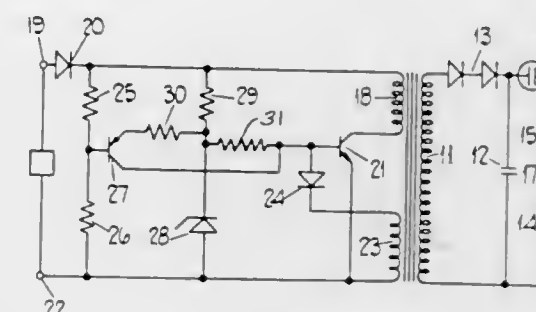
Filed June 24, 1974, Ser. No. 482,278

Claims priority, application United Kingdom, June 29, 1973, 31082/73

Int. Cl.² F02P 3/06

U.S. Cl. 123—148 E

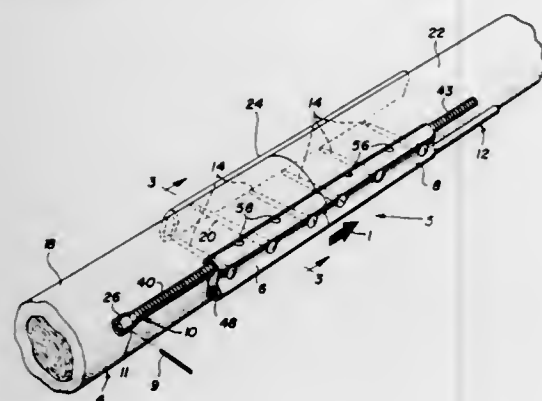
8 Claims



1. A spark ignition circuit for an internal combustion engine comprising a transformer having a secondary winding, a capacitor, a rectifier through which the capacitor is charged from the secondary winding, a pair of output terminals across which in use, is connected a spark plug, a voltage sensitive device connecting one plate of the capacitor to one of the output terminals, the other plate of the capacitor being connected to the other output terminal, a pair of DC supply terminals for connection in use, to a source of DC supply, a transistor, a primary winding on the transformer said primary winding being connected to the DC supply terminals through the collector emitter path of the transistor, a resistor for providing base drive to the transistor, a feedback winding on the transformer, said feedback winding being operable to cause switching of the transistor, and means responsive to the supply voltage for varying the effective value of said resistor, said means including a further transistor the conduction of which is dependent upon the supply voltage.

contiguous longitudinal bone segments, said apparatus comprising:

- a first elongated support member;
- a second elongated support member;
- means on said first support member for placement longitudinally adjacent one of said bone segments in direct contact therewith;
- means on said second support member for placement longitudinally adjacent another bone segment contiguous to said one bone segment and in direct contact therewith and substantially longitudinally aligned with said first support member;



means for releasably mounting said first and second support members to said bone segments;

a manually operable adjusting member;

means on said first and second support members for imparting longitudinal movement to one of said support members in response to operation of said adjusting member and for maintaining substantial longitudinal alignment of said first and second support members; and,

means for preventing rotational movement of said first and second support members during said longitudinal movement thereof.

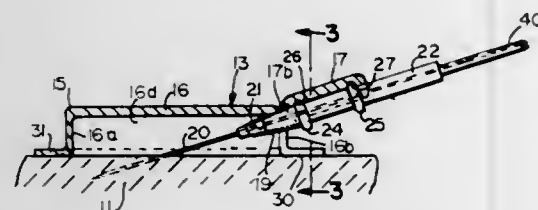
3,900,026

DEVICE FOR HOLDING AND PROTECTING INTRAVENOUS INJECTION NEEDLES

William H. Wagner, 5405 W. Eva St., Glendale, Ariz. 85301
Continuation-in-part of Ser. No. 417,111, Nov. 19, 1973, abandoned. This application Aug. 19, 1974, Ser. No. 498,254
Int. Cl.² A61M 5/00

U.S. Cl. 128-133

1 Claim



1. A device for securely holding and protecting an intravenous injection needle when said needle is inserted in a body part of a patient, said device being substantially transparent to permit visual inspection of said needle and its condition of insertion at all times and comprising a moderately rigid cover or bubble cap member of resilient plastic material adapted to overlie and cover a said needle inserted at a proper angle into said body part, said cover or cap member including integral needle locking means for securing a separable tapered friction joint between said needle and a conventional supply tube therefor, said locking means comprising a neck or extension element of channel section integrally connected to said cap or cover through a flexible hinge, the channel section being shaped to snugly engage and hold both a flange or collar on the needle and a flange or collar on the supply tube to prevent relative movement and inadvertent separation of said needle from the tube, said flexible hinge being formed to permit

angular movement of said neck or extension to accommodate said proper angle of needle insertion into the body part, and flange elements on said cover for resting on the surface of said body part.

3,900,027

PROCESS FOR PREPARING INTEGRAL ABSORBENT PAD BANDAGES AND PRODUCT

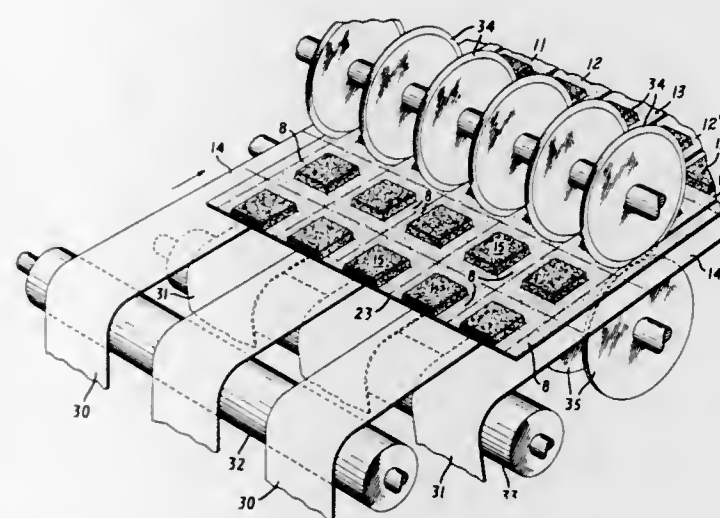
Cyril A. Keedwell, Lovedean, England, assignor to Pall Corporation, Glen Cove, N.Y.

Filed Jan. 2, 1974, Ser. No. 430,327

Int. Cl. A61F 7/02; A61I 15/00

U.S. Cl. 128-268

8 Claims



1. An integral absorbent pad bandage that is all in one piece of shaped nonwoven monolayer thermoplastic fibrous sheet material, comprising a nonwoven thermoplastic fibrous sheet material the fibers of which are self bonded together to define a unitary sheet of fibrous material formed into compressed edge and tab portions having a reduced thickness and porosity below 50% delimiting an absorbent pad portion of greater thickness having a porosity within the range from about 50 to about 98%.

3,900,028

INJECTION SITE FOR STERILE MEDICAL LIQUID CONTAINER

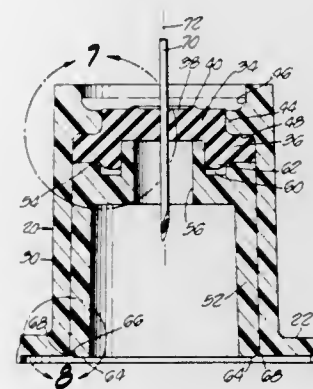
Charles J. McPhee, Sylmar, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Feb. 26, 1974, Ser. No. 445,852

Int. Cl.² A61J 1/00

U.S. Cl. 128-272

19 Claims



1. A container connected to a tube that has a puncturable resealable diaphragm secured within this tube, wherein the improvement comprises:

- a container with a preformed opening therein; a closure with a rigid transverse wall spanning the container opening, with a periphery of the closure joined to the container at a hermetic seal; said transverse wall having an opening that is substantially smaller than the container

opening and spaced from said hermetic seal; a rigid tube integrally formed with the transverse wall without any seam or joint therebetween, said tube having a passage communicating with the transverse wall opening; an inwardly extending flange integrally formed with the tube without any seam or joint therebetween; and a tubular retainer within said tube and spaced from said hermetic seal; said retainer, rigid tube, and flange combining to confine the diaphragm, and said retainer and flange engaging the diaphragm to form a hermetic seal whereby all external joints between the container and closure are remote from the diaphragm.

3,900,029

CLOSED SURGICAL EVACUATOR

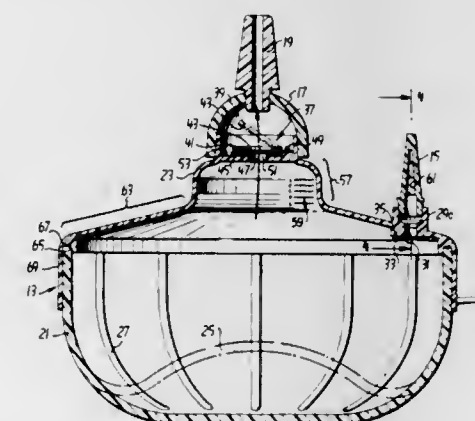
Irving Melnick, Danville, and George W. Oakes, Boston, both of Va., assignors to Irving Melnick, Danville, Va.

Filed Oct. 26, 1973, Ser. No. 410,240

Int. Cl. A61M 1/00

U.S. Cl. 128-278

14 Claims



1. A surgical evacuator for draining fluids from the body of a patient comprising:

- an evacuator bag, said evacuator bag being compressible and expandable to decrease and increase the internal volume of the evacuator bag;
- a drain inlet formed in said evacuator bag for connection to a drain tube adapted to drain fluids from the body of a patient into said evacuator bag;
- a purge port formed in said evacuator bag for evacuating fluids and air from said evacuator bag when said evacuator bag is compressed; and,
- a magnetic purge valve, said magnetic purge valve being a one-way valve mounted so as to allow fluid and air to exhaust from said evacuator bag through said purge port when said evacuator bag is compressed, said magnetic purge valve rapidly closing upon termination of said compression so as to prevent contaminants from entering the bag through said purge port, said magnetic purge valve comprising:
- a valve-seat formed on said evacuator bag about said purge port, said valve seat including a ferromagnetic portion surrounding said purge port; and,
- a valve-closure member being hingedly attached adjacent said purge port so as to be movable between a closed position flat against said valve seat and an open position moved away from said valve seat, said valve-closure member comprising a ferromagnetic portion and a resilient membrane portion, said ferromagnetic portion and said resilient membrane portion being associated and attached to one another so as to form a flexible resilient membrane spanning said exhaust port, said spanning portion of said resilient membrane being unsupported by a rigid member so that it is free to flex into said exhaust port in response to a decrease in pressure in said evacuator bag and thereby be pulled tightly over an edge of said valve seat when said valve-closure member is in said closed position;

one of said valve-seat ferromagnetic portion and said valve-closure member ferromagnetic portion being permanently magnetized.

3,900,030

CATAMENIAL TAMPONS

Robert N. Bashan, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed June 10, 1974, Ser. No. 477,564

Int. Cl. A61F 13/20

U.S. Cl. 128-285

4 Claims

1. In a catamenial tampon the improvement which comprises employing as the sorptive medium a flexible hydrophilic open-celled foam having uniformly dispersed therein from about 15 to about 30 percent by weight of a finely divided water-swelling polymer having a gel capacity of at least 10.

3,900,031

DISPOSABLE DIAPER WITH REINFORCED WAISTBAND AND TAPE ATTACHMENT MEANS

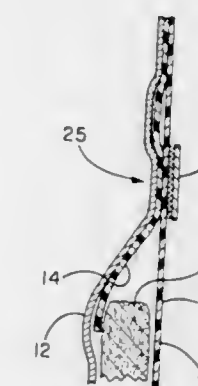
Dan D. Endres, Appleton, and Esther M. Lafond, Winnebago, both of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Aug. 22, 1974, Ser. No. 499,437

Int. Cl.² A41B 13/02; A61F 13/16

U.S. Cl. 128-287

2 Claims



1. An improvement in a disposable diaper in which the sealed side edges of the diaper provide leg-encircling means and the sealed ends of the diaper provide a body-encircling waistband, said diaper being of the type which comprises an absorbent filler sandwiched between a fluid-permeable cover and a thermoplastic film backing and which also has a narrow thermoplastic film strip internally disposed between said cover and said backing at the ends and which film strip is heat-sealed to said cover and said backing across said ends forming the waistband, said improvement comprising a structure in which one end of said filler is short of one heat-sealed end leaving a narrow filler free section at that end, said filler free section having a small laminated area at the edges of the diaper adjacent the short filler end, said laminated area being formed by heat-sealing the cover sheet, backing sheet and film strip together in that area, said laminated area extending inward from the diaper edges about 1 to 2 inches and being about three-eighths to five-eighths inch wide, said diaper being provided with pressure-sensitive adhesive tape strips with one end of a strip of said pressure-sensitive adhesive tape being affixed to said backing in each of said laminated areas and the other end of said strip extending beyond the respective diaper edge.

3,900,032

HOLDER FOR ABSORBENT PADS, SUCH AS INFANTS NAPKINS

Olof Torgny Heurlen, Sandasvagen 4, S-191 45 Sollentuna, Sweden

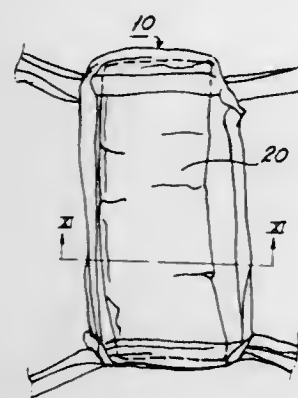
Filed Feb. 6, 1974, Ser. No. 440,175

Claims priority, application Sweden, Feb. 9, 1973, 7318822

Int. Cl. A61f 13/16

U.S. Cl. 128-290 H

10 Claims



1. A holder for an elongated absorbent pad intended to be secured to the body, for instance by being tied therearound, comprising a substantially rectangular center portion formed from a thin flexible sheet material, said center portion being extended in the longitudinal direction of the pad, and plural striplike fastening portions fixed to and extending from the corners of said center portion, the improvement wherein opening means in the form of holes or slits are formed in the center portion adjacent the corners thereof, and the free end of each strip portion being threaded into and the strip portion pulled through the adjacent opening means, the two strip portions adjacent each end of the center portion being pulled away from one another in opposite directions to tension said strip portions and cause twisting of the adjacent longitudinally extending edges of the center portion so that said center portion assumes a troughlike form for accommodating an elongated absorbent pad therein.

3,900,033

DILATOR FOR CERVICAL CANAL

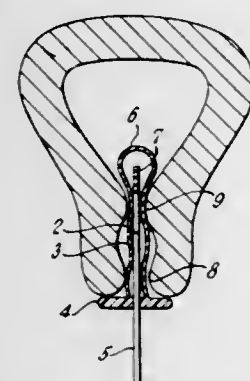
Robert Irvin Leininger, Joseph Ronald Preston, and Brenton Ray Lower, all of Columbus, Ohio, assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed Mar. 7, 1973, Ser. No. 338,697

Int. Cl. A61m 29/00

U.S. Cl. 128-344

10 Claims



1. A body canal dilating device comprising a relatively non-elastic, non-expandable, collapsible, inflatable envelope, having two portions, the first said portion in the inflated state having a relatively constant diameter and a length sufficient to occlude a canal having more than one os, and the other of said portions contiguous with the first said portion and being a terminal enlarged bulbous portion having a diameter in excess of said constant diameter in the inflated state, a tubular in-

serter member entering the first said portion and while inside thereof extending therethrough and into the inside of the other of said portions, a shield located in proximity of the entrance to the first said portion and engaged with said tubular member, said tubular member being adapted to permit entry into said envelope of a pressurizing fluid.

3,900,034

PHOTOCHEMICAL STIMULATION OF NERVES

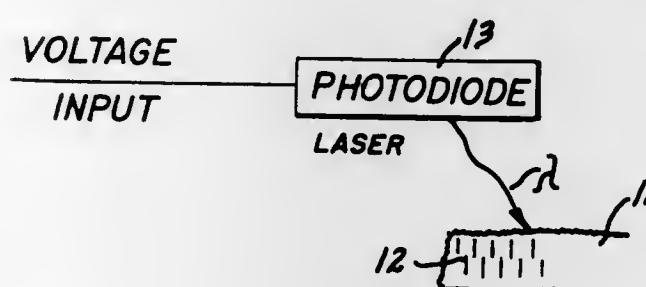
Joseph J. Katz, Chicago, and Thomas R. Janson, Joliet, both of Ill., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Apr. 10, 1974, Ser. No. 459,756

Int. Cl. A61N 1/00

U.S. Cl. 128-395

8 Claims



1. A method of stimulating a nerve comprising: placing a photodiode laser near said nerve; and irradiating said nerve with the output from said photodiode laser, said photodiode laser having a nondestructive intensity; whereby said nerve is stimulated.

3,900,035

THERAPEUTIC ELASTIC BANDAGE

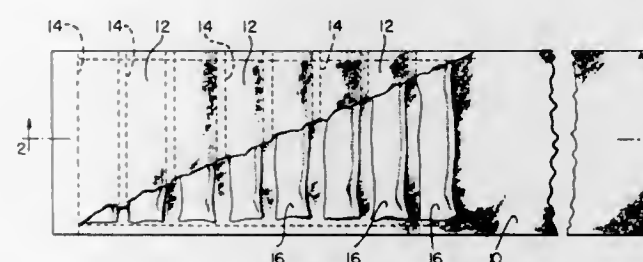
Dennis W. Welch, 3595 Post Rd., Apt. 17301, Warwick, R.I. 02888, and Milton H. Lipsky, 26 Francis Dr., Randolph, Mass. 02368

Filed July 3, 1974, Ser. No. 485,356

Int. Cl. A61F 7/00, 7/04

U.S. Cl. 128-402

6 Claims



1. A therapeutic elastic bandage for cold or heat treatments comprising an elastic bandage formed of textile covered elastic threads and having a plurality of spaced pockets, an elastic flexible latex bag positioned in each of said pockets, and a filling in said bags for providing cold or heat.

3,900,036

CORN HUSKING MACHINE

Ronald L. Anderson, 1698 Best Ln., Eugene, Oreg. 97401, and Harry T. Kessler, Jr., 4460 Mill, Eugene, Oreg. 97405

Filed Oct. 3, 1974, Ser. No. 511,621

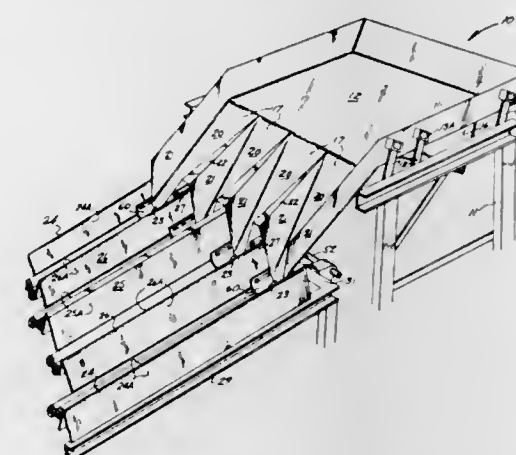
Int. Cl. A01f 7/02

U.S. Cl. 130-5 D

5 Claims

1. In a food article processing machine having a plurality of chutes down which elongate food articles travel during processing, pairs of upper and lower inclined rolls acting jointly on the chute delivered articles, pairs of elongate panels oppositely adjacent each pair of cooperating rolls confining food articles for passage along the rolls during which passage mate-

rial is removed from each article by concerted roll action, means powering said rolls, the improvement comprising, flexible pad members mounted intermediate each pair of panels, said pad members located subjacent the discharge end of each chute for reception of chute discharged food articles, at least one panel of each pair of panels being pivotally mounted on said machine and subjected to



oscillating motion, said flexible pad members partaking of said motion and operable to discharge the elongate food articles lengthwise on their sides upon the uppermost roll of each pair of inclined rolls to initiate removal of material from the article, said flexible pad members additionally serving to yield to a food article momentarily propelled thereagainst by roll action thereby avoiding article damage.

3,900,037

TOBACCO-SMOKE FILTERS

Henry George Horsewell, Totton, and John Anthony Luke, Woodlands, both of England, assignors to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Continuation of Ser. No. 95,370, Dec. 4, 1970, abandoned.

This application Nov. 27, 1972, Ser. No. 309,691

Claims priority, application United Kingdom, Dec. 24, 1969, 062825/69

Int. Cl. A24c 5/50

U.S. Cl. 131-10

10 Claims

1. A tobacco smoke filter comprising a rod formed from a sheet of tobacco smoke filter paper, said sheet having a surface coating of from about 5 to about 25% by weight, based on the weight of the paper, of cellulose acetate.

3,900,038

METHOD OF PREPARING AND PLACING ARTIFICIAL EYELASHES

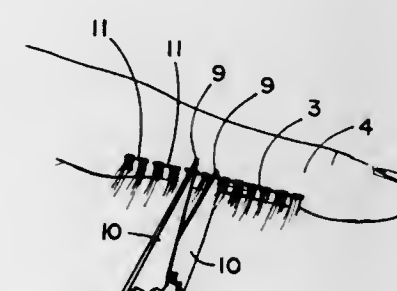
George Masters, Las Vegas, Nev., assignor to Beauty Masters, Ltd., Las Vegas, Nev.

Filed Mar. 19, 1974, Ser. No. 452,625

Int. Cl. A41G 3/00

U.S. Cl. 132-5

9 Claims



1. A method of preparing prefabricated artificial eyelashes having hairlike fibers extending outwardly from a flexible base

member which comprises cutting the base member into a plurality of sections having section lengths of 1/4 inch to 1/2 inch.

3,900,039

METHOD OF PRODUCING SHAPED SEMICONDUCTOR BODIES

Wolfgang Dietze; Manfred Schnöller; Tomislav Mladenovich, and Werner Baumgartner, all of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Oct. 29, 1973, Ser. No. 410,890

Claims priority, application Germany, Oct. 31, 1972, 2253498

Int. Cl. B08b 9/00; C23c 11/06

U.S. Cl. 134-3

2 Claims

1. In a method of producing a tube composed of silicon wherein a gaseous thermally decomposable silicon compound is brought into contact with a tubular carrier member composed of graphite so that a layer of silicon is deposited in a desired thickness about the peripheral surface of the carrier member which is then removed without destroying the so-formed silicon tube, the improvement comprising:

whereby the so-formed silicon tube is removed at room temperature by subjecting the silicon-coated carrier member to 100% fuming nitric acid and flushing the so-formed silicon tube with water to remove any residual material of said carrier member remaining in the silicon tube.

3,900,040

MACHINE FOR CLEANING CONTAINERS

Andreas Graber, and Claus Hörr, both of Oftringen, Switzerland, assignors to Niro-Plan AG Oftringen, Oftringen, Switzerland

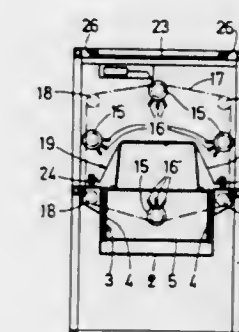
Filed Mar. 6, 1974, Ser. No. 448,481

Claims priority, application Switzerland, Mar. 13, 1973, 3660/73

Int. Cl. B08b 3/02, 9/08, 11/02

U.S. Cl. 134-127

2 Claims



1. A machine for cleaning articles to be washed, particularly containers, having a conveyor running within a framework to carry the containers to be cleaned past at least one set of nozzles connected to a source of high-pressure liquid, wherein an endless, self-contained means running at the same speed as the conveyor is provided for pressing the said containers against the conveyor in the region of the said nozzles, said means for pressing comprises two link belts running over guide members, disposed at a fixed distance from one another at the front and at the rear of the machine, respectively, and a plurality of elastic cords crossing each other under tension from the links of the one link belt to those of the other link belt, the sections of the two link belts adjacent to the bed of the conveyor in the regions of the said nozzles being disposed so close to the said bed that the cords are stretched around the containers which pass beneath them at that point.

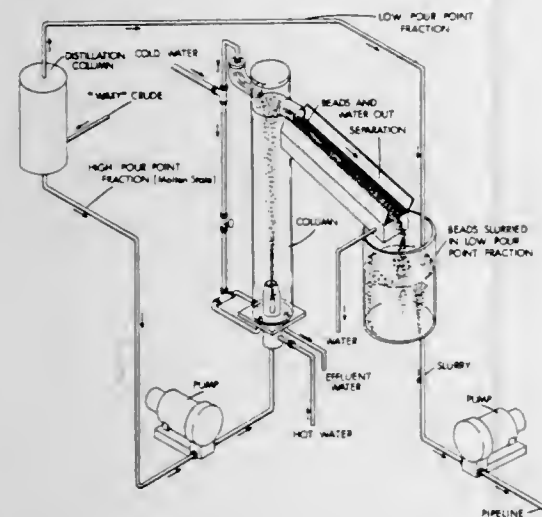
3,900,041

MODIFICATION OF PARTICLE HARDNESS IN WAXY CRUDE OIL SLURRIES

Keith M. Kersch; George A. Pouska; Dennis E. Drayer, and James E. Tackett, Jr., all of Littleton, Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed May 13, 1974, Ser. No. 468,969

Int. Cl. F17d 1/16; B65g 53/30; C10g 43/02
U.S. Cl. 137-13 26 Claims



1. In a process for transporting waxy petroleum crudes by fractionating the crude into at least a wax fraction and a liquid fraction, forming substantially round particles of wax, slurring the wax particles in a liquid hydrocarbon comprised of the liquid fraction and transporting the slurry, the steps comprising introducing molten wax having no substantial crystalline structure into a hot, wax immiscible fluid flowing cocurrent to the introduction of the molten wax and at flow rates sufficient to form substantially round particles having a substantially smooth outer shell and thereafter introducing the wax particles into a colder wax immiscible fluid at a sufficiently low temperature to substantially solidify the wax particles.

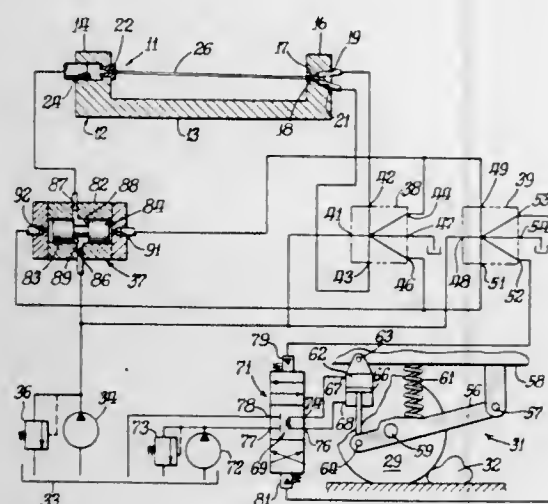
3,900,042

FLUIDIC ACCELEROMETER

Dale H. Unruh, and Frederick D. Proksch, both of Peoria, Ill., assignors to Caterpillar Tractor Company, Peoria, Ill.

Filed Jan. 28, 1974, Ser. No. 437,205

Int. Cl.² F16K 17/36
U.S. Cl. 137-38 8 Claims



1. A fluidic system for detecting acceleration and for producing an acceleration signal in response thereto comprising: fluid flow receiver means having a first flow receiving port, fluid jet forming nozzle means having a flow orifice, means for supplying fluid under pressure to said nozzle means whereby a fluid jet is ejected therefrom,

support means holding said nozzle means in spaced apart relationship from said receiver means with said jet being directed towards said receiver port across an unobstructed gap, fluidic signal output means communicated with said first receiving port for generating fluidic signals in response to brief departures of the pressure at said receiver port receiver a predetermined value, and compensating means for varying the flow passage to said jet nozzle to restore said receiver port pressure to said predetermined value in response to relatively prolonged departures of said pressure from said predetermined value.

3,900,043

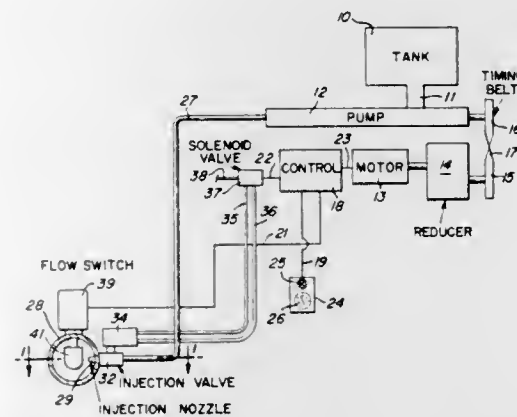
HYDRODYNAMIC DRAG REDUCTION DISPENSER-METERING SYSTEM

James Harold Bowen, Somerville, N.J., and Kenneth John Sollman, Yorktown Heights, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 151,374, June 9, 1971, abandoned.

This application July 16, 1973, Ser. No. 379,706

Int. Cl. F16k 19/00
U.S. Cl. 137-101.21 5 Claims



1. A hydrodynamic drag reduction dispenser metering system for injecting a slurry of a friction reduction agent in a liquid vehicle into a controlled aqueous stream comprising in combination, a dispensing tank for containing and dispensing said slurry, a positive displacement pump associated with said dispensing tank for propelling varying amounts of said slurry, an injection valve attached contiguously to an injection nozzle in contact with said controlled aqueous stream, conduit means communicating with said injection valve and said pump for delivering said slurry from said dispensing tank to said controlled aqueous stream through said injection valve and nozzle, said injection valve being responsive to a positive flow of said controlled aqueous stream through being adapted to close when said positive flow ceases, said injection valve being adapted to provide when required a temporary purge passage from said nozzle to the atmosphere for cleaning gel from said nozzle by back pressure from said controlled aqueous stream.

3,900,044

DETACHABLE TROUGH STRUCTURE

Leon Louis Seidman, 503 Elm Ave., Takoma Park, Md. 20013

Filed Sept. 21, 1973, Ser. No. 399,547

Int. Cl.² B05C 5/02, 11/10; B05D 1/26
U.S. Cl. 137-360 11 Claims

1. A detachable trough structure comprising a trough body formed by a first longitudinal wall having a planar outer surface, a top edge, a bottom edge and end edges, and a second longitudinal wall having a top edge, a bottom edge, and two end edges, said walls being of flexible elastomeric material and being secured together along the bottom edge of each wall in an angular spaced relationship to form a trough space therebetween having a generally V-shaped cross sectional configuration, said walls thus forming a triangular trough channel having an open top, a closed bottom, and opposed open ends, said

3,900,046

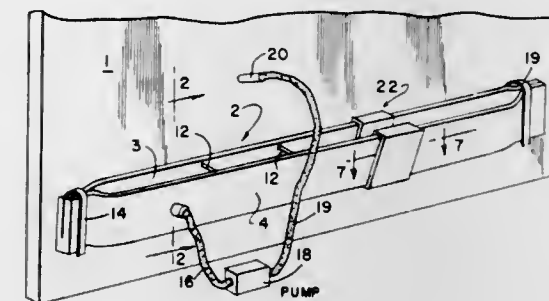
CONTROL VALVE FOR ACCUMULATOR SYSTEMS, ESPECIALLY FOR SERVO BRAKES OF MOTOR VEHICLES

Manfred H. Burckhardt, Waiblingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Germany

Filed Dec. 12, 1973, Ser. No. 423,895

Claims priority, application Germany, Dec. 13, 1972, 2260799

Int. Cl. F16k 11/10
U.S. Cl. 137-596 17 Claims



on the planar surface of the first wall for securing the trough structure to a support surface for the collection of a liquid flowing along said support surface above the trough channel.

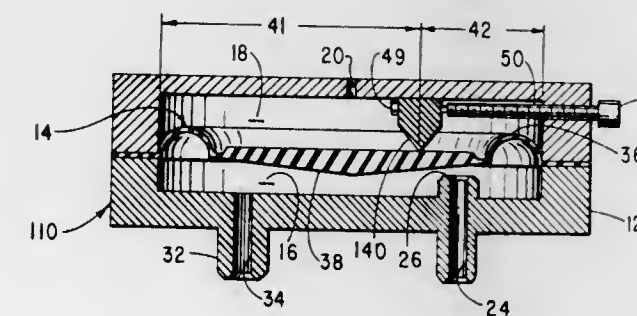
3,900,045

FULCRUM PRESSURE REGULATOR

Donald K. Murrell, Los Angeles, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Sept. 27, 1973, Ser. No. 401,489

Int. Cl. F16k 31/385
U.S. Cl. 137-505.38 7 Claims



1. A pressure regulator comprising a casing having inlet means and outlet means; diaphragm means mounted in said casing to define a pressure chamber communicating with said inlet means and said outlet means; regulating valve means disposed in said casing and including a valve seat; and fulcrum means mounted at an off-center position in said casing and with an elongate edge engaging said diaphragm means to define a first control portion of said diaphragm means and a second valve member operating portion thereof, such that the first portion of said diaphragm means has a greater area exposed to pressure in said pressure chamber than the second portion thereof, said second portion of said diaphragm means being movable thereby to cooperate with said valve seat and control fluid flow in said casing whereby said diaphragm means pivots about said fulcrum means as pressure in said pressure chamber varies to move said second valve member operating portion relative to said valve seat and regulate pressure at said outlet means; said fulcrum means including means movable along and relative to said diaphragm means to change the ratio of the areas of said first and second portions and adjust the regulated pressure at said outlet means.

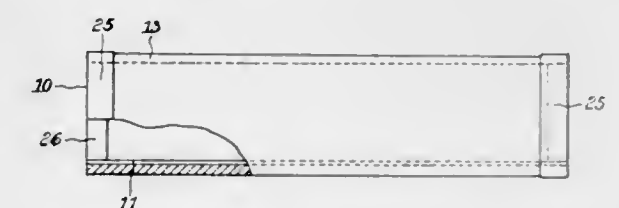
3,900,047

ELECTRICALLY HEATED PLASTIC PIPE

Douglas Fraser Heppell, Lake Cowichan, Canada, assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed June 21, 1974, Ser. No. 481,644

Int. Cl.² E03B 7/10; F16L 53/00
U.S. Cl. 138-33 3 Claims



1. A plastic pipe which is fitted with an electrical conductor on an internal wall of the pipe that runs the length of the pipe, said conductor furnishing a path for a flow of electrical current to heat the contents of the pipe, said conductor being

electrically connected to electrical contact means adjacent to and inside each end of the pipe.

3,900,048

REINFORCED THERMOPLASTIC PIPE

Allan B. Isham, Newark, and Wilbur Shenk, III, Granville, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 164,376, July 20, 1971, abandoned.

This application Feb. 14, 1974, Ser. No. 442,717

Int. Cl. F16I 9/12

U.S. Cl. 138—144

1 Claim



1. A pipe comprising an unreinforced tubular layer comprising a polyvinyl chloride tube placed under compression by criss-crossing filament-wound, impregnated strands of glass fibers, the impregnant of which comprises from 35 to 55 percent by volume of the impregnated strand of a thermoplastic, noncrosslinking material, said impregnant being selected from the group consisting of polyvinyl chloride, chlorinated polyvinyl chloride, acrylonitrile-butadiene-styrene terpolymer and mixtures of said acrylonitrile-butadiene-styrene terpolymer and vinyl resins, said impregnated strands being partially embedded in said layer of thermoplastic resin and being solvent-fused to each other and to said tubular layer to encapsulate and protect the fibers.

3,900,049

APPARATUS FOR GUIDING WEFT THREAD CARRIERS IN THE SHED OF A LOOM OF A PROGRESSIVE SHEDDING TYPE

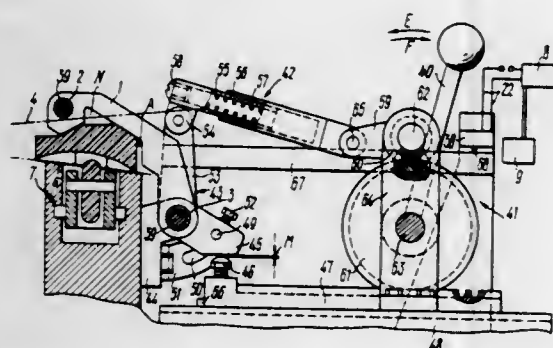
Alexandr Alexandrovich Zabotin, ulitsa Profsojuznaya, 96, kv. 85; Eduard Arshakovich Onikov, ulitsa Panferova, 5 Korpus 2, kv. 106; Alexandr Lvovich Galperin, ulitsa Moldagulovoi, 10, korpus 3, kv. 166, all of Moscow; Evgeny Dmitrievich Loschilin, Kashirskoe shosse, 36, kv. 87, Moskovskoi oblasti; Valerian Petrovich Lileev, ulitsa Nagornaya, 46/48, korpus 20, kv. 2, Moscow; Roman Anatolievich German, ulitsa Davydovskaya, 30, kv. 50, Moscow; Zinovy Yakovlevich Rutkevich, 8 kvartal, korpus 18, kv. 21, Moscow, and Boris Alexandrovich Sakharov, ulitsa Krzhizhanovskogo, 24/35, korpus 6, kv. 404, Moscow, all of U.S.S.R.

Filed May 16, 1973, Ser. No. 360,944

Int. Cl. D03d 47/26

U.S. Cl. 139—12

3 Claims



1. Apparatus for guiding weft thread carriers in the shed of a loom of a progressive shedding type, including a drive and a control circuit of the drive, the apparatus comprising plates embracing said weft thread carrier for guiding it in said shed; bars on which said plates are mounted in spaced relationship for the passage of warp threads therebetween, said plates being electrically connected to said control circuit of said drive, said weft thread carrier being adapted upon having

encountered an obstacle in said shed to cooperate with said plates to break said electric control circuit of said drive and thus to de-energize said drive, said electric control circuit of said drive including one of said plate-supporting bars and at least every other said plate, said plates being mounted on said bars by means of insulating bushings, said weft thread carrier having movable electric contacts adapted to protrude therefrom upon said weft thread carrier having encountered an obstacle in said shed and to engage said plates, whereby said electric control circuit of said drive is broken.

3,900,050

REED DENT ARRANGEMENT

Edgar Strauss, Ruti, Zurich, Switzerland, assignor to Ruti Machinery Works Ltd., Ruti, Zurich, Switzerland

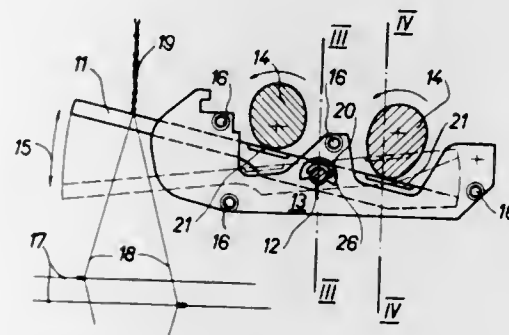
Filed Jan. 28, 1974, Ser. No. 436,866

Claims priority, application Switzerland, Feb. 2, 1973, 1540/73

Int. Cl. D03D 47/26

U.S. Cl. 139—12

8 Claims



1. A reed dent arrangement for a wave-motion loom wherein the reed dents are arranged between laminar guide elements, are of elongate lamella-like shape, and travel at one narrow side on a drive camming means due to which there are imparted to them a rocking movement which takes place about a pivot extending perpendicular to their broad sides, characterized in that each reed dent has at least at one location a thickened portion which bears on said drive camming means and said pivot, and in those zones over which the thickened portions extend and over which they travel, the guide elements are formed with recesses.

3,900,051

APPARATUS AND METHOD FOR SUPPLYING PILE WARP THREADS IN A LOOM FOR WEAVING TERRY CLOTH

Robert Bucher, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Apr. 2, 1974, Ser. No. 457,267

Claims priority, application Switzerland, Apr. 6, 1973, 4914/73

Int. Cl. D03D 39/22, 49/12

U.S. Cl. 139—25

14 Claims

1. An apparatus for supplying pile warp threads in a loom for weaving terry cloth comprising a pile warp release means for delivering pile warp threads at a constant tension to a shed; a storage means downstream of said pile warp release means for forming a reserve of pile warp thread upstream of the shed between successive full beat-ups of the loom; and a clamping means between said storage means and the shed

for selectively releasing the reserve of pile warp thread from said storage means during a full beat-up to supply a

3,900,053

DEVICE FOR CUTTING BENDING AND CORRUGATING THE LEADS OF ELECTRIC COMPONENTS

Thomas Weresch, Augartenstrabe 86, D-7500 Karlsruhe, Germany

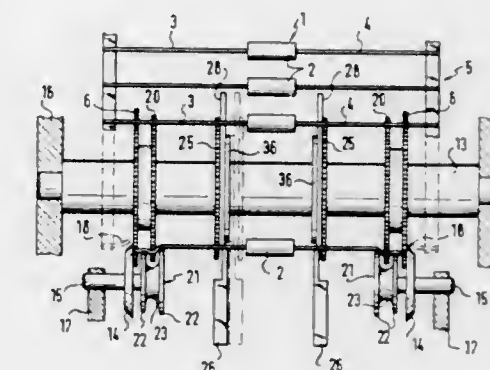
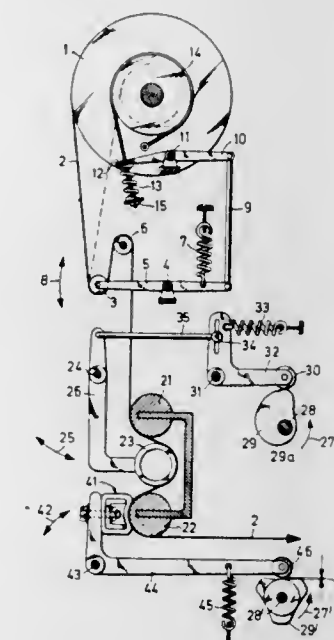
Filed Nov. 2, 1973, Ser. No. 411,929

Claims priority, application Germany, Nov. 2, 1972, 2256290

Int. Cl. B21f 45/00

U.S. Cl. 140—105

51 Claims



measured length of pile warp thread in a substantially untensioned state.

3,900,052

LUG STRAP FOR WEAVING LOOM

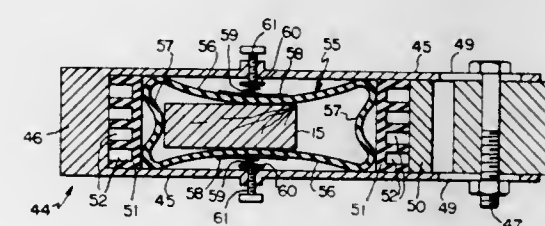
Charles E. Benedict, Tallahassee, and Calvin C. Oliver, Gainesville, both of Fla., assignors to Wayne H. Coloney Company, Inc. and Controlled Acoustics, Inc., both of Tallahassee, Fla.

Filed Jan. 15, 1974, Ser. No. 433,592

Int. Cl. D03D 49/40

U.S. Cl. 139—153

6 Claims



1. Apparatus for driving and controlling the picker sticks of a fly-shuttle weaving loom comprising a generally U-shaped lug strap having a pair of generally parallel arms connected by a bight portion, at least one bumper mounted on said lug strap, a friction applying member carried by said lug strap, said member having a pair of opposed side walls and at least one end wall, each of said side walls having first portions engaging the arms of said lug strap and a second portion extending inwardly to frictionally engage the picker stick, said end wall having first portions engageable with said bumper and a second portion spaced therefrom in a position to engage and cushion said picker stick when the stick is moved against the same, and means for moving said lug strap.

3,900,054

AUTOMATIC ICING MACHINE FOR CAKES

Brian Hamer, Brampton, and David G. Doman, Mississauga, both of Canada, assignors to Kitchens of Sara Lee (Canada) Ltd., Bramalea, Canada

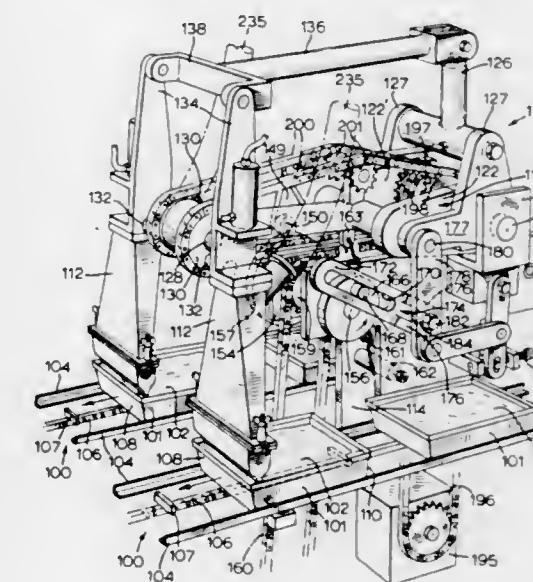
Filed Feb. 7, 1974, Ser. No. 440,342

Claims priority, application United Kingdom, Feb. 14, 1973, 7311/73

Int. Cl. B65B 3/04

U.S. Cl. 141—1

14 Claims



1. Apparatus for sequentially dispensing material into a plurality of containers, comprising:

conveying means for conveying said containers sequentially in a first direction such that each container has a leading edge and a trailing edge,
 nozzle means above the containers for delivering material to each container sequentially,
 means for inserting the nozzle means into each container rearwardly adjacent the leading edge thereof, for holding said nozzle means in the container as the latter passes under the nozzle means in said first direction, and for withdrawing the nozzle means out of the container when the container has advanced so as to bring the nozzle means to a position forwardly adjacent the trailing edge thereof, said means for inserting the nozzle means including a rotatable member having an axis of rotation and a pivot point eccentric of said axis, means for intermittently and repeatedly rotating said rotatable member a full turn about said axis, and linking means for transferring the motion of said pivot point to the nozzle means such that the nozzle means undergoes loop movement which is at least a facsimile of the movement of the pivot point, said loop movement including initial motion at a first level in the direction of container movement, intermediate motion at a higher level in the opposite direction from that of container movement, and final motion at said first level in the direction of container movement, said loop movement of the nozzle means resulting in the withdrawal of the nozzle means from one container and the insertion of the nozzle means into the next subsequent container, and control means for initiating the dispensing of material from the nozzle means upon insertion and for terminating said dispensing upon withdrawal.

3,900,055

BAG PACKING APPARATUS

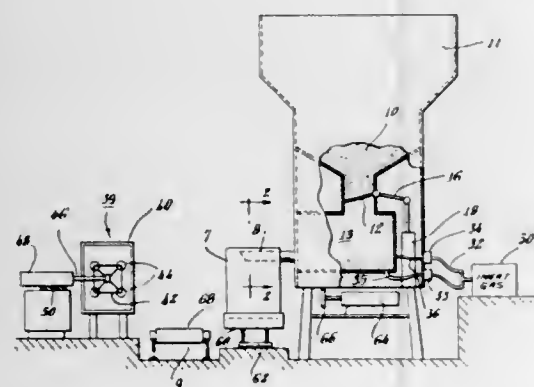
Allan L. Henry, New Eagle, Pa., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Jan. 16, 1974, Ser. No. 433,638

Int. Cl. B65b 1/04

U.S. Cl. 141-67

6 Claims



1. A bag packing apparatus having an operating cycle including a fill mode and a dwell mode comprising:
 - storage means for receiving and containing a powdered or finely granulated material which is to be packed into a bag;
 - an elongated spout communicating with said storage means; means for conveying material from said storage means to said spout and for causing the material to flow from said spout;
 - a first material flow control means for cyclically enabling the discharge of material from said spout into a bag positioned on said spout during a fill mode interval of said operating cycle and for disabling the flow of material from said spout during a dwell mode interval of said operating cycle; wherein said first material flow control means includes a valve means for enabling or disabling the flow of material from said spout actuating means for activating said valve between flow enabling and flow disabling positions, a pneumatic bistable fill cycle control valve having first and second outlet lines, and

means coupled to said fill cycle control valve and said actuating means for causing the activation of said material flow control valve to a closed position when said fill cycle valve is in a first state and to an open position when said fill cycle valve is in a second state;
 means for supplying and positioning an empty bag about said spout and for discharging a filled bag from said spout during a dwell mode interval of said operating cycle; and a second material flow control means including a switch, said switch positioned at said spout for engagement by a bag when a bag is positioned on the spout, said second material control means arranged for disabling the flow of material during a fill mode interval of said operating cycle when a bag on said spout becomes disengaged from said switch wherein said second flow control means includes a pneumatic signalling element coupled to said fill cycle control valve and responsive to said switch for causing said fill cycle control valve to switch from said second to said first condition when a bag becomes disengaged from said switch.

3,900,056

VAPOR RECOVERY NOZZLE

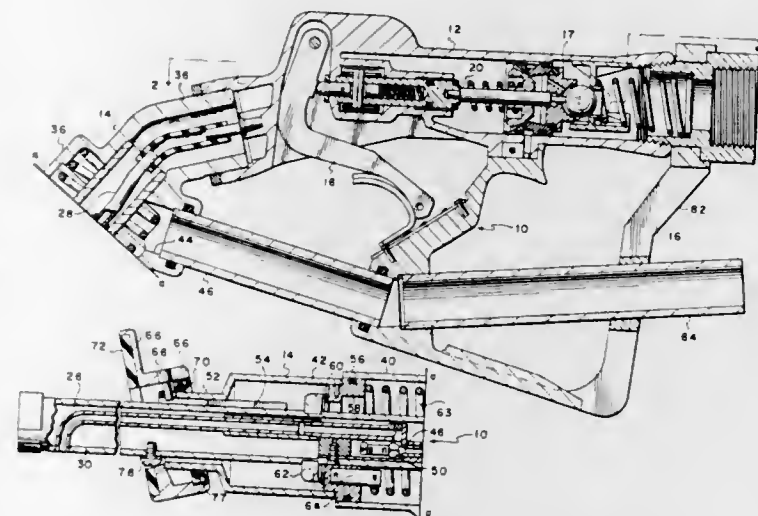
Virgil Victor Giardini, Connerville, Ind., and Richard Gordon Bisker, Salisbury, Md., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Sept. 23, 1974, Ser. No. 508,581

Int. Cl. B65b 1/28

U.S. Cl. 141-93

8 Claims



1. An improved gasoline dispensing nozzle of the automatic shut-off type for use in connection with vapor recovery systems including a body containing a flow control valve, induction means for causing gas flow through a nozzle, a trigger for activating the flow control valve and pressure responsive latch means operable in conjunction with the induction means to release the flow control valve regardless of the trigger position, the improvement comprising:
 - an elongate hollow spout;
 - a conduit extending substantially through the interior of said spout for connection with the induction means and including valve means for opening and closing said conduit;
 - a hollow member for connecting said spout in fluid communication with the body and having an enlarged portion forming a portion of a vapor passageway with said spout and a port therethrough providing fluid communication between said vapor passageway and vapor recovery system;
 - a hollow piston loosely encircling said spout and forming a portion of said vapor passageway therewith, said piston having a first end portion slidably and sealingly received in said hollow member and having a second end portion; an articulated seal assembly located on and movable with the second end of said piston in sealing relationship therewith and loosely encircling said spout, said assembly

forming another portion of the vapor passageway having a seal member thereon arranged to sealingly engage a projecting surface on a tank to be filled whereby said vapor passageway provides communication between the tank and vapor recovery system; and,
 valve operating means carried by said piston for operating said valve means to open said conduit when said piston is moved into said hollow member permitting operation of said nozzle and operating said valve means to close said conduit preventing operation of said nozzle.

3,900,057

EXPANDABLE BIT SCREW HOLDING SCREWDRIVER

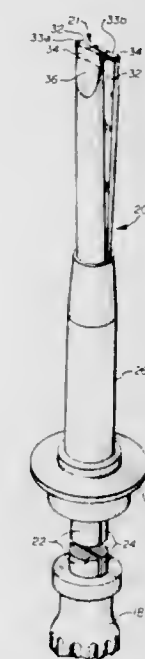
Earl Benitz, P.O. Box 106, Petersburg, Alaska 99833

Filed Apr. 23, 1974, Ser. No. 463,208

Int. Cl. B25b 15/02

U.S. Cl. 145-50 E

2 Claims



1. An expandable bit screw-holding screwdriver comprising:
 - a. a handle;
 - b. an elongated split shank having one end affixed to said handle, said elongated split shank comprising two identical elongated sections, one lying on either side of the longitudinal axis defined by said elongated split shank, each of said sections including:
 1. a flat contact face extending substantially the entire length of said section and being substantially equal in width to the width of said section, said flat contact faces of said sections lying in overlapping contacting engagement with one another along substantially their entire length, the amount of said overlap decreasing with distance at least near the end of said elongated split shank remote from the end thereof affixed to said handle;
 2. an overlapping driving tip formed in the end of said section remote from the end of said elongated split shank affixed to said handle, the overlapping driving tips of both of said sections cooperating to form an expandable screwdriver bit, each of said overlapping driving tips being wedge-shaped over their entire width when viewed in a plane orthogonal to the longitudinal axis of said elongated split shank, one surface of said wedge-shape being defined by the flat contact face of said section, the other surface of said wedge-shape defining a bit face, said bit face diverging inwardly with respect to said flat contact face when viewed in said plane orthogonal to said longitudinal axis of said elongated split shank, said bit face also tapering inwardly toward said handle and said longitudinal axis; and,
 3. an outer-tip-divergence-control surface extending substantially the entire distance between said handle and said overlapping driving tip; and,
 - c. a sleeve slidably mounted on said elongated shank about

3,900,058

MULTIPURPOSE IMPACT HAND TOOL

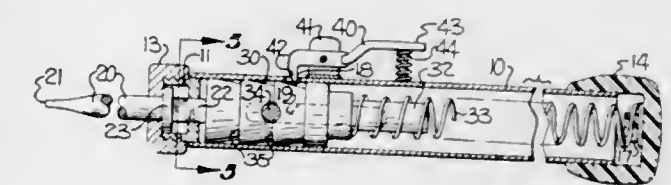
Meade McArdle, Rt. 2, Box 73A, Horse Shoe, N.C. 28742

Filed Sept. 12, 1974, Ser. No. 505,468

Int. Cl. B25B 19/00

U.S. Cl. 145-50 R

10 Claims



8. An impact hand tool particularly adapted for driving a threaded fastener and for applying an impact thereto when needed to facilitate starting the fastener or to overcome binding thereof, said hand tool comprising an elongate, tubular body portion having an elongate slot opening through the side wall thereof extending longitudinally along a portion of the length of the body portion, an elongate bit extending axially from one end of the body portion and being mounted for axial sliding movement relative thereto, said bit having means at the inner end thereof cooperating with the body portion to prevent rotative movement of the bit relative to the body portion, an impact hammer mounted for axial sliding movement within the tubular body portion toward and away from the bit, a compression spring cooperating with the impact hammer and with the body portion for biasing the impact hammer toward the bit, finger-engagable means carried by the impact hammer and extending through the elongate slot opening in the body portion and being adapted to facilitate moving the impact hammer longitudinally away from the bit against the biasing force of the spring means and to a cocked position whereby upon subsequent release of the finger-engagable means, the impact hammer is thrust by the compression spring toward the bit to force the bit outwardly from the body portion for imparting an impact to the fastener.

3,900,059

MOUNTING DEVICE

Lawrence J. Kirk, New Shrewsbury, N.J., and Marshall G. Baldwin, Westport, Conn., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Sept. 10, 1973, Ser. No. 395,421

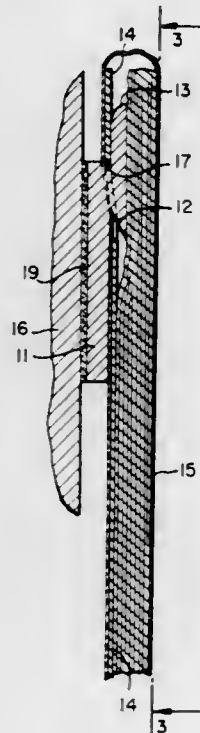
Int. Cl. A47f 5/00; B65d 31/00

U.S. Cl. 150-1

7 Claims

1. A mounting device for supporting a package including a stiffener card comprising,
 - a. a base portion having an outer planar surface and a first inner planar surface generally parallel to said outer planar surface,
 - b. a hook portion adjacent to and integral with said base portion,
 - c. said hook portion having a second inner planar surface generally parallel to and spaced from said outer planar surface and said first inner planar surface,

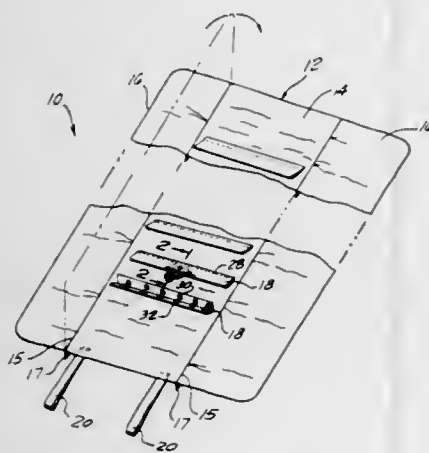
- d. said outer and second inner planar surfaces being partially coextensive, said outer planar surface extending below said second inner planar surface, and said second inner planar surface extending above said outer planar surface,
- e. an undercut surface extending from said first inner planar surface to said second inner planar surface,



3,900,060 JEWELRY BAG

Antoine Shammas, 66 Trinity Pl., New York, N.Y.
Filed June 12, 1973, Ser. No. 369,310
Int. Cl.² B65D 85/02
U.S. Cl. 150—52 R

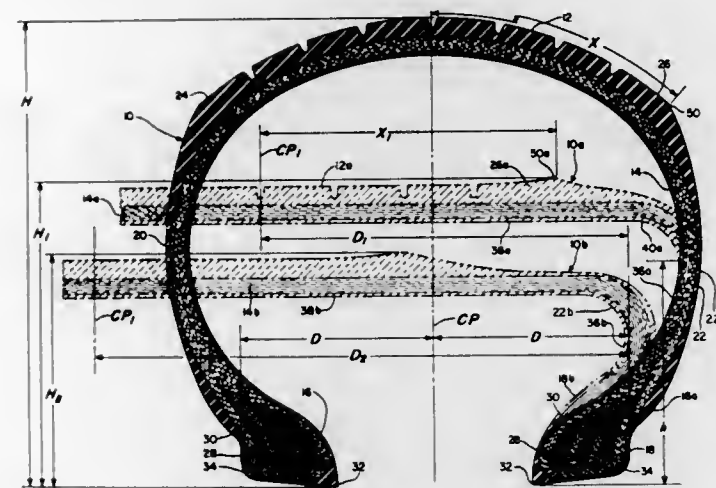
18 Claims



16. A device for supporting and storing jewelry comprising a first relatively flat mounting sheet, at least one pair of operatively associated jewelry support flaps secured to said mounting sheet, and securing means mounted on said flaps for securing individual pieces of jewelry between said pair of flaps; said securing means comprising cooperating male and female snap members respectively mounted on the opposite flaps of said pair of cooperating flaps.

3,900,061
METHOD OF FABRICATING LARGE TIRES
Walter W. Curtiss, Jr., Brimfield, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Jan. 12, 1973, Ser. No. 323,166
Int. Cl.² B60C 5/00
U.S. Cl. 152—352

10 Claims

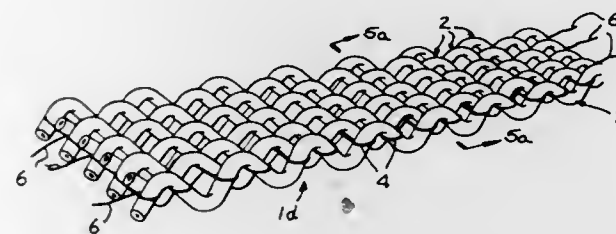


6. A pneumatic tire having a tread portion, a pair of sidewall portions, a pair of bead portions, a carcass extending from bead portion to bead portion, and an outside inflated unloaded diameter greater than 200 inches, said tire when in the configuration in which it is in, when it is in the curing mold, having a section height which is equal to between 50 and 80 percent of the inflated unloaded section height and having a cross-sectional contour length between the beads which is at least 2 percent greater than the cross-sectional contour length of the tire when inflated and unloaded.

3,900,062
ZERO DEGREE BELTED TIRES BUILT WITH HIGH SOFT STRETCH BELT-FORMING TAPES

James J. Neville, Kinnelon; Wesley Ferrell, Wayne, and Daniel Shichman, Cedar Grove, all of N.J., assignors to Uniroyal, Inc., New York, N.Y.
Division of Ser. No. 160,675, July 8, 1971. This application May 10, 1973, Ser. No. 359,118
Int. Cl. B60c 9/16
U.S. Cl. 152—361 FP

69 Claims



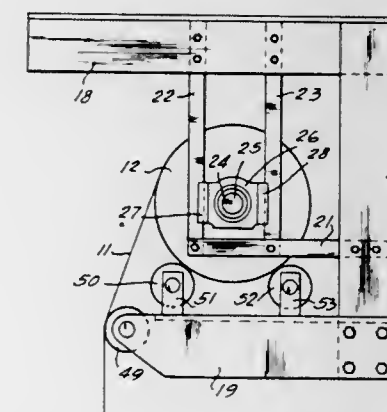
1. A 0° belted tire, comprising:
 - A. a toroidal carcass;
 - B. a rubber tread extending from one shoulder of the tire to the other in surrounding relation to the crown region of said carcass; and
 - C. a 0° belt disposed beneath said tread and circumferentially of said carcass;
 - D. said belt being constituted of
 1. a plurality of reinforcing cords
 2. extending as a unit in a substantially straight condition helically circumferentially of said carcass
 3. for at least a plurality of full turns
 4. at an angle of substantially 0° to the mid-circumferential plane of said carcass,

5. at least two of said plurality of said cords in each turn thereof in said belt being disposed in side by side relation to one another widthwise of said belt and thereby being arranged in a multiple lead screw thread-like formation over the width of said belt, and
- E. each of said cords being locally weakened at a multiplicity of longitudinally spaced portions thereof,
 1. said weakened portions of each cord being out of lateral alignment with the weakened portions of at least each next adjacent cord, and
 2. the extent of weakening of each cord being sufficient to reduce the tensile strength thereof at each of said weakened portions to between about 5 percent and about 20 percent of its full tensile strength.

3,900,063
ROLLER CURTAIN
Max F. Roller, Lincolnwood, Ill., assignor to J. H. Channon, Inc., Chicago, Ill.

Filed June 18, 1973, Ser. No. 370,960
Int. Cl.² E06B 9/08
U.S. Cl. 160—310

6 Claims



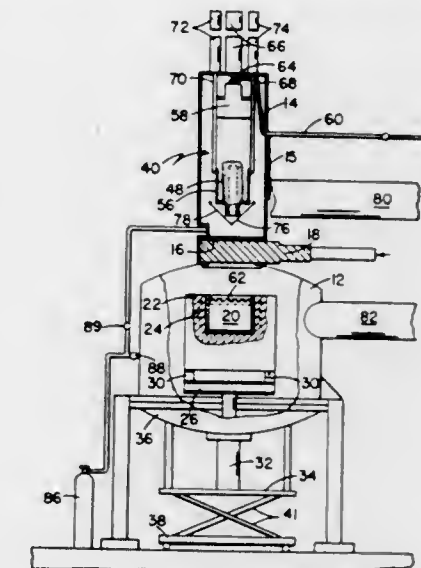
1. Apparatus forming a roll up partition which extends from an overhead support and a floor or the like, comprising:
 - a pair of spaced apart rotary bearing means for attachment to the overhead support and mounted for vertical movement;
 - a cylindrical roller having opposite ends journaled for rotation in respective ones of said bearing means;
 - a curtain for winding about said cylindrical roller and having one end attached to said cylindrical roller and a second end depending therefrom;
 - means extending the length of and supporting said roller and said curtain; and
 - drive means connected to said cylindrical roller for rotating said roller wind and unwind said curtain, said bearing means moving vertically in unison together as the moving curtain winds on or off of said cylindrical roller, said means supporting said cylindrical roller comprising an endless web which passes beneath and supports said roller, said web having a width substantially equal to the length of said roller and with the web having a substantial arcuate area engaging the bottom side of the roller.

3,900,064
METAL CASTING
George D. Chandley, and John N. Lamb, both of Amherst, N.H., assignors to Hitchiner Manufacturing Co., Inc., Milford, N.H.
Division of Ser. No. 312,138, Dec. 4, 1972, Pat. No. 3,863,706.
This application Feb. 1, 1974, Ser. No. 438,692
Int. Cl. B22d 27/02
U.S. Cl. 164—51

1 Claim

1. A method of casting in a refractory, gas permeable, shell mold comprising the steps of
 - providing a mold having a lower open end with a central vertical riser passage having a plurality of mold cavities clustered thereabout connected to said riser passage by

gate passages, the cross section area dimension of said riser passage is at least five times as great as the cross section area dimension of a gate passage, providing a crucible having surrounding induction coils for holding molten metal, stirring said molten metal by means of said coils causing outward surface movement thereof along its surface to

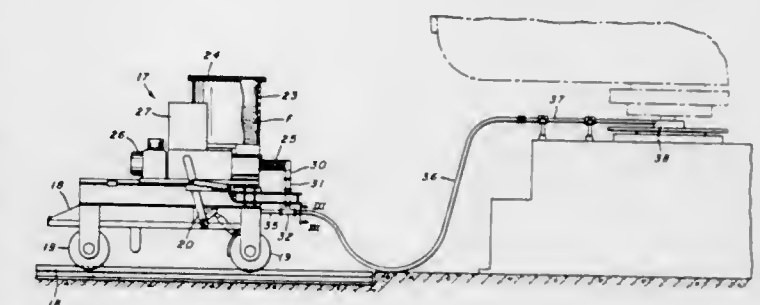


carry impurities away from the central area of said crucible, lowering the lower open end of said mold beneath the surface of the central area of said crucible, causing molten metal to fill said riser passage and said mold cavities through said gate passages and draining molten metal from said riser passage after solidification thereof in said mold cavities.

3,900,065
FLUX FEEDING METHOD AND APPARATUS
Joseph S. Giunta, Monroeville, and Louis G. Lazzaretti, Ambridge, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed May 17, 1973, Ser. No. 361,363
Int. Cl. B22d 11/00
U.S. Cl. 164—273 R

6 Claims



1. The combination, with a plurality of continuous-casting molds and a casting floor adjacent said molds, of an apparatus for feeding powdered flux to said molds, said apparatus including a corresponding plurality of bins for enclosing supplies of flux, a corresponding plurality of feeding devices for receiving flux from said bins, means for delivering flux from said feeding devices to the respective molds, and means for introducing gas to said flux-delivering means, the improvements in which:

said apparatus comprises a portable carriage on which said bins and said feeding devices are mounted; said gas-introducing means comprises a header mounted on said carriage, respective branches connecting said header with said flux-delivering means, and respective sub-branches connecting said branches with said bins, said bins being gas-tight; and said flux-delivering means includes in part a flexible tube.

3,900,066

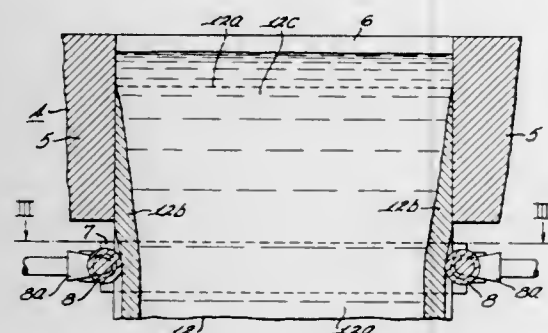
APPARATUS FOR CONTINUOUS CASTING A METAL STRAND SHAPED TO PROVIDE CONCAVE SURFACES Rudolf Schoffmann, Linz, Austria, assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Jan. 2, 1974, Ser. No. 429,701

Int. Cl.² B22D 11/12

U.S. Cl. 164—282

2 Claims



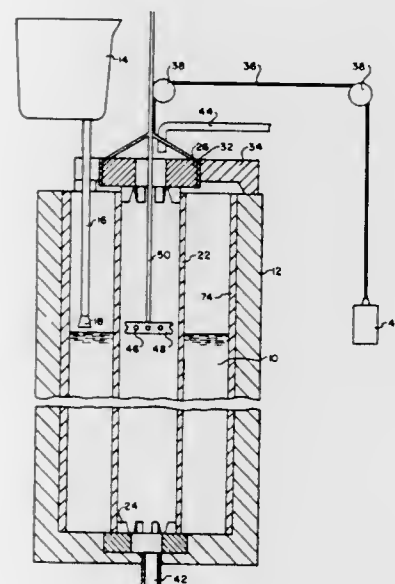
1. An apparatus for supporting and shaping a strand of continuously cast metal having a shell of solidified metal and a still liquid core of molten metal, said apparatus comprising:

- a plurality of strand supporting rolls arranged to define a multi-sided strand passageway with at least a first pair of said rolls being of uniform diameter along its entire length, parallel and spaced apart in mutually facing arrangement and a second pair of said rolls parallel to each other and arranged between the rolls of said first pair;

- each roll of said second pair having an axial length less than the distance between the rolls of the first pair of rolls and each roll of said second pair is arranged with its axial ends spaced from the close adjacent roll of the first pair; and

- each roll of said second pair having equal end diameters smaller than a diameter midway between said end diameters and defining a convex peripheral surface, for supporting between said pair of rolls a continuous strand of continuously cast metal having a shell of solidified metal and a still liquid core and shaping the strand to form a pair of oppositely facing strand surfaces to define a continuous concave arch.

circular plate arranged at a right angle to the ingot mould axis, and movable in the axial direction of the ingot mould and that



above the upper end of the inserted tube an inlet for cooling liquid into the axial tube is provided.

3,900,068

STROKE TYPE DRILL STEM TESTER

Lyle B. Scott, South Gate, Calif., assignor to Byron Jackson, Inc., Long Beach, Calif.

Filed Mar. 11, 1974, Ser. No. 449,879

Int. Cl.² E21B 47/00, 49/00

U.S. Cl. 166—152

6 Claims

6. A formation tester for use in testing an earth formation penetrated by a well bore and adapted to be lowered into the well bore on a pipe string above a well bore packer which is set in the well bore by the weight of the pipe string comprising: telescopic elongated inner and outer bodies respectively having at one end means for connection with said pipe string and with said packer, said bodies defining a flow passage there-through, and valve means including relatively longitudinally shiftable valve members carried by said bodies normally closing said flow passage when said bodies are telescopically extended and opening said flow passage when said bodies are telescopically contracted, and formation fluid balancing means between said bodies responsive to formation fluid pressure on said valve members when in said closed position for imposing a force tending to telescopically contract said bodies and to move said valve members to said open position, wherein said balancing means comprises outer and inner bodies, respectively, an intermediate cylinder, a piston carried by said inner cylinder and slideably engaged with said intermediate cylinder to define a chamber, said chamber containing

air, said intermediate cylinder and said outer cylinder defining an annular space, an annular free piston in said annular space,

3,900,070

GELLING LIQUID HYDROCARBONS

Jiten Chatterji; Marlin D. Holtmyer, and Robert L. Tiner, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed May 6, 1974, Ser. No. 467,312

Int. Cl.² E21B 43/26

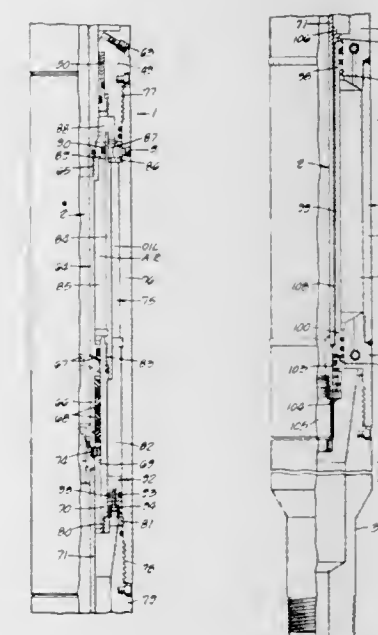
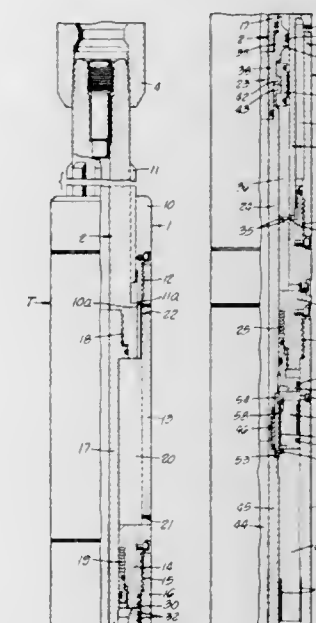
U.S. Cl. 166—308

10 Claims

1. The method of fracturing a subterranean formation which comprises the steps of:

- contacting the subterranean formation with a liquid at a sufficient pressure to fracture the subterranean formation;
- injecting the liquid into said fracture at a sufficient rate to open said fracture to a sufficient width to accept a gelled liquid hydrocarbon;
- injecting said gelled liquid hydrocarbon into said fracture at a sufficient rate to extend said fracture into the subterranean formation; and
- reducing the rate of injecting said gelled liquid hydrocarbon into said fracture to below the rate required for holding said fracture open, thereby permitting said fracture to close on said gelled liquid hydrocarbon;

wherein said gelled liquid hydrocarbon comprises a mixture of oil soluble aliphatic carboxylic acids selected from those having about 5 to 8 carbon atoms and mixtures thereof, a gelling quantity of an aluminum salt of 2-methyl pentanoic acid, and a liquid hydrocarbon.



3,900,071

PLATE TYPE NAIL HOLDER FOR EDGERS, TRIMMERS, OR OTHER APPLICATIONS

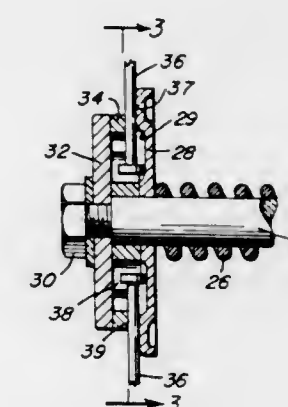
Howard H. Crawford, 9801 Carnegie, El Paso, Tex. 79925

Filed Apr. 10, 1974, Ser. No. 459,904

Int. Cl. A01D 35/00; B26D 11/12

U.S. Cl. 172—15

7 Claims



said annular space being filled with oil, and means exposing said annular piston to the pressure of said formation fluid.

3,900,069

RECOVERY OF PETROLEUM BY FLOODING WITH VISCOUS AQUEOUS SOLUTIONS OF ACRYLAMIDE-DIACETONE ACRYLAMIDE COPOLYMERS

Amir M. Sarem, Yorba Linda, Calif., assignor to Union Oil Company of California, Brea, Calif.

Filed July 11, 1974, Ser. No. 487,611

Int. Cl.² E21B 43/22

U.S. Cl. 166—274

9 Claims

1. In a process for recovering petroleum from a subterranean oil-bearing formation in which a viscous flooding medium is injected through an input well penetrating said formation and forced through said formation towards at least one spaced output well and petroleum is recovered from said output well, the improvement which comprises employing as said flooding medium an aqueous solution of an acrylamide-diacetone acrylamide copolymer.

1. A rotary cutting head for a lawn edger having a drive shaft comprising a driven plate stationarily mounted on the shaft, a pressure plate mounted on said shaft and movable axially thereon toward and away from the driven plate, means biasing the pressure plate toward the driven plate, a cutter element retaining plate journaled on said shaft and disposed between the driven plate and pressure plate, a plurality of radially extending cutter elements carried by said retaining plate, said retaining plate including mounting means for the cutter elements, each of said cutter elements having a headed inner end and a shank, said mounting means including radially extending recess means in the retaining plate for receiving the headed inner end and adjacent portion of the shank of the cutter element whereby the pressure plate will retain the cutter elements mounted on the retaining plate and bias the driven plate, retaining plate and pressure plate toward each other for frictionally driving the retaining plate and pressure plate from the driven plate and enabling slippage of the driven plate in the event the cutter elements engage an obstruction.

3,900,072

ADJUSTABLE BLADE AND CARRYING MEANS

Albert E. Knight, P.O. Box 1774, 11301 Willow Dr., Fort St. John, British Columbia, Canada

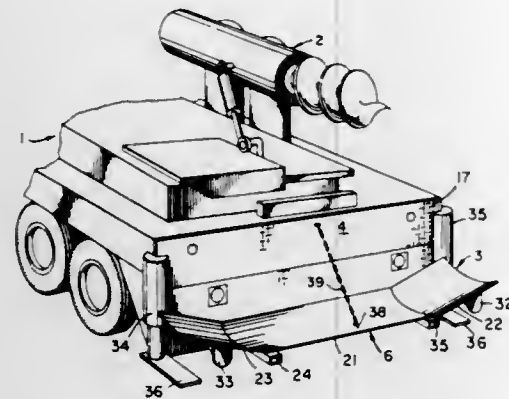
Claims priority, application Canada, Nov. 27, 1972, 157530

Filed Nov. 26, 1973, Ser. No. 419,096

Int. Cl. A01b 65/00

U.S. Cl. 172-238

10 Claims



1. An attachment for the rear of the frame of a drilling truck for levelling drilling chips, comprising:
 - a substructure to be mounted on the truck frame;
 - a plurality of blade hangers fixedly attached to the substructure;
 - vertically adjustable blade control means, to be mounted on the truck frame;
 - a blade;
 - a plurality of blade supports fixedly attached to the blade;
 - means securing the respective blade supports to the respective blade hangers with provision for vertical movement of the blade with respect to the substructure and for pivotal movement of the blade between a vertical disposition in which the blade faces rearwardly for use and horizontal disposition for storage;
 - a blade elevation control support positioned to be engaged with the blade control means when the blade is vertically disposed so that when the blade control means is vertically adjusted when engaged with the blade elevational control support, the blade is correspondingly raised or lowered;
 - a blade retaining means secured on the blade;
 - and a blade retainer connectable the blade to retain the blade in the horizontal disposition thereof with respect to the substructure.

3,900,073

EARTH WORKING DEVICE WITH PREDETERMINED GRADE INDICATING ASSEMBLY

William Norman Crum, 3511 E. 20th St., Highland, Calif. 92346

Filed Oct. 15, 1974, Ser. No. 514,462

Int. Cl. A01B 15/10; G01C 9/24

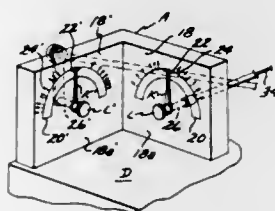
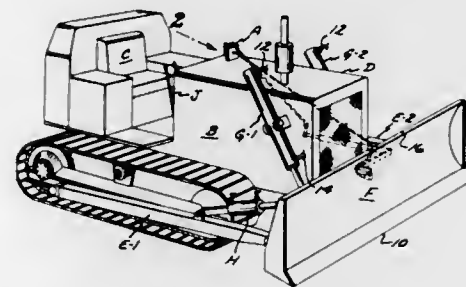
U.S. Cl. 172-430

7 Claims

1. In combination with an earth working device of the type that includes a power movable vehicle having a support for an operator; an earth working blade movably supported from said vehicle that may be angularly tilted both transversely and longitudinally relative thereto, said blade having a lower edge; manually operated control means adjacent said support that may be manipulated by said operator to guide said vehicle and tilt said blade; an assembly for visually indicating to said operator when said vehicle is moving said blade to form a swath in the earth of a predetermined grade both transversely and longitudinally; said assembly including:
 - a. first and second flat members rigidly mounted on said vehicle adjacent said support, said members having first and second grade indicating graduations thereon;
 - b. first and second bubble tubes mounted on said first and second members adjacent said first and second graduations;

tions, with first and second bubbles in said first and second tubes occupying first positions when said blade has said lower edge thereof horizontally disposed;

- c. first and second shafts rotatably supported in said first and second members and normal thereto;
- d. first and second needles adjustably and pivotally supported from said first and second shafts, said first and second needles extending towards said first and second graduations;
- e. first and second means that are manually operable by said operator for locking said first and second needles in desired non-rotatable positions relative to said first and second shafts, with said first and second needles being so locked when they are oriented on said first and second shafts to point to said first and second graduations to predetermined grades that are desired to be formed;



- f. third means operatively associated with said first needle and blade that moves said first needle relative to said first tube and first graduations when said blade is pivoted transversely relative to said vehicle to a second transverse position;
- g. fourth means operatively associated with said second needle and blade that moves said second needle relative to said second tube and second graduations when said blade is pivoted longitudinally relative to said vehicle to a second longitudinal position, with said operator being visually informed as said vehicle moves over said swath that the latter has been formed to said predetermined grades when said first and second bubbles are centered on said first and second needles that have been locked in said predetermined grade indicating positions.

3,900,074

SAND REMOVAL TOOL FOR WELLS

George W. Lee, Rangely, Colo. 81648

Filed Apr. 19, 1974, Ser. No. 462,509

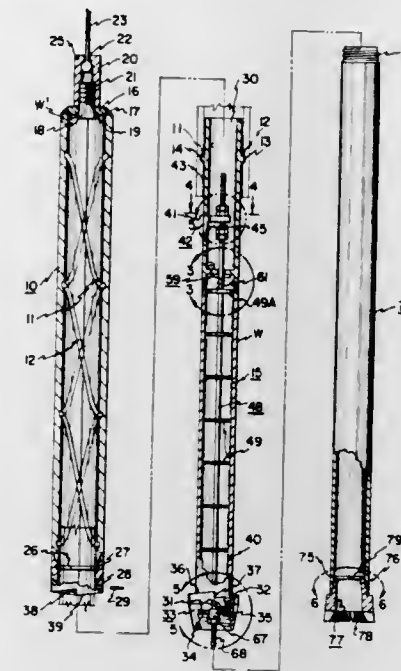
Int. Cl. E21B 27/00, 37/00

U.S. Cl. 175-242

13 Claims

1. A vertically suspendable, longitudinally reciprocable tool for removing sand at the bottom of a well, said tool comprising telescoping outer and inner tube members, said tube members having inter-cooperating means helically keying said tube members together whereby the longitudinal reciprocation of said outer tube member will produce a revolvment of said inner tube member; a sand tube extension integral with and axially depending from said inner tube member and having a lower extremity; and a hollow bit member fastened to said sand tube extension at said lower extremity, said inner tube

member, sand tube extension, and hollow bit member forming a combination, said combination and said outer tube member



each having mutually inter-cooperating, impact abutment means for circumferentially advancing said bit member.

3,900,075

HYDROSTATIC PROPULSION SYSTEM

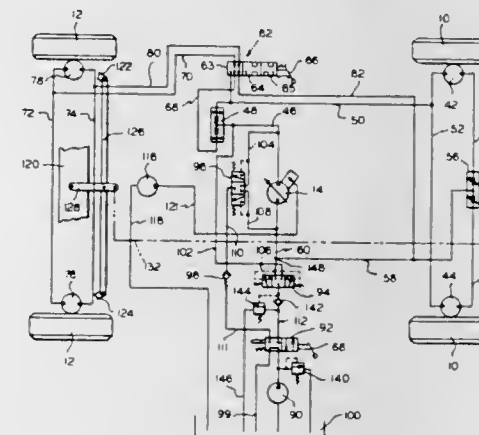
Willard L. Chichester, and Donald A. Holtkamp, both of Battle Creek, Mich., assignors to Clark Equipment Company, Buchanan, Mich.

Filed Apr. 15, 1974, Ser. No. 460,832

Int. Cl. B60k 17/10; B62d 11/04

U.S. Cl. 180-6.3

29 Claims



1. In a hydrostatic power transmission system for vehicles having first and second longitudinally spaced selectively drivable wheel means and first and second hydraulic motor means for driving said wheel means, a fluid drive means which includes a closed loop drive circuit coordinated with an open loop drive circuit, said drive circuits including first and second drive pump means, and control means for driving said first and second hydraulic motor means by said closed loop drive circuit and alternatively for driving said first hydraulic motor means by combining said closed and open loop drive circuits.

3,900,076

ROUGH TERRAIN VEHICLE UTILIZING GYROSCOPIC FORCES (INCHWORM)

Richard C. Winfrey, 1039 Cove, Ventura, Calif. 93003

Filed Nov. 16, 1973, Ser. No. 416,704

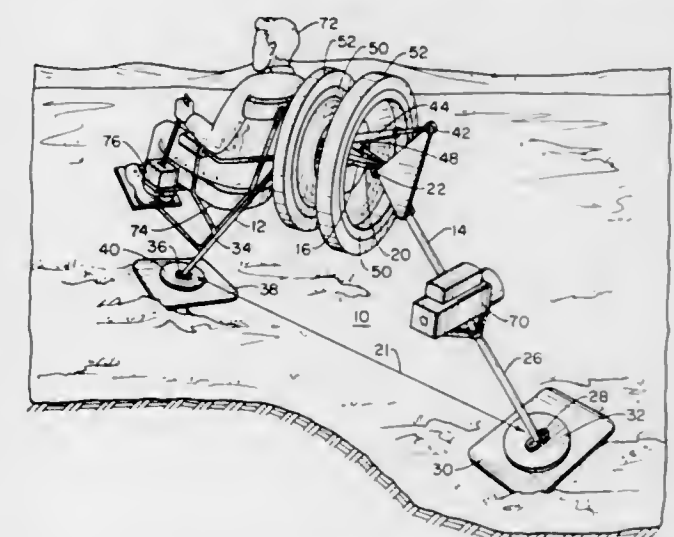
Int. Cl. B62D 57/02

U.S. Cl. 180-8 E

27 Claims

1. A rough terrain vehicle utilizing gyroscopic forces comprising:
 - a. a platform having a front end and a rear end;

- b. a front support member pivotally connected to said front end of said platform;
- c. a rear support member pivotally connected to said rear end of said platform; said front support member, said platform, and said rear support member being physically disposed in a common plane;
- d. means for imparting controlled pivotal movement in said common plane to said front support member with respect to said front end of said platform, said means being connected between said front support member and said platform;
- e. means for imparting controlled pivotal movement in said common plane to said rear support member with respect to said rear end of said platform, said means being connected between said rear support member and said platform; and
- f. means for imparting controlled gyroscopic forces to said platform such that said platform controllably rotates about an axis perpendicular to said common plane and



about a vertical axis, said means being attached to said platform, said means for imparting controlled gyroscopic forces operates synchronously with said means for imparting controlled pivotal movement to said front support member and said means for imparting controlled pivotal movement to said rear support member such that said front support member is lifted into the air by said means for imparting controlled gyroscopic forces to said platform while said front support member is extended forward by said means for imparting controlled movement to said front support member then said front support member is lowered to the terrain by said means for imparting controlled gyroscopic forces to said platform and then said rear support member is lifted into the air by said means for imparting controlled gyroscopic forces to said platform while said rear support member is extended forward by said means for imparting controlled movement to said rear support member then said rear support member is lowered to the terrain by said means for imparting controlled gyroscopic forces to said platform whereby said vehicle traverses said rough terrain.

3,900,077

VEHICLE FOR SURF ZONE WORK

James E. Gee, Washington, and Harlan H. Fels, Chillicothe, both of Ill., assignors to Caterpillar Tractor Company, Peoria, Ill.

Filed Apr. 3, 1974, Ser. No. 457,493

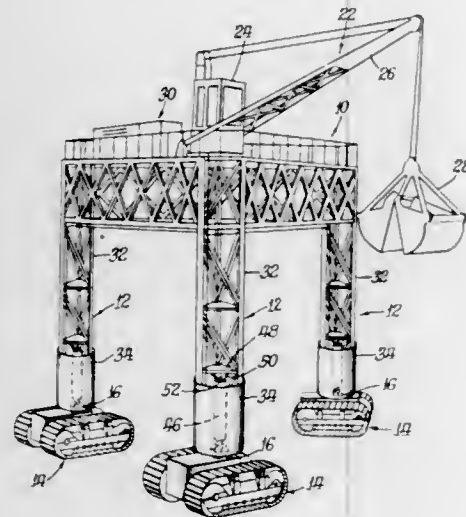
Int. Cl. B62D 11/20

U.S. Cl. 180-9.46

6 Claims

1. A vehicle for surf zone work comprising: a generally horizontal platform adapted to be located above water level and support work equipment; a plurality of at least three legs extending downwardly at spaced locations, from said platform; a plurality of at least three traction units, one for each leg, for engaging and traveling upon submerged terrain; a

plurality of means, one for each leg, connecting an associated traction unit to the lower end of a corresponding leg for substantially universal movement thereon; a plurality of steering devices, one for each leg, for selectively rotating the associated traction unit about a generally vertical axis; a plurality of means, one for each leg, for selectively adjusting the effective length of the associated leg; whereby said vehicle may travel over uneven, submerged terrain with said platform maintain-



able generally horizontal by adjusting the effective length of said legs, the limited universal movement of each traction unit permitting each traction unit to individually adjust to abrupt changes in the underlying terrain over which it individually is travelling; each steering device including a motor connected to one of the associated leg and traction unit; and a linkage including a substantially universal connection interconnecting the motor and the other of the associated leg and traction unit.

3,900,078

SAFETY HARNESS ARRANGEMENT

Syueichi Otani, Tokyo, Japan, assignor to Nissan Motor Co., Ltd., Yokohama City, Japan

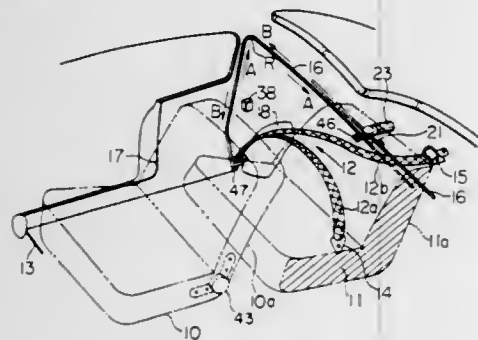
Filed Mar. 21, 1973, Ser. No. 343,260

Claims priority, application Japan, Mar. 22, 1972, 47-33716

Int. Cl. B60r 21/10

U.S. Cl. 180—82 R

10 Claims



1. A safety harness arrangement for use in a motor vehicle, comprising,

a webbing anchored at one end to a lower stationary member located at a relatively low part of a vehicle cabin adjacent a seat and at the other to an upper stationary member located at a relatively upper part of the vehicle cabin,

an elongated hollow guide member having a longitudinally extending slot formed in the peripheral wall thereof, said guide member having one end located at another relatively low part of the vehicle cabin adjacent said seat and spaced apart substantially transversely of the seat from said lower stationary member across and over said seat and which extends partly generally vertically on an inner surface of a side structural member of a vehicle body and partly substantially horizontally over said seat,

an elongated flexible member accommodated in said guide member and being longitudinally movable along said guide member,

retaining means so connected to said flexible member as to be movable through said slot and retaining thereon an intermediate portion of said webbing, said retaining means being movable along said guide member between a first position holding the webbing in a condition to restrain an occupant of said seat and a second position to hold the webbing in a condition inoperative to restrain the seat occupant,

drive means operative to drive said flexible member moving said retaining means between said first and second positions on said guide member,

a first switch which is manually controlled for energizing and de-energizing said drive means,

a second switch responsive to the arrival of said retaining means at said first position for energizing said drive means to be driven in a first direction to move said retaining means from said first to second position when said first switch is closed and simultaneously said retaining means is off said first position, and

a third switch responsive to the arrival of said retaining means at said second position for energizing said drive means to be driven in a second direction to move said retaining means from said second to first position when said first switch is open and simultaneously said retaining means is off said second position.

3,900,079

GROUND EFFECT MACHINE PRESSURE FLUID CUSHION CONFINING WALLS

Jean Henri Bertin, Neuilly-Sur-Seine, France, assignor to Bertin & Cie, Plaisir, France

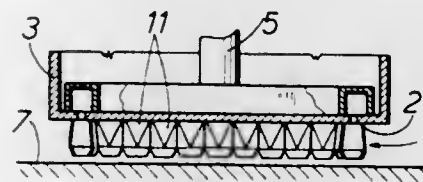
Filed Sept. 4, 1973, Ser. No. 394,056

Claims priority, application France, Sept. 5, 1972, 72.31401

Int. Cl. B60v 1/04

U.S. Cl. 180—121

4 Claims



1. A ground effect machine having a rigid frame movable along a bearing surface with the interposition of pressure fluid cushions, comprising:

a plurality of individual skirts depending from said frame in juxtaposition next to each other along the periphery of said frame to form by their overall succession a peripheral enclosure for an inner cushion space between said frame and said bearing surface, each of said skirts having two opposite smooth side wall portions which are substantially planar and which extend from said frame over a substantial fraction of the overall extension of the skirt towards said bearing surface, said skirts being fitted so that the adjacent planar smooth wall portions of contiguous skirts tightly apply against each other in areal contact engagement, and

a fluid permeable flexible partition extending transversely across each skirt between those ends of the two opposite planar smooth wall portions thereof which are remote from said frame, said fluid permeable flexible partition being designed for offering some resistance to fluid flow therethrough from the inside of the skirt towards said bearing surface thereby causing a pressure drop upon traverse by said fluid flow and bulging towards said bearing surface to develop a force which extends the skirt away from said frame and stretches likewise both the planar smooth wall portions thereof.

3,900,080

SCAFFOLD APPARATUS

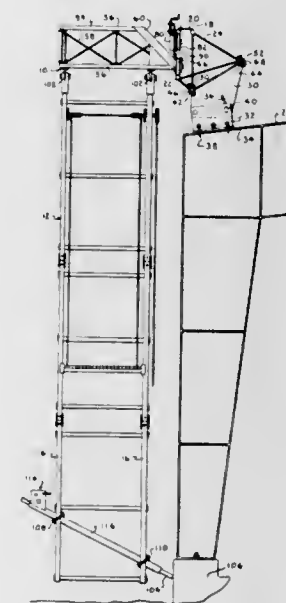
Donald E. Rea, Valparaiso, Ind., assignor to Spencer D. Jones, Hammond, Ind.

Filed Aug. 15, 1974, Ser. No. 497,824

Int. Cl. E04G 3/14

U.S. Cl. 182—36

11 Claims



1. In a hanging scaffold apparatus, a cantilever member comprising:

means for connecting scaffold poles to said cantilever member;

a tandem wheel train connected to one end of said cantilever member;

a wheel supported vertically spaced from said tandem wheel train;

means supporting said wheel hingedly connected to said tandem wheel train; and

means to adjustably move said wheel vertically spaced from said wheel train.

3,900,081

CABLE LADDER FIRE ESCAPE

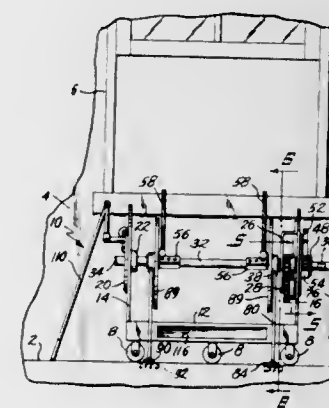
Frank Dunston, 729 Irving St. N.W., Washington, D.C. 20010

Filed Mar. 18, 1974, Ser. No. 452,134

Int. Cl. A62B 1/06

U.S. Cl. 182—73

6 Claims



1. A portable fire escape device for use in conjunction with an opening provided in the wall of a structure, said structure including a floor and said floor having anchor hook means mounted therein spaced from and in alignment with said opening, said device comprising: base means movable on said floor into a position before said opening; a main shaft rotatably mounted generally horizontally on said base means; cable ladder means connected with said main shaft, and wrappable

therearound for storage; anchor bar means engageable at one end with said main shaft and at the other end with said anchor hook means, and arranged to extend generally radially from the axis of said main shaft; and bearing means positioned between said main shaft and the said one end of said anchor bar means engageable with said main shaft, whereby said main shaft is rotatable relative to said one end of said anchor bar means.

3,900,082

ROD CONTROLLED POSITIVE LOCK BRAKE

Kenichi Sakamoto, and Tamio Kawamoto, both of Yokohama, Japan, assignors to Nissan Motor Co., Ltd., Japan

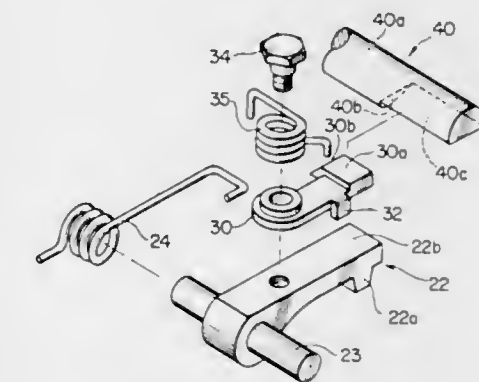
Filed May 31, 1974, Ser. No. 475,251

Claims priority, application Japan, June 8, 1973, 48-63853

Int. Cl. B62c 7/02

U.S. Cl. 188—69

7 Claims



1. A positively acting brake mechanism for braking comprising, a rotary shaft, a brake gear secured to said shaft, a brake pawl having a toothed surface radially of the brake gear and mounted for rotation about a first axis into and out of engagement with said brake gear, means biasing the pawl out of engagement with the brake gear, a plate connected to said brake pawl for rotation therewith about said first axis and for rotation relative to said pawl about a second axis along a plane perpendicular to the plane of rotation of said pawl, said plate having a cam portion with a lateral first wedge surface, a manually operable control element having a raised portion with a second wedge surface, said raised portion being engageable with said cam portion of the plate upon axial displacement of said control element in a direction for rotation of said brake pawl into engagement with the brake gear, and another biasing means biasing said plate to urge it to rotate about said second axis in a first direction toward engagement of the two wedge surfaces, whereby when teeth of the brake gear and the tooth of the brake pawl are misaligned, the second wedge surface abuts and is wedged against the first wedge surface during axial movement of the control element thereby urging the plate in a direction opposite to said first direction against a biasing force of said biasing means, and when the teeth of the brake gear and the tooth of the brake pawl are aligned with each other, said second wedge surface of said raised portion of the control element slides on the wedge surface of the cam portion of the plate during the axial movement of the control element and said raised portion rides on to the brake pawl to urge the brake pawl about said first axis into engagement with the brake gear.

3,900,083

SELF-RELEASING BRAKE DEVICE

Jean-Marc Laurent Hauth, Pont-a-Mousson, France, assignor to Pont-a-Mousson A.G., Pont-a-Mousson, France

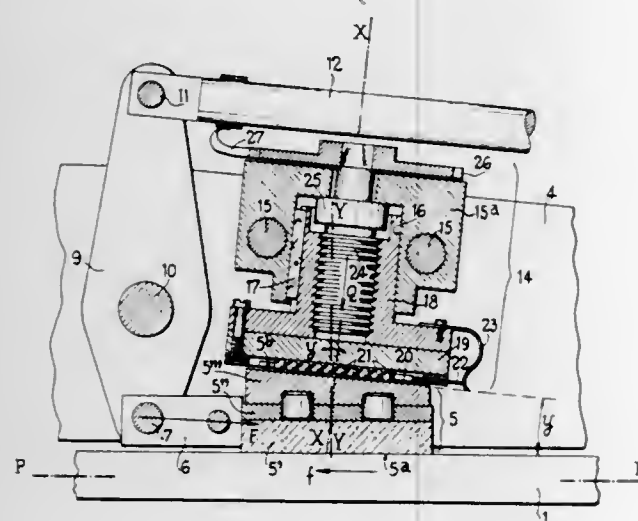
Division of Ser. No. 59,918, July 31, 1970, Pat. No. 3,727,727. This application Jan. 29, 1973, Ser. No. 327,735

Claims priority, application France, Aug. 11, 1969, 69.27515

Int. Cl.² F16D 55/228

U.S. Cl. 188—72.2

2 Claims



1. A self-releasing friction braking device for braking a moving element having parallel rubbing faces on opposite sides of the moving element and movable in a plane in a first direction, said device comprising the following elements on each side of the moving element and arranged symmetrically relative to said plane: a fixed support element having a plane support face which makes an angle of substantially 20° with the corresponding rubbing face, a brake pad means having a plane friction face parallel to the corresponding rubbing face and an opposed plane bearing face which is parallel to said support face of said fixed support element, the plane friction face and the plane bearing face of each brake pad means being convergent in a direction opposed to said first direction and each brake pad means being the sole brake pad means associated with its corresponding rubbing surface, rolling elements interposed between and engaging said plane support face and said plane bearing face affording rolling contact between said plane support face and said plane bearing face, means for retaining said rolling elements between said plane support face and said plane bearing face, means defining a rigid base, adjustable mounting means for adjustably mounting said support element on said base and comprising a screwthreaded male member and a screwthreaded female member screwthreadedly engaged on said male member, one of said members being fixed relative to said base and the other of said members being rotatable relative to said base and having a toothed wheel connected to rotate with said rotatable member, a connecting rod movable relative to said base, means connecting said rod to said pad means to allow said rod to shift said pad means in a direction opposed to said first direction between the corresponding rubbing face and said support face for braking, and pawl means carried by said rod and engageable with and capable of rotating said toothed wheel in a single direction corresponding to movement of said rod in a direction for withdrawing said pad means from between the corresponding rubbing face and said rolling elements when wear of said pad means causes, when applying the brake, said rod to move an additional distance for braking which exceeds the distance between immediately adjacent teeth of said toothed wheel.

3,900,084

IMPROVEMENTS IN HYDRAULICALLY AND MECHANICALLY ACTUATABLE BRAKE SYSTEMS WITH AUTOMATIC ADJUSTERS

Glyn Phillip Reginald Farr, Leek Wootton, England, assignor to Girling Limited, Birmingham, England

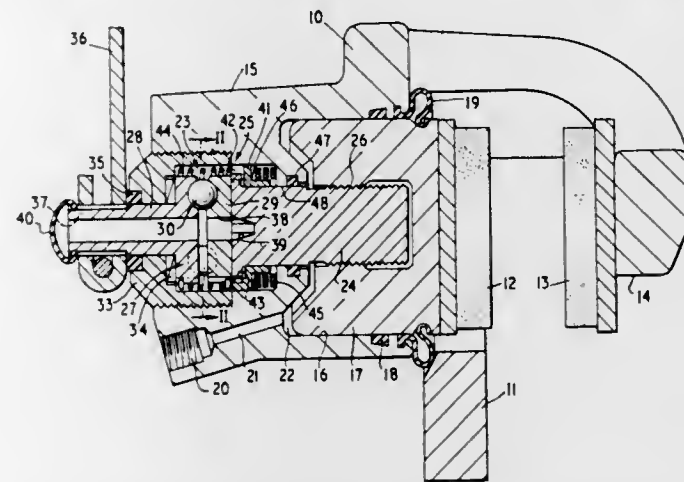
Filed Feb. 25, 1974, Ser. No. 445,207

Claims priority, application United Kingdom, Feb. 23, 1973, 8868/73

Int. Cl. F16d 65/56

U.S. Cl. 188—196 F

22 Claims



1. An actuator mechanism for a vehicle brake comprising in combination, a hydraulic actuator having actuator components being movable apart to apply an associated brake by fluid pressure applied between said components, an auxiliary mechanical actuator and an automatic slack adjuster which is operative between one of said components of the hydraulic actuator and said mechanical actuator, wherein said mechanical actuator comprises a reversible face cam aligned with the hydraulic actuator axis and comprising first and second cam members having co-operative helically inclined surfaces thereon, said first cam member being axially fixed relative to said other hydraulic actuator component, one of said cam members being turnable for mechanical actuation of the brake, and wherein said slack adjuster comprises a first non-rotatable adjuster member and a second rotatable adjuster member in screw-threaded engagement therewith, said first adjuster member being associated with said one actuator component, said second adjuster member being disposed to be axially abutted by said second cam member, means being provided to enable the latter to turn the second adjuster member in one direction upon hydraulic operation when adjustment is required but not to turn the second adjuster member in the opposite direction.

3,900,085

IMPROVEMENT RELATING TO BRAKE ADJUSTERS

Anthony William Harrison, Birmingham, England, assignor to Girling Limited, Birmingham, England

Filed Mar. 19, 1974, Ser. No. 452,560

Claims priority, application United Kingdom, Mar. 20, 1973, 13204/73

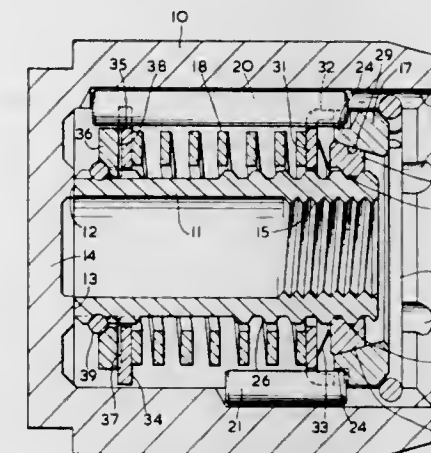
Int. Cl. F16d 65/56

U.S. Cl. 188—196 D

16 Claims

1. In a piston for a hydraulic brake actuator: a slack adjuster for determining the retracted position of said piston comprising a non-rotatable strut having external screw-thread; a rotatable nut coaxial with the piston and having an internal screw-thread to mate with the external thread on said strut and so form a non-reversible screw-thread connection, said nut being axially displaceable and rotatable relative to said piston; a drive ring also coaxial with said piston and encircling said nut; a reversible screw-thread connection effective between said drive ring and one of said nut and piston; cooperating friction surfaces effective between said drive ring and the other of said piston and nut; resilient means axially biasing said drive ring in a direction to urge said friction surfaces towards one another;

other; and differential control means permitting rotation of said nut by said drive ring for adjustment but restraining reverse rotation of the nut during impact loading of the nut by the piston.



3,900,086

AUTOMATIC DOUBLE-ACTING SLACK ADJUSTER

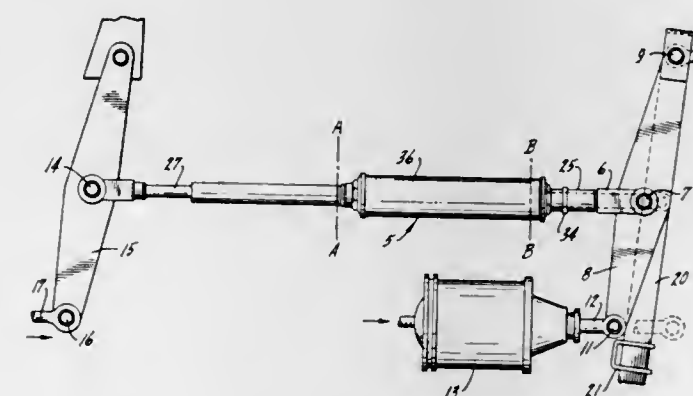
Henry R. Billeter, Marco Island, Fla., assignor to Sloan Valve Company, Franklin Park, Ill.

Filed Nov. 4, 1974, Ser. No. 520,408

Int. Cl. F16d 65/66

U.S. Cl. 188—202

10 Claims



1. In an automatic slack adjuster for railway car brakes, a pull rod tube connected to one portion of the braking system, a threaded rod arranged telescopically within said pull rod tube and connected to another portion of the braking system, a plurality of spin nuts arranged on said threaded rod for rotation thereon, said spin nuts comprising a take-up spin nut, a let-out spin nut, and a lock-up spin nut, said let-out spin nut being located on said threaded rod between said other spin nuts, a clutching sleeve on one end of said pull rod, cooperating clutching surfaces between said clutching sleeve and said lock-up spin nut, a traction tube around said pull rod tube and said spin nuts, cooperating clutching surfaces between said traction tube and said let-out spin nut, a trigger tube surrounding said pull rod tube, a housing around said threaded rod secured to said trigger tube, a trigger spring between said trigger tube and said traction tube, a let-out spring between said traction tube and said clutching sleeve, both of said springs being around said pull rod tube, a plurality of push pins slidably extending through said traction tube and having one end in engagement with said housing and the other end with said lock-up spin nut, and a slip cone clutch member arranged around said take-up spin nut, having cooperating clutch surfaces with each of said take-up spin nuts, said housing, and said traction tube, said slip cone clutch member operative in response to excessive deflection and stretching of the brake rigging to cause it to slip between said clutch surfaces and take up the slack in said slack adjuster and then to lock up the slack adjuster.

3,900,087

BRAKE RELEASED ACCELERATOR HOLDER

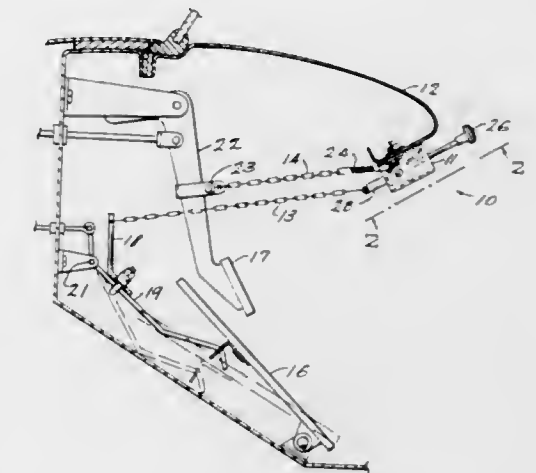
Michael A. Clare, Toledo, Ohio, assignor to Sidcor, Inc., Toledo, Ohio

Filed Mar. 25, 1974, Ser. No. 454,408

Int. Cl.² B60K 29/02

U.S. Cl. 192—3 T

4 Claims



1. A cruise control device for vehicles comprising: a stationary base mounted within the vehicle; a rotatable and axially translatable control rod supported by said base, said control rod including screw threads and a handle; an abutment member pivotally connected to said base and having a flange extending under that end of the control rod opposite the handle, providing a backup against axial movement of the control rod in one direction; a linkage member in threaded engagement with the control rod and positioned for axial movement along the control rod in response to rotation of the control rod; a tension line connecting the linkage member with the accelerator linkage of the vehicle such that advancement of the linkage member along the control rod in a direction opposite said one direction will advance the accelerator position and movement of the linkage member in said one direction will allow retraction of the accelerator position under the influence of the accelerator return spring of the vehicle; a tension line having a tension spring therein connecting a lateral arm of the abutment member with the brake pedal of the vehicle for pivoting the backup flange of the abutment member out from its backup position against the end of the control rod in response to movement of the brake pedal; and a second spring of lower spring constant than the tension line spring, said second spring being disposed between the base and the lateral arm of the abutment member for biasing the abutment member flange toward its backup position.

3,900,088

BICYCLE FREE WHEEL ASSEMBLY

Nobuo Ozaki, Sakai, Japan, assignor to Maeda Industries, Ltd., Sakai, Japan

Filed Jan. 26, 1973, Ser. No. 327,124

Claims priority, application Japan, Jan. 27, 1972, 47-10390

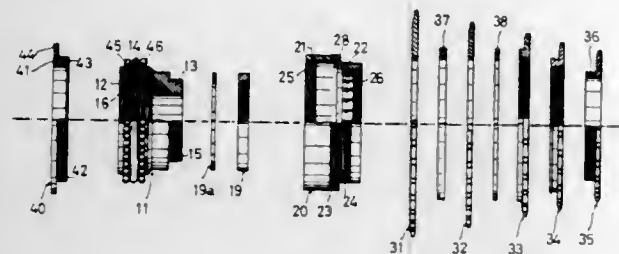
Int. Cl. F16d 16/00

U.S. Cl. 192—64

14 Claims

1. A bicycle free wheel assembly comprising an inner ring adapted to be mounted on the hub of a rear wheel of a bicycle, an annular protuberance formed on the external circumference of said inner ring, an outer ring circumferentially spaced apart a short distance from said inner ring, said outer ring having an internal threaded portion formed adjacent to its inner end, a flanged cup having a flange member and a cup body, said cup body having an external threaded portion screwably attached to said internal thread of the outer ring.

said cup body being threaded in such a manner that said flanged cup is tightened when it is turned in the same direction as the bicycle wheel rotates, when driven, at least two series of balls interposed between said inner and outer rings, the inner series of balls being retained between said cup body of the flanged cup and the inner side wall of said protuberance



formed with said inner ring, a ratchet mechanism arranged between said inner and outer rings, and a plurality of sprocket wheels centrally and axially mounted on said outer ring, at least one of said sprocket wheels being threaded on the outer ring so that when it is rotated in one direction on the outer ring it actually moves at least one other sprocket wheel against said flange, locking said flange and inner sprocket wheel.

3,900,089

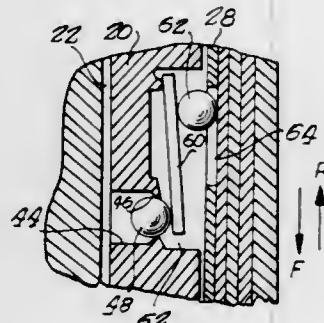
ONE WAY FLUID OPERATED COUPLING

John S. Ivey, Bloomfield, Mich., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed June 21, 1974, Ser. No. 481,945

Int. Cl. F16d 25/00

U.S. Cl. 192—85 AA



1. A control mechanism for an hydraulic motor for a friction engaging device including a piston member, a cylinder member receiving said piston, said piston and cylinder defining a fluid chamber, a valve in one of said members, fluid pressure in said chamber acting to close said valve, an actuator for said valve, rotatable means in said friction engaging device having relative rotation with respect to one of said members, one part of said actuator being in contact with said rotatable means, and a second part of said actuator having contact with said valve whereby in one direction of said relative rotation said valve will be opened by said actuator and in the other direction of relative rotation said valve will remain closed.

3,900,090

ENGINE REMOTE CONTROL

Jack R. Kobelt, 235 E. 5th Ave., Vancouver 10, British Columbia, Canada

Filed Aug. 27, 1973, Ser. No. 391,814

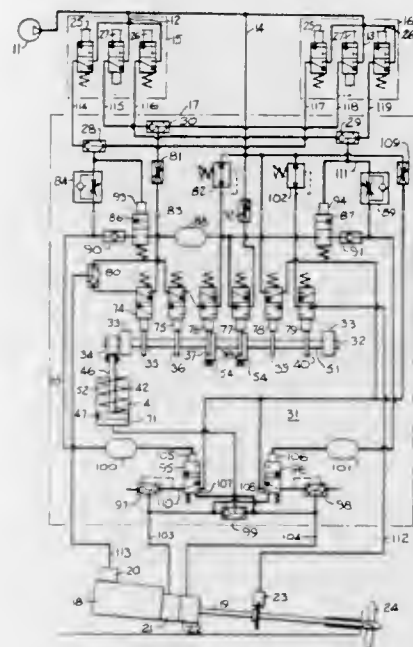
Int. Cl. F16d 67/02

U.S. Cl. 192—094

15 Claims

1. A remote engine control apparatus comprising a pressurized fluid source, clutch and throttle fluid control valves duct-connected in parallel to said pressurized fluid source, fluid controlled clutch and throttle devices, valve and ducting means interconnecting said clutch and throttle control valves respectively to said clutch and throttle devices, a pressure-

proportional linear actuator means operatively duct-connected in parallel with said clutch device and said clutch control valve, an oscillating cam means operatively supported with respect to and operatively connected to said pressure-proportional linear actuator means, said valve and ducting means including a throttle valve and a pair of throttle-boost valves operatively mounted for actuation by said cam means,



3,900,091

CLUTCH RELEASE

Paul Maucher, Sasbach, Germany, assignor to Lamellen und Kupplungsbau GmbH, Buhl, Germany

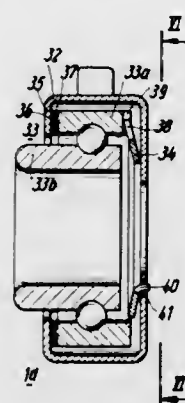
Filed May 10, 1973, Ser. No. 359,055

Claims priority, application Germany, Apr. 29, 1972, 2221231

Int. Cl. F16c 19/00, 33/30

U.S. Cl. 192—98

15 Claims



1. A clutch release for motor vehicles or the like comprising a clutch operating means and a clutch disengaging means, a bearing means operatively associated with said clutch disengaging means for operating the latter, a stop means for said bearing means, an energy storage means providing a biasing force urging said bearing means and stop means towards one another, said clutch operating means being operable to lift said bearing means from said stop by a limited amount whereby said bearing means are moveable in a radial direction

to effect centering, and means providing a positive connection between said bearing means and said stop means when said bearing means and said stop means are biasingly urged into engagement with one another, said bearing means including a non-rotating ring part and said stop means having an engageable part, one of said parts having an elastic material thereon, and the other of said parts having a profiled portion which penetrates said elastic material when said stop means and bearing means are biasingly urged into engagement with one another.

3,900,092

AUTOMATICALLY OPERATED VEHICLE RESTRAINT MECHANISM

Frederick Walter Page, 10 Montana Rd., Wimbledon, and Peter Charles Darlington Wardle, 12 Hunter Rd., Wimbledon, both of London, S.W.20, England

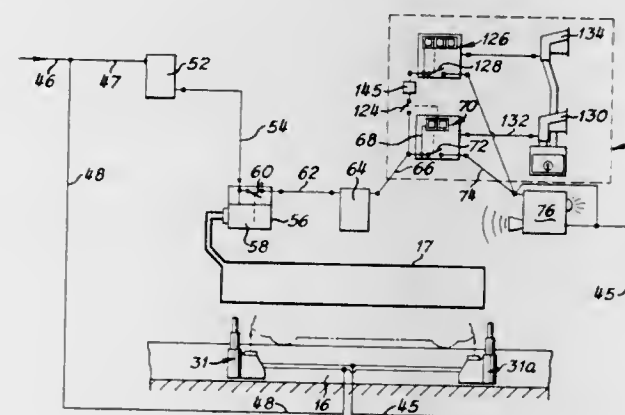
Filed Mar. 7, 1974, Ser. No. 448,891

Claims priority, application United Kingdom, Mar. 9, 1973, 11638/73

Int. Cl. G07C 1/30

U.S. Cl. 194—9 T

25 Claims



1. An automatically operated vehicle restraint mechanism for parking bays of determined orientation, said mechanism comprising sensing means actuated by the presence of any portion of a vehicle that is parked at least generally in such orientation and with such portion in any position in the parking bay, vehicle restraint means movable between an inoperative position in which movement of the vehicle into and out of the parking bay is not restrained by the restraint means and an operative position in which the movement of the vehicle out of the parking bay is restrained by the restraint means, a metering mechanism actuated by the sensing means for timing the presence of such portion of such vehicle in the parking bay, means actuated by the sensing means for moving the restraint means from the inoperative position to the operative position, means for de-activating said metering mechanism when it is desired to terminate the period of vehicle restraint, and means responsive to the de-activation of said metering mechanism for moving said restraint means from operative position to inoperative position.

3,900,093

COIN OPERATED TIMING DEVICE

John P. Bednar, Woodland Hills, and Harvey N. Weaver, Harbor City, both of Calif., assignors to Tele-Vend Systems, Woodland Hills, Calif.

Filed July 25, 1974, Ser. No. 491,689

Int. Cl. G07F 5/02

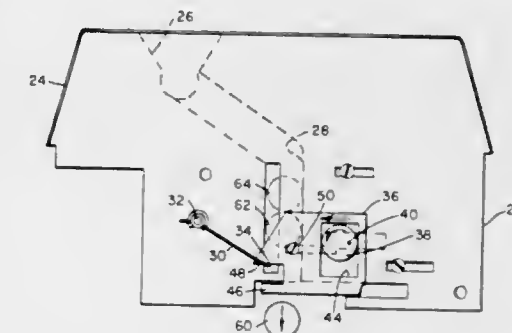
U.S. Cl. 194—9 T

1 Claim

1. A coin operated electrical apparatus for providing uninterrupted service comprising:

a timing motor having a shaft adapted to rotate 360° in a substantially given time period,
an eccentric cam fixedly attached to said shaft,

a cam follower controlled by said eccentric cam and restrained to move in a linear direction,
said cam follower has a bifurcated portion defining a pair of spaced-apart arms,
said spaced apart arms located in a spaced relationship free and clear of said eccentric cam,
each of said spaced-apart arms having an anchoring pin for supporting a pair of heavy duty resilient springs and in which said eccentric cam is forced between said resilient springs whereby rotation of said cam moves said cam follower,
a coin chute for accepting a plurality of similarly sized coins,



a switch connected in circuit with said timing motor and having an operating arm disposed in said coin chute whereby a coin placed in said chute will contact said arm, close said switch, and operate said timing motor, and a pin fixedly attached to said cam follower and positioned to enter said coin chute and support said plurality of coins in excess of one,
said cam follower having a bifurcation defining a lower portion disposed in said coin chute for supporting coins and an upper portion for interfering with said operating arm when a coin is released.

3,900,094

MATRIX PRINTER WITH OVERLAPPING PRINT DOTS

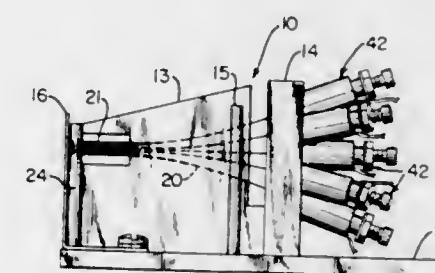
Raymond B. Larsen, and Donald E. Holmes, both of Riverton, Wyo., assignors to LRC, Inc., Riverton, Wyo.

Filed May 10, 1973, Ser. No. 359,013

Int. Cl. B41j 3/04

U.S. Cl. 197—1 R

14 Claims



1. A matrix printer head comprising in combination:
a plurality of print members having impression elements arranged in adjacent columns and disposed in confronting relation to a print medium, the impression elements in one column being offset vertically and laterally with respect to the impression elements in an adjacent column, said impression elements adapted to impress a matrix of dots to form each character on the print medium,
print member drive means for sequentially driving selected of the print members in each column to advance their impression elements forwardly into contact with the print medium whereby the dots formed in one column are vertically and laterally offset with respect to dots formed by the next adjacent impression elements of the adjacent column, and
printer head advancing means for incrementally advancing said printer head in a direction laterally of the print medium to a succession of incremental positions in forming

each character, the distance between incremental positions corresponding to the spacing between adjacent columns of said impression elements, said print member drive means sequentially driving selected of the print members in each column at each incremental position whereby the dots formed by driving selected of said print members in one column by said print member drive means will partially overlap and be vertically aligned with the next adjacent dots previously formed by driving of the print members of the adjacent preceding column at that incremental position, so that characters having apparent solid lines are formed by the matrix of dots when the printer head has been successively advanced through a series of incremental positions in forming each character.

3,900,095

DRIVING CIRCUITS FOR ELECTRICAL PRINTERS

Koji Tanabe, Higashi-murayama, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

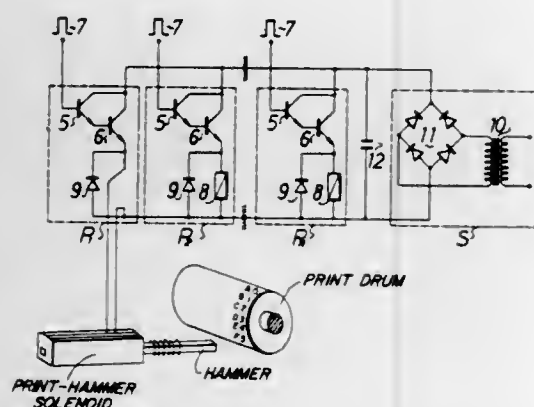
Filed May 31, 1973, Ser. No. 365,589

Claims priority, application Japan, June 6, 1972, 47-66539

Int. Cl. B41j 3/05

U.S. Cl. 197-1 R

5 Claims



1. A driving circuit for an electrical printer comprising: a control-pulse supply circuit; at least one driving transistor having an emitter electrode, a collector electrode and a base electrode, said base electrode being connected to said control-pulse supply circuit; a solenoid having one terminal connected to the emitter electrode of said driving transistor and adapted to operate a mechanical print-driving member; a capacitor connected directly to the collector electrode of said driving transistor and between said collector electrode and another terminal of said solenoid for generating an exciting pulse for energizing said solenoid and operating said mechanical print-driving member; a current-supply circuit shunted across said capacitor, the terminal voltage of said capacitor being at a voltage higher than that of said exciting pulse; and a two-terminal shunting element having a first terminal connected to said other terminal of said solenoid, and a second terminal element returned to said driving transistor for eliminating a counter-electromotive force produced in said solenoid upon de-energization thereof by cessation of said exciting pulse.

3,900,096

FEEDING MECHANISM FOR WRAPPING MACHINE

Michael R. Nack, and Donald C. Crawford, both of Green Bay, Wis., assignors to FMC Corporation, San Jose, Calif.

Continuation of Ser. No. 198,233, Nov. 12, 1971, abandoned.

This application Aug. 16, 1973, Ser. No. 388,880

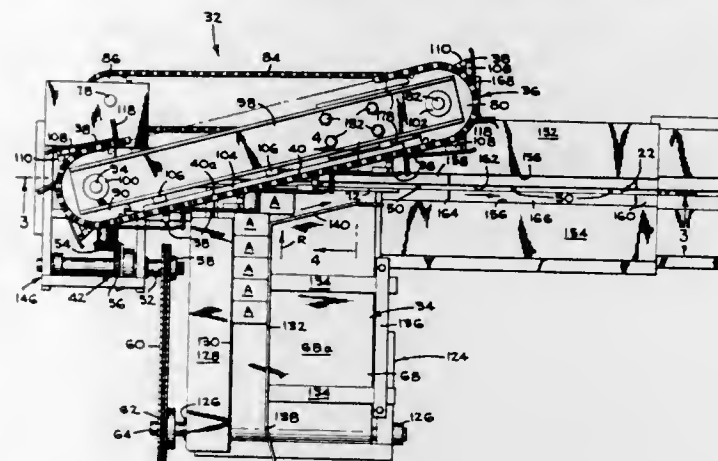
Int. Cl. B65g 47/52

U.S. Cl. 198-23

5 Claims

1. A conveying apparatus for gently transferring a foremost article from an abutting row of articles supported on a feed

conveyor onto a packing conveyor disposed generally normal to the path of said feed conveyor comprising: a transfer conveyor having an endless chain which includes a linear transfer run disposed diagonally across said feed conveyor and said packing conveyor; means defining a plurality of article engaging pushers secured to said chain at spaced intervals; said article engaging pushers each including a first article engaging wall disposed parallel to said feed conveyor and a second article engaging wall disposed parallel to said packing conveyor when said pushers are in said transfer run, and with said second wall of each following pusher disposed closely adjacent said first wall of each leading pusher along said transfer run, and means for continuously driving said feed conveyor and said packing conveyor and for driving said transfer con-



veyor at a speed causing said second article engaging wall to resist movement of the foremost article while the abutting row of articles moves continuously in the direction of movement of said feed conveyor during transfer of articles therefrom but at a rate slower than that of said feed conveyor, and simultaneously therewith causing said first article engaging wall to move the transferred article transversely of said abutting row of articles at a speed slightly slower than that of said packing conveyor until disengaged from said transfer conveyor, the article engaging pusher which follows the pusher that engages said foremost article being positioned so that the next following article in said abutting row of articles engages the second wall of said following pusher prior to moving said foremost article out of engagement with said next following article on said feed conveyor.

3,900,097

LIVE ROLLER CONVEYOR

Rowland J. J. de Courcy, Basingstoke, England, assignor to Douglas-Rownson Limited, Basingstoke, England

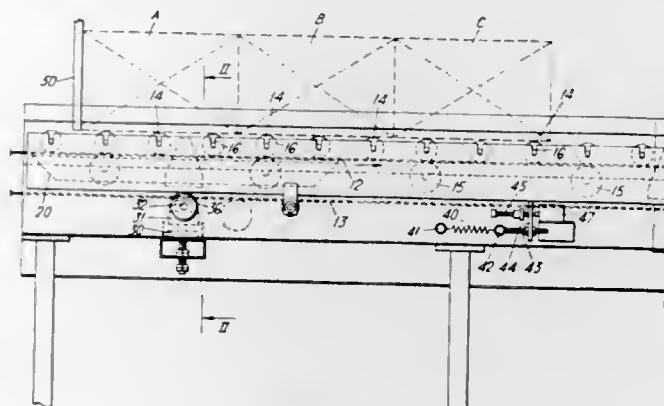
Filed June 26, 1974, Ser. No. 483,358

Claims priority, application United Kingdom, June 29, 1973, 31114/73

Int. Cl. B65g 13/02

U.S. Cl. 198-127 R

4 Claims



1. In a roller conveyor comprising side members, a plurality of rollers mounted to rotate freely between said side members

and a support carrying endless driving means which engages the undersides of said rollers, the improvement comprising means mounting at least one group of rollers and their supporting side members for movement as a unit in a generally horizontal plane in a direction opposite to the direction of conveying, resilient biasing means opposing said movement, a control member actuated by movement of said unit against said biasing means in excess of a predetermined amount, an independently powered mechanism actuated by said control member for separating the rollers of said unit from said endless driving means, and released by said control member when said control member is released by reverse movement of said unit, and braking means for engaging a few rollers at the leading end of said unit when said rollers are separated from said endless driving means.

3,900,098

PAPER GUIDE AND SUPPORT FOR FREE PLATEN TYPEWRITER

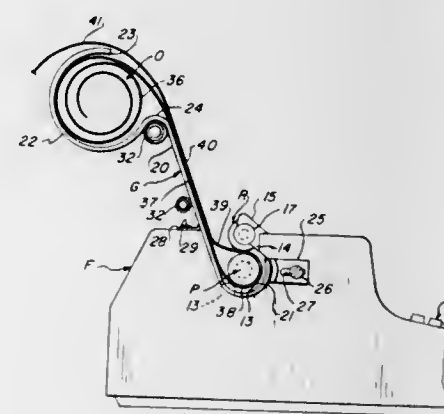
Cecil S. Effinger, 828 Pearl St., Boulder, Colo. 80302

Continuation-in-part of Ser. No. 784,518, Nov. 22, 1968, Pat. No. 3,767,023, which is a continuation-in-part of Ser. No. 594,025, Nov. 14, 1966, abandoned. This application Oct. 18, 1973, Ser. No. 407,643

Int. Cl. B41j 11/04, 13/18

U.S. Cl. 197-127 R

5 Claims



1. A paper guide for a sheet of paper or the like having a width greater than the frame of a typewriter provided with a platen having free ends and means on said frame for supporting said platen, said guide accommodating a sheet of paper or the like having a width greater than said guide, comprising: means providing a generally planar smooth surface having a width greater than said platen support means, for guiding said sheet downwardly and forwardly to the underside of said platen; an approximately semicircular curl formed as an extension of said planar surface at each side and extending laterally outwardly from said frame, each curl being adapted to partially surround at least a portion of the length of said platen; said guide being provided with an extension at each end corresponding in contour to said guide and movable away from said guide for a predetermined distance; a pair of rods at each end of said guide connected to the respective end extension; and a sleeve attached to the rear side of said planar surface for receiving each said rod.

3,900,099

TYPEWRITER RIBBON ARRANGEMENT

Hans-Georg Hengelhaupt, Nurnberg, Germany, assignor to Triumph Werke Nurnberg A.G., Nurnberg, Germany

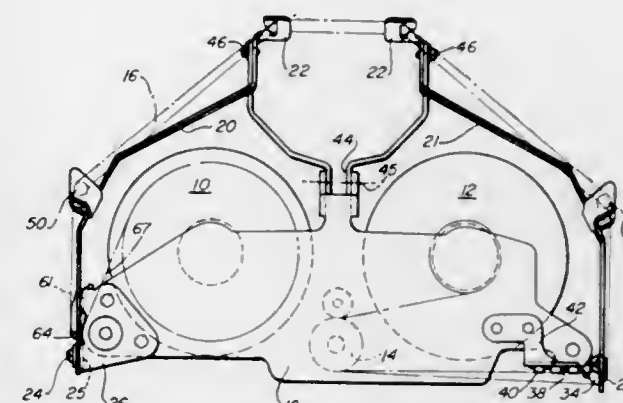
Filed Aug. 16, 1973, Ser. No. 388,983

Claims priority, application Germany, Aug. 26, 1972, 2242141

Int. Cl. B41j 33/58

U.S. Cl. 197-159

4 Claims



1. A ribbon guide arrangement for business machines comprising: support means, a ribbon supply spool and a take-up spool rotatably mounted in spaced apart relationship on said support means, first and second spaced vibrator levers, means pivotally mounting one end of each of said vibrator levers on said support means, ribbon guides at the other ends of said vibrator levers, means for directing a length of ribbon from said supply spool, across said guides on said ends of said first and second vibrator levers and to said take-up spool, and means for elevating said vibrator levers as a unit relative to said support means to present the ribbon length extending across said guides opposite a printing zone, said means for directing said length of ribbon including a ribbon deflector member adjacent the pivot of said first vibrator lever to direct ribbon from said supply spool to said guides on said vibrator levers, and means on said support means for pivotally supporting said deflector member about a point intermediate its ends whereby on movement of said vibrator levers to elevate ribbon opposite said printing zone said deflector will adjust its position to accommodate ribbon stresses.

3,900,100

POP-UP CARTON CONSTRUCTION

Stephen J. Girman, Harleysville, Pa., assignor to The Lehigh Press, Inc., Harleysville, Pa.

Filed Apr. 19, 1974, Ser. No. 462,311

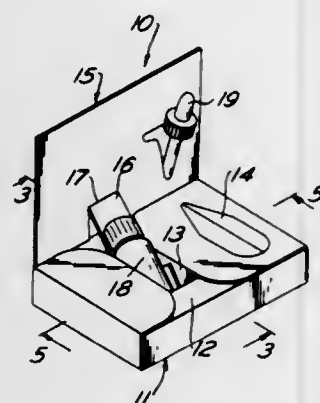
Int. Cl. B65D 79/00

U.S. Cl. 206-45.13

7 Claims

1. A container construction comprising a lower section, a raised platform carried by said lower section, said platform having an opening defining an upwardly facing cavity, an upper section swingably connected to said lower section for movement into and out of overlying relation with said platform, a tongue swingably connected to and extending from said upper section into said cavity for movement into and out of the latter upon upper section movement into and out of said overlying relation, whereby an article of contents located in said cavity is movable with said tongue out of and into said cavity upon upper section movement out of and into said overlying relation, a pair of cover members extending from opposite sides of said lower section over said platform and

inwardly toward said cavity, a leg depending from each cover member into the adjacent region of said cavity, and ears on



said legs extending angularly therefrom into spacing relation between said lower section and platform.

3,900,101

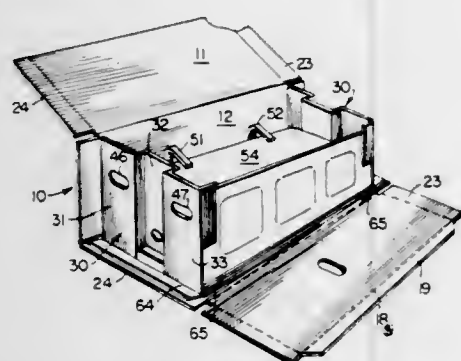
BATHTUB PACKAGE

James R. Goodsite, Sandusky, Ohio, assignor to Westvaco Corporation, New York, N.Y.

Filed Feb. 20, 1974, Ser. No. 444,021

Int. Cl.² B65D 5/32, 5/50, 85/54

U.S. Cl. 206—320



1. A shipping container for bathtubs or the like in the form of a complete enclosure for said bathtub, comprising:

a. a single sheet outer wrapper portion including a series of interconnected panels which extend around the top, bottom and sides of said bathtub, said interconnected panels further including end flaps foldably attached at each end thereof;

b. a pair of end frame members fitted to the ends of said bathtub, each of said end frame members comprising a plurality of separate panels consisting of three primary panels, a pair of secondary panels, an end flap and a lower flap element formed side-by-side in a single blank of foldable material and arranged to support the ends of said bathtub in spaced relation from the ends of said outer wrapper wherein, the three primary panels are arranged so that two of said primary panels lie in a substantially common plane at the extreme edge of the bathtub outer wrapper and a third primary panel intermediate said two primary panels lies in an offset and substantially parallel plane adjacent to and in contact with the packaged bathtub, the two secondary panels lie in substantially parallel and spaced apart planes and connect the intermediate primary panel with the remaining two primary panels, the end flap is connected to the leading edge of one of the two primary panels and is folded around for protecting and cushioning the front face of the bathtub, and the lower flap element is connected to the lower end of said intermediate panel and is folded to lie adjacent and in contact with the lower surface of the side end flange of said bathtub;

c. a pair of suspension pads separate from said end frame members and arranged to lie at each end of said bathtub

between the single sheet outer wrapper and the two side end flanges of said bathtub; and,
d. means for fastening the outer wrapper panel end flaps to the said end frame members and the suspension pads.

3,900,102

WATERPROOFING MEANS AND METHOD

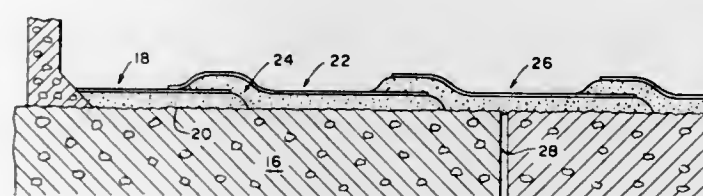
John Hurst, London, England, assignor to W. R. Grace & Co., Cambridge, Mass.

Continuation of Ser. No. 2,746, Jan. 14, 1970, abandoned, which is a continuation-in-part of Ser. No. 803,438, Feb. 28, 1969, Pat. No. 3,741,856, which is a continuation-in-part of Ser. No. 676,652, Oct. 19, 1967, abandoned. This application June 5, 1972, Ser. No. 259,998

Int. Cl. B32b 3/02

U.S. Cl. 206—411

3 Claims



4 Claims

1. A preformed, flexible sheet-like structure suitable for application to concrete as a waterproofing structure, said structure being in the form of a roll alternate layers of (a) a flexible support sheet comprised of a synthetic organic polymer selected from the group consisting of polyolefin and polyvinyl chloride; (b) a waterproof and waterproofing flexible pressure-sensitive adhesive membrane adhered to one face of said support sheet, said adhesive membrane being at least 0.025 cm thick and of a self-healing bitumen-rubber composition wherein the ratio by weight of said bitumen to said rubber is at least 75:25, an edge of said membrane along at least one of the edges of said support sheet extending effectively beyond the edge of said support sheet so that unrolling and overlapping of the preformed structure results in a continuous membrane-to-membrane cohesive contact at the point where the support sheet of the overlapped structure ends; and (c) a protective siliconized paper sheet adherent to and readily releasable from the surface of said adhesive membrane remote from said support sheet and also readily releasable from the membrane on a margin on its face remote from the membrane, which margin corresponds to the portion of the adhesive membrane extending beyond the edge of the support sheet so that the structure may be unrolled without damage.

3,900,103

PACKAGES OF CONTAINERS

Robert H. Day, Bracknell, England, assignor to Illinois Tool Works Inc., Chicago, Ill.

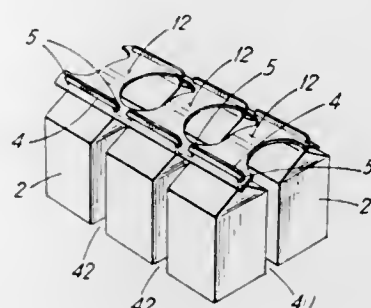
Filed Jan. 30, 1974, Ser. No. 438,104

Claims priority, application United Kingdom, Feb. 2, 1973, 5396/73

Int. Cl.² B65D 71/00, 75/00, 85/62

U.S. Cl. 206—431

1 Claim



1. A package comprising a carrier and a plurality of pairs of containers, each of said containers having a generally gable-shaped top portion and a substantially flat strip of material

extending upwardly from the apex of said gable-shaped top portion, each end of each flat strip of each of said containers being formed to include a shouldered portion, said carrier comprising a strip of resilient sheet material having a plurality of pairs of slits equal in number to the number of pairs of said containers and each of said slits having a length less than the maximum length of said flat strip of each of said containers, each pair of slits disposed transversely of said carrier strip with each slit positioned parallel and adjacent to one longitudinal marginal edge of said carrier strip, the spacing between the slits of each pair of slits being greater than the maximum width of one of said containers measured in a direction perpendicular to the plane of said flat strip thereof, each of said flat strips disposed through one of said slits with the shouldered portions of said flat strip on the upper side of said carrier strip, and apertures forming handle means in said carrier strip between said slits.

3,900,104

TRAPEZOIDAL CONTAINER HAVING END-FLAPS THAT WEDGINGLY ENTRAP A TRAY

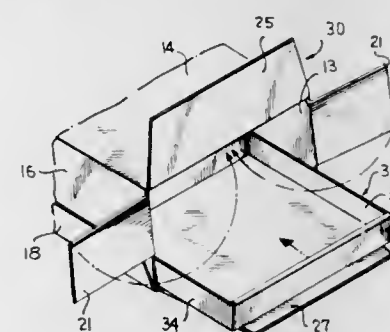
Frederick G. Harned, Bolingbrook, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed May 21, 1973, Ser. No. 362,394

Int. Cl. B65d 85/54, 5/38

U.S. Cl. 206—491

11 Claims



1. A package comprising a product and an enclosing container fully enclosing said product, said product including a tray having articles packed therein with opposite ends of said tray projecting beyond said articles, said container having side walls and ends closed by end walls, said container side walls being trapezoidal and said container end walls sloping towards one another remote from said tray and forming means wedgingly entrapping said tray.

3,900,105

INTERNALLY CONTAINED TEAR-INDUCING TAB FOR VACUUM SEALED PACKAGES

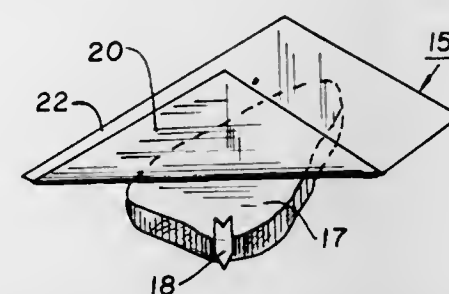
Robert O. Wolfesperger, Fairfield, N.J., assignor to William E. Young, Atlantic Highlands, N.J.

Filed Apr. 19, 1974, Ser. No. 462,305

Int. Cl. B65d 3/26, 75/70, 17/20, 65/26

U.S. Cl. 206—498

7 Claims



1. A package for enclosing a product of determined size and having a tear-inducing means, said package including: (a) a lower flexible film having a width and length greater than the product to be packaged; (b) a tear-inducing tab of relative thinness and having a substantial stiffness to resist bending of said tab and further having at least one sharp portion, said tab

further placed on the lower film and so positioned that the pointed portion is directed toward an edge of the lower film and at a determined distance inwardly from the edge of the lower film; (c) a product of selected size and positioned on the lower film so that the periphery of the product is at least a short distance in from the ends and side edges of the lower film, said product also positioned so that the sharp pointed portion and a short adjacent portion of the tear-inducing tab extends beyond the periphery of the product, and (d) an upper flexible film of substantially the same size as the lower film the upper film drawn tightly around the top and sides of the product and sealed to the lower film as by heat sealing and the like and during the sealing of the upper to the lower film the projecting portion of the tear-inducing tab is peripherally retained by the upper and lower films which also enclose the upper and lower portions of said projecting portion of the tab member.

3,900,106

STACKABLE PLASTIC GARBAGE CAN WITH INTEGRAL TOP

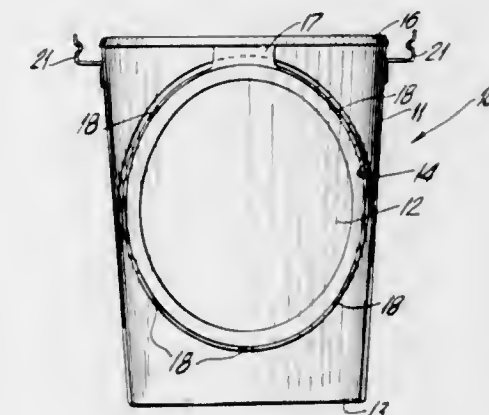
Joseph Cantales, 640 Pelham Rd., New Rochelle, N.Y. 10803

Filed Nov. 26, 1973, Ser. No. 418,918

Int. Cl. B65d 21/02

U.S. Cl. 206—519

8 Claims



1. A stackable garbage can comprising: a main body portion of generally cylindrical configuration having a concave recess portion on one side thereof and a bottom portion attached to the main body portion, and an integrally mounted cover to enclose said can which is connected to and pivotable about the upper edge of the can into the concave recess portion of the body to facilitate stacking of the can when said cover is moved into the recess.

3,900,107

ROTATING METHOD OF SORTING PARTICULATE ARTICLES

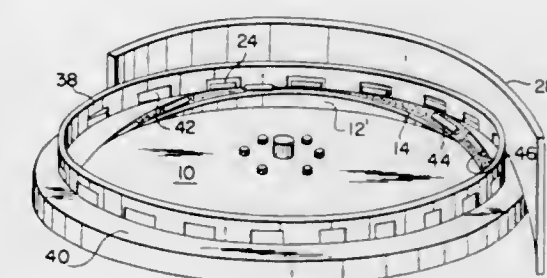
Kurt H. Hoppmann, Falls Church, Va., assignor to Hoppmann Corporation, Springfield, Va.

Filed Feb. 7, 1974, Ser. No. 440,408

Int. Cl.² B23Q 7/02, 7/12; B65H 9/16

U.S. Cl. 209—73

20 Claims



1. Rotating method of sorting particulate articles comprising:

- A. radially distributing while accelerating said articles upon a rotating inner plane;
- B. elevating said articles upon an inclined moving surface ramp rotating peripherally of said rotating inner plane, and
- C. centrifugally carrying said articles away from the top of said ramp upon a rotating outer rim.

3,900,108

DISPLAY RACK FOR CARPETS

Robert Rottermann, Oberengstringen, and Fritz Fuchser, Neuheim, both of Switzerland, assignors to Robert Rottermann, Oberengstringen, Switzerland

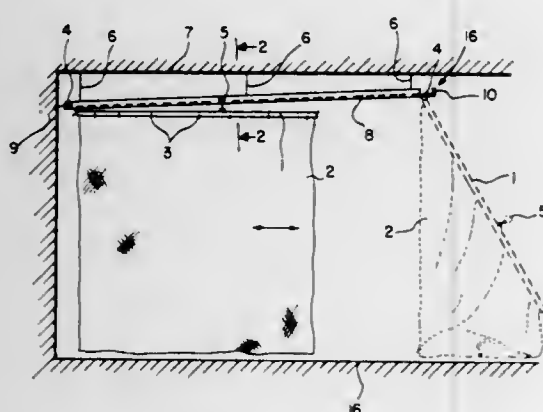
Filed June 24, 1974, Ser. No. 482,410

Claims priority, application Switzerland, June 26, 1973, 9310/73

Int. Cl.² A47F 7/16

U.S. Cl. 211-46

5 Claims



1. A display rack for hanging a display item, comprising: an elongated holder having means for coupling to a display item an overhead support rail; at least two hangers spaced apart from each other along the length of said holder and attached to said holder, said hangers each comprising a rod suspended from a roller, said rollers being separately removable from said rail only at the end of said rail adjacent display position; and said overhead support rail comprising an inverted channel whose ends are turned horizontally inward to provide tracks for said rollers and to confine said rollers within said channel, an opening being provided in the top side of said inverted channel adjacent the display end for insertion and removal of said rollers into said channel, said channel further including stops at each end to prevent said rollers from running off the ends of said channel, whereby said hangers are positionable on said overhead support rail for movement of said holder along said overhead support rail from a storage position to a display position, and said holder can be removed from said overhead support rail by separately removing each hanger from said overhead support rail.

3,900,109

ELONGATED SURGICAL INSTRUMENT HOLDER

Wendell C. Peterson, 7107 Prospect Pl., Albuquerque, N. Mex. 87110

Filed Nov. 28, 1973, Ser. No. 419,599

Int. Cl.² A47F 5/13; 7/00; A61L 7/00

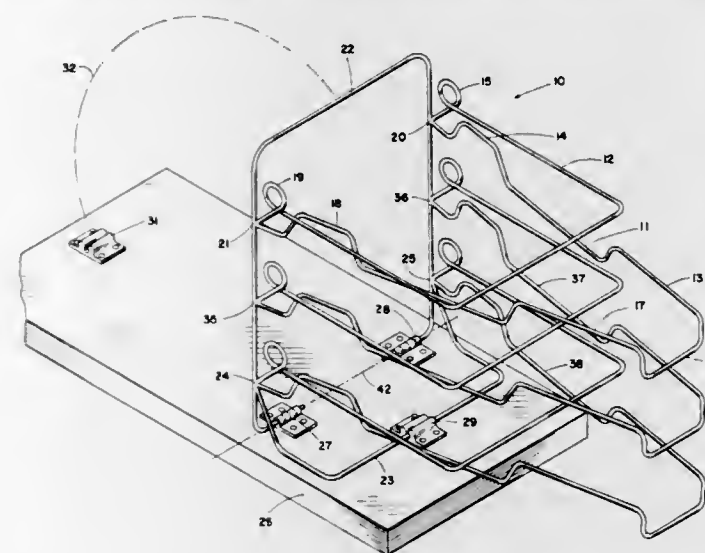
U.S. Cl. 211-60 T

5 Claims

1. A holder for a surgical instrument having two pivotally joined elongated members with a finger gripping hole in the proximity of an end of at least one thereof, comprising:

- a base,
- a bracket pivotally mounted on said base to be moveable between a collapsed position substantially parallel to said base and to a position substantially perpendicular to said base, a wire shelf attached to and projecting outwardly from said bracket to receive the instrument thereupon,

said wire shelf having a portion being bent upwardly from the plane of the shelf and extending along a portion of each side adjacent a distal end thereof from said bracket, to arrest lateral movement of the instrument, said wire shelf being bent upwardly along at least one portion thereof adjacent the bracket to form a post to engage the finger-gripping-ring of said at least one member of the



instrument and to release the instrument upon application of a longitudinal force upon the instrument, and a wire restrainer attached to said bracket extending therefrom parallel to said shelf, said wire restrainer having at least one portion formed into a loop to provide a bias on said restrainer in the direction of said shelf to compress the instrument between said restrainer and said shelf.

3,900,110
HANGER

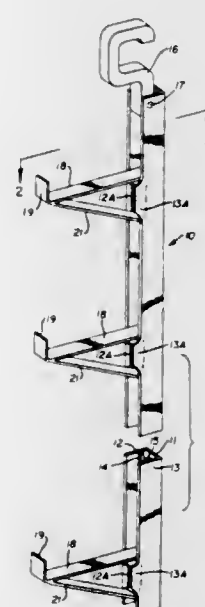
John Soroka, Youngstown, Ohio, assignor to J & S Aluminum Inc., Youngstown, Ohio

Filed Nov. 18, 1974, Ser. No. 524,938

Int. Cl.² A47F 5/08; A47G 29/02

U.S. Cl. 211-113

5 Claims



1. A hanger for suspending articles from a conveyor and consisting of a vertically positioned elongated body having spaced parallel flanges and a plurality of brackets, each of said brackets having a horizontal portion and a vertical portion, the vertical portions of the brackets being positioned between the spaced flanges of the elongated body and portions of the spaced flanges crimped thereagainst to retain the brackets in

position thereon and a hook on one end of said elongated body.

3,900,111

STORAGE RACK

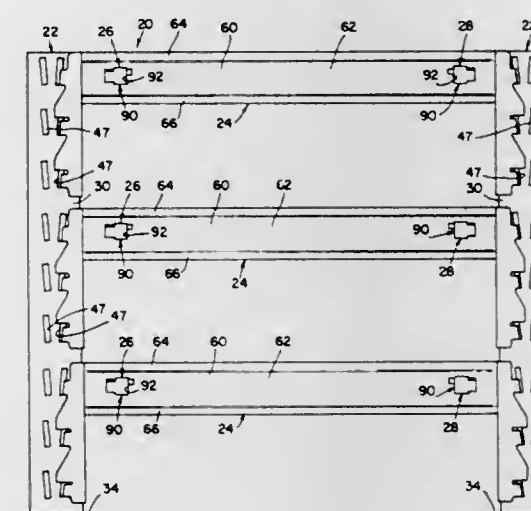
Roy R. Hiler, Sewell, N.J., and Robert W. Hohl, Doylestown, Pa., assignors to Penco Products Inc., Oaks, Pa.

Filed Mar. 6, 1974, Ser. No. 448,735

Int. Cl.² A47F 5/10; F16B 17/00

U.S. Cl. 211-177

6 Claims



5. A storage rack comprising (a) a plurality of upright posts in pairs, each post of a pair connected to the other by braces, (b) horizontal beams extending between corresponding posts in adjacent pairs and having support members at each end connecting them for the beam's support to the respective posts, the direction in each post away the other post of the pair and the direction in each beam away from the beam between the other posts of two pairs being designated as the outward direction, each beam having an outward face recessed inwardly, the recessed portion of the outward face having two extended holes, one near each end of the beam, these holes each having a bottom which is relatively low for a stretch nearest the end of the beam, then enumerating in the direction away from that end, an upward step and a relatively high portion for a stretch, a downward step with a relatively low portion thereafter for a stretch, and then an upward step with a relatively high portion thereafter for a stretch and each beam having end faces recessed in a direction toward the opposite end face and having a vertical slot-type hole in each recess, the posts each having adjacent the end faces a vertical slot-type hole in a position approximately corresponding to that in the end face nearby, (c) strip members each held in the beam in limitedly movable positions respectively near each beam end, with each strip member having a sharply constricted neck positioned longitudinally between two larger portions, with the greater cross-sectional dimension of each strip member being upright and each strip member having an end outside the beam in the vicinity of the hole in the recessed face of the beam, its neck passing through that hole and its other end extending at least into the hole in the end of the beam, each strip member having one position in which that other end extends through that recessed hole in the beam end and at least into the corresponding hole in the post, the neck rests in the lower portion of the beam's outside hole which is nearer the beam end and the end of the strip away from the beam end leaves the end of that hole away from the beam end uncovered, and another position in which the end of the strip toward the beam end does not extend into the hole in the post but clears from the post, the neck of the strip is in the lower portion of the hole in the recessed outer face of the beam which is further from the end of the beam and the end of the strip away from the end of the beam covers the end of that hole away from the beam, with the rest of the strip in front and in back and through that hole substantially completely obscuring

ing the view through that hole, and the strip and end holes in post and beam having relative dimensions and positions preventing the strip from carrying out any support function for the beam as far as the beam's support by the post is concerned.

3,900,112

GRAVITY STORAGE SYSTEM

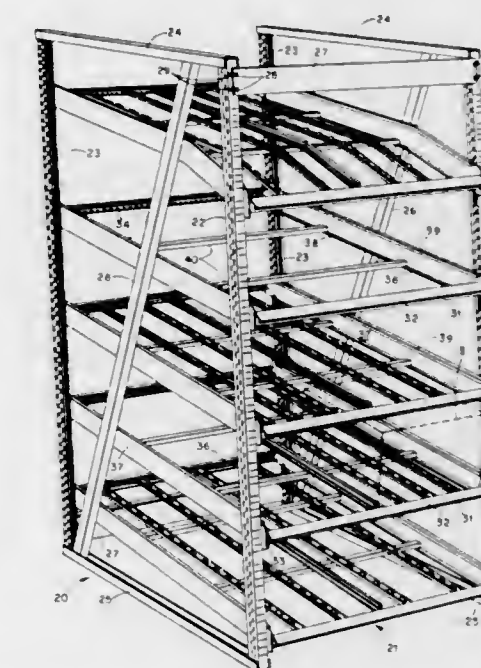
Victor D. Azzi, Durham, and John Wyeth, Exeter, both of N.H., assignors to The Kingston-Warren Corporation, Newfields, N.H.

Filed Apr. 9, 1973, Ser. No. 348,997

Int. Cl. A47I 5/00; B65G 13/12

U.S. Cl. 211-148

42 Claims



1. In a gravity-feed, live storage system, in combination, a plurality of vertical support frames; a plurality of vertically spaced shelf frames mounted between said support frames, said shelf frames comprising front, back and side members; supporting ledges formed on said front and back shelf frame members; means for releasably-adjustably attaching said shelf frames to said vertical support frames; gravity-feed track means installed between said front and back shelf frame members on their said supporting ledges; positioner means fixedly associated with said front and back shelf frame members and endwise engaging said track means to align, longitudinally limit, and laterally fix said track means in structurally determined positions on said supporting ledges; and retainer means associated with said front and back shelf frame members, said retainer means infacing from above, and extending downwardly to engage, portions of said track means under spring pressure and whereby said track means are clamped down against said supporting ledges in secure engagement under said retainer means.
36. In a gravity-feed, live storage system, in combination, a plurality of vertical support frames; a plurality of vertically spaced shelf frames mounted between said support frames, said shelf frames comprising front, back and side members; supporting ledges formed on said front and back shelf frame members; means for releasably-adjustably attaching said shelf frames to said vertical support frames; gravity-feed track means installed between said front and back frame members on their said supporting ledges; positioner means fixedly associated with said front and back frame members and endwise engaging said track means to

align, longitudinally limit, and laterally fix said track means in structurally determined positions on said supporting ledges; and
 retainer means associated with said front and back shelf frame members and spring biasing said track means down against said supporting ledges,
 said track means being of a length such that, and
 said front and back positioner means and retainer means being of different extent endwise of said track means such that,
 when fully inserted at their one ends in one of said front and back positioner means and retainer means, said track means clear at their other ends the other of said front and back positioner means and retainer means, and
 when fully inserted at their other ends in said other of said front and back positioner means and retainer means, said track means are at their one ends engaged to and biased downwardly by said one of said front and back positioner means and retainer means.

3,900,113

APPARATUS FOR ADJUSTING THE RELATIVE INCLINATIONS OF PIVOTABLE MEMBERS

Bernard M. Bourges, Lagny Le Sec, France, assignor to Societa Anonyme Poclain, Oise, France

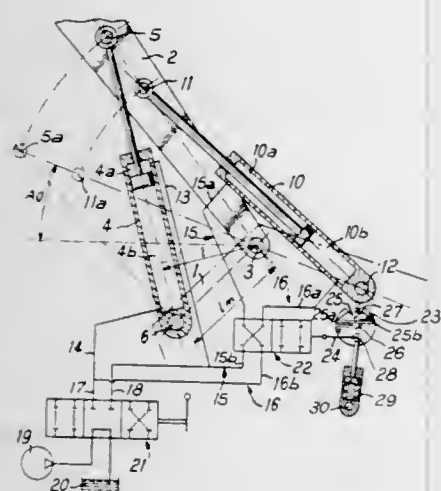
Filed July 17, 1974, Ser. No. 489,099

Claims priority, application France, July 19, 1973, 73.26559

Int. Cl.² B66C 23/54

U.S. Cl. 212—35 HC

3 Claims



1. Apparatus for changing the inclination of a pivotal element, the element being pivotal about an axis with respect to a fixed structure, the apparatus comprising a main jack connected between the structure and the element, and a secondary jack connected between the structure and the element, the main jack always being on the same side of said pivotal axis, the points of connection of the respective jacks to said structure and said element, and said pivotal axis constituting the vertices of two deformable triangles, the deformable triangle of which one side is defined by the secondary jack being flattened to form a straight line when the deformable triangle of which one side is defined by the main jack is substantially right-angled at its vertex defined by the point of attachment of said main jack to said structure.

3,900,114

CRANE APPARATUS

Tadao Inoue, Kashiwa, and Takeo Nakamura, Tokyo, both of Japan, assignors to Hitachi, Ltd., Japan

Filed Feb. 15, 1973, Ser. No. 332,546

Claims priority, application Japan, Oct. 11, 1972, 47-10035

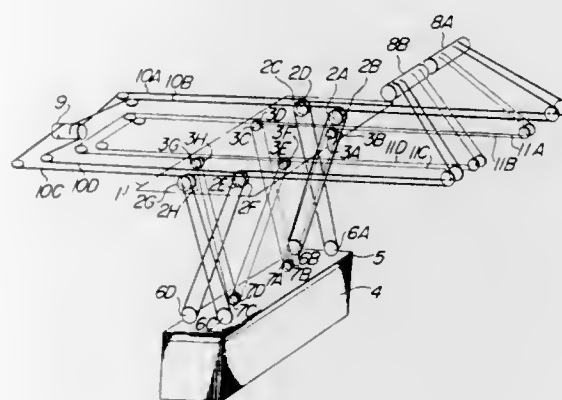
Int. Cl. B66c 11/16

U.S. Cl. 212—83

28 Claims

1. A crane apparatus comprising a trolley having a periphery, a load suspending device, load suspending rope means

disposed at an incline between said trolley and said load suspending device in such a manner that the rope means does not suppress swinging movement of a load, and swinging movement suppressing rope means disposed at an incline between the trolley and the load suspending device in such a manner to suppress the swinging movement of the load, the distance as measured along a plane of said trolley between a support



point of at least one of said load suspending rope means on said trolley and a support point of the same rope means on the load suspending device being equal to the distance as measured along the plane of the trolley between a support point of at least one of the swinging movement suppressing rope means on the trolley and a support point of the same suppressing rope means on the load suspending device.

3,900,115

APPARATUS FOR SUPPLYING THIN, FLAT ARTICLES

Naoki Kumagai, Yokohama, Japan, assignor to Itogihan Company, Ltd., Tokyo, Japan

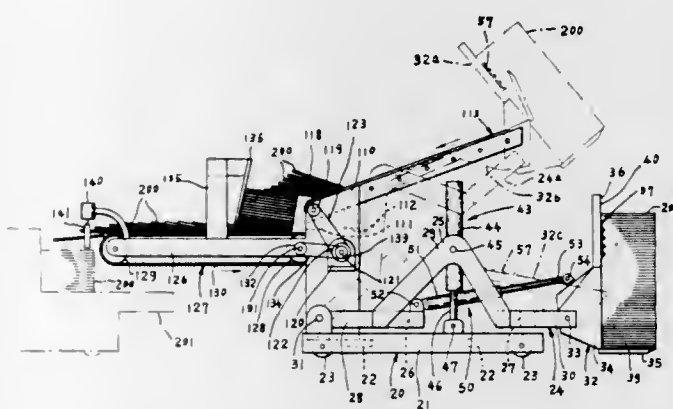
Filed Nov. 22, 1972, Ser. No. 308,820

Claims priority, application Japan, Nov. 24, 1971, 46-93613; Dec. 27, 1971, 46-105242; June 12, 1972, 47-57704; June 21, 1972, 47-61314; June 23, 1972, 47-62312

Int. Cl. B65g 59/08

U.S. Cl. 214—1 Q

6 Claims



1. An apparatus for supplying thin, flat articles comprising: reversing means for reversing the direction toward which said articles face while in a piled condition; and clearance making means for making at least one clearance space between a pair of side edges of said articles while said articles are being reversed, said clearance making means comprising at least one pantograph device having acting members for engaging said side edges of said articles and linkage means for connecting said acting members, said pantograph device stretching from a contracted condition to a separated condition while said articles are being reversed.

3,900,116

FUEL ELEMENT SHIPPING SHIM FOR NUCLEAR REACTOR

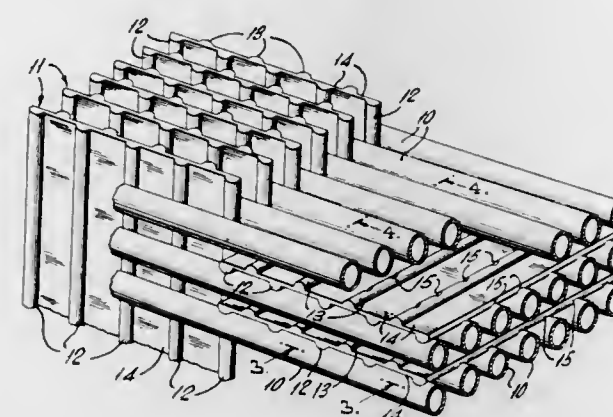
Aime Gehri, Richland, Wash., assignor to Exxon Nuclear Company, Inc., Richland, Wash.

Filed Sept. 5, 1972, Ser. No. 286,113

Int. Cl. B65g 1/14

U.S. Cl. 214—10.5 R

14 Claims



1. In a fuel assembly for a nuclear reactor comprising a plurality of elongated fuel elements having their longitudinal axes substantially parallel and arranged in spaced rows with each of said rows comprising more than one of said fuel elements, the improvement which comprises removable shim means extending along the length of said fuel assembly for preventing flexing of said fuel elements during shipment of said fuel assembly, said shim means comprising a first plurality of individual members having opposed ridged surfaces positioned between first adjacent rows of said parallel fuel elements with the ridged surfaces thereof extending in the same direction as said first adjacent rows and a second plurality of individual members having opposed ridged surfaces independent of said first plurality of members and positioned between second adjacent rows of said parallel fuel elements which rows extend in a direction perpendicular to that of said first adjacent rows and the ridged surfaces thereof extend in the same direction as said second adjacent rows, each of said first and second plurality of individual members being constructed and arranged to removably self-lock in position between said adjacent rows of said fuel elements, said first and second plurality of individual members being adjacent each other in alternating fashion for substantially the length of said fuel assembly.

3,900,117

FEEDING RING FOR FEEDING ORE INTO FURNACES

Frans Heikki Tuovinen; Seppo Ilmari Blomquist; Risto Markus Heikkilä, all of Tornio; Jorma Bruno Honkasalo, Westend, and Kalevi Johan Kunttu, Matinkyla, all of Finland, assignors to Outokumpu Oy, Helsinki, Finland

Filed Feb. 20, 1974, Ser. No. 443,977

Claims priority, application Finland, Feb. 26, 1973, 572/73

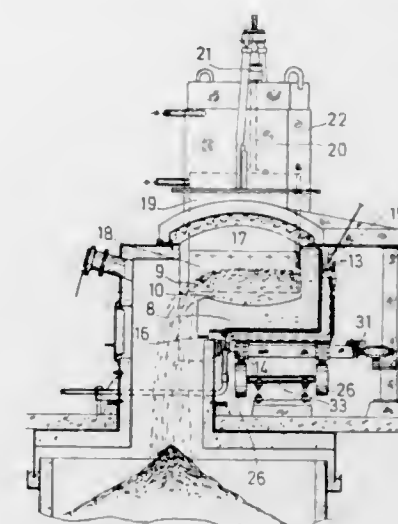
Int. Cl.² F23K 3/00

U.S. Cl. 214—18 R

7 Claims

1. A device for feeding and distributing a heated material, especially a charge of preheated ore concentrates into the batching silos of a light arc furnace, which comprises a ring shaped horizontal material shelf supported rotatably about its vertical axis and positioned above said batching silos, a ring shaped roof mounted stationary above the material shelf and provided with at least one opening for pouring the heated material onto the shelf, at least one stationary ring shaped wall joining the roof and closely related to the material shelf, substantially gas-tight and dust-tight tightening means between the material shelf and stationary parts related thereto,

at least two working scrapers supported movably adjacent the shelf to be brought periodically near the shelf surface thereby deflecting material on the shelf over the shelf



edge down into the batching silos, and a water cooled scraper box for each scraper into which the scraper is withdrawn periodically between periods of material deflecting operation.

3,900,118

LOADING TAILGATE FOR TRUCKS

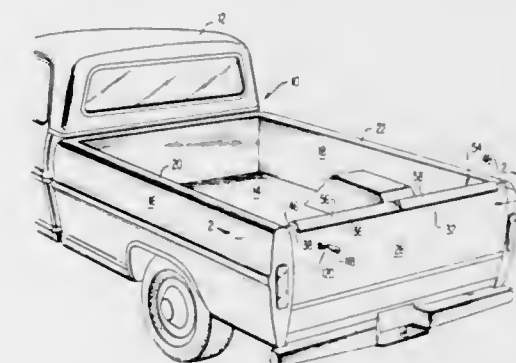
James R. Kellogg, Rt. 2, Meridian, Idaho 83642

Filed May 20, 1974, Ser. No. 471,587

Int. Cl. B60p 1/52

U.S. Cl. 214—84

3 Claims



1. In a truck body having a bed, and having side frames, a loading tailgate comprising: tailgate end walls and tailgate inner and outer wall panels, the end walls being hinged between the side frames of the truck body for movement between vertical and horizontal loading positions; loading roller means secured rotatably between said end walls and projecting at least partially outwardly of said end walls and inner and outer panels; and a brake system for the loading roller means, said brake system including a movable rod, and at least one brake pad moved by the rod to a position wherein it contacts the loading roller means and to a non-contact position.

3,900,119

VEHICLE STABILIZED FOR HEAVY DUTY USE

Harold L. Olsen, Waukegan, Ill., assignor to Olsen Axle & Equipment Company Inc., Waukegan, Ill.

Continuation-in-part of Ser. No. 192,085, Oct. 26, 1971, abandoned. This application Feb. 7, 1973, Ser. No. 330,420

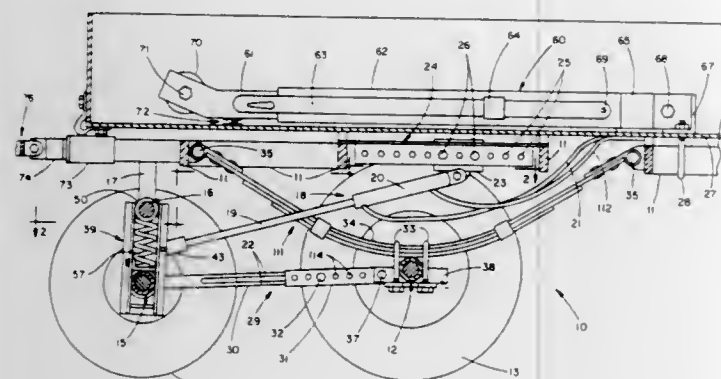
Int. Cl. B60p 1/54

U.S. Cl. 214—86 A

8 Claims

2. In a motor vehicle having a vehicle frame with a towing unit attached thereto for connection to disabled vehicles for purposes of towing such disabled vehicles and having perma-

nent front and rear axles and designed for operation with only two permanent axles and supported by wheels on the ends of said permanent axles, the improvement comprising a mounting assembly rotatably connected to the vehicle frame behind the rear axle for rotation about a mounting axis located above and to the rear of said rear axle, an auxiliary axle with auxiliary wheels mounted on the ends thereof carried by said mounting



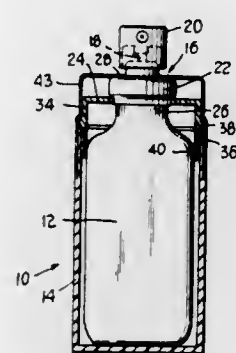
assembly and rotatable about said mounting axis between a lowered, load bearing position at the underside of said vehicle and a raised, load free position at the underside of said vehicle and forward of said mounting axis, actuating means connected to said vehicle frame and to said mounting means for moving said auxiliary axle between said lowered and raised positions, and locking means for locking said auxiliary axle in said lowered, load bearing position.

3,900,120
PREFORMS FOR FORMING PRESSURIZED CONTAINERS
Thomas F. Sincok, Simsbury, Conn., assignor to Monsanto Company, St. Louis, Mo.
Filed Feb. 12, 1973, Ser. No. 331,842
Int. Cl. B65d 81/20
U.S. Cl. 215-1 C
7 Claims



1. A tubular preform for molding into a container having at least a molecularly oriented portion, said preform being formed of a polymer wherein the major constituent is a polymerized nitrile-group-containing monomer, said preform having a substantially spherical bottom, an elongated body having a wall thickness of between 70 to 300 mils and a variation in wall thickness in the circumferential direction in a horizontal plane no greater than 20 percent, and a finished neck portion at the upper end of the body, the diameter of the neck portion being slightly greater than that of the body thereby forming a ledge for supporting the preform in a mold during formation of said container, the length of said preform below the neck being between 3 to 9 inches.

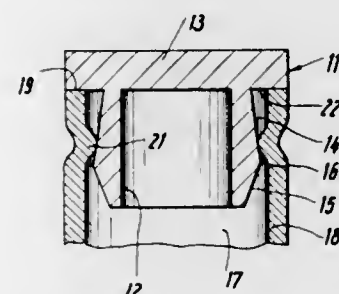
3,900,121
PACKAGE HAVING BOTTLE SUPPORT MEMBER THEREIN
Ralph E. Kruck, Waterbury, Conn., assignor to VCA Corporation, Richmond, Va.
Filed Nov. 16, 1973, Ser. No. 416,578
Int. Cl. B65d 23/08
U.S. Cl. 215-12 R
11 Claims



1. As new article of manufacture, a package comprising in combination:

- a. an outer casing having a bottom wall, a sidewall and a top opening of substantially the same diameter as the inside diameter of said casing adjacent the top of said casing;
- b. a bottle in said casing, said bottle having a neck portion and shoulder portion thereon;
- c. a plastic support, insert member received in said top opening for steadying said bottle, said insert member including,
 - i. a flexible top wall portion,
 - ii. a thin skirt portion depending from said top wall portion having at least a portion thereof engaging the interior surface of the sidewall of the casing adjacent its top opening, and
 - iii. said top wall having an opening therein adapted to at least partially encircle and to embrace the neck of the bottle at a point below the uppermost surface thereof so as to maintain the latter centralized with respect to the casing and prevent looseness thereof.

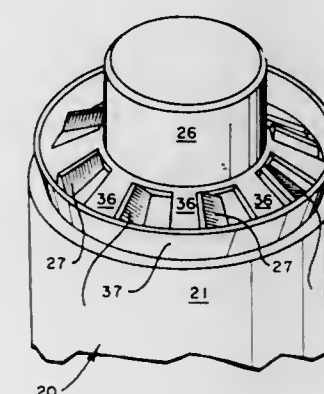
3,900,122
CONTAINERS WITH STOPPERS
Hans-Joachim Dichter, Sachendamm 93, 1 Berlin 62, Germany
Filed July 16, 1973, Ser. No. 379,379
Claims priority, application Germany, July 21, 1972, 2236528
Int. Cl. B65d 39/00
U.S. Cl. 215-31
2 Claims



1. A glass bottle for storing tablets, dragees or the like in combination with a resilient stopper insertable in a cylindrical opening in the bottle, said stopper having a resilient plug portion widening conically towards the interior of the bottle and then tapering inwardly again, said plug portion cooperating with an annular locking means arranged on the inner wall of the opening, said locking means being a bead against which a section of the resilient plug portion which widens conically towards the interior of the bottle bears resiliently in the closed

position of the stopper, the bead and the wall adjacent thereto being of substantially the same thickness, the bead thus forming not only a locking means on the inner wall but also an annular groove on the outer side of the bottle.

3,900,123
CHILD RESISTANT CLOSURE FOR COLLAPSIBLE TUBE
Henry S. Darlington, Aston, Pa., assignor to Teledyne Mid-America Corporation, Chester, Pa.
Filed Feb. 4, 1974, Ser. No. 439,549
Int. Cl. B65D 55/02
U.S. Cl. 215-216
4 Claims



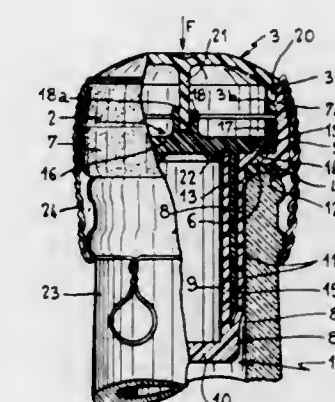
1. In a collapsible container having
 - a. a flexible, collapsible tube closed at the bottom,
 - b. a shoulder on top of the tube,
 - c. an externally threaded neck extending from the shoulder, and
 - d. an internally threaded cap adapted to be threaded on the neck;
- a child resistant closure comprising
 - a. lugs at circumferentially spaced positions on the shoulder, and integral therewith, wherein the lugs
 1. are beveled on one side thereof, and abrupt on the side opposite the beveled side, and
 2. are radially disposed,
 - b. radially disposed spokes extending integrally from the cap, and conforming to the shoulder of the tube when the cap is threadedly and fully engaged on the neck, said spokes being relatively thin and flexible in a direction longitudinal of the tube, and relatively wide and stiff in a direction rotationally of the tube, and a flexible ring surrounding and integrally secured to the spokes at the bottom of the ring,

wherein when the cap is screwed onto the neck of the tube the spokes flexibly come into contact with the lugs on the beveled side and ride over the lugs, and when the cap is unscrewed from the tube the spokes come into contact with the lugs on the abrupt side, whereby the cap is prevented from rotating, unless the spokes are lifted out of interfering engagement with the lugs.

3,900,124
MOLDED SYNTHETIC MATERIAL STOPPERS
Henri Marcel, Les Chères, France, assignor to Le Bouchage Mecanique, Paris, France
Filed Dec. 14, 1973, Ser. No. 424,719
Claims priority, application France, Sept. 13, 1973, 73.33509
Int. Cl. B65D 39/00
U.S. Cl. 215-291
16 Claims

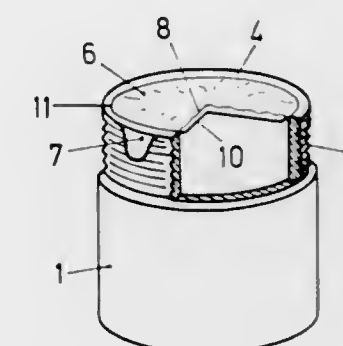
1. A stopper for closing the neck of a receptacle containing a beverage and for seating against its rim, comprising:
 - a hollow plastic stopper body comprising a head including an annular transverse base having a lower face shaped to overlie said rim and having an annular wall extending upwardly from an upper face of said base, and the body having at least one tubular skirt extending below the base

and closed by a bottom wall at its free end, the diameter of the said skirt being smaller than that of said head and sized to enter the neck of the receptacle;
a liner of gas-impervious material comprising a transverse head of diameter larger than said skirt and snugly fitting within said annular wall above said base, and the liner having a tubular sleeve extending downwardly within and



lining said skirt nearly to its bottom wall, and the skirt being displaced inwardly against the sleeve when the skirt is in the receptacle neck;
a cap engaging said annular wall and closing the head of said body; and
resilient packing surrounding the skirt at said lower face of the body for compression between the annular base and the rim of the receptacle when the stopper is closing it.

3,900,125
CASE SEALED BY A COVER, A PROCESS FOR THE MANUFACTURE OF A CASE COVERED BY A FOIL AND EQUIPMENT FOR EXECUTING THE PROCESS
Eugen Wyler, Kusnach, and Max Buser, Zurich, both of Switzerland, assignors to Lovida AG, Oberwil, near Zug, Switzerland
Filed July 23, 1973, Ser. No. 360,450
Claims priority, application Switzerland, May 18, 1972, 7377/72
Int. Cl. B65d 23/00, 53/00
U.S. Cl. 215-341
11 Claims



1. A container for cosmetic or pharmaceutical products comprising a case having an open end, defined by an upper rim, a foil fastened to the case and covering the open end; the foil stretched taut and smooth over the open end; and a cover secured to the case over the foil, the cover having a stamping insert which substantially depresses the foil below the rim in taut condition throughout the circumference of said case open end.

3,900,126

METALLIC CAN GLUED WITH SYNTHETIC RESIN PRODUCT

Katsukiyo Ishikawa, Yamatokouriyama, and Takayuki Shibata, Osaka, both of Japan, assignors to Nippon Paint Co., Ltd., Japan

Filed July 3, 1973, Ser. No. 376,175

Claims priority, application Japan, July 3, 1972, 47-66538; Mar. 24, 1973, 48-33856

Int. Cl. B44d 1/02

U.S. Cl. 220—75

9 Claims

1. A metallic can having a glued layer on the seam portion, which is characterized in that the glued layer comprises an olefin copolymer having a carboxyl group in the side chain and a polyurethane resin in a proportion of 5 : 100 to 100 : 5 by weight, the olefin copolymer being the copolymer of an aliphatic α -olefin having not more than 10 carbon atoms with an α,β -ethylenically unsaturated carboxylic acid having 3 to 8 carbon atoms, which has a melt index of 30 to 300 dg/min, and the polyurethane resin being the reaction product of an isocyanate with either a polyether or a polyester.

3,900,127

SEALING ASSEMBLY IN TANK

Karl Schwarz, Linz, Austria, assignor to Vereinigte Österreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft, Linz, Austria

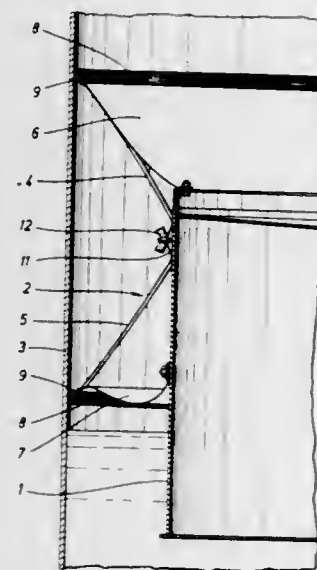
Filed Nov. 30, 1973, Ser. No. 420,538

Claims priority, application Austria, Dec. 6, 1972, 10399/72

Int. Cl. B65d 87/18

U.S. Cl. 220—216

5 Claims



1. In a large tank having a tank wall and a floating top which has a top rim and defines an annular gap with said tank wall, the provision of an assembly for sealing said annular gap, which assembly comprises

- a flexible sealing skirt, which is sealed to the periphery of said floating top and bridges said annular gap,
 - a flexible cover, which slopes down toward and is tightly secured to the top rim of said floating top,
 - upper and lower resilient profiled sealing members, and
 - a plurality of peripherally spaced apart leaf springs, which are secured to the periphery of said floating top,
- each of said leaf springs having diverging, upper and lower resilient legs, which extend upwardly and downwardly, respectively, from said floating top toward said tank wall, said upper legs having free ends, to which said cover and said upper profiled sealing member are secured and by which said upper profiled sealing member is forced into sealing engagement with said tank wall along a peripheral line thereof,
- said lower legs having free ends, to which said sealing skirt and said lower profiled sealing member are secured and by which said lower profiled sealing member is forced

into sealing engagement with said tank wall along a peripheral line thereof.

3,900,128

EASY OPEN CAN END RESISTANT TO PRESSURE

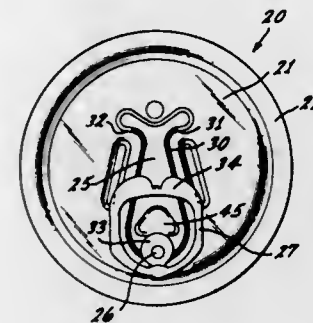
Omar L. Brown, Kettering, Ohio, assignor to Ermal C. Frazee, Dayton, Ohio

Filed Mar. 30, 1973, Ser. No. 346,712

Int. Cl. B65d 41/32

U.S. Cl. 220—269

20 Claims



1. An easy-open can end comprising:
- an end wall surrounded by a peripheral wall which defines the can chime,
 - a score line in said end wall defining a tear strip, tear strip being in said end wall and including a portion adjacent to said peripheral wall,
 - a tab means including a free end for pulling said tear strip away from said end wall by severing along said score line to form an opening which is larger adjacent said chime than in the center of said end wall,
 - a means affixing said tab means to said tear strip,
 - said free end of said tab means being positioned to overlie at least a portion the score line of said tear strip,
 - means in said tear strip of said can end for preventing said can end from assuming a permanently domed configuration when exposed to pressure from within said can tending to bulge said can end and permanently raising the free end of said tab means above said chime,
 - said means in said tear strip being a depression adjacent to said means for affixing said tab means, and
 - said depression having a depth in the portion thereof adjacent to said affixing means which is greater than the remaining depth of said depression.

3,900,129

COVER FOR RETAIL PRODUCE BASKETS

William A. Scholz, 132 N. Campus, Upland, Calif. 95486

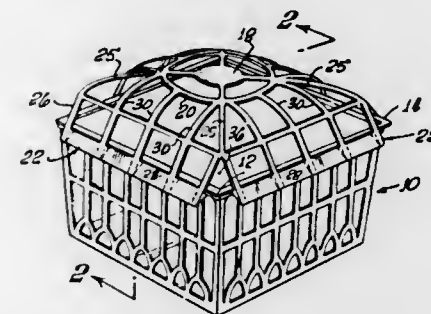
Continuation-in-part of Ser. No. 170,774, Aug. 11, 1971,

abandoned. This application May 4, 1972, Ser. No. 250,312

Int. Cl. B65d 43/10

U.S. Cl. 220—306

4 Claims



1. A closure for a rectangular produce basket that has a rectangular rim formed with a downwardly facing rim shoulder, comprising:
- a cover of rectangular plan configuration made of resiliently flexible plastic material and having four integral flaps on

its four sides to engage the four sides of said rim, respectively,

each of said flaps having two opposite side edges, the flaps being disconnected at their side edges to permit each of the flaps to be flexed independently of the other flaps, the four pairs of confronting side edges of the flaps defining four triangular recesses in the cover at the four corners of the cover;

upwardly facing hook elements formed on the inner sides of the four flaps near the outer edges thereof and extending inward from the flaps to engage said rim flange from the outer side thereof to releasably retain the cover on the basket.

3,900,130

INSERT FOR SECURING IN A HOLE

Sydney Alan Andrews, Stapleford, England, assignor to TRW Inc., Cleveland, Ohio

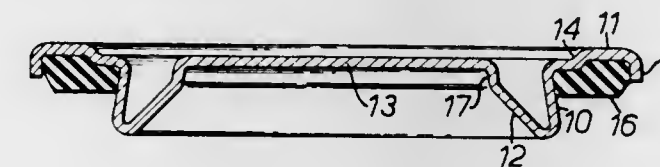
Claims priority, application United Kingdom, Jan. 26, 1972 3743/72

Filed Jan. 22, 1973, Ser. No. 325,781

Int. Cl. B65d 41/10, 39/04

U.S. Cl. 220—378

3 Claims



1. An insert for assembly in a through opening in a thin plate of firm material, said insert including a tubular member which will extend through said plate opening, an outwardly extending flange part integral with one end of said tubular member, said flange part carrying an adherent layer of resilient sealing material which will overlie one side of said plate at the edge of the opening therein, and a re-entrant tubular part having an integral, terminal, transverse free end part, said re-entrant, tubular part being integrally joined to the end of said tubular member remote from said flange part in a single, smooth, reverse bend which will lie beyond, but relatively closely proximate, the edge of said plate opening at the other side of said plate so that said re-entrant tubular part will extend from said bend back through the opening in said plate and its transverse free end part will lie beyond said one side of said plate, said tubular member and said re-entrant tubular part each being formed from a firm but deformable material and each of said member and said part being generally convergent from said reverse bend toward their ends remote from said bend, the end of said tubular member remote from said flange part being radially expandable and axially collapsible to provide a bead of twice the thickness of the material forming said tubular member overlying said other side of said plate adjacent the edge of said plate opening to lock said insert in said opening and draw said sealing material tightly against said one side of said plate responsive to the application of an axial force to the free end part of said re-entrant tubular part which is effective to move said free end part to a position wherein it lies generally coplanar with said plate.

3,900,131

STUD FEEDER FOR STUD WELDING TOOLS

Don E. Ehrlich, Avon, Ohio, assignor to TRW Inc., Cleveland, Ohio

Continuation of Ser. No. 275,675, July 27, 1972, abandoned, which is a continuation of Ser. No. 41,691, May 25, 1970, abandoned, which is a continuation of Ser. No. 723,852, April 24, 1968, abandoned. This application Aug. 27, 1973, Ser. No. 392,128

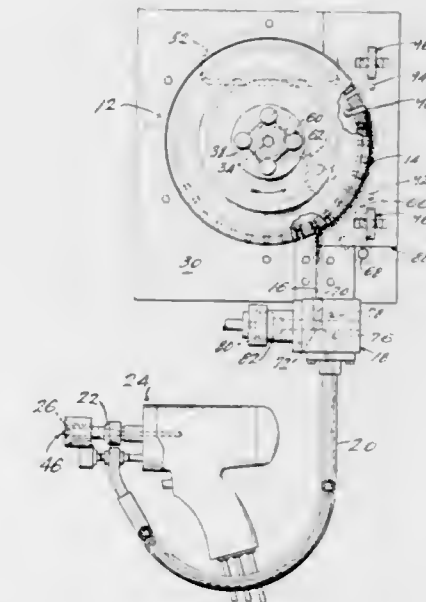
Int. Cl. B65h 9/00

U.S. Cl. 221—169

5 Claims

1. Stud feeding apparatus for feeding weldable studs, each having a head and a stem one at a time to a stud welding tool.

said apparatus comprising a removable cover plate having a stepped arcuate edge forming a recess to receive stems of the studs, means forming a chamber containing a plurality of the studs, said chamber forming means including a base plate supported at an angle to the horizontal, and a hollow rotatable member having an annular edge located in a plane closely adjacent said base plate, means supporting said rotatable member for rotation about an axis perpendicular to said base plate and to the plane of said annular edge, said annular edge of said member having a plurality of notches extending thereacross and shaped to receive the studs from the chamber when in a predetermined orientation with the heads of the studs



adjacent said base plate, means spacing at least the stepped edge of said cover plate from said base plate a distance exceeding the thickness of the stud heads, the stepped edge of said cover plate and the annular edge of said hollow rotatable member cooperating with said base plate to form an arcuate track extending alongside a portion of said annular edge of said rotatable member and positioned to receive the studs which pass through said notches in said rotatable member from said chamber, with the stems of the studs in the stepped edge recess and the heads projecting between said cover plate and said base plate and also between said annular edge of said hollow rotatable member and said base plate.

3,900,132

APPARATUS FOR HANDLING PARTS

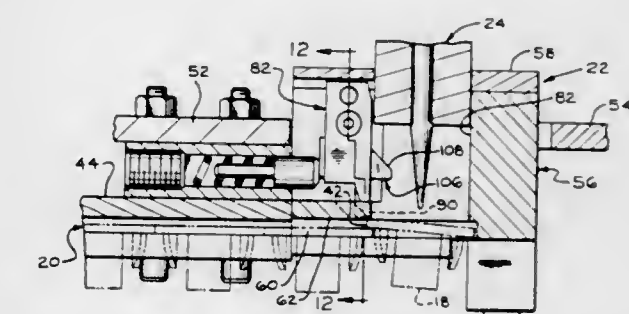
Donald E. Kuehn, Bay Village, and John Keith Lyon, Welling-ton, both of Ohio, assignors to TRW Inc., Cleveland, Ohio

Filed Sept. 27, 1973, Ser. No. 401,236

Int. Cl. B65h 3/24

U.S. Cl. 221—251

19 Claims



1. Apparatus for handling parts comprising means forming a transfer station, moving means for moving parts from said transfer station along a given path, guide means for directing parts sequentially into the path, part-control means including engagable means engagable by said moving means and engaging means for engaging a part adjacent said path, said engag-

ing means moving that part away from said path when said engagable means is engaged by said moving means, and yieldably-mounted feet for yieldably holding the first part in the path of said moving means.

3,900,133

PLATE SEPARATOR FOR SELF-LEVELING PLATE DISPENSING

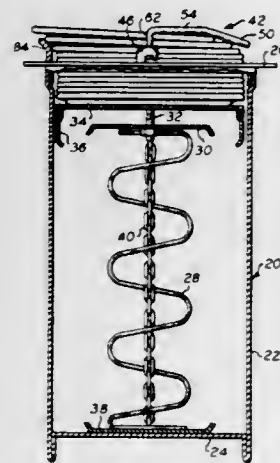
Arthur Lisbin, Upper Saddle River; George Ianney, Wayne Township, Passaic County, both of N.J., and James Albanese, Brooklyn, N.Y., assignors to Levelator Corporation, Paterson, N.J.

Filed Mar. 25, 1974, Ser. No. 454,280

Int. Cl. A47I 1/06

U.S. Cl. 221-280

7 Claims



5. A dispensing device comprising a container means containing a vertical column of articles to be dispensed, said container means having an opening through which said articles are dispensed, biasing means urging said column in one longitudinal direction towards said opening, operable means associated with said opening and engaging one longitudinal end of said column, said operable means including a first V-shaped portion disposed at an acute angle relative to the longitudinal axis of said column and cooperable with said biasing means to partially project said end article laterally to one side of said column to facilitate dispensing of said end article, said operable means including a second portion disposed generally perpendicular to the longitudinal axis of said column, said second portion having converging legs joined to respective legs of said V-shaped configuration of said first portion, said operable means further including a pair of upright portions each joined to a separate stop flange, said opening in said container means being surrounded by a flange, mounting means pivotally mounting one of said stop flanges to said container means flange, said mounting means includes a pivotal support lug, fastening means securing said support lug to said container means flange, pin means pivotally mounting said one stop flange between a part of said support lug and said container means flange, and latch means detachably latching the other of said stop flanges to said container means flange.

3,900,134

AUTOMATIC PLANT WATERING APPARATUS

Harold B. Larson, 260 Bay St., San Francisco, Calif. 94133

Filed Nov. 26, 1973, Ser. No. 418,885

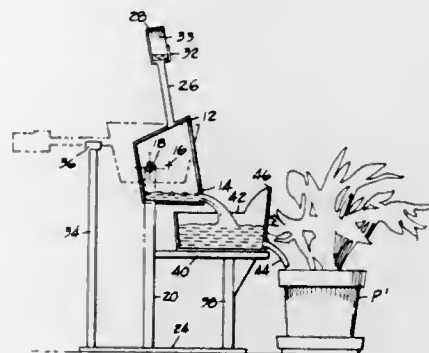
Int. Cl. B67D 5/08; A01G 27/00; F16K 17/36

U.S. Cl. 222-52

4 Claims

1. Automatic plant watering apparatus comprising a first relatively large impervious substantially covered container having a center of gravity and pivotally supported by upright members extending from a base member for pivotal movement about an axis spaced in a first direction from said center of gravity so as to create a tipping moment about said axis, a lever arm attached to said first container and extending there-

from, a second substantially open container mounted on said arm in counterbalanced relationship to said first container and spaced from said axis, means for adjusting and slidably mounting said second container on said arm a vertical member extending from said base member limiting the movement of said lever arm to a horizontal position, and quantities of liquids within said first and second containers, whereby at a predetermined time the evaporation of liquid from the second



container eliminates the counterbalanced relationship of said containers causing said containers to move from a horizontal position to a vertical position thereby discharging liquid from said first container to an auxiliary container, means extending from said base member for supporting said auxiliary container subjacent thereto and in liquid receiving relation to said first container in the discharge position, and at least one conduit secured to said auxiliary container for conveying liquid therein to a remote site containing at least one plant.

3,900,135

LIQUID DISTRIBUTION SYSTEMS

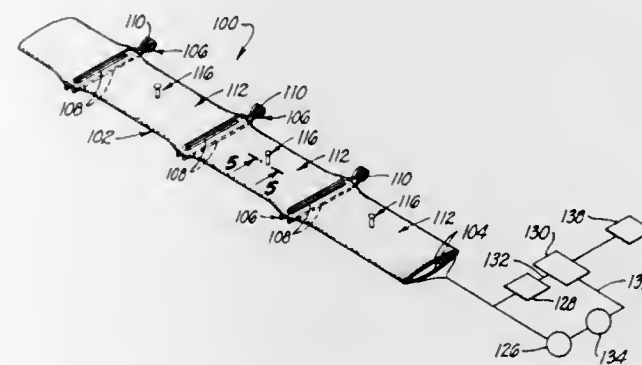
James B. Stephens, La Crescenta, Calif., assignor to Westates Space-Era Products, Inc., S. El Monte, Calif.

Filed June 24, 1974, Ser. No. 482,372

Int. Cl. B67d 5/08

U.S. Cl. 222-52

18 Claims



1. In a liquid distributing system in which liquid is conveyed through a conduit to a plurality of dispensing locations and is dispensed at each of said locations the improvement which comprises:

- a plurality of separate holding means for holding a quantity of liquid, said holding means being connected at various points along the length of said conduit,
- a plurality of separate dispensing means for dispensing liquid from said holding means, each of said dispensing means being associated with one of said holding means, liquid supply means for supplying liquid under pressure at intervals to one end of said conduit,
- said holding means being capable of receiving and holding liquid when liquid is supplied to said conduit by said supply means so that as such liquid is supplied there will be a decrease in flow from said supply means when all of said holding means have received liquid supplied by said supply means, and

flow responsive detection means connected to said conduit, said detection means being responsive to a decrease in flow from said supply means into said conduit and being connected to said supply means so as to be capable of terminating liquid being supplied to said conduit upon a decrease in flow from said supply means into said conduit.

3,900,136

LIQUID DISPENSING APPARATUS

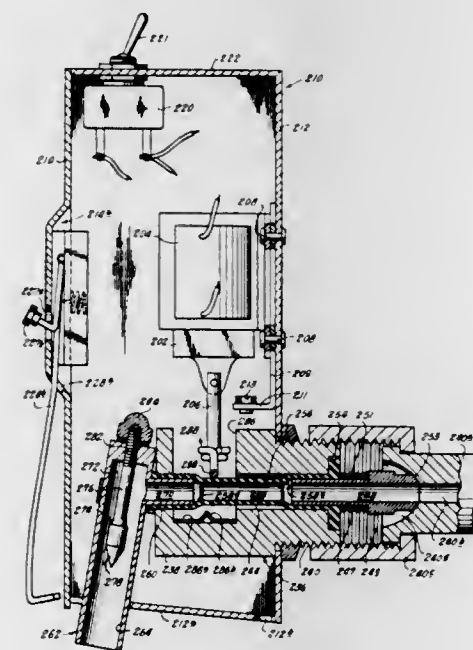
Archie V. Paranto, Dallas, Tex., assignor to Draft Meter Corporation, Dallas, Tex.

Filed Sept. 28, 1971, Ser. No. 184,603

Int. Cl. B67d 1/04

U.S. Cl. 222-70

4 Claims



1. A liquid dispensing apparatus adapted for connection to a tap on a beer keg having an explosion chamber therein and wherein an outlet opening from the keg extends through the wall of the explosion chamber, the improvements comprising, a valve body having a bore extending therethrough and having a notch formed intermediate opposite ends of said bore; an orifice sleeve adapted to be positioned in sealing relation with a wall of an explosion chamber adjacent the outlet opening therein, said sleeve having a passage therethrough having a diameter substantially equal to the diameter of the outlet opening; an elongated resilient tubular member positioned about an end of said sleeve, said tubular member having a passage having an inside diameter substantially equal to the inside diameter of the passage through the sleeve to provide a smooth transition through said passages; means to secure said valve body to a tap such that the tubular member extends through the bore in the valve body and the orifice sleeve is urged into sealing relation with the wall of the explosion chamber; a closure element having a leg; support means secured to said closure element arranged such that said leg extends through the notch in the valve body and engages a wall of said tubular member to close the passage through the tubular member; and actuating means arranged to move the leg from engagement with said tubular member.

3,900,137

FLUID DISTRIBUTOR

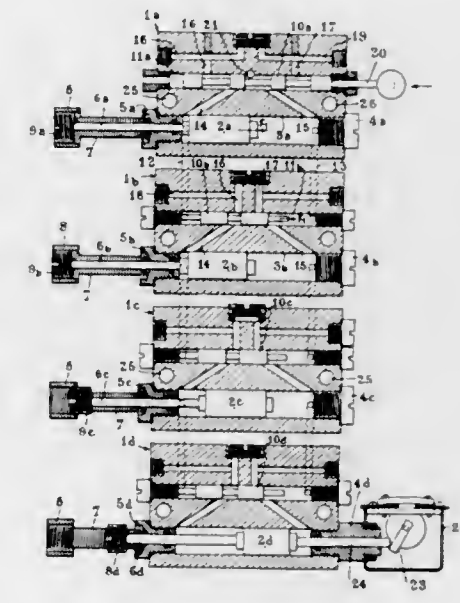
Henri Bricout, deceased, late of Meudon, France, by Marie Bricout, Didier Bricout, Catherine Bricout, and Veronique Bricout, heirs, all of Meudon, France, assignors to Societe d'Applications des Machines Motrices, Issy les-Moulineaux, Haut-de-Seine, France

Filed Sept. 16, 1974, Ser. No. 506,189

Int. Cl. G01F 11/38

U.S. Cl. 222-309

7 Claims



1. A fluid distributor, for distributing from a single pipe under pressure a plurality of separate predetermined doses of fluid, comprising:

- A. a series of devices each including
 - i. a dose-measuring cylinder having an outlet at each end,
 - ii. a dose-measuring piston movable in said cylinder,
 - iii. adjustable stop means determining the travel of said piston in said cylinder,
 - iv. a slide valve associated with said piston and having a smaller cross-section than said piston,
 - v. a cylinder receiving said slide valve and having its ends communicating each with a respective end of the dose-measuring cylinder of the next previous device of said series,
 - vi. a delivery conduit leading to a point to be supplied with fluid, said slide-valve controlling (a) intake of fluid under pressure selectively at one and the other end of said dose-measuring cylinder, and (b) connection selectively of one and the other outlet of said dose-measuring cylinder to said delivery conduit, and
- B. a control block positioned upstream of the fluid distributor and serving as a pilot, said control block serving to operate the slide-valves of the respective devices of said series of devices automatically one after the other.

3,900,138

MEDICAMENT DISPENSER

Robert E. Phillips, Studio City, Calif., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 278,538, Aug. 7, 1972, Pat. No. 3,818,908.

This application Jan. 2, 1974, Ser. No. 430,219

Int. Cl. G01d 11/08

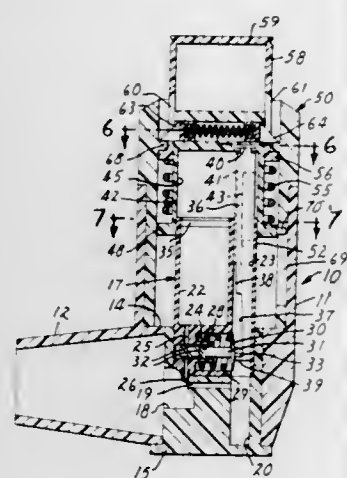
U.S. Cl. 222-340

3 Claims

1. A canister for supplying medicament to a dispenser comprising:

- a cylindrical shaped body member having a first axially extending bore extending toward one end and forming a reservoir, a second bore extending axially through said body member, said body having a third bore with a closed end extending generally diametrically thereto and com-

municating through axially aligned passageways with said reservoir and with said one end,
a piston slidably fitted in said third bore to form a pump, said piston having means affording selective communication of said third bore with said reservoir in a set position and with said one end in an expel position,



an axially movable operator having a cam surface positioned in said second bore for moving said piston, a spring positioned about said piston normally urging it from said bore to engage said operator, and a medicament stored in said reservoir.

3,900,139

AEROSOL DISPENSING VALVE IMPROVEMENTS

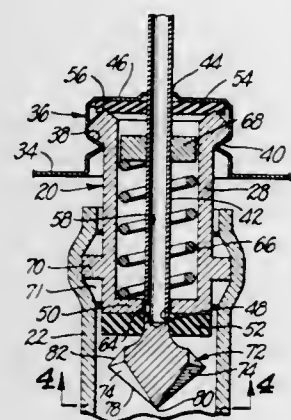
Harold J. Myers, 585 W. Duarte Rd., No. 31, Arcadia, Calif. 91006

Filed Aug. 9, 1973, Ser. No. 386,870

Int. Cl. B65d 83/00

U.S. Cl. 222-402.24

10 Claims



1. A dispensing valve for an aerosol dispenser for dispensing a particulate material which tends to agglomerate comprising:
 - a tubular housing having normally upper and lower ends,
 - a tubular valve stem extending centrally through and beyond the ends of said housing and having a central passage opening through the upper end of said stem and laterally through a port in the lower end of said stem,
 - an annular resilient wiper seal at the lower end of said housing surrounding and disposed in wiping contact with said stem,
 - a bearing member at the upper end of said housing guiding said stem for axial movement relative to said housing and seal between a lower open position wherein said port is below said seal and an upper closed position wherein said seal engages said stem below said port,
 - a spring within said housing above said seal and engaging said stem and housing for urging said stem to closed position, and
 - an enlarged agglomerate breakup head on the lower end of said stem having a lower pointed end and pointed teeth with relatively sharp axially presented cutting edges.

3,900,140

ROTATABLE CARRYING APPARATUS FOR VIDEO TAPE CAMERAS AND SIMILAR ITEMS

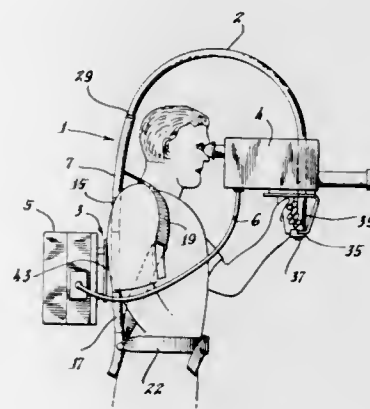
David Allen Kelso, North Bennington, and Robert James Howe, Bennington, both of Vt., assignors to K & H Products, Ltd., Bennington, Vt.

Filed Apr. 2, 1974, Ser. No. 457,237

Int. Cl. A45c 11/00

U.S. Cl. 224-5 V

5 Claims



1. A device for supporting units such as cameras, video cameras and auxiliary equipment, and the like on a person for mobility of use and ease of carrying, comprising:
 - a back frame and at least one strap for securing said frame to a wearer,
 - a substantially arcuate cantilevered arm pivotally secured to said frame and dimensioned to pass from said frame upwardly and about the head of the wearer to a position to support a unit thereon proximate to the wearer's face, pivotal means securing one end of said arm to said frame for rotational movement of said arm and
 - means at the other end of said arm for removably securing said unit to said arm,
 said arm and frame being so dimensioned as to distribute the weight of the unit supported via said arm directly to said back frame and thence to the body of the wearer so as to locate the center of gravity of the support device and unit supported substantially over the body of the wearer to balance thereon,
- whereby said frame and said arm support the unit on the wearer leaving the wearer's hands free and said arm may be selectively rotated between a position proximate the wearer's face for use and various positions to one side for additional use and non-use conditions.

3,900,141

METHOD OF AND APPARATUS FOR HANDLING WEB-LIKE MATERIAL

Clifford Duckworth, 21, West Ln., Baildon, Shipley, Yorkshire, England

Filed Aug. 30, 1973, Ser. No. 393,090

Claims priority, application United Kingdom, Aug. 31, 1972, 40400/72

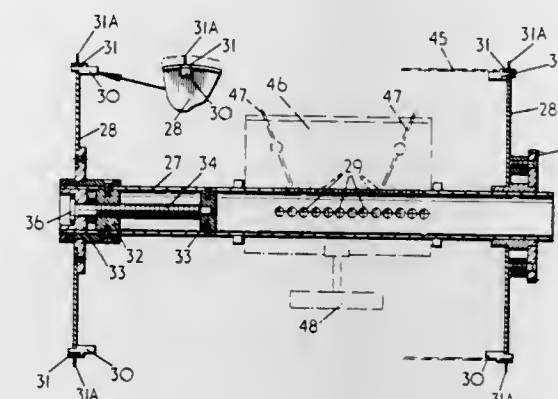
Int. Cl. B65h 17/38

U.S. Cl. 226-53

15 Claims

1. A frame for supporting a piece of web-like material to be subjected to sample testing, the frame comprising:
 - a shaft,
 - a pair of circular discs mounted on the shaft in longitudinally-spaced relationship,
 - a plurality of material-engaging pins on the circumfer-

ence of each circular disc, and
d. means between at least one of the circular discs and the



shaft and actuable to effect longitudinal displacement of the circular disc along the shaft.

3,900,142

ROLL FEED MICRO-ADJUSTMENT INDICATOR

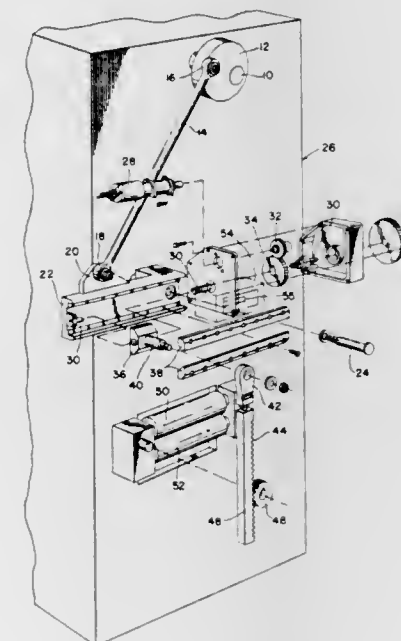
Kurt A. Burtch, Middleville, and James A. Lewis, Hastings, both of Mich., assignors to Gulf & Western Manufacturing Company, Southfield, Mich.

Filed July 15, 1974, Ser. No. 488,811

Int. Cl. B65h 17/22

U.S. Cl. 226-100

13 Claims



1. In combination with a press roll feed having a connecting rod eccentrically securable to one end of a press crank shaft; a rocker member pivotally securable to the press, the other end of said connecting rod being secured to said rocker member to reciprocate said rocker about its pivotal axis; an adjusting block shiftably secured to said rocker member; a rotatable adjusting screw engaging said adjusting block to shift it on said rocker member; means to rotate said adjusting screw, and roll feed drive means drivingly secured to said adjusting block, the improvement in means to measure and to observe adjustment of said adjusting block comprising:

a digital indicator mounted on the pivotal axis of said rocker member having visually observable dials; means to index said dials, and drive means between said adjusting screw and said digital indicator indexing means to produce a linear read-out on said digital indicator dials equal to the length of material being fed by the roll feed.

3,900,143

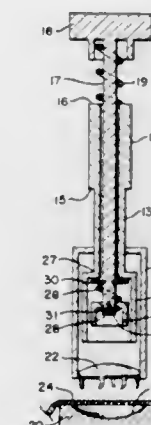
DECORATIVE STUD SETTING TOOL

Ofice Gallman, 11266 Malat Way, Culver City, Calif. 90230
Filed June 17, 1974, Ser. No. 480,094

Int. Cl. B25C 5/02

U.S. Cl. 227-109

4 Claims



1. A stud setting tool including:
 - a. a first cylindrical member having a first internal diameter corresponding to the diameter of a first sized stud for holding the stud;
 - b. a second cylindrical member having a second internal diameter lesser than said first internal diameter for holding a second smaller sized stud, said second cylindrical member being coaxially nested within said first cylindrical member;
 - c. a sleeve passing through said first cylindrical member to rigidly connect to said second cylindrical member; and,
 - d. a plunger passing through said sleeve to terminate within said second cylindrical member whereby a stud held in said first cylindrical member can be ejected by telescoping movement of said sleeve through said first cylindrical member to cause said second cylindrical member to engage said stud and push it free of the first cylindrical member and whereby a smaller sized stud held in said second cylindrical member can be ejected by telescoping movement of said plunger through said sleeve to cause the end of the plunger to engage said smaller sized stud and push it free of said second cylindrical member.

3,900,144

FASTENING MACHINE

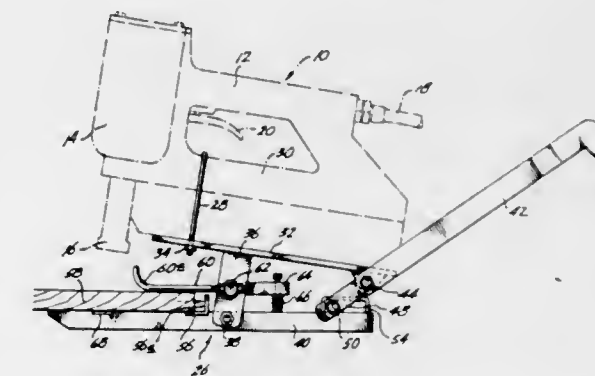
Haldon L. Hamilton, Crescent City, Calif., assignor to Hambro Forest Products, Inc., Crescent City, Calif.

Filed May 22, 1972, Ser. No. 255,565

Int. Cl. B25c 7/00

U.S. Cl. 227-155

1 Claim



1. An attachment for use with a fastening machine including a head adapted to carry a fastener and means for ejecting a fastener from said head to drive the same into a workpiece, comprising:

a mounting adapted to be secured to said machine, a workpiece support pivotally carried by said mounting, means interposed between said mounting and said support for swinging the support with respect to said mounting and for holding the support in a given position with respect to said mounting, said support having an anvil surface which becomes positioned in the path of a fastener ejected from the fastening machine with said support in said given position, indexing means carried by the attachment adjacent said support for indexing the edge of a workpiece on the workpiece support, and clamping means for clamping a workpiece on said support with the edge of said workpiece indexed by said indexing means, said clamping means comprising a spring biased arm overlying the support adapted yieldably to clamp a workpiece between the clamping means and the support, said arm including a second indexing means for indexing the edge of a second workpiece superimposed over the first-mentioned workpiece with said second workpiece overlying said anvil surface.

3,900,145

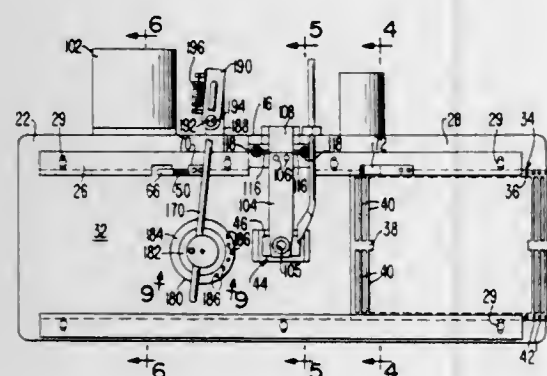
APPARATUS FOR INCREMENTAL MOVEMENT OF DIE FRAME

John C. Dieveven, 1737 Kimberly Dr., Sunnyvale, Calif. 94087

Division of Ser. No. 297,506, Oct. 13, 1972, Pat. No. 3,840,163. This application Jan. 30, 1974, Ser. No. 438,137
Int. Cl. B23k 3/04, 37/04; H05b 3/06

U.S. Cl. 228-4.1

7 Claims



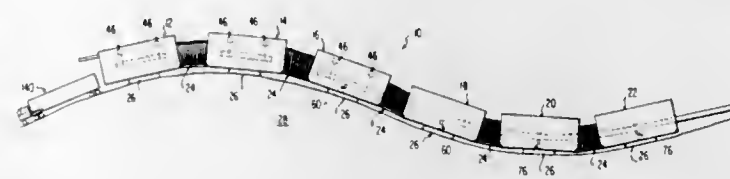
1. In a die bonding machine of the type having a generally horizontal plate provided with an opening and a heater element whose major portion is below the plate in alignment with the opening, the improvement comprising: a support; a heat shield for said heater element, said heat shield being transversely U-shaped and provided with a pair of opposed sides and a bottom; and means mounting the heat shield on said support, the support adapted to be secured to said machine at a location in which the sides and bottom of the heat shield are adjacent to and spaced from said heater element, said mounting means including a tubular post having a pair of open ends, said post being secured at its lower end to the support, said heat shield being coupled to the post adjacent to the upper end thereof.

5. In a die bonding machine of the type having a heater element disposed beneath the path of travel of a die supporting frame and a microscope for viewing a die support of said frame above the heater element, the improvement comprising: means defining a generally flat surface for holding a plurality of die members; and means coupled with said surface-defining means for shiftably pivotally mounting the same on said machine at a location thereon permitting the surface to be moved horizontally into and out of proximity to said heater element, whereby a die support on said frame adjacent to said heater element and said surface can be simultaneously viewed through said microscope.

3,900,146 METHOD AND APPARATUS FOR LAYING PIPELINES

Oliver W. Fowler, Houston, Tex., assignor to Brown & Root, Inc., Houston, Tex.

Filed Nov. 21, 1973, Ser. No. 417,720
Int. Cl.² B23K 31/02; B21D 39/02; F16L 1/00
U.S. Cl. 228-103 16 Claims



1. An apparatus for fabricating a continuous elongate tubular member and for laying said member upon a ground surface comprising:

- a plurality of longitudinally extending chambers;
- means connected to each of said chambers to thermally insulate said chambers;
- means for connecting said plurality of insulated chambers together end-to-end to form an articulated train of thermally insulated chambers;
- means for providing enclosed thermally insulated longitudinal communication between adjacent ones of said insulated chambers while simultaneously permitting articulated movement between adjacent ones of said insulated chambers;
- means positioned within said articulated train of chambers for forming tubular sections end-to-end into a continuous elongate tubular member;
- means for supporting the tubular sections and at least a portion of the continuous elongate member fabricated therefrom for longitudinal movement with respect to said articulated train, said supporting means comprising a plurality of laterally traveling hoists mounted within at least some of said longitudinally extending insulated chambers, and
- normally extending cradle rollers connected with each of said means for connecting said plurality of insulated chambers;
- means for propelling said articulated train of thermally insulated chambers along a desired underlying ground surface for advancing said articulated train from longitudinal support beneath the continuous elongate member and thus laying the continuous elongate member upon the ground surface; and
- means for controlling the temperature within the interior of said articulated train of thermally insulated chambers.

10. A method for fabricating a continuous elongate tubular member and laying the tubular member upon a ground surface comprising the steps of:

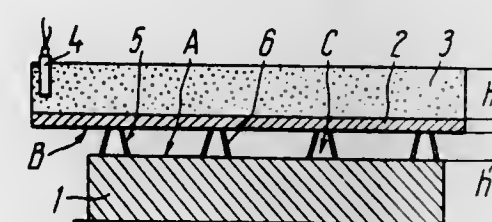
- providing a plurality of longitudinally extending thermally insulated longitudinal chambers connected end-to-end to form an enclosed articulated train with free axial communication between the thermally insulated chambers of the train, the train being suitable to extend along a ground surface and generally conform to the topography thereof;
- supplying tubular sections to the articulated train in a preheated condition relative to the ambient environment surrounding the exterior of the articulated train;
- maintaining a preselected temperature range within the interior of the articulated train;
- connecting the tubular sections to the free end of said elongate tubular member extending within the articulated train of insulated chambers; and
- advancing said articulated train from beneath the elongate tubular member to position said elongate tubular member upon the ground surface with a configuration of the elongate tubular member compatible with that of the topography of the underlying ground surface.

3,900,147 METHOD OF CLADDING METAL ARTICLES

Jury Ignatievich Apalikov, prospekt Lenina, 96, kv. 44; Jury Alexeevich Konon, ulitsa Novaya, 6, kv. 41; Leonid Borisovich Pervukhin, ulitsa Jurina, 116, kv. 40, and Boris Davydovich Tsemakhovich, prospekt Lenina, 69, kv. 41, all of Barnaul, U.S.S.R.

Filed Nov. 13, 1972, Ser. No. 306,348
Int. Cl. B32b 15/00
U.S. Cl. 228-107

1 Claim



1. In a method of cladding metal articles by explosive welding, including positioning a cladding article carrying a charge of detonating explosive in spaced relationship with a metal article forming a base member which is to be cladded therewith so as to provide a uniform spacing between their mutually facing welding surfaces, the improvement comprising: locating a plurality of upright, thin-walled hollow scattered elements at intervals over the entire welding surface between said cladding article and said base member; each said metal elements having a cavity open at opposite ends facing the respective welding surfaces of said base member and cladding article, the thickness of the walls of said hollow member being substantially constant along the height thereof and of at least one order smaller than the thickness of said cladding article; said metal elements being arranged so that a predetermined number of their ends surfaces concurrently form direct contacts with the welding surfaces of said cladding article and said base member so as to maintain said cladding article, together with the charge of detonating explosive, in contact with the welding surface of said base member, and maintain said spacing prior to the instant of explosive welding.

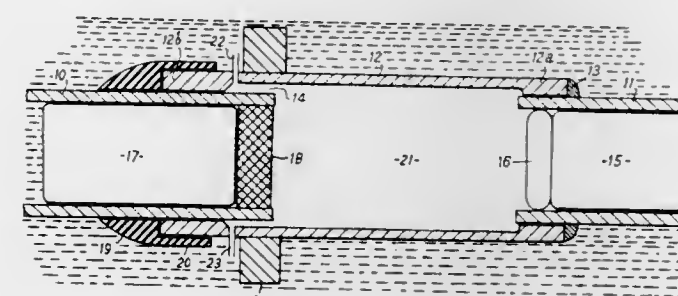
3,900,148 EXPLOSIVE WELDING OF SUBMERGED PIPES

Michael Dickenson Chadwick; Peter Woodall Jackson, and Derek James Brown, all of Newcastle-upon-Tyne, England, assignors to International Research and Development Company Limited, Newcastle-upon-Tyne, England

Filed June 19, 1973, Ser. No. 371,509
Claims priority, application United Kingdom, June 21, 1972, 29128/72

Int. Cl. B23k 27/00
U.S. Cl. 228-107

7 Claims



1. A method of explosively forming a joint between first and second tubular members submerged in a liquid comprising the steps of, assembling one end of the first member, one end of the second member, shock absorbing elements, internal and external seals and an explosive charge to form a jointing assembly, and

thereafter detonating the explosive charge to effect jointing of the said ends of the tubular members, wherein the said assembling step includes the following steps carried out in any operative order, a. arranging the said one end of the first member inside the said one end of the second member, b. disposing an explosive charge within the said end of the first member, c. disposing shock-absorbing elements in the bores of the two members on opposite sides of the explosive charge, d. arranging internal and external seals to form a sealed enclosure comprising at least the space between said ends, and e. displacing liquid from the said enclosure and replacing it with a gaseous medium.

3,900,149 METHOD OF PRODUCING ANTI-SKID STUDS FOR VEHICLE TIRES

Boris Evgenievich Paton, ulitsa Kotsjubinskogo, 9, kv. 21; Vladimir Alexeevich Gusev, ulitsa Malopodvalnaya, 14, kv. 9; Daniil Andreevich Dudko, pereulok Mechnikova, 3, kv. 7; Boleslav Ivanovich Maximovich, Bulvar Lesi Ukrainki, 2, kv. 52, and Grigory Bagradovich Asoyants, Bulvar Lesi Ukrainki, 2, kv. 16, all of Kiev, U.S.S.R.

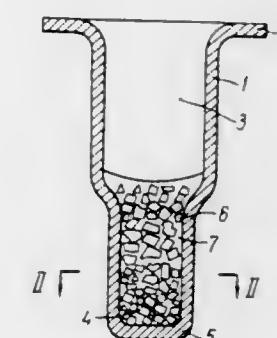
Continuation of Ser. No. 214,324, Dec. 30, 1971, abandoned.

This application May 4, 1973, Ser. No. 357,273
Claims priority, application U.S.S.R., Jan. 4, 1971, 1603843; Feb. 16, 1971, 1618804

Int. Cl. B23k 31/02

U.S. Cl. 228-122

1 Claim



1. A method of producing an anti-skid stud for vehicle tires, comprising the steps of: forming from a metal blank a sleeve with a stud body having a closed cavity projecting from a peripheral flange; charging the cavity of the said sleeve with granular material comprising a granular pre-selected hard alloy and a granular binder-alloy; heating said stud body charged with the said granular materials in a protected atmosphere preventing oxidation, to a temperature exceeding the melting point of the binder-alloy by a temperature in the range of 50°-150°C to insure and cause wetting of said granular material and at least part of the inside surface of said stud body and forming an integrated and a consolidated hard core of said granular material integrally and intimately adhered to the sleeve cavity in the anti-skid stud produced; and subsequently heating the charged stud in a second and additional stage to a temperature of 400°-450°C for a duration of 12-24 hours; and subsequently cooling the stud; wherein said charging step includes charging the stud cavity with 0.5-0.7 g. of a first material comprising by percentage of weight of 15% titanium carbide, six percent cobalt and the remainder being tungsten carbide; including in the charge 0.5-0.7 g. of a second material including, by percentage weight, 8% cobalt and the remainder being tungsten carbide; and forming the remainder of the charge as 0.4-0.6 g. of the granular binder-alloy containing by percentage of weight 30-40 % nickel, 30-40 % manganese and the remainder as copper.

3,900,150

DUPLEX COMPOSITE TAPE

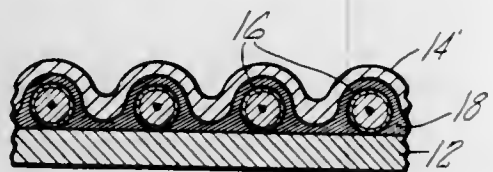
Eugene J. Delgrosso, Wallingford, and Carl E. Carlson, East Hartford, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Aug. 22, 1974, Ser. No. 499,654

Int. Cl.² B23K 28/02

U.S. Cl. 228—185

10 Claims



1. A method for the manufacture of fiber-reinforced metal matrix composites comprising the steps of:

positioning a plurality of evenly spaced reinforcing members on a first surface of a metallic sheet comprising the matrix metal;

depositing a layer of a first alloy of the matrix metal over the reinforcing members;

providing a layer of a second alloy of the matrix metal on an exposed surface of the sheet-first alloy layer intermediate thereby forming a fiber-reinforced metal matrix tap intermediate the second alloy being selected to have a lower melting point than the first alloy;

stacking a plurality of thus formed tapes; and bonding the stacked tapes together while preventing contact of liquid metal with the reinforcing members.

9. A braze bondable metal matrix tape comprising:

a metallic foil, said foil including aluminum;

a plurality of evenly spaced parallel oriented reinforcing fibers positioned on a first surface of said foil;

a thin layer of a first aluminum alloy bonding the fibers to the foil, said first alloy contacting only the fibers and said first surface of the foil; and

a layer of an aluminum braze alloy in contact with an exposed surface of the fiber-foil-first alloy layer matrix, said braze alloy having a lower melting temperature than said first alloy.

3,900,151

JOINING PROCESS

Heinz Schoer, Alfter, and Werner Schultze, Bonn, both of Germany, assignors to Vereinigte Aluminium-Werke Aktiengesellschaft, Bonn, Germany

Division of Ser. No. 285,099, Aug. 29, 1972, Pat. No. 3,807,033, which is a continuation-in-part of Ser. No. 98,173, Dec. 14, 1970, abandoned. This application Dec. 4, 1973, Ser. No. 421,655

Claims priority, application Germany, Sept. 2, 1971, 2143966 The portion of the term of this patent subsequent to Apr. 30, 1991, has been disclaimed.

Int. Cl. B23k 35/28, 35/38

U.S. Cl. 228—220

8 Claims

1. In a process of soldering aluminum-containing workpieces, the step of soldering said workpieces with a Zn base solder comprising 2–26% by weight of Al, and Be as a wetting agent, said Be lowering the viscosity and surface tension of said solder in its molten state and substantially decreasing the interfacial tension between the molten solder and said workpieces, and said step being performed without a flux and in a substantially non-oxidizing atmosphere.

3,900,152

METHOD OF METALS JOINING

David L. Purdy, and John F. Williams, both of Indiana, Pa., assignors to Arco Nuclear Company, Leechburg, Pa.

Division of Ser. No. 127,807, March 24, 1971, abandoned, which is a division of Ser. No. 624,916, March 21, 1967, Pat. No. 3,599,317. This application June 27, 1973, Ser. No. 374,013

Int. Cl. B23k 31/02, 35/38

U.S. Cl. 228—221

1 Claim



1. The method of producing an assembly composed of a member of one of the class of nickel alloys consisting of the alloys C,X and B, having respectively substantially the following compositions, C = Ni 54%, Mo 16%, Cr 15.5%, Fe 5%, W 4%, Co 2.5%, C 0.08, other 2.92%, X = Ni 47%, Cr 22%, Fe 18%, Mo 9%, Co 1.5%, W 0.6%, C 0.1%, other 1.8%, B = Ni 61%, Mo 28%, Fe 5%, Co 2.5%, Cr 1%, C 0.05%, other 2.45%, and a member of copper, the said method comprising, interposing a thin mass of titanium between said members to form a joint between said members, placing said members with said joint between them in an evacuated atmosphere, heating said joint to a temperature at which said joint becomes liquid, and then cooling said joint to permit it to solidify.

3,900,153

FORMATION OF SOLDER LAYERS

Wolfgang Beerwerth, Neheim-Husten; Albrecht Geppert, Warstein, and Rigobert Schimmer, Beleck, all of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

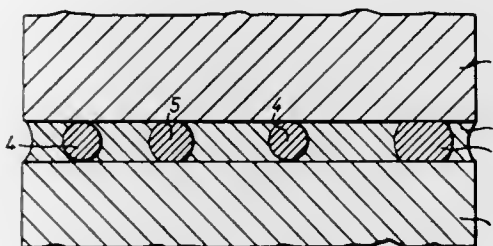
Filed June 13, 1973, Ser. No. 369,495

Claims priority, application Germany, June 13, 1972, 2228703

Int. Cl. B23k 1/12

U.S. Cl. 228—246

35 Claims



1. A method for producing a solder layer of a selected thickness between two parallel surfaces during the production of semiconductor devices, comprising: incorporating additives into solder which is to form the layer; introducing such solder with the incorporated additives between the surfaces so that the additives extend between, and contact, the surfaces; subjecting the solder to time and temperature conditions which cause it to form the desired layer; and giving the additives dimensions such that during the formation of the layer the distance between the two parallel surfaces contacting the additives corresponds to the desired solder layer thickness, the additives being so selected that their dimensions can change only within predetermined limits under said time and temperature conditions.

3,900,154

ASH COLLECTOR

William F. Martin, 350 Stonycroft Rd., Ridgewood, N.J. 07450

Filed Dec. 19, 1973, Ser. No. 426,342

Int. Cl. B65d 3/00

U.S. Cl. 229—1.5 R

1 Claim



1. An ash collector of integral construction comprising a chute section and a receptacle section communicating therewith, said chute section being tapered, open at both ends, and having an opening in its top portion extending the full length thereof, said chute section having side walls which are partially rolled and integral extensions of its bottom wall, said receptacle section having an end wall and an opposing end portion open for communication with the chute section, bottom and rolled side walls integrally extending from the corresponding walls of the chute section and a top wall formed by overlapping and securing together the further rolled integral extensions of the side walls of said chute section whereby ashes and the like may be introduced into the end and through the top at any point along the length of said chute section and then contained within said receptacle section.

3,900,155

PACKAGE

Hans A. Rausing, Lund; Jan-Erik Olsen, Malmo, and Jan Axel Ingemar Rauser, Lomma, all of Sweden, assignors to Tetra Pak Development SA, Lausanne, Switzerland

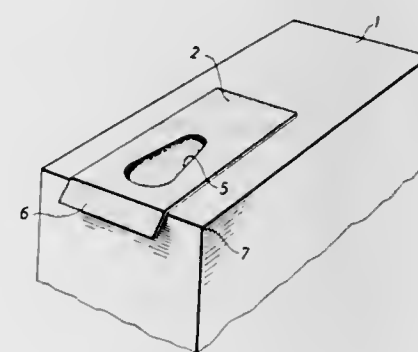
Filed Feb. 11, 1974, Ser. No. 441,218

Claims priority, application Switzerland, Feb. 20, 1973, 2410/73

Int. Cl.² B65D 5/12

U.S. Cl. 229—7 R

5 Claims



1. A disposable package comprising a container body formed of a laminated material having a support layer and an outer layer of heat sealable thermoplastic material thereon and having a flat top panel provided with a pouring opening therein, a closure strip covering said opening, at least a portion of said closure strip being sealed to the outer layer of the top panel in the area surrounding said opening, that portion of said strip which covers said opening being recessed into said opening, said recessed portion extending into said container body beyond the inner surface of said top panel and having a surface parallel to the inner surface of said top panel and an

area larger than that of said opening to releasably engage the periphery of said opening and secure the recessed portion of said strip within said opening, a portion of the closure strip remote from said opening being folded under through 180° and sealed to the outer layer of said top panel, said outer layer being scored beneath said closure strip between the pouring opening and the portion of said strip which is folded under to resist tearing, when said package is opened, of the outer layer where the folded portion of said closure strip is sealed to said outer layer.

3,900,156

CORNER PAD

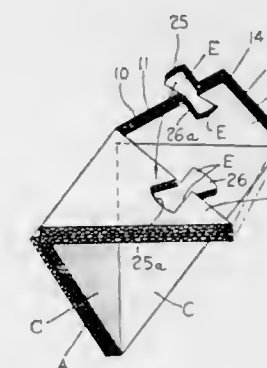
Alexander B. Clark, Jr., Box 2012, Hendersonville, N.C. 28739

Filed May 16, 1974, Ser. No. 470,655

Int. Cl.² B65D 25/12

U.S. Cl. 229—14 C

5 Claims



1. A protective shield for use on corners of articles during shipment comprising:

a flat, fluted cardboard blank;

an intermediate substantially triangular portion of said blank bounded on each side and the base on the underside thereof by slit scores;

an intermediate slit score on the underside of said intermediate portion extending from adjacent the apex to substantially the mid point of the base of said intermediate triangular portion;

a first pair of triangular flaps, each carried by a first mentioned slit score at each side of said intermediate portion;

a second pair of triangular flaps, each carried by the other first mentioned slit score at said base each extending substantially to the mid-point thereof, each flap presenting a free side extending from said base;

a third pair of triangular flaps, each carried by a slit score and foldable in superposed relation to an adjacent one of said second pair of flaps;

a first tab projecting outward from one of said free sides and a first notch carried by the other of said free sides complementary to said first tab for receiving same; and

a second tab projecting outward from one of said third pair of flaps and a second notch carried by the other of said third pair of flaps complementary to said second tab for receiving same;

whereby said tabs join said free sides when said first pair of flaps are folded inwardly to overlay said intermediate portion and said second and third pairs of triangular flaps folded into engagement.

3,900,157

TUB FILE

Herman P. Roth, 211 Anderson St., Manhattan Beach, Calif. 90266

Filed Mar. 19, 1974, Ser. No. 452,601

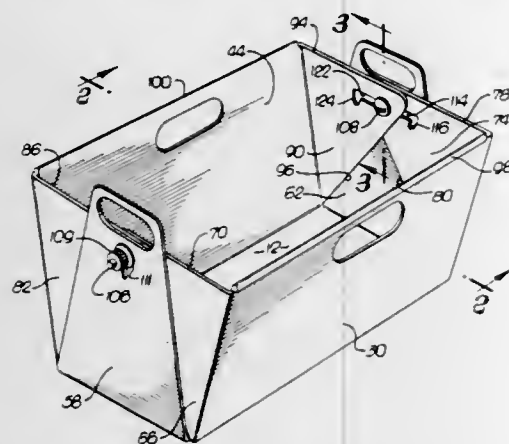
Int. Cl. B65d 5/20

U.S. Cl. 229—16 D

8 Claims

1. A structure comprising:

a generally flat, single unitary shaped panel having a plurality of subpanels defined therein, said subpanels including a generally rectangular base subpanel having two side edges and two end edges, a first side subpanel flexibly attached to one of said side edges, a second side subpanel flexibly attached to the second of said side edges, a first end subpanel flexibly attached to one of said end edges by a first flexible hinge, a second end subpanel flexibly attached to the second of said end edges by a second flexible hinge, each of said first and second side subpanels being generally rectangular and having two longitudinal edges and two transverse edges, four flap subpanels, each of said flap subpanels being



flexibly attached to a said transverse edge, said transverse edges being generally colinear with said end edges, said subpanels being adapted to be folded together into a compact packaged configuration and assembled into a convertible box-tub configuration, said first and second flexible hinges being elongated to accommodate the folding of said first and second end subpanels over the combined thickness of one of said flap subpanels and one of said side subpanels, fastening means for holding said subpanels together in said convertible box-tub configuration, said fastening means permitting at least one of said side subpanels to move pivotally about the said side edge to which it is flexibly attached between a box configuration and a tub configuration.

3,900,158

DISPENSER CARTON

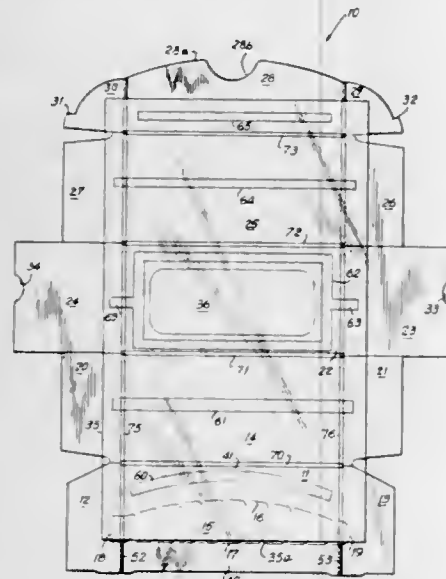
Thomas W. Berkhouse, Cincinnati, Ohio, assignor to International Paper Company, New York, N.Y.

Filed Oct. 26, 1973, Ser. No. 410,291

Int. Cl.² B65D 5/56, 5/54, 5/72

U.S. Cl. 229-17 S

6 Claims



1. In combination with a box having a bottom wall, a back wall, a top wall, a front wall and an end closure means, the improvement which comprises:

a. a front panel foldably connected to said top wall, said front panel including,

- i. at least one transverse tear line extending across said front panel, said at least one tear line dividing said front panel into an upper portion and a lower portion, and
- ii. a pair of spaced apart tear lines extending downwardly from said transverse tear line to the edge of the lower portion of said front panel;
- b. a fold-out panel foldably connected to said bottom panel and disposed behind said front panel the terminal edge of said fold-out panel disposed adjacent to said transverse tear line;
- c. means for adhesively securing at least a part of the lower portion of said front panel to said fold-out panel;
- d. a sheet of flexible material extending peripherally around the interior of said box from the inner surface of said fold-out panel to the inner surface of said front panel;
- e. means for securing said sheet to said fold-out panel; and
- f. means for securing said sheet to said front panel only at a location between said transverse tear line and the fold line which connects said front panel to the adjacent panel, the terminal portion of said sheet which extends beyond said location of securement being disposed between said front panel and said fold-out panel whereby said terminal portion of said sheet provides a dust cover when said box is opened.

3,900,159

CONTINUOUS FORM ENVELOPES

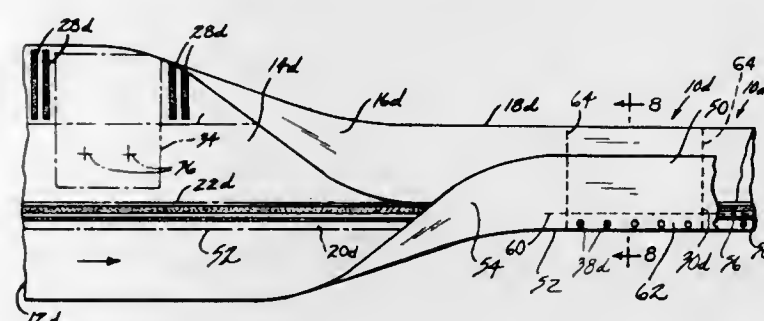
Wilfred H. Gendron, Wilbraham, Mass., assignor to United States Envelope Company, Springfield, Mass.

Filed Nov. 8, 1968, Ser. No. 774,261

Int. Cl. B65d 27/10

U.S. Cl. 229-69

5 Claims



1. An assembly of series connected separable envelopes comprising an elongated web of sheet material folded onto itself and having at least two plies including a lower ply and at least one upper ply connected to one side edge of said lower ply along a longitudinally extending fold line and overlying an associated portion of said lower ply, said lower ply having a longitudinally disposed marginal portion transversely extending beyond the free side edge of said one upper ply, means connecting said one upper ply and said lower ply in face-to-face relation along longitudinally spaced transversely extending lines of attachment to form a succession of envelopes each having a pocket including a mouth open at one side thereof and partially defined by said free side edge, a longitudinally spaced series of lines of weakening extending transversely of said plies, each of said envelopes being connected to an adjacent one of said envelopes along one of said transversely extending lines of weakening, at least one generally longitudinally extending line of weakening disposed on said marginal portion transversely spaced from said free side edge and separating a connecting strip from the remainder of said marginal portion, one longitudinally extending line of adhesive disposed on said marginal portion between said line of weakening and said free side edge, another longitudinally extending line of adhesive disposed on said connecting strip, another upper ply connected to the other side edge of said lower ply along another longitudinally extending fold line, said other upper ply overlying at least a portion of said one upper ply, said one line of weakening and said other side edge defining the transverse extent of said connecting strip, a portion of said other ply

overlying said connecting strip and attached in face-to-face relation thereto by said other line of adhesive, said other ply portion forming a part of said connecting strip, and another line of weakening disposed on said other ply and separating the portion of said other ply which forms said connecting strip from the remaining portion of said other ply.

3,900,160

PAPER CURRENCY DISPENSING ENVELOPE

Hideyuki Goto; Shoji Morishita, and Takashi Usami, all of c/o Omron Tateisi Electronics Co., 20, Igadera, Shimokaiinji, Nagaoka-cho, Otokuni-gun, Kyoto, Japan

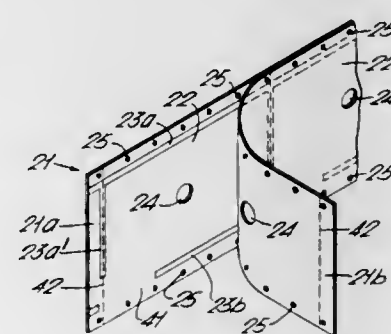
Division of Ser. No. 188,152, June 12, 1971, abandoned. This application June 1, 1973, Ser. No. 366,084

Claims priority, application Japan, Oct. 15, 1970, 45-102786

Int. Cl. B65d 27/04, 27/10

U.S. Cl. 229-71

2 Claims



1. A flat, planar, generally rectangular, paper currency-dispensing envelope defined by a pair of oppositely disposed sheets of pliable material which can be torn asunder to remove the currency therefrom, the mutually opposing faces of which sheets are adhered to one another at points along lines of securement coinciding with the margins of said envelope, there being a plurality of bills of exchange removably disposed in said envelope so as to be coincident as a whole with the plane of said envelope, the edges of said bills are disposed adjacent said lines of securement between said faces, and said lines of securement being substantially coextensive with said bill edges so that said bill is substantially surrounded by lines of securement and is not removable from said envelope without tearing said sheets asunder, there being, however, a section along at least one line of securement at which said faces of said sheets are unadhered and separable from one another so that an opening is formed between said faces of said sheets at said section and said opening being located at one corner of said envelope adjacent corresponding corner edges of said bills and being constructed so that the bill corners are exposed by said opening whereby the type and number of bills of exchange may be verified by counting the number of bill corners thus exposed before tearing the sheets asunder and removing the envelope contents.

3,900,161

WRAPPER FOR BREAD AND THE LIKE

Maurice R. Blackman, 9 Edgar Ave., Toronto, Ontario, Canada (M4W 2B1)

Filed Sept. 20, 1973, Ser. No. 399,070

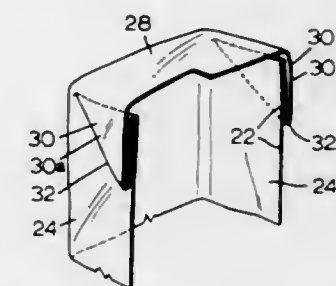
Int. Cl.² B65D 33/00

U.S. Cl. 229-87 B

8 Claims

1. A wrapper for bread and the like having a generally square closed end wall configuration in use comprising, a sleeve consisting of a pair of panels disposed in face-to-face relationship and connected to one another at the outermost side edges thereof, said sleeve having an open end and a closed end, said closed end of said sleeve being folded outwardly upon itself about a single fold line disposed adjacent and parallel to said closed end thereof so as to form end wall panel means extending between said fold line and said closed end, and side wall forming panel means extending from said

fold line to said open end, said end wall forming panel means having side edges secured with respect to each of said side wall forming panel means only at said outermost side edges thereof



3,900,162

METHOD AND APPARATUS FOR GENERATION OF MULTIPLE UNIFORM FLUID FILAMENTS

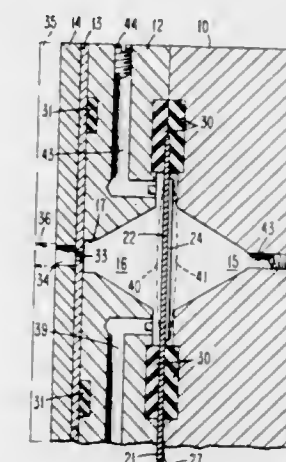
Donald E. Titus, Endicott, and Sherman H. M. Tsao, Apalachin, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 10, 1974, Ser. No. 432,260

Int. Cl. B05b 1/08

U.S. Cl. 239-102

14 Claims



1. Apparatus for producing a plurality of parallel streams of fluid droplets comprising:
means providing a cavity for receiving pressurized fluid;
nozzle means along a wall of said cavity means having at least one row of orifices therein;
means for supplying fluid under pressure to said cavity so that said fluid flows through said orifices in parallel streams;
means within said cavity for generating a series of pressure disturbances therein, said generating means including a flexible member and a plurality of independently movable elements cooperably bending said member to produce a said pressure disturbance when moved; and
means for simultaneously and repetitively moving said elements to create a said pressure disturbance along said nozzle row, thereby creating pressure perturbations within said issuing streams.

3,900,163

DISPENSING APPARATUS

Herbert W. Volker, 463 Church St., Kohler, Wis. 53044

Filed July 29, 1974, Ser. No. 492,544

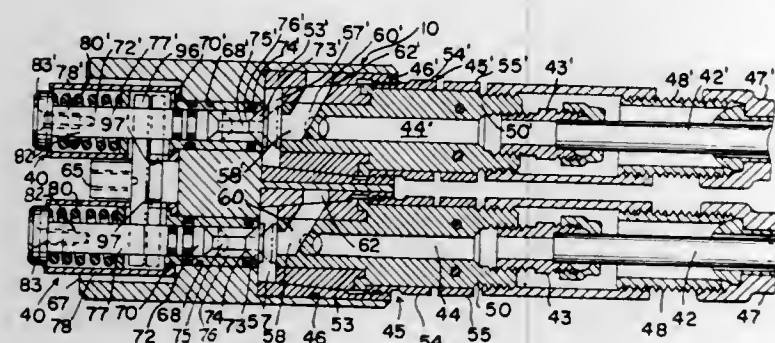
Int. Cl. B05b 7/04

U.S. Cl. 239-112

14 Claims

1. A device for mixing and dispensing coating material which comprises a body member, means forming a mixing chamber in the body member and a discharge nozzle leading therefrom, said body member having parallel bores extending therethrough, passageways leading from one end of each bore

to said mixing chamber, a flow control valve mounted in said one end of each bore, a flow selector valve adjustably mounted in each said bore in alignment with the flow control valve therein, a pivotally mounted trigger member having a connection with each of said flow control valves and operative in one position thereof to open said control valves so as to allow passage of coating through said passageways to said mixing chamber and operative in another position to close said flow control valves, each said flow selector valve having an axially extending infeed passageway to which an inner supply conduit is attached and a parallel passageway for return flow of material to which an outer conduit is connected which outer conduit encloses said inner supply conduit, each



said flow selector valve being disposed in its respective bore so as to provide a relatively small chamber between the innermost end thereof and the confronting innermost end of the associated flow control valve, each said selector valve being formed so that it is adjustable to a position to connect the infeed passageway with said chamber and also adjustable to a position to close the connection with said chamber and to connect the infeed passageway with the return passageway and each flow control valve being formed and disposed in its respective bore so that when said valve is in an open position material will flow from said chamber through said control valve.

3,900,164

MEANS FOR FEEDING FLUID MATERIALS TO A PRILLING BUCKET

Isak Andreas Friestad, Porsgrunn, Norway, assignor to Norsk Hydro A.S., Oslo, Norway

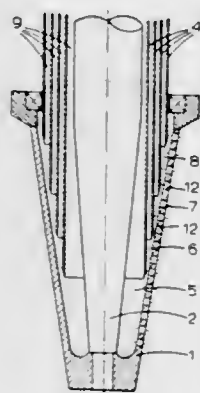
Filed Mar. 5, 1974, Ser. No. 448,387

Claims priority, application Norway, Mar. 8, 1973, 942/73

Int. Cl. B05b 3/08

U.S. Cl. 239—222

6 Claims



1. In a system for feeding liquid material to the orifices of a perforated conical prilling bucket which rotates about a vertical axis to throw said liquid material outwardly through said orifices of the bucket wall to form droplets which are solidified to form prills, the improvement comprising:

means for introducing said liquid material into said prilling bucket in the form of annular and laminar streams and directing each of said streams to vertically separated orifice row zones in the wall of said prilling bucket, said means comprising a plurality of cylindrical tubes defining

therebetween a plurality of annular spaces, said tubes being mounted in a concentric relationship about the axis of rotation of said prilling bucket, said tubes at their lower ends terminating adjacent said bucket wall along substantially horizontal planes, and dividing said wall into said separate orifice row zones.

3,900,165

HAND CARRIED SPRAYING APPARATUS

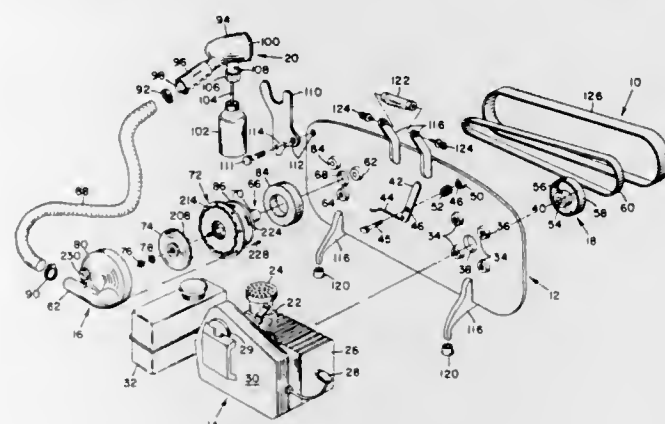
James G. Parke, and C. Richard Gerlach, both of San Antonio, Tex., assignors to Micro-Gen Equipment Corporation

Filed Apr. 15, 1974, Ser. No. 460,725

Int. Cl. A01g 25/14

U.S. Cl. 239—375

10 Claims



1. A portable insecticide aerosol generator comprising:
 - a. a source of air;
 - b. a source of insecticide;
 - c. means for pressurizing said source of air to a substantially constant pressure;
 - e. chamber means remote from said pressurizing means for receiving said substantially constant pressure air, said chamber means being independently movable with respect to said pressurizing means;
 - f. nozzle means forming a portion of said remote chamber means and in communication therewith; and
 - g. conduit means connecting said insecticide source to said nozzle means for communication therewith;
 - h. said insecticide being drawn into said nozzle means via said conduit means by vacuum force, mixed in said nozzle means remote from said pressurizing means, and dispersed from said nozzle means in a mist created by a turbulence therein to break the insecticide into small particles.

3,900,166

APPARATUS FOR RECIPROCATING A YARN GUIDE

Rolland E. Sartori, Riorges, France, assignor to Ateliers Roan-

naux de Constructions Textiles, Roanne, France

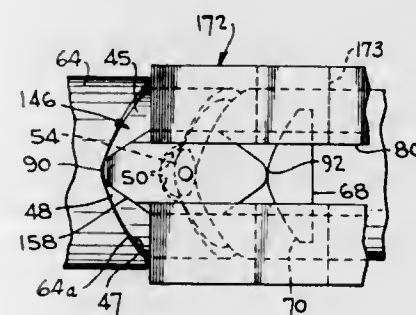
Continuation of Ser. No. 261,362, June 9, 1972, abandoned.

This application Dec. 27, 1973, Ser. No. 429,039

Int. Cl. B65h 54/30

U.S. Cl. 242—43

6 Claims



1. In apparatus for reciprocating a yarn guide for supplying yarn to be wound to a bobbin including a cylindrical rotatable

cam having a pair of spiral pilot grooves formed in the periphery thereof, said pilot grooves formed by side walls and joined at opposite ends of said cam to define spaced positions of direction reversal, track means disposed in parallel with said cam, and traveler means adapted to be connected with the yarn guide and slidably received in said track means, said traveler means including an axle carrying a pilot block riding in said pilot grooves, the improvement comprising:

direction reversing guide means disposed at each of said positions of direction reversal, each of said direction reversing guide means including a guide wall superposed and longitudinally spaced from the outer side walls of said pilot grooves at said direction reversal positions; said traveler means including a shuttle slidable in said track means, said shuttle having rounded ends for abutting said guide wall at a center of impact during direction reversal of said shuttle, each of said direction reversing guide means including a guide member on said rotatable cam opposite and spaced from said guide wall to prevent said pilot block and said axle from impact with the side walls of said pilot grooves during direction reversal of said shuttle.

3,900,167

CLOSED FACE SPINNING REEL

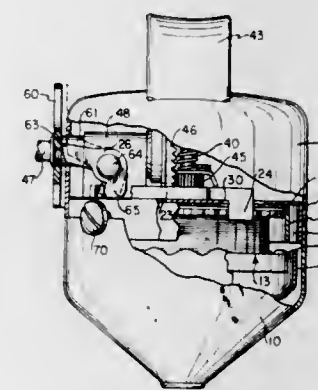
R. Dell Hull, 6101 E. Apache St., Tulsa, Okla. 74101

Filed June 17, 1974, Ser. No. 479,633

Int. Cl. A01K 89/00, 89/02

U.S. Cl. 242—84.2 A

6 Claims



1. In a closed face spinning reel including a cylindrical reel frame body having a transverse circular wall having an opening therein, a spool supported on a hub projecting forwardly of said wall, a main shaft extending axially through the center of said circular wall, a crank drive mechanism mounted in said reel frame for rotating said main shaft, line pickup means carried by the forward end of said main shaft, a front cover means closing off the front face of said reel frame and a rear cover means closing off the rear face of said reel frame, the improvement including:

- a. bracket means extending rearwardly from said transverse wall;
- b. a hollow externally threaded post means extending radially outwardly of said bracket means;
- c. said crank drive mechanism including crank shaft means disposed perpendicular to said main shaft and supported for rotation within said bracket means and within said post means;
- d. said crank shaft means projecting laterally outwardly of said cylindrical frame body to accommodate the mounting thereon of a crank handle;
- e. a drag brake lever of resilient leaf spring construction pivotally supported on said transverse wall and having a bent end projecting axially through said opening in said wall and engaging a peripheral portion of said spool, the other end of said lever being adapted to be selectively displaced to vary the drag braking pressure applied by said first end to said spool;

- f. a flat star wheel directly threaded to said post means for limited travel therealong;
 - g. a bell crank pivotally mounted in a plane perpendicular to that of said star wheel;
 - h. the one end of said bell crank engaging said star wheel and the other end engaging said drag brake lever;
 - i. whereby selective displacement of said star wheel along said post pivots said bell crank to vary the braking pressure applied to said line spool by the brake lever.
5. A closed face spinning reel comprising
 - a. a central circular reel frame means supporting a line spool, rotatable pickup head, and associated reel control mechanism thereon;
 - b. said reel frame means having peripheral circumferential flanges projecting axially thereof;
 - c. locking screws, each threaded engaged with said reel frame means, having a head portion defining an annular groove at the underside thereof;
 - d. cup-shaped front and rear covers having annular flanges of predetermined diameter slightly greater than the diameter of said peripheral reel frame flanges;
 - e. each of said covers including a pair of semi-circular openings defined by semi-circular shoulders;
 - f. said openings of said front and rear covers forming completely circular openings surrounded by annular shoulders when said front and rear covers are abutted in edge-to-edge relation;
 - g. whereby said covers may be locked to said reel frame in edge-to-edge abutment through the cooperation of said shoulders with said annular grooves of said locking screws.

3,900,168

TEXTILE CONE

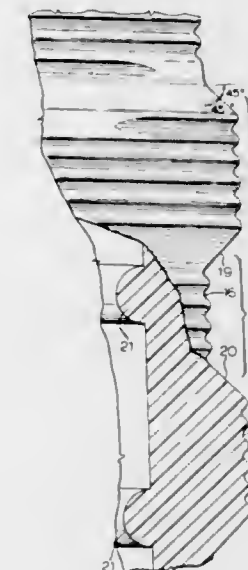
Arthur C. Hamilton, Weston, Canada, assignor to Texcone Limited, Mississauga, Canada

Filed Nov. 21, 1973, Ser. No. 417,866

Int. Cl. B65H 75/26, 75/10

U.S. Cl. 242—118.32

10 Claims



1. A plastic textile cone for winding synthetic yarn, comprising: a hollow frusto-conical body having a non-slip conical peripheral surface tapering from a circular base end to a relatively smaller circular truncated end, said peripheral surface having a surface configuration comprising a plurality of circumscribing ridge sections and groove sections formed alternately thereon, said ridge sections and groove sections being substantially parallel to said base end, and each of said ridge sections and groove sections having a front surface comprising a plurality of circumscribing fine grooves substantially parallel to said base end, whereby said peripheral surface has a frictional yarn-holding characteristic uniform throughout its entire length.

3,900,169

FILM CARTRIDGE

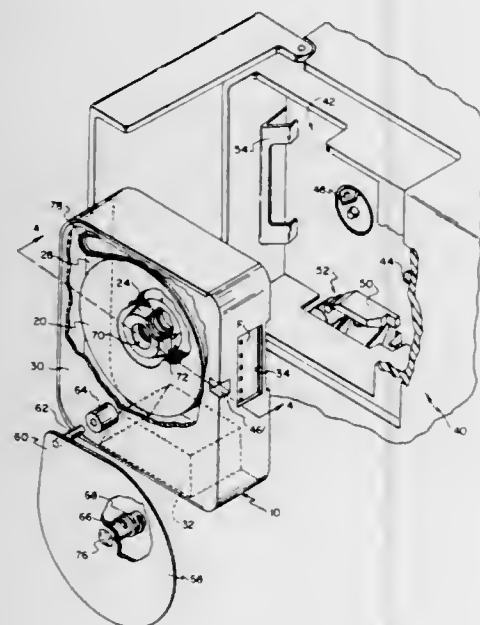
Jeffrey C. Robertson, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 30, 1974, Ser. No. 465,454

Int. Cl.² G03B 1/04; G11B 15/32

U.S. Cl. 242-194

5 Claims



1. In a cartridge having walls defining a chamber for a supply of strip material, the supply being a roll formed of a plurality of adjacent convolutions of the strip wherein opposite edges of the strip lie substantially in two parallel planes, the improvement comprising:

a restraining member disposed in the chamber substantially parallel to the planes in which the edges of the strip lie, said member being adjacent one of the planes and being movable between (1) a first position wherein the supply is held firmly between said member and one wall of the supply chamber with a force sufficient to hold adjacent convolutions of the strip against relative motion and to prevent rotation of the supply and (2) a second position wherein the supply is released to permit the supply to rotate;

resilient means operatively coupled to said restraining member for urging said member toward its first position; and means coupled with said restraining member and responsive to tension being applied to the strip for moving said restraining member toward its second position.

3,900,170

TAPE CASSETTE

Akio Serizawa, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 372,959, June 25, 1973, abandoned. This application Oct. 4, 1973, Ser. No. 403,431

Claims priority, application Japan, June 29, 1972, 47-76844

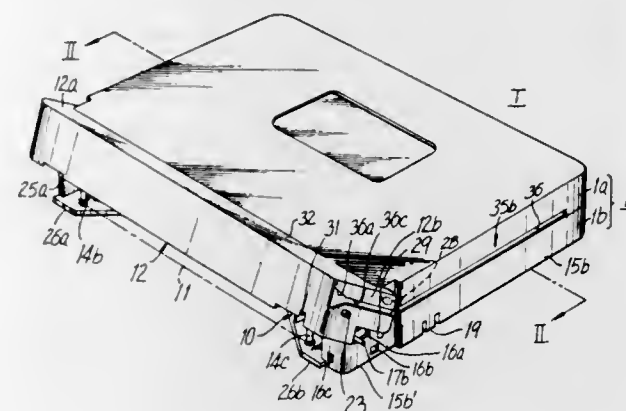
Int. Cl.² G11B 23/10

U.S. Cl. 242-198

8 Claims

1. A tape cassette comprising a housing of generally rectangular configuration containing a supply of tape and having top and bottom walls and a peripheral wall extending between said top and bottom walls along three of the sides of the latter so as to leave an opening along the fourth side of the housing through which the tape can be withdrawn, a lid pivoted on said housing for movement between a closed position covering said opening and an opened position exposing said opening, and guide means on said bottom wall extending in a direction parallel to said fourth side and on said peripheral wall along

at least one of the sides of the housing extending in a direction at right angles to said fourth side for slidably guiding the tape



cassette into a cassette holder in either of said directions without requiring the exertion of pressure on said lid.

3,900,171

TAPE CASSETTE

Akio Serizawa, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

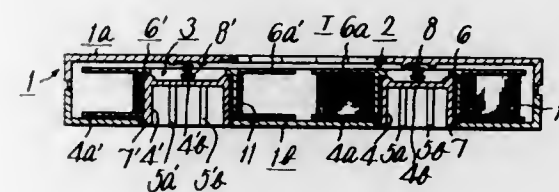
Continuation-in-part of Ser. No. 372,959, June 25, 1973, abandoned. This application Oct. 4, 1973, Ser. No. 403,488

Claims priority, application Japan, June 29, 1972, 47-76844

Int. Cl.² G11B 23/10

U.S. Cl. 242-198

7 Claims



1. A tape cassette comprising a housing of generally rectangular configuration containing reels on which a supply of tape is wound and having top and bottom walls and a peripheral wall extending between said top and bottom walls along three of the sides of the housing so as to have an opening along the fourth side of the housing, said bottom wall having a cutout communicating with said opening and extending along a portion of said fourth side of the housing, means guiding the tape between said reels in a path having a run extending along said opening and across said cutout so that said run of the tape can be engaged through said cutout for withdrawal of the tape through said opening, a lid mounted on said housing and being movable relative thereto between a closed position covering said opening and an opened position exposing said opening, said lid including a front portion which, in said closed position, extends along said opening and has a lower edge portion abutting, at its inner surface, against the adjacent edge of said bottom wall at opposite sides of said cutout, with said front portion of the lid being raised relative to said opening in said opened position of the lid, said front portion of the lid having cutouts in said lower edge portion thereof at spaced apart locations respectively disposed at opposite sides of said cutout in the bottom wall when said lid is in said closed position, and locating elements extending from said edge of the bottom wall at opposite sides of said cutout in the latter and being dimensioned and located to extend through and substantially fill said cutouts, respectively, in said front portion of the lid in said closed position of the latter and by which said housing can be

accurately located without hindering the movement of said lid.

3,900,172

TAPE CASSETTE

Naoki Kamaya, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

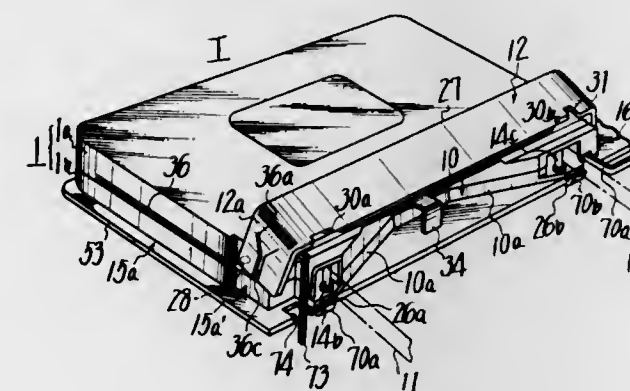
Filed Jan. 31, 1974, Ser. No. 438,447

Claims priority, application Japan, Feb. 1, 1973, 48-14227; Sept. 25, 1973, 48-111572

Int. Cl. G03b 1/04; G11b 15/32, 23/04

U.S. Cl. 242-198

7 Claims



1. A tape cassette comprising:

- a housing of generally rectangular configuration containing at least one reel for a supply of tape and having top and bottom walls and a peripheral wall extending between said top and bottom walls along the sides of the latter so as to leave an opening along at least a side of the housing through which the tape can be exposed;
- a lid pivoted on said housing for movement between a closed position covering said opening and an opened position exposing said opening; and
- means responsive to the position of said lid for preventing rotation of said reel when said lid is in the closed position and for permitting rotation of said reel when said lid is in the opened position.

3,900,173

RECORDING AND/OR PLAYBACK APPARATUS

Manfred Ketzer, Vienna, Austria, assignor to U.S. Philips Corporation, New York, N.Y.

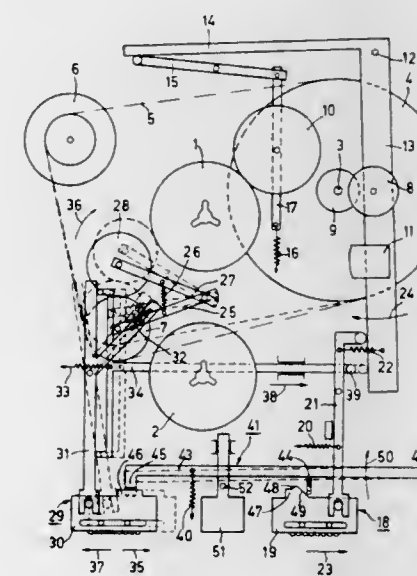
Filed July 12, 1972, Ser. No. 271,015

Claims priority, application Austria, July 15, 1971, 6161/71

Int. Cl. G03b 1/04; G11b 15/32

U.S. Cl. 242-201

5 Claims



1. In a recording and/or playback apparatus, an operating device locking mechanism comprising:

a first operating device for conditioning the apparatus for normal transport of a record carrier, said device being movable from a non-operative to an operative state;

a second operating device for conditioning the apparatus at least for rewind transport of the record carrier, said device being movable from a non-operative to an operative state;

means responsive to movement of said second operating device to an operative state for cancelling a function for which the apparatus is conditioned by said first operating device only for the time during which said second operating device is in an operative state;

common locking means responsive to the state of said first operating device for locking said first operating device in the operative state, and for locking said second operating device in an operative state upon movement from the non-operative state to an operative state only if said first device is in the non-operative state at a time said movement is initiated; and

means for releasing said common locking means.

3,900,174

AUTOMATIC MAGNETIC TAPE RECORDING AND REPRODUCING DEVICE

Toshio Morimoto, Hirakata, and Yoshiaki Fukunaga, Morigu-chi, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

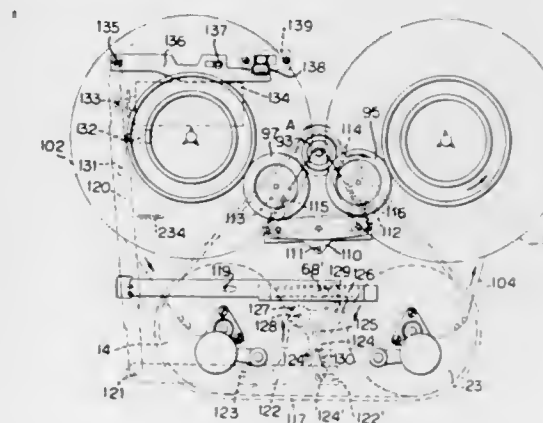
Continuation of Ser. No. 286,002, Sept. 5, 1972, abandoned, which is a continuation of Ser. No. 108,142, Jan. 20, 1971, abandoned, which is a continuation of Ser. No. 700,527, Jan. 25, 1968, abandoned. This application Jan. 4, 1974, Ser. No. 430,665

Claims priority, application Japan, May 4, 1967, 42-29040; May 4, 1967, 42-29041

Int. Cl. G11b 15/30

U.S. Cl. 242-209

4 Claims



1. In a magnetic tape recording and reproducing apparatus, comprising first and second reel stands for mounting tape supply and take-up reels, drive means for selectively driving said reel stands in opposite directions of rotation, first and second flywheels, having tape drive capstans mounted thereon, coupled to and rotatably driven by said drive means, control means coupled to said drive means for controlling the direction of rotation of said reel stands and said flywheels, and braking means mounted for engagement with said flywheels to exert a braking force on at least one of said flywheels when the direction of rotation of said flywheels is changed by said control means, said braking means comprising:

a rocker member movably mounted on a base plate of said apparatus;

first and second brake rollers mounted on said rocker member for engagement with said first and second flywheels, respectively;

a brake lever coupled to said control means for movable between first and second positions depending on the direction of rotation of said reel stands and flywheels; and means coupling said brake lever to said rocker member for moving said rocker member between first and second

positions in correspondence with said first and second brake lever positions, wherein

in said first position of said rocker member, said first brake roller engages said first flywheel to apply at least a momentary braking force thereto and said second brake roller is disengaged from said second flywheel, and

in said second position of said rocker member, said second brake roller engages said second flywheel to apply at least a momentary braking force thereto and said first brake roller is disengaged from said first flywheel.

3,900,175

GUIDANCE SYSTEM FOR AN ANTI-AIRCRAFT MISSILE
Gunnar Sten Gustav Birger Eckerstrom, Askim, and Sven Willner Eriksson, Karlskoga, both of Sweden, assignors to AB Bofors, Bofors, Sweden

Filed June 19, 1973, Ser. No. 371,387

Claims priority, application Sweden, June 26, 1972, 8398/72

Int. Cl. F42b 15/02

U.S. Cl. 244-3.13

2 Claims



1. In a guidance system for an anti-aircraft missile adapted to be launched from a launching device, comprising a sighting device disposed close to said launching device and having a sight-line movable about an azimuth axis and an elevation axis perpendicular to the azimuth axis and intended to be kept pointing at a target during the guidance of a launched missile towards the target, said launching device being coupled to said sighting device so as to have its launching direction substantially parallel to the direction of said sight-line at the instant of launching the missile; means for determining the deviation of the launched missile from said sight-line in a two-axes orthogonal coordinate system having a first axis and a second axis lying in a plane perpendicular to the sight-line with its origin coinciding with the sight-line and for producing a first deviation signal representing the deviation of the missile from the sight-line in the direction of said first coordinate axis and a second deviation signal representing the deviation of the missile from the sight-line in the direction of said second coordinate axis; and flight control means in said missile responsive to said deviation signals for influencing the direction of flight of the missile in a yaw control plane extending through the longitudinal axis of the missile in response to said first deviation signal and in a pitch control plane extending through the longitudinal axis of the missile perpendicularly to said yaw control plane in response to said second deviation signal so as to control the missile to fly along said sight-line, said flight control means including attitude sensing means for determining the orientation in space of said yaw and pitch control planes, the improvement comprising that said attitude

sensing means include a direction reference gyro mounted in a locked position relative to the missile before the launching of the missile with its reference direction perpendicular to the plane parallel to the elevation axis of the sight-line and to the launching direction of the launching device and adapted to be released in said position relative to the missile at the launching of the missile and subsequently to define a plane perpendicular to its reference direction as said yaw control plane for said flight control means, and that after the launching of the missile said coordinate system is rotated about the sight-line through an angle ϕ in response to the movements of the sight-line of the sighting device, the value of said angle ϕ corresponding at least approximately to the expression

$$\tan \phi = \frac{\sin \gamma_a \sin (\chi - \chi_a)}{\sin \gamma_a \cos (\chi - \chi_a) + \cos \gamma_a \cos \gamma_a}$$

where χ is the directional angle of the sight-line about its azimuth axis, χ_a is the value of the angle χ at the instant of launch, γ is the directional angle of the sight-line about its elevation axis and γ_a is the value of the angle γ at the instant of launch.

3,900,176

AIRCRAFT

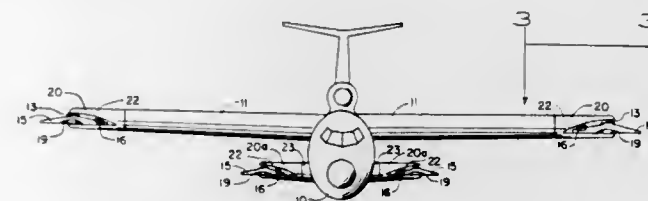
Robert A. Everett, 704 S. 142 E. Ave., Tulsa, Okla. 74108

Continuation-in-part of Ser. No. 365,555, May 31, 1973, abandoned. This application Jan. 31, 1974, Ser. No. 438,233

Int. Cl. B64c 27/30

U.S. Cl. 244-6

7 Claims



1. An aircraft with fixed wings, with rotors mounted to rotate around a vertical axis attached to the aircraft, a flap structure with a horizontal axis and attached to the surface of each rotor blade, an air scoop formed along the trailing edge of each flap arranged to face rearwardly of the direction of the rotor blade movement, a means arranged to permit each flap to pivot on its horizontal axis into a vertical position against a stop, when air currents contact the air scoop, whereby the underside of the flap is exposed to the pressure from the air currents, thereby forcing the rotor to rotate horizontally around its vertical axis and create lift force as it spins.

3,900,177

JET PROPULSION POWERPLANT

Peter Henry Calder; Prem Chandra Gupta, both of Bristol, and William James Lewis, Winscombe, all of England, assignors to Rolls-Royce (1971) Limited, London, England

Filed Oct. 10, 1973, Ser. No. 405,170

Claims priority, application United Kingdom, Oct. 14, 1972, 47500/72

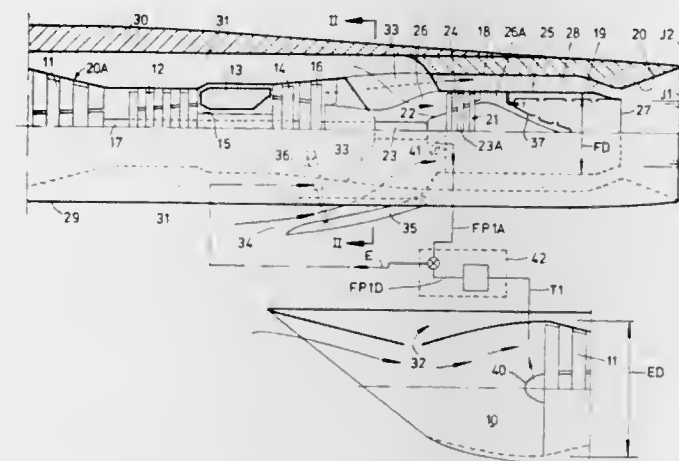
Int. Cl. B64d 27/20, 29/04

U.S. Cl. 244-53 R

4 Claims

1. A jet propulsion powerplant comprising a gas turbine turbojet engine, a casing for the engine having a substantially circular cross-section, a nacelle shaped for supersonic flight speeds in which the engine in its casing is located, the nacelle having a substantially square cross-section and defining with the casing a duct which thereby has an exterior periphery which is substantially square in cross-section and an interior

periphery which is substantially circular in cross-section, the nacelle having an inlet capable of receiving ambient air at flight speeds up to supersonic speeds and being arranged for supplying air to both said engine and said duct, characterised by a fan located within said nacelle downstream of the turbojet engine and connected to the turbojet engine thereby to be



driven by the turbojet engine, said fan having a rotational diameter less than the greatest rotational diameter of the turbojet engine said duct being connected to supply air from said inlet around the exterior of said casing to said fan, and means positioned substantially downstream of said turbojet for introducing additional air into said fan thereby to increase the air flow through said fan.

3,900,178

SUPERSONIC AIRCRAFT WITH A DELTA WING

Andrei Nikolaevich Leninsky prospekt, 14 Tupolev; Alexei Andreevich Tupolev, ulitsa Stanislavskogo, 15, kv.25; Kurt Vladimirovich Minkner, Leninsky prospekt, 30, kv.159; Alexandr Romanovich Bonin, naberezhnaya M. Gorkogo, 28/30, kv.33; Georgy Alexeevich Cheremukhin; Valentin Ivanovich Bliznjuk, all of Moscow; Alexandr Leonidovich Pukhov, Zhukovsky Moskovskoi Oblasti; Georgy Petrovich Svishev; Georgy Sergeevich Bjushgens, Moscow; Alexandr Vasilievich Nikolaev, and Vitaly Georgievich Mikeladze, Zhukovsky Moskovskoi Oblasti, all of U.S.S.R.

Continuation of Ser. No. 18,048, March 10, 1970, abandoned.

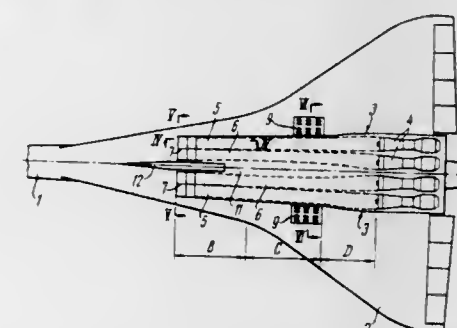
This application Apr. 10, 1972, Ser. No. 242,717

Claims priority, application U.S.S.R., Mar. 10, 1969, 1348852

Int. Cl. B64d 27/00

U.S. Cl. 244-55

8 Claims



1. A supersonic aircraft provided with a thin delta wing, comprising a pair of nacelles each of which nacelles accommodates two engines and two autonomous air intake ducts for servicing the engines, said nacelles being mounted under the wing near the longitudinal axis of the aircraft and arranged symmetrically relative to the longitudinal axis; the front portion of one of the air intake ducts disposed in one of said nacelles, which is the nearest to the longitudinal axis, being spaced from a similar portion of one of the air intake ducts disposed in the other nacelle, which is the nearest to the longitudinal axis, over a minimal distance equalling 1.35-1.70

of the width of the duct each said autonomous air intake duct including turnable panels, in which the front portion of the air intake duct which is nearest to the longitudinal axis of the aircraft in each of said nacelles, including the portion accommodating said turnable panels, is rectilinear in plan, and is disposed at an angle of 1.0°-1.5° relative to the longitudinal axis, with the angle peak facing the nose of said aircraft.

3,900,179

COLUMN ROLL OUT SUPPORT

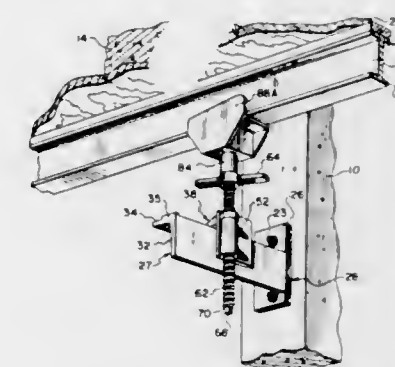
Richard C. Mocny, and Francis B. Mueller, both of Downers Grove, Ill., assignors to Waco Scaffold & Shoring Co., Schiller Park, Ill.

Continuation-in-part of Ser. No. 322,969, Jan. 12, 1973, Pat. No. 3,815,858. This application June 5, 1974, Ser. No. 476,406

Int. Cl. A47F 5/10; A47H 33/00; E04G 17/16

U.S. Cl. 248-287

11 Claims



1. In a device of the class described for shoring and rolling out formwork intact having spaced parallel beams for reuse in pouring concrete floor slabs, the combination of two support means laterally and directionally adjustable on adjacent sides of spaced structural columns comprising:

lateral adjustment extension means having opposing bases mounted on the structural columns and carrying horizontal arms defining vertical weight-bearing flanges extending approximately towards each other, shoring bracket means resting against said vertical flanges to form one side of a clamping member and adjustably movable towards and away from each other on said arms and including second clamping members for holding them in a predetermined spaced relation related to said parallel beams vertically disposed tubular elements spaced the same distance as said beams, screw lift means including screws supported in said tubular elements and including nut means threaded thereon for raising and lowering said screws when the screws are rotated, roller fixture means swivelly supported with respect to and on the upper end of the screws carrying horizontally disposed rollers to engage said parallel beams in roll-out relationship, guide flange means disposed square to said rollers and swivelly carried by said screw to engage said beams in laterally and longitudinally guiding relationship for confining the rollers square to a predetermined roll-out path for the formwork.

3,900,180

SUPER-SAFE TOWEL HOOK

John L. McPhee, Burlingame, Calif., assignor to Aluminum Plumbing Fixture Corporation, Burlingame, Calif.

Filed Apr. 10, 1974, Ser. No. 459,556

Int. Cl. F16B 45/00

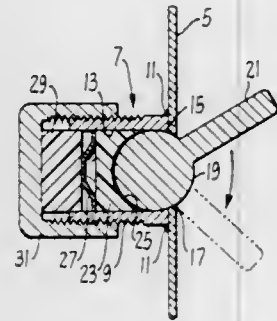
U.S. Cl. 248-288

1 Claim

1. A safety hook for towels and the like for use in the prevention of suicide by a person confined within a space at least part of which is defined by a wall, said safety hook being

incapable of resisting a substantial force either from horizontal or vertical forces, said safety hook comprising in combination:

- a. an enclosure defining said space and including at least one wall, said wall having a first surface exposed to the interior of said enclosure and a second surface exposed to the exterior of said enclosure,—
- b. a hole in said wall,
- c. a nipple extending outwardly from said hole on the second surface of said wall,



3,900,181

DUAL PURPOSE SOCK HOLDER

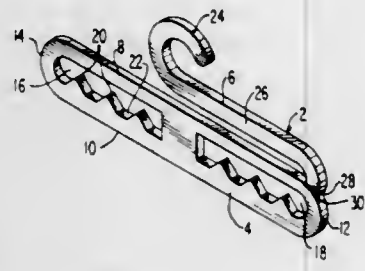
Nicholas James Pitani, 1819 Carolyn Dr., Lexington, Ky. 40502

Filed Jan. 15, 1974, Ser. No. 433,833

Int. Cl. A44b 17/00; A47j 51/08

U.S. Cl. 248—340

8 Claims



1. A dual purpose holder for a pair of hose by which the hose may be hung for sales display purposes and paired together for laundering purposes which comprises:

- a retainer member,
- a hanger member integral therewith,
- said retainer member being planar in configuration,
- two separate transverse openings in said retainer member, each opening being of such size that one hose of a pair may be draped therethrough and retained therein during a normal laundering of the hose,
- said hanger member being a sinuous rod having a C-shaped free end portion held spaced from said retainer member at one side thereof by an elongated leg portion,
- said hanger member being coplanar with said retainer member and attached thereto by said leg portion,
- said attachment being defined by a demarcation along which the hanger member may be separated from the retainer member by severance force.

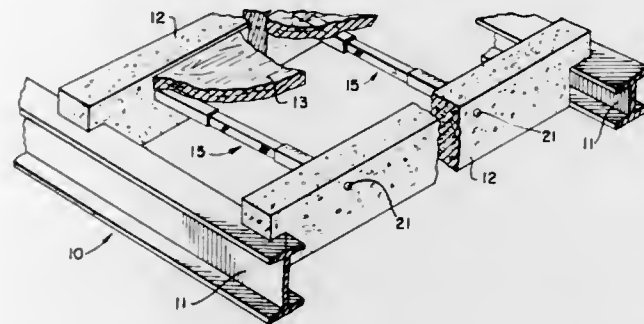
3,900,182
CONSTRUCTION FORM SUPPORT MEMBER
Herbert M. Berman, and Ira Hooper, both of New York, N.Y., assignors to Composite Construction Systems, Inc., New York, N.Y.

Filed Dec. 8, 1972, Ser. No. 313,488

Int. Cl. E04G 17/00, 25/04

U.S. Cl. 249—24

4 Claims



1. A form support member for supporting a concrete form relative to beams and joists in a building construction to receive concrete thereover comprising, longitudinally extensible and retractable support means including a central spanning member and telescoping end parts on opposing ends of said spanning member, each of said telescoping end parts including a support pin member extending outwardly therefrom to be received in a supporting relationship in openings in adjacent beams or joists to support a molding form, and means to provide movement of the telescoping end parts in a vertical direction relative to said support pin members to effect a contacting relationship with a molding form and a retracted relationship with said form, said vertical movement of said end parts to a contacting relationship with said form effecting a frictional bond between said spanning member and said telescoping end parts to secure said end parts against longitudinal movement when said support pin members are positioned in said openings, said vertical movement to a retracted relationship permitting easy withdrawal of said pin members from said openings and removal of the form support member.

3,900,183

DIE ATTACHMENT FOR FORMING SPLIT TYPE FASTENERS ON MOLDED PARTS

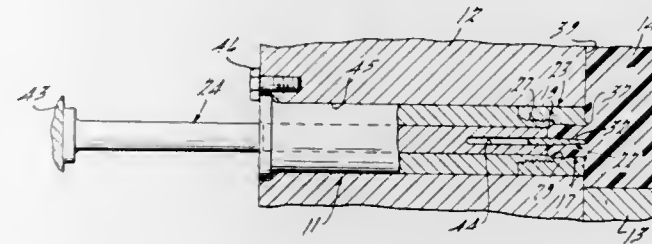
Maynard Wallace, 38172 Seaway Dr., Mt. Clemens, Mich. 48073

Filed Mar. 5, 1974, Ser. No. 448,190

Int. Cl. B29C 7/00, 1/06

U.S. Cl. 249—68

7 Claims



1. In combination with die parts defining a die cavity, a die attachment for forming a split type fastener on a molded part, comprising a sleeve having a bore and an inner end facing the die cavity, a forming wedge carried by the inner end of said sleeve, a cap mounted on the inner end of said sleeve and holding said forming wedge in place, said cap having a bore for forming the outer surface of said fastener, said forming wedge extending into said cap bore for forming the slot of said fastener, and an ejector pin slidably mounted in said sleeve and movable between an outer position in which its end coacts with the surfaces of the cap bore, sleeve end and forming wedge to form a cavity for molding the fastener, and an inner position in which it ejects the molded fastener from the bore,

the ejector pin having a slot for accommodating said forming wedge.

3,900,184

ROLLER CLAMP FOR TUBING

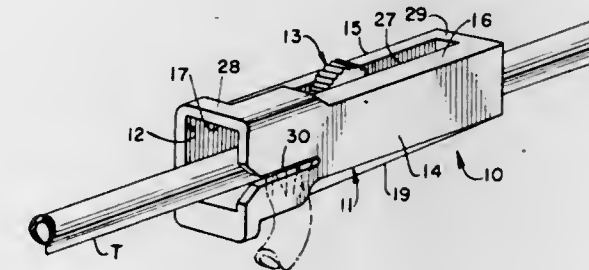
George K. Burke; Kenneth Raines, and Robert J. Le Fevre, all of Bethlehem, Pa., assignors to Burrin Medical Products, Inc., Bethlehem, Pa.

Filed Dec. 13, 1973, Ser. No. 424,323

Int. Cl. F16K 7/06

U.S. Cl. 251—6

12 Claims



1. A roller clamp for tubing, comprising an elongate tubular body having an axially extending opening therethrough, a ramp at one side of the opening, said ramp having an elongate, axially extending channel therein of increasing depth toward one end thereof, said body having a runway in an inner bottom surface thereof extending longitudinally of the body in parallel relationship to said ramp, and a roller mounted in said axially extending opening for rolling movement therealong, the roller comprising a circular finger engaging portion having opposite faces and a peripheral finger engaging portion accessible exteriorly of the body for manually rolling the roller axially of the body, said peripheral portion of said finger engaging portion supported on said runway for rolling movement along said runway, and a tubing engaging portion extending coaxially from one face of the finger engaging portion, said tubing engaging portion being of reduced diameter relative to the finger engaging portion and having a peripheral outer surface and projecting transversely across the ramp and channel for clamping a length of flexible tubing between the peripheral outer surface of the tubing engaging portion and the ramp and between a side wall of the body and said one face of the finger engaging portion to deform a portion of the tubing into the channel and thus control flow through the tubing.

3,900,185

HOIST CONVERSION UNIT FOR SMALL TRACTORS

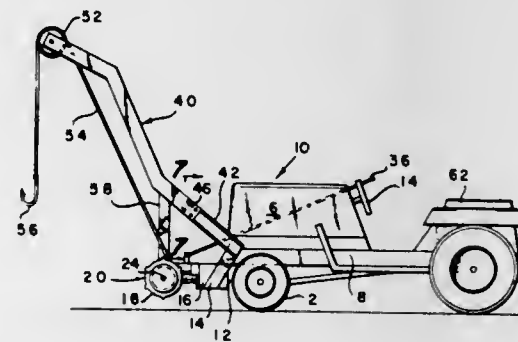
John F. Burr, 32 N. Kanawha St., Buckhannon, W. Va. 26201

Division of Ser. No. 57,941, July 24, 1970. This application Feb. 17, 1972, Ser. No. 226,578

Int. Cl. B66c 23/60

U.S. Cl. 254—139.1

2 Claims



1. In combination with a two wheeled, self propelled tractor having an internal combustion engine and a front accessible power takeoff assembly drivingly engaged to said engine; a power takeoff driven hoist conversion unit mounted on and drivingly connected to said front accessible power takeoff

assembly, said unit comprising a gear case; a tubular extension interposed between said gear case and said front accessible power takeoff assembly, of said tractor, a power driven shaft extending horizontally from said gear case to either side thereof; a reeling drum mounted on one end of said shaft; a toothed ratchet wheel mounted on the other end of the shaft; pawl means mounted on said tubular housing and releasably engaging said toothed ratchet wheel to prevent its rotation in one direction only; a tubular wheel supported frame extension affixed to said gear case and extending horizontally forwardly therefrom; a boom extending at an angle forwardly and upwardly over said gear case and said wheel supported frame extension, the lower terminal end of said boom including connection means connecting said lower end to the fore part of the tractor adjacent said front accessible power takeoff assembly; and a frame stabilizing means connected to said boom adjacent its upper terminal end and having diverging, ground contacting legs extending downwardly and forwardly of said tubular, wheel supported frame extension; a Pulley rotatably journaled in the upper terminal end of said boom; cable means trained over said Pulley and wrapped on said reeling drum; a brace means having its lower end bearing upon said gear case and its upper end attached to said boom and operator means for operating said pawl extending rearwardly of said tractor for operation by the tractor operation.

3,900,186

MAGNETIC CELL STIRRER

John Thomas Balas, Vineland, N.J., assignor to Wheaton Industries, Millville, N.J.

Division of Ser. No. 379,081, July 13, 1973, Pat. No. 3,854,704. This application Sept. 12, 1974, Ser. No. 505,226

Int. Cl. B01F 13/08, 7/30

U.S. Cl. 259—21

2 Claims



1. For use with a container for stirring cells and the like, said container including a bottom, a wall upstanding from said bottom, and an opening at the top, a magnetic flexible stirrer comprising:

- a. a closure for said opening with a central vertical passage and proportioned for a tight fitting relationship with said opening, said passage being offset at an angle with respect to the vertical axis of the container and having a rigid tube received in said passage and a rigid suspension member having its upper end connected to the rigid tube and its lower end to a flexible shaft, said connection of the suspension member to the rigid tube lying in the vertical axis of the container whereby liquid may be introduced into said container through said rigid tube;
- b. a coated magnet rigidly mounted on said flexible shaft at the lower end thereof and closely adjacent to the bottom of said container when the stirrer is assembled therewith, whereby as said magnet is rotated by magnetic operating mechanism the shaft flexes into an arcuate configuration and moves upwardly and outwardly relative to said bottom by the centrifugal force generated by such rotation causing the said flexure.

3,900,187

CONTINUOUS MIXING AND/OR KNEADING MACHINE WITH CO-WIPING SINGLE LEAD SCREWS

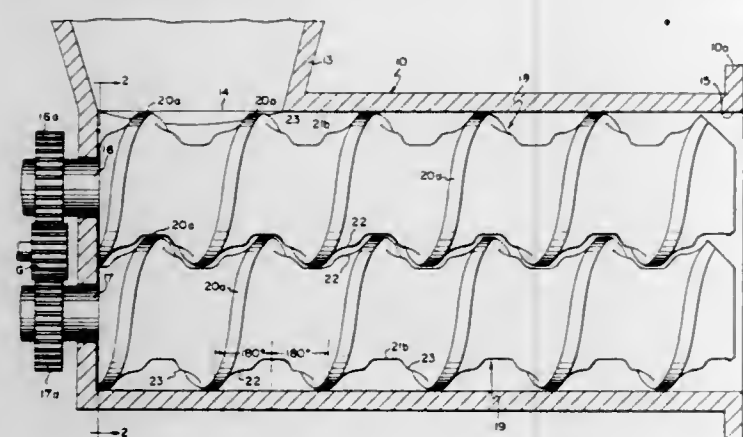
Bernard A. Loomans, Saginaw, Mich., assignor to Baker Perkins, Inc., Saginaw, Mich.

Filed Oct. 29, 1973, Ser. No. 410,352

Int. Cl. B29b 1/10

U.S. Cl. 259-192

9 Claims



1. In kneading and like machines: a barrel leading in a downstream direction from inlet means to outlet means provided therein; at least a pair of substantially axially parallel shafts extending in said barrel; means for revolving said shafts at substantially the same speed in the same direction of rotation; single-lead, co-wiping, mating, screw portions incorporated with each shaft which in axial cross-section for substantially 180° of screw extent provide a sloping profile from a land section of maximum profile radial extent which wipes said barrel to a portion of minimum profile radial extent; each said sloping profile being interrupted by a radially projecting hump; said land and hump extending continuously helically on each screw portion for the 180° of screw extent.

3,900,188

SCREW EXTRUDER HOUSING WITH A WEAR-RESISTANT LINING

Wilhelm Seufert, Korntal, Germany, assignor to Werner & Pfleiderer, Stuttgart-Feuerbach, Germany

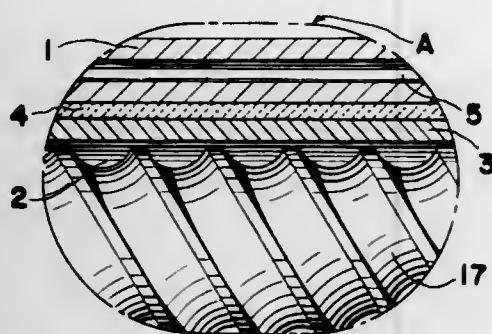
Filed Nov. 13, 1973, Ser. No. 415,295

Claims priority, application Germany, Nov. 18, 1972, 2256671

Int. Cl. B29b 1/10

U.S. Cl. 259-192

5 Claims



1. A screw extruder comprising in combination: an elongate housing including a lengthwise extending space; a sleeve made of a wear-resistant material inserted into said space, the inner peripheral outline of the housing being larger than the outer peripheral outline of the sleeve thereby defining within the housing a space intermediate the inside of the housing and the outside of the sleeve; and a hardened filler material filling said intermediate space, said filler having a melting point lower than the materials of which the housing and the sleeve are made.

3,900,189

EQUIPMENT FOR TREATING MATERIALS AT HIGH TEMPERATURE AND AT HIGH PRESSURE

Staffan Elmgren, and Lennart Svensson, both of Helsingborg, Sweden, assignors to Allmänna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

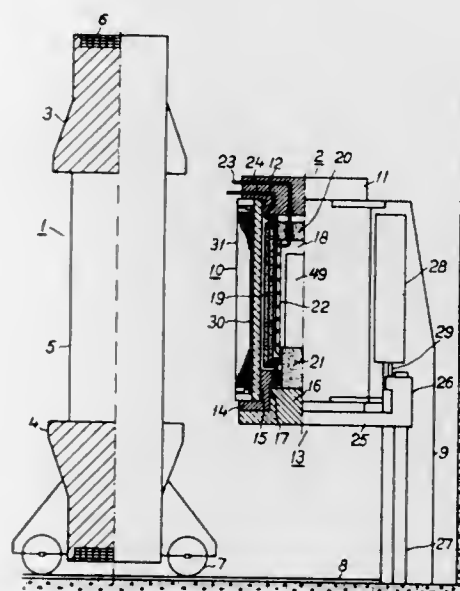
Filed July 16, 1974, Ser. No. 488,991

Claims priority, application Sweden, May 7, 1974, 7406059

Int. Cl. C21D 1/00

U.S. Cl. 266-5 E

6 Claims



1. Equipment for treating material at high temperature and high pressure comprising a high pressure cylinder which is built up from a tube and a prestressed force-absorbing wire or strip sheath, wound around said tube, and end closures projecting into the cylinder and means for taking up forces acting on the end closures, the cylinder is provided with cooling channels in a tubular layer in heat-exchange contact on at least one side with a part of the strip sheath and located at a substantial distance inwardly from the outside of the strip sheath.

3,900,190

SPRING ASSEMBLY

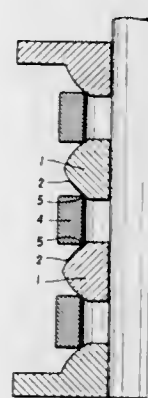
Maximilian Russold; Raimund Scheck, and Heribert Sidan, all of Judenburg, Austria, assignors to Steirische Gusstahlwerke Aktiengesellschaft, Vienna, Austria

Filed Sept. 13, 1973, Ser. No. 396,739

Int. Cl. F16f 3/06

U.S. Cl. 267-9 B

8 Claims



1. A spring assembly which has an axis and is adapted resiliently to take up and exert a force in the direction of said axis and comprises resilient rings which are axially stacked in alternation with rigid rings, said rigid rings being formed on the outside with peripheral sliding surfaces which have angled generatrices having different inclinations to said axis, said resilient rings surrounding said sliding surfaces and bearing thereon in line contact therewith.

3,900,191

CARD ADVANCING AND FUNCTION PERFORMING METHODS AND APPARATUS

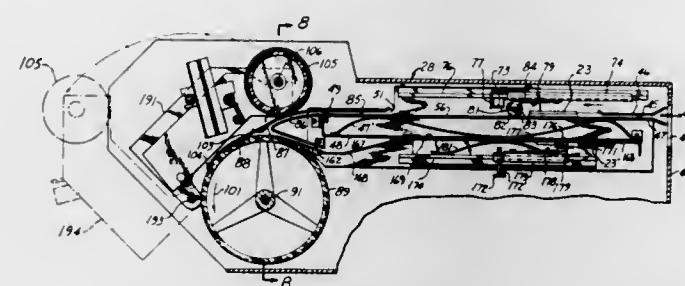
Dwight G. Westover, Sierra Madre, and Frederic F. Grant, Bellflower, both of Calif., assignors to Bell & Howell Company, Chicago, Ill.

Filed Nov. 30, 1973, Ser. No. 420,738

Int. Cl. B65h 5/06, 29/22

U.S. Cl. 271-3

17 Claims



1. In a method of performing a function relative to a card, the improvement comprising in combination the steps of: placing said card in a first region; advancing said card from said first region by way of a first path to a second region, whereby a first edge portion of the card leads an opposite second edge portion of the card; performing said function relative to said card in said second region; providing a second path different from said first path and leading from said second region to said first region, and locating said second path between said first path and said second region; making said second edge portion lead said first edge portion of the card; depressing said leading second edge portion into said second path; and returning said card from said second region to said first region by way of said second path different from said first path with said second edge portion continuing to lead said first edge portion of the card.

3,900,192

SHEET FEEDING APPARATUS

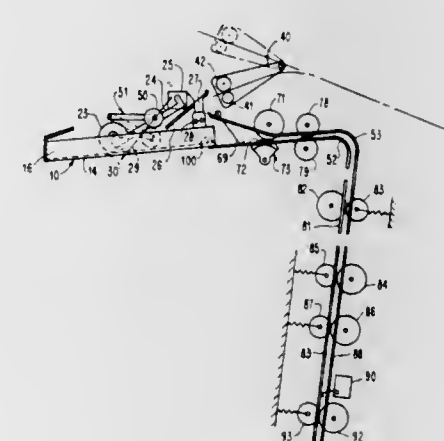
David K. Gibson, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 26, 1973, Ser. No. 428,483

Int. Cl. B65H 3/06, 31/26

U.S. Cl. 271-3.1

14 Claims



1. A sheet feed apparatus for sequentially feeding each sheet from a stack of sheets located in a storage bin or the like to a predetermined position within a predetermined time period irrespective of the dimension of each sheet in the feed direction or its location in the feed direction within the storage bin including:

means to advance a sheet from the storage bin in the feed direction;

first activating means to activate said advancing means at the start of a sheet advance cycle if a sheet is not at a first position;

first inactivating means to inactivate said advancing means when the sheet is advanced to the first position by said advancing means, said first inactivating means preventing activation of said advancing means by said first activating means if the sheet is at the first position at the start of the sheet advance cycle;

and second activating means to activate said advancing means a constant predetermined period of time after the start of the sheet advance cycle and greater than the period of time for said advancing means to advance a sheet of minimum dimension in the feed direction to the first position from its most remote position in the storage bin to advance the sheet from the first position toward the predetermined position irrespective of whether said first activating means activated said advancing means at the start of the sheet advance cycle.

8. An arrangement for controlling the position of an edge of a sheet in a storage bin or the like relative to a predetermined path along which the sheet travels into the storage bin including:

first means to advance the sheet into the storage bin along the predetermined path;

abutment means in the storage bin disposed at an oblique angle to the predetermined path for the sole engagement by the leading entry edge of the sheet in its travel along the predetermined path into the storage bin;

means to cooperate with each sheet as it travels through the storage bin and strikes said abutment means to control the position of the sheet relative to said abutment means so that the leading entry edge of the sheet remains against said abutment means whereby the trailing entry edge of the sheet is at an oblique angle to the predetermined path; and second means to advance each of the sheets in the storage bin out of the storage bin in a direction away from said abutment means and substantially parallel to the predetermined path to cause each of the sheets to remain at its angled relation to the predetermined path.

3,900,193

TAKE-OFF GRIPPERS IN PRINTING PRESSES

Franz Theisz, Munich; Max Pollner, Schleissheim, and Roland Holl, Weiterstadt, all of Germany, assignors to Roland Offsetmaschinenfabrik Faber & Schleicher AG, Germany

Filed Mar. 6, 1974, Ser. No. 448,629

Claims priority, application Germany, Mar. 9, 1973, 2311633

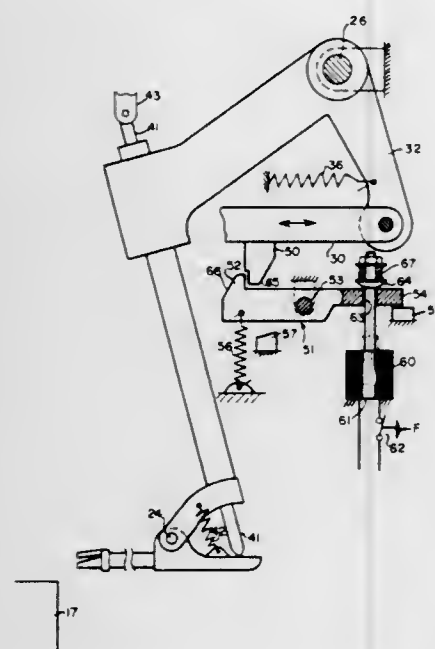
Int. Cl. B65h 29/10

U.S. Cl. 271-85

3 Claims

1. In a sheet delivery mechanism for a printing press having a drive and a conveyor for conveying sheets individually in spaced relation, means defining a pile of sheets at the end of the conveyor, a take-off mechanism comprising an L-shaped take-off arm having a horizontal member and a vertical member, the horizontal member having a take-off gripper at its end and the vertical member being pendulously pivoted for horizontal swinging movement of the gripper between an advanced position and a retracted position, a reciprocating push rod coupled to the vertical leg at one end and having a cam follower at the other, a cycling cam coupled to the drive for causing the push rod to positively retract the arm and gripper, a return spring coupled to the arm for impositively advancing the arm and gripper while maintaining the cam follower seated against the cam thereby to swing the take-off arm so that the gripper thereon removes sheets from the conveyor and deposits them one by one on the pile, a stop coupled to the push rod for reciprocating movement therewith, a latch arranged adjacent the path of movement of the stop and mounted for movement between a latching position and a released position, and

means for temporarily holding the latch in latching position so that upon movement of the push rod by the cam to retracted position the latch captively engages the stop so that the rod, arm and gripper are thereafter held in retracted position accompanied by stressing of the return spring and separation of the cam follower from the cam so that the take-off member is disabled in a position retracted away from the pile and out of the way of oncoming sheets on the conveyor.



3,900,194

JUMPING STAND WITH PIVOTALLY MOUNTED HORIZONTAL BAR

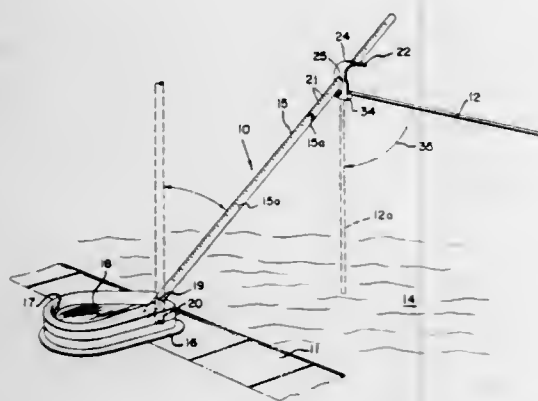
Frederick Alfonso Ward, 1750 Stokes St., No. 168, San Jose, Calif. 95126, and Leslie Augustus Harvey, 8531 Victory Rd., La Mesa, Calif. 92041

Filed Aug. 15, 1974, Ser. No. 497,683

Int. Cl.² A63B 69/00

U.S. Cl. 272-1 B

3 Claims



1. A jumping stand comprising the combination of:
 - a base, said base including weight bearing means and also including a recess extending generally in the vertical direction;
 - an elongated pole having one end adapted to fit within said base recess for extension of the other end upward from the base;
 - a clamp adapted for attachment to the pole, said clamp comprising an elongated spring-like flat member having spaced holes therethrough slightly larger than the cross-section of said pole whereby with pressure said flat member can be bent and said pole passed through both holes and with the release of the bending pressure said flat member will grip the pole, said flat member also including an opening for receiving a bolt;

an elongated bar, said bar including an opening near one end for receiving a bolt;

means for mounting the elongated bar on the clamp including a bolt fastener passing through the flat member bolt opening and the elongated bar bolt opening;

said clamp also including a ledge spaced from the flat member bolt opening on which the bar rests when in the generally horizontal attitude, said bar being so mounted on said ledge whereby with lateral pressure the bar will move off the ledge and pivot downwardly out of the horizontal position.

3,900,195

GRAVITY SIMULATOR AND EXERCIZING DEVICE

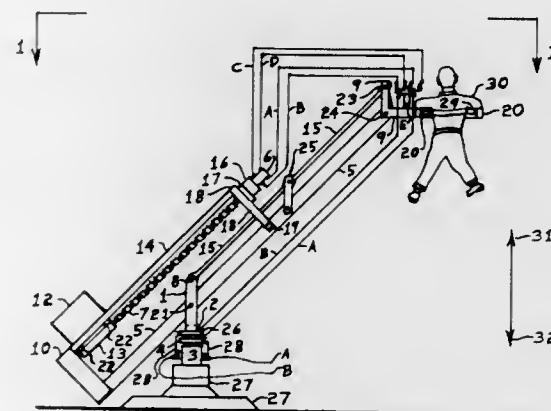
James N. Preston, 1633 W. Campbell, Phoenix, Ariz. 85015

Filed June 17, 1974, Ser. No. 480,234

Int. Cl.² A63B 23/04

U.S. Cl. 272-57 R

1 Claim



1. A gravity simulator and exercising device comprising: a pedestal on which a boom is pivotally-mounted through support means so as to rotate 360° in a circle around a vertical axis of the pedestal and so as to swing for a limited distance in vertical planes around a horizontal axis; the boom extending for a distance on either side of the support means; an electrically-moveable counterweight moveably-mounted to the boom so that the counterweight is longitudinally-moveable to any position along the length of the boom that extends between the support means and one end of the boom; pivoting around a horizontal axis perpendicular to the line of the boom, a vertical member pivotally-mounted at one end to the opposite exercise end of the boom; a horizontal member being attached at one end to the vertical member therefrom extending for a horizontal distance beyond the end of the boom in a direction parallel to the vertical plane in which the boom swings; at a vertical distance from the boom, a levelling rod pivotally-fastened at one end to the support means and therefrom extending parallel with the boom for a distance to where the levelling rod is pivotally-mounted on its other end to one end of the vertical member of the boom so that the levelling rod operates to keep the vertical member parallel with the vertical axis of the pedestal and to keep the horizontal member horizontal at all times regardless of the changes in the angles of the boom above the horizontal; the invention including electrically-powered means to move the counterweight in either longitudinal direction along the boom so as to provide any person exercising on the horizontal member of the boom with any degree of weightlessness ranging from one gravity to zero gravity above the surface of the earth while he or she moves in the vertical and horizontal directions around the pedestal; electrical switching means located on the horizontal member of the device to electrically-connect the electrically-powered means with any source of electricity to provide any person utilizing the device with means to electrically-activate the electrically-powered means so as to electrically-control his or her weightlessness by controlling the position of the counterweight on the opposite end of the boom and then to electrically-disconnect the electrically-powered means at his or her option; fastened to the horizontal member, safety belt means

operating to restrain the body of any person utilizing the device from falling any substantial distance from the horizontal member at altitudes above the surface on which the exercising device sits; the adjustable counterweight of the device thereby operating to provide any occupant with total and near-total weightlessness so as to enable him or her to leap to great heights in the vertical direction and to great lengths in horizontal directions while exercising along the circular exercise path around the vertical axis of the pedestal of the device.

3,900,196

SOUND EFFECT TOY GAME COMBINATION

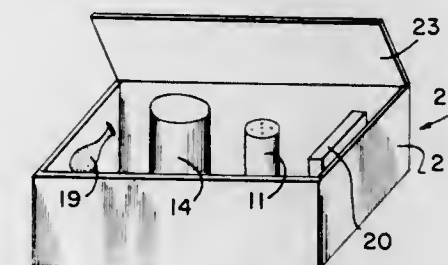
Thomas John Suttner, 1605 28th Ave. E., Palmetto, Fla. 33561

Filed May 29, 1974, Ser. No. 474,201

Int. Cl.² A63F 9/00

U.S. Cl. 273-1 R

1 Claim



1. In a sound effect toy game combination, a recording unit, means for permitting a person to make various sounds, means for super-imposing the sounds produced on the recording unit, and wherein the sounds that are produced are realistic and life-like, said means comprising a salt shaker having grains of material therein, a can having small elements positioned therein, a strip of sand paper, a piece of glass, a balloon and straws; a pre-recorded record having blank spaces therein, and a record player for reproducing the sounds on the record.

3,900,197

STICK GAME SET

Mitsuo Inose, Sendai, Japan, assignor to Japan Patent Center Inc., Tokyo, Japan

Filed June 27, 1974, Ser. No. 483,849

Claims priority, application Japan, June 27, 1973, 48-71743

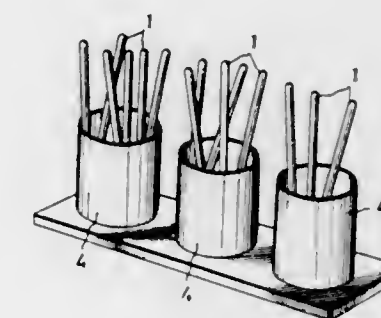
Int. Cl.² A63F 9/00

U.S. Cl. 273-1 R

1 Claim

1. A game comprising a plurality of elongated cylindrical-shaped stick members that have indicia imprinted on the cross-sectional area of one end portion, and hollow cylindrical-shaped cup means having an open top and a closed bottom, said cup means having elongated planar members mounted therein to structurally divide said cup means into a plurality of compartments, each of said compartments adapted to receive a selective number of said stick members,

each of said stick members being selectively distributed to said cup means and being inserted therein with said indicia end



being placed in a hidden position within the interior of said cup means during the playing of the game.

3,900,198

EXPENDABLE SELF-POWERED TARGET WITH STABILIZING CONTROL

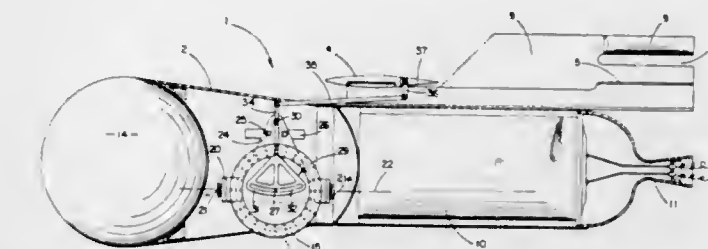
Jack S. Conner, Topanga, Calif., assignor to Northrop Corporation, Los Angeles, Calif.

Filed July 16, 1973, Ser. No. 379,415

Int. Cl. F41j 9/08

U.S. Cl. 273-105.4

6 Claims



1. An airborne target comprising a body, a thrust motor in said body, means for launching said target into flight and starting said motor, radar reflecting means in said body, a gyro rotor, means for spinning said rotor, a movable direction control member on said target for controlling the course heading of said target, and means responsive to gyro precession for deflecting said direction control member in a turn-nulling direction, said latter means including a rotor-driven element movable solely and directly by the rotational energy of said rotor, said rotor-driven element being brought into direct physical mechanical contact with a spinning portion of said rotor by precession due to heading change of said target.

3,900,199

GOLF SWING TRAINING BRACE

Hugh K. McGonagle, 1250 El Camino Real, Apt. 211, Millbrae, Calif. 94030

Filed Feb. 27, 1974, Ser. No. 446,135

Int. Cl.² A63B 69/36

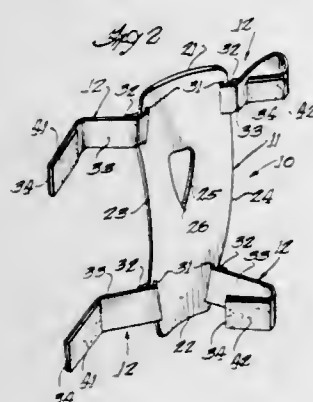
U.S. Cl. 273-189 A

1 Claim

1. A golf swing training brace device intended for use by golfers for discipline and training for playing the game of golf, the device being directed to retention of the arm of the golfer

in a straight, unbent line during the full golf swing, the device comprising:

a latitudinally elongated body member formed of substantially flat material and adapted to extend length-wise along the outside of the arm of the user across the elbow thereof from a position above the elbow to a position below the elbow to prevent bending of the elbow during the golf swing, said body member being curved transversely along the entire length thereof to conform to the arm of the user, the body member being of a substantially oblong configuration having confronting oppositely slightly curved side edges, a top edge, and a bottom edge, the top edge extending substantially parallel to the bottom edge with both the top and bottom edges extending substantially normal to the latitudinal access of said body member, a pair of slots disposed inwardly of said top edge and a slot disposed adjacent to each side edge, a second pair of slots disposed inwardly of said bottom edge with



each slot disposed adjacent to an associated side edge, the body member being at least 12 inches in length and transversely curved throughout its entire length;

an aperture disposed in the central portion of said body member and extending there-through and adapted to receive therein the elbow of the user when the arm is in a straight position to prevent injury or discomfort to the elbow of the user, said aperture defined in the central portion of said body member and being of a generally triangular configuration disposed symmetrically along the latitudinal access of said body member with the apex portion thereof lying substantially on said latitudinal access and pointing in the direction of the bottom edge of said body member; and

strap means affixed to said body member and extending outwardly from opposite sides thereof and adapted to secure the opposite ends of said body member, respectively, about the arm of the user above and below the elbow joint of the arm.

3,900,200

SCUFF RESISTANT SLIDING MEMBER

Yoshikatsu Nakamura, Yokohama, Japan, assignor to Nippon Piston Ring Co. Ltd., Tokyo, Japan

Filed Dec. 4, 1972, Ser. No. 311,618

Claims priority, application Japan, Dec. 4, 1971, 46-97590

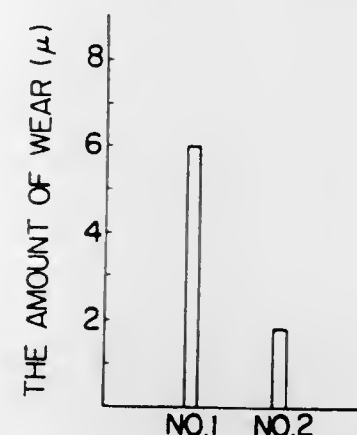
Int. Cl. B05b 7/14, 5/00

U.S. Cl. 277-235 A

2 Claims

1. A piston ring having a high scuffing and abrasion resistant sliding surface layer, said piston ring comprising:
a cast iron body and

a hot metal sprayed Fe_3O_4 particle layer on the sliding surface of the cast iron base body, said hot metal sprayed



Fe_3O_4 layer having an Hv (30) hardness of approximately 700 and being of approximately 0.1 mm in thickness.

3,900,201

SEMI-MOUNTED CARRIER

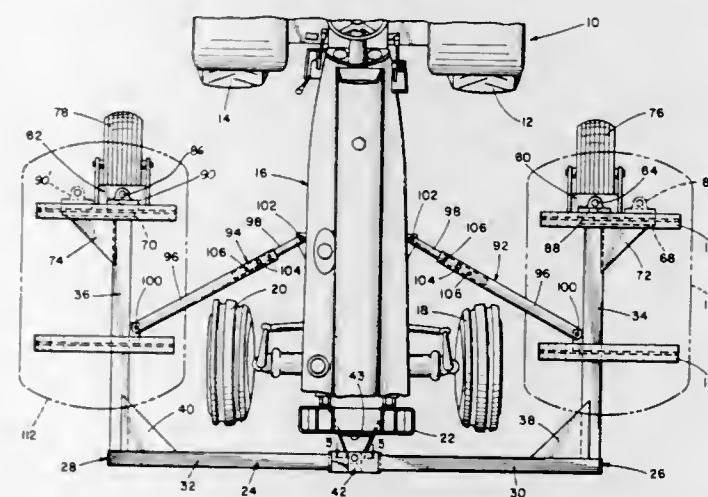
Otto E. Johnson, Hinsdale; Roland J. Frase, Roselle, and Ernest G. Treptow, Westmont, all of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Nov. 11, 1974, Ser. No. 522,670

Int. Cl. B60P 3/22

U.S. Cl. 280-5 H

15 Claims



1. A carrier adapted for supporting a load for transport by a tractor having a forwardly projecting vehicle frame portion, comprising:

a horizontal centrally articulated U-shaped frame having a pair of load-supportable legs disposed in flanking relation to said vehicle frame portion;

a pivot connection mounting said frame on the front of said vehicle frame portion for articulation of said legs relative to each other about a generally vertical axis;

a pair of caster wheels secured respectively to said legs proximate to the rearmost extent thereof whereby the frame is supported forwardly on said tractor on said pivot connection and rearwardly on said caster wheels;

and a pair of links connected respectively between said legs and the respective sides of said vehicle frame portion for maintaining said legs in spaced relation to the respective sides of said vehicle frame portion.

3,900,202

CONVERTIBLE UTILITY CART

James W. Doble, 418 Dovedale Dr., Whitby, Ontario, Canada

Filed Mar. 21, 1974, Ser. No. 453,269

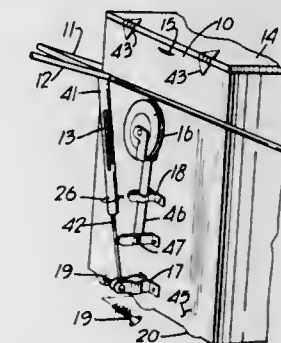
Int. Cl. B62B 13/18

U.S. Cl. 280-8

2 Claims

1. A utility cart designed to be alternately towed either on wheels or on snow runners with the wheels raised above the bottom of the cart body, comprising:

a cart body formed with a bottom panel joined to two side panels and two end panels fitted with sled-like runners attached to the undersurface of the bottom panel of the cart body; with an assembly of two wheels each rotatably fitted to an end of a U-shape frame that is pivotably mounted to each of the two side panels of the cart body, said frame being of a size to extend about the side panels and alternately extend about either the first end panel or the second end panel of the cart body, depending upon the pivoted position of the frame, with the wheels that are attached to the frame ends oriented so that the bottom of the wheels lie below the plane of the undersurface of the sled-like runners when the frame is pivoted to extend about the said first end panel, and with said wheels oriented so that the bottom of the wheels lie above the plane of the bottom panel of the cart body when the frame is pivoted to extend about the said second end panel,



3,900,204

MONO-SKI

Robert C. Weber, 3908 Calverton Dr., Hyattsville, Md. 20782

Filed June 25, 1973, Ser. No. 373,575

Int. Cl. A63c 5/04

U.S. Cl. 280-11.13 S

14 Claims

said frame integrally fastened to a tow bar that extends from the general mid-section of the frame in a direction away from the cart body, together with

a telescopic member fastened to one end to the assembly of the tow bar and frame, which telescopic member may be latched at its other end alternately to a bracket fastened to the first end panel or to a similar bracket fastened to the second end panel, for securing the tow bar and frame assembly in either one or two positions for either towing the cart with the first end panel in the forward position with the wheels engaging the ground surface below the cart bottom or alternately towing the cart with the second end panel in the forward position and with the wheels upraised so that the sled-like runners contact the ground surface below the cart bottom.



3,900,203

TANDEM WHEELED ROLLER SKATE

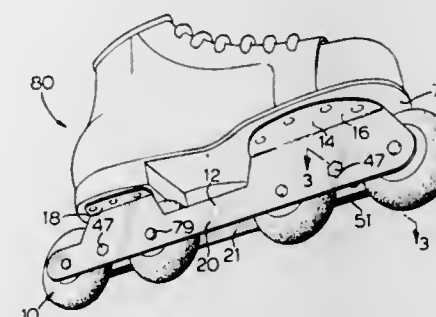
Adolph F. Kukulowicz, 10 Parkway Forest Dr., Apt. 801, Willowdale, Ontario, Canada

Filed July 8, 1974, Ser. No. 486,359

Int. Cl. A63c 17/14

U.S. Cl. 280-11.2

1 Claim



1. A tandem-wheeled roller skate having a plurality of wheels arranged in single file substantially centrally of and along the length of a foot support platform comprising in combination:

A pair of longitudinally extending spaced apart frame plates projecting downwardly substantially at right angles from

1. A mono-ski for skiing on snow having a width of about 10 to 12 inches and at least equal to the length of a user's boots, said ski having an intermediate portion with concavely formed opposite sides and said ski further having boot binding means mounted thereon for securing both of the user's boots in a fore-aft relationship with respect to each other on the ski with both of said boots extending at a substantial angle to the longitudinal axis of the ski, said binding means being disposed to position a rearwardly positioned boot at a greater angle than the forwardly positioned boot with respect to the longitudinal axis of the ski.

3,900,205

SKI SAFETY BINDING

Brigitte Sittmann, Stuttgart, Germany, assignor to Vereinigte Baubeschlagfabriken Gretsch & Co. GmbH, Germany

Continuation of Ser. No. 190,091, Oct. 18, 1971, abandoned.

This application Aug. 13, 1973, Ser. No. 387,638

Claims priority, application Germany, Oct. 22, 1970, 2051758

Int. Cl. A63c 9/08

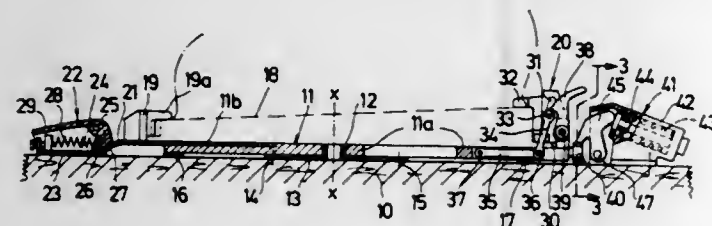
U.S. Cl. 280-11.35 K

58 Claims

1. A ski safety binding for binding a ski boot to a ski comprising:

a sole plate engageable with and extending the length of the sole of the ski boot,

pivot mounting means for pivotably mounting said sole plate so as to be rotatable about an axis extending perpendicular to an upwardly facing sole plate surface, releasable sole plate locking means for locking the sole plate to said ski in a fixed rotative position, hold down means separate from said sole plate locking means, said hold down means being connected to and movable with said sole plate and including boot engaging means engageable with an upper side of said sole, said hold down means being movable between a hold down position with said sole clamped against said sole plate and



a released position with said sole released from said sole plate, and releasable hold down locking means for releasably locking said hold down means in said hold down position, wherein one of said sole plate locking means and said hold down locking means is automatically movable from the locked position thereof in response to a predetermined strong force acting on the ski boot, and wherein said sole plate is freely rotatable about said axis and movable away from said pivot mounting means and said ski when said sole plate locking means is in said unlocked position.

3,900,206

SAFETY SKI BINDING

Georges Pierre Joseph Salomon, 34 Avenue de Loverchy, Annecy, France

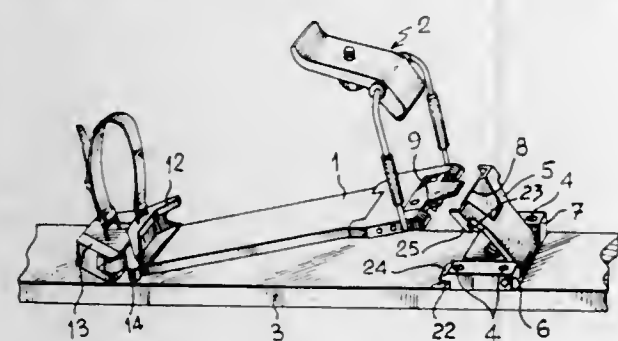
Filed June 28, 1973, Ser. No. 374,623

Claims priority, application France, July 3, 1972, 72.23975

Int. Cl. A63c 9/08

U.S. Cl. 280—11.35 E

15 Claims



1. A safety binding for skis for putting on a ski automatically comprising:

- a first and second releasable holding elements binding the ends of a ski boot;
- a supporting element adapted to tilt up and down and to move substantially longitudinally in relation to a base plate secured to the ski, said supporting element being integral with and supporting said first holding element;
- an irreversible locking system intercalated between said base plate and said supporting element; said supporting element being movable between two positions; said supporting element being irreversibly locked by said irreversible locking system when the boot is in place in the binding; a first high position for which said first holding element is raised and disengaged from the boot, a second low position for which said supporting element is locked to said base plate by said locking system while said supporting element moves substantially longitudinally and

for which said first holding element is in abutment against the boot, said second position being obtained when a skier puts on a ski

by pivoting his foot about the end of the boot associated with said second holding element; and by pressing the opposite end of the boot against said supporting element;

- a system of springs urging said supporting element in a substantially longitudinal movement, said springs being compressed as a result of the skier pivoting his foot; said longitudinal movement being towards the rear if the boot pivots about the front end thereof.

3,900,207

TOE FIXTURE FOR A SKI SAFETY BINDING

Michio Iizuka, Tokyo, Japan, assignor to Hope Kabushiki Kaisha, Tokyo, Japan

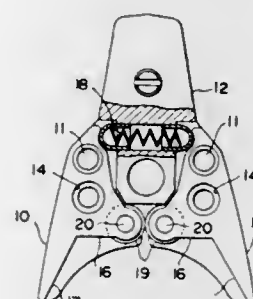
Filed Nov. 7, 1973, Ser. No. 413,627

Claims priority, application Japan, Feb. 20, 1973, 48-2040

Int. Cl. A63c 9/08

U.S. Cl. 280—11.35 T

9 Claims



1. A toe fixture for releasably securing a toe of a ski boot to a ski, the toe fixture being adapted for use with a heel fixture capable of exerting a forwardly directed force toward said toe fixture through a ski boot from a position of mounting of a heel fixture upon a ski remote from said toe fixture, said toe fixture comprising a frame, means for mounting said frame on a ski, a pair of toe-receiving pieces having front and rear ends, means pivotally supporting said toe-receiving pieces at pivot points located adjacent the front ends thereof upon said frame in such a manner that the rear ends of said toe-receiving pieces are turnable in a plane parallel to the plane of a ski, said toe-receiving pieces having recesses formed in the rear ends thereof for receiving a toe of a ski boot, said recesses defining vertical wall portions constituting side pressure bearing portions for a toe of a ski boot, means between the front and rear ends of each toe-receiving piece for making sliding contact with a toe of a ski boot which define forward pressure bearing portions for a ski boot toe under the influence of the forwardly directed force of an associated heel fixture, the points of contact between said slidable contact making means and a toe of a ski boot being located substantially inside of imaginary lines extending between the center of a heel end of a ski boot fixed in position of mounting of a heel fixture and the respective pivot points of said toe-receiving pieces and adjacent a longitudinal center line through said toe fixture and associated ski in the normal position thereof, spring means for normally tending to urge the front ends of said toe-receiving pieces away from each other, said slidable contact making means in cooperation with the aforesaid points of contact and imaginary lines maintain a ski boot in a normal position of use by the forwardly directed force exerting against said slidable contact making means to pivot said rear ends of said toe-receiving pieces relatively toward each other when the associated one of said points of contact is located inside of its associated imaginary line and release a ski boot by the forwardly directed force exerting against said slidable contact making means to pivot said rear ends of said toe-receiving pieces relatively away from each other when the associated one of said points of contact is located outside of its associated imaginary line, said toe fixture being devoid of linkage means between said slidable contact making means, and said pivot

means forming the sole connection between said frame and said toe-receiving pieces.

3,900,208

SLEDs

Stig Gunnar Hjelmquist, Norraby, Tranas, Sweden

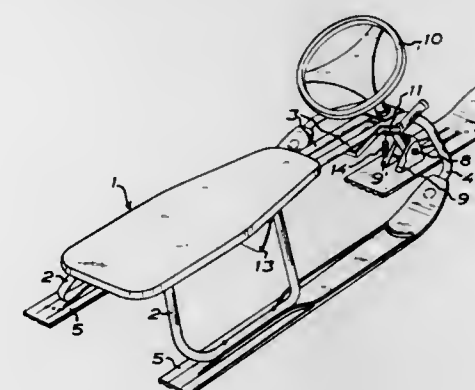
Filed Mar. 16, 1973, Ser. No. 341,822

Claims priority, application Sweden, Mar. 17, 1972, 3467/72

Int. Cl. B62b 5/00

U.S. Cl. 280—16

7 Claims



1. A sled comprising a frame, a platform mounted on said frame, at least one runner fixed in relation to said frame and having a bottom surface defining the sliding plane of the sled, a steering wheel carrying rod rotatably mounted on said frame and extending upwardly from said sliding plane, at least one steering runner connected to the lower end of said steering wheel carrying rod, and runaway preventing means disposed at and continuously urging said steering runner during operation of the sled to an angular position with respect to the longitudinal direction of the fixed runner, said runaway preventing means being overcome by actuation of said steering wheel during operation of the sled by person riding thereon and displacing said steering runner when said steering wheel is not actuated during operation of the sled.

3,900,209

COMBINATION GOLF CADDIE CAR AND GOLF BAG
Tomas Paul McDonnell, 143 Lower Kilmacud Rd., Stillorgan, County Dublin, Ireland

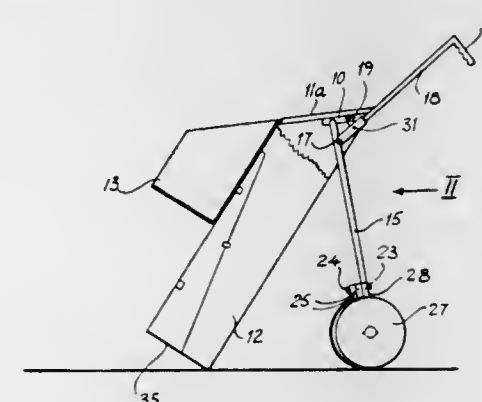
Filed Oct. 19, 1972, Ser. No. 298,808

Claims priority, application Ireland, Oct. 26, 1971, 1356/71

Int. Cl. B62b 1/20

U.S. Cl. 280—36 C

4 Claims



1. A combination golf bag and caddy car comprising: a golf bag container; said container having a first side; an elongated recess into said container through said first side and extending along said container and said container first side; a frame element on said container and communicating into said recess such that a strut extending into said recess can be connected to said frame element;

an elongated strut having an upper end that extends into said recess and that is pivotally connected to said frame element at a first pivot; said strut being pivotable about said first pivot out of said recess and wholly into said recess; said strut having a lower end;

a handle member including an elongated arm; said handle member having a respective third end that is pivotally connected to said strut intermediate said ends of said strut at a second pivot on said strut, such that drawing said handle member out of said recess pivots said strut out of said recess; said handle member being of a length and being at an orientation to fit within said recess and to be pivotable between a rest position in said recess and alongside said strut and an operative position outside said recess; between said rest and said operative positions, said handle member being swept through an obtuse angle; wheel support legs hingedly connected to said lower end of said strut for movement from a first position in which said wheel support legs lie alongside of and substantially parallel to said strut to a second position in which said wheel support legs are located below and at an angle to said strut and are also located in a plane perpendicular to the motion of said strut under the influence of said handle member; said wheel support legs being movable into both of said first and second positions when said strut is located outside said recess and being at said first position when said strut is located inside said recess; wheels detachably mounted on said support legs.

3,900,210

ENERGY ABSORPTION ARRANGEMENT IN VEHICLE PASSENGER RESTRAINT SYSTEM

Thomas E. Lohr, Warren, and John J. Sack, Bloomfield Hills, both of Mich., assignors to Allied Chemical Corporation, New York, N.Y.

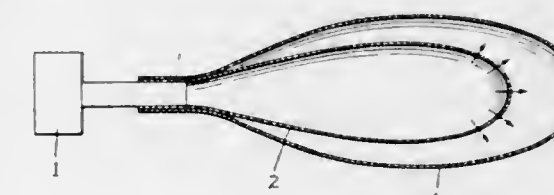
Continuation of Ser. No. 83,557, Oct. 23, 1970, abandoned.

This application Nov. 10, 1972, Ser. No. 305,383

Int. Cl. B60r 21/10

U.S. Cl. 280—150 AB

3 Claims



1. A restraint system comprising an outer bag adapted to be filled with an inflating gas, said outer bag being composed of nylon and being stretchable over its original inflated volume, an energy absorbing elastic knitted inner bag having apertures therein and located within said outer bag, means for passing said inflating gas through said apertures and into said outer bag to stretch said inner bag in the range of at least 50-100 percent of its volume without bursting said inner bag.

3,900,211

PYROTECHNIC ACTUATED VALVE

Lowell L. Russell, Aptos, and Claude E. Campbell, Gilroy, both of Calif., assignors to Teledyne McCormick Selph, Hollister, Calif.

Filed Apr. 4, 1974, Ser. No. 457,890

Int. Cl. B60R 21/08

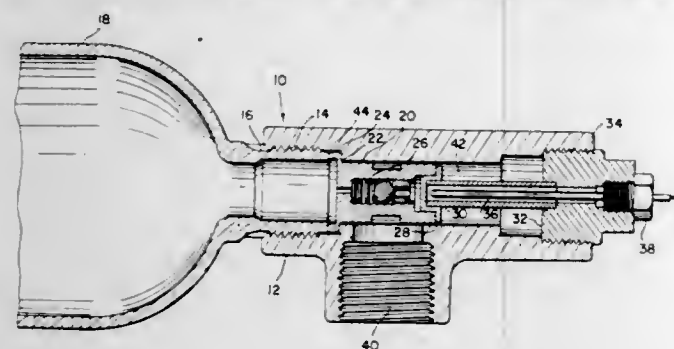
U.S. Cl. 280—150 AB

6 Claims

1. A pyrotechnic actuated valve connectable to a container of fluid under pressure, comprising:

- a hollow valve body having an inlet at one end connectable to a container of fluid under pressure, and terminating in an internal flange;
- said hollow valve body including a poppet cavity with a discharge outlet therefrom;

- C. a movable poppet in said poppet cavity including an external flange interconnected to a poppet body by a shearable web, said flange being engageable against said internal flange of said inlet and said poppet body normally closing said outlet;
- D. a poppet support positioned in operable engagement with said poppet, comprising a dished disc in engagement with said movable poppet, a retainer at the end of said valve body remote from said inlet, and a hollow,



- frangible tube held in longitudinal compression between said disc and said retainer; and
- E. a pyrotechnic charge internal of said frangible support tube adapted upon activation to disintegrate said support tube whereupon fluid pressure moves said poppet, after shearing said shearable web, to open said outlet with disintegrated material of said tube and pyrotechnic residue being maintained free from said outlet by the moved poppet.

3,900,212 TRAILER HITCH

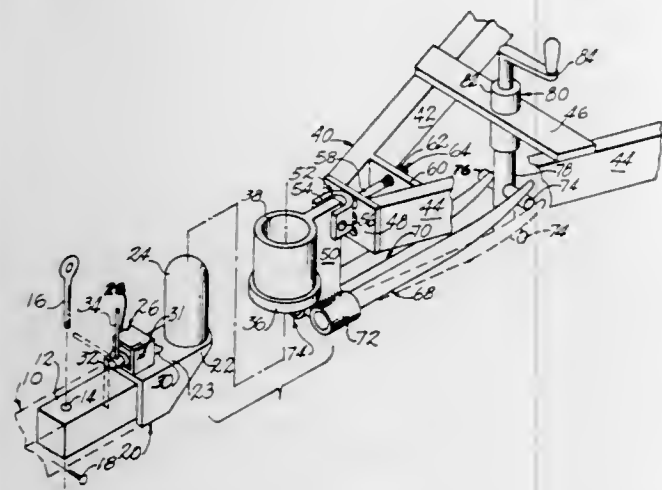
Marlin B. Ewing, 259 S. Bayshore Dr., Valparaiso, Fla. 32580

Filed Sept. 16, 1974, Ser. No. 506,027

Int. Cl. B62d 53/00

U.S. Cl. 280-406 A

11 Claims



1. In a detachable hitch between a lead towing vehicle and a towed trailer:
- a. a lead vehicle having a substantially vertical hitch pin mounted thereon,
- b. a trailer having a coupling means thereon engageable with said vertical pin on said lead vehicle,
- c. ground engaging means, for elevating and lowering said trailer with respect to said hitch pin for the purpose of hitching and unhitching said trailer from said towing vehicle,
- d. means mounting said coupling means on said trailer for swinging movement about a transverse axis thereacross,
- e. other means mounting said coupling means on said trailer for rotary movement about a longitudinal axis of said trailer,

- f. an equalizer means attached to said coupling and engaging said trailer when in towed position on said lead vehicle,
- g. and equalizer stressing means on said trailer for placing said equalizer means under stress when said trailer is being towed.

3,900,213 ADJUSTABLE KING PIN

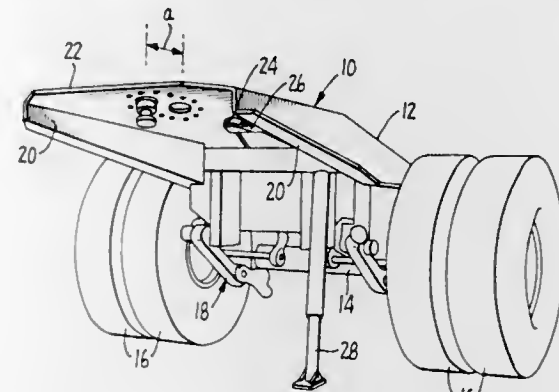
Joseph J. Cunha, Castro Valley, Calif., assignor to Overhead Door Corporation, Dallas, Tex.

Filed Dec. 12, 1974, Ser. No. 531,983

Int. Cl. B62D 53/08

U.S. Cl. 280-407

6 Claims



1. King pin attachment structure for use on a vehicle chassis suspended at least on end thereof on a wheel supported axle, said structure comprising: a generally horizontally disposed mounting plate on the chassis, said plate having at least two spaced openings formed therein so as to open to the exterior underside of the chassis, said openings being proportioned for the extension of a king pin therethrough; a king pin plate proportioned to overlie and cover both of the openings in the mounting plate, said king pin plate having a king pin fixed thereto and extending downwardly therefrom for select extension through one or the other of the openings; and securing means to selectively secure said king pin plate to the mounting plate whereby said plates may be secured in locked engagement with one another with the king pin extending through one or the other of the openings or released from such engagement to provide for rotation of said plate to position the king pin in one or the other of the openings.

3,900,214 WINCH MOUNT AND PLATE WITH COUPLER BALL ADAPTER

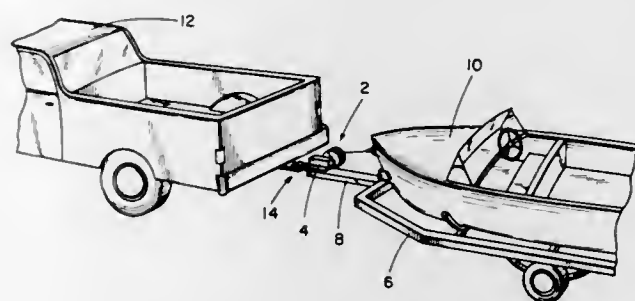
Norman D. Brockelsby, Grand Island, Nebr., assignor to Dutton-Lainson Company, Hastings, Nebr.

Filed June 28, 1974, Ser. No. 483,929

Int. Cl. B66D 1/00; B60D 1/06

U.S. Cl. 280-414 R

11 Claims



1. A device for detachably mounting a winch mechanism to a ball hitch structure comprising, in combination:
- a hitch plate including a forward slot for cooperation with the ball hitch structure;

a base member having a first end and a pair of upwardly and inwardly turned flange portions, said flange portions converging towards said first end;

means for securing said base member to said hitch plate;

a winch-carrying member having a pair of downwardly extending edge portions, said flange portions being adapted to receive said edge portions, said flange and edge portions cooperating in an engaged state; and

means for securing said winch mechanism to said winch-carrying member, whereby said winch mechanism is detachably secured to said base member in said engaged state.

3,900,215

RECORD SHEET

Hajime Kato, and Takao Hayashi, both of Fujinomiya, Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara, Japan

Filed Jan. 22, 1973, Ser. No. 325,720

Claims priority, application Japan, Jan. 24, 1972, 47-8830

Int. Cl. B41c 1/06; B41m 5/00

U.S. Cl. 282-27.5

17 Claims

1. A record sheet comprising a base sheet and coated thereon a layer of a developer which produces a colored image upon contact with an electron-donating colorless chromogenic material, said developer comprising (1) a metal compound of an aromatic carboxylic acid and (2) from 0.5 to 10 parts by weight per 100 parts by weight of the metal compound (1) of a salt of a metal.

3,900,216

METHOD FOR PRODUCING CLAY COATED PAPER FOR PRESSURE SENSITIVE COPYING PAPER

Takao Hayashi, and Hiroharu Matsukawa, both of Fujinomiya, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-Ashigara-shi, Japan

Continuation of Ser. No. 83,211, Oct. 22, 1970, abandoned.

This application Feb. 2, 1973, Ser. No. 328,982

Claims priority, application Japan, Oct. 22, 1969, 44-84537

Int. Cl. B41c 1/06; B41m 5/00

U.S. Cl. 282-27.5

13 Claims

1. A method for preparing a clay-coated paper for pressure-sensitive copying which comprises applying to a paper support a slurry comprising an alkali dispersing agent, an anionic high molecular weight electrolyte, an electron-acceptive adsorbent clay, and a binder, said clay being reactive with a color-former to form a distinct color, the concentration of said electrolyte being in the range of from 0.2 to 5.0% by weight, based on the clay, and said anionic high molecular weight electrolyte being selected from the group consisting of an alkali metal salt of polyacrylate, alginate, a styrene-maleicanhydride copolymer, polyglutamate, polyasparaginate, polymethacrylate, methylvinylether-maleic anhydride copolymers, a butadiene-methacrylate copolymer, a polyethylene-maleic anhydride copolymer, a polyvinylbenzene sulfonate, carboxymethyl cellulose, carboxyethyl cellulose, gum arabic, pectin, pectinic acid, carboxymethyl starch, starch sulfate, starch phosphate, the carboxymethyl-ether of hydroxyethyl cellulose, and the sulfate ester or phosphate ester of a hydroxyethyl cellulose.

5. A pressure-sensitive copying paper comprising a support paper having coated thereon a layer comprising an alkali dispersing agent, a clay, a binder, and an anionic high molecular weight electrolyte, said clay being reactive with a color-former to form a distinct color, said electrolyte being present in a range of from 0.2 to 5.0% by weight, based on the clay, and said anionic high molecular weight electrolyte being selected from the group consisting of an alkali metal salt of polyacrylate, alginate, a styrene-maleicanhydride copolymer, polyglutamate, polyasparaginate, polymethacrylate, methylvinylether-maleicanhydride copolymers, a butadiene-methacrylate copolymer, a polyethylene-maleic anhydride copolymer, a polyvinylbenzene sulfonate, carboxymethyl cellulose, carboxyethyl cellulose, gum arabic, pectin, pectinic acid, carboxymethyl starch, starch sulfate, starch phosphate, the

carboxymethyl-ether of hydroxyethyl cellulose, and the sulfate ester or phosphate ester of a hydroxyethyl cellulose.

3,900,217

PRESSURE-SENSITIVE COPYING PAPER

Takao Hayashi, Hiroharu Matsukawa, and Sadao Ishige, all of Fujinomiya, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan

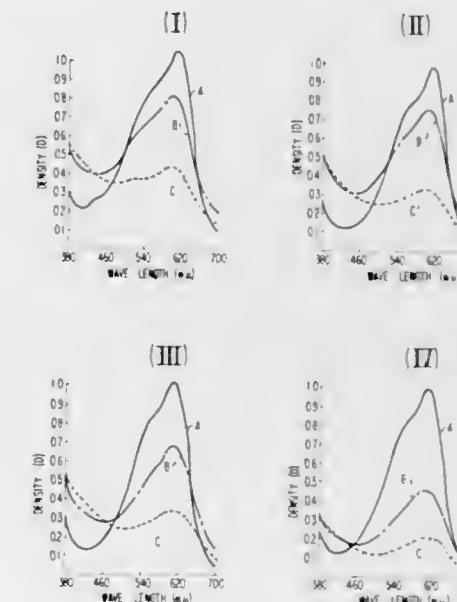
Continuation-in-part of Ser. No. 152,831, June 14, 1971, abandoned. This application July 11, 1973, Ser. No. 378,105

Claims priority, application Japan, June 13, 1970, 45-51116

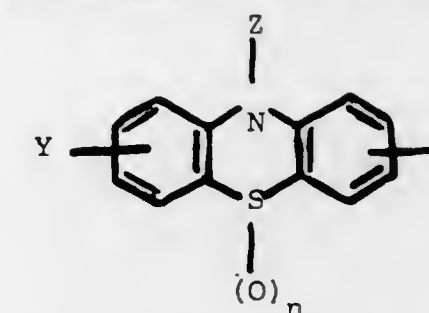
Int. Cl. B41c 1/06; B41m 5/00

U.S. Cl. 282-27.5

3 Claims



1. A pressure-sensitive copying paper comprising a support having coated thereon a layer of microcapsules containing a substantially colorless electron donor color-forming compound capable of forming a distinct color when contacted with an electron acceptor solid acid, said layer containing a colorless phenothiazene compound incapable of forming a distinct color when contacted with the electron acceptor solid acid, the amount of said phenothiazene compound being 10 to 200% by weight based on the color former, said phenothiazene compound being represented by the formula,



wherein n is 0, 1 or 2, X, Y and Z each is a hydrogen atom, an alkyl group, a halogen atom, a nitro group, an acylamino group, a hydroxyl group, an alkoxy group, an acyloxy group, an alkoxy carbonyl group, an alkylsulfonylamino group or an arylsulfonylamino group, said alkyl group and alkyls attached to the other substituents having 1 to 8 carbon atoms, and all aryl groups being phenyl or naphthyl groups.

3,900,218

DESENSITIZER COMPOSITION

Akio Miyamoto, and Hiroharu Matsukawa, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan

Filed Aug. 30, 1973, Ser. No. 393,089

Claims priority, application Japan, Aug. 30, 1972, 47-87011; Nov. 30, 1972, 47-120465

Int. Cl. B41m 5/18

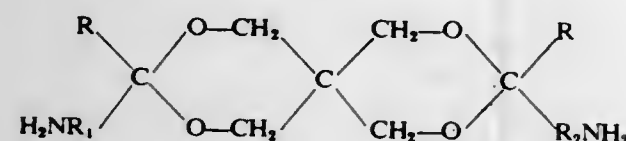
U.S. Cl. 282-27.5

17 Claims

1. A developer sheet comprising a color developer layer and

a desensitizer composition for desensitizing a color developer capable of reaction with a substantially colorless color former to form a color containing as a desensitizer at least one of:

- a. a spiroacetal diamine compound represented by the following general formula:

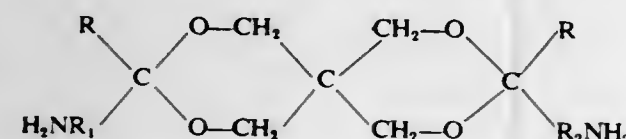


wherein R represents a hydrogen atom or an alkyl group, and R₁ and R₂ each represents a straight or branched chain alkylene residue, or

- b. the reaction product of said spiroacetal diamine compound with a compound having at least one oxirane ring, wherein said desensitizer composition is present in an amount of from about 0.5 to about 10 g/m² on said color developer layer in the areas of said color developer layer containing said desensitizer composition.

10. A process for desensitizing the coloration generated by a color former contacting a color developer which comprises applying to a layer of said color developer a desensitizing composition containing as a desensitizer at least one of:

- a. a spiroacetal diamine compound represented by the following general formula:



wherein R represents a hydrogen atom or an alkyl group, and R₁ and R₂ each represents a straight or branched chain alkylene residue, or

- b. the reaction product of said spiroacetal diamine compound with a compound having at least one oxirane ring.

3,900,219

DOCUMENT HAVING A CONCEALED MARKING AND METHOD OF MAKING SAME

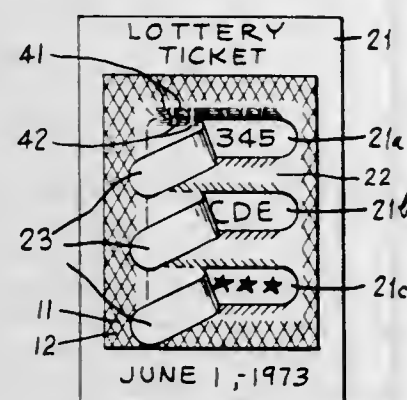
Salvatore F. D'Amato, Floral Park; John J. Kimball, Brooklyn, both of N.Y., and Oliver Lednicer, Hackensack, N.J., assignors to American Bank Note Company, New York, N.Y.

Filed Apr. 23, 1973, Ser. No. 353,467

Int. Cl.² B42D 15/00

U.S. Cl. 283—6

17 Claims



1. A document having a concealed marking, comprising:

- a. a base sheet having a marking printed on one side thereof in at least one area spaced inwardly from all edges of the sheet;
- b. an opaque sheet smaller than the base sheet and overlying said area, said opaque sheet being separable from the base sheet;
- c. a cover sheet overlying said opaque sheet and larger than the opaque sheet so that portions of the cover sheet extend beyond the opaque sheet throughout at least a major part of its periphery, said cover sheet being adhe-

sively attached to the opaque sheet and having said extending portions adhesively attached to the base sheet;

- d. said opaque sheet having one edge accessible so that it may be gripped to displace the opaque sheet and tear the overlying attached cover sheet along the edges of the opaque sheet to reveal the marking on the base sheet, so that the torn edges of the cover sheet provide a permanent indication that the opaque sheet has been displaced.

3,900,220

THREAD ADAPTOR

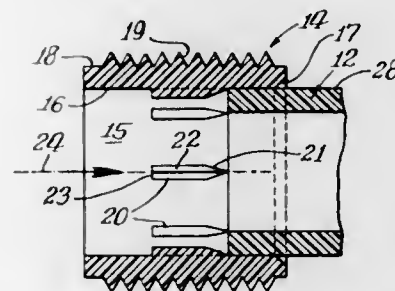
William J. Buchser, Evansville, Ind., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Dec. 3, 1973, Ser. No. 420,971

Int. Cl.² F16L 25/00

U.S. Cl. 285—177

13 Claims



1. Structure for providing a threaded connection on an annular wall formed of a soft material, comprising an annular element having radially inner and outer surfaces, said element being formed of a material substantially harder than said wall material, a radially projecting rib formed on one of said surfaces having a tapered axially inner first end, an opposite axially outer second end defining a radial shoulder, and a constant cross section mid-portion between said ends, and a coaxial thread formed in the other of said surfaces, said one surface being adapted to fit in facial engagement with said annular wall with said element locked to the annular wall by the radial shoulder extending into the annular wall against axially outward withdrawal from the annular wall.

3,900,221

ANGLE ADAPTOR FITTING

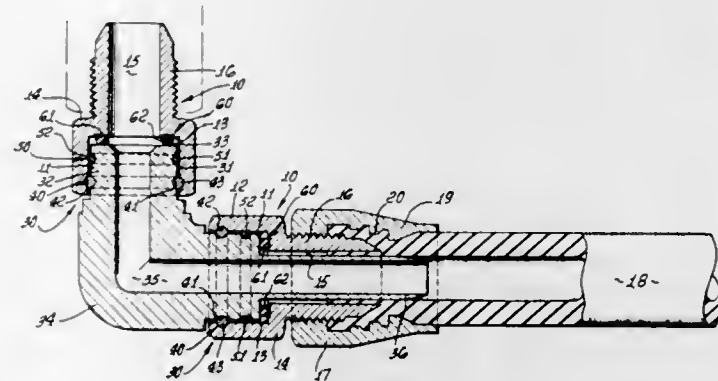
Robert E. Fouts, 2152 Van Karajan Dr., San Pedro, Calif. 90732

Filed Jan. 28, 1974, Ser. No. 437,282

Int. Cl.² F16L 27/00

U.S. Cl. 285—276

3 Claims



1. In a swivel fitting for rotatably mounting two ends of hose or pipe including:

- a female member having a generally cylindrical sidewall and a generally circular rear wall closing the sidewall;
- a male member inserted into said female member and having a generally cylindrical sidewall of an outside diameter smaller than the inside diameter of the female member, said male member having a generally circular front wall spaced apart from said rear wall of said female member, said mem-

bers having an aligned fluid opening extending perpendicular to the front and rear walls;

locking means between the male and female members to maintain a given orientation of said male member in said female member;

a circumferential groove extending between said cylindrical sidewalls when said male and female members are maintained in said given orientation by said locking means;

first resilient seal means comprising an O-ring of resilient material having a generally circular cross-section and located within and extending around said circumferential groove, said circumferential groove having a depth and width and wherein said O-ring protrudes out of said groove; an annular groove between said rear wall and said front wall, said annular groove having a width and a depth, said annular groove being formed on said rear wall; and second resilient seal means within said annular groove, the improvement comprising the provision of:

said inside diameter of said female member, said outside diameter of said male member, and said depth of said groove being of such dimension that said seal means is compressed when said male and female members are maintained in said given orientation by said locking means so that said first seal means seals the cylindrical walls, allows for rotation of said members relative to each other, and maintains alignment of said members; said circumferential groove having a depth and width, wherein the radius of said O-ring is greater than the depth of said groove so that said O-ring protrudes from said groove;

said second seal means being of a thickness relative to the depth of said annular groove and the spacing of the front wall and rear wall established by said given orientation such that the second seal means is compressed between the front wall and the rear wall when said members are maintained in said given orientation by said locking means so that said second seal means forms a seal between the end wall and the front wall,

said second seal means including an O-ring of resilient material having a circular cross-section;

the radius of said O-ring of said second seal means being greater than the depth of said annular groove so that said O-ring of said second seal protrudes from said annular groove;

the distance of protrusion of said O-ring of said second seal means from said annular groove is greater than the protrusion of said O-ring of said first seal means from said circumferential groove.

3,900,222

COMPARTMENTED RESILIENT BUMPER ASSEMBLY

George H. Muller, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

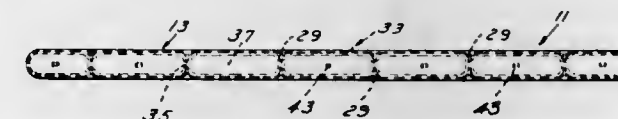
Continuation of Ser. No. 194,934, Dec. 2, 1971. This

application Nov. 9, 1973, Ser. No. 414,598

Int. Cl.² B60R 19/10

U.S. Cl. 293—71 P

3 Claims



1. A resiliently deformable bumper assembly for a vehicle and the like comprising:

- a rigid elongate backing member secured to the vehicle body,
- a resiliently deformable elongate outer shell,
- means securing said outer shell to the backing member, said outer shell and said backing member forming a substantially sealed elongate enclosure,
- a plurality of partitions extending generally transversely to said outer shell and dividing said enclosure into a plurality

of consecutive compartments, each said partition serving as a wall for a pair of adjacent compartments,

passage means interconnecting said compartments and permitting passage of air and the like between adjacent compartments under unimpacted conditions,

said partitions and passage means comprising throttling means restricting substantial air flow between adjacent compartments and thereby preventing immediate collapse of an individual compartment upon a sudden impact confined to that compartment,

an elongate inflatable inner tube member received within said enclosure,

said tube member having a plurality of longitudinally spaced constrictions dividing said tube member into a plurality of sausage-like segments,

each of said compartments containing one of said segments conforming generally to the interiors of said compartments, said partitions positioned about and engaging said constrictions.

3,900,223

PIPE COUPLING

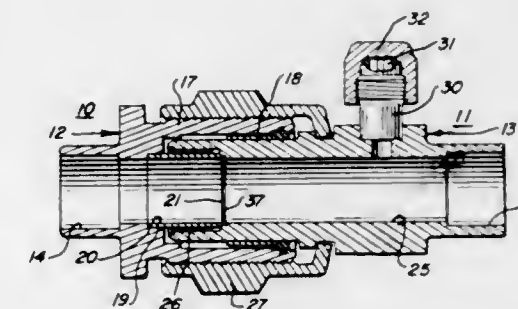
James D. Schafer, Rockford, Ill., and Frederic W. Pollman, Ames, Iowa, assignors to Sundstrand Corporation, Rockford, Ill.

Filed Jan. 23, 1974, Ser. No. 435,894

Int. Cl. F16I 35/00

U.S. Cl. 285—4

9 Claims



1. A coupling for connecting conduits, comprising: a male member having a body with a flow passage therethrough and an outer cylindrical sleeve portion; a diaphragm across the end of said sleeve portion, closing the flow passage; a cylindrical tube inside said body defining a part of the flow passage, spaced inwardly from and concentric with the outer sleeve portion and having an end which is spaced inwardly of said diaphragm; a female member having a cylindrical body with a flow passage therethrough; a diaphragm on the end of the female body member closing the flow passage; and means for drawing the male and female body members together in coaxial relation, the end of the female body member engaging and rupturing the diaphragm over the end of the male body member and thereafter the end of the tube inside the sleeve of the male member engaging and rupturing the diaphragm over the end of the female member, establishing unobstructed communication between the flow passages, the ends of the cylindrical tube and the female body member and both diaphragms being in planes normal to the coupling axis whereby the tube and body member ends engage the respective diaphragms to apply hoop tension thereto.

3,900,224 BOOT

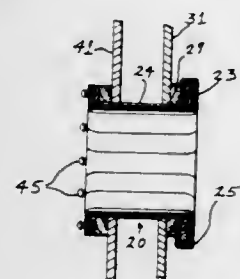
Andrew P. Copeland, 3339 E. Avenue S, Palmdale, Calif. 93550

Filed Jan. 23, 1974, Ser. No. 435,752

Int. Cl. B60p 3/32

U.S. Cl. 296—23 MC

7 Claims



1. A boot for providing an air corridor in the spacing between facing open windows of a cab of a vehicle and a recreational housing accessory mounted to the vehicle, the boot comprising:

- a first frame;
- a sleeve having one end substantially permanently secured to the first frame, the first frame and the sleeve being adapted for installation so that the first frame abuts an interior facing side of one of the windows and the sleeve extends across said spacing and through the other window;
- a second frame positionable to abut the other window on its interior facing side; and
- means for releasably fastening the other end of the sleeve to the second frame, said means including first fastening means located on the second frame and second fastening means located on the sleeve so as to be engageable with the first fastening means only when the sleeve is pulled taut, the sleeve being held in the tension upon engagement of the first and second fastening means so as to exert a pull on each frame thereby holding them flush against the respective windows.

3,900,225

FITTING FOR A SEAT HAVING A SEAT ELEMENT AND A TILTABLE BACKREST ELEMENT

Egon Wirtz, Remscheid-Lennep, and Paul Werner, Remscheid, both of Germany, assignors to Fritz Kelper, Remscheid-Hasten, Germany

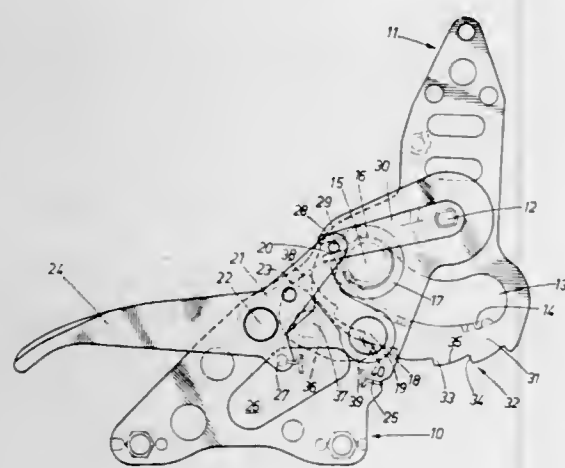
Filed Feb. 6, 1974, Ser. No. 440,036

Claims priority, application Germany, Feb. 9, 1973, 2306312

Int. Cl. B60n 1/06

U.S. Cl. 297—367

9 Claims



1. A fitting for a seat having a seat element and a tiltable backrest element, particularly for a vehicle seat, comprising a first plate member connectable with one of said elements; a

second plate member connectable with the other of said elements; pivot means connecting said members for relative pivotal displacement about a pivot axis; an arcuate gear segment concentric with an arcuate ratchet segment on said second plate member, both said segments having centers of curvature which coincide with said axis; a gear; journaling means journalling said gear on said first plate member so that the teeth of said gear mesh with said gear segment; pawl means; having first and second ends operatively engageable with said ratchet segment, said second end being normally biased out of engagement with said ratchet segment and mounting means pivotably mounting said pawl means on said first plate member, the pawl means being freely rockable and wherein rapid relative pivoting of said members about said axis causes said first end of said pawl means to cam said second end into blocking engagement with said ratchet segment to prevent further relative pivoting, while during slower relative pivoting of said members about said pivot axis said second end is free to move out of blocking engagement with said ratchet segment.

3,900,226

HYDRAULIC MINING METHOD

Lodewikus N. J. de Jong, Rijswijk, Netherlands, assignor to Shell Oil Company, Houston, Tex.

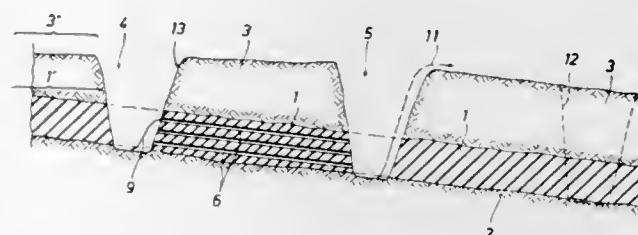
Filed Feb. 22, 1974, Ser. No. 444,924

Claims priority, application United Kingdom, Feb. 26, 1973, 9301/73

Int. Cl. E21C 25/60, 41/04

U.S. Cl. 299—17

5 Claims



1. A process of mining valuable materials from an underground seam, which method comprises digging at least two trenches in the earth surface, said trenches at least reaching into said seam; making at least one dipping passage extending between the trenches, said passage extending through at least the major part of the seam; disintegrating material in the side walls of said passage while simultaneously contacting the disintegrated material with a fluid so that a slurry of said disintegrated material and said fluid flows through the passage towards the lower end thereof into one of the trenches; and flowing this slurry out of the trench to the earth surface.

3,900,227

BRAKE CONTROL ARRANGEMENT FOR SKIDDERS

Duane R. Smith, Montgomery, and Rodney H. Anderson, Naperville, both of Ill., assignors to Caterpillar Tractor Company, Peoria, Ill.

Continuation of Ser. No. 130,938, April 5, 1971, abandoned.

This application Apr. 9, 1973, Ser. No. 349,315

Int. Cl. B60t 13/14

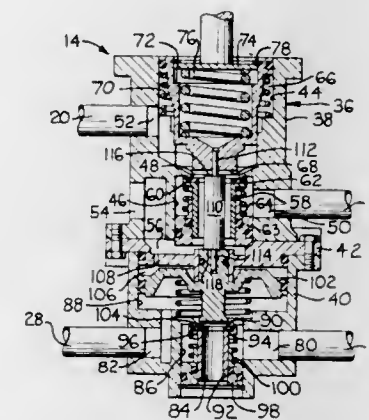
U.S. Cl. 303—7

13 Claims

1. An air pressure actuated hydraulic brake system having a first set of hydraulic motors actuated by a first master cylinder to brake the front wheels of a vehicle and a second set of hydraulic motors actuated by a second master cylinder to brake the rear wheels of said vehicle, a source of air pressure for actuating said master cylinders and control valve means for controlling the actuation of said master cylinders, the improvement comprising:

- actuating means operatively connected to said valve means;
- said control valve means responsive to said actuating

means for supplying full actuating pressure to said first master cylinder prior to and independently of the applica-



tion of full actuating pressure to said second master cylinder.

3,900,228

WHEEL SLIDE PROTECTION SYSTEM

Leonard Ramsey Hiscox, Birmingham, England, assignor to Girling Limited, Birmingham, England

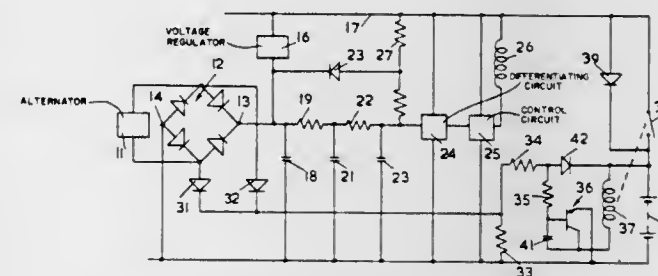
Filed July 18, 1973, Ser. No. 380,225

Claims priority, application United Kingdom, July 18, 1972, 33514/72; July 18, 1972, 33515/72

Int. Cl. B60t 8/12

U.S. Cl. 303—21 CG

8 Claims



1. A wheel slide protection system for a vehicle, comprising means operable in use to produce a signal representing a rotational speed of a wheel, a differentiating circuit to which said signal is applied, the differentiating circuit producing an output dependent upon the rotational deceleration of the wheel, control means coupled to the differentiating circuit and operable in use to release the brakes from the wheel when said deceleration exceeds a predetermined value, and means operable when the wheel speed is below a predetermined value for rendering the system inoperative by clamping the input of the differentiating circuit.

3,900,229

BRAKE CONTROL VALVE INCLUDING FAILSAFE MEANS FOR MANUALLY PUMPING BRAKES OF A VEHICLE

Royce H. Husted, 711 Lakeside Dr., Wheaton, Ill. 60187

Continuation-in-part of Ser. No. 327,761, Jan. 29, 1973, Pat. No. 3,827,765. This application May 14, 1974, Ser. No. 469,631

Int. Cl. B60t 15/06

U.S. Cl. 303—52

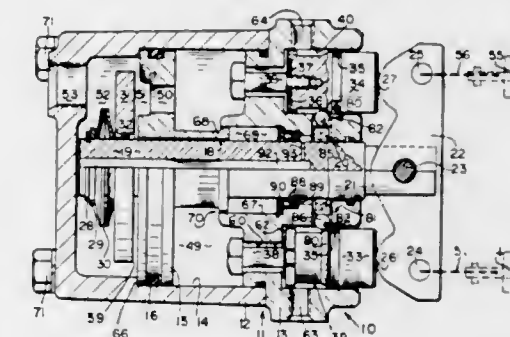
7 Claims

1. In a brake valve comprising in combination; a housing defining a bore closed at one end by an end-wall, a shaft slideably disposed through said end-wall having a first end for accepting an operator's force input and a second end in said bore, a moveable-wall which is moveable by said second end of said shaft including an annular piston slideably disposed in said bore and a reaction piston, said pistons defining between themselves a circumferential variable orifice

adapted to narrow and thereby become restrictive in response to said force input,

a collapsible chamber defined by said bore, by said end-wall and by said moveable-wall, said chamber having a fluid inlet including a check valve means and a pressure output port,

and a flow passage through said brake valve starting at said inlet, passing into said chamber and exiting said chamber through said annular piston and said variable orifice,



so that during power-on operation said force input causes the narrowing of said variable orifice and a restriction of flow through the flow passage which in turn generates pressure at the pressure output port, and during power-off operation said force input causes a closing of said variable orifice and a movement of said moveable-wall toward said end-wall thereby decreasing the volume of said chamber and manually pumping pressurized fluid through said output port.

3,900,230

PNEUMATIC BRAKE SYSTEM INCORPORATING A DOUBLE CHECK VALVE

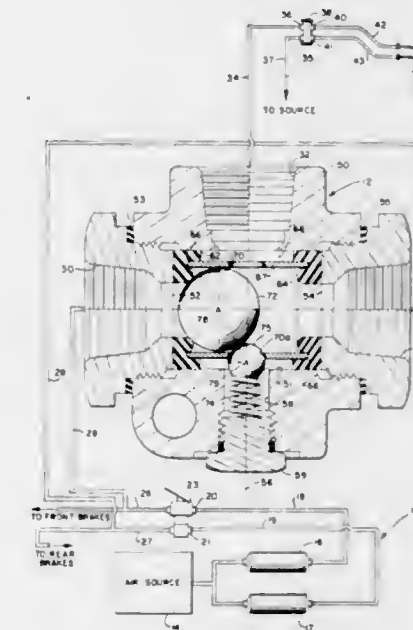
Harold Durling, Elsie, Mich., assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed May 13, 1974, Ser. No. 469,088

Int. Cl. B60t 17/22

U.S. Cl. 303—84 A

8 Claims



1. In a pneumatic brake system for a tractor-trailer type vehicle including a source of compressed air; a dual application valve having an inlet port in fluid communication with said source, a first outlet in fluid communication with the front brakes of said tractor, a second outlet in fluid communication with the rear brakes of said tractor, said dual application valve being manually operable to admit service air at signal pressure

into said first and second outlets, said service air being at approximately equal pressures in said first and second outlets; a first line in fluid communication with said first outlet and a second line in fluid communication with said second outlet of said dual application valve; a double check valve having a first inlet in fluid communication with said first line, a second inlet in fluid communication with said second line and an outlet; a tractor protector valve having a first inlet in fluid communication with said first outlet of said double check valve, a second inlet in fluid communication with said source of pressure, first and second outlets in fluid communication with the trailer brake system of said vehicle, said tractor protector valve normally communicating said first inlet with said first outlet and said second inlet with said second outlet and automatically responsive to a predetermined decrease in said supply pressure to prevent communication between said inlets and outlets thereof; said double check valve comprising:

- a housing having a central bore axially extending therethrough, an outlet perpendicular to and in fluid communication with said bore and a blind passage opening to and perpendicular to said bore, said bore in fluid communication at one end with said first inlet and in fluid communication at its opposite end with said second inlet;
- a circular valve seat at each end of said bore;
- a spherical valve element in said bore;
- cage means within said bore containing said sphere and permitting said sphere to roll into contact with either one of said circular seats, said cage means including a plurality of openings in an array axially aligned with said blind passage and said outlet, one of said openings aligned with said passage; and
- spring-biased ball detent means in said blind passage and extending through said aligned opening to maintain said sphere in sealing engagement with either one of said seats at any given time at a minimum contact force requiring air pressure at the sealed inlet to be at least 2 psi greater than air pressure at the open inlet to shift said sphere within said cage means.

3,900,231

MOLDED TRACK FOR A TRACK-LAYING VEHICLE

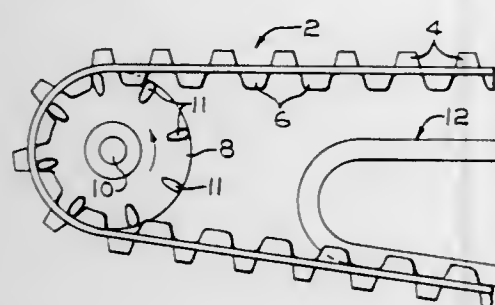
George D. Ohm, Cuyahoga Falls, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Oct. 23, 1973, Ser. No. 408,610

Int. Cl.² B62D 55/24

U.S. Cl. 305—35 EB

7 Claims



1. A flexible track for a track laying vehicle, the vehicle having at least one slide rail adapted to slidably engage the track, the track comprising:

- an endless belt of elastomeric material, the belt having an inner periphery and an outer periphery,
- drive engaging means molded around the inner periphery,
- tread means molded upon the outer periphery thereof, and
- at least one low friction slide rail bearing surface extending continuously longitudinally around the inner periphery of the belt wherein the bearing surface comprises a woven fabric, the fabric partially embedded in and integrally molded to the inner periphery of the belt and partially exposed for operative engagement with the at least one slide rail.

3,900,232
ARRANGEMENT FOR PRELOADING BEARINGS

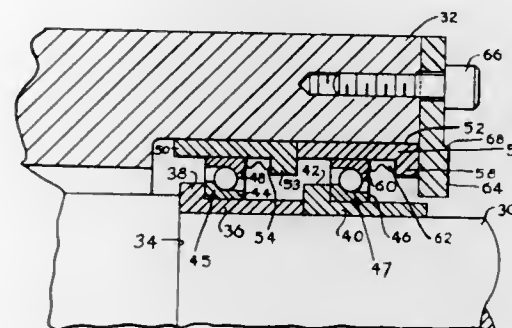
John E. Rode, Fonda, N.Y., assignor to Temper Corporation, Fonda, N.Y.

Filed Sept. 26, 1973, Ser. No. 401,117

Int. Cl. F16c 35/06

U.S. Cl. 308—1 R

28 Claims



1. In combination; first and second relatively rotatable members, at least two thrust sustaining antifriction bearings interposed between said members in axially spaced relation and each bearing having first and second races pertaining to and nonrotatable relative to said first and second members respectively, first abutment means stationary on said first member and engaging one axial side of said first races, second abutment means axially slidable on said second member and in opposed relation to the other axial sides of said second races, axially compressible load element means interposed between said second abutment means and said second races, and clamp means on said other member clamping said second abutment means thereto with said load element means between said second abutment means and the said second races of said bearings, each said load element being axially compressible at a predetermined force thereby to impart a predetermined axial load on each said bearing when the load element means are axially compressed.

3,900,233

LINEAR MOTION BALL BEARING ASSEMBLY AND BALL CONFORMING SHAFT

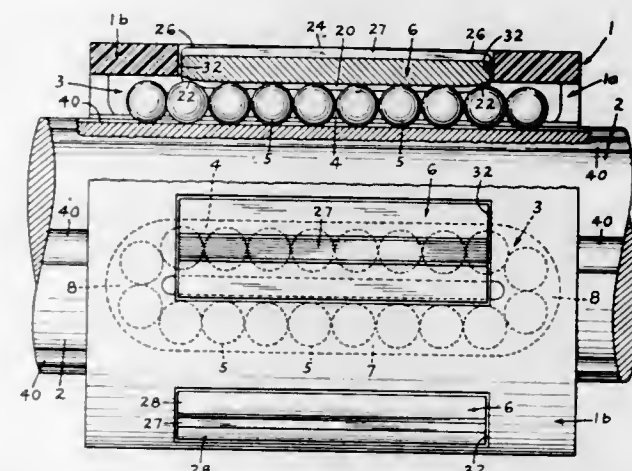
John B. Thomson, Manhasset, N.Y., assignor to Thomson Industries, Inc., Manhasset, N.Y.

Filed Jan. 19, 1973, Ser. No. 325,042

Int. Cl. F16c 17/00

U.S. Cl. 308—6 C

33 Claims



1. A linear motion ball bearing for axial movement along a shaft and which has at least one raceway formed in an inner retainer, said raceway having a load bearing portion and a load free portion and substantially filled with balls and a load-carrying plate provided in said load bearing portion of said raceway, characterized in that, means are provided for mounting said load-carrying plate in said load bearing portion of said raceway so that said load-carrying plate is adapted to be mov-

able within the inner ball retainer in directions circumferentially of the shaft on which said bearing is to be mounted.

flange being provided with a relief hole adjacent to and behind each tab.

3,900,234

DIE CAST SUPPORT HAVING NO EFFECTIVE DRAFT

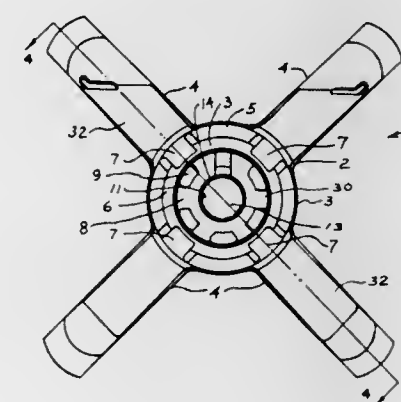
Joseph T. Roddy, Ballwin, and Russell D. Begley, Florissant, both of Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Apr. 30, 1973, Ser. No. 355,788

Int. Cl.² F16C 13/02

U.S. Cl. 308—15

14 Claims U.S. Cl. 312—217



1. In a die cast bearing support including a hub portion intended to receive a second structure having a longitudinal length in a press fit, the improvement comprising a housing in said hub portion having an axial opening in it for receiving said second structure, said opening having a longitudinal axis, said opening being defined by a wall having a plurality of protrusions extending radially inwardly from said wall, the radially innermost part of each of said protrusions being approximately parallel to said longitudinal axis for a length at least equal to the longitudinal length of said second structure.

3,900,235

TAB RACE

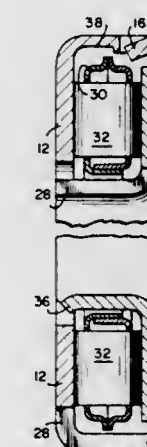
Richard L. Alling, and Roger L. Iffland, both of Torrington, Conn., assignors to The Torrington Company, Torrington, Conn.

Continuation-in-part of Ser. No. 214,260, Dec. 10, 1971, Pat. No. 3,713,713, and a continuation of Ser. No. 304,961, Nov. 1, 1972, abandoned. This application Mar. 4, 1974, Ser. No. 448,006

Int. Cl.² F16C 33/58

U.S. Cl. 308—235

6 Claims



1. A bearing race comprising:

- a radially extending portion;
- a flange integral with and projecting axially from the outer diameter of the radially extending portion; and at least one tab projecting from the flange inwardly and axially toward the axis of the radially extending portion said

3,900,236

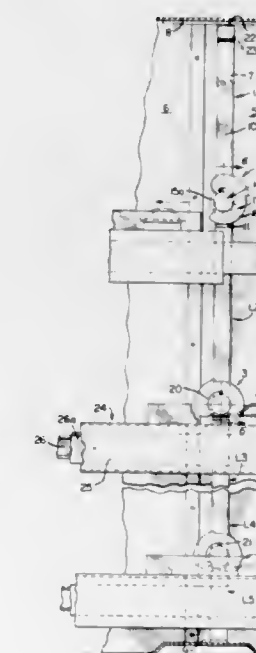
FILE INTERLOCK

Gabriel J. Goulish; Leo Terlecki, and Alan R. Wright, all of Youngstown, Ohio, assignors to GF Business Equipment, Inc., Youngstown, Ohio

Filed June 28, 1974, Ser. No. 484,250

Int. Cl.² E05B 65/46

15 Claims



1. A file cabinet having a plurality of vertically stacked storage elements provided with interlock means for preventing the opening of more than one said element at a time, said interlock means including a plurality of vertically aligned lock bars in said cabinet for limited vertical displacement therein, guide means in said cabinet containing said lock bars and defining the limit of vertical displacement of said lock bars, cam means carried by each said lock bar each having rotatable lesser and greater diameter portions, said lesser diameter portions normally disposed immediately adjacent the next lower one of said lock bars, means mounting each said storage element within said cabinet for substantially horizontal rectilinear movement therein, activator means horizontally movable concurrently with each said storage element to engage one said cam means to vertically displace its respective lock bar and concurrently rotate said cam means whereby, when one said cam means has been rotated by said activator means and its respective lock bar elevated thereby, all remaining said lock bars and cam members are immobilized and block movement of any additional activator means and associated storage elements therepast.

3,900,237

METHOD OF MAKING ARCH SHAPED ARC TUBE

Rudolph Marcucci, Beverly, Mass., assignor to GTE Sylvania Incorporated, Danvers, Mass.

Filed Aug. 9, 1973, Ser. No. 386,868

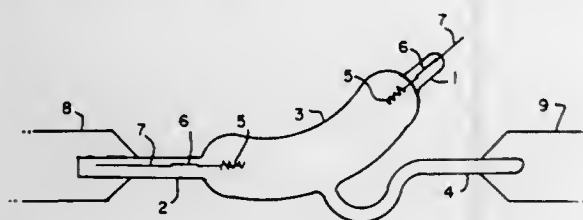
Int. Cl. H01J 9/38

U.S. Cl. 316—20

3 Claims

1. In the manufacture of an arc tube for a high intensity arc discharge lamp, the steps which comprise: joining two lengths of quartz tubing to the ends of a larger diameter cylindrical quartz tube; bending the cylindrical quartz tube into an arch shape; forming an opening in the wall of the arch tube, said opening being substantially at the longitudinal center of the arch tube; joining an exhaust tube to the arch tube in alignment with said opening; bending the exhaust tube into axial alignment with one of the lengths of tubing; sealing the open

end of said exhaust tube and the open end of the other length of tubing; inserting an electrode assembly including a molyb-



denum ribbon into said one length of tubing and vacuum sealing the tubing onto a molybdenum ribbon.

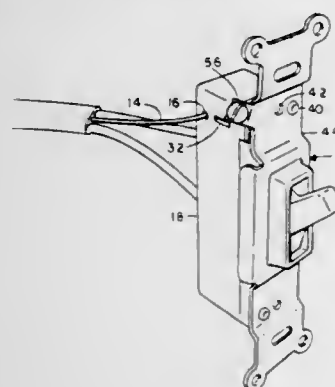
3,900,238

ADDITION OF A STAB GROUND WIRE TO ELECTRICAL RECEPTACLES, I.E. SWITCHES AND PLUGS

Raymond G. Anderson, 206 N. Sharmin, Ankeny, Iowa 50021
Continuation-in-part of Ser. No. 290,080, Sept. 18, 1972, abandoned. This application Apr. 15, 1974, Ser. No. 460,769
Int. Cl. H01r 3/06

U.S. Cl. 339-14 R

4 Claims



1. An electrical outlet receptacle comprising, an insulated housing having wall portions forming a chamber for holding power terminals and a ground terminal therewithin, an electrical cover means for said housing, at least two power wire terminals mounted within said housing chamber, and a quick wiring ground terminal arranged to receive a ground wire and grip the same which is comprised of, an integral metallic ground conductor mounted on one wall of said housing and having an extension portion extending across an immediately adjacent wall and opposite said one wall said ground conductor having a wire receiving channel, and said extension portion which extends across said immediately adjacent wall having a deflectable arm with a ground wire gripping lower edge which partially obstructs said ground wire receiving channel, said housing having a ground wire access aperture aligned with said channel, and a tool access aperture aligned with said deflectable arm for insertion of a tool to deflect said arm and release a ground wire.

3,900,239

ELECTRICAL SOCKET ADAPTOR

John William Anhalt, and David Samuel Goodman, both of Orange, Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Sept. 4, 1973, Ser. No. 394,355

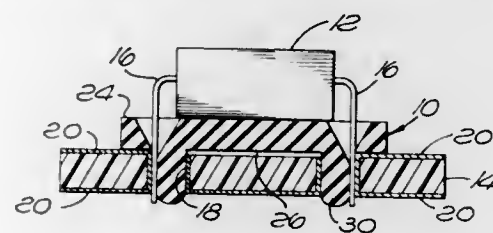
Int. Cl. H05k 1/07

U.S. Cl. 339-17 CF

4 Claims

1. An electrical socket adaptor for interconnecting an electrical circuit element having electrical leads extending therefrom with a mounting member having plated-through holes therein, comprising:

a body of resilient insulative material having an upper surface and a lower surface;
a plurality of apertures in said body opening at said upper surface thereof and arranged in a pattern corresponding to the arrangement of said electrical circuit element leads;
a plurality of integral resilient hubs on said body extending downwardly from said lower surface thereof, each said hub being positioned in juxtaposition to a respective one of said apertures and being adapted to be resiliently mounted in one of said plated-through holes; and



said apertures opening at the lower surface of said body adjacent to one side of their respective hubs, each said hub having a portion positioned below and spaced from the bottom of its respective aperture whereby, when said socket adaptor interconnects said electrical circuit element and said mounting member, the electrical circuit element leads extending downwardly through said apertures will be biased against the walls of said plated-through holes by said resilient hubs, each said aperture including a pair of inclined side walls converging downwardly toward said lower surface of said body, said planes of said side walls intersecting below said lower surface.

3,900,240

SKIRTING BOARD

Johannes Kurt Bertrams, deceased, late of Hilden, Germany, by Casper Antonius Henricus Mulkens, administrator, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

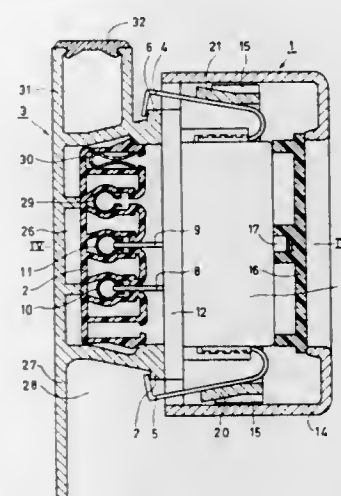
Filed Nov. 29, 1973, Ser. No. 420,113

Claims priority, application Netherlands, Dec. 16, 1972, 7217178

Int. Cl. H01r 9/00

U.S. Cl. 339-21 R

3 Claims



1. A current adapter for connecting and holding an electrical socket to a current rail, comprising a housing having a bottom portion and an upper portion, two coupling members connected to said lower portion for movement between an unclamped position and a clamping position for clamping under an edge portion of the current rail, a movable member within said housing movable between first and second extreme positions, means for moving said coupling members from said unclamped position to said clamping position responsive to

movement of said movable member from said second to said first extreme positions and for returning said coupling members to said unclamped position upon movement of said movable member to said second position, means for making electrical contact with a conductor in said voltage rail, socket means for connecting a current-consuming unit to the adapter, a safety disc connected to said upper portion and covering said socket means, movable between a locked position and an operating position, said disc having at least one hole aligned with said socket means only when said disc is in said operating position, and means for permitting movement of said disc from said locked position only when said movable member is in said first extreme position and for permitting movement of said movable member from said first extreme position only when said disc is in said locked position, whereby said adapter cannot be removed from the voltage rail while a plug is inserted in the socket means.

3,900,241

WIRING HARNESS

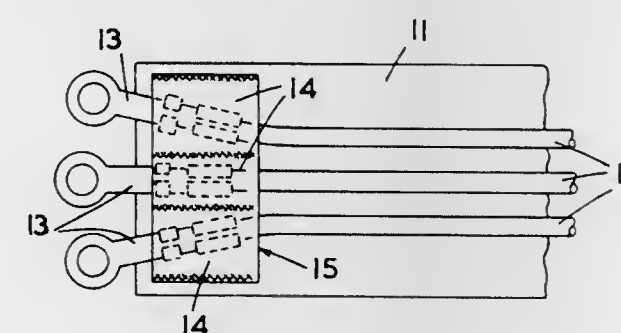
William Lawrence Fry, Stafford, England, assignor to Rist's Wires & Cables Limited, Birmingham, England
Filed Jan. 31, 1974, Ser. No. 438,279

Claims priority, application United Kingdom, Feb. 14, 1973, 7171/73

Int. Cl.² H01R 11/04

U.S. Cl. 339-59 M

5 Claims



1. A wiring harness including a thermoplastic backing strip, at least one conductive lead including a conductive core in a thermoplastic sheath, said sheath being fused to the backing strip to secure the lead to the backing strip, a terminal electrically connected to one end of the core of the lead, and a thermoplastic sleeve within which said terminal is received, said sleeve being fused to said backing strip to locate the terminal in a predetermined position on said backing strip.

3,900,242

ELECTRICAL CONNECTION OF FLEXIBLE PRINTED CIRCUITS

Peter Francis Maheux, Arnprior, and Brian Matthew Deacon, Ottawa, both of Canada, assignors to Northern Electric Company Limited, Montreal, Canada

Filed July 17, 1974, Ser. No. 489,175

Int. Cl.² H01R 13/38

U.S. Cl. 339-95 R

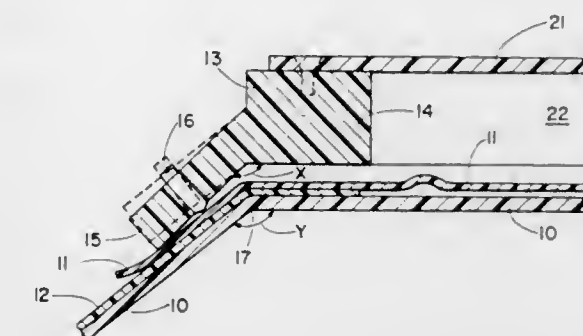
3 Claims

1. A method of electrically connecting two flexible printed circuits, each circuit having at least one conductor thereon, comprising:

positioning the two circuits with the conductors in contact between two clamping members having opposing cooperating surfaces, the surface of one member being slightly out of parallelism with the surface of the other member; positioning a pin to project through the said surface of the one member for each opposed pair of conductors in the flexible circuits;

and moving the clamping members into clamping relationship to distort said surface of said one member substantially into parallelism with the surface of said other mem-

ber and swinging said pins in a plane normal to the planes of the conductors to urge said conductors into direct



intimate connection and to cause a wiping motion between said conductors as the connection is made.

3,900,243

WATCHING MIRROR

Berndt-Ola Folke Johnsson, Linköping, Sweden, assignor to Moderna Butiksinredningar AB, Mölndal, Sweden

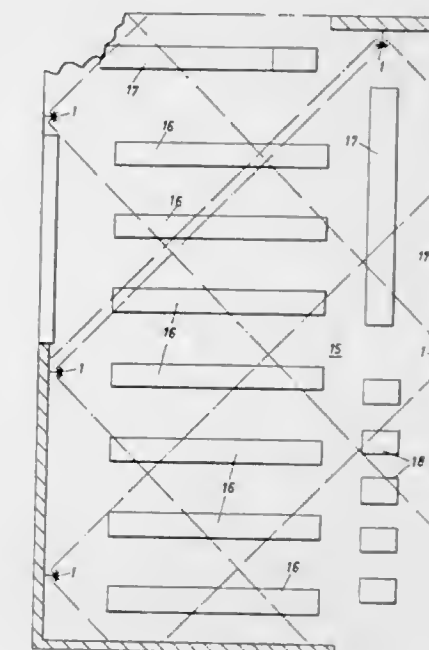
Filed June 21, 1974, Ser. No. 481,707

Claims priority, application Sweden, June 25, 1973, 7308903

Int. Cl. G02b 27/17, 5/08

U.S. Cl. 350-6

1 Claim



1. In building building having a station for supervisory personnel and regions remote from said station which cannot be directly observed from said station, a plurality of mirror members positioned in the line of sight from said station, each mirror member comprising a mounting base, a mirror and means for rotatably attaching said mirror to said base for rotation about a substantially vertical axis, a drive motor and a crank arm rotatably driven thereby, and link means connecting said crank arm to said mirror in offset relation to said axis for continuously oscillating said mirror about said axis over an angular deviation sufficient to allow observation of all of said remote regions by means of said mirrors at some times, whereby a person in a remote region is uncertain when he is under observation thereby to broaden the supervisory field and deter shoplifting.

3,900,244

VISUAL SELECTION AND PRECISION ISOLATION SYSTEM FOR MICROELECTRONIC UNITS

Mordechai Wiesler, 6 Carmel Cir., Lexington, Mass. 02173, and John C. McCarron, 9A Ellis Ct., Woburn, Mass. 01801, assignors to Teledyne, Inc., Woburn, Mass.

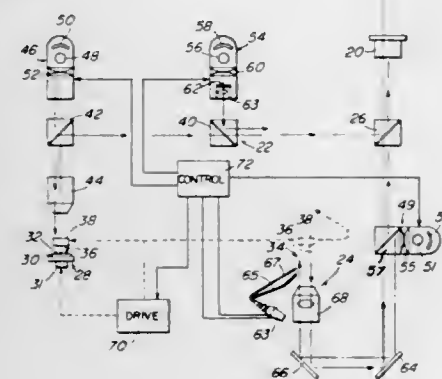
Continuation of Ser. No. 290,968, Sept. 21, 1972, abandoned.

This application July 5, 1974, Ser. No. 486,217

Int. Cl. G02b 21/20

U.S. Cl. 350—81

17 Claims



1. An optical system for visually selecting and precisely locating microelectronic units, said optical system comprising first optical means including first imaging means having a first pair of conjugate planes in a first optical path, second optical means including second imaging means having a second pair of conjugate planes in a second optical path, observation means visually communicating with one of said first conjugate planes and one of said second conjugate planes, third optical means for projecting a reticle image, beam splitting means for superposing said reticle image onto said one of said first conjugate planes and said one of said second conjugate planes, said one of said first conjugate planes and said one of said second conjugate planes being coplanar with the reticle image plane, first illuminating means for said second optical path, first mechanical means for adjustably positioning a plurality of microelectronic devices in the other of said first conjugate planes and in the other of said second conjugate planes, second mechanical means for selecting one of a plurality of microelectronic devices with reference to said reticle image for movement through a predetermined distance with reference to said reticle image, and control means for switching said first illuminating means and said second illuminating means, whereby different aspects of a particular microelectronic unit optically centered initially may be examined.

3,900,245

COUPLER FOR LIQUID CORE OPTICAL WAVEGUIDES

Richard Burnaby Dyott, London, and John Hill Stewart, Stanmore, both of England, assignors to The Post Office, London, England

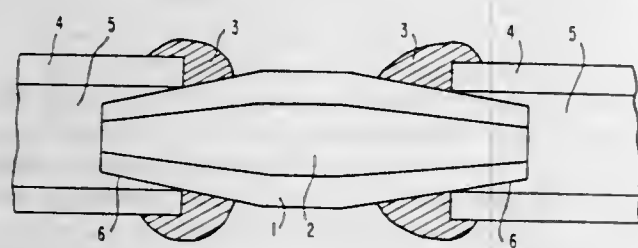
Filed Aug. 24, 1973, Ser. No. 391,360

Claims priority, application United Kingdom, Sept. 6, 1972, 41240/72

Int. Cl. G02b 5/14

U.S. Cl. 350—96 C

8 Claims



1. A dielectric optical waveguide coupling including first, second and third lengths of dielectric optical waveguide, said first length having a solid cladding and core, a central cylindrical portion and oppositely tapered end portions, said second

and third lengths each having a liquid core and a solid cladding, said lengths being disposed in axial alignment with each other and with said first length between the other two and the tapered portions of said first length being disposed partially within the liquid cores of said second and third lengths, said second length having a Pyrex cladding and a bromotrichloromethane core, said first length having a cladding consisting of Schott glass FK1 and a core selected from the group consisting of Schott glass 2KN7 and PK1, and said third length having a Pyrex cladding and a core selected from the group consisting of bromotrichloromethane and tetrachloroethylene.

3,900,246

LANTHANUM TITANATE SINGLE CRYSTAL ELECTRO-PTIC MODULATOR

Masakazu Kimura; Satoshi Nanamatsu; Kikuo Doi, and Shigeo Matsushita, all of Tokyo, Japan, assignors to Nippon Electric Company Limited, Tokyo, Japan

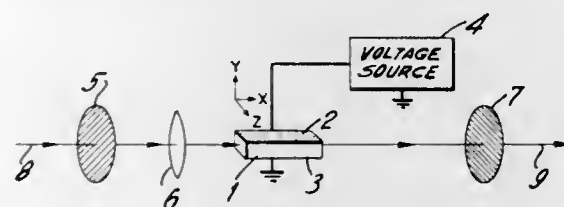
Continuation-in-part of Ser. No. 251,156, May 8, 1972, abandoned. This application Feb. 25, 1974, Ser. No. 445,349

Claims priority, application Japan, May 24, 1971, 46-35763

Int. Cl. G02F 1/26

U.S. Cl. 350—150

2 Claims



1. An intensity modulator for a light beam comprising:
 - a. a crystal element having a rectangular parallelepiped shape elongated in the direction parallel to the natural cleavage plane and normal to both of the optic axes of said crystal element, said crystal element comprising a single crystal having a nominal composition of $\text{La}_2\text{Ti}_2\text{O}_7$;
 - b. first and second light polarizers having polarization directions at right angles;
 - c. means for impressing an electric field across said crystal element in a direction parallel to said natural cleavage plane and parallel to a plane containing both of said optic axes of said crystal element;

wherein a light beam is transmitted through said first polarizer, said crystal element and said second polarizer in succession in said direction parallel to said natural cleavage plane and normal to both of said optic axes of said crystal element, and the intensity of said light beam is modified by the linear electro-optic effect of said crystal element.

3,900,247

OPTICAL MODULATOR HAVING COMPENSATION FOR THERMAL AND SPACE CHARGE EFFECTS

Safwat George Zaky, Oakville, Canada, assignor to Northern Electric Company Limited, Montreal, Canada

Filed Feb. 26, 1974, Ser. No. 445,875

Int. Cl. G02F 1/03

U.S. Cl. 350—150

2 Claims

1. In an optical modulator for connection to a source of linearly polarized light, comprising in tandem connected optical combination;
 - a beam splitter for splitting the linearly polarized light which is reentrant from that which is incident thereupon;
 - a mirror; and
 - a variable birefringent device located between the beam splitter and the mirror;
 the improvement comprising:
 - a quarter-wave plate located between the variable birefringent device and the mirror;
 - the optical axis of the birefringent device being at an angle of $\pi/4$ radians with respect to that of the source of lin-

3,900,249

SOFT-FOCUS OPTICAL ELEMENT

Teruyoshi Tsunashima, Kawasaki; Teruo Kaneko, and Takeo Ichimura, both of Tokyo, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

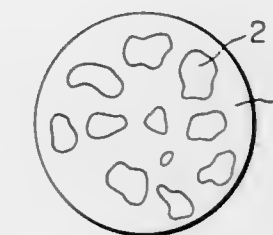
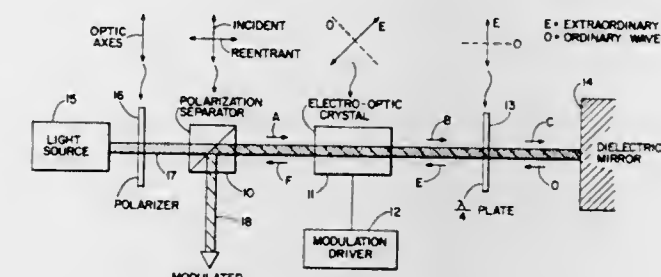
Filed May 9, 1973, Ser. No. 358,466

Claims priority, application Japan, May 15, 1972, 47-47154

Int. Cl. G02b 13/20

U.S. Cl. 350—188

7 Claims



whereby the relative phase shift, of the ordinary and extraordinary components of the polarized light in said modulator is substantially a result of only said change in birefringence of said device.

1. A soft-focus optical element comprising a transparent substrate of a predetermined refractive index, and an almost infinite number of micro-and indefinite shaped ion-penetrated portions formed in said transparent substrate in accordance with a desired pattern preformed on said transparent substrate, said ion-penetrated portions having a refractive index different from that of the rest of said transparent substrate.

3,900,248

LIQUID CRYSTAL DISPLAY DEVICE

Osamu Nagasaki, Narashino, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Japan

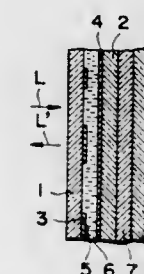
Filed Sept. 11, 1973, Ser. No. 396,310

Claims priority, application Japan, Sept. 11, 1972, 47-90351

Int. Cl. G02F 1/16

U.S. Cl. 350—160 LC

9 Claims



1. A high contrast liquid crystal optical image display device comprising a light source, means defining at least one cavity for containing liquid crystal compositions, comprising at least one pair of spaced apart parallel plates, each pair defining one cavity therebetween; a liquid crystal composition in each cavity, said composition containing a dichroic substance which absorbs a component of the light having an electric vector in a given direction when the substance is aligned parallel to said plates and transmits light without absorption when said dichroic substance is aligned perpendicular to said plate, said cavity being illuminated by said light source and at least one of said plates in each pair being light transmitting; each of said plates having transparent electric field-generating electrode means adjacent to said cavity; at least one of said electrode means being segmented into character forming elements; means for selectively imposing electric fields in individual segments; and retardation plate means for changing the electric vector of said light after initial passage through said liquid crystal cavity whereby causing said light to make a second passage through said liquid crystal cavity such that when said dichroic substance is aligned parallel to the plate, one electric vector of said incident light is absorbed during said initial passage and the orthogonal electric vector component is absorbed during said second passage.

3,900,250

SEMI-RIGID, GAS PERMEABLE CONTACT LENSES

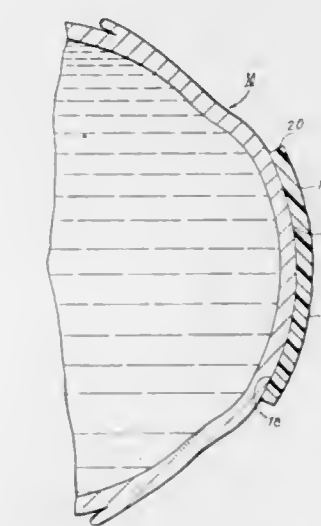
Edward J. Ivani, Brooklyn, N.Y., assignor to Rynco Scientific Corporation, Floral Park, N.Y.

Filed Oct. 26, 1973, Ser. No. 410,255

Int. Cl. G02C 7/04

U.S. Cl. 351—160

1 Claim



1. A semi-rigid, gas-permeable contact lens of generally concave-convex cross-section having the concave surface thereof substantially conforming to the cornea of the eye, said lens being formed of transparent, optically clear cellulose acetate butyrate.

3,900,251

SYNCHRONIZER SYSTEM FOR A MOTION PICTURE SOUND RECORDER

Robert O. Doyle; Jordan Kirsch, both of Cambridge, Mass., and Wendt Thomis, Fort Lee, N.J., assignors to Super 8 Sound, Inc., Cambridge, Mass.

Filed Mar. 29, 1974, Ser. No. 456,035

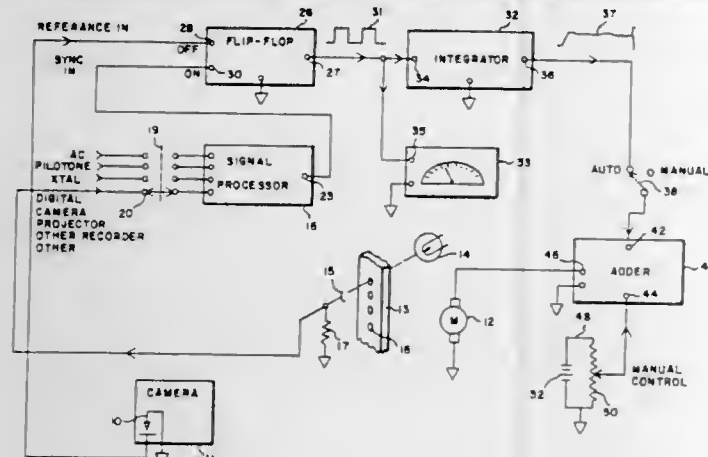
Int. Cl. G03b 31/00

U.S. Cl. 352—12

13 Claims

1. A synchronizer for a motion picture sound recorder comprising:

means for generating sync signals representative of film advancement of motion picture film;
 sound synchronizing means for supplying reference signals representative of the sound recording rate;
 means coupled to said sound synchronizing means and said means for generating said sync signals for generating intermediate control pulses having a duration representa-

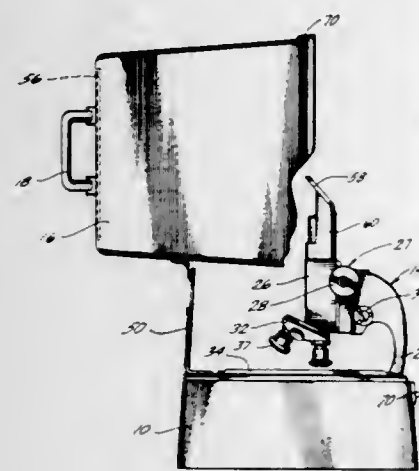


tive of the phase difference between the sync and reference signals;
 means for converting said pulses to a d-c control signal, the amplitude of which is a function of the duration of the intermediate control pulses; and
 d-c drive means for controlling the sound recorder drive rate, said d-c drive means being coupled to said d-c control voltage and at least partially energized thereby.

3,900,252
METHOD AND APPARATUS FOR ANALYZING HAIR STRUCTURE
 Ronald M. Di Salvo, Marina Del Rey, and Robert W. Yates, Woodland Hills, both of Calif., assignors to RedKen Laboratories, Van Nuys, Calif.

Filed Oct. 31, 1973, Ser. No. 411,188
 Int. Cl. G02b 21/36
 U.S. Cl. 353-39

2 Claims

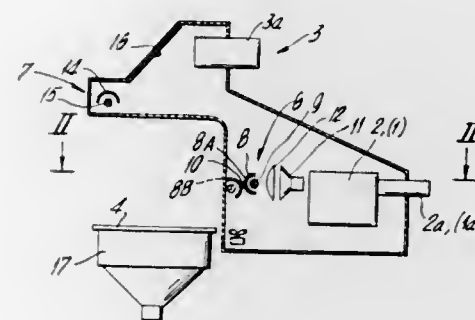


1. A projection microscope comprising a base, a light source mounted in the base, a microscope mounted on top of the base, the microscope having a vertically extending optical system with an eyepiece at the top, means directing light from the source to illuminate a sample positioned below the microscope and through the optical system of the microscope, means including a mirror mounted on the top of the microscope directing the light from the image formed by the microscope from a vertical to a horizontal path, a rigid cover fitting over the microscope and having walls surrounding the microscope on three sides and the back, the walls extending upwardly from the base to a top wall extending above the microscope when the cover is closed, the cover having a projection screen mounted inside the top wall of the cover, and hinge

means connecting the wall at the back of the cover to the base, the cover being tiltable to an open position with the screen positioned vertically, the mirror directing light from the eyepiece onto the screen with the cover in the open position, the hinge means including a back plate secured to the base and extending upwardly above the base, the back wall of the cover having an opening for receiving the back plate, the back plate closing the opening when the cover is closed, and hinges connecting the top of the back plate to the back wall of the cover at the upper margin of said opening, the hinge axis being positioned substantially above the base intermediate the top wall and the bottom of the side walls of the cover, whereby the three sides of the cover when tilted to the open position about the hinge axis partly shield the top and sides of the microscope from stray light.

3,900,253
OPTICAL PROJECTING APPARATUS
 Jan-Erik Asterö, Tumba, Sweden, assignor to Lindaco Ltd., Geneva, Switzerland
 Filed Apr. 20, 1973, Ser. No. 353,202
 Claims priority, application Sweden, Apr. 26, 1972, 5521/72; July 3, 1972, 8743/72; Sept. 12, 1972, 11778/72
 Int. Cl. G03b 21/08, 21/20, 21/00
 U.S. Cl. 353-63

11 Claims



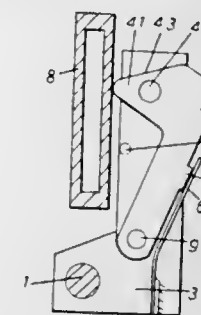
1. Projection apparatus of the overhead type, comprising: a TV-set, the picture tube surface of which is arranged horizontally; a mirror positioned above said picture tube surface for deflecting light from said picture tube surface, and a lens system for projecting the image of the picture tube surface, support means for mounting said TV-set, said support means at its top side being provided with a sheet of transparent material, light means for illuminating said sheet from a position above said surface, whereby said projection apparatus is a combined overhead and episcopic projector which functions to project an image from said picture tube by directing light originating from said picture tube to said mirror and reflecting it thereby through said lens system; to project an image from a full size transparency placed on said transparent material by directing light originating from said picture tube through said transparency and to said mirror where it is reflected through said lens system; and to project an image from an opaque picture placed on said sheet of transparent material by directing light originating from said light means to said opaque picture and thence to said mirror where it is reflected through said lens system.

3,900,254
STILL PICTURE PROJECTOR
 Wolfgang Apel, Dresden, Germany, assignor to VEB Pentacon, Dresden, Germany
 Filed Mar. 25, 1974, Ser. No. 454,442
 Int. Cl. G03b 21/00
 U.S. Cl. 353-68

7 Claims

1. In a still picture projector having a housing, a light path within said housing, means defining an aperture within said housing in the light path, a first opening in the housing whereby an image carrier is movable into the aperture and a second opening in the housing whereby an image carrier is movable into the aperture, the provision of:

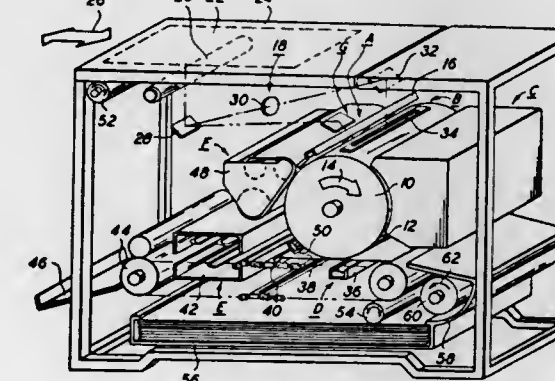
a. means for moving an image carrier in the form of slide into said aperture via said first opening, and



b. a slide return element movably mounted within the housing for moving said slide out of said aperture, and means responsive to the introduction of an image carrier into said aperture via said second opening, to move the slide return element away from the aperture.

3,900,255
PADDLE-WHEEL DEVELOPMENT SYSTEM
 Kazunobu Yamamoto, Akasaka, Japan, assignor to Rank Xerox Ltd., London, England
 Division of Ser. No. 269,903, July 7, 1972. This application Feb. 27, 1974, Ser. No. 446,584
 Int. Cl. G03g 15/00
 U.S. Cl. 355-3 DD

2 Claims

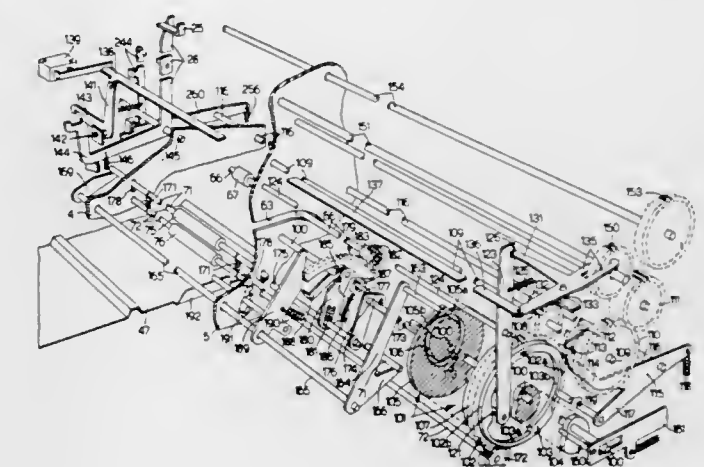


1. An electrophotographic printing machine, including: a photoconductive member;
 corona generating means for charging said photoconductive member to a substantially uniform level;
 exposure means for producing a light image which irradiates said photoconductive member to selectively discharge portions thereof recording an electrostatic latent image thereon of an original document to be reproduced;
 a housing member storing a supply of developer mix comprising carrier granules and toner particles;
 a hub member mounted rotatably in said housing member;
 a plurality of substantially equally spaced longitudinally extending vanes mounted fixedly on the circumferential surface of said hub member;
 drive means for rotating said hub member to form a flow of developer mix moving from a first region below said hub member to a second region above said hub member;
 a deflection plate disposed above said hub member and within said deflection plate having an undersurface extending transversely to said photoconductive member for intercepting and directing the flow of developer mix impacting thereon towards the electrostatic latent image recorded on said photoconductive member;
 a control plate having opposed end portions, said control plate being disposed in closely spaced relation to said photoconductive member with one end portion in an adjacent spaced relation to the portion of the undersurface of said deflection plate closest to said photoconductive member such that the developer mix directed by the undersurface of said deflection plate towards said photo-

conductive member cascades within the space defined by the control plate and the photoconductive member and over the electrostatic latent image recorded on said photoconductive member; and
 a recovery plate disposed adjacent the end portion of said control plate opposed from the undersurface of said deflection plate and arranged to direct the flow of unused developer mix and carrier granules into the first region of said housing member for subsequent re-use.

3,900,256
ELECTROSTATIC COPYING MACHINE AND SYNCHRONIZING CONTROL SYSTEM THEREFOR
 Giovanni Ravera; Giorgio Siletto, both of Turin, and Carlo Bellis, Strambino, all of Italy, assignors to Ing. C. Olivette & C., S.p.A., Turin, Italy
 Filed June 21, 1974, Ser. No. 481,941
 Claims priority, application Italy, July 9, 1973, 69035/73
 Int. Cl. G03G 15/00
 U.S. Cl. 355-14

9 Claims



1. An electrostatic copying machine of the type having a motor, a first transport system actuated by the motor for transporting an original along a scanning zone past an illuminating system, a second transport system actuated by the motor for transporting a copy sheet fed from a feed station through a corona-effect electrostatic charging device and through an exposure zone at which an image of the original is formed by an optical system, means for synchronizing the movement of the said first and second transport systems and for co-ordinating the actuation of the charging device and illuminating system with the movement of the first transport system, said means comprising in combination:
 a first cam actuated by the motor,
 a second cam integral with said first cam and movable therewith,
 a third cam integral with said second cam and movable therewith,
 a clutch device movable into a first operative position of transmission of the motion from the motor to said first cam and into a second position of non-transmission of the motion from the motor to said first cam,
 a key for effecting the movement of said clutch device into its first operative position and for switching on the corona charging device,
 means actuated by said first cam for transmitting the motion from the motor to the first transport system and for activating the illuminating system,
 means actuated by said second cam for feeding the copy sheet to the second transport system; and
 means actuated by said third cam for causing said clutch device to move into its second position.

3,900,257

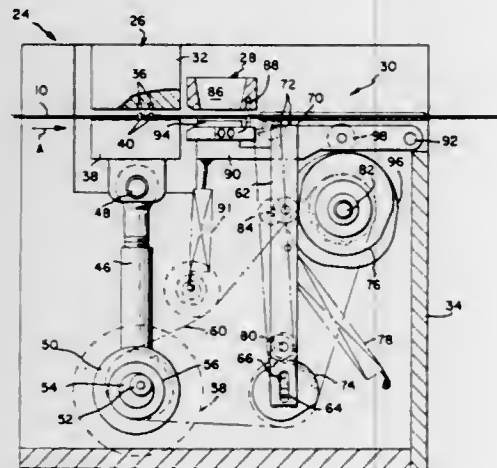
REGISTRATION DEVICE FOR PRINTED CIRCUITS

Harold Oakley Woolley, Jr., Hershey, and Bernard Groene Ryle, Camp Hill, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of Ser. No. 357,050, May 3, 1973, abandoned. This application Jan. 21, 1974, Ser. No. 435,144 Int. Cl.² G03B 27/42

U.S. Cl. 355-29

16 Claims



1. A device for printing a predetermined pattern on a web having perforations formed therein in predetermined spaced locations, said device including:

a printing station, means at said printing station for sequentially printing said predetermined pattern on said web, spaced recesses formed in said printing means located in predetermined spaced relation to the pattern to be printed thereby, clamping means movably mounted in said device on the opposite side of said web from said printing means, means for moving said clamping means into and out of engagement with said printing means during each printing operation, said clamping means including pins extending therefrom towards said recesses in said printing means, said pins, perforations and recesses all having a complementary configuration in plan, said pins passing through perforations in said web into said recesses, as said moving means moves said clamping means into engagement with the web, whereby the perforations receiving said pins are located in alignment with said recesses and positioned in a predetermined relation with respect to the pattern being printed on the web; and means for advancing said web through said printing station a predetermined distance between each printing operation comprising at least one advancing head movably mounted in said device downstream of said printing station in the direction of travel of the web, said advancing head having at least one tooth extending therefrom in position to selectively engage perforations in said web, and means for moving said advancing head in a generally D-shaped path of travel wherein at an initial position said teeth engage perforations in the web after a printing operation and are moved away from the printing station for a predetermined distance at the end of which the teeth are disengaged from said perforations and the heads are returned, out of engagement with the web, toward the printing station, during the printing operation, to said initial position, whereby said web is advanced in a step-wise manner over a predetermined distance between printing operations.

3,900,258

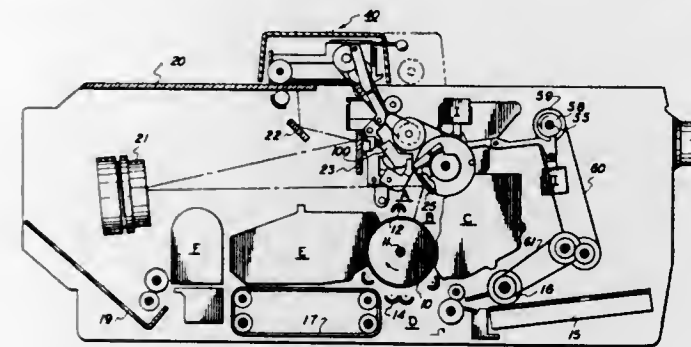
EXPOSURE APPARATUS

Werner F. Hoppner, Webster, and David K. Shogren, Ontario, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 284,687, Aug. 29, 1972, abandoned. This application June 7, 1973, Ser. No. 367,996 Int. Cl.² G03B 27/46; G03G 15/04

U.S. Cl. 355-51

16 Claims



10. A reproducing apparatus comprising means for providing a flowing light image of a stationary original supported upon a stationary viewing platen in a first mode of operation and for providing a flowing light image of a moving original in a second mode of operation and means for selecting between said first mode of operation and said second mode of operation, said flowing light image of said stationary original being provided by optical means for scanning said stationary original, said flowing light image of said moving original being provided by means of fixing said optical means at a given position and means for feeding said original over said platen past said fixed optics, said feeding means comprising a document feeder including a feeding member arranged to engage said platen to form a nip therebetween through which said originals are fed when said feeder is in an operative position over said platen and means to move said document feeder from a stored position off said platen to said operative position, whereby documents advanced over the platen by said feeder are within the viewing domain of said optical means.

3,900,259

TIME INTERVAL PHASE DETECTION IN DISTANCE MEASURING APPARATUS

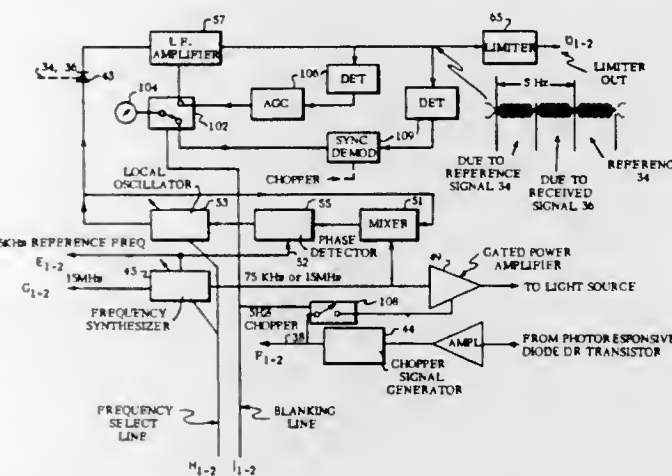
Claude M. Mott, and Richard J. Clark, both of Loveland, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 9, 1973, Ser. No. 358,771

Int. Cl. G01c 3/08

U.S. Cl. 356-5

4 Claims



1. Electro-optical distance measuring apparatus of the type including a modulated target path light signal transmitted to and reflected back from a distant target, and an internal reference path light signal continuously and cyclically time multi-

plexed therewith to provide a time multiplexed signal of fixed frequency having alternating target path and reference path portions, wherein the improvement comprises:

detecting means for separately determining the beginning of a target path portion of said time multiplexed signal and an immediately succeeding reference path portion thereof, and for providing a plurality of pulses, during each of those target path and reference path portions, the number of such pulses being proportional to the phase difference between the reference frequency signal and the respective portions of said time multiplexed signal; accumulator means connected to said detecting means for separately receiving and counting the plurality of pulses provided by said detecting means during those target path and reference path portions of said time multiplexed signal; and

logic means for combining the counted results of the accumulator means obtained during those target path and reference path portions of said time multiplexed signal to provide an intermediate indication of the phase difference between said target path light signal and said internal reference path light signal, said logic means being operative for enabling said detecting means to repeatedly sample said time multiplexed signal to provide a plurality of pulses, during subsequent target path and immediately succeeding reference path portions thereof, the number of pulses provided during each sample again being proportional to the phase difference between the reference frequency signal and the respective portions of said time multiplexed signal, said logic means being operative to enable said accumulator means to separately receive and count the plurality of pulses provided by said detection means during each of the target and reference path portions of said time multiplexed signal occurring in connection with each such repeated sample, said logic means being operative for combining the counted results of the accumulator means obtained during each of the target and reference path portions of said time multiplexed signal occurring in connection with each such repeated sample to provide a plurality of intermediate indications of the phase difference between said target path light signal and said internal reference path light signal, said logic means being operative for computing the statistical variance of the plurality of intermediate indications of phase difference and for comparing that computed statistical variance with a predetermined test limit to insure a specified degree of measurement accuracy.

3,900,260

METHOD AND APPARATUS FOR MEASURING THE DISTANCE AND/OR RELATIVE ELEVATION BETWEEN TWO POINTS IN AN OPTO-ELECTRONIC MANNER

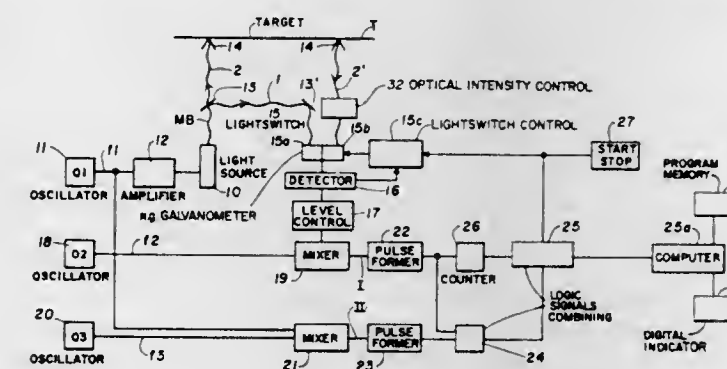
Gerhard Wendt, Kulmbach, Germany, assignor to MITEC Moderne Industrietechnik GmbH, Frieding-Herrsching, Germany

Filed Jan. 23, 1974, Ser. No. 435,936

Int. Cl. G01c 3/08; G01b 11/26

U.S. Cl. 356-5

26 Claims



1. An opto-electronic apparatus for the measuring of the distance (x or y) between a measuring point (M) and a target

(T), comprising: light source means (10) located at said measuring point (M), first signal generating means (11, 12) for producing a first frequency signal (f1) operatively connected to said light source (10) for modulating a light beam produced by said light source (10) for modulating a light beam produced by said light source (10), optical means (50, . . .) operatively arranged to divide said modulated light beam (MB) into a measuring beam (2) and into a reference beam (1), said target (T) including retro-reflecting means (14) located to receive said measuring beam (2) and to return a reflected beam (2'), light switching means (15a, 15b) located to receive said reference beam (1) and said reflected beam (2'), switch control means (15c) operatively connected to said light switching means (15a, 15b) for alternating actuation of said light switching means (15a, 15b), a first signal channel (I) comprising a first signal mixing stage (19) and second signal generating means (18) for producing a second frequency signal (f2), said first mixing stage being connected to receive a signal from said detector means (16) and said second frequency signal to produce a first intermediate frequency signal, a second signal channel (II) comprising a second signal mixing stage (21), and a third signal generating means (20) for producing a third frequency signal (f3), said second signal mixing stage (21) being connected to receive said first frequency signal (f1) and said third frequency signal (f3) to produce a second intermediate frequency signal, and signal evaluating means (22, 23) having inputs connected to said first and second signal channels (I, II) respectively, logic circuit means (24, 26), said signal evaluating means having outputs connected to said logic circuit means (24, 26) and computing means (25a) connected to said logic circuit means (25, 26) for computing said distance.

3,900,261

ELECTRONIC RANGE FINDER

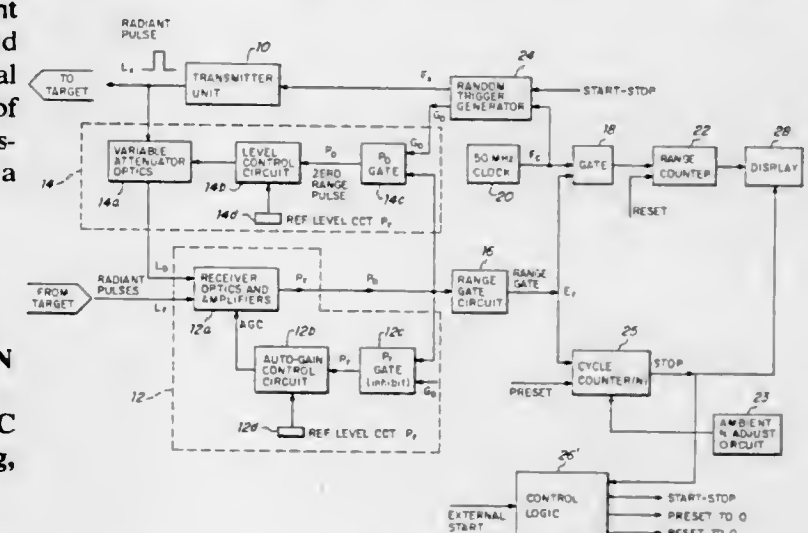
Sidney Wingate, Concord, Mass., assignor to Transitek Corporation, Concord, Mass.

Filed Mar. 18, 1974, Ser. No. 452,049

Int. Cl.² G01C 3/08

U.S. Cl. 356-5

18 Claims



1. A high resolution electronic range finder comprising: a transmitter unit for generating a first pulse of radiation and transmitting it to a target whose range is to be determined; a single channel receiver unit for receiving said first pulse of radiation after it is reflected from the target and producing a counterpart first signal pulse; an automatic gain control unit, responsive to said first signal pulse, for providing a control signal to said receiver unit to maintain said first signal pulse at a predetermined reference level; a variable attenuation system responsive to said first pulse of radiation at said transmitter unit for producing a second pulse of radiation having the same level that said first pulse of radiation has at said receiving unit; said receiver in response to said second pulse of radiation producing a counterpart second signal pulse;

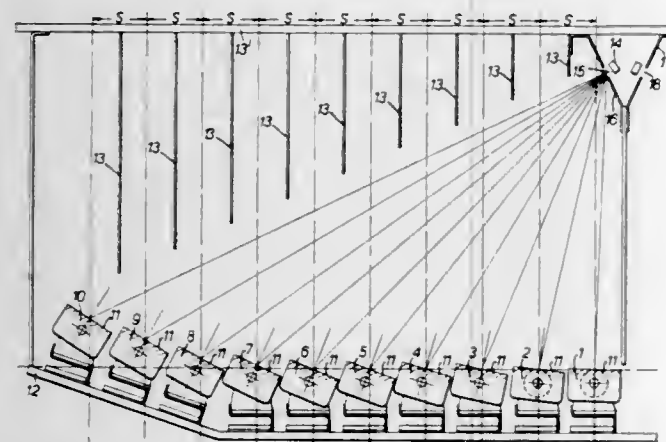
- a clock pulse source;
 a range determining circuit responsive to said first and second signal pulses to count, during the interval defined by said first and second signal pulses, clock pulses from said clock pulse source as a representation of the range to the target; and
 a trigger generator for providing a trigger signal to said transmitter unit to enable it to generate said first pulse of radiation, said trigger signal having a frequency which is a sub-multiple of the frequency of said clock pulse source.

3,900,262

OPTICAL VELOCITY MEASURING APPARATUS
 Ivor Renton Baxter, Brentwood, England, assignor to The Marconi Company Limited, Chelmsford, England
 Filed Oct. 25, 1972, Ser. No. 300,814
 Int. Cl.² G01P 3/36

U.S. Cl. 356—28

7 Claims



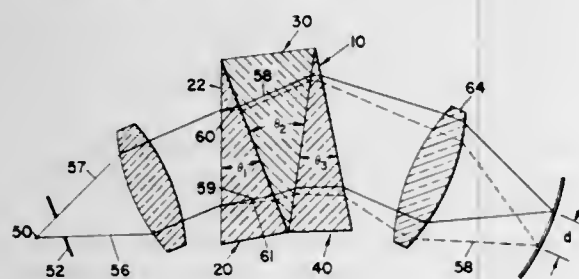
1. An apparatus for optically measuring the velocity along a particular line of travel of a moving object and providing therefrom an electrical output which includes a spectral component of modulation dependent upon said velocity in which there is provided a set of elemental reflecting elements each arranged to view a different spaced portion of said line of travel to provide an effective optical grating in space along said line and a common photo-sensitive device arranged to receive light from each of said reflecting elements via an aperture common to all of the elements in said set and to provide therefrom said electrical output.

3,900,263

METHOD FOR MINIMIZING DEVIATION IN OPTICAL DISPERSION SYSTEMS
 Joseph F. Hall, Jr., 1052 La Limonar, Santa Ana, Calif. 92705
 Filed Jan. 4, 1974, Ser. No. 430,847
 Int. Cl.² G01J 3/12

U.S. Cl. 356—74

1 Claim



1. The method of designing a prism set for dispersing light such that components differing in wave length are physically separated, which comprises the steps of:
 algebraically adding at least three equations, each of which expresses deviation in a prism and which can be reduced to the form:

$$\delta = \left(n_0 + \frac{A}{\lambda^2} + \frac{B}{\lambda^4} \right) \Theta$$

such that together said equations express resultant deviation through three prisms arranged so that the sum of the deviation through two of them is diminished by deviation through the third to produce an expression for resultant deviation;
 recording the known range of values of the terms n_0 , A, and B that can be achieved in a single prism by selection of the materials from which a prism may be made;
 computing values of θ , n_0 , A and B in each of the equations that form said expression that would cause said expression to describe a locus of points on a graph of deviation versus wave length that crosses a straight line at not less than four points;
 constructing at least three prisms, each having a prism angle and composition corresponding to a respectively associated one of said three equations; and
 associating said three prisms such that light can pass through them in series such that deviation is added upon light passing through the first and third of said three prisms and is diminished upon said light passing through the second of said three prisms.

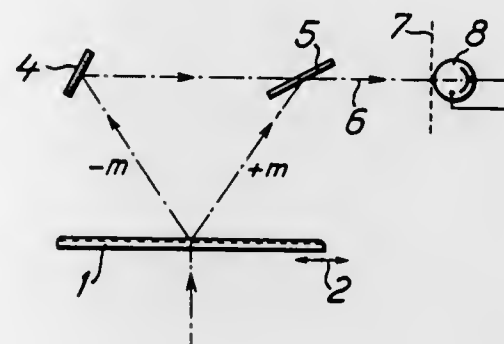
3,900,264

ELECTRO-OPTICAL STEP MARKER
 Knut Heitmann, and Eckart Schneider, both of Wetzlar, Germany, assignors to Ernst Leitz G.m.b.H., Wetzlar, Germany
 Filed June 19, 1973, Ser. No. 371,473
 Claims priority, application Germany, June 20, 1972, 2229996

Int. Cl.² G01B 9/02

U.S. Cl. 356—111

6 Claims



1. In an apparatus having a diffraction grating suitable for measuring a property of movement of said grating relative to a beam of radiation with reference to at least one coordinate axis and defining at least one set of two diffraction orders, means to cause radiation of one of the diffraction orders of one set to interfere with the radiations of the other one of the diffraction orders of the respective set, and detecting means receiving the radiation of said interfering diffraction orders and generating electric signals indicative of the property of movement, the improvement comprising:
 said diffraction grating having a uniform line geometry and a plurality of sections with groove geometry varied irregularly by section defining at least one set of two diffraction orders other than the zero diffraction order and energetically preferred to all the other diffraction orders.

3,900,265

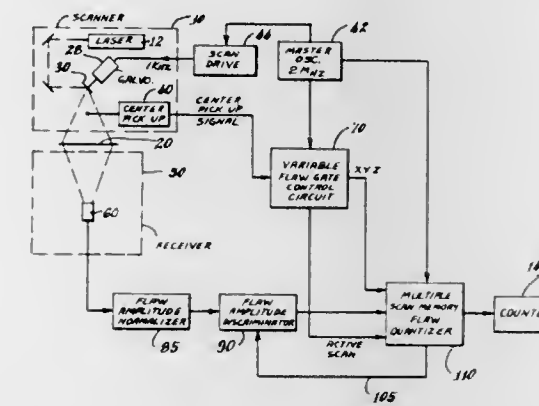
LASER SCANNER FLAW DETECTION SYSTEM
 Monty M. Merlen, Stamford, and Peter H. Nichols, Cheshire, both of Conn., assignors to Intec Corporation, Norwalk, Conn.

Filed Mar. 8, 1974, Ser. No. 449,247

Int. Cl.² G01N 21/32

U.S. Cl. 356—200

21 Claims



1. A laser scanner flaw detection system for detecting flaws on a surface of material, comprising:
 a. a laser for emitting a laser beam of radiation,
 b. scanner means for successively scanning said laser beam across a surface of material being examined,
 c. receiver means having a field of view and a detector means for receiving radiation applied by said laser beam from said surface to said detector means producing, signals therefrom in response to the radiation applied to said detector means,
 d. flaw amplitude discriminator means coupled to said detector means for producing flaw signals therefrom when the signals from said detector means exceed a predetermined level,
 e. laser beam position indicating means for producing beam position signals,
 f. variable flow gate control means having said beam position signals coupled thereto for providing variable flow gate control signals which vary in accordance with the scan position of said laser beam,
 g. one-scan delay variable width flow gate means having said flaw signals from said discriminator and said flow gate control signals coupled thereto for providing a one-scan delay variable time width flow gate signals which vary in accordance with the scan position of said laser beam, and
 h. flaw quantizer means coupled to said flaw amplitude discriminator and said one-scan delay variable width flow gate means for passing an output indicative of a flaw on the surface of the material being examined only on the first occurrence of a flaw signal during an active scan interval, and inhibiting subsequent flaws signals occurring during adjacent successive scans which occur during the time intervals of the flaw gates established by said one-scan delay variable width flow gate means.

3,900,266

METHOD AND APPARATUS FOR DETECTING SOLID SUBSTANCES CONTAINED IN LIQUID
 Toshio Takahashi, Honjo; Ryosaku Tagaya, Isezaki, and Toshiyasu Ehara, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Filed Oct. 25, 1973, Ser. No. 409,368

Claims priority, application Japan, Oct. 31, 1972, 47-108524; May 29, 1973, 48-59379

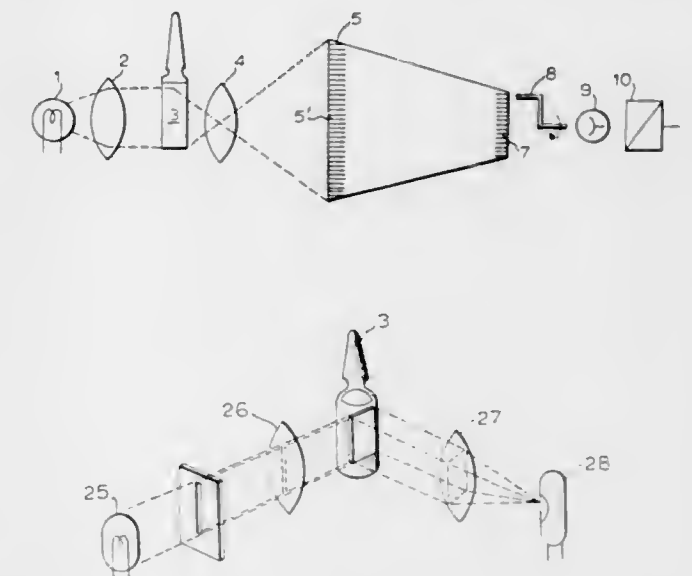
Int. Cl. G01N 21/06, 21/24

U.S. Cl. 356—208

3 Claims

1. A method for detecting foreign solid matter that might exist as an impurity in a transparent liquid enclosed in a sealed transparent vessel by measuring intensity of the light passed through the liquid, comprising the steps of rotating said sealed

vessel and then suddenly stopping the rotation of the vessel to cause the solid matter to swirl up in a rotary movement in the column of the still moving liquid; projecting light through said liquid in the vessel; capturing the light of reduced intensity



3,900,267

METHOD OF DETERMINING CATALYTIC ACTIVITY BY MEASURING THE RELATIVE REFLECTANCE OF THE CATALYST

Marvin F. L. Johnson, Homewood, Ill., assignor to Atlantic Richfield Company, Philadelphia, Pa.

Filed May 17, 1974, Ser. No. 470,885

Int. Cl. G01N 21/48

U.S. Cl. 356—209

8 Claims

1. A method for determining the hydrocarbon hydrotreating activity of a first catalyst comprising a major amount of a solid porous support and a minor catalytically-effective amount of nickel at least a portion of which nickel being present in the Ni⁺⁺ form and a minor, catalytically-effective amount of at least one additional metal selected from the group consisting of molybdenum, tungsten and mixtures thereof, at least a portion of said metal being present in an oxidized state, prior to said first catalyst being used in at least one reaction zone to catalyze hydrocarbon hydrotreating, which comprises:
 1. determining the maximum relative reflectance of said first catalyst of light having a wave number in the range from about 16,000 cm.⁻¹ to about 17,000 cm.⁻¹;
 2. determining the maximum relative reflectance of said first catalyst of light having a wave number of about 20,000 cm.⁻¹;
 3. determining an activity ratio equal to the relative reflectance determined in step (1) minus the relative reflectance determined in step (2);
 4. performing steps (1), (2) and (3) to determine the activity ratio of a standard catalyst having essentially the same elemental composition as said first catalyst and acceptable hydrocarbon hydrotreating activity;
 5. comparing the activity ratios obtained in steps (3) and (4), provided that (a) an increase in activity ratio from step (3) to step (4) being indicative of reduced hydrocarbon hydrotreating activity of said first catalyst relative to said standard catalyst, (b) no change in activity ratio from step (3) to step (4) being indicative of essentially equal hydrocarbon hydrotreating activity of said first catalyst relative to said standard catalyst and (c) a decrease in activity ratio from step (3) to step (4) being indicative of

greater hydrocarbon hydrotreating activity of said first catalyst relative to said standard catalyst.

3,900,268

PEN WITH INK INJECTION SYSTEM

Edward Bok, Burgemeester Amersfoortlaan 82, Badhoevedorp, Netherlands

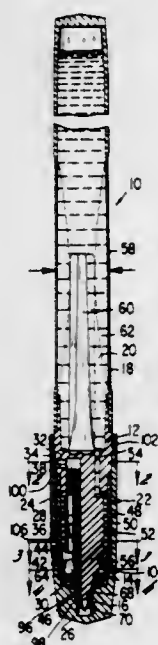
Filed Sept. 11, 1973, Ser. No. 396,149

Claims priority, application Netherlands, Sept. 8, 1972, 7212745; Oct. 16, 1972, 7213945; Nov. 14, 1972, 7215137; Dec. 12, 1972, 7216870; Jan. 8, 1973, 7300219; Jan. 8, 1973, 7300220; Feb. 19, 1973, 7302247

Int. Cl.² B43K 5/10, 1/08, 1/10, 1/12

U.S. Cl. 401—230

13 Claims



1. A pen, comprising:
a first ink reservoir,
a second ink reservoir beneath said first ink reservoir,
a pen tip in capillary communication with said second ink reservoir,
venting means extending upwardly from a position near the bottom of said second reservoir to the atmosphere,
at least one injection channel extending downwardly from said first reservoir to a position near the bottom of said second reservoir and of sufficient length to avoid capillary ink transport from said first reservoir to said second reservoir; and
means to manually inject ink from said first reservoir to said second reservoir.

3,900,269

CHANNEL JOINT AND JOINER THEREFOR

James Pavlot, Pittsburgh, Pa., assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Nov. 7, 1974, Ser. No. 521,681

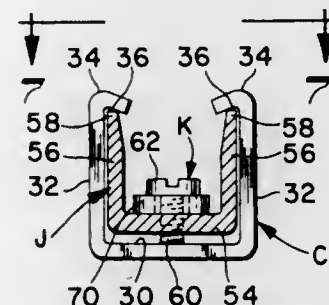
Int. Cl. F16d 1/00

U.S. Cl. 403—292

8 Claims

1. A joint between a channel and a joiner, said channel having a generally U-shaped cross-sectional configuration and including a substantially flat bottom wall and opposite sidewalls having terminal end portions extending toward one another in overlying relationship to said bottom wall to define abutment surfaces facing toward said bottom wall, said joiner including a connecting tongue having a generally U-shaped cross-sectional configuration and including a substantially flat bottom wall and opposite sidewalls terminating in sidewall edges, said tongue being dimensioned for closely fitting within said channel with said tongue bottom wall closely adjacent said channel bottom wall, said tongue sidewalls having a

height extending a major portion of the height of said channel sidewalls, and threaded biasing means including a head at one end for biasing said bottom walls away from one another to tightly urge said terminal edges of said tongue sidewalls against said abutment surfaces and hold said tongue and chan-



nel against longitudinal movement relative to one another; and the threaded biasing means having a length locating said head between the flat bottom wall of the tongue and a plane bisecting the height of said tongue sidewalls when said terminal edges are in engagement with said abutment surfaces.

3,900,270

SHAFT COUPLINGS

John Kenneth Rhodes, Sunnyhill, England, assignor to Rolls-Royce (1971) Limited, London, England

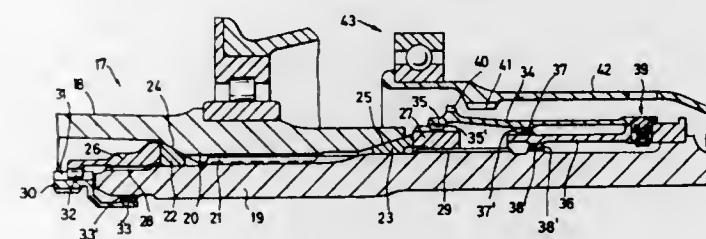
Filed Sept. 5, 1974, Ser. No. 503,509

Claims priority, application United Kingdom, Sept. 22, 1973, 44546/73

Int. Cl.² F16D 1/08

U.S. Cl. 403—317

1 Claim



1. A shaft coupling comprising:
a first shaft portion and a second shaft portion, one of said shaft portions having axially extending external splines and the other of said shaft portions being hollow and having axially extending internal splines arranged to cooperate with the external splines of one of said portions; means to restrain said shaft portions from moving axially relative to one another, said means including two annular members carried upon one of said shaft portions and having tapering surfaces, the other of said shaft portions having cooperating corresponding tapering surfaces;
means for translating said annular members on the one of said shaft portions, said translating means including screw nuts for respectively urging the tapering surfaces of said annular members into engagement with the tapering surfaces of the other of said shaft portions, screw threads on the one of said shaft portions for cooperating with said screw nuts;
and means for locking said annular members on the one of said shaft portions for securing the screw nut against relative rotation with said shaft portions, said locking means comprising two axially movable members, each having a plurality of axially extending splines, said screw nuts having axially extending splines cooperating with said axially extending splines of said axially movable members, and one of said axially movable nut securing members having a spring-loaded plunger member to restrain it from both axial and rotational movement.

3,900,271

JOINT FORMING SEAL ASSEMBLY

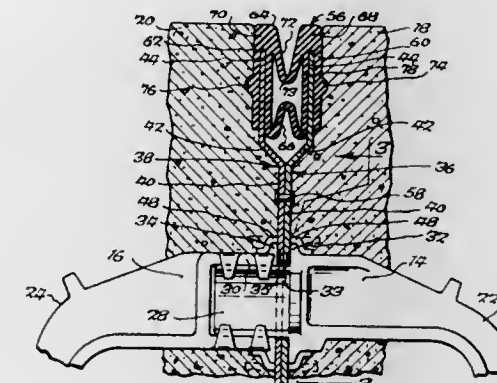
Alfred F. Crone, Williamsville, N.Y., assignor to Acme Highway Products Corporation, Buffalo, N.Y.

Filed Oct. 25, 1973, Ser. No. 409,426

Int. Cl.² E01C 11/02

U.S. Cl. 404—68

14 Claims



1. A joint forming seal assembly for use in a pavement construction comprising: a pair of movable joint support members adapted to connect a pair of relatively movable adjacent pavement sections; a sealing member comprising an elongated elastic body having side portions engagable against opposed surfaces of said pavement sections; means connecting said sealing member to said joint supports for movement therewith to provide positive pressure sealing of each said side portion of said elastic body against said opposed surfaces of said pavement sections upon relative movement therebetween, said connecting means comprising a pair of center plates, each of said center plates being respectively mounted on one of said joint supports for relative movement therewith and connected to respective side portions of said sealing member, and locking means for locking each of said center plates in fixed position with respect to its respectively associated joint support.

3,900,272

COMPACTING MACHINE WITH MOVABLE BALLAST
Domenico Domenighetti, Via Noretto 6, Bellinzona, Switzerland (6500)

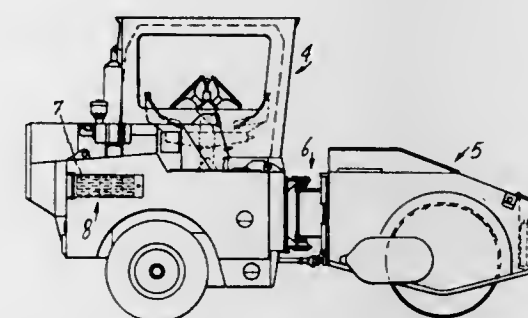
Filed Oct. 9, 1973, Ser. No. 404,810

Claims priority, application Switzerland, Oct. 27, 1972, 15704/72

Int. Cl.² E01C 19/26

U.S. Cl. 404—130

1 Claim



1. A compacting machine having cavities at the front and rear thereof and on opposite sides thereof, and prismatic ingots of a very heavy material each having a gripping handle, there being a plurality of said ingots in at least one of said cavities, said ingots having dimensions so related to the dimensions of said cavities that said plurality of ingots extend entirely across said at least one cavity in at least one direction, said compacting machine being of the combined type comprising a wheeled towing unit having a plurality of tired wheels rotatable on a bearing axle and a towed drum, said towed drum being a vibrating drum that rotates on a horizontal axis, said cavities being disposed in pairs, a forward pair being

disposed in front of the bearing axle, and a rear pair of said cavities being disposed behind the axis of said vibrating drum.

3,900,273

CENTRIFUGAL AUTO-PRIMING PUMP

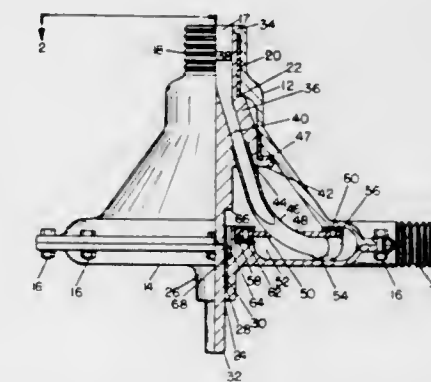
Larry L. Jackson, P.O. Box 595, Cripple Creek, Colo. 80813

Filed Apr. 30, 1974, Ser. No. 465,566

Int. Cl.² F04D 1/12

U.S. Cl. 415—88

3 Claims



1. A pump comprising a casing having a central inlet for receiving a fluent material, a radially disposed outlet for discharging said fluent material and a central opening axially aligned with and opposing said inlet; a rotor comprising a shaft located centrally within said casing, said shaft having a first portion extending through said opening without said casing and a second enlarged hollow portion congruent with said inlet, said shaft further including a plurality of passages communicating from said hollow portion to within said casing; a sealing plate located within said casing, said plate dividing the space within said casing to define a pressure chamber, and an isolation space for support bearings of said rotor; and a plurality of tubular conduits connecting said passages to said pressure chamber and passing through said sealing plate, wherein rotation of said shaft causes fluid flow from said inlet to said outlet.

3,900,274

REMOTE CONTROLLED ACTUATION SYSTEM FOR THE ROTOR OF A GAS TURBINE ENGINE

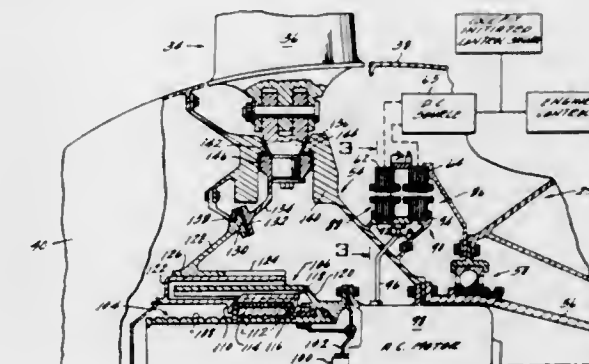
Richard Paul Johnston, Peabody, and Dave Baer Levins, Swampscott, both of Mass., assignors to General Electric Company, Lynn, Mass.

Filed June 25, 1974, Ser. No. 482,857

Int. Cl. B64c 11/44

U.S. Cl. 416—155

7 Claims



4. In a gas turbine engine of the variable pitch fan type having a static frame and rotatable fan frame, an actuation system for the variable pitch fan comprises:
an electric motor mounted for rotation with the rotatable fan frame,
stator winding means in fixed connection to the static frame,
rotor winding means in fixed connection to the fan frame for rotation therewith and in electrical connection to the

motor wherein rotation of the rotor operates to induce an electromotive force in the rotor windings to drive the motor when the stator windings receive an excitation current,

means interconnecting the motor to the fan in order that operation of the motor may be converted into variation of the pitch of the fan blades, and

means for varying the level and polarity of excitation current applied to the stator winding means.

3,900,275

ROTARY AIR COMPRESSOR

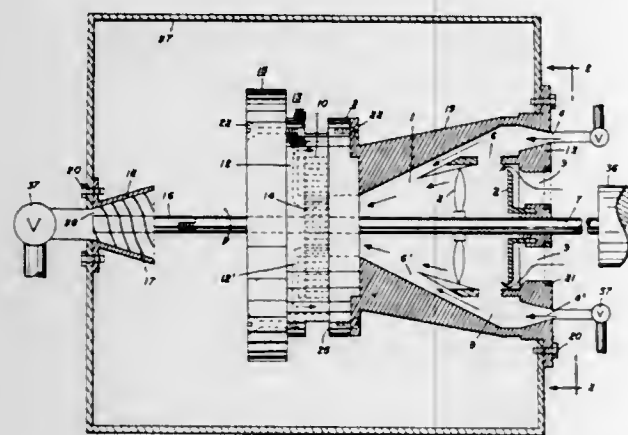
Lewis Richter, 1414 E. 29th St., Des Moines, Iowa 50317

Filed Feb. 8, 1974, Ser. No. 440,743

Int. Cl. F04b 23/14

U.S. Cl. 417—203

6 Claims



1. A Rotary Air Compressor built into the air space of a compressed air container, performs suction and air re-cycling, converts the pressurized air outflow through spiral turbine-rotor to assist its own driven shaft in the rotation comprising:

a. a pressureless hollow member defining a chamber with air passageway, connected by bolts to the inside of said container wall in which is located an impeller or airscrew rotatable by a driven shaft extending outside said container to an external driving power communicating with the atmosphere through at least one valved inlet port located in said hollow member defining a chamber wall, said shaft extending longitudinally from said container external surface through said hollow chamber passageway into said air outlet opening and into operative engagement to rotate simultaneously, said impeller, said air transfer channeled cover, said flywheel and said spiral turbine-rotor mounted on the same shaft;

b. at least one valveless air re-cycling inlet port also located in said hollow member defining a chamber wall, is connected to an annular duct to convey re-cycling air towards said impeller;

c. a stationary wall, being fixed to said hollow member defining a chamber wall with a circularly arranged plurality of teeth having air cavities therebetween meshing with freely rotating seal gears has an axial opening in its center, said stationary wall surface is ground to cooperate with said rotatable cover ground surface forming therewith a sliding seal between said two surfaces against said container pressure as atmospheric or re-cycling air flows into said teeth cavities from said communication channels;

d. a rotatable cover, covering said teeth cavities as said cover trailing portion moves thereacross is connected to a flywheel on said shaft to assist in the rotation therewith, has ground surface which slides in rubbing contact upon said teeth tops, and mounted in and upon said stationary wall ground surface to communicate through said channels in said cover with the interior of said hollow member defining a chamber and teeth cavities to displace air into said container as said cover is rotated exposing said covered teeth cavities with atmospheric or recycling air

encapsulated, to leave into said compressed air container; e. a ring of gear teeth, having air cavities is mounted upon said stationary wall facing said container inner pressure receives air from said hollow member defining a chamber through channels to displace it into said container, and is at all times partly covered and sealed by the channeled cover;

f. an externally applied turnable shut-off air inlet plate, at said valved inlet port;

g. a freely rotating seal gear, being mounted before each communication channel outlet intermeshing with said teeth forcing air therefrom into said compressed air container in the direction of rotation leaving a vacuum in said cavities to receive additional air from said communication channel outlet, as said cover slidably rotates;

h. communication channels in said rotating cover, which transfers air from the interior of said hollow member defining a chamber through said passageway by facing said teeth cavities at said channel outlet for registering with at least said one teeth cavity at each outlet as it rotates, is to said flywheel on one side sealingly connected forming therewith said closed channels;

i. said driven shaft having an extension within said container, on which extension is mounted a spiral turbine-rotor or impeller, that is set into a duct, through which duct said compressed air flows to said air outlet orifice to leave said container, said turbine being arranged to assist in turning said already powered driven shaft as air under pressure leaves said container, said orifice being controlled by an independent shut-off valve to close and open said airflow from said container.

3,900,276

DIAPHRAGM PUMP METHOD AND APPARATUS

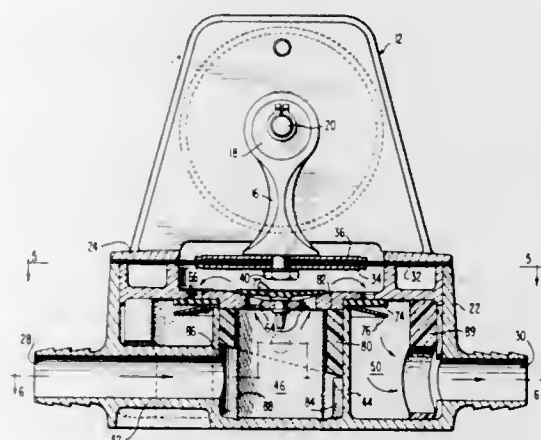
John Lewis Dilworth, Santa Monica, Calif., assignor to McCulloch Corporation, Los Angeles, Calif.

Filed May 16, 1973, Ser. No. 360,819

Int. Cl. F04b 11/00

U.S. Cl. 417—542

7 Claims



1. In a diaphragm pump including, a frame means; a motor connected to said frame means; a connecting rod eccentrically mounted at one end thereof to a drive shaft of said motor; fluid housing means mounted upon said frame means, including a fluid entry port, and a fluid exit port; and flexible pump diaphragm means affixed to said connecting rod at the other end thereof and intercalated between said frame means and said fluid housing means; the improvement comprising: a first cylindrical tubular wall means coaxially positioned within said housing means for defining, an inlet chamber within said tubular wall means, and an outlet chamber exterior of said tubular wall and interior of said fluid housing means, said outlet chamber

circumferentially extending about said tubular wall means;

a cylindrical sleeve of volumetrically compressible material positioned within said inlet chamber about and disposed in full contact with said first tubular wall means for attenuating fluid pulsations within said inlet chamber;

a second cylindrical wall concentrically extending radially outwardly of said tubular wall means to define a concentrically annular fluid outlet chamber;

a cylindrical sleeve of volumetrically compressible material positioned within said outlet chamber contiguously extending about said second cylindrical wall for attenuating fluid pulsations within said outlet chamber;

conduit means extending between and placing in fluid communication said inlet port and said inlet chamber;

valve plate means mounted between said diaphragm and one end of said coaxial tubular wall means and defining a pumping chamber coaxially extending above said inlet chamber and said outlet chamber, said valve plate having a plurality of inlet ports communicating between said inlet chamber and said pumping chamber, and a plurality of outlet ports communicating between said pumping chamber and said outlet chamber;

first valve means operably covering said inlet ports for permitting fluid to flow from said inlet chamber into said pumping chamber but preventing fluid from flowing from said pumping chamber into said inlet chamber;

second valve means operably covering said outlet ports for permitting fluid to flow from said pumping chamber into said outlet chamber but preventing fluid from flowing from said outlet chamber into said pumping chamber, whereby upon actuation of said motor said eccentric mounted connecting rod will serve to reciprocate said diaphragm coaxially with said inlet chamber to draw fluid through said conduit means into said inlet chamber, past said first valve means into said pumping chamber, and force fluid from said pumping chamber past said second valve means into said circumferential outlet chamber and out said exit port.

3,900,277

ROTARY COMPRESSOR

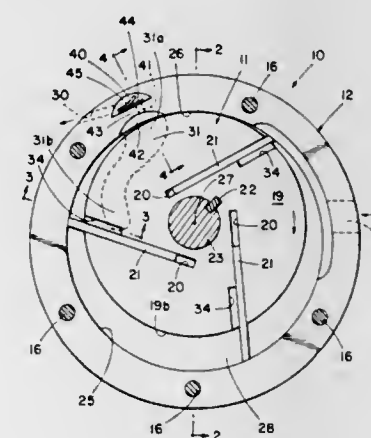
Alwin B. Newton, York, Pa., assignor to Borg-Warner Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 261,846, June 12, 1972, abandoned. This application Feb. 4, 1974, Ser. No. 439,512

Int. Cl. F01c 21/12

U.S. Cl. 418—184

1 Claim



1. A rotary gas compressor comprising a housing having a substantially cylindrical interior surface and opposed end plates defining a closed chamber;

a rotor having a cylindrical peripheral surface and opposed side faces, said rotor being mounted in said chamber and rotatable about an axis which is offset with respect to the axis of said cylindrical interior surface, said rotor and said housing defining a generally crescent shaped compression cavity;

a gas inlet port and a gas discharge port communicating with said compression cavity;

a valve associated with said gas discharge port;

a plurality of vanes slidably supported in said rotor and engaging said cylindrical interior surface;

means defining an elongated slot in at least one of said end plates having an exit end located in communication with said discharge port and an entrance end located at a point circumferentially spaced in a direction toward said inlet port and inwardly spaced from said cylindrical peripheral surface, the entire slot being substantially covered by one of the side faces of said rotor; and

means defining a passage immediately adjacent each vane in said one rotor end surface extending away from the cylindrical surface and providing a first flow path for gas which intermittently connects that portion of the compression cavity ahead of the vane with the entrance end of said elongated slot, a second flow path, communicating with said discharge port, for gas being provided between the cylindrical surface on said rotor, the cylindrical interior surface of said housing and said end plates within said housing.

3,900,278

APPARATUS FOR MOLDING LAMP SOCKETS ONTO PAIRED INSULATED CONDUCTORS

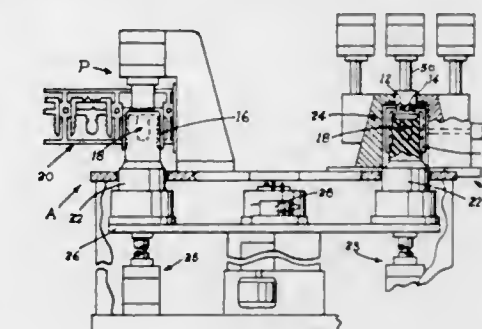
Henry T. Beck, Toronto, and Rudolph Koehler, Willowdale, both of Canada, assignors to Numa Lites Canada Limited, Scarborough, Canada

Division of Ser. No. 857,452, Sept. 12, 1969. This application Oct. 9, 1973, Ser. No. 404,778

Int. Cl. B29c 6/04

U.S. Cl. 425—123

5 Claims



1. Apparatus for molding lamp sockets onto paired insulated conductors comprising:

a core movable between a loading station and a molding station, said core member having slots for receiving and maintaining a pair of pointed electrical contacts in spaced relation with their points exposed for penetration into respective conductors to establish electrical connection therewith and with their margins extending from said core member for embedment in molding material;

means at said loading station for locating said contacts in said slots as aforesaid;

mold sections at said molding station movable between a closed position in which they surround said core member, cooperating with it to form a mold cavity of annular configuration for receiving molding material, and an open position in which said mold sections are separated from each other and from said core member enabling release of the molded socket and removal of the core member;

a plunger disengageably engageable with said mold sections in their closed position aforesaid to seal the resultant mold cavity with said paired conductors captured therein and with said plunger applying pressure to said paired conductors to assist, at least, and to maintain penetration of said contact points into respective conductors to establish electrical connection therewith, and

means for injecting molding material into said cavity while the plunger maintains pressure on said conductors as aforesaid.

3,900,279

APPARATUS FOR FORMING A PATTERN ON THE SURFACE OF A MOLDABLE MATERIAL

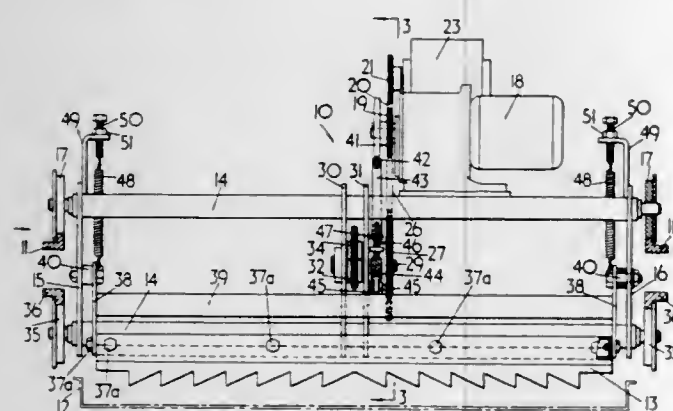
Ronald Newby, Borehamwood, England, assignor to John Laing and Son Limited, London, England

Continuation-in-part of Ser. No. 155,810, June 23, 1971, abandoned. This application Nov. 6, 1973, Ser. No. 413,220
Claims priority, application United Kingdom, June 30, 1970, 31486/70

Int. Cl. B28b 11/08

U.S. Cl. 425—385

11 Claims



1. Apparatus for forming a pattern on the surface of a moldable material comprising
 - a frame adapted to extend across a mold;
 - spaced pivotally mounted arms on said frame;
 - a pattern-forming means mounted on and between said arms to extend across the mold;
 - drive means for pivoting said arms relative to said frame to move said pattern-forming means arcuately relative to the frame; and
 - means for effecting relative movement between said frame and the mold, said latter means including a prime mover with said drive means being connected to said prime mover to be driven in synchronism with said means for effecting relative movement, whereby during use said movements of said frame and said arms cause a predetermined repetitive pattern to be formed on the surface of the material in the mold.

3,900,280

APPARATUS FOR STRETCHING A TUBULAR WORK PIECE

Eugene T. Herman, St. Marys, and Kenneth W. McIntosh, Cuyahoga Falls, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jan. 28, 1974, Ser. No. 437,111

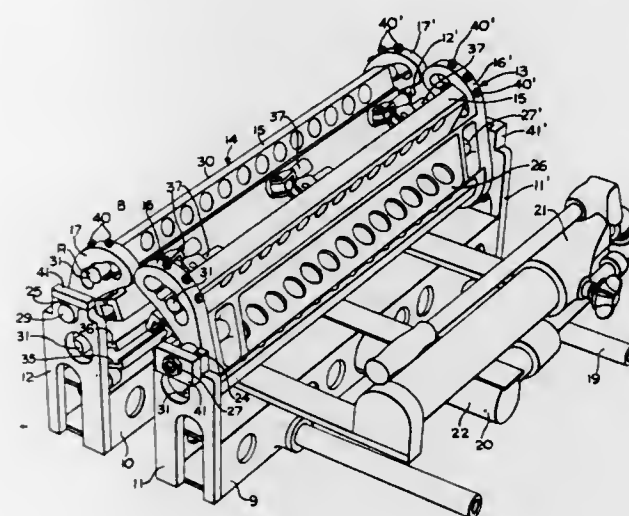
Int. Cl. B29C 17/02

U.S. Cl. 425—392

11 Claims

1. An apparatus for stretching a flexible resilient tubular work piece in at least two nonparallel directions perpendicular to the longitudinal axis of said work piece, said apparatus comprising:
 - A. a first frame member;
 - B. a second frame member spaced from said first frame member;
 - C. means mounting said frame members for relative movement of at least one said frame member toward and away from the other said frame member; and
 - D. a pair of spaced pivotally movable gripping means carried on at least one said frame member and gripping means carried on the other said frame member with each said gripping means having a gripping portion for gripping the work piece at spaced gripping locations on the periphery of the external surface thereof, the pair of pivotally movable gripping means being pivotable about a pair of spaced axes of rotation so that when said frame members

move in one axial direction away from each other the pivotally movable means is free to pivot and the work



piece is stretched in two nonparallel directions perpendicular to the longitudinal axis of said work piece.

3,900,281

BACKPACKER'S STOVE

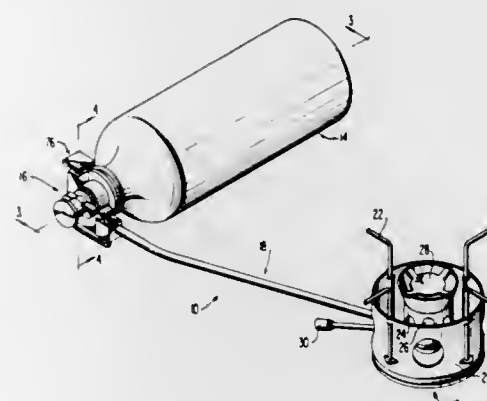
Harvey Larry Penberthy, 5624 S.W. Admiral Way, Seattle, Wash. 98116

Continuation-in-part of Ser. No. 352,948, April 20, 1973, Pat. No. 3,829,278. This application Apr. 26, 1974, Ser. No. 464,298

Int. Cl. F24c 5/20

U.S. Cl. 431—344

8 Claims



1. A portable liquid fuel stove comprising a burner assembly, a fuel container having a neck defining a container opening, means for delivering fuel under pressure from said container to said burner assembly including a fuel tube in communication between said burner assembly and said fuel container, and a housing having an air pump and a fuel outlet passage in communication with said fuel tube, said air pump including a cylinder and a piston within said cylinder, means for releasably securing said housing to the neck of said fuel container, said piston having an actuating handle operable externally of said housing to reciprocate said piston to pressurize the fuel container and thereby pump fuel from said fuel container into said fuel outlet passage when said housing is secured to said container, a valve carried by said housing for controlling the flow of fuel through said outlet passage and said fuel tube to said burner assembly, and means for releasably connecting said fuel tube and said housing whereby said housing and said fuel container are separable from said burner assembly, said releasable connecting means including a clamp having a clamping element carried by one of said fuel tube and said housing and a keeper carried by the other of said fuel tube and said housing and cooperable between said housing and said fuel tube to releasably clamp said fuel tube and said housing one to the other.

3,900,282

FURNACE SEAL

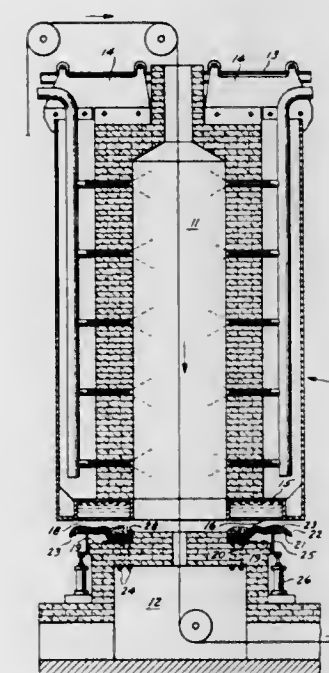
Thomas A. Seeburger, Hillsborough, Calif., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed May 15, 1974, Ser. No. 470,247

Int. Cl. F27B 9/028; F27D 3/00

U.S. Cl. 432—59

4 Claims



1. In a heating furnace having a support base portion and an upper portion in alignment therewith and separable therefrom, an improved seal comprising:
 - a. a cooling jacket fixedly mounted on the lower end of the upper portion,
 - a flexible high temperature cloth-like refractory blanket having one end fixedly mounted on the upper surface of the support base and extending freely therefrom toward the outer periphery of the furnace, and
 - c. means for biasing the other end of the high temperature refractory blanket into contact with the cooling jacket to form a seal between the cooling jacket and the support base.

3,900,283

PROCESS FOR THE DYEING OF MATERIALS CONSISTING OF ANION-MODIFIED POLYACRYLONITRILE, POLYAMIDE AND POLYESTER FIBRES

Dietrich Hildebrand, Odenthal; Winfried Kruckenberg; Werner Kuhnle, both of Leverkusen; Hans Heinz Molls, Cologne-Flittard, and Karlheinz Wolf, Cologne-Stammheim, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Germany

Filed Sept. 9, 1969, Ser. No. 856,468

Claims priority, application Germany, Mar. 1, 1969, 1910587

Int. Cl. D06p 5/00

U.S. Cl. 8—21 A

7 Claims

1. In a process for dyeing anionically modified synthetic material selected from the class consisting of polyacrylonitrile containing internal anionic groups, polyamide containing internal anionic groups, polyesters containing internal anionic groups, and mixtures of said materials with other fiber materials, wherein the internal anionic groups are strong anionic groups that are attached to the internal portion of the molecular chains and are frequently repeated along the molecular chains, the improvement which comprises padding or printing said materials with aqueous dispersions containing the salt of a basic dyestuff which is free from carboxylic acid and sulfonic acid groups and a polynuclear aromatic sulfonic acid selected from the class consisting of diphenyl sulfonic acid, naphtha-

lene di-, tri-, or tetrasulphonic acid, and pyrene tetrasulfonic acid, and subsequently subjecting the thus treated materials to a heat treatment.

3,900,284

PROCESS FOR THE REMOVAL OF SILVER NITRATE STAINS

John D. Ciko, Allen Park, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed June 21, 1973, Ser. No. 372,014

Int. Cl. D06L 3/06, 3/08

U.S. Cl. 8—109

6 Claims

1. The method of removing silver nitrate stains from fabrics comprising:
 - a. soaking the fabric in an aqueous bath,
 - b. bleaching the fabric with a chlorine bleach,
 - c. rinsing the fabric with water substantially removing the bleach,
 - d. adding sufficient thiosulfate salt wherein the concentration of said thiosulfate exceeds that of the silver by a factor of from about 22 to about 130,
 - e. adjusting the pH to a range of about 5.0 to about 13.0,
 - f. maintaining the temperature of the bath from about 50° to about 150° F., and
 - g. effectively rinsing the fabric with water substantially removing the thiosulfate salt.

3,900,285

PROCESS FOR PRODUCING FIREPROOF FIBERS

Michakaze Ono; Hajime Sahara, and Masanori Akasaka, all of Nagoya, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Oct. 20, 1972, Ser. No. 299,401

Claims priority, application Japan, Oct. 21, 1971, 46-83511

Int. Cl. D06c 1/00

U.S. Cl. 8—115.5

13 Claims

1. A process for producing fireproof fibers which comprises contacting an acrylic fiber with hydroxylamine to effect chemical reaction at a pH of not higher than 7 at a temperature of below 200°C for a time sufficient that the contacted fiber has a solubility of not more than 50% in dimethylformamide at 90°C and heating the contacted fiber to oxidize the fiber at a temperature of 245°C to 305°C in a gaseous atmosphere.

3,900,286

DYESTUFF PREPARATIONS AND PROCESSES FOR THE DYEING OF SYNTHETIC ORGANIC MATERIAL

Jacques Wegmann, Bettingen, and Richard Peter, Basel, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Nov. 13, 1972, Ser. No. 305,769

Claims priority, application Switzerland, Nov. 19, 1971, 016869/71; Nov. 19, 1971, 016870/71

Int. Cl. D06p 5/06

U.S. Cl. 8—172

15 Claims

1. A dyestuff preparation consisting essentially of 5 to 80% of a finely dispersed dispersion dyestuff having a maximum particle size of 10 μ ; 5 to 200%, relative to the amount of dyestuff, of a low-polymeric compound which is soluble in halogenated hydrocarbons, and which is a polyurea, a polyamide or a polyvinylpyrrolidone compound; and 20 to 95%, relative to the dyestuff preparation, of an inert, organic compound soluble in halogenated hydrocarbons and having a boiling point of above 200°C, said organic compound containing, in addition to carbon and hydrogen, at most, halogen atoms, or oxygen bound solely to carbon atoms, and having a molecular weight of 100 to 10,000.

3,900,287

EXHAUST DISPERSE DYEING OF SYNTHETIC POLYMERS UTILIZING A SATURATED LIQUID FLUOROCARBON

Harold Leonard Jackson, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 9, 1973, Ser. No. 322,127

Int. Cl. D06p 1/90

U.S. Cl. 8-174

11 Claims

1. Exhaust dyeing process providing a high degree of exhaust and fixation and wherein disperse dyes are applied to and fixed in disperse dyeable synthetic polymers in the form of films, fibers or fabrics, said process comprising:

- admixing an organic disperse dye, a suitable organic solvent and a saturated liquid fluorocarbon having a fluorine to carbon atom ratio of at least one, a solubility parameter of less than 7.0 and a critical temperature of at least 135°C., said organic solvent having a boiling point less than the boiling point of the liquid fluorocarbon;
- contacting the disperse dyeable synthetic polymer with the mixture from (a); and
- heating to evaporate the organic solvent, and then continuing heating at a temperature greater than the glass transition temperature of the synthetic polymer to fix the dye in the polymer.

3,900,288

METHOXYMETHANE STERILIZATION METHOD

Irving E. Levine, Mill Valley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 387,869, Aug. 13, 1973, abandoned, which is a division of Ser. No. 337,519, March 2, 1973, Pat. No. 3,795,750, which is a continuation-in-part of Ser. Nos. 65,695, Aug. 20, 1970, abandoned, and Ser. No. 238,601, March 27, 1972, abandoned, which is a continuation-in-part of

Ser. No. 163,532, July 8, 1971, abandoned, which is a continuation-in-part of Ser. No. 65,695, Aug. 20, 1970. This application Sept. 30, 1974, Ser. No. 510,201

Int. Cl. A61L 13/00

U.S. Cl. 21-58

5 Claims

1. Sterilization method comprising contacting a surface, a product or an article contaminated by microorganisms with an effective amount of methoxymethane under pressure and for a contact time adequate to kill the microorganisms, releasing the pressure and removing the methoxymethane by evaporation.

3,900,289

APPARATUS AND METHOD FOR FILLING A COMPARTMENT

Max D. Liston, Irvine, Calif., assignor to Abbott Laboratories, North Chicago, Ill.

Division of Ser. No. 133,081, April 12, 1971, Pat. No. 3,748,044. This application May 3, 1973, Ser. No. 357,066

Int. Cl. G01N 1/14, 33/16

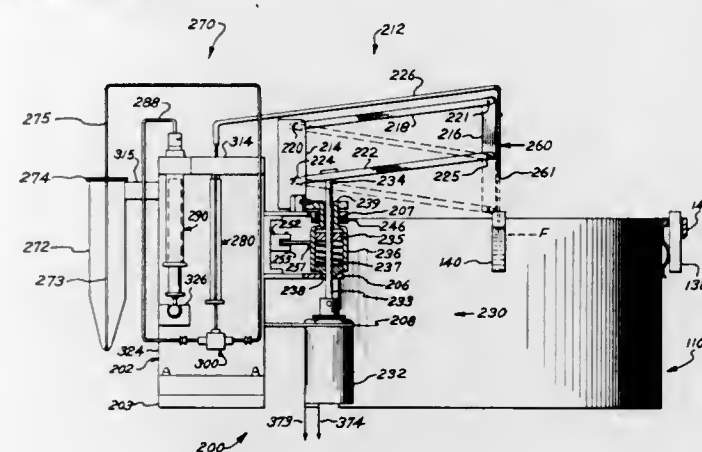
U.S. Cl. 23-230 R

6 Claims

3. A method for filling a compartment to a predetermined level with an aqueous solution taken from a reservoir of aqueous solution having a surface by means of a hollow probe nozzle having an inside diameter of between about 0.010 to 0.020 inches and an end point, said method comprising the steps of:

- positioning the end point not more than two millimeters under the surface of the solution;
- drawing a predetermined amount of solution through the end point of the hollow probe nozzle;
- retaining the end point under the surface of the solution for a first predetermined period of time after the predetermined amount of solution has been drawn through the end point of the hollow probe nozzle;
- rapidly accelerating the hollow probe nozzle from the solution;

positioning the end point in the compartment at a predetermined level such that the end point is not more than two millimeters below the surface of the solution after the solution is ejected from the hollow probe nozzle into the compartment;



retaining the end point below the predetermined level for a second predetermined period of time after the predetermined amount of solution has been ejected from the hollow probe nozzle; and rapidly accelerating the hollow probe nozzle from the compartment.

3,900,290

METHOD AND APPARATUS FOR DETERMINING THE DEGREE OF PLATELET AGGREGATION IN BLOOD

Gerard Hornstra, Klaaswaal, Netherlands, assignor to N.V. Internationale Octrooi Maatschappij "Octropa", Rotterdam, Netherlands

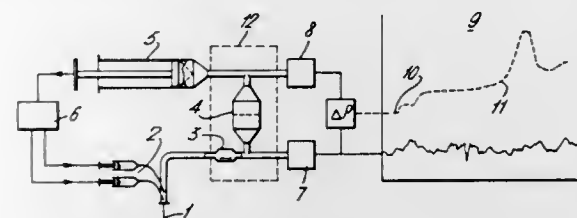
Filed Mar. 12, 1974, Ser. No. 450,529

Claims priority, application Netherlands, Mar. 13, 1973, 7303522

Int. Cl. G01N 15/00, 33/16

U.S. Cl. 23-230 B

7 Claims



1. An apparatus for determining the degree of platelet aggregation in blood comprising, connected in series by tubing, sample supply means for supply of a sample of blood to be examined,

- a filter having a pore size which allows red and white blood cells to pass but prevents passage of aggregated platelets,
- a pump for drawing blood from said supply and through the filter,
- and pressure measuring means for measuring the pressure drop across the filter.

3,900,291

APPARATUS FOR DETERMINING THE POINT OF COLOUR CHANGE IN VOLUMETRIC CHEMICAL ANALYSES

Mario Tullio Francardi, Bergamo, Italy, assignor to Italcementi S.p.A. Fabbriche Riunite Cemento, Bergamo, Italy

Filed Nov. 5, 1973, Ser. No. 412,622

Claims priority, application Italy, Dec. 29, 1972, 33793/72

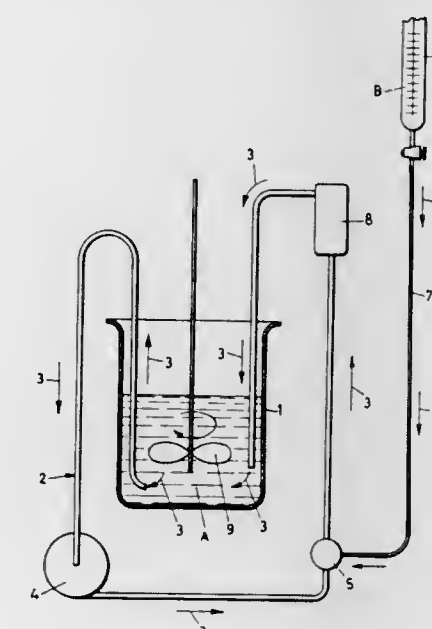
Int. Cl. G01N 31/16

U.S. Cl. 23-253 R

8 Claims

1. An apparatus for detecting the point of colour change in a volumetric chemical analysis, comprising a container for containing the solution to be titrated, a titrant solution feeder,

flow defining means forming a closed forced circulation circuit having an inlet and a return in said container, a mixer connected to said titrant solution feeder and included in said closed circuit for introducing a titrant solution to a solution being circulated within said closed circuit, said closed circuit



including a colour detection cell with transparent walls downstream of said mixer and upstream of said return in the direction of circulation of a solution to be titrated, said colour detection cell being separated from said container and of a reduced size with respect to said container.

3,900,292

AUTOMATIC CONTROL OF CRYSTAL SIZE DISTRIBUTION

James Logan Fairchild, Trona, Calif., assignor to Kerr-McGee Chemical Corporation, Oklahoma City, Okla.

Continuation of Ser. No. 96,179, Dec. 8, 1970, abandoned.

This application Dec. 11, 1972, Ser. No. 313,852

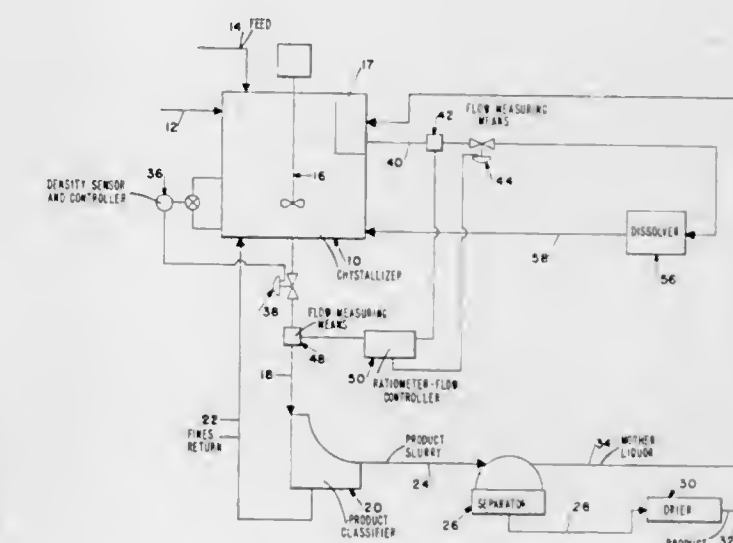
Int. Cl. B01d 9/00

U.S. Cl. 23-273 R

4 Claims

1. In a process for continuously producing crystals which comprises establishing in a crystallizing zone a slurry of (1) a

mother liquor, (2) crystallizable material and (3) crystals of said crystallizable materials, monitoring the slurry density in the crystallizing zone using a slurry density sensing means and controlling the slurry density by increasing or decreasing the rate at which a first slurry is withdrawn from a well-mixed portion of said crystallizing zone and classified by size into two slurries, one of which contains small crystals which is returned to the crystallizing zone and the other of which contains predominantly large crystals, recovering as product said large crystals from said other slurry and returning the remaining mother liquor therefrom to the crystallizing zone, measuring



the rate at which said first slurry is withdrawn from the crystallization zone while withdrawing a seed slurry containing predominantly seed crystals from a baffled, quiescent zone within the crystallizing zone which quiescent zone separates said crystals by a settling method, treating said seed slurry to render it seed-free and returning the seed-free slurry to said crystallization zone: the improvement which comprises producing said product crystals within a prescribed, desired size distribution by maintaining a fixed predetermined ratio of withdrawal rates between said first slurry and said seed slurry.

3,900,293

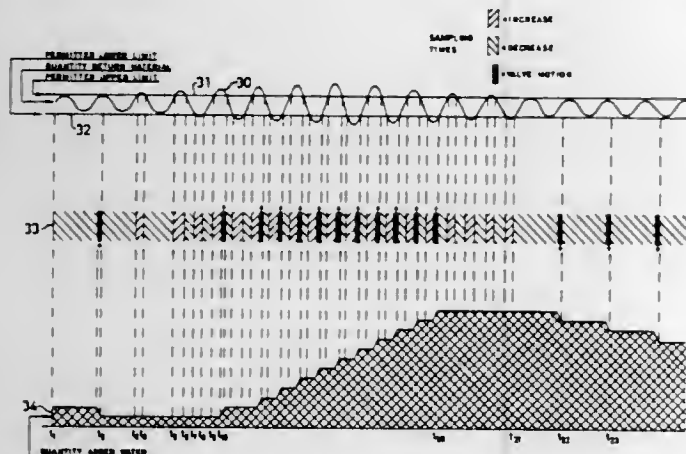
CONTROLLING ADMIXTURE OF AQUEOUS LIQUID TO BALL ROLLING OF POWDERY IRON ORE

Borje Gustav Sjöberg; Rolf Ragnar Odman; Arne Belstad, and Nils Clov Allan Lofgren, all of Malmberget, Sweden, assignors to Luossavaara-Kiirunavaara AB., Stockholm, Sweden
Filed Dec. 29, 1972, Ser. No. 319,467

Claims priority, application Sweden, Dec. 30, 1971, 16944/71

Int. Cl. C21b 1/08, 1/24; B01j 2/12
U.S. Cl. 23-313

2 Claims



1. A method of controlling a supply of liquid to a material composition adapted to be formed into balls for sintering, said composition being constituted of a slick consisting of a mixture of powdery iron ore material and aqueous liquid in a ball rolling machine comprising an open ended rotary ball rolling drum to an entrance end of which is supplied a supply of fresh slick and a supply of said ore material which has already passed through the rotary drum and which after having left the drum at an exit end remote from said entrance end, has passed through a sieve separating material which upon passing the drum is below a size of balls of a prescribed size to be passed on as a final product of the machine, said separated smaller-sized material passing through the sieve being reconveyed from said exit end back to said entrance end of the drum at a rate corresponding substantially to the rate of which said reconveyed material passes through the sieve, the liquid content of the material being treated in the drum being adjusted by varying a supply of aqueous liquid being added to the material so as to change the consistency of the material, measuring amplitudes of variations in the rate at which said material is reconveyed from said exit end to said entrance end of the drum, ascertaining whether said amplitudes increase above or decrease below a predetermined variation amplitude, increasing said rate of supply of said consistency adjusting aqueous liquid when said amplitudes increase above said predetermined amplitude and decreasing said rate of supply of said consistency adjusting aqueous liquid when said amplitudes decrease below said predetermined amplitude.

3,900,294

METHOD OF MANUFACTURING SPHERICAL BEARINGS

Albert R. McCloskey, Fairfield, Conn., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Aug. 23, 1974, Ser. No. 499,940

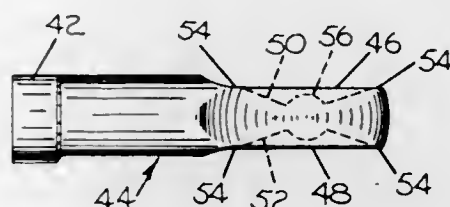
Int. Cl. B23P 1/00; B21D 53/10

U.S. Cl. 29-149.5 B

8 Claims

1. A method of manufacturing a spherical bearing rod end having an outer member, an intermediate member of yieldable material within and supported by said outer member and an inner race operationally supported by said intermediate member comprising preforming a rod end blank having a ball-like

section at one end thereof, flattening the ball-like section to form two enlarged faces, each face having an inwardly disposed annular dished portion whereby the material flows uniformly to the outer periphery of the faces to form a uniformly cold formed annular area, removing the inwardly disposed annular dished portion to form a bore through said



faces thereby leaving said uniformly cold formed annular area to serve as the outer race member, inserting in said bore said intermediate member and said inner race member, interlocking with mechanical interlocking means said intermediate member and inner race member within said bore to effect the bearing support of said inner race member within said intermediate member.

3,900,295

BILAYER METALLIC ARTICLE

James Q. Steigelman, Towanda, Pa., assignor to W. M. Chace Company, Detroit, Mich.

Continuation of Ser. No. 138,779, April 29, 1971, abandoned.

This application May 29, 1973, Ser. No. 364,976

Int. Cl. B32b 15/00

U.S. Cl. 29-196.3

2 Claims

1. A laminate consisting essentially of a layer of a martensitic stainless steel alloy selected from the group consisting of the 400 series stainless steel alloys and precipitation hardened stainless steel alloys and metallurgically bonded along a common interface to a layer of a primary brazing alloy in the unbrazed state, said primary brazing alloy having a melting point above 900°F and below about 1800°F, said metallurgical bond being achieved by diffusing a secondary brazing alloy having a melting point of at least 30°F lower than said primary brazing but above about 900°F into said layer of martensitic stainless steel alloy and said layer of primary brazing alloy, said laminate being in the form of a composite strip having a thickness of less than 0.185 inches.

3,900,296

COMPOSITE MAGNESIUM-TITANIUM CONDUCTOR

Henry A. Kuchek, Auburn, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 402,563, Oct. 1, 1973, Pat. No. 3,849,879.

This application Aug. 1, 1974, Ser. No. 493,810

Int. Cl. B32b 15/00; H01b 13/22

U.S. Cl. 29-197

11 Claims

1. A composite comprising an in situ cast core consisting essentially of about 0.05 to about 10 weight per cent lithium and the balance magnesium with a titanium cladding.

3,900,297

FUEL FOR ENGINES

James Michaels, 26 Valmont Ln., Commack, N.Y. 11725

Continuation-in-part of Ser. No. 150,822, June 7, 1971, abandoned. This application Sept. 29, 1972, Ser. No. 293,576

Int. Cl. C10I 1/22

U.S. Cl. 44-57

16 Claims

1. Fuel composition for internal combustion engines comprising a homogeneous blend of

- 5 to 95 volume percent of gasoline, and correspondingly
- 95 to 5 volume percent of a blend comprising

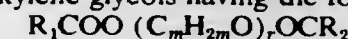
- 10 to 90 volume percent of a nitroalkane having one or two nitro groups, and containing up to four carbon atoms, and mixtures thereof, and correspondingly
- 90 to 10 volume percent of a normally liquid ester lubricant having a viscosity at 100°F. of at least 1 cSt. selected from the group consisting of esters of

- primary alcohols, linear or branched chain, and dicarboxylic acids, linear or branched chain, having the formula



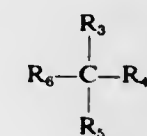
wherein n is an integer of from 2 to 10 and R_1 and R_2 , which may be the same or different, are alkyl, straight chain or branched, having from 4 to 12 carbon atoms,

- monocarboxylic acids and dihydric alcohols and/or polyalkylene glycols having the formula



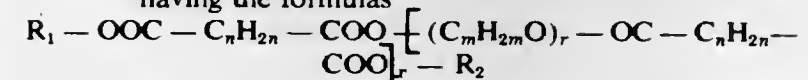
wherein m is an integer of from 2 to 12, r is an integer of from 1 to 10, and R_1 and R_2 have the afore-stated meanings,

- neopentyl polyols and monocarboxylic acids, straight chain or branched, having the formula

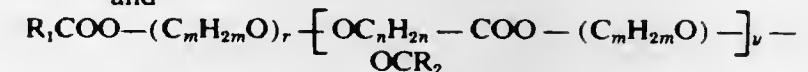


wherein R_3 to R_6 , which may be the same or different, are selected from the group consisting of (1) alkyl, straight chain or branched, having from 1 to 10 carbon atoms, and (2) radicals of the formula $C_sH_{2s}OOCR_7$, wherein s is an integer of from 1 to 4, and R_7 is alkyl, straight chain or branched, having from 4 to 12 carbon atoms, with the proviso that not more than two of the R_3 to R_6 groups may be alkyl, and

- mixed complex esters of primary alcohols, straight chain or branched, mono- and dicarboxylic acids, straight chain or branched, and polyalkylene glycols, having the formulas



and



wherein R_1 , R_2 , m , n , and r have the afore-stated meanings and x and y are integers of from 1 to 4,

and mixtures thereof, with the proviso that the proportion of ester lubricant in the fuel

3,900,298

PREVENTION OF AIR POLLUTION BY USING ACTIVATED ALUMINA SOLID ADSORBENT TO REMOVE PARTICULATES OF LESS THAN 0.5 MICRONS FROM FLUE GASES

Lewis A. St. Cyr, Sandusky, and Loren H. Young, Huron, both of Ohio, assignors to Vulcan Materials Company, Birmingham, Ala.

Continuation-in-part of Ser. No. 228,087, Feb. 22, 1972, Pat. No. 3,762,134, which is a continuation-in-part of Ser. No. 130,398, April 1, 1971, Pat. No. 3,750,372. This application July 13, 1973, Ser. No. 378,908

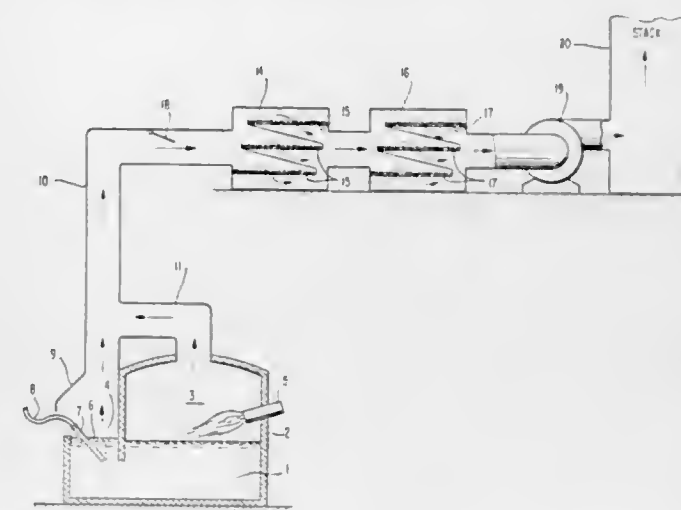
Int. Cl. B01d 53/04

U.S. Cl. 55-71

2 Claims

1. An air pollution control process for the prevention of white smoke in the atmosphere and caused by finely divided metal halide solids having a particle size of less than 0.1 microns from a gaseous effluent of an aluminum processing operation utilizing a gaseous chlorine treatment of molten aluminum, which process comprises

treating the gaseous effluent to remove entrained solids having a particle size greater than 1 micron; and passing the treated effluent into intimate contact with and through a bed of granular activated alumina, the granular alumina having a size of from 300 to 5,000 microns and



the bed having a depth of from about 5 to 50 centimeters, at a temperature between about 110°C. and about 500°C. to remove a quantity of the metal halide solids having a particle size of less than 0.1 microns at least sufficient to prevent formation of the white smoke.

3,900,299

EXPANDING VALVES FOR ELECTROSTATIC PRECIPITATORS AND THE LIKE

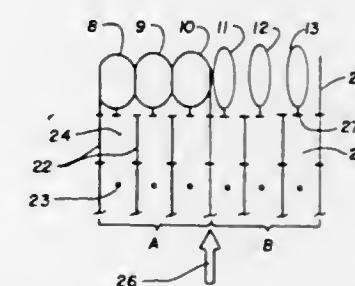
Charles W. Spehrley, White River Junction, Vt., assignor to Joy Manufacturing Company, Pittsburgh, Pa.

Filed June 6, 1973, Ser. No. 367,460

Int. Cl. B03c 3/36

U.S. Cl. 55-133

9 Claims



1. A flow control system for an electrostatic precipitator having an assembly of parallel vertically extending laterally spaced collecting curtains carried within a housing comprising a plurality of elongated flexible substantially cylindrical vertically extending inflatable containers secured within said housing in juxtaposition with each other and respective ones of said curtains to shut off gas flow between certain of said curtains when the ones of said containers respective to said certain curtains are inflated and to allow substantially free gas flow between said curtains when said containers are deflated, means for alternatively inflating certain of said containers and means for simultaneously deflating other of said containers, and said containers extending between and being connected to top and bottom mandrel elements, at least a portion of each of said mandrel elements adjacent the connection between a respective mandrel element and container being of non-circular cross section, said portion having a maximum transverse length at least one and three quarters as great as the maximum transverse width thereof.

7. A flow control system for a gas handling apparatus having at least one gas conducting passageway therein comprising: at least one elongated flexible substantially cylindrical inflatable container located at adjacent one end portion of said passage-

way, means for inflating said container to stop gas flow through said passageway, means for deflating said container to allow substantially free flow through said passageway, said container extending between and connected to top and bottom mandrel elements, at least a portion of each of said mandrel elements adjacent the connection between a respective mandrel element and container being of non-circular cross section with said portion having a transverse length at least 175% as great as the width thereof.

3,900,300

VAPOR-LIQUID SEPARATION APPARATUS

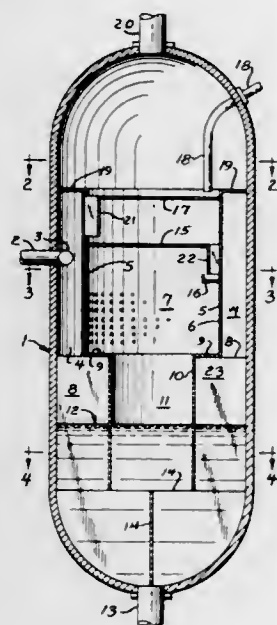
Bruce Lehman, South Holland, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Oct. 19, 1974, Ser. No. 408,139

Int. Cl. B01d 19/00

U.S. Cl. 55—184

4 Claims



1. A vapor-liquid separation apparatus which comprises:
 - a. a vertically orientated cylindrical outer vessel;
 - b. a cylindrical wall axially aligned within the vessel and forming an annular volume located between the inner surface of the outer vessel and the outer surface of the upper cylindrical wall, and also forming a cylindrical volume located within the cylindrical wall, said annular volume having an upper seal which prevents fluid flow, said cylindrical wall having a plurality of perforations located a vertical distance below a hereinafter described mixed-phase fluid inlet means, which perforations allow the passage of fluids from the annular volume into the cylindrical volume;
 - c. a mixed-phase fluid inlet means passing into the vessel and discharging an entering fluid mixture into the annular volume in a substantially tangential direction relative to the inner surface of the outer vessel;
 - d. a liquid outlet means passing through a wall of the vessel and communicating with a bottom portion of the internal volume of the vessel to effect the withdrawal of separated liquid material which entered the annular volume via the mixed-phase fluid inlet means and descended through said annular volume into the lower portion of the vessel;
 - e. a liquid-vapor contacting means located in said cylindrical volume at a point above said perforations in the cylindrical wall, said liquid-vapor contacting means extending across the cylindrical volume to effect the passage of vapor entering the cylindrical volume from the annular volume through the vapor-liquid contacting means;
 - f. a liquid inlet means passing through a wall of the vessel and extending to an upper portion of said liquid-vapor contacting means;
 - g. a vapor outlet means passing through a wall of the vessel and communicating with an upper portion of the internal

volume of the vessel which is above said liquid-vapor contacting means to effect the withdrawal of a vapor from the vessel, said vapor having passed into the vessel and into the annular volume via said mixed-phase fluid inlet means and then into the cylindrical volume through the perforations in said cylindrical wall before having passed upward through the liquid-vapor contacting means, whereby a mixed-phase stream is divided into a liquid fraction which descends through the annular volume and a vapor fraction which separates from the liquid and passes through perforations in the cylindrical wall before traveling upward through the liquid-vapor contacting means wherein liquid material entrained in the vapor is removed by contacting the vapor with an externally produced liquid material.

3,900,301

AIR TREATMENT APPARATUS

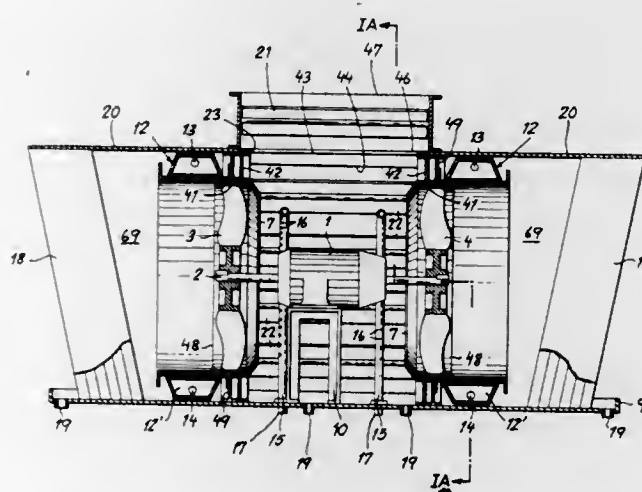
Petre Constantinescu, Bucharest; Emil Oachis; Dorin Trimbitas, both of Cluj, and Doina Alexandrescu, Bucharest, all of Romania, assignors to Intreprinderea Metalul Rosu Cluj, Cluj, Romania

Filed July 16, 1974, Ser. No. 488,927

Int. Cl. B01f 3/04

U.S. Cl. 55—257

10 Claims



1. An air treatment apparatus comprising:
 - a rectangular prismatic housing defining a blending chamber;
 - rectangular extensions of two opposite sides of said blending chamber defining ducts for carrying an air flow from said blending chamber;
 - air inlets formed in the top wall and two opposite facing side walls of said blending chamber at right angles to said ducts;
 - air outlets formed in the two remaining side walls of said blending chamber feeding into said ducts;
 - a pair of oppositely effective axial flow fans mounted on a common drive shaft in said blending chamber and respectively juxtaposed with said outlets;
 - means for rotating said fans in the same direction;
 - respective means adjacent each of said fans for humidifying air drawn into said blending chamber by said fans;
 - respective means adjacent each of said fans for cooling air drawn into said blending chamber by said fans;
 - respective air heating means downstream of each of said outlets in said ducts for heating the air traversing same;
 - respective turbulence abatement chambers downstream of each of said outlets;
 - respective demisters spanning said ducts downstream of each of said outlets; and
 - means connecting at least one of said inlets with a source of fresh air.

3,900,302

METHOD FOR PRODUCING GLASS FIBER BULK PRODUCT

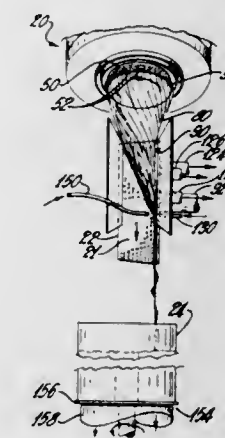
Roland E. Langlois, and Cletis L. Roberson, both of Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Division of Ser. No. 279,575, Aug. 10, 1972, Pat. No. 3,832,840. This application May 7, 1974, Ser. No. 467,705

Int. Cl. C03b 37/04

U.S. Cl. 65—8

9 Claims



1. The method of producing a bulky sliver-like fibrous glass product comprising:
 - depositing individual discontinuous glass fibers on a perforated surface in sufficient number and degree of interengaging relation to form a coherent web having a marginal region of higher fiber concentration;
 - advancing the perforated surface with the web thereon across a progressively narrowing opening; and
 - moving gas through the advancing perforated surface into the opening so as to effect lateral gathering of the fibers of the web together to form a relatively loosely associated longitudinal sliver-like fibrous product having at least a portion of the fibers at each increment of length of the product interengaged into a continuous system of fibers possessing sufficient coherency to establish longitudinal dimensional stability and having fibers of the marginal web region intermittently along the length of the sliver-like product interengaged into a secondary system of fibers bending outwardly of the continuous system between spaced locations along the length of the continuous system to provide non-uniform bulk to the sliver-like product.

3,900,303

METHOD OF MAKING GLASS PRODUCTS

John D. Mackenzie, Los Angeles, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Filed July 5, 1972, Ser. No. 268,971

Int. Cl. C03c 27/00

U.S. Cl. 65—18

5 Claims

1. An improved method of making a pressed glass product, which method comprises:
 - mixing particulate used-container glass together with a glass filling agent, said used-container glass having the following approximate concentration of foreign inclusions mixed therewith:

Inclusions	% by wt. in glass
Fe	0.1 to 3
Sn	0.1 to 2
Al	0.1 to 2
Other metals	0.1 to 1
Cellulosics	0.1 to 1
Other organics	0.1 to 1

said used-container glass having an average reflectance of between about 5 and about 95%;
 heating the resulting mix to a temperature and pressure within a range sufficient to sinter and soften said glass and coalesce said filling agent therewith but insufficient to melt said glass;
 maintaining said mix within said range while pressing at about 10–10,000 p.s.i. until said glass has been converted into a hard glass coherent mass having a multi-colored appearance; and
 thereupon cooling said pressed glass to below the solidification point thereof and recovering the finished glass product.

3,900,304

METHOD OF REDUCING H₂S EMISSIONS DURING SLAG QUENCHING

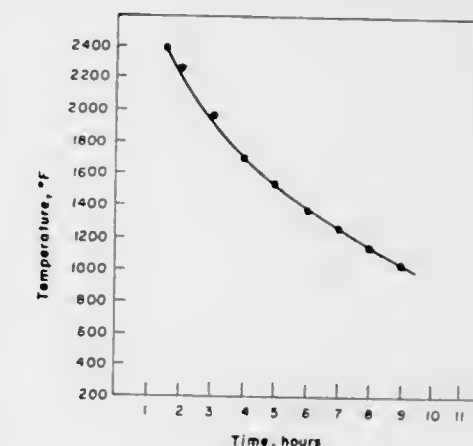
Frederick H. Rehms, Baldwin, Pa., assignor to Jones & Laughlin Steel Corporation, Pittsburgh, Pa.

Filed May 7, 1973, Ser. No. 358,000

Int. Cl. C03b 19/08

U.S. Cl. 65—19

13 Claims



1. A method of minimizing H₂S emissions during slag quenching, comprising:
 - a. successively pouring molten slag increments into a holding pit in such incremental slag layer thicknesses and time intervals between said incremental slag pours that a slag thermal arrest temperature of from about 1200°F to about 1400°F is attained; and
 - b. quenching said incrementally poured slag with a quenchant which comprises water and an oxidizing agent.

3,900,305

METHOD OF FORMING CONDUCTIVE LAYER ON OXIDE-CONTAINING SURFACES

Robert D. DeLuca, Big Flats, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed May 7, 1973, Ser. No. 358,013

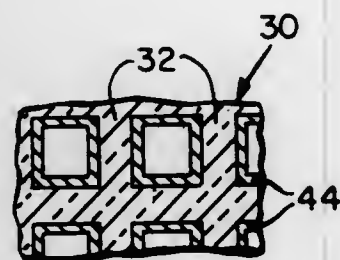
Int. Cl. C23c 13/04

U.S. Cl. 65—30

16 Claims

1. A method of forming a conductive layer on a surface of an oxide-containing ceramic substrate comprising the steps of providing a substrate of oxide-containing ceramic material that is capable of being reduced by magnesium vapor at temperatures in excess of 300°C, said ceramic material being selected from the group consisting of sinterable ceramics, glasses and glass-ceramics,

disposing said substrate in a reaction chamber having a vacuum system connected thereto for maintaining the pressure in said chamber at 10^{-4} Torr or less, heating said substrate to a temperature greater than 300°C but less than the deforming temperature thereof, and



providing said chamber with a source of magnesium vapor that is disposed on that side of said substrate opposite said vacuum system connection so that said magnesium vapor flows across and reacts with a surface of said substrate, thereby reducing said surface and forming a conductive cermet thereon.

3,900,306

CATALYTIC CRYSTALLINE GLASS FIBERS AND METHOD

Walter H. Brueggemann, Chagrin Falls, and Jack S. Gilhart, Salem, both of Ohio, assignors to Ferro Corporation, Cleveland, Ohio

Division of Ser. No. 279,210, Aug. 9, 1972, Pat. No. 3,873,328.

This application Dec. 23, 1974, Ser. No. 535,187

Int. Cl.² B01J 35/06; C03C 3/22, 13/00

U.S. Cl. 65—33

8 Claims

1. A process for forming catalytic, oxidation-inducing crystalline glass fibers comprising:

- fiberizing a molten glass composition containing from about 10 to about 70% by weight of an oxide selected from the group consisting of an oxidation-inducing oxide of cobalt, manganese, copper, chromium, and mixtures thereof to form amorphous glass fibers containing said oxide substantially throughout the fibers, and
- heat treating the resulting glass fibers within a temperature range of about $1,000^{\circ}\text{F}$ to about $1,600^{\circ}\text{F}$ for a sufficient time and up to about 60 minutes to crystallize a substantial portion of the glass of said fibers, in which said oxidation-inducing oxide becomes a part of the crystalline structure and supplies sites capable of catalyzing oxidation reactions.

3,900,307

COMPOSITION AND METHOD FOR CONTROLLING SUCKERS IN TOBACCO

Walter W. Abramitis, Downers Grove, Ill., assignor to Akzona Incorporated, Asheville, N.C.

Filed Apr. 5, 1973, Ser. No. 348,393

Int. Cl. A01n 9/24

U.S. Cl. 71—78

20 Claims

1. A composition for controlling the growth of suckers in tobacco plants, consisting essentially of:

- from about 10% to about 75% by weight of an aliphatic monocarboxylic acid diester of an aliphatic glycol selected from the group consisting of an alkylene glycol containing from 2 to 6 carbon atoms, diethylene glycol, and triethylene glycol, said acid having 7 to 15 carbon atoms;
- from about 0.5% to about 10% by weight of a surfactant; and
- from about 70% to about 80% of the total weight of the composition of an aliphatic alcohol having 8 to 12 carbon atoms.

3,900,308

HERBICIDAL MONO AND DISUBSTITUTED AMIDES OF PHENOXYALIPHATIC CARBOXYLIC ACIDS

Pierre Poignant, Lyon, and Pierre Delage, Lentilly, both of France, assignors to Pechiney Progil, France

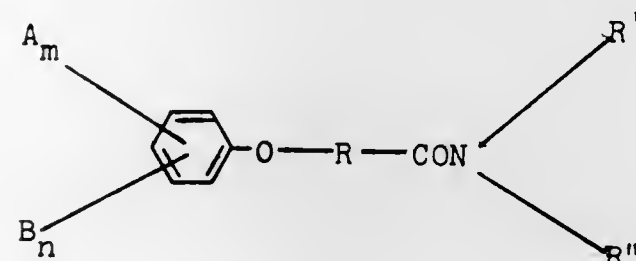
Continuation-in-part of Ser. No. 862,026, Sept. 29, 1969, abandoned. This application May 25, 1972, Ser. No. 256,652

Int. Cl. A01n 9/20

U.S. Cl. 71—118

17 Claims

1. A method of selective crop cleaning which comprises applying a weed-killing amount of an herbicide composition containing at least one compound of the formula,



wherein R is a linear or branched alkylene group containing 1 to 5 carbon atoms,

R' is hydrogen or an alkyl group containing 1 to 5 carbon atoms,

R'' is an alkyl group containing 1 to 5 carbon atoms or an alkenyl group containing up to 5 carbon atoms,

A is halogen,

B is an alkyl group containing 1 to 3 carbon atoms or an halogenated alkyl group containing 1 to 3 carbon atoms and

m and n are integers of 0 to 3, m + n being no more than 3 and the substituents A and B being in positions 2, 3, 5 and 6 of the phenyl radical provided that when n = 1 and m = 0, B is not in position 2.

3,900,309

PROCESS FOR THE PRODUCTION OF HIGH APPARENT DENSITY WATER ATOMIZED STEEL POWDERS

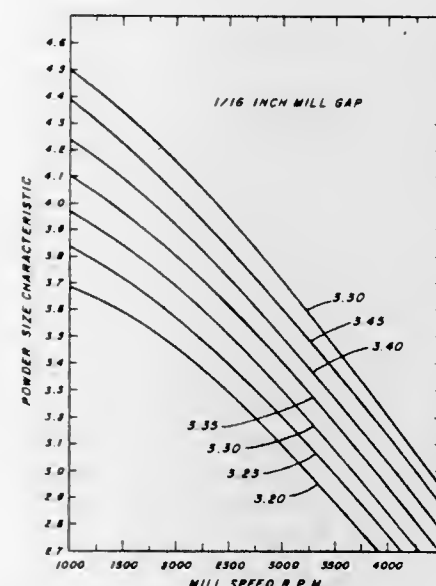
Hung-Chi Chao; John H. Gross, both of Monroeville; Robert R. Judd, and Roger L. Rueckl, both of Murrysville, all of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Aug. 16, 1973, Ser. No. 389,603

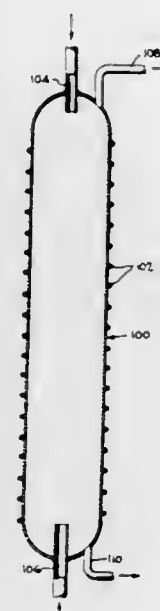
Int. Cl.² B22F 1/04

U.S. Cl. 75—0.5 BA

6 Claims



temperature up to 350°C at which they will maintain their bottom of said zone, passing said solution from the settling respective phases, the elemental manganese reducing the zone upwardly through a bed of scrap iron, said scrap iron



liquid aluminum chloride and forming essentially elemental aluminum and manganese chloride.

3,900,313

PROCESS FOR PRODUCING DIE-CASTING ALLOYS FROM ALUMINUM SCRAP

Hubert Martin, 4720 Shoremeade Rd., Richmond, Va. 23234
Continuation-in-part of Ser. No. 289,597, Sept. 18, 1972,
abandoned. This application Feb. 2, 1973, Ser. No. 329,143
Int. Cl. C22b 21/06

U.S. Cl. 75—68 R

5 Claims

1. A method for the conversion of scrap aluminum alloy to die-casting alloys, the scrap alloy containing at least 70 weight percent aluminum and one or more impurities in iron, titanium, calcium, manganese, copper, magnesium, zinc, nickel, chromium, phosphorus, comprising the steps of melting said scrap aluminum alloy, adding and dissolving in said aluminum alloy sufficient silicon to obtain between 7.5 to 20 percent silicon in the melt, cooling the melt to cause formation of one or more solid intermetallic crystalline phases lower in aluminum content than the remaining liquid aluminum alloy but higher than said scrap aluminum alloy in at least one of said impurities, further cooling the melt at such a rate and for sufficient time to cause coarsening of said crystalline phases while keeping them suspended in the liquid alloy, separating said coarsened crystals from said melt and recovering at least the remaining liquid aluminum alloy.

3,900,314

PROCESS FOR RECOVERING DISSOLVED COPPER FROM SOLUTIONS CONTAINING COPPER

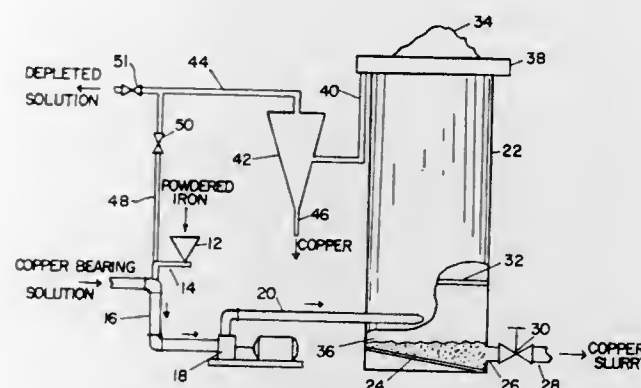
Jan Hulsebos, Cranbury, N.J., assignor to Cities Service Oil Company, Tulsa, Okla.

Continuation-in-part of Ser. No. 128,435, March 26, 1971,
abandoned. This application Sept. 29, 1972, Ser. No. 293,616
Int. Cl. C22b 15/12

U.S. Cl. 75—109

9 Claims

1. In the process of recovering copper values from solutions containing the same, wherein powdered iron is used to reduce copper in the solution to metallic copper, the improvement which comprises mixing powdered iron with the copper bearing solution in a highly turbulent mixing zone, and reducing the flow velocity of the solution containing the metallic copper by tangentially discharging from the turbulent mixing zone to a settling zone permitting the solution to flow circumferentially in the settling zone and for the copper to settle to the



acting to trap entrained metallic copper and to displace remaining copper values dissolved in the solution.

3,900,315

NICKEL-CHROMIUM-IRON ALLOY

Udo Walter Vogt, and Sven G. Waher, both of Sandviken, Sweden, assignors to Sandvik Aktiebolag, Sandviken, Sweden

Filed Feb. 15, 1974, Ser. No. 443,097

Claims priority, application Sweden, Feb. 20, 1973,
7302336

Int. Cl. C22C 38/06, 38/50

U.S. Cl. 75—124

12 Claims

1. Nickel-chromium-iron alloy having excellent resistance to oxidation at rapid cyclic temperature variations, high creep strength and good structure stability, said alloy having a composition consisting essentially of in % by weight: 0.02 - 0.15 % Cr; 18 - 24 % Cr; 22 - 31 % Ni; 1.1 - 2.5 % Al; 0.1 - 0.8 % Ti; 0.3 - 1.2 % Si; 0.3 - 2.0 % Mn, and the remainder Fe besides normally present impurities.

3,900,316

CASTABLE NICKEL-CHROMIUM STAINLESS STEEL

Robin Mackay Forbes Jones, Suffern, N.Y., assignor to The International Nickel Company, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 275,095, Aug. 1, 1972,
abandoned, which is a continuation-in-part of Ser. No.
182,219, Sept. 20, 1971, abandoned. This application Mar. 7,
1973, Ser. No. 337,278

Int. Cl. C22C 38/02, 38/08, 38/54, 38/58

U.S. Cl. 75—128 A

16 Claims

1. An austenitic nickel-chromium stainless steel consisting essentially of 6% to about 28% nickel, about 14% to about 25% chromium, 2% to about 5% silicon, 0.3% to about 0.7% boron, up to about 0.15% carbon, up to about 20% manganese, up to about 3% copper, up to about 8% molybdenum, up to about 1% columbium and balance iron and wherein the amounts of nickel, chromium, silicon, and boron and any manganese and molybdenum in the alloy are correlated in accordance with the relationship
 $8(\%Ni + \%Mn) - 1.5(\%Cr + \%Mo) + 22(\%Si + 284(\%B))$ equal at least 360;

said steel being characterized by castability superior to that of austenitic steels of the A.C.I. CF-8 type, as determined by relative freedom from cold shut defects when cast in three-sixteenths-inch thick by 1½-inch interlocking squares in green sand molds according to the Chinese Puzzle pattern, and additionally characterized by corrosion resistance superior to that of martensitic-ferritic steels of the A.C.I. CA-15 and CB-30 types, as determined by resistance to pitting and general corrosion in salt-spray CASS tests corresponding to ASTM B368-61T.

3,900,317

Fe-Sn-Cu-Pb SINTERED COMPOSITE METAL ARTICLE AND PROCESS

Frederick W. Meadus; Bryan D. Sparks, and Ira E. Puddington, all of Ottawa, Canada, assignors to Canadian Patents and Development Limited, Ottawa, Canada

Filed Mar. 6, 1973, Ser. No. 338,563

Int. Cl. C22c 1/04; B22f 7/00

U.S. Cl. 75—211

8 Claims

1. A method of preparing a composite iron-lead article from metal powders comprising iron particles in about 25 to about 90% wt.; a metal selected from the group consisting of tin, copper or mixtures thereof in up to about 5%; and the balance substantially all lead powder, including:

- incorporating iron particles with the other metal powders to form a composite mixture;
- shaping the metal mixture into the desired article;
- sintering and partially-alloying between the iron particles and the other metals in a reducing atmosphere, the iron being substantially un-alloyed except at the surfaces thereof but wetted and bonded by an alloy of the other metals; and
- subjecting the sintered article to mechanical compaction to further increase the density over that obtained in step (c).

3,900,318

USE OF SUBLIMABLE DISPERSE DYES IN PHOTOELECTROPHORETIC IMAGE REPRODUCTION

Georgios Zographos, Zurich, and Peter Mockli, Basel, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland
Filed May 14, 1973, Ser. No. 360,234

Claims priority, application Switzerland, May 23, 1972,
007595/72

Int. Cl. G03g 13/06

U.S. Cl. 96—1.3

4 Claims

1. In a process for producing an image by the photoelectrophoretic image reproducing system, comprising the steps of (a) irradiating with light a volatile liquid dyestuff suspension, causing migration of said dyestuff in said suspension from an injector electrode to a blocking electrode, (b) evaporating the volatile liquid to leave a powder dyestuff image on the injector electrode or the blocking electrode or both and, (c) fixing the image, the improvement comprising using as said dyestuff a disperse dye or a mixture of disperse dyes which can be converted into the vapor state at temperatures between 160°C and 220°C under atmospheric pressure.

3,900,319

ELECTROSTATOGRAPHIC COPY PAPER CONTAINING GLYCIDYL QUATERNARY AMMONIUM COMPOUNDS

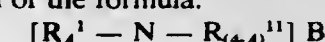
Lewis S. Miller, 10260 S.E. 21st St., Bellevue, Wash. 98004
Division of Ser. No. 187,211, Oct. 6, 1971, Pat. No. 3,798,032.
This application Dec. 26, 1973, Ser. No. 427,503

Int. Cl. G03G 5/00

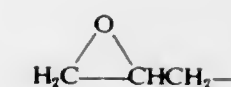
U.S. Cl. 96—1.8

8 Claims

1. An electroconductive paper useful as a base for producing electrostatographic copy paper comprising a paper sheet coated with an electroconductive layer comprising an organic, film-forming polymer and a monomeric quaternary ammonium compound of the formula:



wherein R¹ is



R¹¹ is CH₃— or CH₃CH₂—; A is 1, 2 or 3; and B is a chloride, fluoride or bromide anion.

3,900,320

ACTIVATION METHOD FOR ELECTROLESS PLATING

John H. Rolker, Altadena, and Bradley A. Carson, Monrovia, both of Calif., assignors to Bell & Howell Company, Chicago, Ill.

Filed Sept. 30, 1971, Ser. No. 185,106

Int. Cl. B44d 1/092; C23c 3/02

U.S. Cl. 96—35.1

7 Claims

1. A method for forming a metal image on an organic polymer base, which comprises:

combining in solution a metal-containing component capable of forming catalytic bonding sites for an electroless metal plating process, photosensitive polymerizable binder material and at least one solvent for said binder material and said component, the weight ratio of said binder material to the metal portion of said metal-containing component in said combination being from about 0.3:1 to about 15:1, said combination having a viscosity, under the conditions of its application to said base, equivalent to a Newtonian fluid viscosity of about 0.2 to about 100 centipoises;

applying said combination to said base and drying at a temperature of 20°–150° so as to form a layer thereof about 20 Å to about 3000 Å thick on said base;

photographically exposing said layer to form solvent-resistant polymerized image portions on said plate against a solvent-soluble background;

thereafter treating said layer with solvent to remove said background; and

thereafter electrolessly plating said image portions to form said metal image.

3,900,321

SILVER HALIDE EMULSION CONTAINING AROMATIC AZOCARBONAMIDE ANTIFOG AGENT

Alan Norman Ferguson, Harlow, England, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 2, 1972, Ser. No. 293,772

Claims priority, application United Kingdom, Oct. 18, 1971,
47056/71

Int. Cl. G03c 1/48, 1/34

U.S. Cl. 96—76 R

10 Claims

1. A silver halide photographic emulsion which has in fog inhibiting reactive association therewith at least a fog inhibiting amount of an azocarbonamide having one azo-carbonamide group.

3,900,322

DIFFUSION TRANSFER COLOR PHOTOGRAPHIC MATERIAL HAVING DEVELOPMENT INHIBITOR PRECURSOR

Yasushi Oishi; Jun Hayashi, and Yoshinobu Yoshida, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan

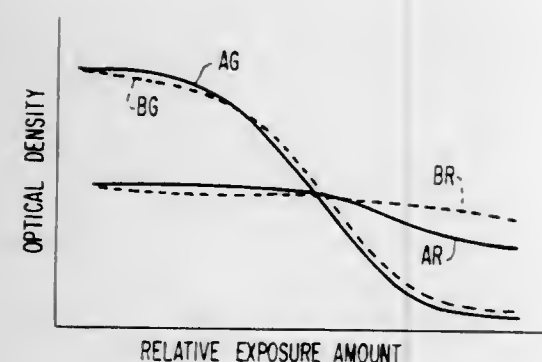
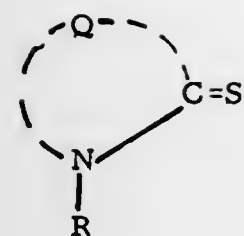
Filed Oct. 11, 1972, Ser. No. 296,698

Claims priority, application Japan, Oct. 12, 1971, 46-80393
Int. Cl. G03C 1/40, 7/00, 5/54, 1/48

U.S. Cl. 96—77

13 Claims

1. A diffusion transfer color photographic material comprising a support having thereon at least two layers each containing a dye developer, and having thereon at least two silver halide photographic emulsion layers, at least one of said silver halide photographic emulsion layers containing a compound represented by general formula I



wherein Q represents an atomic group necessary for forming a heterocyclic ring, and R represents an unsubstituted alkyl group, an alkyl group substituted by a hydroxyl group, an aryl group or a morpholino group, an unsubstituted aryl group, an aryl group substituted by an alkyl group, an alkoxy group or a halogen atom or a heterocyclic group, said compound being capable of releasing a diffusible development inhibitor upon development of exposed silver halide by said dye developer, thereby causing imagewise release of said inhibitor upon development of said emulsion layers subsequent to exposure thereof.

3,900,323

PHOTOGRAPHIC ELEMENT COMPRISING AN OPAQUE BACKCOAT

William T. MacLeish, North Andover, and Terry W. Milligan, Belmont, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Oct. 23, 1973, Ser. No. 408,374

Int. Cl.² G03C 1/84

U.S. Cl. 96—84 R

7 Claims

1. A photographic element which includes at least one silver halide emulsion layer and which also includes a layer containing carbon black and a water-soluble salt of a heavy metal capable of forming a relatively insoluble sulfide.

3,900,324

TREATMENT OF SYNTHETIC POLYESTER FILM PRODUCTS

Raphael Landau, Woodford Green, England, assignor to Ozalid Company, Ltd., Loughton, England

Filed June 25, 1972, Ser. No. 283,667

Int. Cl. B44d 1/40

U.S. Cl. 96—87 R

17 Claims

1. A process for sensitizing to actinic radiation a film consisting of polyester resin without pretreatment of the film, which consists in applying to the surface of the film a solution or dispersion, in a liquid organic solvent medium which evaporates upon heating to a temperature not exceeding 150°C., of a diazonium compound and a coupler, said solution or dispersion consisting essentially of said solvent and a halogenated compound selected from the group consisting of halogenated acetic acids, halogenated propionic acids fully halogenated acetaldehyde hydrate and fully halogenated acetaldehyde, in an amount sufficient to cause penetration into and deposition in the film of the diazonium compound and the coupler, and thereafter heating the film to effect evaporation of the medium, an acid also being present when said halogenated compound is said fully halogenated acetaldehyde.

3,900,325

LIGHT SENSITIVE QUINONE DIAZIDE COMPOSITION WITH N-3-OXOHYDROCARBON SUBSTITUTED ACRYLAMIDE

Carl W. Christensen, and Calvin M. Isaacson, both of Beverly, Mass., assignors to Shipley Company, Inc., Newton, Mass.

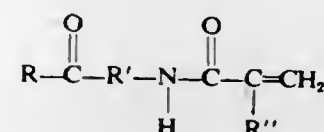
Continuation-in-part of Ser. No. 261,982, June 12, 1972, abandoned. This application Nov. 6, 1972, Ser. No. 304,111

Int. Cl. G03F 7/08; G03C 1/54

U.S. Cl. 96—91 D

9 Claims

1. A positive working photoresist composition comprising an ortho quinone diazide sulfonyl ester light sensitive compound, an acrylic terpolymer resin wherein one of the monomers of the terpolymer is selected from the group consisting of methyl acrylate, ethyl acrylate, and propyl acrylate, wherein a second monomer of the terpolymer is selected from the group consisting of p-methyl styrene, p-chlorostyrene, p-ethyl styrene and styrene, and the third monomer of the terpolymer is selected from the group consisting of acrylic acid, methacrylic acid, and maleic acid, wherein the weight percent of said third monomer is 3–15% by weight as based on the total weight of the monomers of said acrylic terpolymer resin, and an N-3-oxohydrocarbon substituted acrylamide, the ratio of said acrylic resin to said acrylamide being between 100:1 parts acrylic resin to acrylamide to 1:2 parts acrylic resin to acrylamide on a weight basis, and said light sensitive compound comprising up to 40% by weight of the photoresist composition on a dry solids basis, and said acrylamide being represented by the formula:



wherein R and R'' are each selected from the class consisting of hydrogen and lower alkyl radicals and R' is selected from the class consisting of ethylene and a lower alkyl-substituted ethylene radical.

3,900,326

PROCESS AND APPARATUS FOR HEATING UP AND THERMOSTATING SOLUTIONS OF HIGH SOLIDS CONTENT FOR COATING OF WEB MATERIALS AT A GIVEN TEMPERATURE AND FOR LOWERING THE VISCOSITY OF SUCH SOLUTIONS WHICH HAVE A STRUCTURAL VISCOSITY

Peter Herzhoff, Leverkusen; Hans Gref, Cologne-Stammheim; Fritz Maus, Cologne-Flittard; Stephan Platz, Leverkusen; Josef Friedsam, Langenfeld; Wolfgang Schweicher, Leverkusen; Rolf Behr, Leverkusen; Willi Wasser, Leverkusen, and Kurt Browatzki, Opladen, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Continuation-in-part of Ser. No. 860,039, Sept. 22, 1969, abandoned. This application July 2, 1973, Ser. No. 375,498

Int. Cl. G03C 1/74

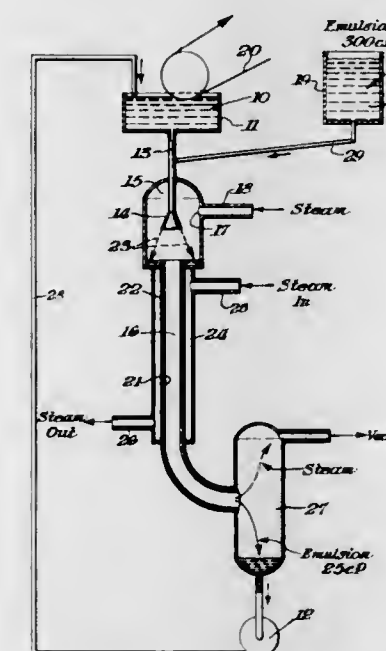
U.S. Cl. 96—114.8

4 Claims

1. In a continuous process for providing a flowable gelatino-silver halide emulsion having a viscosity in the range of 2–100 cp for casting on a moving substrate by treating a gelatino-silver halide emulsion introduced into the process to reduce the emulsion viscosity, said viscosity being 20–400 cp at room temperature while substantially maintaining the aqueous content of the emulsion, the steps comprising:

introducing a gelatino-silver halide emulsion having a viscosity of 20–400 cp and an aqueous content sufficient to provide flowability into the head of an evaporator column and regulating the pressure in the head to between 60–200 mm Hg and a temperature between 42°–67°C, injecting into the emulsion from the head and under the pressure and temperature of the head ballast steam at a high steam velocity from an external source and mixing the steam up in the emulsion under a high shearing force

of the ballast steam on the emulsion so that steam becomes entrained in the emulsion, flowing the emulsion in a thin film downwardly over a surface while being subject to a shearing gradient in the evaporator column from the head and under a pressure in the column of between 30–60 mm Hg and a temperature of between 29°–42°C, condensing in the downwardly flowing emulsion part of the entrained steam in the emulsion under the conditions of lower temperature and pressure in the column than in



the head so that water from the condensed steam is incorporated in said emulsion, and separating the processed emulsion of reduced viscosity and the steam in a stage under a condition of equilibrium between temperature and steam pressure, and continuously recovering emulsion from the separating stage in a composition having a viscosity at room temperature of 2–100 cp and an aqueous content substantially the same as the initially introduced emulsion.

3,900,327

FLAME RETARDANT CELLULOSIC MATERIALS

George T. Miller, Lewiston, N.Y., assignor to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.

Filed Oct. 12, 1973, Ser. No. 405,962

Int. Cl. C09D 5/18

U.S. Cl. 106—15 FP

13 Claims

1. Fire retardant cellulosic containing material which material contains an effective fire retardant amount of a reaction product of aqueous ortho phosphoric acid or an acid ammonium salt thereof and an alkylene oxide wherein said reaction product has been obtained by reacting an aqueous solution of a ortho phosphoric acid or an acid ammonium salt thereof containing from about 1 to about 85 percent by weight of ortho phosphoric acid or the equivalent amount of an acid ammonium salt thereof with an amount of an alkylene oxide which is from about 0.5 to 1.5 times the weight of 100 percent phosphoric acid or equivalent thereof present, intimately associated therewith.

3,900,328

METHOD AND APPARATUS FOR MOLDING GLASS LENSES

William F. Parsons; Gerald E. Blair, and Clarence C. Maier, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

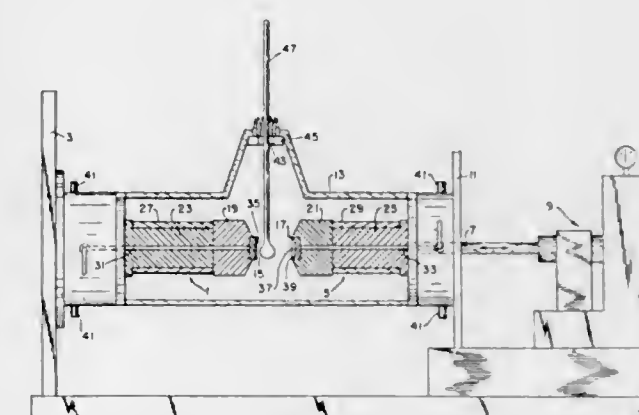
Continuation of Ser. No. 93,336, Nov. 27, 1970, abandoned.

This application Mar. 12, 1973, Ser. No. 340,510

Int. Cl. A44c; C03b 9/14

U.S. Cl. 106—39.5

31 Claims



1. A method of molding glass which comprises pressing a heat softened glass against a molding surface of glasslike carbon, the glasslike carbon being a form of carbon which has been prepared by the thermal degradation of an organic polymer, which is substantially chemically inert with heated glass and which is isotropic.

3,900,329

GLASS COMPOSITIONS

Everett F. Grubb, Toledo; Erwin C. Hagedorn, Oregon, and Joseph R. Monks, Toledo, all of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 512,235, Dec. 7, 1965, Pat. No. 3,524,738.

This application Oct. 23, 1969, Ser. No. 871,386

Int. Cl. C03c 3/04

U.S. Cl. 106—52

2 Claims

1. A glass having an oxide composition consisting essentially, on a percent by weight basis, of

SiO ₂	51–63
Al ₂ O ₃	15–22
Total CaO + MgO expressed as CaO mole equivalent	10–22
Na ₂ O	3.5–10
K ₂ O	0–5
Total alkali metal oxide present as Na ₂ O or a mixture of Na ₂ O and K ₂ O expressed as Na ₂ O mole equivalent [5–15]	7–14

and the log viscosity of the glass at its liquidus temperature is at least 2.8, the liquidus of the glass compositions ranges from 2,060°F to about 2,320°F and the cooling time ranges from about 55 to 66 seconds.

3,900,330

ZnO-B₂O₃-SiO₂ GLASS COATING COMPOSITIONS CONTAINING Ta₂O₅ AND A SEMICONDUCTOR DEVICE COATED WITH THE SAME

Toshiro Moriguchi; Kiyoshi Miwa, and Takehiro Shibuya, all of Tokyo, Japan, assignors to Nippon Electric Glass Company, Limited, Tokyo, Japan

Filed Mar. 22, 1973, Ser. No. 343,642

Int. Cl. C03c 3/08, 3/30, 7/00

U.S. Cl. 106—54

4 Claims

1. A glass coating composition consisting of, by weight, 45–70% ZnO, 15–35% B₂O₃, 3.5–15% SiO₂ and 0.1–25% Ta₂O₅, said coating composition when disposed on a semiconductor device having the capacity to induce positive electric charges on the surface of said device.

3,900,331

PHOSPHATIC MATERIALS

John Edward Cassidy, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Oct. 12, 1972, Ser. No. 296,984

Claims priority, application United Kingdom, Oct. 19, 1971, 48574/71; Feb. 21, 1972, 7844/72

Int. Cl.² C04B 19/00

U.S. Cl. 106—85

13 Claims

1. A process for the preparation of a solid water-soluble aluminium phosphate which comprises spray-drying or freeze-drying a solution containing aluminium ions, phosphate ions and additionally the anions of a mineral acid other than phosphoric acid or of a carboxylic acid, the aluminium ions and phosphate ions being present in solution in a ratio of substantially 1:1.

3,900,332

LIGHTWEIGHT CEMENT COMPOSITIONS FOR BUILDING AND OTHER PURPOSES

Matthew L. Davis, 8399 Hough Ave., Cleveland, Ohio 44103

Filed Aug. 6, 1973, Ser. No. 385,731

Int. Cl. C04b 7/02

U.S. Cl. 106—97

6 Claims

1. A mixture for use in making waterproof concrete, said mixture consisting of from 44.14 to 67.63% by weight of crushed coke coated with a thermosetting resin in an amount constituting an additional 0.87 to 1.31% of the mixture, 29.78% to 44.68% portland cement, and not in excess of 6.38% lime.

3,900,333

MORTARS AND THE LIKE

Karl Knauf, Iphofen, Germany, assignor to Gebrüder Knauf Westdeutsche Gipswerke, Iphofen, Germany

Filed Dec. 29, 1972, Ser. No. 319,393

Claims priority, application United Kingdom, Jan. 3, 1972, 195/72

Int. Cl. C04b 11/00

U.S. Cl. 106—109

2 Claims

1. Particulate anhydrite, of whose particles from about 2 to 6% by weight have a particle size greater than about 5 mm, from about 13 to 23% by weight have a particle size of from about 5 to 3.15 mm, from about 33 to 40% by weight have a particle size of from about 3.15 to 1 mm, from about 17 to 23% by weight have a particle size of from about 1 to 0.2 mm, and from about 17 to 33% by weight have a particle size less than about 0.2 mm.

3,900,334

LIGNOCELLULOSIC MOLDING METHOD AND PRODUCT

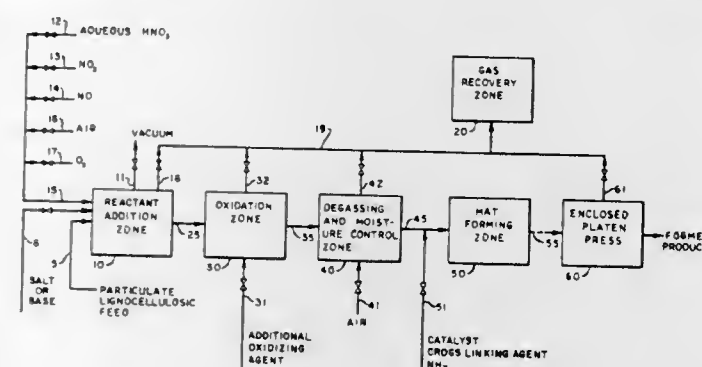
David L. Brink, Berkeley, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Continuation-in-part of Ser. No. 133,688, April 13, 1971, abandoned. This application Sept. 27, 1973, Ser. No. 401,444

Int. Cl. C08b 23/00, 27/24, 27/52

U.S. Cl. 106—163

17 Claims



1. A method of preparing an oxidized, particulate, lignocellulosic product which can be molded between plates in a press at elevated temperatures above about 100°C and elevated pressures above about 100 psig into a shaped article having good strength and dimensional stability, which comprises oxidizing the particulate, lignocellulosic material at an elevated temperature above about 0°C with at least one of nitric acid and oxygen gas in an amount and under conditions whereby said lignocellulosic material consumes from about 1.25 to 25 weight percent of oxygen, based on the dry weight of the particulate lignocellulosic material, and terminating such oxidation after evolution of gas has substantially ceased, followed by molding the oxidized lignocellulosic material between plates in a press under said elevated pressure and temperature above 100°C to effect cross-linking within the materials and densify the same and to reduce the moisture content in the molded product to below about 10 percent.

3,900,335

PAPER SIZING

Heinz Beck, Nidegger, Germany, assignor to Akzo N.V., Arnhem, Netherlands

Filed Apr. 1, 1974, Ser. No. 456,614

Claims priority, application Germany, Apr. 14, 1973, 2318894

Int. Cl. C08b 25/02, 27/52

U.S. Cl. 106—213

12 Claims

1. A stable sizing agent for paper comprising:
a. water;
b. an emulsifying agent; and
c. as the active sizing component an N,N'-alkyl-substituted aspartimide in which at least one alkyl substituent consists essentially of an alkyl chain of at least 16 up to about 40 carbon atoms.

3,900,336

NOVEL AUTOXIDIZABLE LIQUIDS

Frederick John Lubbock, Beaumaris, and Livia Polgar, Caulfield, both of Australia, assignors to Dulux Australia Ltd., Melbourne, Australia

Filed Apr. 25, 1974, Ser. No. 464,234

Claims priority, application Australia, May 18, 1973, 3366/73

Int. Cl.² C09D 3/26

U.S. Cl. 106—252

3 Claims

1. A liquid, non-polymeric, autoxidizable monocarboxylic fatty acid ester of a polyhydric alcohol, characterised in that the ester comprises on average 3.5–4.5 autoxidizable fatty acid residues and 0.8–1.4 acrylyl or methacrylyl residues per

molecule, has an acid value of 45–75 mgm KOH per gm provided by carboxyl groups attached thereto and a molecular weight of 1500–3000.

3,900,337

METHOD FOR STRIPPING LAYERS OF ORGANIC MATERIAL

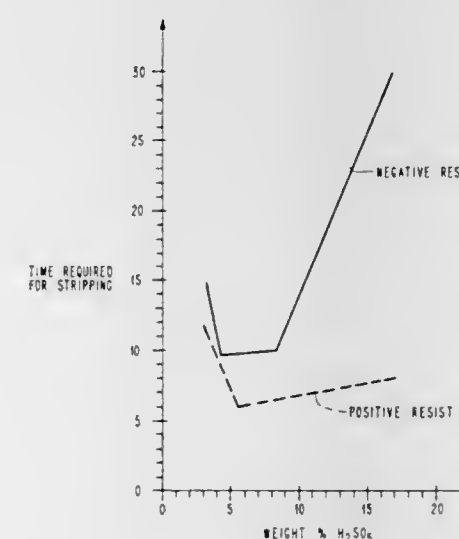
Wolfgang Beck, Boeblingen; Friedrich C. Brunner, Sindelfingen; Peter U. Frisch, Boeblingen; Blanka Ivancic, Boeblingen; Friedrich W. Schwerdt, Boeblingen, and Theodor Vogtmann, Holzgerlingen, all of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 5, 1974, Ser. No. 458,254

Int. Cl.² H01L 21/312; C09K 13/04

U.S. Cl. 134—3

8 Claims



1. Method for stripping layers of organic material from the surface a substrate which is resistant to oxidizing acids comprising:

providing a mixture of H₂SO₄ and H₂O₂ in a ratio of at least about 15:1, acid to peroxide, referring to volume quantities of the anhydrous chemical substances, using at least 95% by weight sulphuric acid and an at least 30% H₂O₂ by weight aqueous H₂O₂ solution; and immersing said substrate in said mixture.

3,900,338

WATER SOLUBLE BLOCK POLYMERS USED AS SILT CONTROL AGENTS

Regis Robert Rumpf, Coraopolis; David Elmer Farley, Oakdale, and Lawrence James Guilbault, McMurray, all of Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

Filed Apr. 30, 1974, Ser. No. 465,716

Int. Cl.² B08B 9/00; C02B 1/20, 5/06

U.S. Cl. 134—22 R

2 Claims

1. A method of removing alluvium and silt deposits and inhibiting the deposition of alluvium and silt in aqueous systems comprising adding to the water in said aqueous system at least 0.05 ppm of a polymer of the formula A-B-A wherein the A block represents from 10 to 100,000 mer units of acrylamide and the B block represents from 10 to 5,000 mer units of N-vinylpyrrolidone, flowing said water in contact with the deposits in said system thereby forming a flock and flushing said water containing said flock out of said system.

3,900,339

METHOD FOR WASHING A VESSEL IN A HERMETICALLY CLOSED CHAMBER

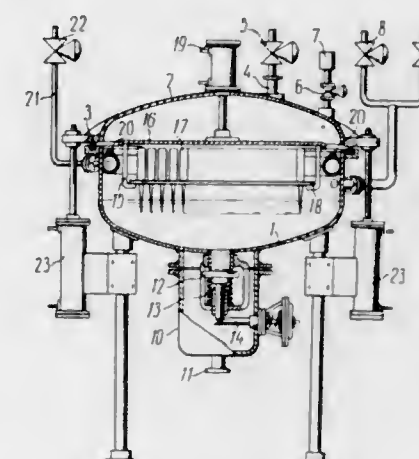
Nikolai Andreevich Filipin, V.O. Nalichnaya ul., 36, korpus 6, kv. 110; Jury Vladimirovich Alexander, Naberezhnaya reki Fontanki, 165, kv. 13; Jury Alexandrovich Poddubny, Pushkin, Shkolny pereulok, 29, kv. 24; Valentin Sergeevich Mozhzhukhin, ul. Sofii Kovalevskoi, 5, korpus 4, kv. 45, all of Leningrad, and Petr Petrovich Neugodov, Novye Chermushki, kvartal 34a, korpus 8, kv. 51, Moscow, all of U.S.S.R.

Filed July 7, 1972, Ser. No. 269,585

Int. Cl. B08b 3/00, 9/00

U.S. Cl. 134—22 R

4 Claims



1. A method of washing a vessel with an open neck, comprising:

- placing a vessel in a hermetically closed chamber with its neck facing downwardly,
- filling said chamber and the internal space of said vessel with steam by feeding the steam into the chamber to expel air therefrom and surround the vessel with steam,
- filling the chamber with washing liquid to a level above the neck of the vessel,
- again introducing steam into said chamber this time at a sufficiently high temperature and pressure to increase the pressure of the steam in the vessel and cause condensation of this steam whereby the vessel becomes filled with the washing liquid which replaces the thus condensed steam and
- condensing the steam in said chamber around the vessel by cooling the steam in the chamber which reduces the pressure within the vessel to effect boiling of the washing liquid inside said vessel and its consequent removal therefrom.

3,900,340

GALVANIC CELL STRUCTURES EMPLOYING COILED ELECTRODES

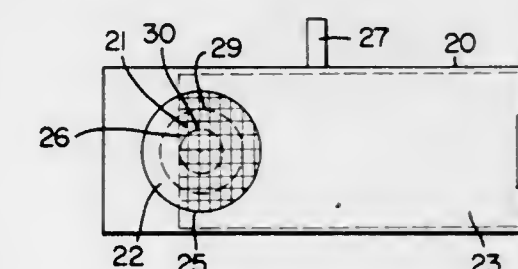
Sheridan H. Greaser, North Olmsted, and Edwin T. Russell, Avon Lake, both of Ohio, assignors to Union Carbide Corporation, New York, N.Y.

Filed Nov. 13, 1973, Ser. No. 415,318

Int. Cl. H01m 37/00

U.S. Cl. 136—13

14 Claims



1. A galvanic cell comprising, in combination, an electrically conductive cylindrical can closed at one end and opened

at the other end; a coiled electrode assembly disposed within said can and comprising an elongated sheet of the innermost wound electrode material of a first polarity electrode material, an elongated sheet of a second polarity electrode material and at least two separators all of which are helically wound about each other so that said at least one separator is interposed between said first polarity electrode material and said second polarity electrode material, and at least one separator is disposed about the outer circumference of the wound assembly; an electrolyte disposed in said can at least between said first and second electrodes; a cover for said can; an insulating member interposed between the cover and the upper wall of the can such that a seal is formed between said can and said cover; an electrically conductive means secured to the sheet of the innermost wound electrode material and secured to the cover thereby adopting said cover as the first terminal for the cell; and at least one opening disposed in the outermost separator so as to expose a portion of the outermost wound electrode material such that said exposed electrode material contacts the inner wall of the can with sufficient pressure thereby adopting said can as the second terminal of said cell.

3,900,341

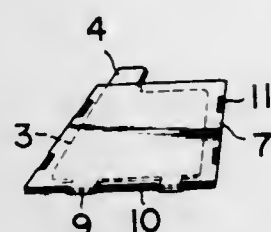
STORAGE BATTERY AND PROCESS FOR PRODUCING THE BATTERY

Ito Shoichiro, Tokuzi Ohya, and Shoji Nagai, all of Takatsuki, Japan, assignors to Yuasa Battery Company Limited, Japan
Filed June 21, 1973, Ser. No. 372,039

Claims priority, application Japan, July 12, 1973, 82774/47
Int. Cl.² H01M 4/73, 2/18

U.S. Cl. 136—54

5 Claims



1. A lead-acid type storage battery comprising: micro-pores an envelope type separator formed by a folded micro-porous sheet made of a synthetic resin having between several 10,000 to several 100,000,000 micro-pores per cm², with the diameter of such micro-pores being in a range between 100 Å to several μ, and said folded micro-porous sheet having portions of at least one of its sides heat-sealed together and having slits in its folded section; and

a battery plate housed within said envelope type separator, said battery plate having at least one leg; said slits within said micro-porous sheet being arranged so as to leave a sufficient portion of the folded section of said sheet for forming a protective cover for said leg of said battery plate; and said slits being arranged to enable active material generated during battery operation to drop from said battery plate without accumulating at the bottom of said separator.

3,900,342

SILVER CATALYST AND A METHOD OF ITS MANUFACTURE

Karl Hohne, and Renate Bogusch, both of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany
Filed Apr. 28, 1972, Ser. No. 248,386

Claims priority, application Germany, May 3, 1971, 2121748

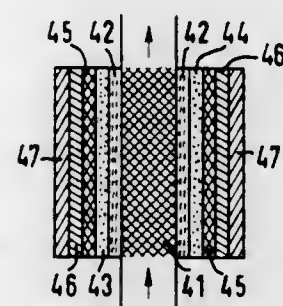
Int. Cl. H01m 13/00

U.S. Cl. 136—120 FC

10 Claims

1. A silver catalyst suitable for use as a fuel cell electrode material comprising an unleached composite of predominantly metallic silver disposed on two or more commingled

hydroxides of bismuth, cobalt, iron, nickel and titanium, in which the total metal content of said hydroxides is in the range



of from about 0.5 to about 5 weight %, based on the amount of silver in the finished composite.

3,900,343

METHOD OF ASSEMBLING STORAGE BATTERIES AND INJECTION MOULD FOR CARRYING OUT THE METHOD

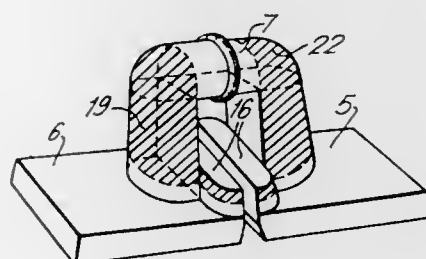
Gunnar Bergh, Kjell Brass, Jorgen Hessner, all of Oslo, and Thomas Varberg, Hosle, all of Norway, assignors to Sonnak Batterier A/S, Oslo, Norway

Filed Dec. 10, 1973, Ser. No. 423,403
Claims priority, application Norway, Dec. 12, 1972, 4572/72

Int. Cl. H01m 13/10, 35/32

U.S. Cl. 136—134 R

8 Claims



1. A process for assembling a multicell storage battery comprising a thermoplastic container having at least one internal partition for dividing the container into a plurality of compartments, said partition having an opening in its upper portion comprising the steps of forming a one-piece unit comprising positive and negative plates, at least one bridge for retaining edge of said positive and negative plates respectively and at least one connector joining bridges of opposite polarity between said compartments, inserting said one-piece unit into said container such that said connector is within the opening in said partition, placing the open side of a one-piece mould over said connector and a portion of said partition immediately surrounding said opening in such a manner as to establish a tight seal between said open side, the lower portion of said connector and said partition portion thereby forming the bottom of an injection mould from the lower portion of said connector and said partition portion, injecting a thermoplastic material into said mould thereby forming a creep current-resistant seal around said connector and restoring said partition, removing said one-piece mould, positioning a cover of said container and securing said cover to said container.

3,900,344

NOVEL INTEGRATABLE SCHOTTKY BARRIER STRUCTURE AND METHOD FOR THE FABRICATION THEREOF

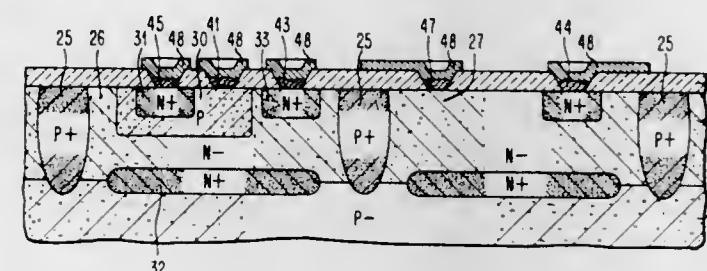
Ingrid E. Magdo, Hopewell, N.Y., assignor to IBM Corporation, Armonk, N.Y.

Filed Mar. 23, 1973, Ser. No. 344,455

Int. Cl. B44d 1/18; H01l 1/00

U.S. Cl. 148—1.5

10 Claims



1. A method of forming Schottky-Barrier contacts to a silicon surface comprising
depositing a layer consisting essentially of platinum on said surface,
heating to form a platinum silicide layer on a silicon substrate having a maximum conductivity-determining impurity C₀ of 10¹⁸ atoms/cm³,
depositing a metallic layer consisting essentially of aluminum on said platinum silicide layer, and
sintering the substrate at a temperature in the order of from 400° to 550°C. for at least 1 hour.

3,900,345

THIN LOW TEMPERATURE EPI REGIONS BY CONVERSION OF AN AMORPHOUS LAYER

Israel A. Lesk, Scottsdale, Ariz., assignor to Motorola, Inc., Chicago, Ill.

Filed Aug. 2, 1973, Ser. No. 385,195

Int. Cl.² H01L 7/00

U.S. Cl. 148—1.5

3 Claims

1. A method for forming a thin layer of monocrystalline silicon atop a supporting monocrystalline silicon substrate comprising the steps of:

providing a monocrystalline silicon substrate, said substrate having a thin oxide layer on its upper surface;
depositing a polycrystalline silicon amorphous layer atop the thin oxide layer on said monocrystalline silicon substrate at a temperature lying within the range of 500°C to 600°C, thereby forming an interface including the thin oxide layer between said monocrystalline substrate and said polycrystalline silicon layer;

implanting ions through said polycrystalline silicon layer into said substrate to a sufficient extent to damage the interface including the thin oxide layer between said substrate and said polycrystalline silicon layer, thereby establishing intimate contact between said substrate and polycrystalline silicon layer; and
raising the temperature of said substrate and polycrystalline silicon layer to a range of 600°C to 900°C for converting said polycrystalline silicon amorphous layer to a monocrystalline silicon layer.

3,900,346

METHOD FOR THE AUTOMATIC GUIDANCE OF A WORK TOOL ON THE CURVES OF INTERSECTION OF TWO PIPES OR TUBES

Willi Muller, Ophovenstr. 14-20, 567 Opladen, and Hans Noll, Am Werth 16, 4019 Hittorf, both of Germany

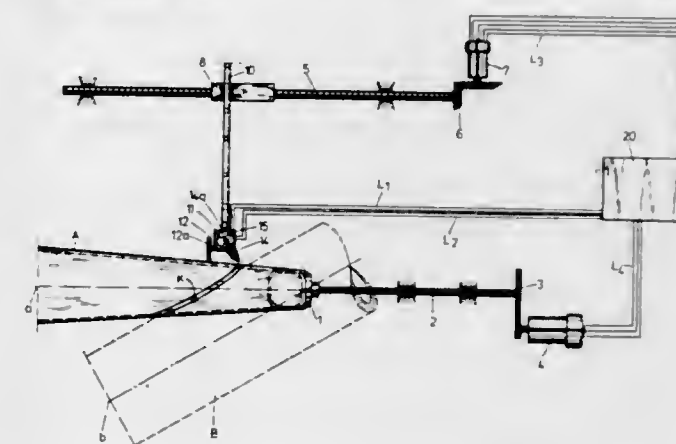
Filed Sept. 10, 1973, Ser. No. 395,638

Claims priority, application Germany, Nov. 4, 1972, 2254147

Int. Cl. B23k 7/04, 7/10

U.S. Cl. 148—9.6

4 Claims



1. A method for automatically guiding a cutting tool on the curve of intersection of two pipes, one of which has a non-cylindrical cross section and in which the axes of the pipes are at an acute cutting angle to each other, comprising the steps of: effecting relative rotation between one of the pipes and the cutting tool about the axis of the pipe, and moving the cutting tool along the pipe axis with a speed of v parallel to the pipe axis in accordance with the following equation:

$$v = \frac{R}{\sin \alpha} + \frac{r}{\tan \alpha} - \cos \alpha \frac{R}{\sin \alpha} - \cos \alpha \frac{r}{\tan \alpha}$$

in which

R = the radius of the latter-mentioned pipe;

r = the radius of the other pipe;

α = the sharp angle under which the axes of the two pipes intersect;

φ = the angle by which the pipe R is rotated;

$$\sin \gamma = \frac{\sin \alpha \frac{r}{\sin \alpha}}{\frac{R}{\sin \alpha}}$$

3,900,347

COLD-DRAWN, STRAIGHTENED AND STRESS RELIEVED STEEL WIRE FOR PRESTRESSED CONCRETE AND METHOD FOR PRODUCTION THEREOF

James J. Lorenzetti, Franklin, and James N. Cordea, Monroe, both of Ohio, assignors to Armco Steel Corporation, Middletown, Ohio

Filed Aug. 27, 1974, Ser. No. 500,932

Int. Cl. C21d 9/52

U.S. Cl. 148—12 B

7 Claims

4. A method of producing cold-drawn steel wire for prestressed concrete having reduced loss due to stress relaxation and good ductility, comprising the steps of providing a silicon killed, hot reduced rod stock consisting essentially of, by weight percent, from about 0.70 to about 0.90 percent carbon, about 0.5 to about 1.0 percent manganese, about 0.025 percent maximum phosphorus, about 0.035 maximum sulfur, about 0.15 to about 0.35 percent silicon, about 0.010 to about 0.020 percent total nitrogen, about 0.010 to about

0.030 percent columbium, and remainder iron except for incidental impurities, austenitizing said stock by heating in the range of about 980° to about 1030°C, transforming said stock to a fully pearlitic microstructure by isothermal heating to about 540° to about 590°C, and air cooling, whereby to obtain a pearlite colony size ranging between about 15 and 30 μ , and cold-drawing, straightening and stress relieving said rod stock into wire of desired final diameter.

3,900,348

METHOD FOR PROTECTING COPPER SURFACES AGAINST CORROSION

Hans Zukriegel, and Elke Karl Schrom, both of Vienna, Austria, assignors to Karl Entzmann, Vienna, Austria, a part interest

Filed Dec. 11, 1973, Ser. No. 423,684

Claims priority, application Austria, Dec. 13, 1972, 10601/72

Int. Cl.² C23C 1/10; C23F 7/26

U.S. Cl. 148—6,24

3 Claims

1. A method for protecting copper surfaces against corrosion, comprising treating the surfaces to be protected with a solution of elementary sulfur in the proportion of 15 to 20% by weight in a hydroxyalkyl amine, said solution being diluted with H₂O in the ratio of 1:100 to 1:1000 before application.

3,900,349

SILICON BRASS RESISTANT TO PARTING CORROSION

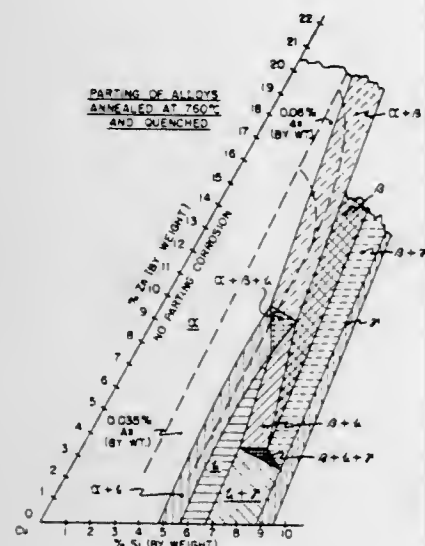
Louis P. Costas, Cheshire, Conn., assignor to The Anaconda Company, New York, N.Y.

Continuation-in-part of Ser. No. 434,613, Jan. 18, 1974, abandoned, which is a continuation of Ser. No. 222,508, Feb. 1, 1972, abandoned, which is a continuation-in-part of Ser. No. 887,927, Dec. 24, 1969, abandoned. This application Mar. 19, 1974, Ser. No. 452,618

Int. Cl. C22c 9/10; C22f 1/08

U.S. Cl. 148—32

2 Claims



1. A silicon brass alloy resistant to parting corrosion consisting essentially of about 3–21 percent by weight zinc, an amount of silicon in the range of about 2.5 to about 7 percent, said amounts of zinc and silicon being sufficient to produce a structure consisting of alpha plus zeta phases in the brass, from about 0.030 percent up to the percentage by weight of solid solubility of one or more elements of the group consisting of arsenic, antimony and phosphorus remainder essentially copper, said alloy having been rapidly cooled to room temperature from a temperature in the range of 500°C to 760°C and consisting of alpha plus zeta micro structure.

3,900,350 METHOD OF MANUFACTURING SEMICONDUCTOR DEVICES IN WHICH SILICON OXIDE REGIONS INSET IN SILICON ARE FORMED BY A MASKING OXIDATION, WHEREIN AN INTERMEDIATE LAYER OF POLYCRYSTALLINE SILICON IS PROVIDED BETWEEN THE SUBSTRATE AND THE OXIDATION MASK

Johannes Arnoldus Appels, and Wilhelmus Henricus Cornelis Gerardus Verkuiljen, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

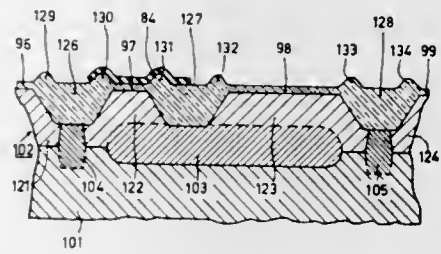
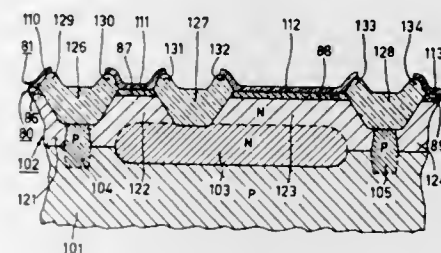
Filed Apr. 4, 1973, Ser. No. 347,806

Claims priority, application Netherlands, Apr. 8, 1972, 7204741

Int. Cl.² H01L 21/76, 27/04, 21/20

U.S. Cl. 148—175

11 Claims



1. A method of manufacturing a semiconductor device comprising providing a semiconductor body comprised mainly of a monocrystalline silicon portion, providing on the surface of the semiconductor body a layer of polycrystalline silicon material, providing on the polycrystalline silicon layer a layer of material capable of masking silicon against oxidation, patterning at least the oxidation masking layer to form openings at the areas where it is desired to inset an oxide, and thereafter oxidizing said body at the said openings until an inset oxide is formed that penetrates down into the monocrystalline silicon portion to a depth substantially below that of adjacent polycrystalline silicon layer portions.

3,900,351

METHOD OF PRODUCING SEMICONDUCTOR INTEGRATED CIRCUITS WITH IMPROVED ISOLATION STRUCTURE

Masashi Mukogawa, and Takashi Takagaki, both of Tokyo, Japan, assignors to Nippon Electric Company Limited, Tokyo, Japan

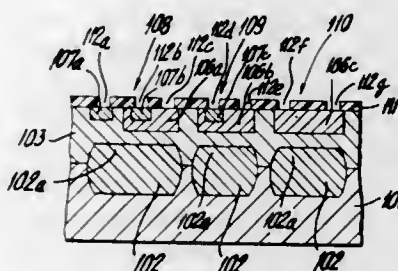
Filed Nov. 21, 1973, Ser. No. 417,783

Claims priority, application Japan, Nov. 24, 1972, 47-118175

Int. Cl.² H01L 21/22

U.S. Cl. 148—186

4 Claims



1. A method of producing a semiconductor integrated circuit comprising the steps of forming highly doped regions

separated from each other on the surface of a semiconductor substrate, depositing a semiconductor layer on said surface, forming circuit elements in said semiconductor layer above each of said highly doped regions and thereafter diffusing a selected impurity through said semiconductor substrate from the entire back surface thereof and into regions of said semiconductor layer between said circuit elements by using the masking action of said highly doped regions, thereby forming high-resistivity regions between said circuit elements in said semiconductor layer, said high-resistivity regions being sufficiently high to effect electrical isolation between said circuit elements, wherein said impurity has a high diffusion coefficient in said semiconductor substrate and promotes conductivity of a type opposite to that of said semiconductor layer.

3,900,352

ISOLATED FIXED AND VARIABLE THRESHOLD FIELD EFFECT TRANSISTOR FABRICATION TECHNIQUE

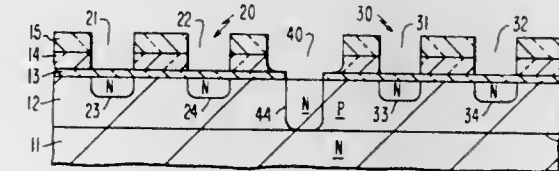
Michael David Potter, Grand Isle, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 1, 1973, Ser. No. 411,857

Int. Cl.² H01L 21/223

U.S. Cl. 148—187

10 Claims



1. A method of fabricating a variable threshold field effect transistor having source drain and gate regions and a fixed threshold field effect transistor having source, drain, and gate regions in the same semiconductor body with an isolation region between the devices comprising the steps of depositing on the semiconductor body a series of insulating layers, adjacent layers having different etch ratios, depositing a first mask on said layers which defines the source, drain, and gate regions of both a fixed threshold field effect transistor and a variable threshold field effect transistor, selectively etching selected ones of said layers through said mask to delineate the source, drain, and gate regions of the transistors defined by said mask in said selected layers to selectively expose surface portions of the body, selectively introducing impurities into the exposed surface portions of the body to create separated diffusions in the body, masking the gate region of the variable threshold transistor, selectively removing the insulating layers in the gate region of the fixed threshold transistor, growing a gate oxide in the gate region of the fixed threshold transistor, and forming electrodes on said diffusions and over the gate regions of said fixed threshold and variable threshold transistors.

3,900,353

HIGH STRENGTH ALUMINUM INTERCONNECTIONS FOR MICROELECTRONICS PACKAGING

Carroll L. Marriott; Hans E. Patzer, both of Ellicott City; Ronald D. Hall, Baltimore, all of Md.; Charles D. Caposell, Alexandria, Va., and Aaron David Klein, Olney, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 16, 1974, Ser. No. 470,695

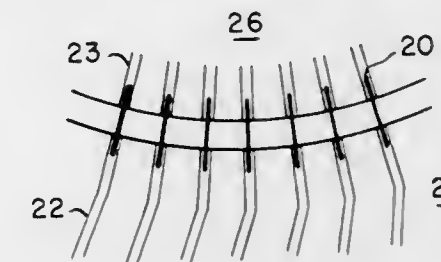
Int. Cl.² C23F 1/02

U.S. Cl. 156—3

5 Claims

1. A method for making a supported-beam interconnecting segment comprising the steps of:

coating a section of film carrier material on both top and bottom surfaces with a film of electrically conductive material; forming an image of the desired carrier-strip shape on the top film and the desired beams on the bottom film; etching away on the top surface all of the conductive film except that covering the carrier strip; etching away on the bottom surface all of the conductive material except that comprising the desired beams;



etching away all film carrier material except that comprising the carrier strip; after bonding the beams to other electrical elements so as to form interconnections between said elements, etching away the remaining conductive film on the top surface of the carrier strip and then etching away the carrier strip material itself, leaving only the bonded beams and their associated electrical elements.

3,900,354

METHOD FOR BONDING PILE YARNS ONTO RIGID THERMOPLASTICS

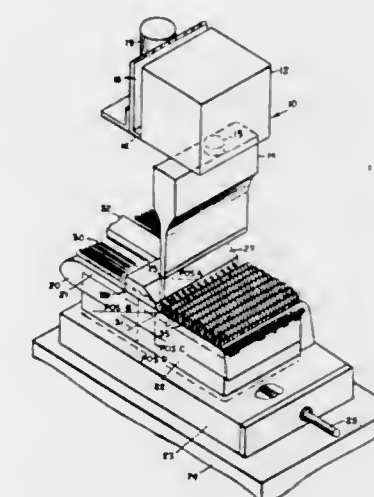
Charles W. Carpenter, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Continuation of Ser. No. 888,708, Dec. 29, 1969, abandoned, which is a continuation-in-part of Ser. No. 780,038, Nov. 29, 1968, Pat. No. 3,640,786, which is a continuation-in-part of Ser. No. 731,221, May 22, 1968, abandoned. This application July 26, 1972, Ser. No. 275,385 The portion of the term of this patent subsequent to Feb. 8, 1989, has been disclaimed.

Int. Cl. B32b 31/16

U.S. Cl. 156—73.2

6 Claims



1. In a method of covering the surface of an article with tufted yarn wherein the article is advanced in an endwise direction, a plurality of yarns are guided onto the surface of the article, loops are formed in the yarns upstanding from the surface of the article with a portion of each loop engaging the surface along a bonding line extending transversely of the path of advancement of said article; the improvement of which comprises:

providing a substantially rigid article of a thermoplastic material; providing yarns of an oriented thermoplastic material;

engaging the yarns and thermoplastic article under pressure along a bonding line between a support and the working surface of a sonic device;
focusing the sonic device precisely along the bonding line to avoid loss in orientation level of the yarns between the bonding lines;
sonically fusion bonding the yarns to the thermoplastic article;
releasing the thermoplastic article and yarns from between said support and said sonic device;
advancing the thermoplastic article a distance corresponding to the desired loop spacing; and
repeating the above steps to cover the surface of said rigid article with tufted thermoplastic yarn.

3,900,355

METHOD OF INTERNALLY WINDING REINFORCING MATERIAL AND OF PRODUCING REINFORCED SYNTHETIC PIPE

Toshiho Goto, Osaka, and Yoshinori Nishino, Sen-nan, both of Japan, assignors to Hitachi Shipbuilding and Engineering Co. Ltd., Osaka, Japan

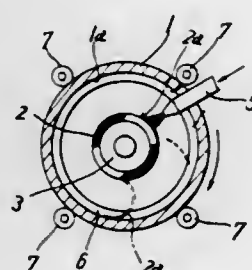
Filed Mar. 14, 1973, Ser. No. 341,119

Claims priority, application Japan, Apr. 15, 1972, 47-37984; Apr. 15, 1972, 47-37992; Apr. 15, 1972, 47-37993

Int. Cl. B32b 31/16

U.S. Cl. 156-74

13 Claims



1. The method of applying a reinforcing material to an internal cylindrical surface which includes:
winding the reinforcing material on a shaft;
placing the shaft concentrically within a cylinder having said internal cylindrical surface thereon and rotatable on the axis thereof, the shaft having a diameter less than that of the cylindrical surface thereby providing an annular space between the shaft and the cylindrical surface; and,
rewinding the reinforcing material from the shaft onto the internal cylindrical surface by rotating at least the cylinder to produce a rotational speed difference between the cylinder and the shaft such as to unwind the reinforcing material from the shaft, the reinforcing material reversing direction within said annular space during the rewinding step.

3,900,356

METHOD FOR MAKING A CELLULAR CUSHIONING STRUCTURE

Walter T. Koch, Havertown, Pa.; Eugene G. Horsky, Claymont, Del., assignors to FMC Corporation, Philadelphia, Pa.

Filed Mar. 28, 1973, Ser. No. 345,768

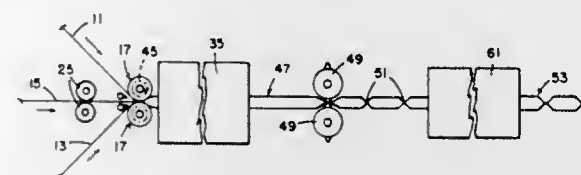
Int. Cl. B32b 31/06

U.S. Cl. 156-145

8 Claims

1. A method of making a cellular structure including the steps of sealing like plies of uniaxially oriented thermoplastic polymeric films in planar relationship to the opposite sides of an intermediate flexible ply along continuous areas which are spaced from each other and extend at substantially right angles to the direction of film orientation with the areas at which the respective film plies are sealed to the intermediate ply being in alternating relationship with each other, heating the

overlapping plies to at least partially relax the orientation in the films, and delivering and containing between the interme-



mediate ply and each of the film plies a fluid which is under a pressure greater than that of the ambient atmosphere whereby the intermediate ply is urged into a corrugated configuration.

3,900,357

COMPOSITE MATERIAL SPRINGS AND MANUFACTURE

Paul V. Huchette, and Homer H. Hall, Jr., both of Latrobe, Pa., assignors to Edgewater Corporation, Latrobe, Pa.

Continuation-in-part of Ser. No. 34,117, May 4, 1970, abandoned. This application Nov. 30, 1972, Ser. No. 310,815

Int. Cl.² B65H 81/00; B32B 31/00; B28B 11/12

U.S. Cl. 156-185

10 Claims



1. Method for forming a fiber-reinforced composite spring having a tension side and a compression side, a neutral axis extending longitudinally between its longitudinal ends, and a varying cross-sectional area measured in a plane perpendicular to the neutral axis with the cross-sectional area diminishing in approaching at least one of the longitudinal ends of the spring providing a tapered configuration, comprising the steps of

providing a plurality of varying-length plies comprising solely non-woven fibers in side-by-side, longitudinally oriented, unidirectional relationship, such fibers being held in a curable matrix material,
providing a plurality of elongated full-length plies comprising solely non-woven fibers in side-by-side, longitudinally oriented, unidirectional relationship with the fibers being held in a curable matrix material, such elongated plies extending at least over the full longitudinal length of the composite spring being formed,
providing a molding means having a configuration conforming to the desired tapered configuration of the elongated spring being formed,
assembling such varying length plies and such elongated full-length plies to form a composite spring, with shorter length plies of the varying length plies being centrally located contiguous to the neutral axis and plies of progressively increasing length of such varying length plies being located outwardly from such neutral axis in the direction of both the tension and compression sides of the composite spring being formed and including
placing an elongated ply comprising solely nonwoven fibers in side-by-side longitudinally oriented, unidirectional relationship along the neutral axis to extend between longitudinal ends of the spring being formed, with such plurality of elongated full length plies overlying such varying length plies, and
treating such assemblage of plies to cure such matrix material to form a solid unitary structure in which the non-woven fibers of such assemblage of plies are bonded together by the cured matrix material.

3,900,358

PROCESS FOR MAKING A FUEL ELEMENT FOR HIGH TEMPERATURE NUCLEAR REACTORS

Roke Bujas, and Claude Ringot, both of Gif-sur-Yvette, France, assignors to Commissariat a l'Energie Atomique, Paris, France

Continuation of Ser. No. 213,283, Dec. 29, 1971, abandoned.

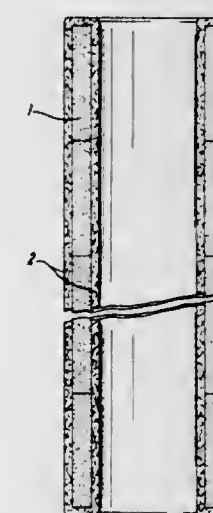
This application Mar. 8, 1973, Ser. No. 339,292

Claims priority, application France, Jan. 8, 1971, 71.00543; Dec. 7, 1971, 71.43837

Int. Cl. B29c 17/02

U.S. Cl. 156-215

2 Claims



1. A process for making a fuel element for high temperature nuclear reactors comprising the steps of forming a central fuel compact of successive annular segments, impregnating at least one carbon fabric with a mixture of graphite powder and thermosetting resin, jacketing said compact internally and externally with said impregnated fabric and bonding said fabric to said compact by polymerization and curing of the thermosetting resin and degassing the fuel element.

2. A process for making a fuel element for high temperature nuclear reactors comprising the steps of forming a central fuel compact of successive annular segments containing a mixture of graphite powder and thermosetting resin, jacketing said compact internally and externally with at least one sheet of carbon fabric and bonding said fabric to said compact by polymerization and curing of the thermosetting resin and then degassing the fuel element.

3,900,359

METHOD AND APPARATUS FOR TELEVISION TUBE SHADOW MASK

Joseph J. Bakewell, Boxford, Mass., assignor to Dynamics Research Corporation, Wilmington, Mass.

Filed Feb. 26, 1973, Ser. No. 335,503

Int. Cl. B44d 1/18; H01j 29/46

U.S. Cl. 156-242

22 Claims

1. A method of fabricating a picture tube shadow mask in a predetermined curvature employing a mandrel having said predetermined curvature to a curved surface thereof and further having a plurality of columns extending outward from regions of said curved surface arranged in a preset pattern, said method comprising the steps of:

forming a curved layer of a material onto said surface to a predetermined thickness surrounding said columns;
said columns substantially defining holes through said layer; and
separating said layer from said surface to provide said shadow mask.

14. A method of fabricating a multiplicity of picture tube shadow masks having substantially identical predetermined curvature and aperture placement employing a mandrel having said predetermined curvature to a curved surface thereof

and further having a plurality of areas thereon arranged in a preset pattern, said method comprising the steps of:

forming a plurality of columns to extend outward from regions of said curved surface coextensive with said plurality of areas;
forming a first layer of a material onto said surface to a predetermined thickness surrounding said columns;
separating said layer from said surface to provide a single shadow mask; and
repeating the first and second mentioned forming steps and said removing step to provide an identical one of said shadow masks on each repetition.

3,900,360

SELF-HEATING COMPOSITE BONDING MEANS AND METHOD

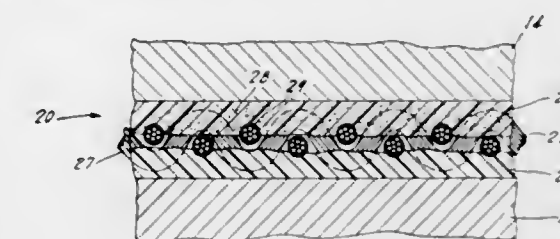
Alfred F. Leatherman, Columbus, Ohio, assignor to William C. Heller, Jr., Milwaukee, Wis.

Filed Oct. 20, 1972, Ser. No. 299,349

Int. Cl. B29c 27/04

U.S. Cl. 156-272

8 Claims



1. A process for thermal fusion bonding first and second thermally bondable plastic bodies formed of materials exhibiting mutual bonding incompatibility, said method comprising the steps of:

providing a composite bonding agent including first and second thermoplastic layer means having bonding compatibility with the first and second bodies, respectively, and bonding incompatibility with each other, said layer means being at least partially embedded in a medial fibrous stratum of strands for joinder thereto, at least one of said layer means having dispersed therein a particulate susceptor heatable upon exposure to a selected form of indirectly applied energy;
juxtapositioning the first and second bodies so that the portions thereof to be bonded are contiguous;
applying the bonding agent to the bodies with the first and second thermoplastic layer means adjacent the bodies with which they have bonding compatibility;
exposing the composite bonding agent to a selected form of indirectly applied energy to heat said first and second thermoplastic layer means and the adjacent portions of the bodies to heat sealing temperatures; and
bringing said first and second bodies into abutment with said composite bonding agent to form thermal fusion bonds with the first and second thermoplastic layer means, respectively.

3,900,361

HOT FUSION COATING MASSES

Gerhard Hoppe, Marl-Sinsen; Heinrich Leppke, Gelsenkirchen-Buer; Leo Rensmann, and Helmut Kehr, both of Dorsen, all of Germany, assignors to Veba-Chemie AG, Gelsenkirchen-Buer, Germany

Division of Ser. No. 194,023, Oct. 29, 1971, abandoned. This application July 2, 1973, Ser. No. 376,044

Claims priority, application Germany, Oct. 30, 1970, 2053365

Int. Cl. C09j 5/00; B32b 27/32

U.S. Cl. 156-334

7 Claims

1. In a process for adhering two substances together wherein to one substance there is applied an adhesive at an elevated temperature which when it cools adheres thereto and

the substance containing said adhesive is applied to a second substance which abuts the adhesive on the first substance and is heat fused thereto, improvement wherein said adhesive is a fusion coating mass consisting essentially of an atactic homo or co-polymer of butene-1 said fusion coating mass containing at least 60% by weight solids.

2. A process according to claim 1 wherein the fusion coating mass contains a salt of manganese, a salt of aluminum, a salt of sodium, a salt of potassium, a salt of iron, an oxide of manganese, an oxide of aluminum, an oxide of sodium, an oxide of potassium, an oxide of iron, up to 30% by weight polyisobutylene, barium sulfate, crystalline chalk, amorphous chalk, heavy spar, talc, asbestos, clay, low molecular weight polyolefin having a wax-like consistency or paraffin.

3,900,362 TAPING MACHINE

Edward W. Schaffer, 1690 Walnut Ave., Winterpark, Fla. 32789

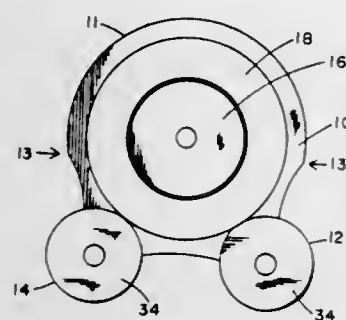
Continuation of Ser. No. 332,066, Feb. 13, 1973, abandoned.

This application Nov. 18, 1974, Ser. No. 524,513

Int. Cl.² B44C 7/04, C09J 7/02

U.S. Cl. 156—577

10 Claims



1. A taping machine for applying masking material for painting comprising in combination:

a support means;

first and second resilient rollers mounted on said support means about generally parallel rotational axes;

a rotatable hub mounted on said support means and adapted to carry a roll of tape in position to feed tape onto said first and second resilient rollers.

3,900,363 METHOD OF MAKING CRYSTAL

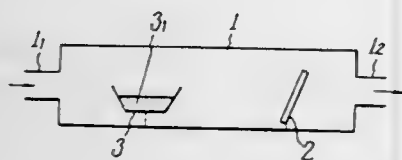
Kohta Teraoka, and Toshio Nakano, both of Kawasaki, Japan, assignors to Nippon Columbia Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 15, 1972, Ser. No. 306,891

Int. Cl. C23c 13/00

U.S. Cl. 156—612

1 Claim



1. A method of growing a crystal comprising steps in the following sequence:

- disposing a substrate of gallium arsenide inside one end of an open tube;
- disposing indium in said open tube near the second end and heating it to about 900° C;
- passing a first gas over said indium and said substrate comprising a mixture of argon and gaseous phosphorous trichloride into said tube from the second end and at a flow rate of about 20 cm³ per minute to gas etch the surface of said substrate while the substrate is at a temperature of about 450°–500° C; and
- passing a second gas over said indium and said substrate comprising a mixture of hydrogen and gaseous phosphorous trichloride into said tube from the second end at a flow rate of about 20 cm³ per minute to grow a crystal of indium phosphide on said substrate while the substrate is at a temperature of about 550°–650° C.

3,900,364 ROLL-OUT MODULE FOR A PAPERMAKING PRESS SECTION

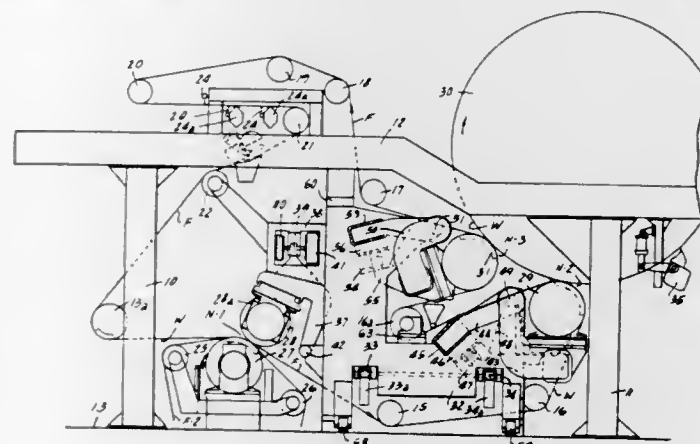
John P. Nelson, Beloit, Wis.; Robert E. Page, Davis, Ill., and Paul S. Hendrickson, Beloit, Wis., assignors to Beloit Corporation, Beloit, Wis.

Continuation-in-part of Ser. No. 250,961, May 8, 1972, abandoned. This application Feb. 28, 1974, Ser. No. 446,591

Int. Cl. D21f 3/00, 3/06

U.S. Cl. 162—274

6 Claims



1. In a press section of a paper making machine, the combination comprising:

a press frame having a front frame section and a rear frame section;

a plurality of first press rolls and a plurality of second press rolls forming nips therebetween,

said second rolls supported between said frame sections, said first and second rolls located between said frame sections in operating position;

a looped felt passing through said press nips; felt rolls positioned for supporting said looped felt with said second rolls on said frame sections;

a roll-out module supporting said first press rolls;

mobile means supporting said module for axial movement of the first rolls from an operating first position between the frame sections and a servicing second position with the first rolls on said module in an aisle in front of the paper machine outwardly of said frame sections,

said second press rolls remaining stationary when said module is moved;

guide rolls;

said guide rolls and said second rolls positioned so that said felt is fully supported thereon so that said first rolls can be movable axially into servicing position relative to the felt while the felt is strung on said second rolls.

6. A press arrangement for a paper machine comprising:

a press couple including a pair of press rolls forming a press nip therebetween;

- a first support for one of the rolls;
- a second support for the other of said rolls including a pair of swing arms carrying the roll ends;
- a movable cross-machine beam extending parallel to the rolls carried by the swing arms and connected at its ends to the swing arms;
- a stationary beam coextensive with the movable beam; and a plurality of pressure members positioned between the beams at axially spaced intervals along said beams for applying a force to the movable beam thereby applying a force to the arms for controlling nip pressure.

3,900,365 FLUID SHUT-DOWN SYSTEM FOR A NUCLEAR REACTOR

Francis W. Barclay; J. Richard Frey, both of Pinawa; James N. Wilson, and Robert W. Besant, both of Saskatoon, all of Canada, assignors to Atomic Energy of Canada Limited, Ottawa, Canada

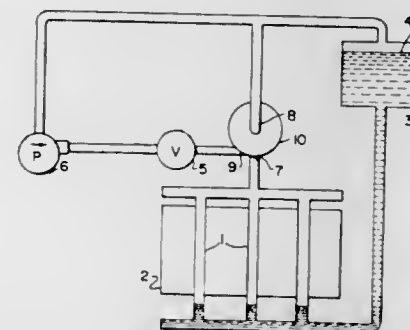
Filed Oct. 5, 1973, Ser. No. 403,794

Claims priority, application Canada, Oct. 10, 1972, 153528

Int. Cl. G21c 7/22

U.S. Cl. 176—22

12 Claims



- A shut-down system for a nuclear reactor comprising:
 - at least one upwardly extending poison tube passing through the reactor core, said tube having an upper and lower end;
 - a reservoir for liquid poison communicating with the lower end of said tube;
 - means for applying pressure to the liquid in the reservoir biasing the liquid for flow into the reactor core through said poison tube;
 - a fluidic vortex valve having a supply port, outlet port and control port, said supply port communicating with the upper end of said tube;
 - gas supply means for supplying a substantially continuous flow to the control port of the vortex valve which results in high impedance to flow from the supply port to the outlet port;
 - means for applying gas pressure to the poison tube for preventing the poison from entering the reactor core when the vortex valve is in the high impedance state;
 - means for modulating the flow of gas to said control port in response to deviations of the liquid poison level in said tubes from a predetermined level, in order to maintain the poison at the predetermined level; and
 - control means for interrupting the flow to the control port whereby the vortex valve is switched to a low impedance state allowing release of gas pressure from the poison tube such that the liquid poison enters the core effecting reactor shut-down.

3,900,366 EMERGENCY COOLING APPARATUS FOR REACTORS

Seiichiro Sakaguchi, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

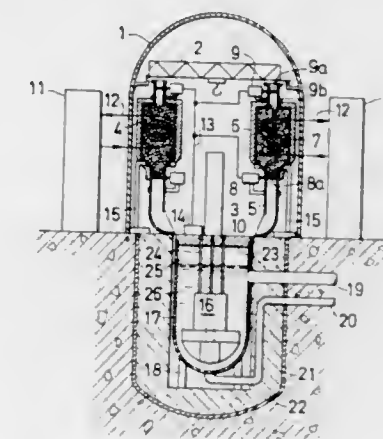
Filed Apr. 2, 1974, Ser. No. 457,365

Claims priority, application Japan, Apr. 2, 1973, 48-36727

Int. Cl. G21c 9/00

U.S. Cl. 176—37

11 Claims



- Emergency cooling apparatus for nuclear reactors having a normally sealed core container for containing a nuclear core, a coolant of liquid metal around the core within the core container, a cover gas above the liquid coolant within the core container, and a second auxiliary apparatus container above the core container, which comprises: means for detecting at least one of the cover gas and the liquid metal coolant leaked into the second container to produce an emergency signal, means for containing a heat exchange material that is inert to the liquid metal coolant; means for cooling the heat exchange material during the operation of the nuclear reactor; means for dispensing the heat exchange material to the lower portion of said second container where the liquid metal coolant would collect upon leakage to contact with the leaked coolant; and valve means normally preventing dispensing of the heat exchange material and releasing the heat exchange material to said dispensing means only in response to said emergency signal in accordance with the detection of the leaked coolant or cover gas by the means for detecting.

3,900,367 RESTRAINT SYSTEM FOR CORE ELEMENTS OF A REACTOR CORE

Gottfried Class, Blankenlock, Germany, assignor to Gesellschaft fur Kernforschung m.b.H., Karlsruhe, Germany

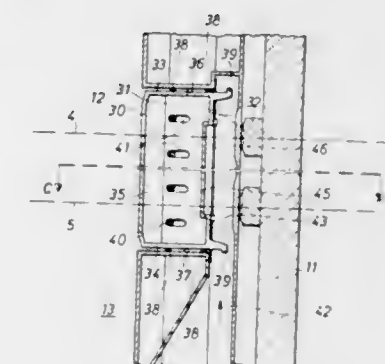
Filed Dec. 6, 1972, Ser. No. 312,577

Claims priority, application Germany, Dec. 15, 1971, 2162171

Int. Cl. G21c 19/12

U.S. Cl. 176—87

8 Claims



- In a restraint system for elongated prismatic core elements having longitudinal axes and arranged in a close, side-by-side, parallel relationship forming a core element bundle, the restraint system being of the type that includes restraint elements arranged circumferentially about the core element bundle and exerting thereto a radially inwardly directed re-

straining force generating friction forces between the core elements along at least one plane of restraint extending through the core element bundle transversely to said axes at least at one point along its length, the improvement comprising rolling elements arranged between adjoining core elements in the zone of said plane, said adjoining core elements being in contact with their respective rolling elements in said plane, whereby said core elements being in engagement with one another by rolling friction in said plane in response to said force; means for supporting a plurality of said rolling elements in each core element along the circumference thereof; a plurality of resilient bar members secured to each core element along the circumference thereof in the zone of said plane, said resilient bar members being arranged for flexing radially inwardly with respect to the core element to which they are secured, any adjoining two core elements being so oriented with respect to one another that any said rolling element supported in one core element engages one of said bar members supported in the adjoining core element, said resilient bar members constituting means for providing a resilient engagement between at least one of said rolling elements and the adjoining core element it contacts.

3,900,368

FERMENTATIVE PRODUCTION OF RIBOFLAVINE

Hitoshi Enai, Zushi; Katsuaki Sato; Yasuo Anzai, both of Kawasaki, and Hiroshi Okada, Tokyo, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Oct. 15, 1973, Ser. No. 406,319

Claims priority, application Japan, Oct. 26, 1972, 47-107504

Int. Cl. C12d 5/04

5 Claims

U.S. Cl. 195—96

1. A method of producing riboflavine which comprises culturing a riboflavine-producing, artificially induced mutant of a parent microorganism of the genus *Bacillus* on an aqueous fermentation medium including assimilable sources of carbon and nitrogen, inorganic ions, and minor organic nutrients required for the growth of said mutant until riboflavine accumulates in said medium; and recovering the accumulated riboflavine from said medium, said parent microorganism being unable to produce riboflavine when cultured on said medium.

3,900,369

COAL CHARGING COVER AND SEAL FOR THE COAL CHARGING HOLE OF A COKE OVEN

Sadanao Irie, Izumisano; Kenichi Tomomoto, Kaizuka; Toyohiko Akahori, and Kazuhisa Simomura, both of Bizen, all of Japan, assignors to Osaka Gas Company, Ltd., Osaka and Kyushu Refractories Co., Ltd., Bizen, both of Japan

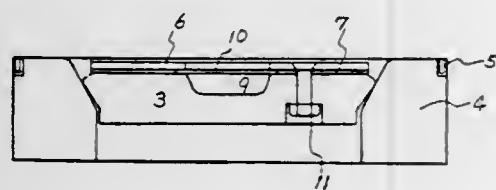
Filed Dec. 10, 1973, Ser. No. 423,147

Claims priority, application Japan, Dec. 9, 1972, 47-141672; June 12, 1973, 48-69992

Int. Cl. C10b 1/06, 25/06, 29/00

U.S. Cl. 202—247

23 Claims



1. A coke oven charging-hole closure construction comprising a coke oven cover and a coal charging seat adapted to receive said coke oven cover in a tight relationship, thereby establishing a complete seal between the coke oven cover and the coal charging seat, at least the contacting surfaces between said coke oven cover and said coal charging seat being made of a refractory body.

3,900,370.
PROCESS FOR TREATING ALUMINUM SURFACES

Hans Gunther Germscheid, Hesel; Wolfgang Friedemann, Neuss, and Roland Geisler, Dusseldorf-Holthausen, all of Germany, assignors to Henkel & Cie G.m.b.H., Dusseldorf-Holthausen, Germany

Filed Feb. 23, 1973, Ser. No. 335,065

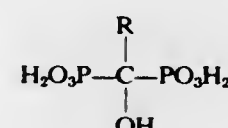
Claims priority, application Germany, Mar. 10, 1972, 2211553

Int. Cl. C23c 1/08; B41m 1/18; B44c 3/02

U.S. Cl. 204—38 A

5 Claims

1. In the process for treating the surface of aluminum or an aluminum alloy which comprises subjecting said surface to an anodic oxidation and subsequently sealing with hot water or steam, the improvement which consists essentially of sealing said surface by applying an aqueous solution consisting essentially of water, calcium ions and from 0.001 to 0.05 gm per liter of at least one acid selected from the group consisting of (A) a water-soluble phosphonic acid which forms a complex with a divalent metal, said acid having the formula



in which R is selected from the group consisting of phenyl and alkyl of 1 to 5 carbon atoms, (B) a water-soluble salt of said acid of (A), and (C) the mixtures thereof at a temperature ranging from 90°C to the solution boiling point temperature and at a pH of from 5 to 6.5, to the anodic oxidized surface, the molar ratio of calcium ions to phosphonic acid being at least 2:1.

3. The process as claimed in claim 1 in which said salt of (B) is selected from the group consisting of alkali metal salts, ammonium salts, and lower alkanolamine salts.

3,900,371

METHOD OF CONTROLLING THE THICKNESS OF THE LATERAL LEDGES IN A CELL FOR THE ELECTROLYTIC RECOVERY OF ALUMINUM

Kiranendu B. Chaudhuri, Gampel, Switzerland, assignor to Swiss Aluminum Ltd., Chippis, Switzerland

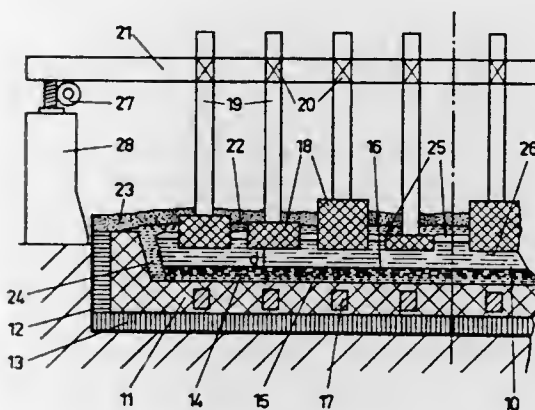
Filed Feb. 15, 1974, Ser. No. 443,099

Claims priority, application Switzerland, Jan. 30, 1974, 1243/74

Int. Cl. C25C 3/06

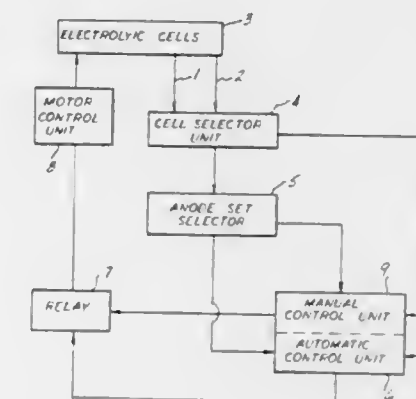
U.S. Cl. 204—67

8 Claims



1. A method for controlling the thickness of the lateral ledges of frozen electrolyte in a cell for the recovery of aluminum metal by the electrolysis of aluminum oxide dissolved in an electrolyte including a fluoride melt, said electrolysis being conducted with at least one anode connected to and movable with an anode beam operative for raising and lowering said anode with respect to said electrolyte, said method comprising the steps of:

- measuring the instantaneous ohmic resistance of said cell at predetermined regular intervals of time during which measurements there are no anode effects which can substantially affect the measured instantaneous ohmic resistance and during which measurements there are no working operations carried out or have been previously carried out which can substantially affect the measured instantaneous ohmic resistance, measuring the average instantaneous ohmic cell resistance from a plurality of the measured instantaneous ohmic cell resistances obtained during a predetermined period of time, measuring the base resistance of the cell, obtaining the difference ΔR between the average instantaneous ohmic cell resistance and the base resistance;
- moving said anode beam to minimize the difference between the measured instantaneous ohmic cell resistance and the base resistance when the difference ΔR exceeds a predetermined amplitude;
- measuring the level of the anode beam;
- thereafter repeating the steps a) to c) after a time interval not exceeding about one day;
- measuring the differences ΔB between the level of the anode beam obtained in the steps c) and d) and compensating for level differences due to the tapping of and the accumulation of the aluminum metal in the cell; and
- changing the thickness of the lateral ledges to a predetermined amplitude whenever the difference ΔB lies outside a predetermined range of values.



- comparing each current measurement with the preceding current measurement and determining the difference in current, and,
- conveying an electric signal from said computer to said motor drive means to increase said space when said difference in current is an increase which exceeds a predetermined limit.

3,900,372

RECYCLE OF ACYL FLUORIDE AND

ELECTROCHEMICAL FLUORINATION OF ESTERS

William V. Childs; Benedict H. Ashe, Jr., and Paul S. Hudson, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sept. 16, 1974, Ser. No. 505,996

Int. Cl. C07b 9/00

U.S. Cl. 204—81

18 Claims

1. A process for producing perfluorinated acyl fluorides comprising in combination:

- contacting a primary alkanol with an acyl fluoride under esterification conditions to produce a partially fluorinated ester;
- passing said partially fluorinated ester to an electrochemical fluorination cell to produce a perfluorinated ester;
- cleaving said perfluorinated ester to produce said perfluorinated acyl fluorides and acyl fluoride for recycle;
- recycling a portion of said acyl fluoride from step (3) to step (1) to sustain said esterification; and
- recovering a portion of said perfluorinated acyl fluoride as product.

3,900,373

METHOD OF REGULATING ANODE-CATHODE SPACING IN AN ELECTROLYTIC CELL

Richard W. Rabston, Jr., Cleveland, Tenn., assignor to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 272,240, July 17, 1972, abandoned. This application July 18, 1974, Ser. No. 489,647

Int. Cl. C01d 1/08, 1/14; B01k 3/00

U.S. Cl. 204—99

22 Claims

1. In a method for adjusting the space between electrodes in an electrolytic cell containing an electrolyte decomposable by electric current, said electrolyte being in contact with said electrodes, said electrodes being comprised of at least one adjustable solid anode set and a liquid cathode in spaced relationship, and a voltage being applied to said cathode and said anode set to develop an electric current flow through said electrolyte to effect decomposition thereof, the improvement which comprises

- operably connecting to said adjustable anode set a motor drive means adapted to raise and lower said adjustable

3,900,374

METHOD OF ELECTROCHEMICAL MACHINING

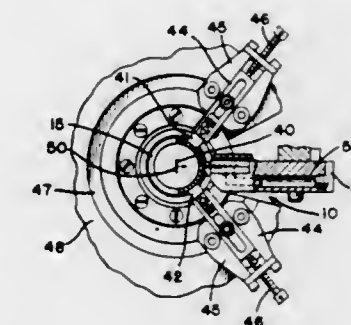
William Andrew Haggerty, Cincinnati, Ohio, assignor to Cincinnati Milacron, Inc., Cincinnati, Ohio

Division of Ser. Nos. 719,450, April 8, 1968, Pat. No. 3,730,861, and Ser. No. 719,451, April 8, 1968, Pat. No. 3,591,473. This application Mar. 12, 1971, Ser. No. 123,773

Int. Cl. B23p 1/00, 1/09, 1/20

U.S. Cl. 204—129.5

2 Claims



- A method of electrochemically machining a surface of revolution on a rotating workpiece comprising the steps of rotating said workpiece about its axis; placing an electrochemical machining tool having an essentially flat machining surface adjacent said workpiece to form a gap therebetween, said machining surface having a straight edge in a plane which also includes the axis of said workpiece, said machining surface being oriented essentially perpendicular to said plane so that the smallest gap dimension exists between said edge and said workpiece; introducing electrolyte into said gap so that it flows across said machining surface and between the tool and the workpiece in a direction parallel to the direction of relative movement and toward said smallest gap dimension; and connecting a source of electrical current between the workpiece and the tool such that the workpiece is anodic with respect to the tool to cause machining of said surface of revolution as it rotates past said machining surface.

3,900,375

ELECTROLYTIC SEPARATION OF METALS

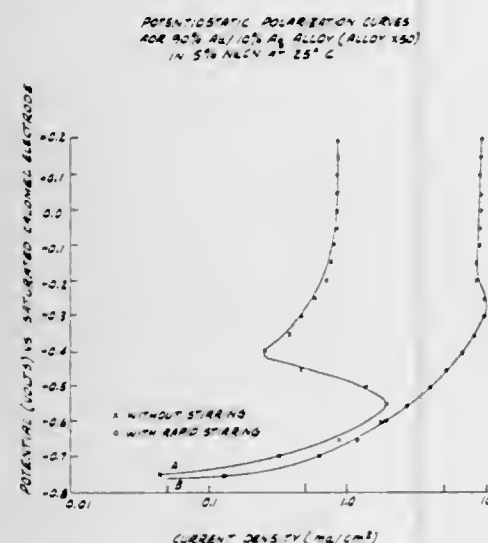
Robert Baboian, North Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 13, 1973, Ser. No. 424,526

Int. Cl.² C25F 1/00, 5/00

U.S. Cl. 204—140

9 Claims



1. A process for separating a first metal selected from the group consisting of gold, silver and alloys of gold and silver from a composite metal body in which said first metal is adhered as an external layer over a substrate constituted by a second metal, the process comprising the steps of:

immersing the body in an electrolytic solution of an alkali metal cyanide in which the two metals are subject to differential anodic dissolution at a predetermined anode voltage measured by reference to a standard electrode with the degree of dissolution of the second metal in the half-cell comprising said second metal and said solution being substantially less than the degree of dissolution of the first metal in the half-cell comprising said first metal and said solution at said voltage;

supplying direct current to said body from the positive terminal of a direct current power source whose negative terminal is connected to a second electrode immersed in said solution thereby establishing an electrolytic circuit in which said body is the anode and said second electrode is the cathode; and

continuously controlling the voltage of said anode relative to said standard electrode at a level at which the degree of dissolution of the second metal in the half-cell comprising said second metal and the solution is substantially less than the degree of dissolution of the first metal in the half-cell comprising said first metal and the solution thereby causing selective removal of said first metal from said body.

3,900,376

CLEANING OF METAL SURFACES

Mervyn John Copsey, Chester, and Brian Hanson Wilby, Leeds, both of England, assignors to The Electricity Council, London, England

Filed Nov. 6, 1973, Ser. No. 413,415

Claims priority, application United Kingdom, Nov. 8, 1972, 51631/72

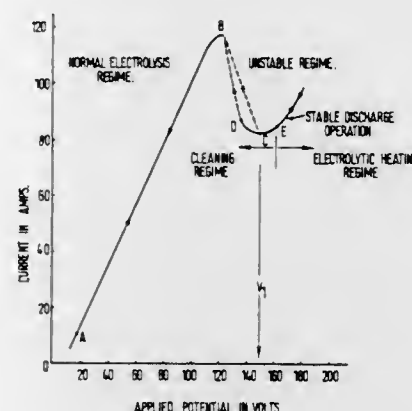
Int. Cl. C23b 3/02, 1/04, 1/06

U.S. Cl. 204—141.5

6 Claims

1. A method of cleaning a surface of an elongate metal article in a continuous process comprising the steps of moving the surface of the article through an electrolyte which does not react chemically with the metal to be cleaned or any surface contaminant on the article so that successive regions of the surface area to be cleaned are covered by the electrolyte and applying an electric voltage between the article and at least one other electrode electrically in contact with the

electrolyte, said voltage being sufficiently high that a layer of gas or vapour covers the surface to be cleaned and a discharge occurs through this layer between the electrolyte and the surface, the electrolyte being static or caused to flow suffi-



ciently slowly over said surface that, as the voltage is increased, there is an unstable regime where the current decreases with increase of voltage, the voltage being maintained above the level of this unstable regime.

3,900,377

REDUCTION OF TOXICITY OF AQUEOUS SOLUTIONS

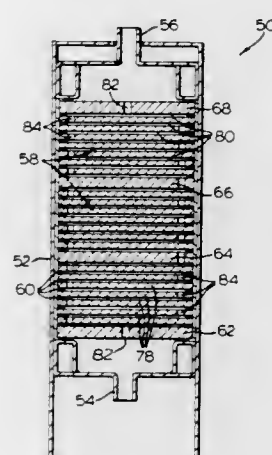
Kurt Enns, 345 Dale Crescent; John J. Byerley, 154 Chelford Crescent, and Clare J. Beingessner, 505 Oxbow Rd., all of Waterloo, Ontario, Canada

Filed Jan. 8, 1973, Ser. No. 322,085

Int. Cl. C02c 5/12

U.S. Cl. 204—149

11 Claims



1. A method of decreasing the concentration of anodically-oxidizable species selected from free and/or complexed cyanide ions, cyanate ions and thiocyanate ions in an aqueous solution thereof which comprises:

passing said aqueous solution along a plurality of fluidly-interconnected successive confined paths each constituted by at least one pair of electrodes having faces of opposite polarity spaced apart a distance of about 1/16 inch to 1 inch, said passage of said aqueous solution along said plurality of fluidly-interconnected successive confined paths providing a layer of liquor immediately adjacent each of said electrode faces and a bulk mass of liquor between said layers,

applying d.c. power between said electrodes to provide a current density of less than 200 amps per sq. ft. to said electrodes, whereby an electroactive anode and an electroactive cathode are provided,

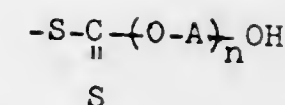
maintaining said aqueous solution at a flow rate along said confined paths and over said electrodes less than 5 ft/sec, oxidizing said anodically-oxidizable species at said electroactive anode to produce materials including gaseous material,

intermixing the layer of liquor immediately adjacent said electroactive anode with said bulk mass of said aqueous

solution to minimize pH polarization and anodically-oxidizable species concentration polarization between said bulk mass and said liquor layer immediately adjacent said electroactive anode,

scrubbing bubbles of gaseous material from both said electroactive anode and said electroactive cathode during said passage of said aqueous solution along said plurality of fluidly-interconnected successive confined paths to form a mixture of said gaseous material and said aqueous solution and to minimize the accumulation of gaseous material on said electroactive anode and electroactive cathode,

conveying said mixture of gaseous material and aqueous solution successively along said confined paths, and restricting the passage of said mixture along said confined paths below a total path length above which the proportion of gas in the mixture at the extremity of said paths exceeds about 20 percent.



wherein A is an alkanediyl or cycloalkanediyl radical having at least two carbon atoms, and n is a positive integer of 1–4; with the proviso that the two valences of A are attached to different carbon atoms, only one of which can be a tertiary carbon atom.

3,900,380

PREPARATION OF FLUORINATED CYCLOBUTENYL ALKYL ETHER COPOLYMERS

Richard W. Anderson, Englewood, Colo., and Hughie R. Frick, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

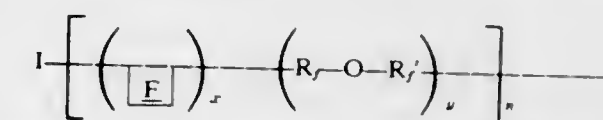
Division of Ser. No. 231,404, March 2, 1972, Pat. No. 3,840,603. This application Mar. 21, 1974, Ser. No. 453,652

Int. Cl. B01j 1/10

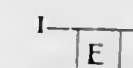
U.S. Cl. 204—163 R

3 Claims

1. A process for the preparation of a highly fluorinated polymer of the formula:



wherein R_f and R'_f are straight or branched chain perfluoroalkyl groups or perfluoroalkyl ethers having a combined number of carbon atoms totaling from 3 to 20, n is a number from 2 to 10,000 representing the degree of polymerization and the ratio of x:y ranges from 0.001:1 to 1000:1, which comprises reacting in the presence of mercury and ultraviolet light a diiodo perfluorocyclobutene of the formula



with an iodo terminated perfluoroalkyl ether of the formula I—R_f—O—R'_f—I wherein R_f and R'_f are straight or branched chain perfluoroalkyl groups or perfluoroalkyl ethers having a combined number of carbon atoms totaling from 3 to 20, said process being further defined in that the ratio of perfluorocyclobutene to iodo terminated perfluoroalkyl ether may range from 1000:1 to 1:1000.

3,900,381

METHOD OF FORMING BETA-ALUMINA ARTICLES

Robert W. Powers, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sept. 24, 1973, Ser. No. 400,047

Int. Cl. B01k 5/02; C23b 13/00

U.S. Cl. 204—181

9 Claims

1. A method of forming a beta-alumina article which comprises providing a suspension consisting of beta-alumina particles the majority of which have a diameter in the range of 1 to 2 microns in an organic fluid having a dielectric constant at 25°C of from 12 to 24, electrophoretically depositing the beta-alumina particles from the suspension as a dense deposit onto a charged electrode in a DC electric field of from 100 to 10,000 volts per centimeter, drying the deposit on the elec-

3,900,378

HYDROGELS FROM RADIATION CROSSLINKED BLENDS OF HYDROPHILIC POLYMERS AND FILLERS

Steven N. Yen, Highland Mills, and Frederick D. Osterholtz, Warwick, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 194,511, Nov., 1971, abandoned. This application Nov. 6, 1972, Ser. No. 303,880

Int. Cl. B01J 1/10; C08f 3/00, 3/34, 3/62, 13/00, 45/18, 45/24, 45/64, 45/68

U.S. Cl. 204—159.14

25 Claims

1. A process for the preparation of a free-flowing, water swellable hydrophilic polymer in particulate form, said process comprising the steps of:

- blending a mixture of at least one water soluble pulverulent hydrophilic polymer and at least one pulverulent inert filler in a ratio of polymer to filler of from about 1:9 to about 9:1, a substantial portion of said filler having a particle size less than that of said polymer and present in an amount sufficient to cover a substantial portion of the surface area of said pulverulent polymer,
- thereafter while said blending is continued, contacting said mixture under thorough agitation with a finely divided spray of water at a rate and in an amount not to exceed that at which the mixture is maintained in a free-flowing particulate form, and
- thereafter exposing said mixture in said free-flowing particulate form to ionizing radiation for a period of time to crosslink said polymer.

3,900,379

HYDROXYL-TERMINATED CHLOROPRENE POLYMERS

Tsuneichi Takeshita, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 2, 1974, Ser. No. 457,387

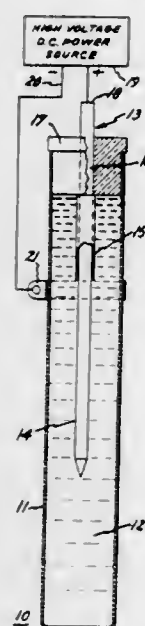
Int. Cl. C08f 1/18

U.S. Cl. 204—159.24

7 Claims

1. A substantially linear polymer of chloroprene containing 0–50 weight percent of at least one copolymerizable monomer, said polymer being terminated substantially at each end of the chain by a xanthate group having the following formula

trode, removing the deposit from the electrode, and sintering the deposit in an oxygen oxidizing atmosphere at a tempera-



ture between 1,700° and 1,825°C resulting in a dense, sintered beta-alumina article.

3,900,382

MINIATURE PROBE CONTAINING MULTIFUNCTIONAL ELECTROCHEMICAL ELECTRODES

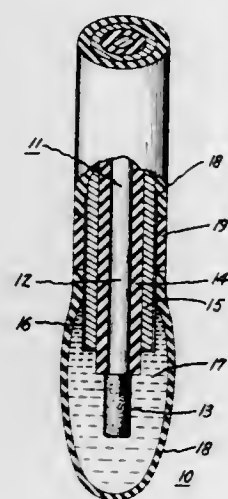
John F. Brown, Jr., Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 1, 1974, Ser. No. 519,796

Int. Cl. G01n 27/46

U.S. Cl. 204—195 M

12 Claims



1. A miniature probe containing a carbon dioxide sensor and a specific ion electrode which comprises a flexible metallic elongated electrode lead, an electrochemically active region responsive to carbon dioxide changes adhering tightly to and in electrical contact with one end portion of the electrode lead, electrical insulation surrounding the electrode lead, a second metal electrode lead surrounding at least partially and spaced from the first electrode lead by the electrical insulation thereon, the second electrode containing a second electrochemically active region of silver and silver halide thereon, an electrolyte contacting both electrochemically active regions, a first outer sheath of a carbon dioxide permeable diffusion barrier material encapsulating at least both electrochemically active regions and the electrolyte thereby forming a carbon dioxide sensor, outer electrical insulation surrounding at least partially the second electrode lead, and a second outer sheath of specific ion-permeable barrier material surrounding a portion of the second electrode lead and in contact with its silver and silver halide region thereby forming a specific ion elec-

trode, the outer electrical insulation and first and second sheaths forming a continuous cover for the probe.

7. A miniature probe containing an oxygen sensor and a specific ion electrode which comprises a flexible metallic elongated electrode lead, an electrochemically active region responsive to oxygen changes adhering tightly to and in electrical contact with one end portion of the electrode lead, electrical insulation surrounding the electrode lead, a second metal electrode lead surrounding at least partially and spaced from the first electrode lead by the electrical insulation thereon, the second electrode containing a second electrochemically active region of silver and silver halide thereon, an electrolyte contacting both electrochemically active regions, a first outer sheath of an oxygen permeable diffusion barrier material encapsulating at least both electrochemically active regions and the electrolyte thereby forming an oxygen sensor, outer electrical insulation surrounding at least partially the second electrode lead, and a second outer sheath of specific ion-permeable barrier material surrounding a portion of the second electrode lead and in contact with its silver and silver halide region thereby forming a specific ion electrode, and the outer electrical insulation and first and second sheaths forming a continuous cover for the probe.

3,900,383

APPARATUS FOR ELECTROPLATING

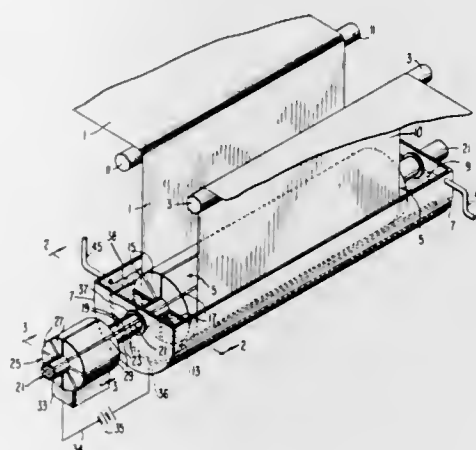
Lowell W. Austin, Weirton, W. Va., and Walter Alexander Wilson, Pittsburgh, Pa., assignors to National Steel Corporation, Pittsburgh, Pa.

Filed July 24, 1974, Ser. No. 491,377

Int. Cl. C23b 5/68, 5/58; B601 9/00

U.S. Cl. 204—211

14 Claims



1. An electroplating apparatus comprising
 - a. bath container means including walls for holding an electrolyte,
 - b. an elongated shaft in the bath container means having one end portion extending through one wall of the bath container means,
 - c. an electroplating contact roll for passing conductive strip to be plated through the bath carried by the shaft and partially submerged in the electrolyte, the contact roll including a core member and a plurality of circumferentially spaced, electrically conductive segmental elements, elongated in the direction of the longitudinal axis of the shaft, affixed to the core member, the outermost surfaces of the plurality of segmental elements relative to the longitudinal axis of the shaft being of substantial area and falling in a cylinder having the longitudinal axis of the shaft as its center line,
 - d. an anode structure submerged in the electrolyte and having surface portions contiguous to but spaced from the electroplating roll,
 - e. an electrolyte retainer means surrounding the shaft where the shaft passes through the wall of the bath container means, and

f. means carried by said one end portion of the shaft outside of the bath container means for delivering electrical current selectively to each of the segmental elements.

3,900,384

METHOD OF ASSEMBLING A BIPOLAR ELECTRODE HAVING FRICTION WELDED CONDUCTOR/CONNECTOR MEANS AND BIPOLAR ELECTRODE FORMED THEREBY

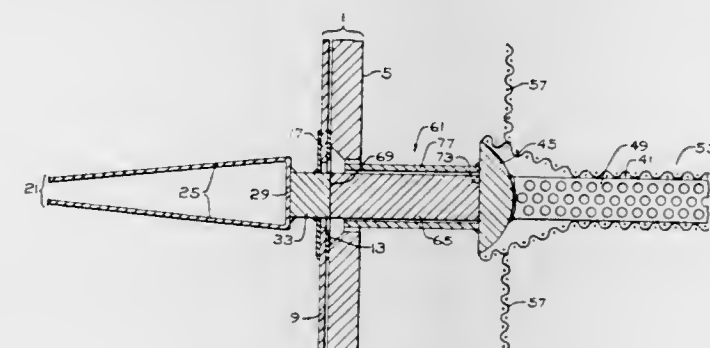
Leslie Gunby, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 309,310, Nov. 24, 1972, Pat. No. 3,813,326. This application Jan. 4, 1974, Ser. No. 430,977

Int. Cl. B01k 3/04

U.S. Cl. 204—286

7 Claims



6. In a backplate comprising a catholyte-resistant steel plate, a cathode projecting from the catholyte-resistant steel plate, an anolyte-resistant titanium sheet, an anode projecting from the anolyte-resistant titanium sheet, and means for conducting electrical current from said cathode to said anode and connecting said anode and cathode to said backplate, the improvement wherein said conducting and connecting means comprises:

- a copper member;
- a catholyte-resistant steel member friction welded to one end of said copper member; and
- an anolyte-resistant titanium member bonded to the opposite end of said copper member, the bond between said anolyte-resistant titanium member and said copper member having an electrical conductivity of greater than about 1.5×10^4 mho and having substantially no third phase between the copper member and the anolyte-resistant titanium member.

3,900,385

METHOD FOR CONTINUOUS PRODUCTION OF ELECTROLYTIC MANGANESE DIOXIDE

Akio Era, and Takeo Emoto, both of Tokyo, Japan, assignors to Mitsui Mining & Smelting Co., Ltd., Tokyo, Japan

Filed Dec. 11, 1973, Ser. No. 423,760

Claims priority, application Japan, Sept. 20, 1973, 48-106182

Int. Cl. C01b 45/02

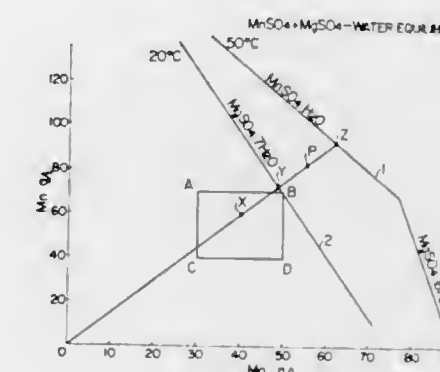
U.S. Cl. 204—96

5 Claims

1. In a method for continuous production of electrolytic manganese dioxide by electrolysis of an aqueous manganese sulfate - sulfuric acid solution containing 30 g/l or more of magnesium in the form of magnesium sulfate as impurity wherein consumed manganese is made up for by supplying a neutral aqueous manganese sulfate solution prepared by leaching of manganese ore which contains magnesium as impurity with spent electrolyte and sulfuric acid followed by neutralization and filtration;

the improvement comprising concentrating the whole amount of or a part of the neutral manganese sulfate solution in a vacuum at a temperature of between 40°C. and 60°C. to produce a solution having a concentration corresponding to a saturation point at from 15°C. to 60°C., and then rapidly cooling the resultant solution to

15°C. - 25°C., to give crystal containing magnesium sulfate, filtering away the crystal and feeding the filtrate to the electrolytic cell to make up for the whole amount of



or a part of consumed manganese, whereby the content of magnesium in the form of magnesium sulfate in the electrolyte is maintained at not more than 45 g/l.

3,900,386

HYDROPROCESSING OF HYDROCARBONS

John C. Hayes, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 365,782, May 31, 1973, which is a continuation-in-part of Ser. No. 27,457, April 10, 1970, abandoned. This application Feb. 15, 1974, Ser. No. 443,046

Int. Cl. C10g 13/02; C01b 33/28

U.S. Cl. 208—111

11 Claims

1. A hydrocarbon hydroprocess which comprises reacting a hydrocarbon with hydrogen at conditions selected to effect chemical consumption of hydrogen, and in contact with a catalytic composite of a platinum or palladium component, an iridium component, a germanium component and a porous carrier material, substantially all of the platinum or palladium component and the iridium component being in the elemental metallic state and the germanium component being in an oxidation state above that of the elemental metal.

3,900,387

HYDROCARBON CONVERSION WITH A MULTIMETALLIC CATALYTIC COMPOSITE

Frederick C. Wilhelm, Arlington Heights, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 233,819, March 10, 1972, Pat. No. 3,798,155. This application Jan. 24, 1974, Ser. No. 436,305

Int. Cl. C10g 35/08; B01j 11/78; C07c 5/28

U.S. Cl. 208—139

21 Claims

1. A process for converting a hydrocarbon which comprises contacting the hydrocarbon at hydrocarbon conversion conditions with a catalytic composite comprising a porous carrier material containing, on an elemental basis, about 0.01 to about 2 wt. % platinum group metal, about 0.01 to about 5 wt. % Group IVA metal selected from germanium and tin, about 0.1 to about 3.5 wt. % halogen and bismuth in an amount sufficient to result in an atomic ratio of bismuth to platinum group metal of about 0.1:1 to about 1:1, wherein the platinum group metal, Group IVA metal, and bismuth are uniformly dispersed throughout the porous carrier material, wherein substantially all of the platinum group metal and bismuth are present in the corresponding elemental metallic states and wherein substantially all of the Group IVA metal is present in an oxidation state above that of the corresponding elemental metal.

matting the rate of injection of the raw sewage liquid, discharging the resulting clarified liquid effluent and returning at least a portion of the settled sludge to the liquid in said reservoir, the average retention time of the liquid in the reservoir being at least about 24 hours, said second distance being at least about 10% of the sum of said first and second distances.

3,900,395

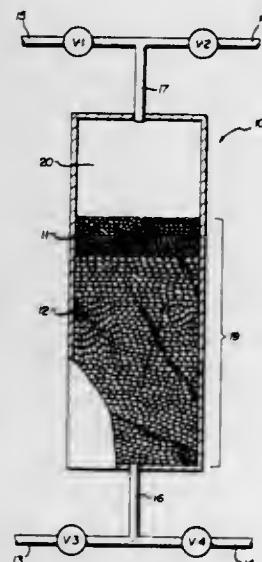
METHOD OF AND APPARATUS FOR FILTERING

Gene Hirs, Birmingham, Mich., assignor to Hydromation Filter Company, Livonia, Mich.

Filed Aug. 16, 1973, Ser. No. 389,061
Int. Cl.² B01D 23/10

U.S. Cl. 210—80

3 Claims



1. In a filtering apparatus for removing particulate contaminants from liquids, said apparatus having:

an anthracite coal filter media bed characterized by primary filter granules and smaller, fine, relatively flat, flaky particles, said bed having upper inlet and lower outlet surfaces and said smaller fine particles tending to accumulate in the region of the inlet surface after backwashing to thereby inhibit penetration into said anthracite media bed by particulate contaminants,

the improvement of a layer of granulated black walnut shells positioned on the inlet surface of said anthracite media bed, said black walnut shells being selected to have a size and shape in relation to the fine anthracite particles for intermixing therewith after backwashing and having an angular, three-dimensional configuration to inhibit blinding off of said bed of anthracite coal by said fine particles and accumulated contaminants, a portion of said black walnut shells being intermixed in the inlet surface of the filter media bed with at least a portion of the smaller fine particles,

said layer of granulated walnut shells improving the filter capabilities of said bed by enabling more effective penetration of said inlet surface by said particulate contaminants.

3,900,396

BLOOD LEAK DETECTOR

Rene G. Lamadrid, Bethesda, Md., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.

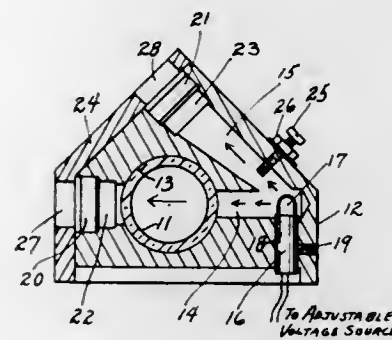
Filed Mar. 22, 1974, Ser. No. 453,751
Int. Cl.² B01D 35/14

U.S. Cl. 210—94

10 Claims

1. In an artificial kidney machine, a blood leakage detector comprising a transparent flow conduit containing dialysate from the artificial kidney machine, an opaque block of heat-absorbing material having a bore closely receiving said conduit, said block being formed with a pair of intersecting divergent light passages, one of said passages traversing said conduit substantially perpendicularly thereto and the other being

clear of the conduit and defining an independent clear reference passage, a light source mounted in the block at the intersection of said passages, respective photosensitive elements mounted in the block at the end portions of said passages, and



alarm circuit means operatively connected to said photosensitive elements and operating responsive to differences in intensity of the light reaching said photosensitive elements through said passages caused by light absorbance due to the presence of blood in the flow conduit.

3,900,397

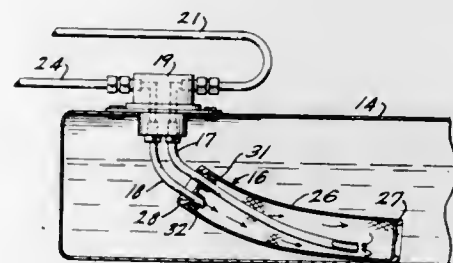
FUEL TANK FILTER

Rupert B. Bell, Grosse Pointe, Mich., assignor to R. L. Kuss & Co., Inc., Findlay, Ohio

Filed June 10, 1974, Ser. No. 477,659
Int. Cl.² B01D 35/02

U.S. Cl. 210—128

4 Claims



1. In an automobile fuel system having a fuel tank, a fuel feeding means for introducing fuel to the vehicle engine including a stop valve for terminating the flow of fuel to the fuel feeding means, a fuel pump, a fuel pump line connecting the fuel pump with the fuel feeding means and a fuel feed line connecting the fuel tank with the inlet side of the fuel pump, and means for bypassing the fuel pump line in response to the closing of the stop valve, the improvement comprising a fuel filter within the fuel tank, said fuel filter having a filtering mesh and closure means defining an interior with upstream and downstream ends and an outlet tube and an inlet tube extending into the interior, means operably connecting said outlet tube with said fuel feed line, and means operably connecting said inlet tube with the bypassing means, whereby upon closure of the stop valve of the fuel feeding means, substantially all of the fuel returned by the bypassing means exits said inlet tube within said filter and re-enters said outlet tube, a substantially zero pressure drop occurs across the filtering mesh, and the filtering mesh is cleaned of filtrate material by sloshing action of the fuel in the tank.

3,900,398

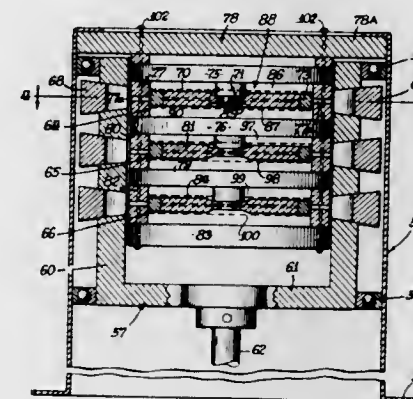
SYSTEM FOR EXCHANGING BLOOD ULTRAFILTRATE

Deighton D. Gillette, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

Division of Ser. No. 167,571, July 30, 1971, Pat. No. 3,788,319. This application Sept. 24, 1973, Ser. No. 400,388
Int. Cl.² B01D 31/00

U.S. Cl. 210—196

5 Claims



1. Ultrafiltration apparatus comprising: housing means providing a plurality of filtering sections each defining a closed chamber; a disc-shaped impeller having an upper and lower surface and rotatably mounted in each chamber and defining a plurality of spiral channels extending outwardly from the center to the periphery thereof, each channel alternately communicating with the space above and below its associated channel, for communicating a fluid therein alternately with the upper and lower sides thereof at a plurality of locations spaced progressively along said channel; first and second filtering membranes for each chamber and mounted respectively above and below an associated impeller; first conduit means associated with each chamber for coupling a fluid to be processed to the center of its associated impeller and into said channels; second conduit means for each chamber communicating with said chamber at locations above said upper membrane and below said lower membrane for collecting fluid passing through said membranes and for returning said filtrate; third conduit means for each chamber and communicating with the space between said membranes for collecting the filtrand; and powered means for rotating said impellers, whereby as said impellers are rotated, the fluid to be processed passes through said first conduit means of each filter section, enters the center portion of said impellers, passes through said channels under centrifugal force alternately contacting said first and second filter means at a plurality of progressively outwardly spaced locations during said passage, and the filtrate is collected by said second conduit means whereas the filtrand is passed to said third conduit means.

3,900,399

FILTER APPARATUS FOR EXTRUSION PRESSES

Joachim Kreyenborg, Raesfeldstr. 67/69, 44 Munster, Germany, and Udo Kreyenborg, Munster Str. 371, 44 Munster, Germany

Filed Nov. 2, 1973, Ser. No. 412,189
Claims priority, application Germany, Nov. 18, 1972, 2256639

Int. Cl.² B01D 27/08

U.S. Cl. 210—236

4 Claims

1. Apparatus for processing plastic material, and comprising: a. a housing having an axial bore of predetermined length and a transverse bore, extending through said axial bore, for connection to a source of plastic material;

b. filtering means mounted in said axial bore for movement axially therein, and including a plurality of screen chambers spaced therealong and having through bores adapted for alignment with said transverse bore, and

c. power means for advancing said filtering means through said axial bore to bring said through bores successively into alignment with said transverse bore, in which apparatus said filtering means comprises a plurality of adjacent, individual screen supporting cylinders shorter than said axial bore, each including at least one of said screen chambers and each having complimentary coupling means



extending transversely across its ends for form-locking connection with adjacent cylinders to prevent rotation and axial separation therebetween, wherein said complimentary coupling means comprises:

- a transverse T-shaped tongue on one end of each screen supporting cylinder; and
- a cooperating transverse T-shaped groove formed in the other end of each screen supporting cylinder.

3,900,400

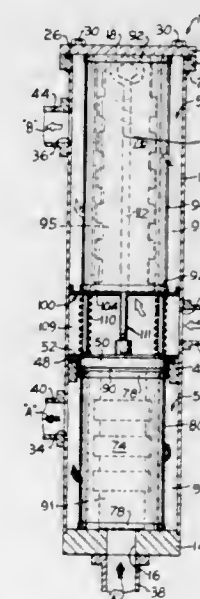
DUAL FILTER ARRANGEMENT

Joseph A. Whitfield, Peoria, Ill., assignor to Caterpillar Tractor Company, Peoria, Ill.

Filed Apr. 29, 1974, Ser. No. 465,328
Int. Cl.² B01D 27/08

U.S. Cl. 210—238

9 Claims



1. A dual filter arrangement comprising: an elongated housing having a removably closable end;

a pair of hollow filter elements removably disposable in said housing in axially spaced relation and individually defining a filter chamber centrally therein;

divider wall means removably disposable within the housing intermediate said filter elements dividing the housing into a pair of axially spaced and independent filter compartments, said divider wall means including a pair of axially spaced apart divider walls defining a fluid transfer chamber therebetween within the housing between adjacent ends of said pair of filter elements with one of said divider walls having an opening therethrough communicating said transfer chamber with one of said filter chambers;

said housing having a fluid inlet port and a fluid outlet port for each compartment with one of said ports being in fluid communication with said fluid transfer chamber; and means connected to said divider wall means for withdrawing said divider wall means and both of said filter elements as a unit from said removably closable end of said housing.

3,900,401

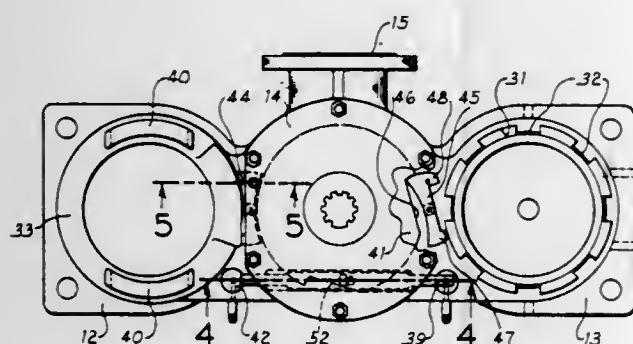
DUAL FILTER FOR LUBRICATING OIL

Haven D. Oliver, South Portland, Maine; Richard K. Burke, Groton, Conn.; Herbert Dobson, Jr., Bradford, R.I., and Leon E. Grant, Colchester, Conn., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 4, 1974, Ser. No. 520,327
Int. Cl.² B01D 27/08

U.S. Cl. 210-238

3 Claims



1. A dual filtering device for lubricating oil comprising, a housing having first and second filtering sections separated by a flow control section, said first and second filtering sections each being closed at one end and having an opening at the other end with a plurality of housing lugs disposed about the periphery of each opening, said flow control section having an inlet and an outlet for lubricating oil,

an aperture in one of said housing lugs, a shaft rotatably positioned in said flow control section, first and second filter elements positioned one each in said first and second filtering sections, a first valve positioned in said inlet and connected with said shaft and a second valve positioned in said outlet and connected with said shaft whereby flow of lubricating oil can be selectively passed through said first and second filter elements by rotating said shaft,

first and second covers closing the openings, respectively, in said first and second filtering section, each said cover having a plurality of cover lugs engageable with said housing lugs to lock said covers with said housings when said covers are rotated and said cover lugs are positioned beneath said housing lugs,

a pin in each said cover adaptable for engagement one each with one of said apertures in said housing lugs whereby pressure within each said filtering section lifts said cover associated therewith and said pin enters said aperture thereby preventing rotation of said cover,

a timing disk attached to said shaft, and first and second pawls pivotally attached to said housing and engageable with said timing disk to prevent rotation of

said shaft, said first pawl being engageable with said first cover for biasing said pawl out of engagement with said timing disk and said second pawl being engageable with said second cover for biasing said pawl out of engagement with said timing disk whereby said shaft can only be rotated to connect said inlet and outlet valves to a filtering section that has a cover thereon.

3,900,402

HEMODIALYZER

Risaburo Aoki, No. 16-1, Ohtsukamachi, Yukigaya, Ohta-ku, Tokyo, Japan

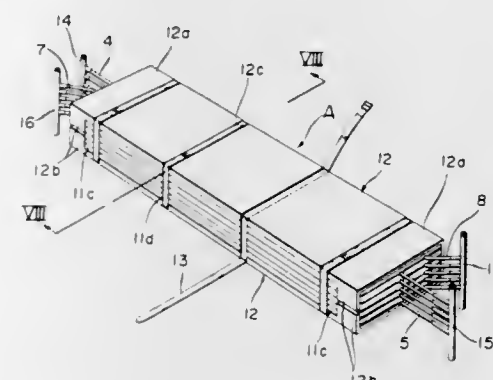
Filed Mar. 12, 1973, Ser. No. 339,970

Claims priority, application Japan, Jan. 19, 1973, 48-8782

Int. Cl. B01d 13/00, 31/00

U.S. Cl. 210-321

5 Claims



1. A hemodialyzer comprising at least one dialyzer pack including a flat dialyzer tube, a fibrous sheet of paper-like material directly over the outer surface of said dialyzer tube, a net directly over the outer surface of said fibrous sheet, and a flat sealed outer sack enclosing said dialyzer tube, fibrous sheet and net.

3,900,403

FILTRATION APPARATUS

Raymond Thomas Randle, Hartlepool; John Williamson, Hart, near Hartlepool, and David Wilson, Hartlepool, all of England, assignors to Steetley (Mfg.) Limited, Workson, England

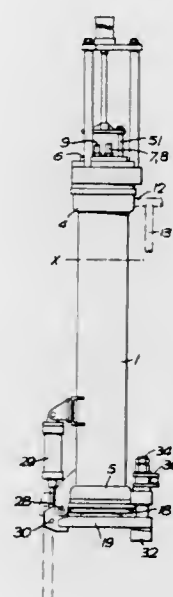
Filed Mar. 25, 1974, Ser. No. 454,276

Claims priority, application United Kingdom, Mar. 29, 1973, 15223/73; Oct. 26, 1973, 50000/73

Int. Cl.² B01D 29/42

U.S. Cl. 210-350

10 Claims



1. A filtration apparatus which comprises a cylindrical housing accommodating therein a stationary, hollow, perfo-

rated, cylindrical body fixedly secured thereto and thus creating an annular space defined by the inside of the housing and the outside of the cylindrical body, an impermeable elastic sleeve disposed within said annular space and fixed at its opposite ends to said housing thereby dividing the annular space into an inner filtration compartment and an outer pressure applying compartment, a filter element disposed around and supported by the cylindrical body, outlet means connected with the interior of said cylindrical body for the discharge of filtrate which has passed through the filter element into the cylindrical body, an inlet into the inner filtration compartment for liquid/solid mixtures, an inlet into the outer pressure applying compartment for a hydraulic fluid under pressure, said housing having an annular opening at its lower end below the lower end of said cylindrical body, means for dislodging filter cake from said filter element, and a pivoted end plate hinged to said housing for closing said annular opening, said end plate, when in the open position, constructed and arranged to permit discharge from the inner filtration compartment of filter cake dislodged from said filter element.

3,900,404

OPTICAL COMMUNICATION SYSTEM

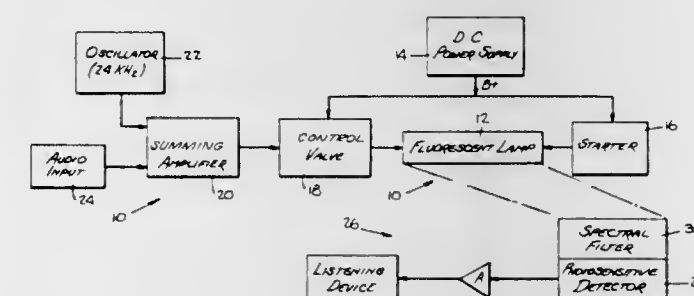
Martin R. Dachs, 37 Pine St., New City, N.Y. 10596

Filed Aug. 2, 1973, Ser. No. 384,798

Int. Cl. H04b 9/00

U.S. Cl. 250-199

4 Claims



1. The transmitter of an optical communication system comprising:

a fluorescent lamp,

audio signal means to provide an audio frequency signal for conveying whatever audio communication is to be transmitted,

oscillator means to provide a super audible frequency signal,

a summing amplifier coupled to said audio signal and to said super audible signal to provide a sum signal, and

a control valve responsive to said sum signal and coupled to said fluorescent lamp, to vary the current through said fluorescent lamp as a function of said sum signal,

said fluorescent lamp providing a light output varying in intensity as a function of said audio signal.

3,900,405

CASSETTE OPENING MECHANISM

Fred J. Bartlett, San Dimas; Paul A. Bevis, Pasadena; Hazen L. Hoyt, III, Glendora, and Francis T. Mercer, Manhattan Beach, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 310,305, Nov. 29, 1972, abandoned, which is a continuation of Ser. No. 61,297, Aug. 5, 1970, abandoned. This application Oct. 7, 1974, Ser. No. 512,634

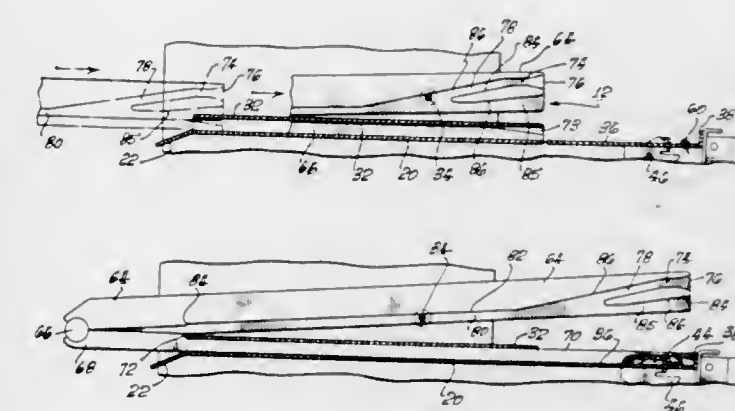
Int. Cl. G03b 41/16

U.S. Cl. 250-468

41 Claims

1. A mechanism adapted to rotate the cover of a cassette between open and closed positions, said mechanism comprising means to receive a cassette, guide means disposed on opposite sides of the cassette-receiving means for guiding the cassette into the cassette-receiving means, means for holding the base member of the cassette along the plane in which the

base member is inserted into the cassette-receiving means, and means rigidly mounted on each side guide means for cooperating with at least one groove in each adjacent side wall



of the cover for rotating the cover between the open and closed positions upon insertion and withdrawal, respectively, of the cassette from the cassette-receiving means.

3,900,406

AQUEOUS GELS AND USES THEREOF

Richard L. Clampitt, and James E. Hessert, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 159,052, July 1, 1971, Pat. No. 3,727,687.

This application Oct. 30, 1972, Ser. No. 301,953

Int. Cl. E21b 21/04

U.S. Cl. 252-8.55 C

23 Claims

1. An aqueous medium, comprising water to which there has been added:

a water-thickening amount of a water-soluble cellulose ether;

an amount of a water-soluble compound of a polyvalent metal wherein the valence state of the metal therein is capable of being reduced to a lower polyvalent valence state and which is sufficient to supply at least about 3×10^{-6} gram atoms of said polyvalent metal per gram of said cellulose ether; and

an amount of a water-soluble reducing agent which is effective to reduce at least a portion of said metal to said lower valence state; said reducing agent being selected from the group consisting of hydroquinone, sodium sulfide, sodium hydrosulfite, sodium metabisulfite, potassium sulfite, sodium bisulfite, potassium metabisulfite, sodium sulfite, sodium thiosulfate, p-hydrazinobenzoic acid, hydrazine phosphite, hydrazine dihydrochloride, acetamide, and mixtures thereof.

3,900,407

COMPOSITION FOR CLEANING AND GLAZING FURS

Benjamin Kaufman, Philadelphia, Pa., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Dec. 14, 1972, Ser. No. 315,256

Int. Cl. C11d 9/46; D06m 13/00

U.S. Cl. 252-8.57

1 Claim

1. A composition for cleaning and glazing fur consisting essentially of a uniform mixture of about 0.05 to 0.2 weight percent of potassium oleate, about 0.05 to 0.2 weight percent of a non-soap detergent selected from the group consisting of anionic and non-ionic detergents, about 0.02 to 0.1 weight percent of a terpene oil, about 0.05 to 0.2 weight percent of a liquid silicone oil, about 15 to 50 weight percent of an alcohol selected from the group consisting of methanol, ethanol, propanol, and isopropyl alcohol, with the remainder being water.

3,900,408

BEARING LINER

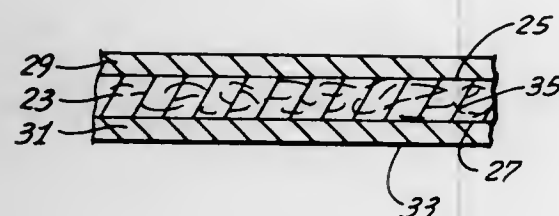
Peter H. Turner, Burbank, Calif., assignor to Sargent Industries, Inc., Los Angeles, Calif.

Continuation of Ser. No. 274,606, July 24, 1972, abandoned. This application June 3, 1974, Ser. No. 475,622

Int. Cl. F16c 9/06

U.S. Cl. 252-12.6

23 Claims



1. A liner for reducing the coefficient of friction between first and second surfaces movable relative to each other, comprising:

a fibrous backing having first and second major surfaces and having chopped and compressed fibers to reinforce the liner;

an adhesive layer in fixed relationship with the first major surface of the backing for bonding the backing to the first surface; and

a low friction layer in fixed relationship with the second major surface of the backing and providing a low friction surface for slidably engaging the second surface, the low friction layer having a thin dimension relative to the second major surface and being formed from small portions of low friction material interspersed in an adhesive; whereby

the second and low friction surfaces have a lower coefficient of friction than the first and second surfaces.

3,900,409

LUBRICATING OIL COMPOSITIONS CONTAINING SULFURCHLORINATED STYRENE DERIVATIVES

Raymond S. Dalter, Montgomery, and Sidney S. White, Westchester, both of Ohio, assignors to Cincinnati Milacron Chemicals Inc., Reading, Ohio

Filed Jan. 10, 1974, Ser. No. 432,395

Int. Cl. C10m 1/42, 3/36

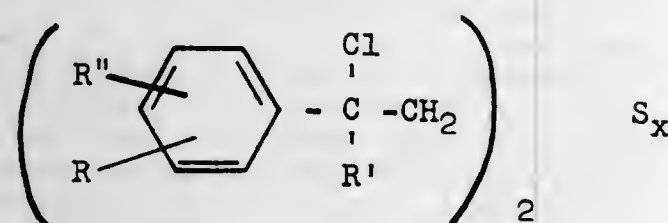
U.S. Cl. 252-48.8

16 Claims

1. A lubricating oil composition comprising:

a. a major amount of a lubricating oil; and

b. a minor amount sufficient to improve extreme pressure properties thereof of an additive having the formula:



where R is hydrogen, alkyl of 1 to 4 carbon atoms or chlorine, R'' is hydrogen or chlorine, R' is hydrogen or methyl and x is a number from 1 to 10.

3,900,410

LUBRICATING OIL COMPOSITIONS CONTAINING TRIALKYL-SUBSTITUTED PHENOLS AND BENZOTRIAZOLE

Robert E. Malec, Birmingham, Mich., assignor to Ethyl Corporation, Richmond, Va.

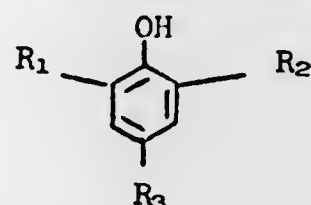
Filed Apr. 23, 1973, Ser. No. 353,394

Int. Cl. C10m 1/32

U.S. Cl. 252-51.5 R

9 Claims

1. A mineral lubricating oil composition containing an antioxidant amount of a compound having the formula:



wherein R₁ and R₂ are tert-alkyl groups containing 4 to about 20 carbon atoms and R₃ is a straight chain primary alkyl group containing 8 to about 24 carbon atoms and an antioxidant promoter amount of a benzotriazole.

3,900,411

LUBRICANT COMPOSITIONS CONTAINING ACETAL OR KETAL DETERGENTS

Harry J. Andress, Jr., Pitman, and Henry Ashjian, East Brunswick, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 19, 1973, Ser. No. 417,165

Int. Cl. C10m 1/20

U.S. Cl. 252-52 R

15 Claims

1. A lubricant composition comprising a major amount of an oil of lubricating viscosity and, in an amount sufficient to impart detergent properties, a carbonyl compound selected from the group consisting of alkenylsuccinic acid-polyhydric alcohol ester acetals or ketals, wherein the alkenyl group contains at least about 30 carbon atoms.

3,900,412

LIQUID TONERS WITH AN AMPHIPATHIC GRAFT TYPE POLYMERIC MOLECULE

George E. Kosel, Park Ridge, N.J., assignor to Philip A. Hunt Chemical Corporation, Palisades Park, N.J.

Division of Ser. No. 7,253, Jan. 30, 1970, abandoned, which is a continuation-in-part of Ser. No. 810,841, March 26, 1969, abandoned. This application Apr. 30, 1973, Ser. No. 355,567

Int. Cl. G03g 9/04

U.S. Cl. 252-62.1

26 Claims

1. A liquid electrostatic toner essentially comprising a liquid solvent system, amphipathic polymeric molecules of the graft type each having a polymeric backbone part and a polymeric graft part on said backbone part, each of said molecules being composed of two moieties of which at least one is thermoplastic, said first moiety, which is one of said parts, being solvated by said system, a portion of said first moiety being a dispersant and a fixative to bond the molecules to a substrate, and a second moiety, which is the other of said parts, being insoluble in said system, said second moiety having a particle size between 25mμ and 25μ, a portion of said second moiety being a fixative to bond the molecules to a substrate, so that there is provided a continuous phase constituting the solvent system with the first moieties of the molecules dissolved therein and a dispersed phase constituting the non-solvated moieties of the molecules whereby said molecules act as a mono-dispersed particle phase, a fixative and a dispersant, and a charge director.

3,900,413

REACTIVE DEVELOPER FOR ELECTROPHOTOGRAPHY

Kenneth A. Metcalfe, Lockleys, and Alwin S. Clements, Largs Bay, both of Australia, assignors to The Commonwealth of Australia, Canberra, Australia

Filed June 6, 1973, Ser. No. 367,402

Claims priority, application Australia, June 15, 1972, 9341/72

Int. Cl. G03G 9/04

U.S. Cl. 252-62.1

12 Claims

1. A developer for electrophotography comprising an insulating carrier liquid having an electrical resistivity of at least 10¹⁰ ohm-centimeter and developer particles suspended in said carrier liquid and being electrically conductive so as to be movable in the carrier liquid under the influence of an electrical field, said developer particles being reactively produced in situ in said carrier liquid and being constituted by the reaction product of at least two substances both soluble in said carrier liquid, one being a substance which is electrically insulative relative to the carrier liquid and which does not reduce the electrical resistivity of the carrier liquid when dissolved therein, the other substance being a substance which is electrically conductive relative to the carrier liquid and reduces the electrical resistivity of the carrier liquid when dissolved therein, said substances forming, when in dissolved state in said carrier liquid said conductive developer particles, the relative quantities of said two substances being so selected that there is no surplus of the relatively conductive substance after reaction in the carrier liquid to insure that the resistivity of the carrier liquid is not lowered in its insulating value, said developer particles by virtue of being formed in said carrier liquid being shielded against oxidation and being held in said liquid until used as a developer, said carrier liquid being a hydrocarbon liquid, said substance of greater insulating value being selected from the group consisting of: Quinalizarin, anthranilic acid, Alizarin, Hydroquinone, Chloranil, sym-diphenylcarbazine, diphenylthiocarbazine, 2-Furoic Acid, Tetrachlorophthalic anhydride, fumaric acid, Naphthalene-2-Sulphonic Acid, Citral, Cinnomoldehyde and Diphenylamine, said substance which is more conductive being selected from the group consisting of: cobalt octoate, the octoates and naphthenates of zinc, lead, manganese, copper, zirconium, iron and chromium, copper nonyl phthalate and ferric chloride.

3,900,415

MAGNETIC GLASS

Thomas E. Lee, Baton Rouge, and Sebastian M. Laurent, Greenwell Springs, both of La., assignors to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 184,291, Sept. 27, 1971, abandoned. This application Sept. 4, 1973, Ser. No. 394,046

Int. Cl. C04b 35/00; H01f 1/00; C03c 3/04

U.S. Cl. 252-62.51

8 Claims

1. A method of preparing a magnetic glass comprising the step of calcining or heating in an oxygen free atmosphere about 1-5 parts by weight of an alkali metal aluminosilicate and one part by weight of iron sulfide, to a temperature of from about 1200°C to about 1600°C for a period of time sufficient to form an amorphous magnetic fraction.

3,900,416

ELECTRICAL DEVICES CONTAINING NITROARYLSILOXANE DIELECTRIC FLUID

Gary A. Vincent, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Dec. 20, 1973, Ser. No. 426,975

Int. Cl. H01B 3/18; H01G 4/02

U.S. Cl. 252-63.7

16 Claims

1. In an electrical device containing a dielectric fluid, the improvement comprising employing as the dielectric fluid a siloxane which consists essentially of from 1 to 100 mole percent of R_xR'_ySiO_{(4-x-y)/2} siloxane units wherein x has an average value of from 1 to 3, y has an average value of from 0 to 2, the sum of x+y being from 1 to 3, R is a nitroaryl radical containing from 6 to 18 carbon atoms, and R' is an alkyl, aryl, alkaryl or aralkyl radical containing from 1 to 18 carbon atoms, and from 0 to 99 mole percent R''_zSiO_{(4-z)/2} siloxane units wherein z has an average value from 0 to 3 and R'' is an alkyl, aryl, alkaryl or aralkyl radical containing from 1 to 18 carbon atoms.

4. A transformer as defined in claim 3 wherein in the siloxane R contains from 6 to 12 carbon atoms, R' contains from 1 to 6 carbon atoms, and R'' contains from 1 to 6 carbon atoms.

3,900,417

METHOD AND APPARATUS FOR FORMING SUBMICRON DIPOLE PARTICLES

Alvin M. Marks, Whitestone, N.Y.

Division of Ser. No. 11,176, Feb. 13, 1970, Pat. No. 3,709,828.

This application Jan. 2, 1973, Ser. No. 320,172

Int. Cl. F21V 9/00; G02B 5/20; G02C 7/10; G03C

U.S. Cl. 252-300

10 Claims

1. A method of forming submicron particles of controlled average dimensions from dipole-forming reactants which comprises, providing at least two reactant fluids, mixing said reactant fluids together in substantially stoichiometric relationship to form a dipole precipitate by forming a jet stream of at least one of said reactants and a jet stream of at least one other of said reactants, then causing said jet streams to impinge one on the other and effect mixing thereof over a predetermined distance at a predetermined flow rate to thereby form said dipole precipitate having desirable predetermined average dimensions, wherein said fluids are both solutions which after having been mixed by impingement of said streams are collected in a reaction chamber which is refrigerated to increase the supersaturation, to thereby form a great many nuclei and many small crystals and to also inhibit the growth of large crystals of the dipole precipitate, forming said precipitate as a solution suspension, and stabilizing the suspension by exposing said dipole crystals to oxygen ions from a proportionately small quantity of a free oxygen ion emitting agent in said solution suspension.

8. A method of stabilizing a dipole precipitate of herapathite in a suspension solution which comprises exposing said herapathite dipole to oxygen ions from a proportionately small

3,900,414

ELECTROPHOTOGRAPHIC DEVELOPER

Elinor J. Tanck, Cupertino; Lauren L. Hulse, and Paul P. Kelly, both of Saratoga, all of Calif., assignors to Memorex Corporation, Santa Clara, Calif.

Division of Ser. No. 293,082, Sept. 28, 1972, Pat. No. 3,806,458. This application Jan. 30, 1974, Ser. No. 437,945

Int. Cl. G03g 9/02

U.S. Cl. 252-62.1 P

1 Claim

1. Carrier particles for xerographic toner consisting essentially of 200-600 micron mean diameter particles of steel shot thinly coated with a mixture of a copolymer of methyl methacrylate and ethyl acrylate having a glass transition temperature at least 50°C. and below 100°C., and a cellulose acetate butyrate resin containing less than 60% by weight acetate plus butyrate.

quantity of a free oxygen ion emitting agent in said solution suspension.

3,900,418

ELECTROCHEMICAL LUMINESCENT SOLUTIONS AND DEVICES INCORPORATING SUCH SOLUTIONS

Allen J. Bard, and Nurhan E. Takvoryan, both of Austin, Tex., assignors to Bell-Northern Research, Ltd., Canada

Filed Apr. 12, 1973, Ser. No. 350,497

Int. Cl.² C09K 11/48

U.S. Cl. 252—301.2 R

21 Claims

1. An electrically conducting electrochemical luminescent solution for use in an electro-generated chemical luminescent device operating at a predetermined potential, said solution comprising a fluorescent metal chelate luminescor, an aprotic solvent for said metal chelate, and an electrolyte comprising an organic compound electroinactive at said potential, said metal chelate being capable of producing stable ion radicals at said predetermined potential, the radicals taking part in a reaction in which excited states are formed and then annihilated with eventual emission of light, said solution being substantially free of O₂ and water, said chelate being the most readily oxidized or reduced constituent in said solution, the metal component of said chelate being selected from the group consisting of ruthenium, platinum and palladium and the ligand component of said chelate being selected from the group consisting of bipyridine, 1,10-phenanthroline, 2,2'-terpyridine and tetraphenylporphyrin.

3,900,419

BENZOFURANS

Hans Schlapfer, Basel, and Guglielmo Kabas, Binninger, Basel-Land, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 45,922, June 12, 1970, Pat. No. 3,772,323. This application July 16, 1973, Ser. No. 379,288

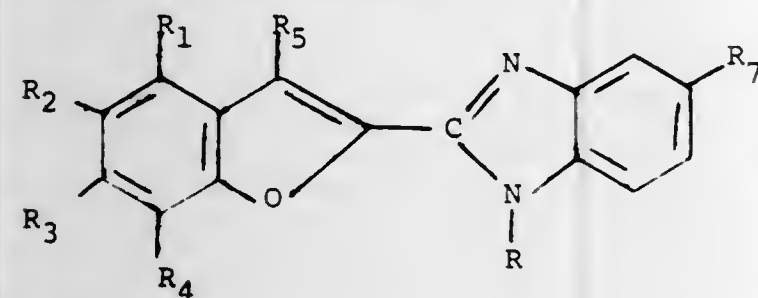
Claims priority, application Switzerland, June 27, 1969, 9863/69

Int. Cl. D061 3/12

U.S. Cl. 252—301.2 W

16 Claims

1. In a process for optically brightening a high molecular weight organic material by contacting said material with an optical brightener, the improvement comprising contacting said material with an effective amount of a solution or dispersion of a benzofuran of the formula



wherein

R is hydrogen, alkyl of 1 to 4 carbon atoms, hydroxy alkyl of 1 to 4 carbon atoms, phenyl, benzyl or cyclohexyl, R₁ is hydrogen or, together with R₂ and the two carbon atoms to which R₁ and R₂ are attached, represent a fused benzene ring, R₂ is hydrogen, halogen, or together with R₁ and the two carbon atoms to which R₁ and R₂ are attached, represent a fused benzene ring, R₃ is hydrogen, alkyl of 1 to 4 carbon atoms, or alkoxy of 1 to 4 carbon atoms, R₄ is hydrogen or halogen, R₅ is hydrogen, alkyl of 1 to 4 carbon atoms, or phenyl, R₆ is hydrogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, or halogen.

3,900,420 MICROGAS EMULSIONS AND METHOD OF FORMING SAME

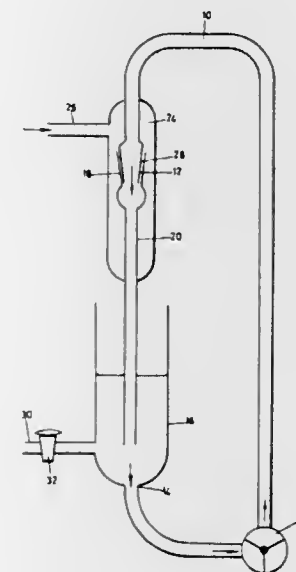
Felix Sebba, c/o Department of Chemistry, University of the Witwatersrand, Jan Smuts Ave., Johannesburg, South Africa

Continuation-in-part of Ser. No. 38,347, May 18, 1970, abandoned. This application Sept. 14, 1972, Ser. No. 289,142

Int. Cl.² B01J 13/00

U.S. Cl. 252—307

12 Claims



1. A microgas emulsion consisting essentially of from about 20% to 60% by volume undissolved gas in the form of spherical bubbles of colloidal size distributed in an aqueous liquid containing at least a small but effective amount of a soluble emulsifier to stabilize the emulsion, said emulsion having a viscosity which is not substantially greater than that of the liquid.

7. A method of forming a microgas emulsion from gas and an aqueous liquid containing at least a small but effective amount of a soluble emulsifier to stabilize the emulsion, said method comprising aspirating gas into a flowing body of said aqueous liquid thereby to form an emulsion of said gas in said liquid and aspirating gas into a flowing body of said emulsion thereby to increase the gas content thereof.

3,900,421

METHOD OF ACCELERATING THE BIODEGRADATION OF PETROLEUM PRODUCTS

Pierre Fusey, Paris, France, assignor to Societe Anonyme: Banque pour l'Expansion Industrielle "Banexi", Paris, France

Filed Feb. 13, 1973, Ser. No. 332,088

Claims priority, application France, Feb. 22, 1972, 72.05894

Int. Cl.² B01J 13/00

U.S. Cl. 252—312

2 Claims

1. A method of accelerating the biodegradation of petroleum products, comprising mixing 100 parts by weight of the petroleum product to be biodegraded with about 30 parts by weight of a mixture of one part by weight of lecithin with one to five parts by weight of an emulsifier selected from the group consisting of sodium oleylisethionate, sodium laurylsulfate, sulphonated alpha-olefin, sarcosinate, 2-amino-2-hydroxymethyl-1, 3-propanediol, aminomethyl propanol, ethoxylated fatty acid, and ethoxylated fatty alcohol, and forming an emulsion of the mixture thus produced with water.

3,900,422 HEAVY METAL ADSORBENTS AND PROCESS FOR PRODUCING SAME

Kazuki Terajima; Shigeru Tomita; Yoshindo Matsuda, all of Tokyo, and Keiji Abe, Ohmiya, all of Japan, assignors to Director-General of the Agency of Industrial Science and Technology, Tokyo, Japan

Filed Sept. 25, 1973, Ser. No. 400,645

Claims priority, application Japan, Sept. 26, 1972, 47-95762; Oct. 27, 1972, 47-107101

Int. Cl. C02b 1/52

U.S. Cl. 252—426

13 Claims

1. A composition of matter comprising a granular mixture of nitrohumic acid and about 5–50 parts by weight per 100 parts of said nitrohumic acid of at least one carboxyl-containing polymeric binder selected from the group consisting of carboxymethylcellulose, carboxymethylstarch, alginic acid, pectinic acid, protein, polyacrylic acid, polymethacrylic acid, partially hydrolyzed polyacrylamide, partially hydrolyzed N-methylolated polyacrylamide, partially hydrolyzed N-methylolated polymethacrylamide and water-insoluble salts thereof.

3,900,423

PROCESS FOR BREAKING EMULSIONS

Sheldon B. Markofsky, Silver Spring, Md., assignor to W. R. Grace & Co., New York, N.Y.

Filed Mar. 28, 1973, Ser. No. 345,775

Int. Cl.² B01D 17/04

U.S. Cl. 252—344

14 Claims

1. A process for demulsifying a water-in-oil or an oil-in-water emulsion which comprises subjecting the emulsion to the demulsifying action of an amount of demulsifying composition effective for demulsifying the emulsion and separating the resulting oil and water phases, the demulsifying composition being formed by:

admixing and reacting at 25°–125°C i. a member selected from a first group consisting of ammonia, a primary alkylamine having 4–12 carbon atoms per molecule, and a alkylenepolyamine having 4–12 carbon atoms per molecule and 1–6 primary amino groups per molecule; (ii) a member selected from a second group consisting of a secondary alkyl amine having 2–8 carbon atoms and 1–6 secondary amino groups per molecule and a secondary alkylenepolyamine having 3–28 carbon atoms per molecule and at least 1 secondary amino group per molecule; (iii) a member selected from a third group consisting of an epihalohydrin and a dihalohydrin having 3–10 carbon atoms per molecule; and (iv) water to form a mixture, the equivalent ratio of third group member to first group member being 1:0.009–0.5 and the equivalent ratio of the third group member to first group member plus second group member being 1:0.22–1.3 and the mole ratio of third group member to water being 1:1–100.

3,900,424

CATALYST FOR COPOLYMERIZING EPOXY COMPOUNDS WITH CARBON DIOXIDE

Shohei Inoue, Tokyo; Masaki Kanbe, Fujisawa; Tadamiichi Takada, Yokohama; Nobuyuki Miyazaki, and Masanori Yokokawa, both of Fujisawa, all of Japan, assignors to Nippon Oil Seal Industry Company Limited, Tokyo, Japan

Filed July 18, 1973, Ser. No. 380,222

Claims priority, application Japan, July 21, 1972, 47-73616; July 24, 1972, 47-73443

Int. Cl. B01j 11/06, 11/82, 11/84

U.S. Cl. 252—428

10 Claims

1. A catalyst composition consisting essentially of the reaction product of (a) an organometallic compound having the general formula R'ⁿM wherein n is an integer, at least one R' is selected from the group consisting of an alkyl group, halogen, hydroxy, alkoxy and hydrogen, the remaining R' groups are selected from the group consisting of alkyl groups, alkaryl

groups, aralkyl groups, aryl groups, halogen, hydroxy and alkoxy, and M is a metal element selected from the group consisting of those metal elements in groups II and III of the periodic Table, (b) at least one co-catalyst component selected from the group consisting of sulfur and compounds containing one or more active hydrogen atoms in a molar ratio to the organometallic compound within the range of from about 0.1 to about 5.0, and (c) carbon dioxide gas under a pressure at room temperature of from about 5 to about 50 kg/cm² and in a molar ratio to the organometallic compound of at least 1, said reactants having been reacted together at a temperature between room temperature and about 300°C for a time of from about 0.1 to about 100 hours.

3,900,425

CATALYST FOR OXIDATION OF HYDROCARBONS AND METHOD OF MAKING SAME

Eric Robinson, Lambeg, Northern Ireland, assignor to Lambeg Industrial Research Association, Lisburn, Northern Ireland

Continuation-in-part of Ser. No. 235,388, March 16, 1972, which is a continuation-in-part of Ser. No. 3,190, Jan. 15, 1970, abandoned. This application May 2, 1973, Ser. No. 356,490

Int. Cl. B01j 11/06, 11/08, 11/22

U.S. Cl. 252—430

27 Claims

1. A composition which is the reaction product of a permanganate with a compound selected from the group consisting of lactose, sucrose, dextrin, glucose, starch, pectin, hemi-cellulose, alginic acid, a salt of alginic acid, a soluble cellulose derivative, a salt of a soluble cellulose derivative, polyvinyl alcohol and polyethylene glycol, said product containing an ion selected from the group consisting of boron, aluminum, chromium, iron, cobalt, nickel, copper, molybdenum, silver, lanthanum, cerium, praseodymium, osmium and mixtures thereof.

9. A process for preparing a catalyst composition, comprising adding a solution of a permanganate to a solution of a compound selected from the group consisting of lactose, sucrose, dextrin, glucose, starch, pectin, alginic acid, a salt of alginic acid, a soluble cellulose derivative, a salt of a soluble cellulose derivative, polyvinyl alcohol and polyethylene glycol, allowing the reaction mixture to gel or form a precipitate, separating the gel or precipitate from the liquor supernatant thereto and treating the gel or precipitate with a solution containing a salt of elements selected from the group consisting of boron, aluminum, chromium, iron, cobalt, nickel, copper, molybdenum, silver, lanthanum, cerium, praseodymium, osmium, and mixtures thereof.

3,900,426

CATALYSTS FOR THE OXIDATION OF OLEFINES

Vittorio Fattore; Paolo Moreschini, and Bruno Notari, all of San Donato, Milanese, Italy, assignors to Snam Progetti S.p.A., San Donato Milanese, Italy

Filed Sept. 1, 1972, Ser. No. 285,651

Claims priority, application Italy, Sept. 2, 1971, 28151/71

Int. Cl. B01j 11/74; B01j 11/06

U.S. Cl. 252—439

2 Claims

1. A catalyst for the oxidation of olefines corresponding to the following general formula
Sb₂Fe_mMe_nCo_pO_q
wherein Me is a metal selected from tellurium and arsenic, m is in the range of 0.1 to 1
n is in the range of 0 to 0.5
p is in the range of 0.005 to 1
q is in the range of 2.2 to 6.5

3,900,427

HYDROPROCESSING CATALYST

Kenneth L. Riley, and Willard H. Sawyer, both of Baton Rouge, La., assignors to Exxon Research and Engineering Company, Linden, N.J.

Division of Ser. No. 101,957, Dec. 28, 1970, Pat. No. 3,770,617. This application June 4, 1973, Ser. No. 366,460

Int. Cl. B01j 11/40

U.S. Cl. 252-455 R

13 Claims

1. A hydroprocessing catalyst comprising a hydrogenation component on an alumina support having a major portion of its surface area in pores ranging from 30-80A in diameter, with less than four percent of the total pore volume being in pores ranging from 200 to 2000A in diameter, and at least three percent of the total pore volume being in pores greater than 2000A in diameter.

3,900,428

CATALYST FOR THE REDUCTION OF NITRIC OXIDES

Gerhard Mai, Bruchkobel; Reiner Siepmann, Rodenbach, and Franz Kummer, Rossdorf, all of Germany, assignors to W. C. Heraeus GmbH, Hanau, Germany

Continuation-in-part of Ser. No. 295,790, Oct. 6, 1972, abandoned, which is a continuation-in-part of Ser. No. 284,323, Aug. 28, 1972, abandoned. This application Sept. 7, 1973, Ser. No. 395,090

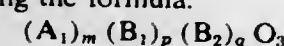
Claims priority, application Germany, Oct. 19, 1971, 2151958. The portion of the term of this patent subsequent to Aug. 26, 1992, has been disclaimed.

Int. Cl. B01J 23/10

U.S. Cl. 252-462

8 Claims

1. Catalyst having the formula:



wherein

m is 1, and p and q , respectively, have values greater than 0 but less than 1, and $p + q = 1$; and

A_1 is at least one trivalent cation of metals selected from the group consisting of Bi and the rare earth metals;

B_1 is at least one divalent cation of metals selected from the group consisting of Ni, Co, Fe and Cu;

B_2 is at least one tetravalent cation of metals selected from the group consisting of Ru, Os, Ir, Pt, Ti, Mo, Mn and V; with the proviso that when B_1 is Cu, B_2 is only Mn, and the further proviso that $(m \cdot a_1) + (p \cdot b_1) + (q \cdot b_2)$ equals 6 such that a neutrality of charge exists, wherein

a_1 = the valency of A_1

b_1 = the valency of B_1 and

b_2 = the valency of B_2 .

3,900,429

CATALYST FOR PURIFYING EXHAUST GASES

Noboru Komatsu, Toyooka; Osami Kamigaito; Takatoshi Suzuki; Haruo Doi; Kazuya Sano; Nobuyuki Yamamoto; Toshio Kandori, and Yukikazu Tsuzuki, all of Nagoya, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi-ken, Japan

Filed Feb. 6, 1974, Ser. No. 440,021

Claims priority, application Japan, Feb. 14, 1973, 48-18112

Int. Cl. B01j 11/06, 11/22

U.S. Cl. 252-462

18 Claims

1. A catalyst for purifying exhaust gases produced by a process, which comprises the steps of:

mixing particles of nickel and copper; nickel, copper and chromium or nickel; copper, chromium and an oxide selected from the group consisting of yttrium oxide, titanium oxide, lanthanum oxide and mixtures thereof;

sintering said particles at a temperature ranging from 500° to 1000°C in air or an oxygen containing gas which results in partial oxidation of the particles; and

activating said sintered mixture at a temperature ranging from 500° to 1000°C under an atmosphere of a reductive gas or a non-oxidizing gas.

3,900,430

CATALYTIC HYDROCARBON CONVERSION PROCESS

William Ralph Beaty, Jr., Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed May 14, 1973, Ser. No. 360,274

Int. Cl. B01j 23/08

U.S. Cl. 252-463

7 Claims

1. A hydrosulfurization catalyst consisting essentially of from about 0.5 to about 25 weight percent based on the catalyst weight of at least one catalytic metal selected from the group consisting of molybdenum, tungsten, chromium, nickel and cobalt supported on gamma alumina produced by a process consisting essentially of

a. hydrolyzing aluminum alkoxides to produce an aqueous alumina portion containing up to about 32 weight percent Al_2O_3 and an organic reaction product;

b. contacting said aqueous alumina slurry with an organic solvent selected from the group consisting of ethanol, propanol, isopropanol, butanol, hexanol, isobutanol and tertiary butanol in an amount sufficient to produce alumina having a cumulative pore volume (0-10,000A) from about 1.0 to about 2.75 cc/g, a surface area from about 225 to about 400 m²/g and a loose bulk density from about 7.5 to about 25 lb/ft³ upon drying to an Al_2O_3 content from about 80 to about 100 weight percent to form a solvent-aqueous alumina mixture;

c. drying said solvent-aqueous alumina mixture to produce alumina; and

d. forming said alumina of (c) into particles and calcining to produce said gamma alumina.

3,900,431

PHOTOCONDUCTIVE MATERIAL COMPRISING A SOLID SOLUTION OF (Cd, Pb)S

Toshio Kobayashi, Kokubunji; Kenzo Susa, Hachioji, and Satoshi Taniguchi, Tokorozawa, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Apr. 8, 1974, Ser. No. 459,182

Claims priority, application Japan, Apr. 11, 1973, 48-40445

Int. Cl. H01L 31/18

U.S. Cl. 252-501

13 Claims

1. A photoconductive material comprising a solid solution represented by the general formula (Cd, Pb)S and which has a rock-salt type crystal structure.

7. A process for making a photoconductive material composed of a solid solution represented by the general formula (Cd, Pb)S and which has a rock-salt type crystal structure, said process comprising maintaining the temperature of a mixture of powdery cadmium sulfide and powdery lead sulfide at at least about 600°C for a period of time and under a pressure sufficient so that the calcium sulfide and lead sulfide form a solid solution having a rock-salt type crystal structure.

3,900,432

VARISTOR COMPOSITIONS

Sanford Morton Marcus, and Frank Knowles Patterson, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 15, 1973, Ser. No. 406,302

Int. Cl. H01b 1/06

U.S. Cl. 252-519

30 Claims

1. A composition useful for printing a film on a dielectric substrate and firing the same to form film varistors, said composition being of finely divided inorganic material dispersed in an inert liquid vehicle, said inorganic material comprising, by weight,

a. 60-99% of a crystalline semiconductive oxide of the formula $Fe_{2-x}M_xO_3$, wherein M is one or more of Ge and Ti and x is in the range 0.0001-0.05, and

b. 1-40% of a glass powder comprising one or more of at least 10% PbO , at least 10% Bi_2O_3 and at least 25% CdO .

3,900,433

EXPANDABLE POLYSTYRENE BEADS

Bernard Taub, Williamsville, and Daniel F. Harnish, Orchard Park, both of N.Y., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Dec. 17, 1973, Ser. No. 425,372

Int. Cl. G08j 1/26

U.S. Cl. 260-2.5 B

16 Claims

1. A process for making expandable styrene polymer particles by contacting particles of said styrene polymer with a volatile organic fluid blowing agent, said blowing agent containing from about 0.5 to about 20 percent by weight of blowing agent of an impregnation aid consisting essentially of a compound having a solubility parameter between 7 and 12 hildebrands, a critical volume of less than about 190 cm³/gram mole and a hydrogen bonding parameter contribution to said solubility parameter of less than 5 hildebrands, the impregnation aid being present in an amount sufficient to permit incorporation of the blowing agent into the styrene polymer particle to form a free flowing styrene polymer particle.

3,900,434

WALLBOARD TAPE JOINT COMPOSITION AND ADHESIVE THEREFOR CONTAINING WATER SOLUBLE POLYACRYLAMIDE, LIMESTONE, ASBESTOS, MICA AND CELLULOSE ETHER

Fabio B. Bruschtein, and Dennis L. Lyftgot, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sept. 4, 1973, Ser. No. 393,854. The portion of the term of this patent subsequent to Feb. 19, 1991 has been disclaimed.

Int. Cl. C08b 21/32

U.S. Cl. 260-17 R

7 Claims

1. In a dry powder composition suitable on admixture with water for adhering and covering wallboard joint tapes which comprises a major proportion of up to about 88 percent by weight of minus 100 mesh ground limestone, from about 2 to about 20 percent by weight of asbestos, from about 5 to about 20 percent by weight of minus 100 mesh mica, from about 0.25 to about 1 percent by weight of water-soluble cellulose ether and from about 1.5 to about 5 percent by weight of a water-soluble polyacrylamide, said polyacrylamide having a low degree of hydrolysis of from 0 to about 5 percent, the improvement which consists in employing a polyacrylamide characterized by (1) an Ostwald viscosity of at least 2.4 centipoises for a 0.5 percent by weight solution thereof in distilled water and (2) a Brookfield viscosity of no greater than 700 centipoises for a 5.1 percent by weight solution thereof in aqueous 1 percent borax solution, said polyacrylamide being in the form of finely divided solids having a particle size such that substantially 100 percent thereof passes through a screen having 35 meshes to the inch.

3,900,435

PULVERULENT ACRYLIC RESIN BINDER MIXTURES CONTAINING TRIGLYCIDYL ISOCYANURATE AND CELLULOSE ACETOBUTYRATE

Frank Wingler, Leverkusen, and Richard Muller, Bergisch-Neukirchen, both of Germany, assignors to Bayer Aktiengesellschaft, Germany

Filed Apr. 2, 1974, Ser. No. 457,258

Claims priority, application Germany, Apr. 7, 1973, 2317578

Int. Cl. B05b 5/02; C08b 21/08

U.S. Cl. 260-17

4 Claims

1. A powdered coating agent comprising a mixture of A. a copolymer of

I. 23 to 92% by weight of methyl methacrylate,

II. 5 to 62% by weight of an acrylic acid ester having from 1 to 12 carbon atoms in the ester portion or a meth-

acrylic acid ester having from 2 to 12 carbon atoms in the ester portion or a mixture thereof and

III. 3 to 15% by weight of acrylic acid, methacrylic acid, itaconic acid, maleic acid or fumaric acid or a mixture thereof,

wherein the sum of the percentage contents of I to III is 100 and the average molecular weight is from about 3,000 to 20,000,

B. triglycidyl isocyanurate and

C. cellulose acetobutyrate

wherein there are 95 to 80 parts by weight of said copolymer (A) to 5 to 20 parts by weight of triglycidyl isocyanurate (B) and 50 to 40% by weight, based on (A), of cellulose acetobutyrate (C).

3,900,436

POLYESTERAMIDE RESIN

Manfred Drawert, Werne; Eugen Griebisch, Unna; Bernhard Krieger, Bergkamen; Horst Schepp, Altluenen, and Christian Burba, Luenen, all of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Germany

Filed Aug. 30, 1972, Ser. No. 260,800

Claims priority, application Germany, June 11, 1971, 2128984

Int. Cl. C08g 20/30

U.S. Cl. 260-18 N

2 Claims

1. A polyesteramide resin having an hydroxy number between 9.35 and 37.1, said resin comprising

1. an acid component comprising

A. 85 to 95 percent by weight of a polymerized C_6-C_{24} fatty acid product containing from 5 to 15 percent by weight of monomeric fatty acid, 60 to 80 percent of dimeric fatty acid, and 10 to 35 percent by weight of trimeric and higher fatty acid polymers, and

B. 15 to 5 percent by weight of an additional monomeric $C_{16}-C_{18}$ fatty acid;

and condensed therewith in a substantially equivalent amount,

2. a second component comprising

A. from 5 to 20 equivalent percent of an aliphatic polyol having at least three primary or secondary hydroxy groups and

B. 95 to 80 percent of ethylene diamine, said resin additionally comprising an excess of 5 to 20 equivalent percent of hydroxy component condensed with said acid component.

3,900,437

NEW METHOD FOR THE PREPARATION OF POLYAMIDE ADDUCT

Harold M. Preston, Minneapolis, Minn., assignor to General Mills Chemicals, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 320,407, Jan. 2, 1973, abandoned. This application July 1, 1974, Ser. No. 484,721

Int. Cl. C08 30/00

U.S. Cl. 260-18 PN

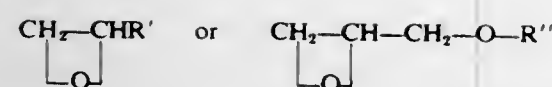
1 Claim

1. A process comprising: heating a mixture of a. an amine component having the formula



wherein R is an aromatic group containing 6 to 10 carbon atoms or an alkylene containing 2 to 4 carbon atoms and x is an integer from 1 to 5,

b. a monoepoxide component selected from monoepoxides having the formula



wherein R' is a hydrogen group, phenyl group, alkyl group having from 1 to 10 carbon atoms, or an alkylene carboxylate group having 2 to 22 carbon atoms and R'' is a phenyl group or an alkyl group having from 1 to 10 carbon atoms, and

c. an acid component selected from monomeric, aliphatic, unsaturated monocarboxylic fatty acids containing 16 to 22 carbon atoms or polymeric fat acids predominantly containing 32 to 44 carbon atoms;

wherein said mixture comprises about 0.3 to 93.5 equivalent percent epoxide component, about 2.8 to 99 equivalent percent amine component and about 0.5 to 89.0 equivalent percent acid component;

said heating increasing the temperature of the above mixture from a temperature below the boiling point of the epoxide component to a temperature of about 350°F. to 450°F. and conducted so that the temperature of the above mixture is held below the boiling point of the epoxide component, the boiling point of said epoxide component being adjusted in the mixture by adjusting the pressure under which the reaction is conducted, for a period of time sufficient to permit association of the monoepoxide component and the amine component prior to heating to the temperature of about 350°F. to 450°F. and holding at that temperature for a time period of about three to eight hours until the amidification reaction takes place thereby forming a polyamide resin-epoxide adduct wherein the amine component is condensed with the monoepoxide.

3,900,438

COPOLYMER-WAX COMPOSITION

Richard E. Zdanowski, Fort Washington, and Bjorn E. Larsson, Rushland, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 353,585, March 20, 1964, abandoned, which is a continuation-in-part of Ser. No. 74,230, Dec. 7, 1960, abandoned. This application Feb. 12, 1970, Ser. No. 11,017

Int. Cl. C08f 45/24, 45/52; C09g 1/10

U.S. Cl. 260—28.5 R

28 Claims

1. An emulsion of copolymeric resin particles dispersed in water containing a dispersing agent, said particles being an emulsion copolymer selected from those prepared from:

a)	ethyl acrylate	60%
	methyl methacrylate	30%
	t-butylaminoethyl methacrylate	10%
b)	ethyl acrylate	25%
	methyl methacrylate	71%
	dimethylaminoethyl methacrylate	4%
c)	ethyl acrylate	45%
	methyl methacrylate	45%
	dimethylaminoethyl methacrylate	10%
d)	ethyl acrylate	70%
	methyl methacrylate	20%
	dimethylaminoethyl methacrylate	10%

the percentages being weight percentages, said copolymer when admixed with wax being redispersible in acid solution but not redispersible in neutral or alkaline solution, the amount of wax being 5 to 50 parts per 50 to 95 parts of copolymer by weight, said wax being selected from montan, carnauba, Chinese insect, cerasin, ozocerite, polyethylene, and microcrystalline waxes.

3,900,439 METHOD AND COMPOSITION FOR REPAIRING ASPHALT PAVEMENT

Carl Joseph Kay, Burbank, Calif., assignor to Products Research & Chemical Corporation, Burbank, Calif.

Filed May 24, 1974, Ser. No. 473,136

Int. Cl. C08f 45/52

U.S. Cl. 260—28.5 AS

18 Claims

1. Method for repairing asphalt pavement having voids on the top surface thereof which comprises:

forming a uniform admixture of (a) aggregate granules the surfaces of which are substantially completely coated with a coating composition consisting essentially of a mixture of asphalt and ethylene-vinylacetate copolymer and (b) between 0.5 to 5 percent, by weight, of a solvent solution consisting essentially of an organic solvent for the coating composition which will tackify and solvate said coating composition said organic solvent having a solubility parameter from about 7 to 10, a boiling point from about 150°F. to about 325°F. and an evaporation rate of from about 0.1 to 6.0, at room temperature, using butyl acetate as 1.0 as the basis; and from 0 to 50 percent, by weight, of a binder which is a mixture of asphalt and ethylene-vinylacetate copolymer;

and filling said voids with said admixture and compacting the same in said voids to form a long lasting patch which can be driven upon by vehicular traffic shortly after filling said voids.

3,900,440

ADHESIVE COMPOSITION

Osamu Ohara, and Nobuyoshi Wakabayashi, both of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Oct. 23, 1973, Ser. No. 408,882

Claims priority, application Japan, Nov. 2, 1972, 47-110048

Int. Cl. C08d 7/14; C08f 15/40, 45/26, 45/58

U.S. Cl. 260—29.7 W

27 Claims

1. An adhesive composition comprising: (A) an aqueous solution of a member selected from the group consisting of (1) a copolymer of an α -olefin having from 2 to 8 carbon atoms and at least one comonomer selected from the group of an unsaturated carboxylic acid, an ester of an unsaturated carboxylic acid and a compound having a functional group which is convertible to a carboxyl group by hydrolysis or alkali saponification, said comonomer being present in an amount comprising from 30 to 85% by weight of the copolymer, the degree of polymerization being at least 100, and (2) a water soluble salt of said copolymer; (B) a salt selected from the group consisting of the carbonate, sulfate, nitrate, acetate, phosphate, chloride and silicate salts of calcium, magnesium, zinc, barium, cadmium, lead, copper, aluminum, iron, nickel and cobalt, in an amount less than 8000% by weight of the copolymer; and (C) a compound having at least two epoxy groups per molecule in an amount less than 1000 mole % based on the carboxyl group of the copolymer.

3,900,441

ZINC AND MOLYBDENUM-CONTAINING COMPOUNDS AS SMOKE DEPRESSANTS FOR POLY(VINYL CHLORIDE) RESIN COMPOSITIONS

Thomas Y. King, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Continuation-in-part of Ser. No. 340,271, March 12, 1973, abandoned. This application July 10, 1974, Ser. No. 487,175

Int. Cl. C08f 45/56, 45/62

U.S. Cl. 260—31.8 HA

9 Claims

1. A poly(vinyl chloride) homopolymer or copolymer resinous composition, wherein said copolymer comprises a major portion of vinyl chloride, containing, as a smoke suppressant, based on 100 parts by weight resin:

a. a mixture of zinc and molybdenum compounds containing between about 0.2 to 7.0 parts by weight zinc metal

3,900,443

TRIAZINE DERIVATIVES

Christian Luethi, Muenchenstein; Hans Rudolf Biland, Gelterkinden, and Max Duennenberger, Frenkendorf, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y. Division of Ser. No. 156,541, June 24, 1971, abandoned. This application Nov. 14, 1973, Ser. No. 415,715

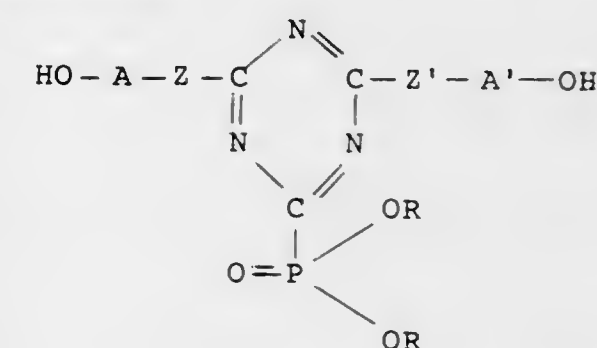
Claims priority, application Switzerland, June 30, 1970, 9877/70

Int. Cl. C08f 45/58

U.S. Cl. 260—45.8 NT

10 Claims

1. A composition of matter consisting essentially of an organic material subject to oxidative decomposition and from 0.01 to 5% by weight of the organic material of a stabilizer having the formula



wherein A and A' are identical or different and represent an unsubstituted or substituted phenylene radical which is bound in position 1 to Z or Z' and carries in position 4 a hydroxyl group; Z and Z' are identical or different and represent a bridging member —O—, —S— or —N—, with Q standing for hydrogen, alkyl, alkoxy, or —CN; R and R' are identical or different and represent an unsubstituted or substituted alkyl, cycloalkyl or phenyl radical.

3,900,442

TITANIUM DIOXIDE PIGMENTED POLYMER COMPOSITIONS WITH IMPROVED VISIBLE AND ULTRAVIOLET LIGHT STABILITY

Joseph S. Zannucci, and Gerald R. Lappin, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 394,369, Sept. 4, 1973, abandoned.

This application Apr. 30, 1974, Ser. No. 465,470

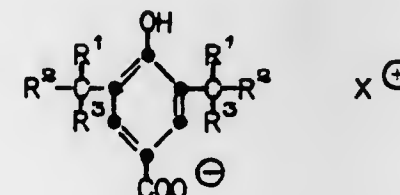
Int. Cl. C08K 5/13, 5/27

U.S. Cl. 260—42.46

9 Claims

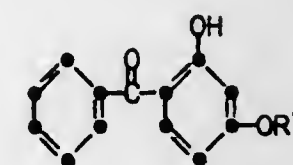
1. Composition comprising a titanium dioxide pigmented polymer normally susceptible to degradation due to visible or ultraviolet light selected from the group consisting of poly- α -olefins prepared from at least one α -monoolefin having 2 to 12 carbon atoms and graft copolymers prepared by polymerizing an α -monoolefin containing 2 to 5 carbon atoms and subsequently grafting maleic or acrylic acid to the polymer backbone; mixed with a stabilizing amount of the following components (1) and (2):

1. a compound having the formula

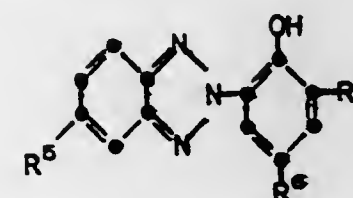


wherein R¹ to R³ are the same or different and each represents an alkyl group having 1 to 8 carbon atoms; X⁺ is Mn²⁺ or Zn²⁺; and

2. a compound selected from (a) compounds having the formula:



or (b) compounds of the formula:



wherein R⁴ represents hydrogen or alkyl, R⁵ represents hydrogen or chloro, each R⁶ is the same or different and represents hydrogen or alkyl, each of said components being utilized in an amount of from about 0.01 to about 4.0 weight percent based on the weight of the polymer with an upper limit such that the sum of all such percentages of said components does not exceed 5 weight percent based on the weight of the polymer.

3,900,444

FLAME RESISTANT THERMOPLASTIC POLYESTERS

Werner Racky, Wiesbaden; Hans-Jerg Kleiner, Bad Soden, Taunus, and Walter Herwig, Neuenhain, Taunus, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Oct. 23, 1973, Ser. No. 408,644

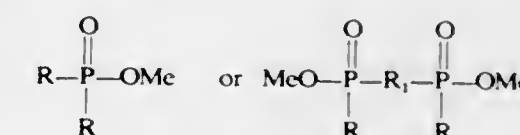
Claims priority, application Germany, Oct. 25, 1972, 2252258

Int. Cl. C08G 51/62

U.S. Cl. 260—45.75 P

6 Claims

1. A flame resisting thermoplastic polyester consisting essentially of a polyalkylene terephthalate which may contain up to 10 mole % based on the total dicarboxylic acid and diol units in said polyester of units derived from a dicarboxylic acid other than terephthalic acid and up to 10 mole % of units derived from a diol other than an alkylene diol, containing an effective flame-retarding amount of a flame-retarding compound of the formula



wherein Me represents an alkali metal, R represents the same or different alkyl radicals of 1 to 6 carbon atoms, and R₁ represents an alkylene radical of 2 to 4 carbon atoms.

3,900,445

PROCESS FOR THE PREPARATION OF
POLYPHENYLENE ETHERS WITH CUPROUS AND
CUPRIC AMINE CATALYSTGlenn D. Cooper, and James G. Bennett, both of Delmar, N.Y.,
assignors to General Electric Company, Pittsfield, Mass.

Filed Dec. 26, 1973, Ser. No. 428,449

Int. Cl.² C08G 65/44

U.S. Cl. 260—47 ET

12 Claims

1. In a process for the preparation of a high molecular weight polyphenylene ether having a degree of polymerization of at least 50 by oxidatively coupling a monovalent phenol having substitution in at least the two ortho positions and hydrogen or halogen in the para position, using oxygen and a complex catalyst as an oxidizing agent, the improvement which comprises using as said complex catalyst a mixture of a cuprous halide salt and a cupric halide salt at a ratio of from 0.1:1 to 1:0.1 of said cuprous halide to said cupric halide, in combination, with a primary, or secondary amine.

3,900,446

POLYURETHANE INTERLAYER FOR LAMINATED
SAFETY GLASS

Charles E. McClung, Kettering, and David G. Glasgow, Dayton, both of Ohio, assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 313,492, Dec. 8, 1972, Pat. No. 3,823,060, which is a continuation-in-part of Ser. No. 219,175, Jan. 19, 1972, abandoned, which is a continuation-in-part of Ser. No. 50,731, July 27, 1970, abandoned. This application Sept. 27, 1973, Ser. No. 401,481

Int. Cl.² C08G 22/06, 22/10, 22/24

U.S. Cl. 260—75 NT

10 Claims

1. A polyurethane interlayer for laminated safety glass consisting essentially of the polymerization reaction product of (1) a diisocyanate which is an isomeric mixture of 4,4'-methylenebis(cyclohexylisocyanate); (2) a hydroxy terminated polyester having a melting point above 42°C. and a molecular weight in the range of from 800 to 1200 which is selected from the group consisting of poly(1,4-butylene adipate) and poly(ethylene adipate); and (3) a chain extender which is a diol-containing from 2 to 16 carbon atoms; which is selected from the group consisting of aliphatic and alicyclic diols; wherein the diisocyanate isomeric mixture has a trans-trans content of from 0 to 30 percent by weight, a cis-cis content of from 0 to 25 percent by weight and a cis-trans content of from 45 to 90 percent by weight and wherein the ratio of diisocyanate/polyester/chain extender in the polyurethane interlayer is in the range of from 1.5/1.0/0.5 to 4/1.0/3.0.

3,900,447

THERMALLY ACTIVATED PROMOTERS FOR SALT
COMPLEX CURING AGENTS

Norman Martin van Gulick, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 30, 1974, Ser. No. 465,698

Int. Cl.² C08G 18/32, 18/38

U.S. Cl. 260—77.5 AM

15 Claims

1. In a process wherein a urethane prepolymer containing free isocyanato groups is heated in contact with a complex of 4,4'-methylenedianiline and a salt to a temperature sufficient to cure the prepolymer, the salt component of the complex being selected from the group consisting of sodium chloride, sodium bromide, sodium iodide, sodium nitrite, lithium chloride, lithium bromide, lithium iodide, lithium nitrite, and sodium cyanide, the ratio of said 4,4'-methylenedianiline to salt in said complex being 3 moles to 1 mole, the improvement comprising employing the aforesaid complex in a mixture with a urea channel inclusion complex, the latter being employed in an amount of about 0.1–10% by weight of the total weight of the prepolymer and both complexes, and heating the resulting dispersion of prepolymer and both complexes to a curing

temperature of about 60°–140°C., whereby the urea channel inclusion complex is decomposed.

3,900,448

COPOLYAMIDES WHICH CONTAIN
QUINAZOLINEDIONE STRUCTURES

Gerhard Dieter Wolf, Dormagen, and Francis Bentz, Cologne, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 30, 1973, Ser. No. 420,372

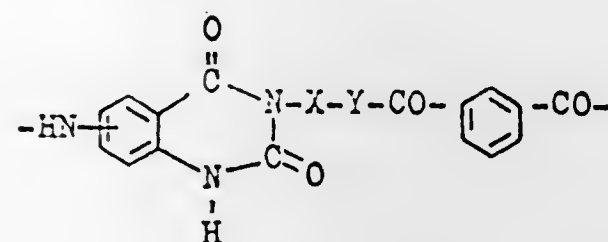
Claims priority, application Germany, Dec. 2, 1972, 2259123

Int. Cl. C08g 20/20, 20/22

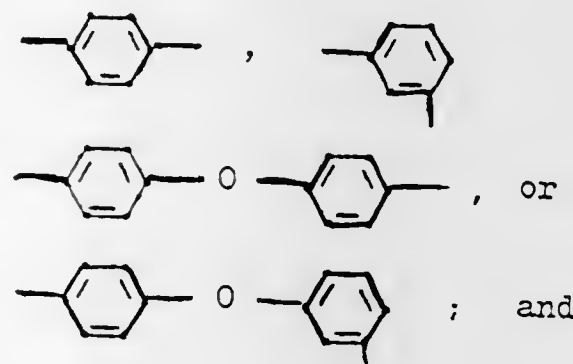
U.S. Cl. 260—78 R

3 Claims

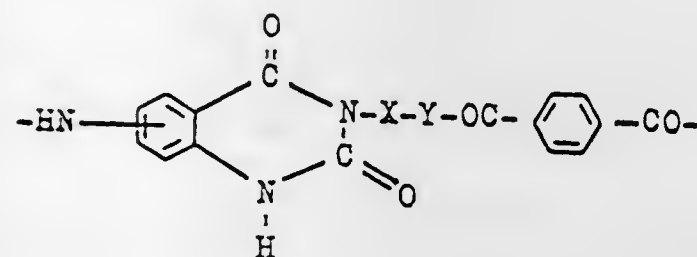
1. High molecular weight aromatic copolyamides which contain quinazolinedione structures comprising 25 to 99 mols-% of structural units of the formula



in which
X is



Y is —NH—;
and the remaining 75 to 1 mols-% of structural units of the general formula



in which X and Y have the meanings defined above, said copolyamides having a relative viscosity (η_{rel} determined on a 0.5% solution of the copolyamide in sulphuric acid at 25°C) of 1.3 to 4.5.

3,900,449

STORAGE-STABLE AND THERMOSETTING MIXTURES
Heinz Rembold, Arlesheim; Theobald Haug, Frenkendorf;
Sigfried Wyler, Dornach, and Jurg Kiefer, Reinach, all of
Switzerland, assignors to Ciba-Geigy Corporation, Ardsley,
N.Y.

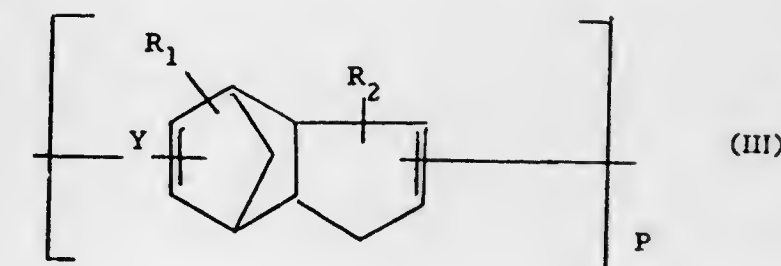
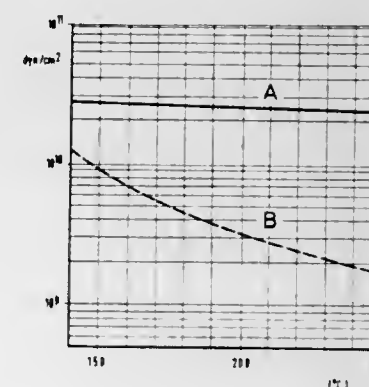
Filed June 14, 1973, Ser. No. 370,179

Claims priority, application Switzerland, July 4, 1972, 9991/72

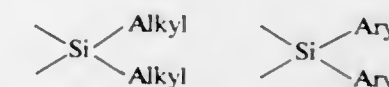
Int. Cl. C08f 17/00

U.S. Cl. 260—78 UA

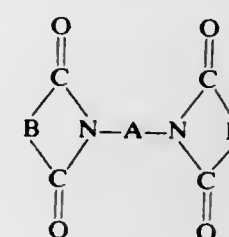
8 Claims



in which Y denotes a radical of the formulae

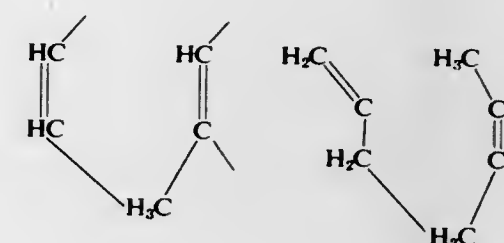


1. Storage-stable, thermosetting mixtures which are characterized in that they contain (a) N,N'-bis-imides of unsaturated dicarboxylic acids of the general formula

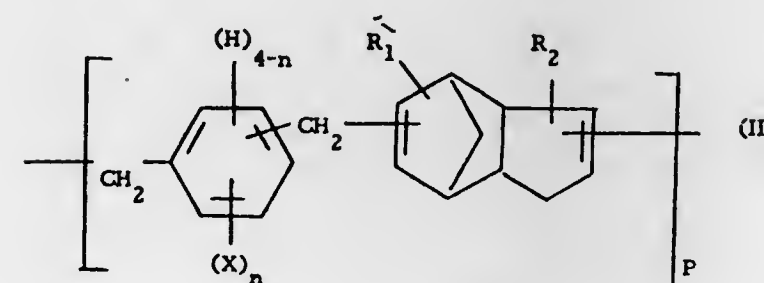


(1) or a divalent aliphatic, cycloaliphatic, araliphatic or aromatic hydrocarbon radical, the molar ratio of N,N'-bis-imides of formula I to the bis-(cyclopentadienyl) compounds of formula II and optionally III being about 1:4 to 4:1.

in which A denotes a divalent organic radical with at least 2 and at most 30 carbon atoms and B denotes a radical of the formulae



and (b) dimeric or oligomeric halogen-containing bis-(cyclopentadienyl), compounds of the general formula



3,900,450

PREPARATION OF POLYAMIDES BY CONTINUOUS
POLYMERIZATION

Iqbalsingh Jaswal, Copper Cliff, and Kalev Pugi, Kingston, both of Canada, assignors to Du Pont of Canada, Ltd., Montreal, Canada

Filed Aug. 29, 1973, Ser. No. 392,511

Claims priority, application Canada, Mar. 5, 1973, 165282

Int. Cl. C08g 20/20

U.S. Cl. 260—78 R

21 Claims

1. A process for the continuous preparation of an aliphatic polycarbonamide from an aliphatic polycarbonamide-forming aqueous salt solution prepared from a diamine and a dicarboxylic acid comprising:

injecting continuously an aliphatic polycarbonamide-forming aqueous salt solution into a first reaction zone designed to permit rapid heating and uniform mixing; heating and uniformly mixing the salt solution within the first reaction zone at amide-forming pressures, temperatures and hold-up times to form a first vapor and a prepolymer having an extent of reaction in the range of from 70 to 98 percent and a relative viscosity in the range of from about 2.3 to about 11, said mixing being accomplished by recirculating a portion of said prepolymer past the location of said injecting step and injecting said reactants into said portion of prepolymer being recirculated; continuously separating the first vapor from the prepolymer so formed;

passing the prepolymer from the first reaction zone into a second reaction zone;
 heating the prepolymer for a predetermined hold-up time within the second reaction zone to form a second vapor and a polymer having an extent of reaction in the range of about 96.5 to 99 percent and a relative viscosity in the range of from about 6 to about 26;
 continuously separating the second vapor from the polymer so formed; and
 withdrawing the polymer from the second reaction zone, relative viscosity being the ratio of viscosity (in centipoises) at 25°C. of an 8.4 percent by weight solution of polyamide in 90 percent formic acid to the viscosity (in centipoises) at 25°C. of the 90 percent formic acid alone.

3,900,451

METHOD OF MAKING SULFHYDRYL-CONTAINING POLYMERS

Albertha B. Mitchell, Framingham; Suzanne V. McKinley, Wellesley, both of Mass., and Joseph W. Rakshys, Jr., Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

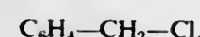
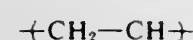
Filed Aug. 24, 1973, Ser. No. 391,429

Int. Cl. C08f 27/06

U.S. Cl. 260—79.5 NV

6 Claims

1. A process for preparing sulfhydryl-containing polymers comprising reacting by contacting
 a. a chloromethylated vinylaromatic polymer whose backbone comprises units of the formula



said polymer being swollen or dissolved in an inert water-immiscible organic solvent, and
 b. an aqueous solution of an alkali metal hydrosulfide, in the presence of
 c. a catalytic amount of an organic onium salt.

3,900,452

OLEFINIC COPOLYMERS AND PROCESS FOR THE PREPARATION THEREOF

Alberto Valvassori, Milan, Italy; Guido Sartori, Brussels, Belgium, and Vittorio Turba, Milan, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

Continuation-in-part of Ser. Nos. 373,064, June 5, 1964, abandoned, and Ser. No. 515,482, Dec. 21, 1965. This application Jan. 17, 1969, Ser. No. 797,337

Claims priority, application Italy, June 7, 1963, 12064/63; Nov. 12, 1963, 23100/63

Int. Cl. C08f 15/14, 15/40

U.S. Cl. 260—80.78

24 Claims

1. Substantially linear, amorphous, unsaturated high molecular weight copolymers of at least one monoolefin having the formula $\text{CH}_2 = \text{CHR}$ in which R is selected from the group consisting of hydrogen and alkyl groups containing from 1 to 6 carbon atoms, and at least one triene selected from the group consisting of 1,4,9-decatriene; alkyl-substituted 1,4,9-decatriene, aryl-substituted 1,4,9-decatriene; arylalkyl-substituted 1,4,9-decatriene; and 1,5,9-decatriene, said copolymers containing ethylene in an amount less than about 75% by mols and such that the copolymer is amorphous on X-ray examination, between 0.1% and 30% by mols of the triene, and the balance, if any, being a higher alpha-olefin of the formula $\text{CH}_2 = \text{CHR}$ in which R is an alkyl group containing from 1 to 6 carbon atoms, and consisting of macromolecules containing unsaturations and each of which is made up of units derived from all of the starting monomers, and said copolymers being further characterized in that each of the units derived from the triene contains at least one free double bond.

3,900,453

PROCESS FOR THE PRODUCTION OF METHACRYLATE POLYMER MOLDING MATERIALS

Kazushi Shimada; Toru Maeda; Tamotu Nishizawa; Takehiko Narisada; Hisao Anzai, all of Otake, and Yosataka Sasaki, Tokyo, all of Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Aug. 15, 1973, Ser. No. 388,554

Claims priority, application Japan, Aug. 15, 1972, 47-81138; July 18, 1973, 48-80306

Int. Cl. C08f 3/68, 15/18

U.S. Cl. 260—86.1 E

7 Claims

1. A process for the production of methacrylate polymer molding materials, said methacrylate polymer containing at least 80% by weight of methyl methacrylate units and up to 20% by weight of units derived from a member of the group consisting of alkyl acrylates and alkyl methacrylates other than methyl methacrylate, by continuous bulk polymerization and subsequent removal of volatile contents, said process comprising:

continuously feeding to a polymerization zone a monomer feed containing 0.01 to 1.0% by mol of mercaptan and a free radical initiator in a concentration such that the following relations are satisfied:

$$10 \geq A^{1/2} \cdot B^{-1/2} \times 10^3, \\ 3 \geq A \cdot B \times 10^5,$$

and

$$2.9 \geq A^{-1} (B + 10.3) \times 10^{-6}$$

where A = concentration of the free radical initiator in the monomer feed in terms of the number of moles of the initiator per 100 g of the monomer feed, and

B = half-life in hour of the free radical initiator at a temperature of polymerization;

thoroughly stirring the resultant reaction mixture; maintaining the reaction mixture at a temperature of above 130° and 160°C;

maintaining a polymer content in said reaction mixture substantially constant and so as to satisfy the following relation:

$$50 < \phi < 70 \exp (0.0121T - 1.81)$$

where ϕ = the polymer content in said reaction mixture in % by weight, and

T = polymerization temperature in °C, whereby polymerization is effected;

continuously withdrawing the reaction mixture from the polymerization zone and continuously removing volatile contents of said withdrawn reaction mixture.

3,900,454

METHOD FOR POLYMERIZING MONOMERS COMPRISING ALPHA-OLEFIN

Akihiro Sato; Saburo Takeda; Shiro Konotsune; Mitsuru Kato, and Takao Tonoike, all of Yokohama, Japan, assignors to Chisso Corporation, Osaka, Japan

Continuation-in-part of Ser. No. 23,484, March 7, 1970, abandoned, which is a continuation-in-part of Ser. No. 794,421, Jan. 27, 1969, abandoned. This application Nov. 9, 1972, Ser. No. 305,045

Claims priority, application Japan, Feb. 3, 1968, 43-6546; July 9, 1968, 43-47974

Int. Cl. C08f 1/56; B01j 11/84

U.S. Cl. 260—88.2 R

7 Claims

1. A method for polymerizing a material selected from the group consisting of (1) an alpha-olefin monomer and (2) a mixture of an alpha-olefin monomer and another olefin monomer in the presence of a polymerization catalyst, said polymerization catalyst being prepared by a process which consists essentially of;

a. reacting one mole of a halogenide of a trivalent metal selected from the group consisting of AlCl_3 and FeCl_3 together with 0.1 – 2 moles of at least one kind of compound selected from the group consisting of $\text{Na}_2\text{S} \cdot 9\text{H}_2\text{O}$,

$\text{LiOH} \cdot \text{H}_2\text{O}$, $\text{Mg}(\text{OH})_2$, $\text{Zn}(\text{OH})_2$, $\text{Ca}(\text{OH})_2$, $\text{MgCl}_2 \cdot 6\text{H}_2\text{O}$, $\text{SnCl}_2 \cdot 2\text{H}_2\text{O}$, $\text{TiCl}_3 \cdot 6\text{H}_2\text{O}$, $\text{MnCl}_2 \cdot 4\text{H}_2\text{O}$, $\text{FeCl}_2 \cdot 2\text{H}_2\text{O}$, $\text{CoCl}_2 \cdot 6\text{H}_2\text{O}$, $\text{NiCl}_2 \cdot 6\text{H}_2\text{O}$, $\text{Cr}(\text{OH})_3$, $\text{Mn}(\text{OH})_2$, $\text{Fe}(\text{OH})_3$, $\text{Co}(\text{OH})_3$, $\text{Ni}(\text{OH})_2 \cdot \text{H}_2\text{O}$, $\text{VOSO}_4 \cdot 2\text{H}_2\text{O}$, $\text{CoSO}_4 \cdot 7\text{H}_2\text{O}$ and $\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$ so as to form a first reaction product having active groups on the surface,
 b. the reaction of step (a) being carried out at a temperature ranging from 60° to 200°C under an atmospheric or reduced pressure,
 c. reacting the product resulting from step (a) with a compound of transition metal selected from the group consisting of halides, oxyhalides, alcoholates, alkoxyhalides and acetoxyhalides of titanium, vanadium and chromium,
 d. the reaction of step (c) being carried out in an inert hydrocarbon solvent
 e. combining the reaction product of step (c) with an organoaluminum compound selected from the group consisting of trialkylaluminum, alkylaluminum, sesquihalide, dialkylaluminum monohalide, and monoalkylaluminum dihalide at a temperature of about -50°C to about 150°C and under a pressure from the atmospheric pressure to 40 kg/cm² in an inert hydrocarbon solvent.

3,900,455

PROCESS TO EMULSION POLYMERIZE VINYL CHLORIDE

Paul Kraft, So. Spring Valley, and Jung Il Jin, Irvington, both of N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Aug. 16, 1974, Ser. No. 498,488

Int. Cl. C08f 3/30

U.S. Cl. 260—92.8 W

10 Claims

1. In an emulsion polymerization of vinyl chloride monomer in the presence of an emulsifier wherein the improvement comprises conducting said polymerization in a polymerization medium comprising a sodium alkyl sulfosuccinate emulsifier and in ammonium or alkali metal borate.

3,900,456

POLYISOPRENE

Floyd E. Naylor, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 31, 1974, Ser. No. 438,421

Int. Cl. C08d 1/4, 3/2

U.S. Cl. 260—94.3

24 Claims

1. A process which comprises polymerizing isoprene under polymerization conditions including effective polymerization temperature, pressure, and time, to form a high cis rubbery polymer having a cis 1,4 content of at least about 83 percent wherein the improvement comprises polymerization in the presence of an effective amount of the catalyst which forms on admixing components consisting essentially of effective catalytic ratios of (I) a hydrocarbon compound of a metal of Group IA of the periodic table, (II) an aluminum halide, and (III) a tetravalent titanium salt represented by TiY_4 , wherein Y is chlorine, bromine, iodine, or alkoxylic —OR, wherein R is a hydrocarbon radical containing up to 8 carbon atoms per R group.

3,900,457

OLEFIN POLYMERIZATION CATALYST

Donald R. Witt, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 8, 1970, Ser. No. 79,316

Int. Cl. C08f 1/66, 3/06

U.S. Cl. 260—94.9 D

4 Claims

1. A polymerization catalyst comprising an oxide of chromium supported on a silica-containing composition prepared by:

a. adding an alkali metal silicate to an acid to form a hydrogel;

b. aging the hydrogel;
 c. washing the aged hydrogel to produce a substantially alkali metal-free hydrogel;
 d. forming a mixture comprising the washed hydrogel and a normally liquid oxygen-containing water-soluble organic compound;
 e. separating said organic compound and water from said mixture to form a xerogel; and
 f. recovering said xerogel as said silica-containing composition.

3,900,458

MIXED SALTS OF POLYSULFURIC ESTERS OF NATURALLY OCCURRING GLYCOPEPTIDES WITH METALS AND ORGANIC BASES, AND PROCESS FOR PRODUCING SAME

Adriano Butti, Como, and Giuseppe Prino, Milan, both of Italy, assignors to Crinos Industria Farmacobiologica S.p.A., Villa Guardia, Italy

Filed Mar. 22, 1974, Ser. No. 453,765

Claims priority, application Italy, Mar. 27, 1973, 22122/73 Int. Cl. C07G 7/04

U.S. Cl. 260—112 R

20 Claims

1. A process for the preparation of a mixed salt, wherein the anionic moiety is a sulfoglycopeptide polyanion and the cationic moiety is:

a. a metal cation selected from the group consisting of the alkali metal and alkaline-earth metal cations; and
 b. a nitrogen-containing organic cation which is the cation of an organic base having spasmolytic and anticholinergic activities;

which process comprises:

1. mixing a solution of a sulfoglycopeptide in its acid form with a solution of an alkali metal or alkaline-earth metal salt of a sulfoglycopeptide;
 2. mixing the solution thus obtained with a solution of a nitrogen-containing organic base, having spasmolytic and anti-cholinergic activity, in a solvent, to salify said acid sulfoglycopeptide, thus obtaining a solution of the mixed salt; and
 3. separating the mixed salt from the solvent.

3,900,459

PROCESS FOR PREPARING HIGH MOLECULAR WEIGHT AZO PIGMENT

Kimihide Kawamura, Koshigaya, and Shojiro Horiguchi, Tokyo, both of Japan, assignors to Dainichiseika Color & Chemicals Mfg. Co., Ltd., Tokyo, Japan

Filed Mar. 15, 1973, Ser. No. 341,793

Claims priority, application Japan, Nov. 16, 1972, 47-114250

Int. Cl. C09b 31/02, 33/02, 35/02

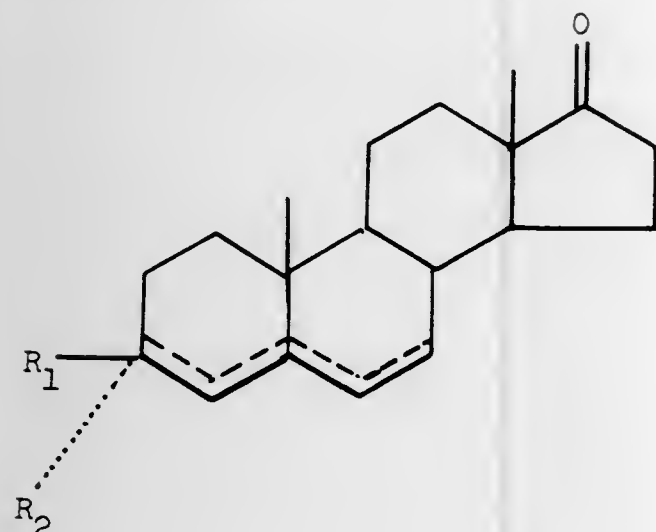
U.S. Cl. 260—157

5 Claims

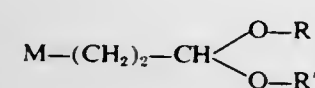
1. In a process for preparing a high molecular weight azo pigment by coupling a diazo component with a coupling component, the improvement which comprises:

preparing a solution or a partial dispersion of a diazo component by diazotizing a primary aromatic amine in a hydrophobic aromatic solvent having a boiling point greater than 150°C, preparing a solution or a partial dispersion of a coupling component having two coupling positions in said hydrophobic aromatic solvent and forming a coupling reaction mixture by mixing the solution or partial dispersion of the diazo component with the solution or partial dispersion of the coupling component.

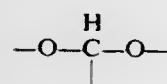
hydroxy-4-androstene-17 α -yl)-propionic acid γ -lactone which comprises reacting a 17-oxo-steroid of the formula



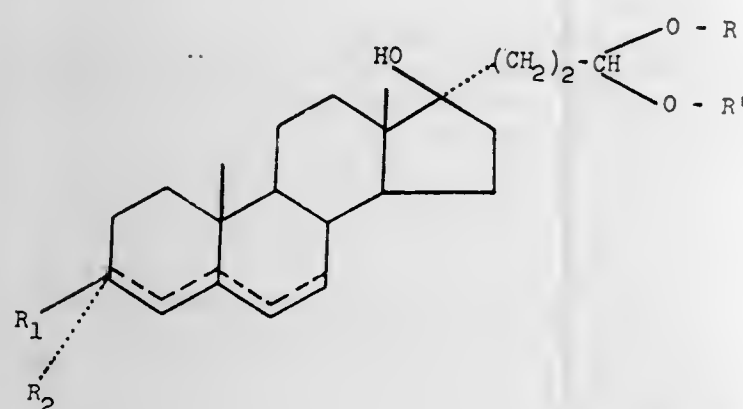
wherein the dashed lines represent a $\Delta^{3,5}$, $\Delta^{5,6}$, or $\Delta^{4,6}$ unsaturation and wherein R_1 , taken alone, is $-\text{OH}$, and R_2 , taken alone, is hydrogen, or in which R_1 and R_2 , taken together define an acetal, enamine, or enol ether group, with an organo-metallic compound, formed in situ, of the formula



wherein M is an alkali metal, R and R', taken alone, are the same or different and are a hydrocarbon having 1 to 20 carbon atoms, and R and R', taken together, are a hydrocarbon having 2 to 6 carbon atoms and are joined with the

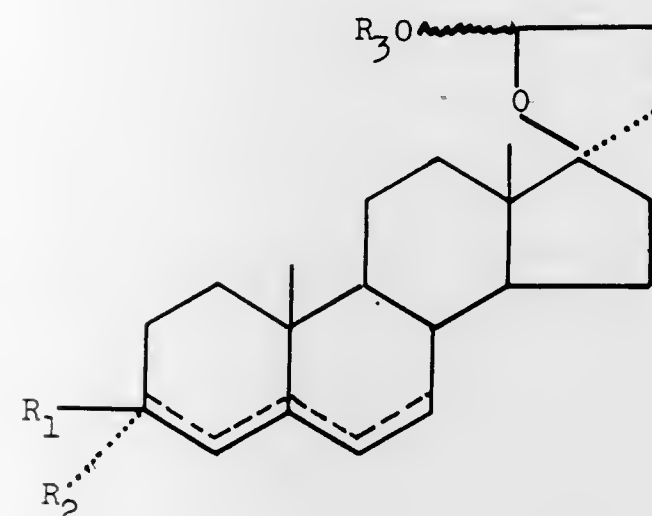


group to form a ring, whereby a γ -hydroxy-acetal of the formula

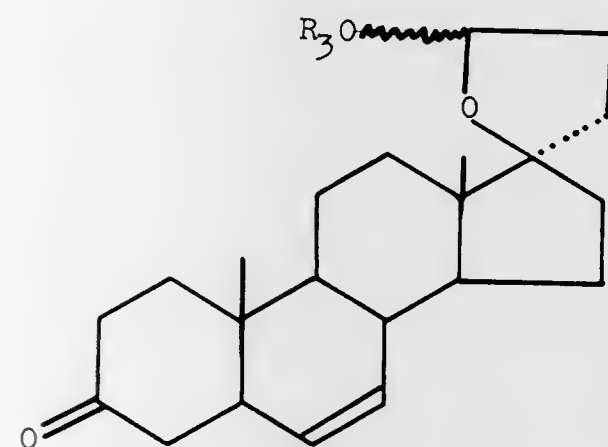


is formed, wherein R_1 , R_2 , R, and R' are as earlier defined; solvolizing this γ -hydroxy-acetal with an acid and esterifying or etherifying the hydroxy group present in the

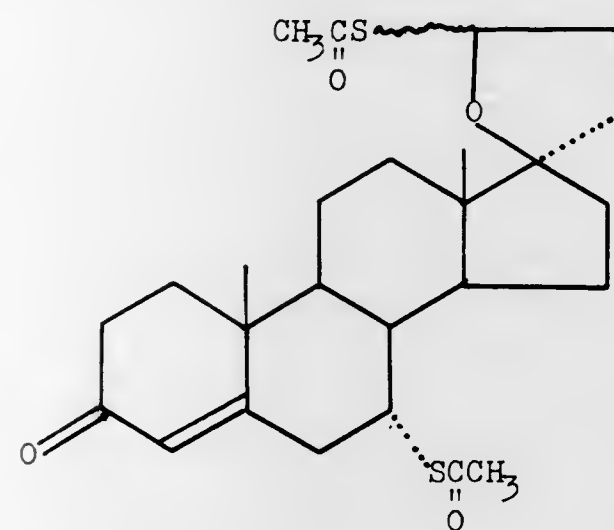
semi-acetal group of the semi-acetal so formed, whereby a compound of the formula



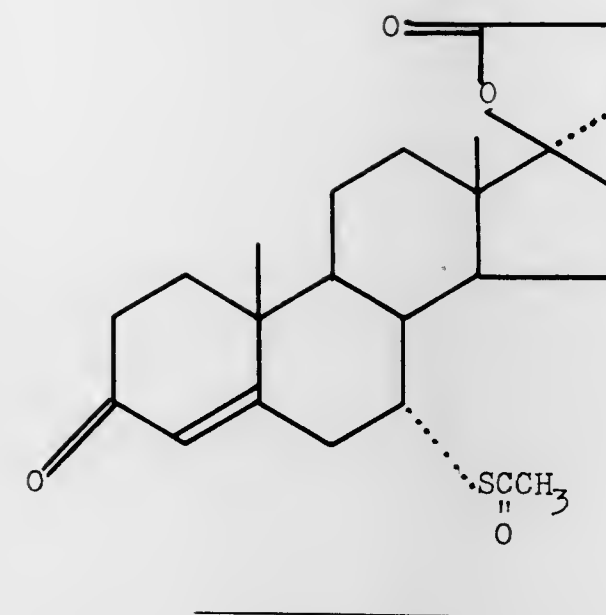
is obtained, wherein R_1 , taken alone, is $-\text{OH}$, R_2 , taken alone, is hydrogen, R_1 and R_2 , taken together, define an oxo group, and R_3 is acyl or alkyl; oxidizing the 3-OH group and dehydrogenating the resultant compound in the 6-position if R_1 is $-\text{OH}$, or only dehydrogenating the resulting compound in the 6-position if R_1 and R_2 together define a 3-oxo group, whereby a 3-oxo-6-dehydro compound of the formula



is formed; reacting the 3-oxo-6-dehydro compound with thioacetic acid, whereby a dithioacetate of the formula



is formed; and oxidizing the dithioacetate under acid conditions to form the corresponding γ -lactone,



3,900,468 CEPHALOSPORAN DERIVATIVES AND THEIR PREPARATION

Jacques Martel, Bondy, and René Heymes, Romainville, both of France, assignors to Roussel UCLAF, Paris, France

Filed Feb. 15, 1972, Ser. No. 226,526

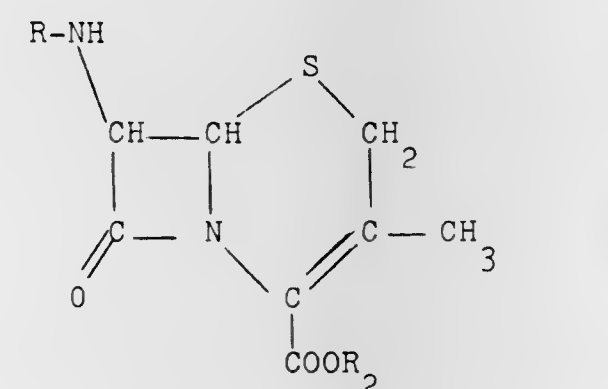
Claims priority, application France, Feb. 18, 1971, 71.05555; Feb. 18, 1971, 71.05556

Int. Cl. C07d 99/24

U.S. Cl. 260-243 C

4 Claims

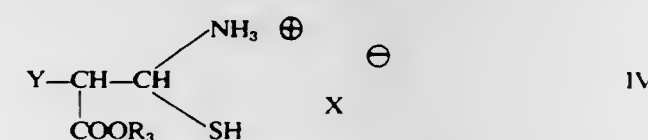
1. A process for the preparation of a compound of the formula



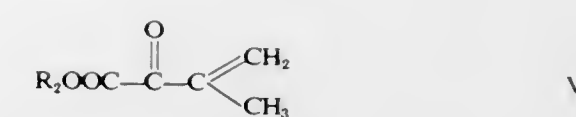
in the form of cis, trans or cis-trans mixtures wherein R is selected from the group consisting of hydrogen and trityl and R_2 is lower alkyl of 1 to 6 carbon atoms optionally substituted with a chlorine and phenylalkyl of 7 to 15 carbon atoms comprising the steps of reacting an enamine of the formula



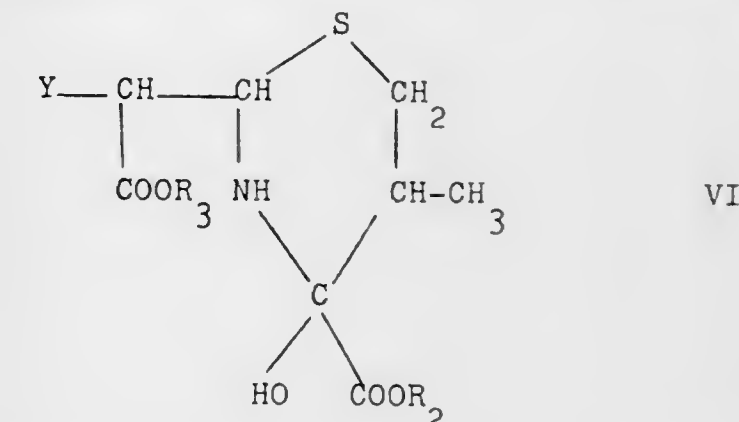
wherein R_3 is selected from the group consisting of alkyl of 1 to 10 carbon atoms and phenylalkyl of 7 to 15 carbon atoms and Y is selected from the group consisting of cyclic imido, benzoylamino and thiobenzoylamino with hydrogen sulfide in the presence of an acid of the formula HX wherein X is selected from the group consisting of chlorine, bromine, $-\text{SO}_3\text{H}$ and $-\text{SO}_3\text{H}$ to form a thioaminal of the formula



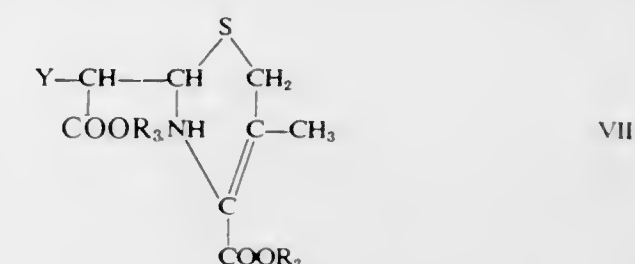
which occurs in erythro and/or threo isomeric form, reacting the latter in the presence of a tertiary amine with an ester of α -keto- β -methylene-butyric acid of the formula



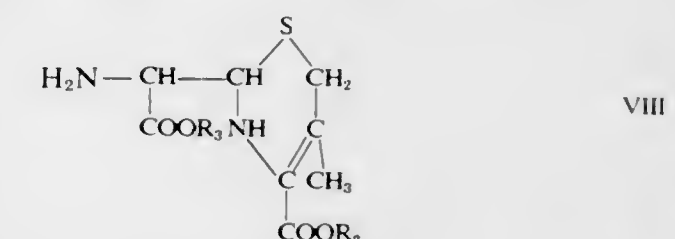
wherein R_2 has the above definition to form a 1,3-thiazane of the formula



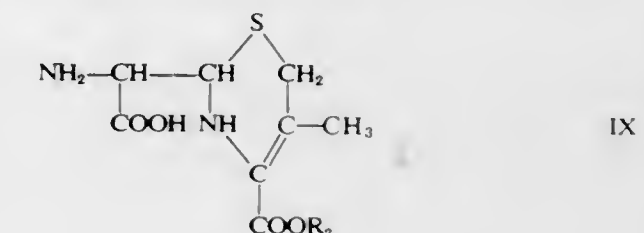
in the form of its erythro and/or threo form independent of the configuration of 3- and 4-carbon atoms, reacting the latter with an acid dehydrating agent to form a 1,3-thiazine of the formula



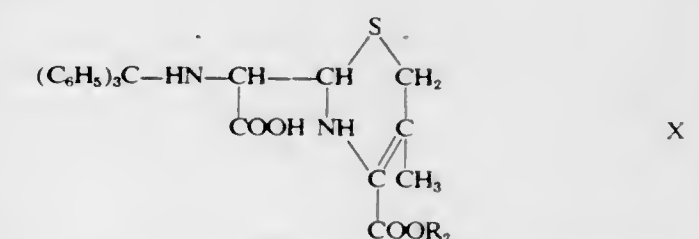
occurring in the form of its erythro and/or threo isomers, subjecting the latter to reaction with hydrazine for a functional exchange to form a compound of the formula



occurring in the form its erythro and/or threo isomers, selectively saponifying the latter with a dilute aqueous alkali metal base to form a compound of the formula



occurring in the form of its erythro and/or threo isomers, reacting the latter with trityl chloride to form a compound of the formula



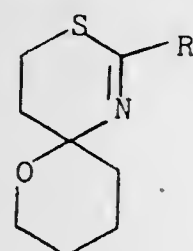
occurring in the form of its erythro and/or threo isomers and cyclizing the latter with a dialkylcarbodiimide or dicycloalkylcarbodiimide lactamization agent to form a compound of formula II wherein R is trityl.

3,900,469

7-OXA-3-THIA-1-AZA SPIRO[5,5]UNDEC-1-ENE
Noel Cohen, Montclair, N.J.; Wijitha De Silva, Niederstein-
maur, and Gerhard Hueppl, Gockhausen, both of Switzer-
land, assignors to Hoffmann-La Roche Inc., Nutley, N.J.
Filed July 3, 1974, Ser. No. 485,653
Int. Cl.² C07D 279/06

U.S. Cl. 260—243 R

1. A compound of the formula



wherein R is phenyl; phenyl monosubstituted with a chloro,
lower alkyl or lower alkoxy group; or pyridyl; and the acid
addition salts thereof.

3,900,470

ESTERS OF BENZOTHAZINE-1,1-DIOXIDES
DERIVATIVES

Chris Royce Rasmussen, Ambler, Pa., assignor to McNeil Lab-
oratories, Incorporated, Fort Washington, Pa.

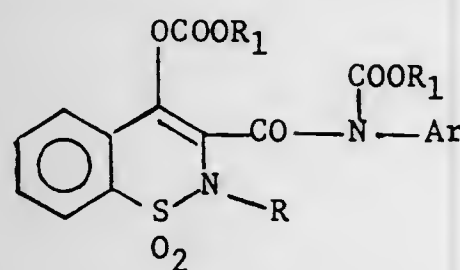
Filed Sept. 23, 1974, Ser. No. 508,117

Int. Cl. C07d 93/02

U.S. Cl. 260—243 R

2 Claims

1. A compound represented by the formula



wherein

R is lower alkyl

R₁ is selected from the group consisting of lower alkyl,
benzyl, phenyl,

Ar is an aryl radical selected from the group consisting of
phenyl and substituted phenyl wherein the substituent in
said substituted phenyl is selected from the group consist-
ing of lower alkyl, lower alkoxy, halo and trifluoromethyl.

3,900,471

PHENYLENE AND XYLYLENE
BIS(AMINECARBOTRITHIOATES)

Joseph E. Dunbar, and Joan H. Rogers, both of Midland,
Mich., assignors to The Dow Chemical Company, Midland,
Mich.

Division of Ser. No. 166,258, July 26, 1971, Pat. No.

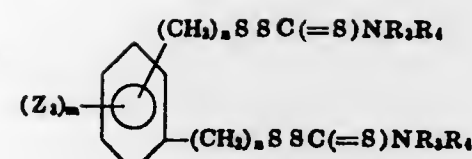
3,810,890, which is a continuation-in-part of Ser. No. 682,511,
Nov. 13, 1967, abandoned. This application Oct. 25, 1973, Ser.
No. 409,552

Int. Cl. C07c 155/10; C07d 87/46, 29/36

U.S. Cl. 260—246 B

2 Claims

1. A compound corresponding to the formula



wherein R₃ and R₄ individually represent loweralkyl or hydro-
gen and together with the nitrogen atom represent piperidinyl
or 4-morpholino, n represents 0 or 1, each Z₃ individually
represents lower-alkyl, hydrogen, chloro, bromo, iodo, lower-
alkoxy, nitro or loweralkylthio and m represents 1 to 4, inclu-
sive, not more than two Z₃ groups of which are iodo or nitro.

3,900,472

ANTHRAQUINONE DYES CONTAINING A 2-ARYLOXY
ALKOXY CARBAMATE MOIETY, THEIR
INTERMEDIATES, AND A PROCESS FOR THEIR
PREPARATION

Charles H. Chang, Piscataway, N.J., assignor to GAF Corpora-
tion, New York, N.Y.

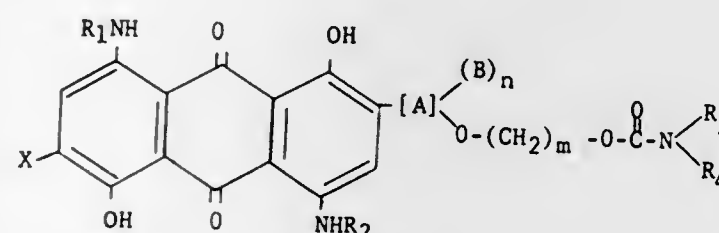
Filed Dec. 20, 1971, Ser. No. 210,109

Int. Cl. C07d 87/46

U.S. Cl. 260—247.1 A

16 Claims

1. A compound of the formula



in which A is a phenyl, naphthyl, anthracenyl or phenanthryl
radical; B is hydrogen, lower alkyl, lower alkylmercapto,
amino, lower alkylamino, di-lower alkyl amino, halogen or
phenylamino; n is an integer of from 1 to 4; each of R₁, R₂, R₃,
and R₄ is hydrogen, lower alkyl, cycloalkyl of 3 to 6 carbon
atoms or phenyl; alternatively, R₃ and R₄ taken together with
the nitrogen atom to which they are attached form a heterocyc-
lic ring selected from the group consisting of pyrrolidine,
piperidine, piperazine, and morpholine; X is SO₃H or hydro-
gen; and m is an integer of from 1 to 4.

3,900,473

QUINOXALINE-DI-N-OXIDE DERIVATIVES

Peter J. Diel, Basel, and Wolfgang Schmid, Therwil, both of
Switzerland, assignors to Ciba-Geigy Corporation, Ardsley,
N.Y.

Filed Sept. 4, 1973, Ser. No. 393,863

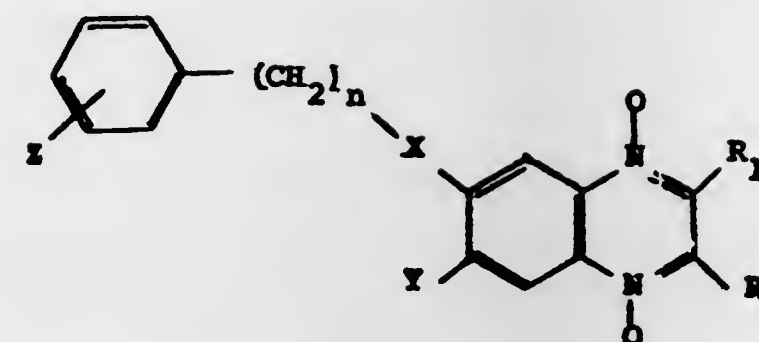
Claims priority, application Switzerland, Sept. 5, 1972,
13032/72

Int. Cl.² C07D 241/40

U.S. Cl. 260—250 Q

8 Claims

1. A compound of formula



wherein

each of R₁ and R₂ is hydrogen, lower alkoxy, carbonylmethyl,
lower alkyl, phenyl, benzoyl, lower alkanoyl, lower alk-
oxy, carbonyl, N,N-di-lower-alkylcarbamoyl, cyano or
amino,

or R₁ and R₂ taken together is polymethylene having from
3 to 5 carbon atoms,

Y is hydrogen or halogen,

X is oxygen, sulphur, sulphonyl or sulphonyl,

Z is hydrogen, lower alkyl, trifluoromethyl, halogen or
lower alkoxy, and

n is 0, 1 or 2.

3,900,474

TRIFLUOROALKYL, FLUOROBENZYL,
PENTAFLUOROBENZYL,
FLUOROBENZENESULFONYL, AND
PENTAFLUOROBENZENESULFONYL THEOPHYLLINES
Roger D. Ginger, Park Ridge, Ill., and Carlos M. Samour,
Wellesley, Mass., assignors to The Kendall Company, Wal-
pole, Mass.

Filed May 14, 1973, Ser. No. 360,260

Int. Cl.² C07D 473/08

U.S. Cl. 260—256

7 Claims

1. The compound having the name 7-(2,2,2-trifluoroethyl)-
theophylline.

3,900,475

CERTAIN PHENOBARBITAL SALTS

Julius A. Vida, Boston, and Mary L. Hooker, Cambridge, both
of Mass., assignors to The Kendall Company, Walpole, Mass.

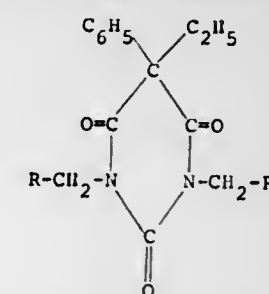
Filed June 26, 1972, Ser. No. 265,977

Int. Cl.² C07D 239/64

U.S. Cl. 260—256.4 C

7 Claims

1. A compound having the structural formula



wherein R is Y⁺X⁻, Y being a 2-thiuronium or N-phenyl-2-
thiuronium group or hexamethylenetetramine; X being bro-
mine or chlorine, and R₁ is hydrogen or R.

3,900,476

2[2'-PYRIMIDYLAMINO]QUINAZOLINES AND THEIR
PREPARATION

Harold E. Renis, Portage, and Louis L. Skaletzky, Kalamazoo,
both of Mich., assignors to The Upjohn Company, Kalamazoo,
Mich.

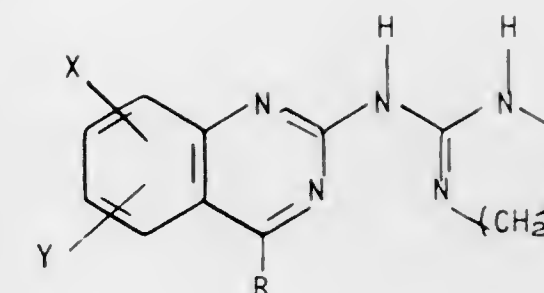
Filed May 17, 1973, Ser. No. 361,311

Int. Cl.² C07D 239/84

U.S. Cl. 260—256.4 Q

13 Claims

1. A compound selected from those of formula:



3,900,477

5-AMINO-AND
DERIVATIVES

5-HYDRAZINODIHYDROPYRROLOISOQUINOLINE

Adolf H. Philipp; Christopher A. Demerson, both of Montreal,
and Leslie G. Humber, Dollard des Ormeaux, all of Canada,
assignors to Ayerst McKenna and Harrison Ltd., Montreal,
Canada

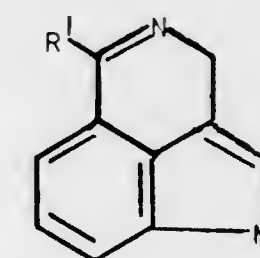
Filed Nov. 6, 1973, Ser. No. 413,418

Int. Cl.² C07D 217/12

U.S. Cl. 260—288 CF

8 Claims

1. A compound of the formula



in which R¹ is amino, lower alkylamino, di(lower)alkylamino,
di(lower)alkylamino(lower)alkylamino in which the alkylene
portion thereof has 2 to 6 carbon atoms and the alkyl portion
thereof has from 1 to 6 carbon atoms, when a straight chain
alkyl, and from 3 to 4 carbon atoms, when a branched chain
alkyl, hydrazino, 2-(lower)alkylhydrazino, 2,2-di(lower)alkyl-
hydrazino and isopropylidenehydrazino.

3,900,478

2-METHYL-2-PIPERIDINO-3'-(TRIFLUOROMETHYL)
PROPIOPHENONE

John Krapcho, Somerset, N.J., assignor to E. R. Squibb &
Sons, Inc., Princeton, N.J.

Filed Jan. 29, 1973, Ser. No. 327,352

Int. Cl.² C07D 295/00

U.S. Cl. 260—293.8

2 Claims

1. A compound having the name 2-methyl-2-piperidino-3'-
(trifluoromethyl)propiophenone.

3,900,479

PROCESS FOR THE CYCLALKYLATION OF AMINES
Stephen N. Massie, Palatine, Ill., assignor to Universal Oil
Products Company, Des Plaines, Ill.

Filed Dec. 27, 1973, Ser. No. 428,644

Int. Cl.² C07D 295/00

U.S. Cl. 260—293.64

11 Claims

1. A process for the preparation of a heterocyclic nitrogen
compound which comprises cyclalkylating a primary amine
by reaction thereof with a tetrahydrofuran or a tetrahydropy-
ran at a temperature of from about 100°C. to about 300°C.

and a pressure of from about 1 to about 200 atmospheres in the presence of a catalyst system comprising 1,4-diazabicyclo[2.2.2] octane and a component selected from the group consisting of a hydrogen halide, a metal from Group VIII of the Periodic Table dispersed on an inorganic oxide support and a sulfonic acid-substituted divinyl benzene-styrene copolymer resin, and recovering the resultant heterocyclic nitrogen compound.

3,900,480

N-(2-PYRIDYL)-1-POLYMETHYLENETHIOCARBOXAMIDES

William B. Dickinson, Albany, and Marcia P. Vaupotic, Sand Lake, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of Ser. No. 422,863, Dec. 7, 1973, abandoned, which is a division of Ser. No. 287,620, Sept. 11, 1972, Pat. No. 3,835,145. This application July 1, 1974, Ser. No. 484,443

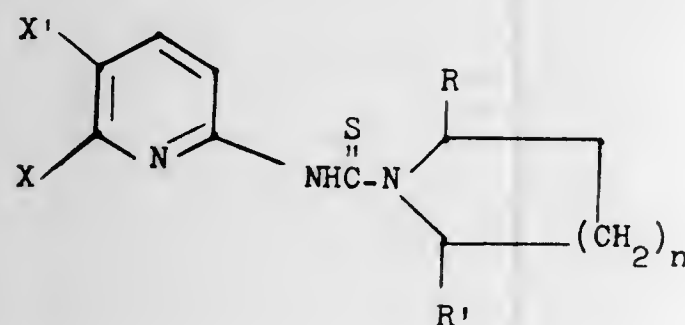
Claims priority, application United Kingdom, Aug. 13, 1973, 38310/73; Mar. 1, 1974, 9414/74

Int. Cl. C07d 29/36

U.S. Cl. 260—293.69

19 Claims

1. A compound having the formula



wherein:

X is hydrogen, lower-alkyl or lower-alkoxy;

X' is hydrogen, bromine, chlorine, lower-alkyl, carbo-lower-alkoxy or di-lower-alkylamino;

R is lower-alkyl or hydroxymethyl;

R' is hydrogen or lower-alkyl; and

n is 1 or 2 except that:

a. when X is hydrogen, X' is lower-alkyl and n is 2, either both R and R' are lower-alkyl or one is hydrogen and the other lower-alkyl; and

b. when X is hydrogen, X' is lower-alkyl and n is 1, R and R' are not both lower-alkyl.

3,900,481

DERIVATIVES OF PYRROLIDINE AND PIPERIDINE

Elden H. Banitt, Woodbury, and William R. Bronn, St. Paul, both of Minn., assignors to Riker Laboratories, Inc., Northridge, Calif.

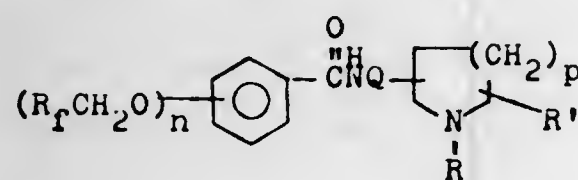
Filed Apr. 1, 1974, Ser. No. 457,099

Int. Cl. C07d 29/30

U.S. Cl. 260—293.77

15 Claims

1. A compound of the formula:



wherein R_f is a perfluoroalkyl radical containing from one to three carbon atoms, n is one to three, p is one or two, Q is a carbon-nitrogen bond, methylene or methylmethylene and R

and R' are hydrogen, methyl or ethyl, or a pharmaceutically acceptable salt thereof.

3,900,482

1-(PYRIDYL-THIOALKYL)-2-ALKYL-5-NITRO-IMIDAZOLES

Erhardt Winkelmann, Kelkheim, Taunus, and Wolfgang Raether, Dreieichenhain, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany
Filed Dec. 19, 1973, Ser. No. 426,081

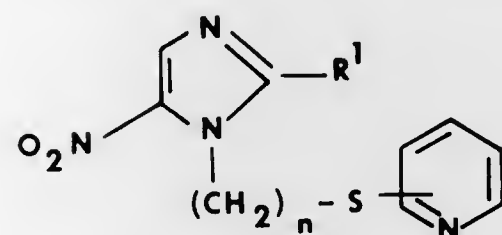
Claims priority, application Germany, Dec. 21, 1972, 2262552

Int. Cl. C07d 31/40

U.S. Cl. 260—294.8 G

3 Claims

1. A 1-(pyridyl-thioalkyl)-2-alkyl-5-nitro-imidazole of the formula I



in which R₁ stands for hydrogen, methyl or ethyl, —(CH₂)_n— stands for alkyl of from 2 to 4 carbon atoms, to which the pyridine ring is linked in 2-, 3- or 4-position via the sulfur atom.

3,900,483

γ-[2(1H)PYRIDONE]γ-PIVALYL-5-(γ-2,4-DI-T-AMYL-PHENOXYBUTYRAMIDE)-ACETANILIDES AND DERIVATIVES

Wataru Fujimatsu; Shui Sato, both of Hachioji; Tamotsu Kojima, Kokubunji; Takaya Endo, Hino, and Kazumi Minahara, Hachioji, all of Japan, assignors to Konishiroku Photo Indusary Co., Ltd., Tokyo, Japan

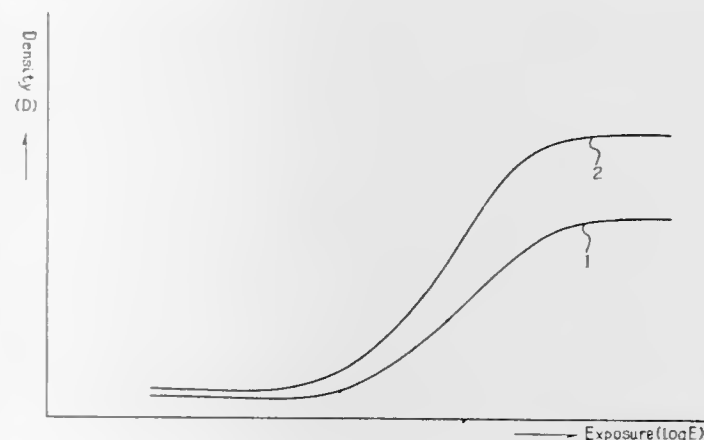
Filed Apr. 13, 1973, Ser. No. 351,031

Claims priority, application Japan, Apr. 15, 1972, 47-37367; May 27, 1972, 47-52179

Int. Cl. C07D 31/44, 31/46

U.S. Cl. 260—294.9

1 Claim



1. A compound selected from the group consisting of:
α-[2 (1H)-Pyridone]-α-pivalyl-2-chloro-5-(γ-2,4-di-t-amylphenoxybutyramide)-acetanilide;
α-[5-Chloro-2(1H)-pyridone]- α-pivalyl-2-chloro-5-[γ-(2,4-di-t-amylphenoxy)butyramide]-acetanilide;
α-[2(1H)-Pyridone]-α- 3-[α-(2,4-di-t-amylphenoxy)-butyramide]-benzoyl -2-methoxyacetanilide;
α-[3,5-Dibromo-2(1H)-pyridone]-α- 3-[α-(2,4-di-t-amylphenoxy)-butyramide]-benzoyl -2-methoxyacetanilide;
α-[3-Nitrile-2(1H)-pyridone]-α-pivalyl-2-chloro-5-[γ-(2,4-

di-t-amylphenoxy)-butyramide]-acetanilide;
α-[3-Bromo-2(1H)-pyridone]-α-pivalyl-2-chloro-5-[γ-(2,4-di-t-amylphenoxy)-butyramide]-acetanilide;
α-[5-Bromo-2(1H)-pyridone]-α- 3-[α-(2,4-di-t-amylphenoxy)-butyramide]-benzoyl -2-methoxyacetanilide;
α-[3,5-Dichloro-2(1H)-pyridone]-α- 3-[α-(2,4-di-t-amylphenoxy)-butyramide]-benzoyl -2-methoxyacetanilide;
and
α-[5-Bromo-2(1H)-pyridone]-α-pivalyl-2-chloro-5-[γ-(2,4-di-t-amylphenoxy)-butyramide]-acetanilide.

3,900,484

1,2,3,5-OXATHIADIAZOLIN-4-ONE,2-OXIDES

John Paul Chupp, Kirkwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

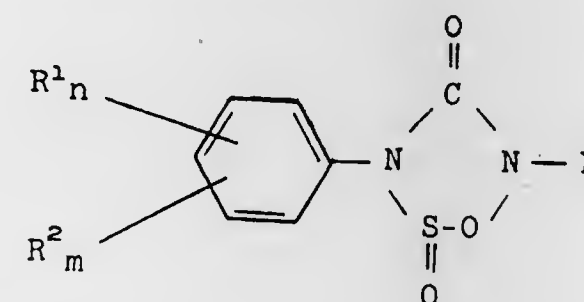
Filed Jan. 14, 1974, Ser. No. 433,184

Int. Cl. C07D 291/04

U.S. Cl. 260—301

11 Claims

1. A compound of the formula



wherein R is lower alkyl, R¹ is lower alkyl, each R² is independently halo or trifluoromethyl, n is 1 or 0 and m is 1 or 2.

3,900,485

NEW SUBSTITUTED

1,2,4-THIADIAZOLIDINE-3,5-DIONES

John Krenzer, Oak Park, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

Filed Feb. 10, 1967, Ser. No. 615,047

Int. Cl. C07D 285/08

U.S. Cl. 260—302 D

7 Claims

1. 2-phenyl-4-methyl-1,2,4-thiadiazolidine-3,5-dione.

3,900,486

3-METHYL-2-PHENYL-5-BENZOTHAZOLINE ACETIC ACID COMPOUNDS AND PROCESS FOR PRODUCING THE SAME

Tadayuki Suzuki, Koshigaya; Jin Wada, Soka; Hiroki Miyamatsu; Shinji Ueno, both of Tokyo, and Mitsuhiro Shimizu, Chiba, all of Japan, assignors to Tokyo Tanabe Company, Ltd., Japan

Filed Jan. 4, 1974, Ser. No. 430,915

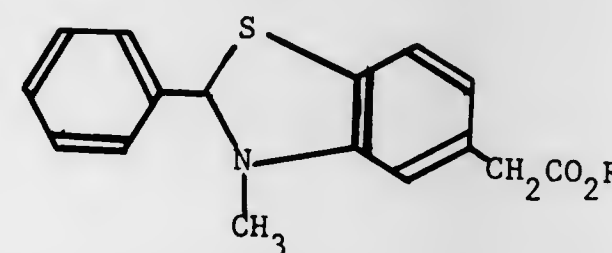
Claims priority, application Japan, Jan. 23, 1973, 48-9158

Int. Cl. C07D 251/72

U.S. Cl. 260—304

3 Claims

1. A compound of the formula:



wherein R is a member selected from the group consisting of hydrogen and methyl.

3,900,487 CERTAIN DIAZATHIABICYCLOHEPTANE DERIVATIVES

William George Elphinstone Underwood, Stoke Pages, and Alan Gibson Long, Greenford, both of England, assignors to Glaxo Laboratories Limited, Greenford, England
Filed July 30, 1971, Ser. No. 167,874

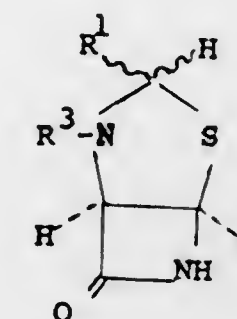
Claims priority, application United Kingdom, July 31, 1970, 37187/70

Int. Cl. C07d 99/10

U.S. Cl. 260—306.7 C

7 Claims

1. A compound selected from the group consisting of those of the general formula:



wherein:

R¹ is the residue of the group R¹CO, wherein R¹CO is R¹C₆H₄CO-

where R¹ is phenyl, fluorophenyl, nitrophenyl, aminophenyl, acetoxypheyl, methoxyphenyl, methylphenyl, hydroxyphenyl, N,N-bis(2-chloroethyl)aminophenyl, thien-2-yl, thien-3-yl, isoxazol-4-yl, pyridyl, tetrazolyl, 3-phenyl-5-methyl isoxazol-4-yl, or 3-chlorophenyl or 3-bromophenyl-5-methyl isoxazol-4-yl, and n is an integer from 1-4; and

R³ is hydrogen; a hydrocarbyloxycarbonyl group selected from the group consisting of methoxycarbonyl, ethoxycarbonyl, t-butoxycarbonyl, 2,2,2-trichloroethoxycarbonyl, benzyloxycarbonyl, p-methoxybenzyloxycarbonyl, diphenylmethoxycarbonyl, adamantyloxycarbonyl, and p-nitrobenzyloxycarbonyl; an o or p-nitrophenylsulphenyl group; or a diphenylmethyl or triphenylmethyl group; and when R³ is hydrogen the acid addition salts thereof.

6. 3-Methyl-4,7-diaza-6-oxo-2-thia-1(R),5(R)-bicyclo[3,2,0]-heptane.

7. 3-Methyl-4-chlorocarbonyl-4,7-diaza-6-oxo-2-thia-1(R),5(R)-bicyclo[3,2,0]-heptane.

3,900,488

PRODUCTION OF 6-AMINOPENICILLANIC ACID

Fritz Huper, Wuppertal, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 21, 1972, Ser. No. 308,576

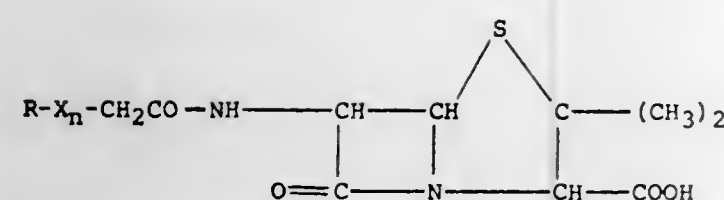
Claims priority, application Germany, Nov. 23, 1971, 2157970

Int. Cl. C07D 499/42

U.S. Cl. 260—306.7 C

12 Claims

1. A process for the production of 6-aminopenicillanic acid which comprises contacting, in an aqueous medium, a penicillin and a water-insoluble polymer-enzyme derivative comprising penicillin acylase covalently bound to a carrier, wherein said penicillin is characterized by the structural formula:



wherein n is a whole figure selected from the group consisting of 0 and 1, X is a member selected from the group consisting of sulphur and oxygen, R is a member selected from the group consisting of alkyl groups having 2 through 6 carbon atoms, alkenyl groups having 3 through 6 carbon atoms, phenyl and monosubstituted phenyl groups in which the substituent is a member selected from the group consisting of chloro, bromo, iodo, fluoro, nitro, alkyl groups having from 1 to 6 carbon atoms inclusive, alkenyl groups having from 3 to 6 carbon atoms inclusive, and alkoxy in which the alkyl group has from 1 to 6 carbon atoms inclusive; wherein said carrier is an interpolymer composed of components containing from about 50 to 90 percent by weight of acrylamide, from about 2.5 to 25 percent by weight of N,N' -methylene-bis-acrylamide, and from about 5.0 to 30 percent by weight of maleic acid in the anhydride form, the total amount of said components being 100 percent by weight; and wherein the pH of the reaction medium is controlled and maintained in the range of from about 6.0 through about 8.0, and the temperature of the reaction medium is maintained in the range from about 20°C. to about 50°C.

3,900,489

PREPARATION OF

1,1'-PEROXYDICYCLOHEXYLAMINE

John O. Turner, West Chester, Pa., assignor to Sun Research and Development Co., Philadelphia, Pa.

Filed Jan. 2, 1973, Ser. No. 320,225

Int. Cl.² C07D 273/00

U.S. Cl. 260—307 F

6 Claims

1. A process for the production and recovery of 1,1'-peroxydicyclohexylamine and an aliphatic or alicyclic alcohol, which comprises reacting at a temperature of from -10°C to 50°C cyclohexanone and ammonia with a hydroperoxide of the formula ROOH, wherein R is a primary, secondary, or tertiary alkyl or cycloalkyl hydrocarbon group having from 3 to 12 carbon atoms, and recovering from the reaction mixture said 1,1'-peroxydicyclohexylamine and an alcohol of the formula ROH, wherein R is defined as above, and wherein the mole ratio of hydroperoxide to cyclohexanone is about 0.5:1.0.

3,900,490

ANTIINFLAMMATORY AND ANALGESIC OXADIAZOLO BENZODIAZOCINONES

Yutaka Kuwada; Hideaki Natsugari, and Kanji Meguro, all of Hyogo, Japan, assignors to Takeda Chemical Industries, Ltd., Japan

Filed Nov. 12, 1973, Ser. No. 414,843

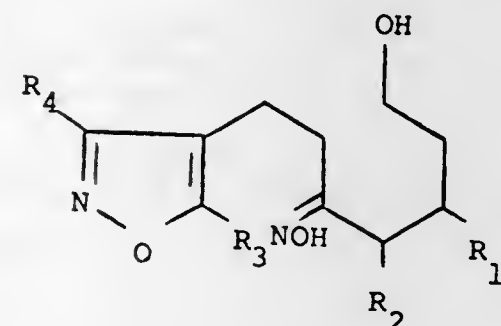
Claims priority, application Japan, Nov. 13, 1972, 47-113600; Dec. 12, 1972, 47-124553

Int. Cl.² C07D 498/04

U.S. Cl. 260—307 A

22 Claims

1. A compound of the formula



wherein R_1 , R_2 and R_4 are selected from the group consisting of hydrogen and lower alkyl and R_3 is selected from the group consisting of hydrogen, lower alkyl, tolyl, xylyl, benzyl and phenylethyl.

3,900,491

1-(4-ISOXAZOLYL)-7-HYDROXY-2-HYDROXYIMINO HEPTANES

Gabriel Saucy, Essex Fells, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

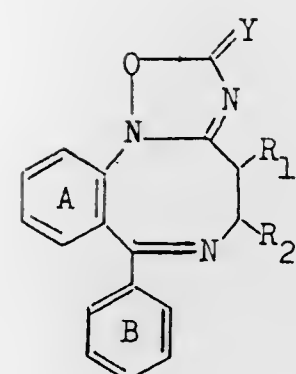
Division of Ser. No. 259,724, June 5, 1972, Pat. No. 3,813,411, which is a division of Ser. No. 811, Jan. 5, 1970, Pat. No. 3,691,189. This application Feb. 25, 1974, Ser. No. 445,416

Int. Cl.² C07D 261/08

U.S. Cl. 260—307 H

2 Claims

1. A compound of the formula



wherein Y is O or S, R_1 and R_2 are hydrogen or lower alkyl of 1 to 2 carbon atoms and rings A and B are unsubstituted or independently may have up to two substituents selected from the group consisting of halogen, trifluoromethyl, lower alkyl of 1 to 4 carbon atoms and lower alkoxy of 1 to 4 carbon atoms, and pharmaceutically acceptable salts thereof.

3,900,492

(SUBSTITUTED)-PHENYL-1,2,3-TRIAZOLE-ALKANOIC AND -ALKENOIC ACIDS

Robert Thomas Buckler, Edwardsburg, Mich.; Harold Eugene Hartzler, Elkhart, Ind.; Shin Hayao, Tokyo, Japan, and Gust Nichols, Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

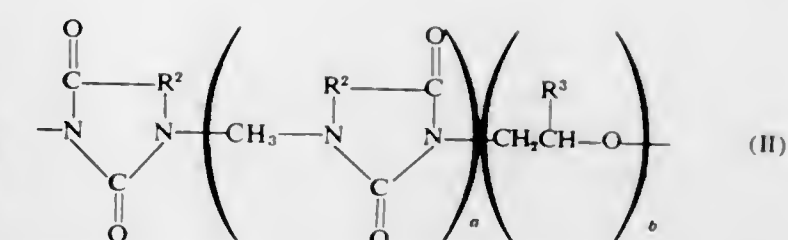
Filed May 29, 1973, Ser. No. 364,609

Int. Cl.² C07D 249/06

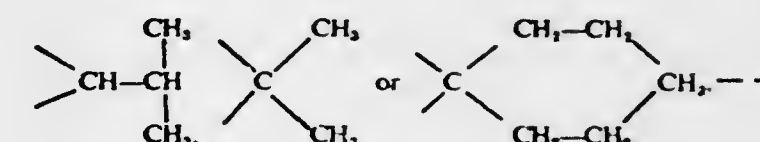
U.S. Cl. 260—308 A

2 Claims

1. 3-[5-phenyl-1,2,3, (1H)-triazole-1]-propionic acid.
2. 3-[4,5-diphenyl-1,2,3, (2H)-triazole-1]-propionic acid.



wherein a and b are identical or different and denote either 0 or 1; R^3 is hydrogen or methyl; and R^2 is one of the radicals



3,900,493

POLYGLYCIDYL COMPOUNDS CONTAINING N-HETEROCYCLIC STRUCTURE

Jürgen Habermeyer, Pfeffingen; Hans Batzer, Arlesheim, and Daniel Porret, Binningen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed June 19, 1973, Ser. No. 371,449

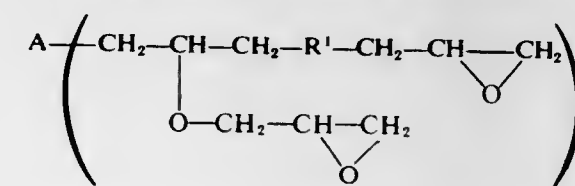
Claims priority, application Switzerland, June 23, 1972, 9528/72

Int. Cl. C07d 49/32, 51/20, 51/30

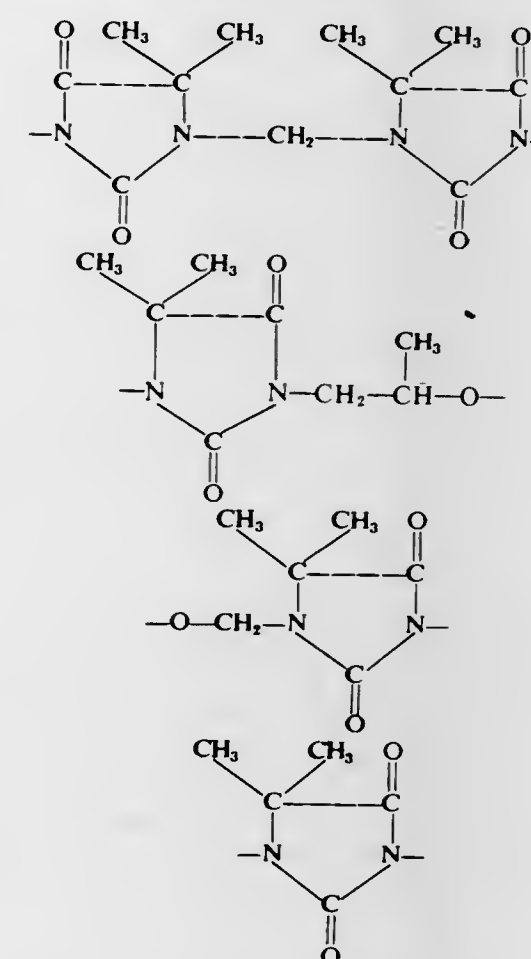
U.S. Cl. 260—309.5

5 Claims

1. A polyglycidyl compound of the formula



wherein A is an organic radical of the formula



R^1 is a divalent radical of the formula

3,900,494

TETRAHYDROPYRIMIDINYL PHENYL CARBONYL ACID ADDITION SALTS, IMIDAZOLINYL PHENYL CARBONYL COMPOUNDS ACID ADDITION SALTS AND RELATED COMPOUNDS

Theodore S. Sulkowski, Wayne, Pa., assignor to American Home Products Corporation, New York, N.Y.

Division of Ser. No. 757,792, Sept. 5, 1968, Pat. No.

3,763,178, which is a continuation-in-part of Ser. Nos.

622,918, March 14, 1967, abandoned, Ser. No. 622,931,

March 14, 1967, abandoned, Ser. No. 576,833, Sept. 2, 1966,

abandoned, and Ser. No. 487,587, Sept. 15, 1965, abandoned.

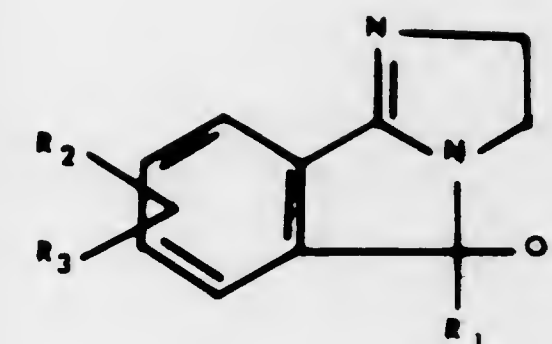
This application Sept. 6, 1973, Ser. No. 394,705

Int. Cl.² C07D 49/34

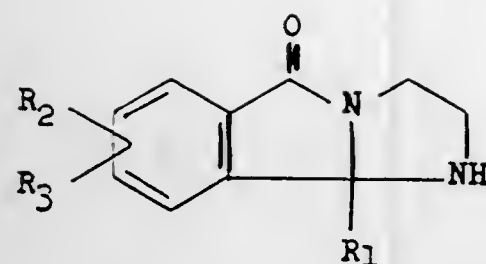
U.S. Cl. 260—296 T

2 Claims

1. A process for the production of a compound having the formula:



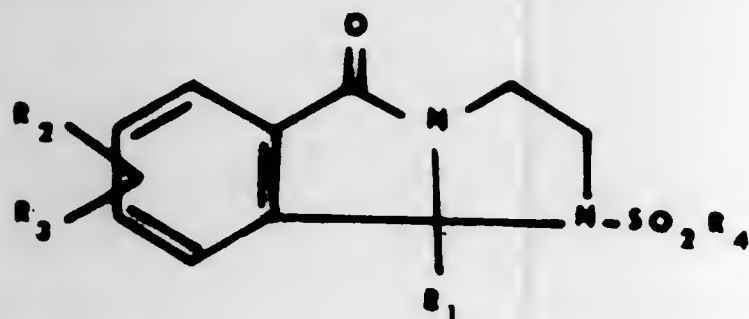
wherein R_1 is selected from the group consisting of hydrogen, lower alkyl, phenyl, phen(lower)alkyl, monohalophenyl, dihalophenyl, mono(lower)alkylphenyl, di(lower)alkylphenyl, trifluoromethylphenyl, mono(lower)alkoxyphenyl, di(lower)alkoxyphenyl, thienyl, pyridyl, furyl and tetrahydro-2-naphthyl; R_2 is selected from the group consisting of hydrogen, halogen, amino, lower alkylamino, lower alkyl and lower alkoxy; and R_3 is hydrogen when R_2 and R_3 are dissimilar and when R_2 and R_3 are the same they are both selected from the group consisting of hydrogen, halogen, lower alkyl and lower alkoxy, which comprises contacting a compound of the formula:



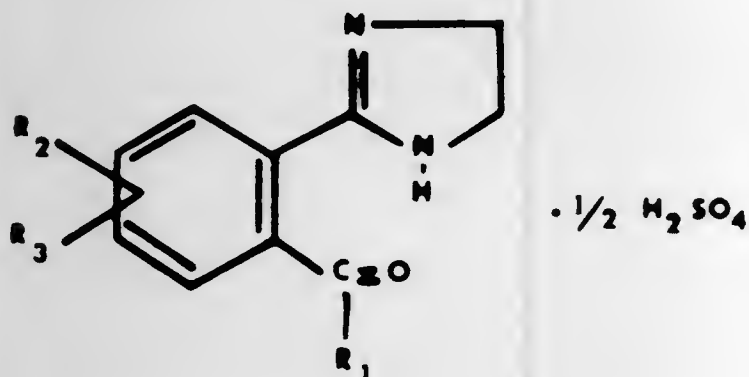
wherein R_1 , R_2 and R_3 are defined as above, with a sulfonyl halide selected from the group consisting of those having the formula:



wherein R_4 is selected from the group consisting of lower alkyl, phenyl, monohalophenyl, dihalophenyl, mono(lower) alkylphenyl, di(lower)alkylphenyl, trifluoromethylphenyl, mono(lower)alkoxyphenyl and di(lower)alkoxyphenyl and X is halogen, in pyridine at a temperature that is in the range from about 80°C. to about 115°C. for a period from about two hours to about fourteen hours, to form a compound of the formula:



wherein R_1 , R_2 , R_3 and R_4 are defined as above, and hydrolyzing said sulfonylimidazoisoindolone by treatment with from about 80 to about 100 percent sulfuric acid to form a sulfate of the formula:



wherein R_1 , R_2 , and R_3 are defined as above, and then contacting said sulfate with a base.

3,900,495

INTERMEDIATE INDOLINES

George Rodger Allen, Jr., Old Tappan, N.J.; Francis Joseph McEvoy, Pearl River, N.Y.; Vern Gordon DeVries, Ridgewood, N.J.; Daniel Bryan Moran, Suffern, N.Y., and Ruddy Littell, River Vale, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 147,700, May 27, 1971, Pat. No. 3,751,416. This application Apr. 12, 1973, Ser. No. 350,445

Int. Cl.² C07D 209/12

U.S. Cl. 260—326.11 R

9 Claims

1. 1-Benzoyl-3-(2-bromoethyl)-5,6-dimethoxy-2-methylindoline.

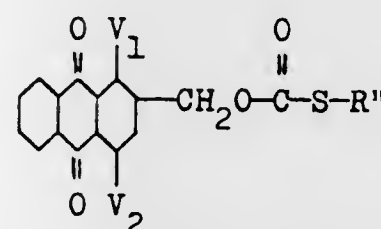
3,900,496
ANTHRAQUINONE DYESTUFFS
Hans Peter Kolliker, Munchenstein; Urs Karlen, Magden, and Peter Hindermann, Bottmingen, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland
Filed Aug. 20, 1973, Ser. No. 389,824
Claims priority, application Switzerland, Aug. 22, 1972, 12431/72

Int. Cl.² C07D 27/00

U.S. Cl. 260—326 C

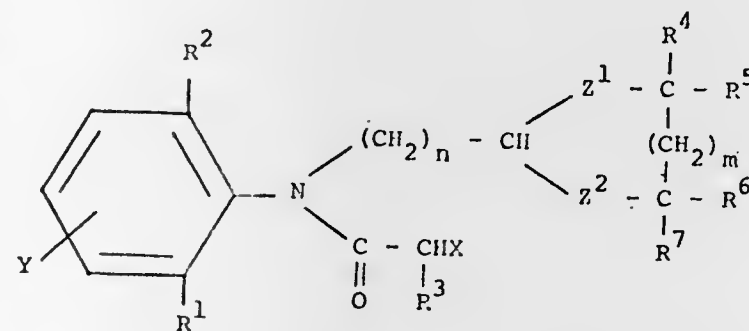
12 Claims

1. An anthraquinone dyestuff of the formula



wherein V_1 represents hydroxyl or $-NH_2$, V_2 represents hydroxyl, phenylamino or phenylamino ring-substituted by one substituent selected from chlorine and C_1-C_4 -alkoxy or by one to three lower alkyl, and R'' represents C_1-C_4 -alkyl, phenyl or phenyl substituted by one or two substituents selected from chlorine and lower alkyl.

3,900,497
DITHIANYL ANILIDS
Sidney B. Richter, Chicago, and John Krenzer, Oak Park, both of Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.
Division of Ser. No. 357,746, May 7, 1973. This application June 3, 1974, Ser. No. 475,542
Int. Cl. C07d 73/00
U.S. Cl. 260—327 M
2 Claims
1. A compound of the formula



wherein Y is selected from the group consisting of hydrogen, lower alkyl and halogen; R^1 is selected from the group consisting of hydrogen, lower alkyl and lower alkoxy; R^2 is lower alkyl; R^3 , R^4 , R^5 , R^6 and R^7 are independently selected from the group consisting of hydrogen and lower alkyl; X is halogen; m is the integer 1; Z^1 and Z^2 are sulfur; and n is an integer from 1 to 2.

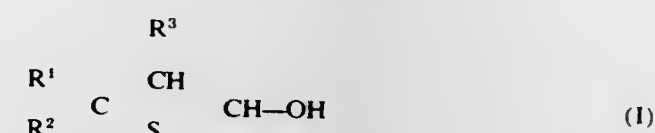
3,900,498
2-THIETANOLS AND THEIR PREPARATION
Paul Dubs, Zug; Heiner Kuntzel, Oberengstringen, and Mario Pesaro, Zurich, all of Switzerland, assignors to Givaudan Corporation, Clifton, N.J.
Filed Apr. 5, 1973, Ser. No. 348,444
Claims priority, application Switzerland, Apr. 12, 1972, 5353/72

Int. Cl. C07d 61/00

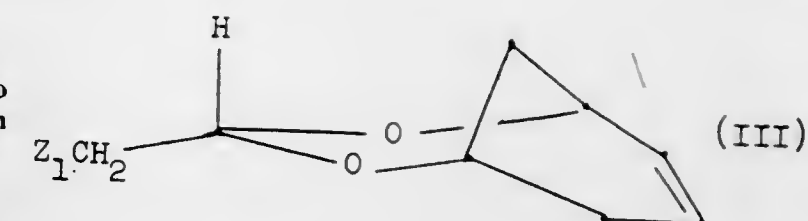
U.S. Cl. 260—327 R

22 Claims

1. A 2-thietanol of the general formula



wherein R^1 represents a hydrogen atom or a C_{1-10} alkyl group, R^2 represents a hydrogen atom or a C_{1-3} alkyl group and R^3 represents a hydrogen atom or a C_{1-3} alkyl group.



wherein Z_1 represents a hydroxy group esterified with an aliphatic or aromatic sulphonic acid, and the optical antipode thereof.

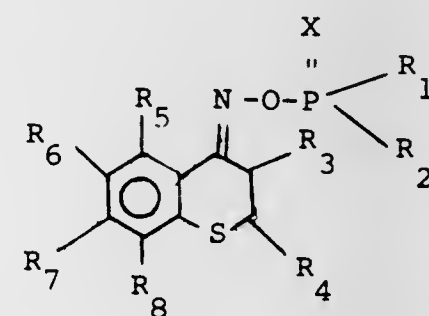
3,900,499
(THIO) PHOSPHORIC ACID AND (THIO) PHOSPHONIC ACID ESTERS AND AMIDES
Gerhard Horlein, Frankfurt am Main; Gerhard Salbeck, Kelheim, Taunus, and Ludwig Emmel, Bergen-Enkheim, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany
Filed Mar. 19, 1973, Ser. No. 342,491
Claims priority, application Germany, Mar. 24, 1972, 2214297

Int. Cl. C07d 65/08

U.S. Cl. 260—327 TH

16 Claims

1. Compound of the formula



in which R_1 is O-alkyl, NH-alkyl, or N-dialkyl, R_2 is alkyl, O-alkyl, or phenyl, wherein the R_1 and R_2 alkyl constituent has 1 to 10 carbon atoms, R_3 and R_4 are each hydrogen or lower alkyl, R_5 , R_6 , R_7 , R_8 are each hydrogen, halogen, lower alkyl, lower alkoxy or lower alkylthio, and X is oxygen or sulfur.

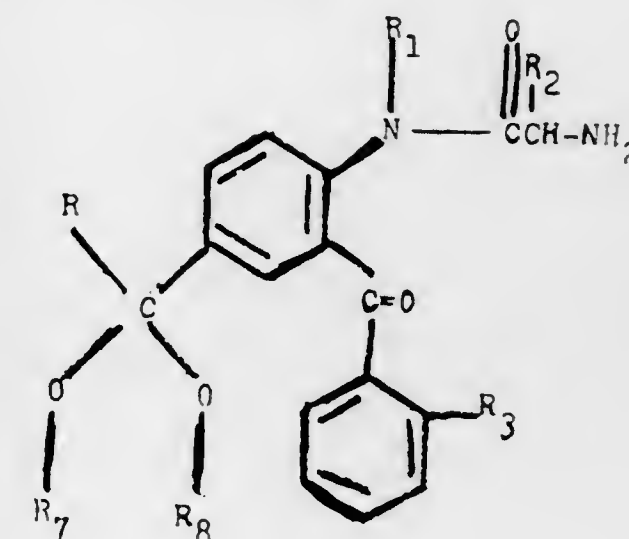
3,900,501
BENZOPHENONE INTERMEDIATES FOR 7-LOWER ALKANOYL BENZODIAZEPINES
Robert Ye-Fong Ning, West Caldwell, and Leo Henryk Sternbach, Upper Montclair, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.
Division of Ser. No. 101,117, Dec. 23, 1970, abandoned. This application Oct. 2, 1972, Ser. No. 293,967 The portion of the term of this patent subsequent to Aug. 22, 1989, has been disclaimed.

Int. Cl. C07d 13/04

U.S. Cl. 260—340.9

8 Claims

1. A compound of the formula



wherein R , R_1 and R_2 are each selected from the groups consisting of hydrogen and lower alkyl, R_3 is selected from the group consisting of hydrogen and halogen and R_7 and R_8 represent individually lower alkyl and when taken together represent the radical $(CH_2)_n$ wherein n is a whole integer from 2-3.

3,900,500
ESTERS OF
HYDROXYMETHYL-DIOXABICYCLONONENE
Robert Burns Woodward, Cambridge, Mass., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.
Filed Feb. 2, 1973, Ser. No. 329,255
Claims priority, application Switzerland, Feb. 10, 1972, 1945/72

Int. Cl. C07d 15/04

U.S. Cl. 260—340.7

4 Claims

1. A racemic mixture consisting of a compound of the formula III

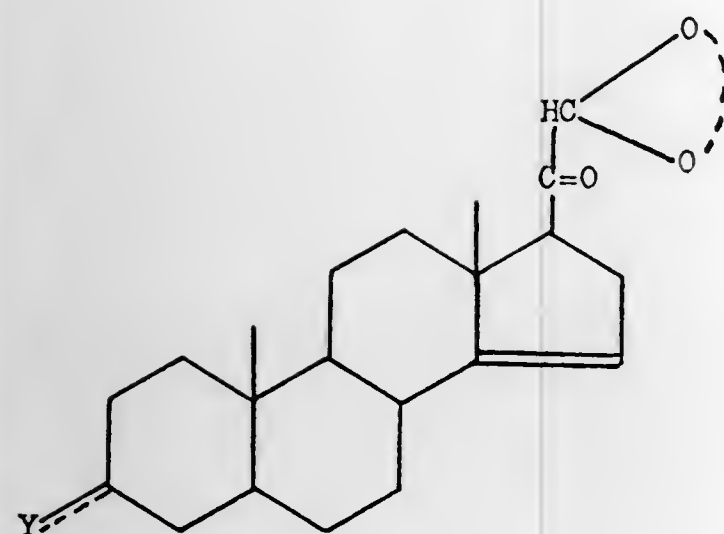
3,900,502
PROCESS FOR THE MANUFACTURE OF DELTA 14-20-ETO-21-DIALKOXY STEROIDS
Kurt Radsch, Kelkheim, Taunus; Ulrich Stache, Hofheim, Taunus; Werner Fritsch, Neuenhain, Taunus, and Werner Haede, Hofheim, Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany
Continuation of Ser. No. 816,066, April 14, 1969, abandoned. This application June 30, 1971, Ser. No. 158,566
Claims priority, application Germany, Apr. 18, 1968, 1768226

Int. Cl.² C07C 169/32

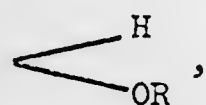
U.S. Cl. 260—397.47

3 Claims

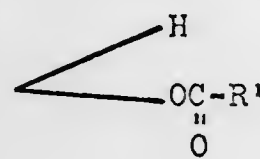
1. A Δ^{14} -20-keto-21-acetal steroid of the formula



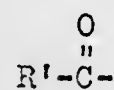
and corresponding compounds having a Δ^4 -unsaturation, wherein Y is a member selected from the group consisting of oxo; oxo ketalized with a monohydric or dihydric aliphatic alcohol or benzyl alcohol;



wherein R is lower alkyl, cyclohexyl, aralkyl, or tetrahydropyranyl; and



wherein



is aliphatic acyl having 1 - 20 carbon atoms, benzoyl, phenylacetyl, or cyclohexane-carbonyl; and wherein



is selected from the group consisting of acyclic acetals of lower alkanols or benzyl alcohol and cyclic acetals of dihydric alkanols having 2 - 5 carbon atoms.

3,900,503

RANDOMLY INTERESTERIFIED SUNFLOWER AND TOBACCOSEED C¹

John P. McNaught, Saddle River, N.J., assignor to Lever Brothers Company, New York, N.Y.
Division of Ser. No. 77,757, Oct. 2, 1970, Pat. No. 3,746,551, Continuation-in-part of Ser. No. 10,313, Feb. 10, 1970, abandoned. This application Oct. 6, 1972, Ser. No. 295,744
Int. Cl. C11c 3/10

U.S. Cl. 260-410.7

2 Claims

1. As a new component for margarine having a high polyunsaturated fatty acid content, randomly interesterified tobaccoseed oil wherein the fatty acids that can be obtained therefrom by hydrolysis or alkaline saponification followed by separation from an aqueous medium, have a polyunsaturated fatty acid content of at least 65 percent, based on the total fatty acid content.

2. As a new component for margarine having a high polyunsaturated fatty acid content, randomly interesterified sunflower oil wherein the fatty acids that can be obtained therefrom by hydrolysis or alkaline saponification followed by separation from an aqueous medium, have a polyunsaturated fatty acid content of at least 65 percent, based on the total fatty acid content.

3,900,504

CUPRAMMONIUM ACETATE COMPLEX AND METHOD OF PREPARING

Hans Woerner, Mount Pleasant, N.C., assignor to Mineral Research & Development Corporation, Charlotte, N.C.
Filed Feb. 4, 1972, Ser. No. 223,702
Int. Cl. C07F 1/08

U.S. Cl. 260-438.1

3 Claims

1. A method for producing a substantially non-corrosive cuprammonium acetate complex comprising reacting at atmospheric temperature and pressure copper acetate and ammonium acetate in a dilute aqueous ammonia solution at a pH between about 7.1 to 7.4, said reaction proportions being in amounts to provide an aqueous solution having a copper content of about 8 to 8.2 percent by weight.

3,900,505

CATALYSED REACTION OF ALUMINUM COMPOUNDS WITH NITRILES

Thomas Mole, East Melbourne, and Aivars Meisters, North Coburg, both of Australia, assignors to Commonwealth Scientific and Industrial Research Organization, Campbell, Australia

Filed Dec. 12, 1972, Ser. No. 314,384

Claims priority, application Australia, Dec. 13, 1971, 7363/71

Int. Cl. C07I 5/06

U.S. Cl. 260-448 A

6 Claims

1. A method for effecting the reaction of an aluminum compound selected from the class consisting of aluminum trialkyls, aluminum triaryls and aluminum triaralkyls with a nitrile having a formula $R^1 - C \equiv N$ wherein R^1 is a straight or branched-chain, saturated or unsaturated, aliphatic or cycloaliphatic, aralkyl or an aryl group which comprises reacting said compounds in the presence of a transition metal catalyst where the metal is coordinated to an oxygen containing ligand, said catalyst being selected from the group consisting of cobalt acetylacetonate, iron acetylacetonate, nickel acetate, nickel stearate, nickel acetylacetonate, nickel bisacetylacetonate, nickel bisacetylacetonate dihydrate, nickel bis(-diethyl oxaloacetate), and nickel .3 (ethyl acetoacetate) .5 (OH).

3,900,506

FLAME RETARDANTS FOR PLASTIC FOAMS

Reuben H. Bell, Granville, and Kevin M. Foley, Hebron, both of Ohio, assignors to Owens-Corning Fiberglass Corporation, Toledo, Ohio

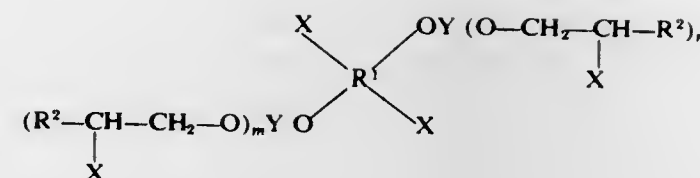
Filed Nov. 23, 1973, Ser. No. 418,708

Int. Cl. C07I 7/04, 7/18

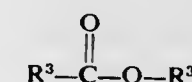
U.S. Cl. 260-448.8 A

6 Claims

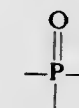
1. An addition product represented by the formula:



wherein R^1 is a divalent group selected from the group consisting of alkyl, alkoxy, cycloalkyl, cycloalkoxy, aryl, an ester represented by the formula



wherein each R^3 is a divalent group selected from the group consisting of alkyl, alkoxy, cycloalkyl or aryl, each R^3 having 1 to 20 carbon atoms, or an ether represented by the formula $R^3 - O - R^3$ is as defined above, or a combination thereof having from 1 to 50 carbon atoms; each R^2 is an alkyl radical having 1 to 20 carbon atoms, each X is chlorine, bromine or fluorine; one Y is phosphorus or the radical



and the other Y is silicon and each m is the integer 2 when Y is phosphorus or the radical PO and the integer 3 when Y is silicon.

3,900,507

ETHER AND THIOETHER CONTAINING THIOLESTERS

Friedrich Karrer, Basel, and Saleem Farooq, Aesch, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 6, 1974, Ser. No. 521,314

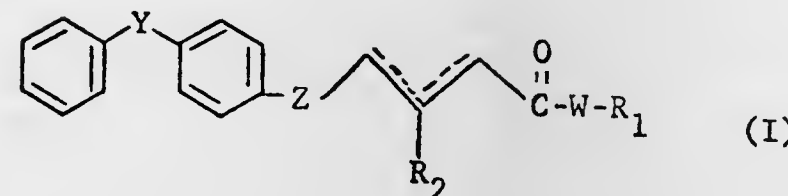
Claims priority, application Switzerland, Nov. 9, 1973, 15812/73; Nov. 9, 1973, 15813/73; Oct. 9, 1974, 13565/74

Int. Cl. C07C 157/07

U.S. Cl. 260-455 R

8 Claims

1. Compounds of the formula



wherein

R_1 represents C_1 - C_4 -alkyl,

R_2 represents methyl or ethyl,

Y represents O, $-CH_2-$, $>C=O$ or S, and one of the radicals Z is oxygen or sulfur and W is sulfur.

3,900,508

PERFLUOROALKYLSULFONIC ACID AMINOPHENYL ESTERS

Peter Voss, Leverkusen; Hans Niederprum, Monheim, and Volker Beyl, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
Continuation-in-part of Ser. No. 76,255, Sept. 28, 1970, Pat. No. 3,803,199. This application Nov. 30, 1973, Ser. No. 420,497

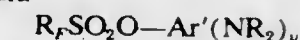
Claims priority, application Germany, Oct. 17, 1969, 1952387

Int. Cl. C07c 143/08

U.S. Cl. 260-456 A

4 Claims

1. An aminosubstituted-aryl ester of perfluoroalkylsulfonic acid of the formula



wherein

R_f is a perfluoroalkyl group of 6 to about 12 carbon atoms, Ar' is phenyl or naphthyl, R is independently hydrogen or an alkyl radical having 1 to 4 carbon atoms, and y is 1 or 2.

3,900,509

SUBSTITUTED BUTYL ESTERS OF ALKYL- AND HALOALKYL-SULFONIC ACIDS

Lowell D. Markley, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

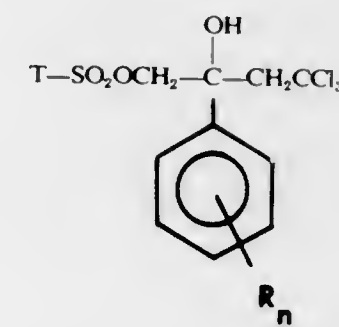
Filed May 3, 1974, Ser. No. 466,568

Int. Cl. C07c 143/68

U.S. Cl. 260-456 R

30 Claims

1. A compound of the formula



wherein n represents an integer of 0 to 3, inclusive; R is substituted in the 3, 4 or 5 positions and each R independently represents trifluoromethyl, alkyl of from 1 to about 3 carbon atoms, bromo, chloro, fluoro, nitro or alkoxy of from 1 to about 3 carbon atoms; and T represents alkyl of from 1 to about 18 carbon atoms or haloalkyl of from 1 to about 4 carbon atoms.

3,900,510

SULFURIC ACID ESTER OF 1-AMINOBENZENE-4-(β-HYDROXYETHYL-SULFONE)-2-SULFONIC ACID, THE 4-VINYLSULFONE COMPOUND THEREOF AND A PROCESS FOR THEIR PREPARATION

Hermann Fuchs, Kelkheim, Taunus, and Fritz Meininger, Frankfurt am Main, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Nov. 3, 1972, Ser. No. 303,626

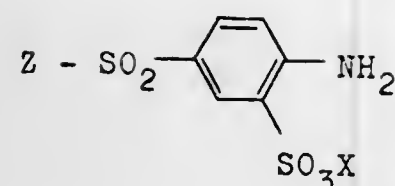
Claims priority, application Germany, Nov. 5, 1971, 2154943

Int. Cl. C07C 141/02

U.S. Cl. 260-458

3 Claims

1. A compound of the formula



in which Z is $\text{XO}_2\text{SO}-\text{CH}_2\text{CH}_2-$ or $\text{CH}_2=\text{CH}-$ and X is hydrogen, sodium or potassium.

3,900,511

PROCESS FOR THE PREPARATION OF AMINOMETHYLENE MALONONITRILE

Willy Leimgruber, Montclair, and Manfred Weigle, North Caldwell, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

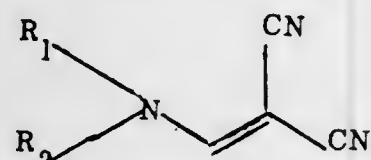
Division of Ser. No. 338,018, March 5, 1973, Pat. No. 3,853,946, which is a division of Ser. No. 197,968, Nov. 11, 1971, Pat. No. 3,742,015, which is a division of Ser. No. 42,528, June 1, 1970, Pat. No. 3,655,716, which is a division of Ser. No. 719,834, April 9, 1968, Pat. No. 3,542,848. This application June 19, 1974, Ser. No. 480,660

Int. Cl.² C07C 120/00, 121/20

U.S. Cl. 260—465.5 R

2 Claims

1. A process of producing aminomethylene malonitrile from a dinitrile compound of the formula:



wherein R₁ and R₂ are lower alkyl containing from 1 to 6 carbon atoms; comprising dissolving said dinitrile in liquid ammonia at a temperature below about -70°C. to form a reaction mixture and thereafter bringing said reaction mixture to room temperature within a period of at least one hour to form aminomethylene malonitrile.

3,900,512

2-(6-CARBOMETHOXY-CIS-2-HEXENYL)-4(R)-HYDROXY-2-CYCLOPENTEN-1-ONE AND METHOD FOR PREPARING SAME

Charles J. Sih, Madison, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Nov. 12, 1973, Ser. No. 411,772

Int. Cl.² C07C 61/38, 69/74

U.S. Cl. 260—468 K

1 Claim

1. A method for preparing 2-(6-carbomethoxy-cis-2-hexenyl)-4(R)-hydroxy-2-cyclopenten-1-one which comprises: reacting the pyrrolidine enamine of aceto-acetic ester with propargyl bromide

subjecting the resulting product to alkaline hydrolysis and decarboxylation and recovering 5-oxo-1-hexyne

reacting the 5-oxo-1-hexyne with ethylene glycol in the presence of p-toluene sulfonic acid to obtain the corresponding cycloethylene ketal, 5-ethylenedioxy-1-hexyne subjecting the said ketal to treatment with lithium amide in liquid ammonia and to condensation with 1-bromo-4-tetrahydropyranyloxybutane in tetrahydrofuran to obtain the equivalent ethylene ketal-THP ether

subjecting the said ether to acid hydrolysis and recovering 9-oxo-5-decyn-1-ol

oxidizing the 9-oxo-5-decyn-1-ol with Jones reagent, esterifying the resulting product under acid conditions to obtain 9-oxo-5-decynoic acid methyl ester

hydrogenating the said ester over Lindlar's catalyst and recovering 9-oxo-5-cis-decenoic acid methyl ester

condensing the said decenoic acid methyl ester with diethyl oxalate, hydrolyzing the reaction product under acid conditions and recovering 2-(6-carboxy-cis-5-hexenyl)-cyclopentane 1,3,4-trione from the resulting reaction mixture

reesterifying the said trione, incubating the resulting ester with a microorganism of the order Ascomycetes and recovering 2-(6-carbomethoxy-cis-5-hexenyl)-4(R)-hydroxy-cyclopentane-1,3-dione

enolizing the said dione to preferentially promote acylation or alkylation of the oxygen at the C-1 position and recovering the substituted C-1 enol

reducing the said substituted C-1 enol with a hydride reducing agent acidifying the reaction mixture and recovering 2-(6-carbomethoxy-cis-2-hexenyl)-4(R)-hydroxy-2-cyclopenten-1-one from the reduction reaction mixture.

3,900,513

EXTRACT CONTAINING PROSTAGLANDINS

Ramon D. Hamilton, Portage, and William P. Schneider, Kalamazoo, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 159,479, July 2, 1971, Pat. No. 3,794,675, which is a continuation-in-part of Ser. No. 71,432, Sept. 11, 1970, abandoned. This application Oct. 25, 1973, Ser. No. 409,440

Int. Cl.² C07C 61/38, 69/74, 51/48, 67/48

U.S. Cl. 260—468 D

12 Claims

1. A composition comprising those substances obtained by extracting colonies or colony pieces of the marine invertebrate *Plexaura homomalla* (Esper), 1792, forma S or forma R, with a neutral organic liquid effective to extract PGA₂ or PGA₂ methyl ester from forma S or 15β-PGA₂ or 15β-PGA₂ methyl ester from forma R, said colonies or colony pieces having been previously maintained in contact with water in a temperature range up to 50° C. until substantially all of the C-15 acetates of the prostanoic acid derivatives originally present in the colonies or colony pieces are transformed to C-15 hydroxy prostanoic acid derivatives.

3,900,514

N-CYCLOALKYL HYDROXAMIC ACIDS

Cecil C. Chappelow, Jr., and James F. Engel, both of Kansas City, Mo., assignors to Kerr-McGee Corporation, Oklahoma City, Okla.

Division of Ser. No. 149,750, June 3, 1971, Pat. No. 3,825,585.

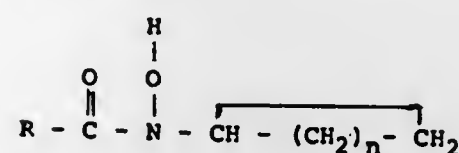
This application Oct. 29, 1973, Ser. No. 410,954

Int. Cl.² C07C 119/00, 103/75

U.S. Cl. 260—500.5 H

6 Claims

1. A compound of the formula



wherein R is selected from the group consisting of alkaryl, substituted alkaryl, aralkyl, substituted aralkyl, aryl and substituted aryl, radicals the substituted radicals being substituted with a member selected from the group consisting of halogen, nitro, alkoxy and phenoxy, said radicals having from 6 to 20 carbon atoms and n is an integer of from 3 to 6, inclusive.

3,900,515

2-ARYL-3-ISOPROPYLAMINO-1-BUTANOLS

Elvio Bellasio, Como, and Franco Cristiani, Pavia, both of Italy, assignors to Gruppo Lepetit, S.p.A., Milan, Italy

Filed May 8, 1972, Ser. No. 251,037

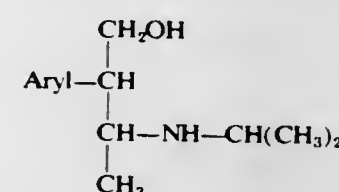
Claims priority, application Italy, May 21, 1971, 24389/71

Int. Cl. C07c 91/00

U.S. Cl. 260—501.17

7 Claims

1. A 2-aryl-3-isopropylamino-1-butanol of the formula



wherein aryl represents phenyl or substituted phenyl wherein the substituents are selected from dichloro, amino, and lower alkylsulfonamido; and a salt thereof with a pharmaceutically acceptable acid.

3,900,516

PROCESS FOR MAKING ACRYLAMIDE

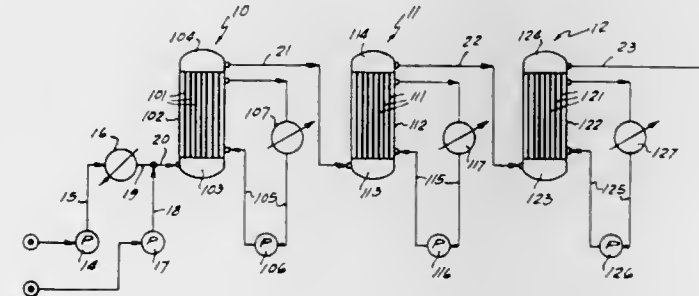
Darrell L. Werges, Park Forest, Ill., assignor to Nalco Chemical Company, Chicago, Ill.

Filed Nov. 1, 1973, Ser. No. 411,821

Int. Cl. C07c 103/08

U.S. Cl. 260—561 N

34 Claims



1. A process for catalytically hydrolyzing acrylonitrile to acrylamide under liquid phase conditions comprising continuously passing sequentially through at least two tubular reaction zones in a plug flow manner a liquid reactant feed composition comprising from about 25 to 75 wt. % acrylonitrile and from about 25 to 75 wt. % water on a 100 wt. % total reactant feed composition basis, each one of said reaction zones

- containing a fixed catalyst bed,
- the catalyst comprising each of said beds being characterized by having an initial activity of at least about 0.25 based upon a starting feed composition of 35 wt. % acrylonitrile and 64 wt. % water, total composition basis, using an arithmetic mean catalyst bed temperature of 210°F., a catalyst bed volume of about 50 cubic inches and an evaluation weight hourly space velocity which is sufficient to produce 80 percent conversion of acrylonitrile to acrylamide,

said process

- being conducted substantially isothermally at temperatures in the range of from about 100° to 300°F. and
- having a system weight hourly space velocity in the range of from about 0.1 to 10 hours⁻¹,

the interrelationship between said system weight hourly space velocity and the temperature, respectively, in each one of said reaction zones being such that the percentage conversion of acrylonitrile to acrylamide in each one of such reaction zones ranges from about 0.5 to 1.5 times said total system conversion divided by the total number of said reaction zones.

34. In an improved process for hydrolyzing with a fixed bed catalyst acrylonitrile to acrylamide of the type employing three tubular reaction zones through which in normal process operation a reactant composition comprising from about 25 to

75 weight percent acrylonitrile and from about 25 to 75 weight percent water on a 100 weight percent total composition basis is passed sequentially, substantially isothermally, and under liquid phase conditions, each of said reaction zones containing a bed of Raney copper catalyst which has an initial catalytic activity of at least about 0.25 based upon a starting feed composition of 35 weight percent acrylonitrile and 65 weight percent water, total composition basis, using an arithmetic means catalyst bed temperature of 210°F., a catalyst bed volume of about 50 cubic inches and an evaluation weight hourly space velocity which is sufficient to produce 80 percent conversion of acrylonitrile to acrylamide, the improvement which comprises the steps of

- removing from service one of said three tubular reaction zones, and
- passing said reactant composition sequentially, substantially isothermally, and under liquid phase conditions through the remaining two of said three tubular reaction zones at a system weight hourly space velocity in the range from about 0.5 to 10 hours⁻¹ while maintaining the first of said remaining two reaction zones at a temperature range from about 100° to 250°F. and the second of said remaining two reaction zones at a temperature ranging from about 120° to 300°F., the conversion of starting acrylonitrile to acrylamide after passing through the first of said remaining two reaction zones being from about 15 to 55 percent, and being from about 35 to 99 percent after passing through the second of said remaining two reaction zones.

3,900,517

CONVERSION OF NITRILE TO ITS CORRESPONDING AMIDE USING IMPROVED COPPER OXIDE CATALYST

Jerry J. Svarz, LaGrange, Ill., assignor to Nalco Chemical Company, Oak Brook, Ill.

Continuation-in-part of Ser. No. 292,216, Sept. 25, 1972, Pat. No. 3,846,495. This application Nov. 29, 1973, Ser. No.

420,037

Int. Cl. C07c 103/08

U.S. Cl. 260—561 N

4 Claims

1. A process for catalytically hydrolyzing acrylonitrile to acrylamide, the improvement comprising contacting a reactant feed of acrylonitrile in the presence of water with an activated copper oxide prepared by the following steps:

- Contacting an aqueous slurry of copper oxides for ½ to 3 hours at a temperature within the range 0°-90°C with a dilute aqueous solution of from 5-20% by weight of an alkali metal hydroxide and a powdered aluminum to yield a slurry containing 1-75% by weight of copper oxide and 10 to 90% by weight based on said copper oxide of powdered aluminum to form an activated copper oxide catalyst.
- Filtering, washing and recovering said copper oxide catalyst.

3,900,518

HYDROXYL OR THIOL TERMINATED TELOMERIC ETHERS

Jack Milgrom, Concord, Mass., assignor to The General Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 130,776, April 2, 1971, abandoned, which is a division of Ser. No. 676,712, Oct. 20, 1967, Pat. No. 3,654,224. This application Dec. 10, 1973, Ser. No. 423,194

Int. Cl.² C07C 93/14, 87/62

U.S. Cl. 260—573

8 Claims

1. A process for the production of hydroxyl or thiol terminated alkylene ether telomers having an average molecular weight between 300 and 10,000 which comprises telomerizing polymerizable cyclic ether selected from the group consisting of ethylene oxide, 1,2-propylene oxide, 1,2-butene oxide, 2,3-butene oxide, 1,2-dodecane monoxide, isobutylene monoxide, 1,2-pentene oxide, isopentene oxide, 1,2-diisobutylene oxide, 1,2-hexene oxide, 1,2-heptene oxide,

allyl glycidyl ether, crotyl glycidyl ether, isooheptene oxide, 1,2-octene oxide, 1,2-nonene oxide, styrene oxide, 1,2-decene oxide, 1,2-hendecene oxide, methyl glycidyl ether, ethyl glycidyl ether, propyl glycidyl ether, phenyl glycidyl ether, 4-chloro phenyl glycidyl ether, butadiene monoxide, isoprene monoxide, oxetane (C_3H_6O), tolyl glycidyl ether, 3,3-dimethyl oxetane, 3-n-nonyl oxetane, 3-allyl-3-methyl oxetane, 3-vinyl-3-methyl oxetane, 1,2-pentadecene oxide, 3,3-diethyl oxetane, 3-ethyl-3-butyl oxetane, 3-chloromethylene oxetane, 3-chloromethyl-3-methyl oxetane, 3-methyl-3-ethyl oxetane, 4,5-epithio-1-pentene; 5,6-epithio-1-hexene; 5,6-epithio-2-hexene; 9,10-epithio-1-decene; 7,8-epithio-2-methyl-1-octene; 1,2-epithio-1-(2-cyclopenten-1-yl) ethane; 3-allyloxy-1,2-epithio propane; 3-(2-butenyloxy)-1,2-epithio propane; 1,2-epithio-1-(3-cyclohexen-1-yl)ethane; 3-(1-methyl allyloxy)-1,2-epithio propane; 3-(1-methyl-2-butenyloxy)-1,2-epithio propane; 3-(2-cyclohexen-1-yloxy)-1,2-epithio propane; 3-(3-methyl-4-hexenyloxy)-1,2-epithio propane; ethylene sulfide; 2,3-epithio butane; 1,2-propylene sulfide; cyclohexene sulfide; isobutylene sulfide; styrene sulfide; vinyl thiorone; 1,2-octene episulfide; crotyl oxy-1,2-epithio propane; 2-butene sulfide; 2,3-dimethyl-2-butene sulfide; 3,3-dimethyl thiocyclobutane; 3-chloropropene sulfide; thiocyclobutane; allyl thio-1,2-epoxy propane; 3-(1-chloro-4-butenyloxy)-1,2-epithio propane; 3-(1-bromo-4-butenyl)-1,2-epithio propane; 3-(1-fluoro-4-butenyl thio)-1,2-epithio propene; and 3-(1-iodo-4-hexenyl thio)-1,2-epoxy propane, and mixtures thereof, with a telogen selected from the group consisting of aniline, N-alkyl anilines, p-phenylene diamine, p-amino-phenol, p-methyl aniline, m-chloro aniline, o-hexyl aniline, p-iodoaniline, m-bromoaniline, 2-methyl-4-chloroaniline, 4-(p-aminophenyl) butanol, N-phenyl hexamethylene diamine, N-(p-tolyl) diethylene triamine, naphthylamine, N-phenyl-N'-naphthyl ethylene diamine and N-naphthyl-N'-hydroxy hexamethylene diamine, in the presence of a catalytic amount of a double metal cyanide complex catalyst.

3,900,520

MERCAPTO-BUTANONE SUBSTITUTED CYCLOHEXENES

Hanspeter Schenk, Zumikon, and Trudi Sigg-Grutter, Winterthur, both of Switzerland, assignors to Givaudan Corporation, Clifton, N.J.

Filed Oct. 9, 1973, Ser. No. 404,582

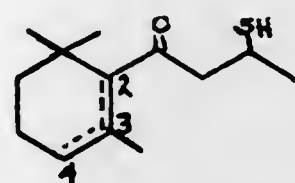
Claims priority, application Switzerland, Oct. 17, 1972, 15189/72

Int. Cl.² C07C 49/48

U.S. Cl. 260—586 R

3 Claims

1. A cycloaliphatic ketone of the general formula



wherein the broken lines denote a double bond in the 2- or 3-position.

3,900,521

3,5-DISUBSTITUTED-2-HYDROXYACETOPHENONES
Andrew G. Kallianos, Albert H. Warfield, and Melvyn I. Simpson, all of Durham, N.C., assignors to Liggett & Myers Incorporated, New York, N.Y.

Division of Ser. No. 78,913, Oct. 7, 1970, Pat. No. 3,787,501, which is a division of Ser. No. 857,211, Sept. 11, 1969, Pat. No. 3,605,760. This application Sept. 7, 1973, Ser. No. 395,014

Int. Cl. C07c 49/78, 49/82

U.S. Cl. 260—592

1 Claim

1. 3,5-Diisopropyl-2-hydroxyacetophenone.

3,900,522

PRODUCTION OF CATECHOL

Nicholas P. Greco, Pittsburgh, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed June 30, 1972, Ser. No. 268,035

Int. Cl. C07c 37/06

U.S. Cl. 260—621 H

5 Claims

1. A process for preparing catechol from dihydrocatechol, comprising:

adding dihydrocatechol at a controlled rate to a slurry of a noble metal catalyst and a refluxing solvent that is butyrolactone and that is at a refluxing temperature, said controlled rate of addition of dihydrocatechol being approximately equal to the rate at which the dihydrocatechol is dehydrogenated to catechol in the reaction medium.

3,900,523

METHOD FOR PURIFYING HYDROQUINONE AS WELL AS METHOD FOR PURIFYING AND RECOVERING HYDROQUINONE

Sugihiko Tada, Minami Ashigara; Yasuo Nishigaki, and Masatoshi Sugiyama, both of Odawara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan

Filed Sept. 4, 1973, Ser. No. 394,209

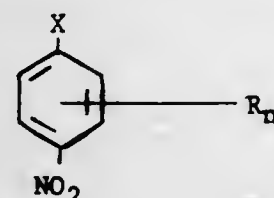
Claims priority, application Japan, Sept. 4, 1972, 47-88525

Int. Cl.² C07C 37/22

U.S. Cl. 260—621 A

14 Claims

1. In a process which comprises oxidizing para-diisopropylbenzene to the corresponding dihydroperoxide and subjecting said dihydroperoxide in a solvent to acid decomposition followed by removal of said solvent by steam distillation to form a crude hydroquinone aqueous solution consisting essentially of water, hydroquinone, solvent and tar substances, the improvement which comprises recovering said hydroquinone from said crude hydroquinone aqueous solution by adjusting



where X is a halogen selected from the group consisting of chlorine, bromine and iodine; each R is independently selected from the group consisting of halogen and alkyl of 1 to 4 carbon atoms; and n is an integer of 0 to 4 with anhydrous hydrogen fluoride in the presence of a deoxygenating agent selected from the group consisting of elemental phosphorus, elemental sulfur, phosphorus trihalides, sulfur halides in which sulfur has a valence lower than 6, aryl phosphorus halides, aryl sulphenyl halides and triaryl phosphines.

the concentration of the hydroquinone in the aqueous solution to about 23 percent by weight or more at a temperature of about 60°C. or higher, stirring said aqueous solution, allowing said aqueous solution to stand to form two layers, and removing said tar substances as an upper layer while recovering said hydroquinone in the lower layer.

3,900,524

STABILIZED METHYLENE CHLORIDE

Norman L. Beckers, Humble, Tex., assignor to Diamond Shamrock Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 335,004, Feb. 23, 1973, abandoned, and a continuation-in-part of Ser. No. 335,368, Feb. 23, 1973, abandoned. This application May 13, 1974, Ser. No. 469,360

Int. Cl. C07c 17/42

U.S. Cl. 260—652.5 R

2 Claims

1. A stabilized composition consisting essentially of methylene chloride and from about 0.001 to about 2.0 percent by weight of each of diisopropylamine, N-methyl pyrrole, butylene oxide and propylene oxide.

3,900,525

MANGANESE FERRITE CATALYZED OXIDATIVE DEHYDROGENATION

Harold F. Christmann, Seabrook, and Paul H. Teel, Houston, both of Tex., assignors to Petro-Tex Chemical Corporation, Houston, Tex.

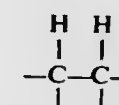
Division of Ser. No. 253,820, May 16, 1972, Pat. No. 3,843,745, which is a division of Ser. No. 11,289, Feb. 3, 1970, abandoned. This application June 3, 1974, Ser. No. 475,786

Int. Cl. C07c 5/18

U.S. Cl. 260—680 E

9 Claims

1. In a process for the vapor phase oxidative dehydrogenation acyclic non-quaternary hydrocarbons having 4 to 5 contiguous carbon atoms and having at least one



grouping or ethyl benzene to produce a corresponding hydrocarbon having a higher degree of unsaturation with a metal manganese ferrite catalyst wherein the improvement comprises using as the manganese ferrite catalyst a manganese ferrite prepared by preparing a solution of soluble metal components of iron and manganese, adding 0.1 to 4 weight percent of a soluble polyhydric organic compound based on the weight of metal to said solution said polyhydric compound having number average molecular weight of about 3000 to 400,000 and further being selected from the group consisting of polyesters derived from polybasic carboxylic acids and polyols; polyethers being the condensation products of ethylene oxide, propylene oxide and mixtures thereof with polyols; polysaccharides and mixtures thereof, contacting said solution of soluble metal components and polyhydric organic compound with a precipitating agent at a temperature in the range of 20° to 100°C and at a pressure of 0.5 to 50 atmospheres to precipitate insoluble metal component of iron and manganese, recovering a gelatinous material, and heating said gelatinous material to form manganese ferrite.

3,900,526

SELECTIVE REMOVAL OF 1,2 POLYENES AND ACETYLENIC COMPOUNDS FROM CONJUGATED-DIENE FEED USING A NICKEL, IRON OR COBALT ARSENIDE CATALYST

Marvin M. Johnson; Donald C. Tabler, and Gerhard P. Nowack, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 249,726, May 2, 1972, Pat. No. 3,787,511, which is a division of Ser. No. 44,665, June 8, 1970, Pat. No. 3,697,448, which is a continuation-in-part of Ser. No. 6,971, Jan. 29, 1970, abandoned. This application Aug. 23, 1973, Ser. No. 390,799

Int. Cl. C07c 11/00

U.S. Cl. 260—681.5

7 Claims

1. A process for hydrotreating conjugated diene-containing streams to selectively remove 1,2-polyenes, acetylenic compounds, and other unsaturated impurities present in said streams, which comprises contacting hydrogen and a conjugated diene feedstream containing 1,2-polyenes, acetylenes and other unsaturated impurities with a catalyst consisting essentially of an arsenide of nickel, iron, or cobalt at an elevated temperature sufficient to selectively hydrogenate and remove a substantial portion of said 1,2-polyenes and said acetylenes present in said feedstream without significant conversion of conjugated dienes to saturates, and recovering said conjugated diene feedstream substantially reduced in said 1,2-polyenes and said acetylenes.

3,900,527

PRODUCTION OF BASIC DYEABLE POLYESTER FROM TEREPHTHALIC ACID

Henry L. King, and John W. McGee, both of Cary, N.C., assignors to Monsanto Company, St. Louis, Mo.

Filed Apr. 16, 1973, Ser. No. 351,676 The portion of the term of this patent subsequent to Aug. 12, 1992, has been disclaimed.

Int. Cl. C08g 17/01

U.S. Cl. 260—75 S

10 Claims

1. A method for producing fiber-forming modified polyesters non-continuously which comprises (1) forming a reaction product consisting of at least 85% by weight of the polyester of an aromatic dicarboxylic acid and a polymethylene glycol selected from the group consisting of those having the formula $HO(CH_2)_nOH$, wherein n is an integer from 2 to 10, and cyclohexane dimethanol by reacting said acid and said glycol under esterification conditions until said reaction product has a carboxyl level of not more than 2000 $\mu eq/g$ and an intrinsic viscosity of not more than 0.07; and (2) reacting with said reaction product a glycol solution of a bis glycol ester of a difunctional aromatic compound possessing a metallo sulfonate group of such concentration that when said bis glycol ester is mixed with said prepolymer, the resulting glycol/dicarboxylic acid moiety ratio is at least about 1.6; and copolymerizing and polycondensing said reactants at a temperature in the range of from about 65° C to about 325° C until the resulting polymer attains an intrinsic viscosity in the range of about 0.3–0.8.

3,900,528

PROCESS FOR IMPACT MODIFICATION OF HIGH NITRILE POLYMERS

Ludwig A. Beer, Agawam, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed Oct. 9, 1973, Ser. No. 404,448

Int. Cl. C08f 19/08

U.S. Cl. 260—876 R

8 Claims

1. A process for preparing rubber modified nitrile polymer compositions which comprises:

A. admixing
1. a rubbery polymer substrate having a butadiene content of 68 to 72 percent by weight and a styrene content of 28 to 32 percent by weight based on the total weight of the butadiene-styrene rubbery substrate which rubbery substrate is further characterized as

having a refractive index in the range of from 1.5375 to 1.5425, a particle size in the range of from 0.06 to 0.2 micron, a gel content in the range of from 40 to 95 percent, a swelling index in the range of from 10 to 40, and a second order transition temperature (T_g) less than -40°C .; and

2. a first polymerizable monomer composition comprising:

- from 0.1 to 2 percent by weight of a nonconjugated diolefin monomer;
- from 0 to 30 percent by weight of an ethylenically unsaturated nitrile monomer selected from the group consisting of acrylonitrile, and mixtures of acrylonitrile and methacrylonitrile;
- from 40 to 60 percent by weight of a vinylidene aromatic hydrocarbon monomer; and
- from 20 to 50 percent by weight of an alkyl ester of acrylic or methacrylic acid wherein the alkyl group contains from 1 to 8 carbon atoms, wherein the percent by weight is based on the total weight of the monomer in the first polymerizable monomer mixture;

B. heating the admixture to a temperature in the range of from 30° to 100°C . in the presence of a polymerization catalyst to effect polymerization of said monomer formulation and grafting of the polymer being produced onto the rubbery polymer substrate to form a graft copolymer, said graft copolymer having a superstrate to substrate ratio of at least 10:100;

C. admixing said graft copolymer with a second polymerizable composition comprising from 55 to 85 percent by weight of an ethylenically unsaturated nitrile monomer selected from the group consisting of acrylonitrile and mixtures of acrylonitrile and methacrylonitrile which contains up to 20 percent by weight of methacrylonitrile based on the total weight of acrylonitrile and methacrylonitrile and from 15 to 45 percent by weight of a monovinylidene aromatic hydrocarbon monomer wherein the percent by weight is based on the total weight of the monomers in the second polymerizable monomer mixture; and

D. heating the second mentioned admixture to a temperature in the range of from 30° to 100°C . in the presence of a polymerization catalyst to effect polymerization of the monomers thereof and to produce grafting of the polymer being produced onto said graft copolymer to form a composite graft copolymer, said grafted polymers of said first and second admixtures providing a grafted superstrate which contains a total of at least 40 percent by weight ethylenically unsaturated nitrile monomer and wherein the ratio of grafted superstrate to substrate is in the range of from 15-200:100;

E. blending the polymerization product of steps A to D above with a matrix polymer which comprises from 55 to 85 percent, based on the total weight of the polymer, of an ethylenically unsaturated nitrile monomer selected from the group consisting of acrylonitrile and mixtures of acrylonitrile and methacrylonitrile which contain up to 20 percent by weight of methacrylonitrile based on the total weight of acrylonitrile and methacrylonitrile and from 15 to 45 percent of a monovinylidene aromatic hydrocarbon monomer;

wherein the resulting blend contains from 3 to 50% by weight of the rubbery polymer substrate.

3,900,529

RUBBER MODIFIED HIGH NITRILE POLYMERS AND POLYMER BLENDS PRODUCED THEREBY

Ludwig A. Beer, Agawam, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed Oct. 9, 1973, Ser. No. 404,527

Int. Cl. C08f 19/08

U.S. Cl. 260—876 R

13 Claims

1. A polymeric composition comprising:
 - a butadiene-styrene rubbery substrate having a butadi-

ene content of 68 to 72 percent by weight and a styrene content of 28 to 32 percent by weight based on the total weight of the butadiene-styrene rubbery substrate which rubbery substrate is further characterized as having a refractive index in the range of from 1.5375 to 1.5425, a particle size in the range of from 0.06 to 0.2 micron, a gel content in the range of from 40 to 95 percent, a swelling index in the range of from 10 to 40, and a second order transition temperature (T_g) less than -40°C .; and

B. a superstrate grafted onto the rubbery substrate in two separate stages which superstrate comprises:

1. as the first stage graft, the polymerization product of a first polymerizable monomer composition comprising:
 - from 0.1 to 2 percent by weight of a nonconjugated diolefin monomer;
 - from 0 to 30 percent by weight of an ethylenically unsaturated nitrile monomer selected from the group consisting of acrylonitrile, and mixtures of acrylonitrile and methacrylonitrile which contain up to 20 percent by weight of methacrylonitrile;
 - from 40 to 60 percent by weight of a vinylidene aromatic hydrocarbon monomer; and
 - from 20 to 50 percent by weight of an alkyl ester of acrylic or methacrylic acid wherein the alkyl group contains from 1 to 8 carbon atoms, wherein the percent by weight is based on the total weight of the monomer in the first polymerizable monomer mixture; and
2. as the second stage graft, a second polymerizable monomer composition comprising from 55 to 85 percent by weight of an ethylenically unsaturated nitrile monomer selected from the group consisting of acrylonitrile and mixtures of acrylonitrile and methacrylonitrile which contain up to 20 percent by weight of methacrylonitrile based on the total weight of acrylonitrile and methacrylonitrile and from 15 to 45 percent by weight of a monovinylidene aromatic hydrocarbon monomer wherein the percent by weight is based on the total weight of the monomers in the second polymerizable monomer mixture;

wherein the grafted superstrate contains a total of at least 40 percent by weight ethylenically unsaturated nitrile monomer and wherein the ratio of grafted superstrate to substrate is in the range of from 15-200:100.

3,900,530

METHOD FOR FORMING GRAFT COPOLYMERS EMPLOYING THE REACTION PRODUCT OF HYDROGEN PEROXIDE AND ETHYLENE-ACRYLIC ACID ALKALI SALT COPOLYMERS

James E. Crawford, Adrian, Mich., assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Apr. 1, 1974, Ser. No. 456,653

Int. Cl. C08f 15/00

U.S. Cl. 260—877

19 Claims

1. A process for producing a polymeric acrylonitrile acrylate-ethylene graft polymer comprising: combining, in water, a water soluble, copolymeric alkali metal salt of ethylene-acrylic acid with acrylonitrile and, optionally, a monoethylenically unsaturated polymerizable monomer selected from the group consisting of lower alkyl acrylates, lower alkyl methacrylates, vinyl aromatics, vinylidene halides, vinyl halides, and mixtures thereof; releasing hydrogen peroxide into said combination in an amount sufficient to form a free radical initiator with said copolymeric alkali metal salt, thereby forming a polymerization system; polymerizing said system with the sole free radical polymerization initiator consisting of the reaction product of said hydrogen peroxide and said copolymeric alkali

metal salt for a time and at a temperature sufficient to graft polymerize said acrylonitrile and, when present, said monoethylenically unsaturated monomer; recovering the polymerized product.

3,900,531

GRAFT OF ACRYLONITRILE, N-ARYL MALEIMIDE AND ALKENE UNTO A DIENE SUBSTRATE

Carl Fraser Mathews, Hitchin; Eric Nield, Watton-at-Stone; John Brewster Rose, Letchworth, and Peter Incedon Vincent, Welwyn Garden City, all of England, assignors to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 236,976, March 22, 1972, Pat. No. 3,816,563, Continuation-in-part of Ser. No. 860,100, Sept. 22, 1969, abandoned, which is a continuation of Ser. No. 539,738, April 4, 1966, abandoned. This application Jan. 28, 1974, Ser. No. 437,478

Claims priority, application United Kingdom, Apr. 9, 1965, 15191/65; Jan. 12, 1966, 1423/66

Int. Cl. C08f 15/00, 15/22

U.S. Cl. 260—878 R

4 Claims

1. A graft copolymer comprising
 - a substrate of a diene rubber containing 40 to 100% molar of at least one conjugated 1,3-diene monomer and from 0 to 60% molar of at least one ethylenically unsaturated monomer copolymerizable therewith using free radical catalyst and
 - a superstrate, which contains from 45 to 90% molar of units from acrylonitrile, from 1% to 20% molar of units of at least one N-aryl maleimide and from 5 to 35% molar of units of at least one alkene containing 2 to 18 atoms.

3,900,532

LOW VISCOSITY PASTY RUBBER COMPOSITIONS

Manfred Dietrich, Leverkusen; Jochen Schnetger, Berg-Gladbach; Friedrich Haas, Schildgen; Günter Marwede, Leverkusen, and Hansgünter Appel, Bergisch-Gladbach, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

Filed July 2, 1973, Ser. No. 375,687

Claims priority, application Germany, July 7, 1972, 2233359

Int. Cl. C08f 15/10, 15/14

U.S. Cl. 260—879

3 Claims

1. A pasty vulcanizable rubber mixture which is free of elemental sulphur comprising
 - 100 parts by weight of a high molecular weight rubber containing 0.5 to 8% by weight of OH or COOH groups,
 - 50 to 40 parts by weight of a liquid homopolymer or copolymer of a diene having a molecular weight of 400 to 10,000 and containing 0.5 to 8% by weight of OH or COOH groups and
 - 0.5 to 10 equivalents per equivalent of said OH and COOH groups present in said mixture of a crosslinking agent which is capable of reacting with the OH and COOH groups present.

3,900,533

FLAME RETARDANT POLYETHYLENE COMPOSITION AND COATING PROCESS

Joseph J. Krackeler, Los Altos Hills, and William G. Biddell, San Mateo, both of Calif., assignors to National Distillers and Chemical Corporation, New York, N.Y.

Filed Mar. 5, 1973, Ser. No. 337,982

Int. Cl. C08f 29/12

U.S. Cl. 260—897 A

5 Claims

1. A flame retardant polymeric composition for insulating

coating of high voltage electrical wire or cable comprising the following ingredients:

- about 45 to 85% of polymeric components comprising about 15 to 60% high density polyethylene and about 40 to 85% low density polyethylene;
- fire retardant components comprising about 2 to 20% by weight, 1, 2, 3, 4, 6, 7, 8, 9, 10, 10, 11, 11-dodecachloro-1, 4, 4a, 5a, 6, 9, 9a, 9b-octahydro-1, 4, 6, 9-dimethanodibenzofuran and about 2 to 30% by weight 5-(tetrabromophenyl)-1, 2, 3, 4, 7, 7-hexachloronorborene in a parts by weight ratio of 1/1 to 1/1.86, respectively; and
- about 10 to 40% by weight of an antimony compound.

3,900,534

THERMOPLASTIC FILMS BASED ON BLENDS OF POLYPROPYLENE AND POLYBUTENE

Malcolm P. Schard, Califon, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed May 7, 1973, Ser. No. 357,754

Int. Cl. C08f 29/12

U.S. Cl. 260—897 A

3 Claims

1. A heat shrinkable biaxially oriented thermoplastic film comprising a resinous mixture containing:
 - from about 82% to about 88% by weight of a high isotactic content polypropylene resin; and
 - from about 12% to about 18% by weight of a high isotactic content polybutene resin;

said film having a thickness of from about 0.10 mil up to about 10 mils, said thermoplastic film being further characterized in that it has improved optical properties in comparison to film containing 20% by weight of said polybutene resin in said mixture and improved heat seal strength characteristics in comparison to films containing 10% by weight of said polybutene in said mixture.

3,900,535

TOXIC PHOSPHORUS COMPOUNDS

Gerard E. Ntarelli, Jr., Bel Air, Md.; Frank G. Pinto, Middlesex, N.J., and Jacob I. Miller, Baltimore, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

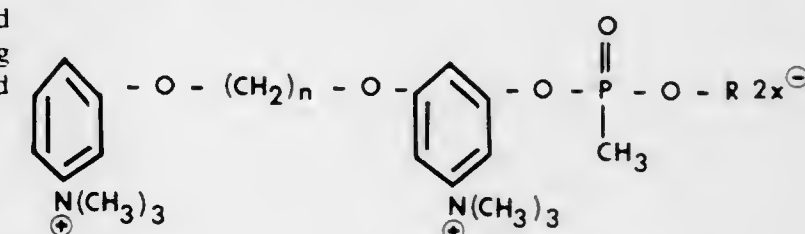
Filed Mar. 13, 1963, Ser. No. 265,594

Int. Cl. C07F 9/28

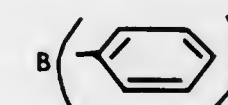
U.S. Cl. 260—945

7 Claims

1. A new chemical toxic agent



where R is an alkyl group, where n is from 1 to 10, and where X⁻ is selected from the group consisting of



3,900,536

HALOGENATED ESTERS OF PHOSPHORUS-CONTAINING ACIDS

Gaetano F. D'Alelio, 2011 E. Cedar St., South Bend, Ind. 46617

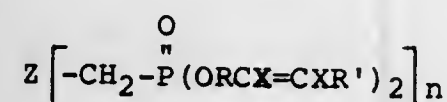
Continuation-in-part of Ser. No. 179,543, Sept. 10, 1971, Pat. No. 3,780,144, which is a continuation of Ser. No. 785,335, Dec. 19, 1968, abandoned. This application July 30, 1973, Ser. No. 383,599

Int. Cl. C07f 9/40

U.S. Cl. 260-952

14 Claims

1. A phosphorus-halogen-containing compound having the formula



wherein n represents an integer having a value of 1 to 4;

Z represents an organic monomeric nucleus of no more than 20 carbon atoms, valency of n and selected from the class consisting of aliphatic, aromatic and cycloaliphatic hydrocarbon radicals, combinations of 2-6 of said hydrocarbon radicals linked together by connecting groups —O—, —S—, —S(O)—, —S(O)₂—, —NH—, —NR''—, —C(O)—, —C(O)O—, —C(O)NH— or —C(O)NR''—, and derivatives of said hydrocarbon radicals in which the derivative group is —OR'', —OC(O)R'', —C(O)R'', —NR'', —NHR'' or —SR'';

X represents Cl or Br;

R represents a divalent hydrocarbon radical of 1-20 carbon atoms;

R' represents H, X or R''; and

R'' represents a monovalent hydrocarbon radical of 1-20 carbon atoms.

3,900,537

COLUMN FOR HEAT-AND-MASS EXCHANGE BETWEEN GAS AND LIQUID

Anatoly Borisovich Tjutjunnikov, ulitsa Frunze, 17, kv. 34; Boris Nikanorovich Tjutjunnikov, ulitsa Frunze, 15, kv. 4; Alexandr Nikolaevich Marchenko, Kolodezny pereulok, 47/2; Viktor Leontievich Burin, Pavlovo Pole, 5 mikrorajon, 54, kv. 26, all of Kharkov; Josif Mironovich Bolotin, ulitsa Sovetskaya, 29, Volgodonsk, Rostovskoi oblasti; Anatoly Sergeevich Drozdov, ulitsa Lenina, 66, kv. 29, Volgodonsk, Rostovskoi oblasti; Leonid Petrovich Koval, ulitsa Lermontova, 11, kv. 3, Volgodonsk, Rostovskoi oblasti; Zoya Vasilievna Didenko, ulitsa Lenina, 66, kv. 22, Volgodonsk, Rostovskoi oblasti; Georgy Vasilievich Ljubushkin, ulitsa Lermontova, 8, kv. 6, Volgodonsk, Rostovskoi oblasti; Jury Mikhailovich Budnik, pereulok Donskoi, 34, kv. 16, Volgodonsk, Rostovskoi oblasti; Vladimir Dmitrievich Moskvina, ulitsa Yakornaya, 7, kv. 28, and Dmitry Mikhailovich Bolyanovsky, ulitsa Sheremetievskaya, 71(b), korpus 18, kv. 73, both of Moscow, all of U.S.S.R.

Filed May 29, 1974, Ser. No. 474,313

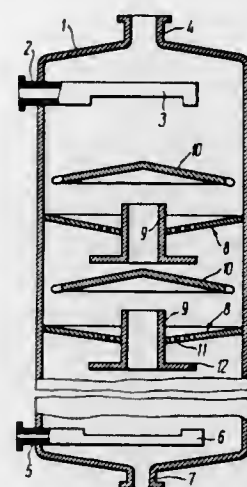
Int. Cl. B01f 3/04

U.S. Cl. 261-122

2 Claims

1. A column for heat-and-mass exchange between gas and liquid comprising: a vertical shell; transverse partitions arranged in said shell one above another and provided with holes for the passage of liquid from said overlying transverse partition down to the underlying partition; downflow pipes secured in said holes of said transverse partitions; lower ends of said downflow pipes protruding from said transverse partition in which said downflow pipes are secured; circular portions of said transverse partitions adjoining said downflow pipes and provided with holes for the passage of gas; circular plates fastened to said lower ends of said downflow pipes, the area of said plates corresponding to that of said overlying circular portions of said transverse partitions with holes; bubbling bells secured above said downflow pipes; pipe connections admitting liquid into the upper part of the shell and discharging it from its lower part; pipe connections admitting gas into the lower part of the shell and discharging it from its upper part.

tions admitting liquid into the upper part of the shell and discharging it from its lower part; pipe connections admitting



3,900,538

METHOD FOR SURFACE TREATMENT OF PLASTICS

Ken-Ichi Kawakami; Kenji Hatada, and Yasuhiko Yamaguchi, all of Otsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

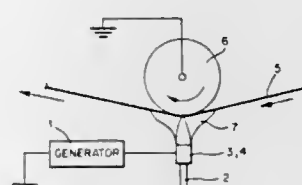
Filed Feb. 13, 1973, Ser. No. 332,230

Claims priority, application Japan, Feb. 16, 1972, 47-15625

Int. Cl. B29c 25/00

U.S. Cl. 264-22

12 Claims



1. A method for the production of plastic materials having improved surface-bonding properties which comprises passing the plastic material through an electrically charged flame, said flame being continuous and electrically charged to create a corona in the presence of activated ions moving through the flame and impinging upon the surface of the plastic material.

3,900,539

ARTIFICIAL CHRISTMAS TREE WITH SLANTED NEEDLES

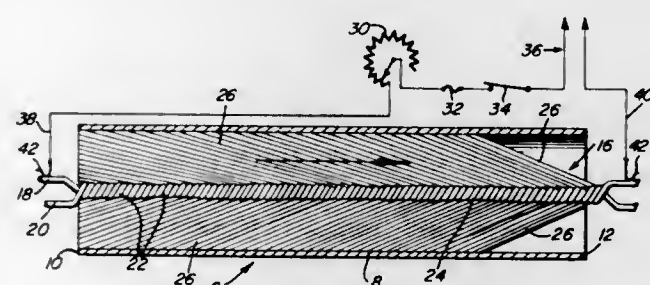
Salvatore J. Puleo, 15 Sequoia Dr., Watchung, N.J. 07201

Filed Mar. 7, 1973, Ser. No. 338,824

Int. Cl. A47g 33/06

U.S. Cl. 264-27

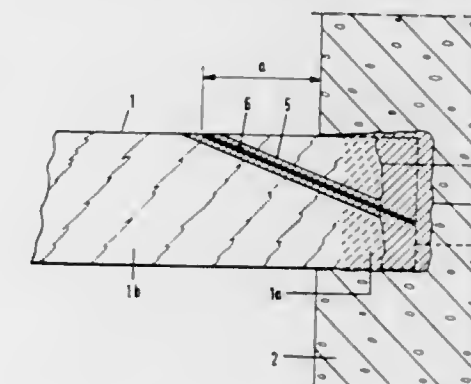
4 Claims



1. In combination, a tubular member having unobstructed inlet and outlet ends, an insertable and removable prefabricated

cated self-contained brush, said brush comprising an elongated stem-like core made up of a pair of like intertwined core wires and complementary pliant bristles of thermoplastic plastic material which have median portions nested and retentively clenched between the twisted convolutions of said core wires, the diameter of the tubular member being less than the brush whereby flexible bristle half-portions projecting radially from the locale of said core will be obliquely angled when the brush is inserted through the tubular member, and electric current conducting wires connected to the end portions of the core wires outwardly of the ends of the tubular member for heating said core wires and subjecting the clenched median portions of said bristles to heat and causing the same to be reset while obliquely angled and in so doing setting the half-portions with a slant from the core toward one end of said core.

part of the building structure in place of the part of the end portion, said method comprising the steps of boring a hole in the solid portion of the beam and in communication with the hollow space, said hole being elongated as compared to a transverse dimension thereof, placing a unitary mass of synthetic resin grout of the type having highly cementitious properties such as epoxy resin in the hollow space and into the hole



3,900,540

METHOD FOR MAKING A FILM OF REFRACTORY MATERIAL HAVING BI-DIRECTIONAL REINFORCING PROPERTIES

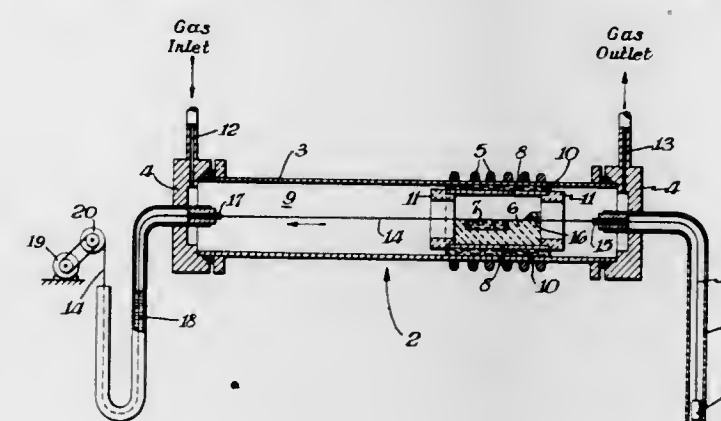
William A. Robba, Shoreham, N.Y., and Robert W. Froberg, Easton, Pa., assignors to Pfizer Inc., New York, N.Y.

Continuation of Ser. No. 202,385, Nov. 26, 1971, abandoned, which is a continuation-in-part of Ser. No. 154,228, June 17, 1971, abandoned, which is a continuation-in-part of Ser. No. 43,430, June 4, 1970, abandoned. This application Mar. 6, 1974, Ser. No. 448,651

Int. Cl. C01b 31/07

U.S. Cl. 264-29

10 Claims



1. A method of making a thin film of substantially defect-free pyrolytic graphite which comprises: maintaining the temperature of an inert liquid substrate selected from the group consisting of copper, gold, tin, silver, palladium, lead, antimony, platinum, and glass below the melting point of graphite; and introducing a premixed source gas comprising a mixture of a hydrocarbon gas and a diluent gas selected from the group consisting of helium, neon, argon, krypton, xenon, radon, hydrogen and nitrogen at a distance above the surface of said liquid substrate, said surface being substantially smooth and stress-free; whereby said hydrocarbon gas decomposes upon contacting said surface to form a pyrolytic graphite film thereon.

3,900,541

METHOD OF RESTORING A WOODEN BEAM

Dick Klapwijk, Brielle, Netherlands, assignor to Bouweconomisch en Technologisch Adviesbureau B.V., Rotterdam, Netherlands

Filed June 18, 1973, Ser. No. 370,827

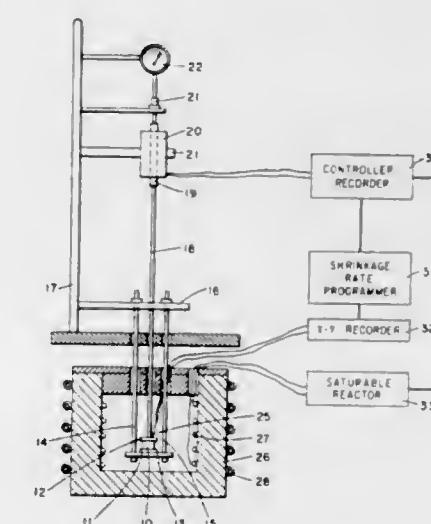
Int. Cl. E04b 1/16

U.S. Cl. 264-35

4 Claims

1. A method of restoring an end portion of a wooden beam forming a part of a building structure wherein the beam includes a solid portion and an end portion at least initially in structural engagement with a cooperating part of the building structure, and wherein at least a part of said end portion has disappeared through decay and the like and there is a confined hollow space between said solid portion and the cooperating

1. In a process for forming sintered ceramic structures including the steps of compacting finely divided particulate material, with or without an ignitable binder, to form a green structure and then heating the green structure to the onset of shrinkage, the improvement comprising sintering the heated green structure through three sequential rate regimes of progressively decreasing densification rates from said onset of shrinkage, the said densification rate in each regime being below the critical rate at which gas entrapment is effected and discontinuous grain growth is induced, the third of said regimes being continually decreasing and the first and second of said regimes being linear; said first of said regimes being defined between said onset of shrinkage and the attainment of between about 0.70 and about 0.75 fractional density; said second of said regimes being defined between about 0.70 and 0.75 fractional density and the attainment of between about



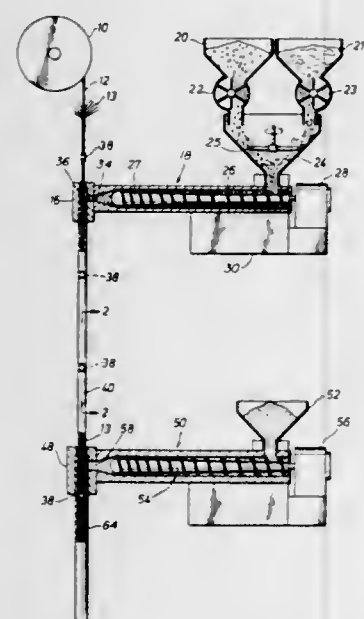
0.82 and about 0.87 fractional density; and said third of said regimes being defined between about 0.82 and about 0.87 fractional density and the attainment of final density.

3,900,543

METHOD FOR MAKING A FOAM SEISMIC STREAMER

Billy W. Davis, Flagstaff, Ariz., assignor to Schlumberger Technology Corporation, New York, N.Y.
Division of Ser. No. 105,547, Jan. 11, 1971, Pat. No. 3,744,016. This application Oct. 26, 1972, Ser. No. 301,047
Int. Cl. G01v 1/02; H04b 13/02
U.S. Cl. 264-45.3

5 Claims



1. A method of manufacturing a neutral buoyancy seismic hydrophone streamer having a plurality of hydrophone transducers which comprises:

admixing a thermoplastic resin with gas filled microspheres to obtain a mixture having a specific gravity less than 1; conveying said mixture to the heating zone of an extruder;

heating said mixture to a temperature sufficient to melt said thermoplastic resin;

extruding said mixture at a pressure less than about 300 pounds per square inch about a central streamer assembly comprising a cable-like stress member to produce a syntactic foam extrudate having a central stress member; and affixing hydrophone transducers to said extrudate.

3,900,544

METHOD FOR THE CONTINUOUS EXTRUSION OF MULTIPLE SMALL CROSS-SECTION THERMOPLASTIC POLYMERIC RESINOUS FOAM PROFILES

Keith G. Johnson, Pittsburgh, and Anthony Paul Limbach, Downingtown, both of Pa., assignors to ARCO Polymers, Inc., Philadelphia, Pa.

Filed Nov. 28, 1973, Ser. No. 419,785

Int. Cl. B29D 27/00; B29F 3/08

U.S. Cl. 264-45.5

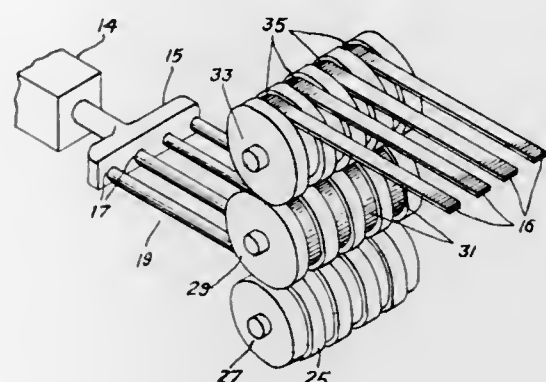
2 Claims

1. A method of preparing multiple continuous extrudates having predetermined cross section profiles, from thermoplastic polymeric resinous material containing a blowing agent, comprising:

a. forcing said material in a molten condition through a die having a multiplicity of orifices into an unconfined zone of lower pressure; thereby providing a multiplicity of extrudates in a softened but unexpanded condition so that partial expansion of each extrudate occurs in the unconfined zone;

b. passing each of the partially expanded extrudates through a confined passage of predetermined configuration and

formed from cooling wall surfaces moving with said extrudate to shape said extrudate into a predetermined cross section profile and to cool the surface layers of said



extrudate to a temperature sufficiently low to substantially solidify the surface layers of the material; and
c. thereafter alternately cooling one and then the other of the surface layers of each of said extrudates.

3,900,545

PROCESS FOR PRODUCING OBLONG HOSE

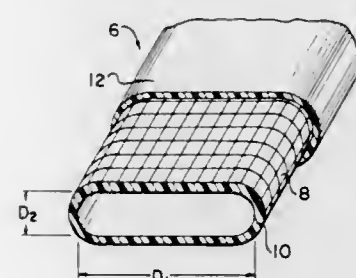
Alfred Korejwa, Crestline; Walter J. Layer, and Richard E. Ruda, both of Bucyrus, all of Ohio, assignors to Amerace Corporation, New York, N.Y.

Division of Ser. No. 101,156, Dec. 23, 1970, which is a division of Ser. No. 849,951, Aug. 14, 1969, Pat. No. 3,581,778. This application Nov. 16, 1973, Ser. No. 416,616

Int. Cl. B29C 17/02; B29D 3/02, 23/05

U.S. Cl. 264-89

5 Claims



1. A process for producing an article useful as hose or the like comprising the following steps:

a. providing an extrudable material having elastic memory,
b. extruding said material about an oblong die to form a tube normally having an oblong inside transverse cross-section defining a flattened ribbon-like condition along substantially its entire length, said oblong inside transverse cross-section being characterized by a major inside transverse dimension D_1 and a minor inside transverse dimension D_2 which is substantially less than dimension D_1 ;

c. treating said tube to preserve its shape as extruded in step (b)

d. rounding out said tube,

e. applying a reinforcing layer to said rounded out tube throughout the length thereof, and

f. extruding an outer cover about the outer surface of said reinforced tube while maintaining said tube in a rounded out condition

whereby upon completion of step (f) the elastic memory of said tube material causes said reinforcing layer and said outer cover to assume a normally oblong inside transverse cross-section conforming to said flattened ribbon-like condition along substantially their entire length of said tube.

3,900,546

FILTERING EXTRUSION BATCH MATERIAL

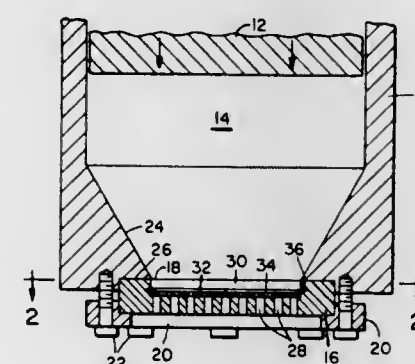
Ralph M. Kaukeinen, Middlebury Center, Pa., assignor to Corning Glass Works, Corning, N.Y.

Filed Sept. 18, 1973, Ser. No. 398,380

Int. Cl. B28c 3/00

U.S. Cl. 264-102

2 Claims



1. In the method of forming honeycomb articles from extruded ceramic batch material wherein ceramic batch material is extruded under pressure through a final extrusion die having a gridwork of narrow discharge slots to form thin-walled honeycomb ceramic articles, the improvement comprising a method of removing contaminants from the extrudable ceramic batch material prior to such material being extruded through the final extrusion die so as to avoid the clogging of the discharge slots thereof with such contaminants which comprises, initially blending ceramic batch material ingredients in a dry state, adding water to said ingredients and further mixing the batch material, subjecting said mixed batch material to a pressing force providing an extrusion pressure for extruding the same through a pre-extrusion die, and while subjected to said extrusion pressure and prior to passing through said pre-extrusion die, scalping said batch material of contaminant particles to thereby produce batch material of improved purity and homogeneity, immediately passing said scalped batch material through a pre-extrusion die in order to further plasticize and de-air the ceramic batch material, removing said ceramic batch material from said pre-extrusion die, and then subsequently press extruding said scalped and de-aired ceramic batch material through a separate final extrusion die unconnected to said pre-extrusion die and having a gridwork of narrow discharge slots to form thin-walled honeycomb ceramic articles.

3,900,547

APPARATUS AND METHOD FOR FORMING PELLETS

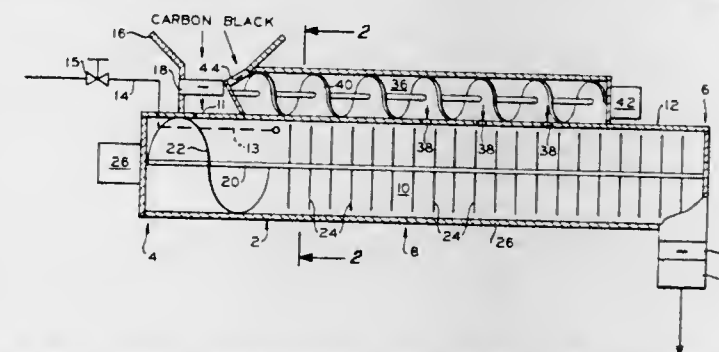
Harold R. Hunt, and John W. Vanderveen, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed July 19, 1973, Ser. No. 380,722

Int. Cl. C09c 1/56

U.S. Cl. 264-117

7 Claims



4. In a method for forming carbon black pellets comprising adding a feed stream of an aqueous liquid to a wet pellet mill, adding a feed stream of flocculent carbon black to said mill, forming a mixture of said feed stream in a ratio of carbon black and liquid sufficient to form pellets of wet carbon black in said mill, agitating said mixture for forming wet carbon

black pellets, recovering the wet carbon black pellets and drying said carbon black pellets;

the improvement which comprises

adding additional flocculent carbon black to the wet carbon black pellets formed;

mixing the wet pellets formed and the added carbon black and forming wet carbon black pellets with a higher carbon black-to-water ratio than the respective ratio of the pellets to which the additional carbon black has not been previously added; and

thereafter recovering the wet carbon black pellets and drying them.

3,900,548

COEXTRUSION OF POLYSTYRENE AND POLYSULFONES

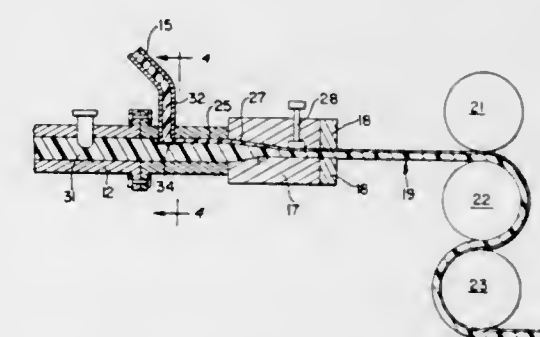
Donald F. Wiley, Big Spring, Tex., assignor to Cosden Oil & Chemical Company, Big Spring, Tex.

Filed Jan. 24, 1973, Ser. No. 326,240

Int. Cl. B32B 27/30, 27/08

U.S. Cl. 264-171

7 Claims



1. A process for the manufacture of composite sheeting having a major base layer of polystyrene and at least one relatively thin surface layer of polysulfone polymer adhered thereto, comprising extruding a heat plastified stream of polystyrene at a temperature of from about 440°F. to about 480°F., extruding a heat plastified stream of polysulfone polymer at a temperature of from about 540°F. to about 565°F., conveying said heat plastified stream of styrene polymer in a conduit having a generally circular cross-section, joining to the exterior surface of said styrene polymer stream within said conduit said heat plastified stream of polysulfone polymer, thereby forming a single stratified stream of heat plastified materials conforming to the cross-section of said conduit and being characterized by distinct, contiguous layers of said two polymeric materials having a relatively sharply defined interface therebetween, said interface terminating at each end at a point on the inside surface of said conduit, the relative volumetric proportion of the polysulfone polymer in said stratified stream being less than about 20 percent based upon the total polymeric material, and passing said stratified stream of heat plastified material through a sheet-form extrusion die, said die having a die orifice width substantially greater than the diameter of said conduit and having its die lips generally transversely aligned with said interface between the two polymeric materials.

3,900,549

METHOD OF SPINNING COMPOSITE FILAMENTS

Tadayuki Yamane, and Yutaka Hirano, both of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Okayama, Japan

Filed June 1, 1973, Ser. No. 366,095

Claims priority, application Japan, June 6, 1972, 47-56686

Int. Cl. D01d 5/08

U.S. Cl. 264-176 F

7 Claims

1. A method of spinning composite filaments composed of a polyethylene and a polyester which comprises mixing a polyethylene having a melt index of above 27 but below 200 with a fiber-forming polyester having an intrinsic viscosity of 0.5 to 0.9 so that the following condition is satisfied:

the weight % of the polyethylene to the total weight of the mixture is in the range of 25 to 90 % and moreover the relationship

$$38 - 40v + \frac{1050}{w} \times 0.5v - \frac{1600}{w} + 48$$

is satisfied,

wherein x is the weight % of the polyethylene to the total weight of the mixture,
 v is the intrinsic viscosity of the polyester, and
 w is the melt index of the polyethylene;
 following which the resulting mixture is melt extruded from orifices of a spinneret; and thereafter the extruded filaments are withdrawn at a speed of above 2,500 meters per minute.

3,900,550

METHOD OF ENHANCING FLEXURE OF PLASTIC HINGES

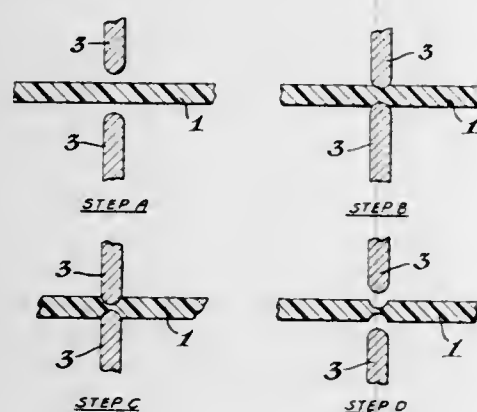
Bruce L. Oliver, Midland, Mich., and Ben W. Heinemeyer, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 24, 1970, Ser. No. 31,690

Int. Cl. B29c 15/00

U.S. Cl. 264—320

9 Claims



1. A method for providing plastic hinges having improved tensile strength and increased flex life which comprises compressing a groove-forming die into a normally solid, thermoplastic organic polymer at a compression rate less than about 2000 mils/second, the temperature of the polymer being below the softening point thereof.

3,900,551

SELECTIVE EXTRACTION OF METALS FROM ACIDIC URANIUM (VI) SOLUTIONS USING NEO-TRIDECANO-HYDROXAMIC ACID

Franco Bardocelli, and Giuseppe Grossi, both of Rome, Italy, assignors to Comitato Nazionale per l'Energia Nucleare, Rome, Italy

Filed Mar. 2, 1972, Ser. No. 231,377

Claims priority, application Italy, Mar. 2, 1971, 48741/71

Int. Cl. B01d 11/04; C01g 43/00

U.S. Cl. 423—9

2 Claims

1. A process for purifying uranium from Pu(IV), Np(IV), Zr(IV), Nb(V), Fe(III), Ti(IV), V(V), Hf(IV), Ta(V), Po(IV), comprising
 preparing an U(VI) aqueous solution containing said ions and acid by strong inorganic acids at a concentration in the range from 0.1 to 5 M;
 removing from said solution all the nitrous acid therein contained by adding a nitrous acid suppressor selected from urea, hydrazine or hydroxylamine;
 contacting said acid solution with a liquid organic phase comprising a water-immiscible organic solvent and neo-

tridecano-hydroxamic acid to extract said metal ions into the organic phase; and
 separating the resultant organic phase into which said elements are transferred from the aqueous phase in which the purified uranium is left.

3,900,552

PREPARATION OF HIGHLY PURE TITANIUM TETRACHLORIDE FROM PEROVSKITE OR TITANITE

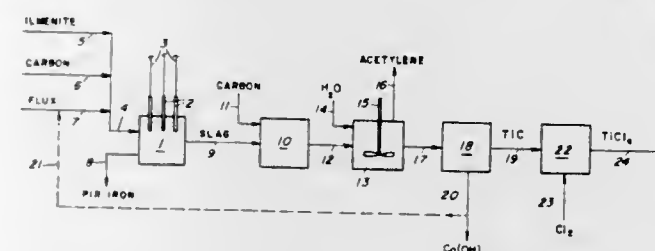
Willard L. Hunter; Jack C. White, and William A. Stickney, all of Albany, Oreg., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Division of Ser. No. 222,503, Feb. 1, 1972. This application Nov. 2, 1973, Ser. No. 412,222

Int. Cl. C01G 23/02

U.S. Cl. 423—76

8 Claims



1. In a process for the production of titanium tetrachloride by the reaction of elemental chlorine with a titanium compound, the improvement comprising reacting a naturally occurring ore of titanium selected from the group consisting of perovskite and titanite with carbon at a temperature above about 1850°C but below the melting point of titanium carbide to form particles of titanium carbide within a calcium carbide matrix, separating the titanium carbide from the calcium carbide and thereafter reacting the titanium carbide with elemental chloride to produce titanium tetrachloride.

3,900,553

PROCESSING TACHYDRITE ORE

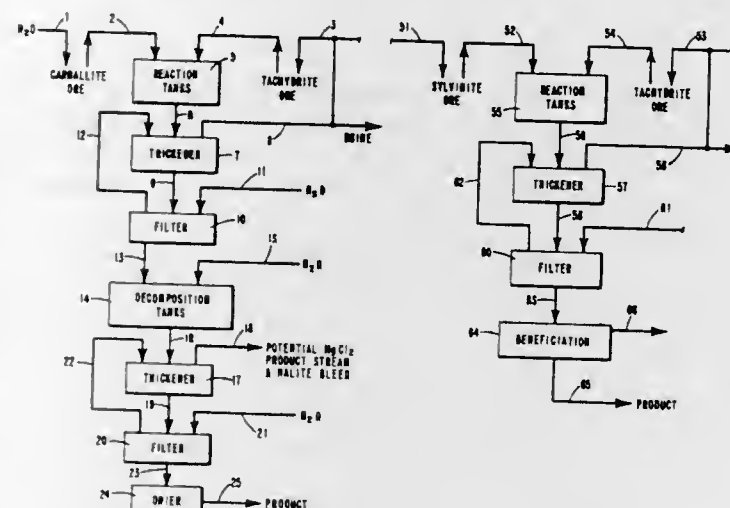
Alfred F. Nylander, 1736 Alemeda Ave., Redwood City, Calif. 94064

Filed May 14, 1973, Ser. No. 360,000

Int. Cl. C01d 3/08, 3/14; C01f 5/30

U.S. Cl. 423—184

6 Claims



1. A process which comprises:
 1. forming a saturated aqueous solution of tachydrite ore;
 2. forming an aqueous solution containing carnallite, sylvinit or mixtures thereof, saturated with respect to potassium chloride;
 3. mixing said solutions in a mineral solution: tachydrite solution weight ratio of from about 1:0.5 to about 1:1.5 and at a temperature of from about 20°C to about 60°C whereby potassium chloride-containing solids are precipitated; and

4. beneficiating said potassium chloride-containing solids to provide potassium chloride.

3,900,554

METHOD FOR THE REDUCTION OF THE CONCENTRATION OF NO IN COMBUSTION EFFLUENTS USING AMMONIA

Richard K. Lyon, Fanwood, N.J., assignor to Exxon Research and Engineering Company, Linden, N.J.

Filed Mar. 16, 1973, Ser. No. 341,919

Int. Cl. C01b 21/00

U.S. Cl. 423—235

34 Claims

1. A process for selectively reducing NO in a combustion effluent, said process comprising the step of contacting an effluent stream containing NO in the presence of oxygen with a compound selected from the group consisting of ammonia, ammonium formate, ammonium oxalate, ammonium carbonate, and their aqueous solutions, said compound being present in an amount sufficient to provide an equivalent mole ratio of ammonia ranging from 0.4 to 10 moles per mole of NO, but not more than about 0.9 volume percent based on the total volume of said effluent stream, and in the presence of a reducing material in such a manner that the true temperature where said compound and said reducing material react with the NO containing combustion effluent ranges from 1300° to 2000°F., whereby the NO is selectively reduced, said reducing material being one selected from the group consisting of paraffinic, olefinic and aromatic hydrocarbons, oxygenated hydrocarbons, sulfonated hydrocarbons, carbon monoxide and hydrogen; but not in an amount more than about 2 volume percent based on the total volume of said combustion effluent and the amount of oxygen is at least enough to have some oxygen left after oxidation of said compound and said reducing material.

3,900,555

PROCESS FOR GENERATING AN OXIDIZING REAGENT FOR THE TREATMENT OF POLLUTED WATER

Eric Jourdan-Laforte, Ecully, France, assignor to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procédes Georges Claude, Paris, France

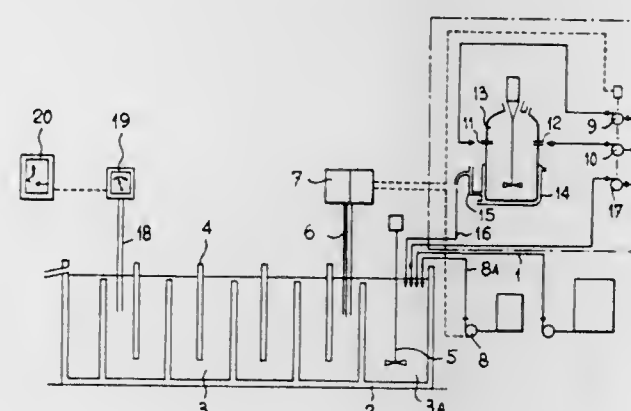
Filed July 19, 1973, Ser. No. 380,815

Claims priority, application France, July 28, 1972, 72.27359

Int. Cl. C02B 1/34; C01B 21/12

U.S. Cl. 423—365

6 Claims



1. A process for obtaining monoperoxysulphuric acid from hydrogen peroxide and sulphuric acid and automatically controlling the content of oxidizable impurity in an aqueous medium by oxidizing the impurity with the monoperoxysulphuric acid, comprising:

simultaneously adding to a reaction vessel (1) hydrogen peroxide in the form of an aqueous solution with a concentration ranging from 35–100% and (2) concentrated sulphuric acid or fuming sulphuric acid;
 maintaining the temperature in the reaction vessel in the range of -10° C to +80° C;

allowing the contents of the reaction vessel to overflow into the aqueous medium having oxidizable impurity therein; monitoring the oxidizable impurity content of the aqueous medium downstream of the point of entry of said overflow into the aqueous medium; and
 controlling the amount of reactants added in said adding step in response to the concentration of the oxidizable impurity monitored in said monitoring step;
 whereby the supply of hydrogen peroxide and sulphuric acid to the reaction vessel is so controlled that the generation of monoperoxysulphuric acid occurs only when required and the quantity thereof produced is adjusted according to the quantity thereof required for reaction with said oxidizable impurity.

3,900,556

PROCESS FOR THE CONTINUOUS CARBONIZATION AND GRAPHITIZATION OF A STABILIZED ACRYLIC FIBROUS MATERIAL

Charles M. Clarke, Watchung, N.J., assignor to Celanese Corporation, New York, N.Y.

Continuation of Ser. No. 777,275, Nov. 20, 1968, abandoned.

This application Apr. 17, 1972, Ser. No. 244,990

Int. Cl. C01b 31/07

U.S. Cl. 423—447

13 Claims

1. A continuous process for the carbonization and graphitization of a stabilized acrylic fibrous material which is non-burning when subjected to an ordinary match flame and derived from an acrylic fibrous material selected from the group consisting of an acrylonitrile homopolymer and acrylonitrile copolymers which contain at least about 85 mol percent of acrylonitrile units and up to about 15 mol percent of one or more monovinyl units copolymerized therewith comprising continuously passing a continuous length of said fibrous material through a heating zone of a single induction furnace while said fibrous material is suspended within the confines of a hollow graphite susceptor which is inductively heated and provided with an inert gaseous atmosphere and a temperature gradient in which said fibrous material is initially raised from a temperature within the range of about 20° to about 500°C. within a period of about 3 seconds to about 10 minutes to a temperature within the range of about 900° to about 1600°C. where it is maintained for about 3 seconds to about 5 minutes to form a continuous length of carbonized fibrous material, and in which said carbonized fibrous material is subsequently raised to a temperature within the range of about 2400° to about 3100°C. to form a continuous length of graphitized fibrous material.

3,900,557

ANCHORED HOMOGENEOUS-TYPE CATALYSTS FOR H-D EXCHANGE

Graeme Gilroy Strathdee, Pinawa, Canada, assignor to Atomic Energy of Canada Limited, Ottawa, Canada

Filed July 16, 1973, Ser. No. 379,272

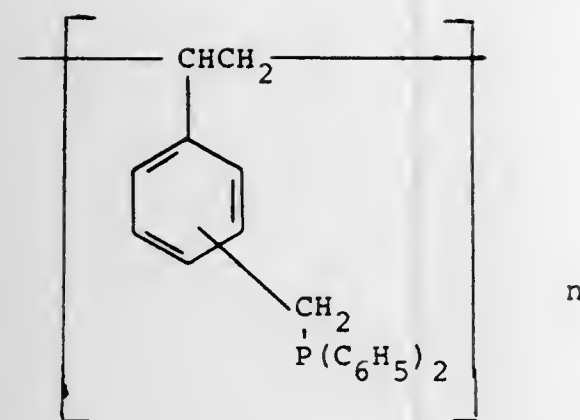
Claims priority, application Canada, July 19, 1972, 147481

Int. Cl. B01J 11/00; C01B 4/00, 5/02

U.S. Cl. 423—580

5 Claims

1. A process for the catalyzed H-D exchange between hydrogen-containing gaseous streams and liquid water or alcohols characterized by the use therein of an anchored, transition metal catalyst prepared by reacting a diphenylphosphinomethylated polystyrene of the general formula:



with an homogeneous, transition metal catalyst complex in which the transition metal is selected from the group consisting of ruthenium, rhodium and iridium, said complex containing a ligand weaker than the $-P(C_6H_5)_2$ attached to the resin and displaceable thereby.

3,900,558

METHOD OF MEASURING HISTAMINE RELEASE FROM MAST CELLS

C. Richard Kinsolving, Cincinnati, Ohio, assignor to Richardson-Merrell Inc., Wilton, Conn.

Continuation-in-part of Ser. No. 156,076, June 23, 1971, abandoned. This application Oct. 9, 1973, Ser. No. 404,446
Int. Cl. G01n 21/38, 31/22, 33/16

U.S. Cl. 424-8

7 Claims

1. A method of determining the susceptibility of a subject to allergens which comprises the steps of incubating mast cells with serum of the subject at temperatures of 30° to 45°C., contacting the incubated mast cells with an allergen and thereafter adding a dilute solution of an absorbable fluorescent acridone to the allergen treated cells and measuring the acridone absorbed by the mast cells.

3,900,559

SUSTAINED RELEASE OF METHANTHELIN

James S. Y. Sim; Maurice H. Van Horn; Arthur I. Cohen; Stanley E. Gordesky, and Stanley I. Gordon, all of Rochester, N.Y., assignors to Union Corporation, Verona, Pa.

Filed Sept. 10, 1973, Ser. No. 395,668

Int. Cl. H61K 27/12

U.S. Cl. 424-22

16 Claims

1. A sustained release oral ingestion 26 hour methantheline eluting pharmaceutical composition consisting essentially of: A. a polymerized and cured matrix of about 104 parts of a polymerizable composition consisting essentially of:

1. polymerizable monoester of a member selected from the group consisting of acrylic acid, methacrylic acid, and mixtures thereof; and a polyhydric alcohol;
2. heterocyclic polymerizable compound containing a carbonyl functionality adjacent to the nitrogen in the heterocyclic ring and being selected from the group consisting of N-vinyl lactams, N-vinyl imidazolidone, N-vinyl succinimide, N-vinyl diglycolylimide, N-vinyl glutarimide, N-vinyl-3-morpholinone, N-vinyl-5-methyl-3-morpholinone, and mixtures thereof;
3. monoethylenically unsaturated esters selected from the group consisting of alkyl acrylates, alkyl methacrylates, vinyl esters of saturated monocarboxylic acids of up to 22 carbon atoms, and mixtures thereof, wherein the alkyl group of said methacrylate or acrylate contains from 1 to 22 carbon atoms; and
4. divinyl benzene; and

wherein the monomer mixture contains from about 75 to about 82 percent by weight of (1); from about 10 to about 15 percent by weight of (2); from about 1 to about 2 percent by weight of (3) and from about 0.1 to about 0.6 percent by

weight of (4) based upon the total weight of (1), (2), (3), and (4) in the monomer mixture; in admixture with about 26 parts of finely divided absorptive siliceous, or calcareous inert filler and suspending aid for methantheline bromide;

B. said polymerized and cured matrix having been soaked for about 12 hours in an isotonic saline solution containing per 5 ml of isotonic saline solution at least about 100 mg of methantheline bromide in an amount at least sufficient for a total dosage requirement adapted to gradually elute, upon oral ingestion during 26 hours of a treatment period; and thereby entrapping the methantheline in said matrix.

3,900,560

SOLUTION COMPRISING A LACRYMATOR

Amnon Jacobson, Omri St. 22, Tel Aviv, Israel

Continuation-in-part of Ser. No. 259,217, June 2, 1972, abandoned. This application May 15, 1973, Ser. No. 360,509
Claims priority, application Israel, Apr. 23, 1972, 39273
Int. Cl. A61K 9/00; A61R 9/04; A01N 9/06, 9/20

U.S. Cl. 424-45

5 Claims

1. A process for conveying a lacrymator at least 4 feet in the form of a foam onto a surface which process comprises dissolving a lacrymator selected from the group consisting of o-chlorobenzal-malenonitrile and phenylacetylchloride in a non-toxic, compatible surface active agent selected from the group consisting of an ethoxylated nonyl phenol, ethoxylated linear alcohol, sodium lauryl sulfate and ethoxylated alkylolamide or in a solution of said surface active agent in a small amount of water to form a non-foamable solution; mixing with said non-foamable solution a solvent for said non-foamable solution selected from the group consisting of water and a solution of a water-miscible organic solvent in water until a homogeneous mixture is obtained; introducing the foamable solution into an aerosol container along with a sufficient amount of a liquified gaseous propellant to enable the foamable solution to be ejected from said container when pressurized to a distance of at least 4 feet; and ejecting said foamable composition through a distance of at least 4 feet onto said surface in the form of a foam through an orifice of said container having a cross-sectional area of from 1 mm² to 80 mm² at a flow rate of 14-240 g/second while maintaining said composition at a temperature of from 0° to 120°F., the amount by weight of surface active agent being within the range of 4.5 to 29.7% based on weight of entire foamable composition minus propellant and the amount by weight of said lacrymator being from 0.05 to 3% based on the weight of the entire foamable composition minus propellant.

3,900,561

PHARMACEUTICAL COMPOSITIONS

Benjamin Davis, Chalfont St. Peter, and Derek Roger Pearce, Bracknell, both of England, assignors to Glaxo Laboratories Limited, Greenford, England

Continuation-in-part of Ser. No. 208,984, Dec. 16, 1971, abandoned. This application Nov. 20, 1972, Ser. No. 307,851
Claims priority, application United Kingdom, Dec. 17, 1970, 60069/70

Int. Cl. A61K 17/00

U.S. Cl. 424-238

14 Claims

1. An aqueous solution adapted for use in medicine to produce anaesthesia by intravenous injection, said solution consisting essentially of from 0.1-20% by weight of a steroidal anaesthetic having a solubility in water at 20°C of at least 1 mg/ml and from 0.1-50% by weight of a vein-damage reducing substance consisting of a parenterally acceptable non-ionic surface active component having an HLB value above 9 and not more than 30, whereby the physiological compatibility of said steroidal anaesthetic is improved.

3,900,562

ANTIBACTERIAL COMPOSITIONS AND METHODS

Florin Seng, Cologne-Buchheim; Kurt Ley, Odenthal-Globusch, and Georg Metzger, Wuppertal-Elberfeld, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

Division of Ser. No. 323,953, Jan. 15, 1973, which is a division of Ser. No. 130,007, March 31, 1971, Pat. No. 3,819,616. This application Aug. 16, 1973, Ser. No. 388,961

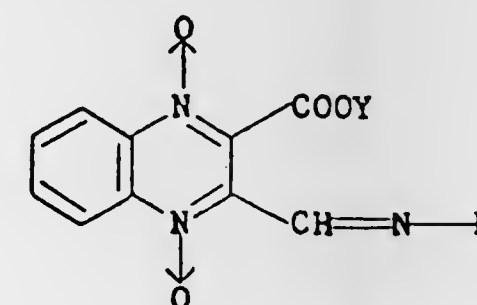
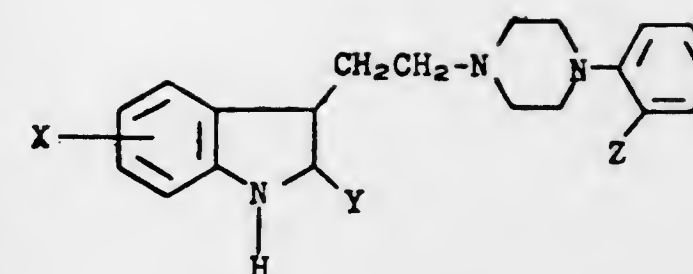
Claims priority, application Germany, Apr. 2, 1970, 2015676

Int. Cl. A61I 27/00

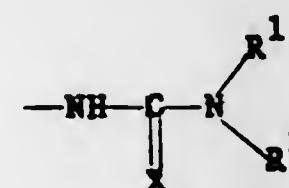
U.S. Cl. 424-248

30 Claims

1. An antibacterial composition which comprises an antibacterially effective amount of a compound of the formula



or a pharmaceutically acceptable non-toxic salt thereof wherein Y is hydrogen, an alkali metal cation or the cation $R^5-NH_3^+$; and each of R and R^5 is



in which

X is O, S or NH, and

each of R^1 and R^2 when taken independently is identical to or different from the other, and is selected from the group consisting of hydrogen, alkyl of 1 to 4 carbon atoms and hydroxyalkyl of 1 to 4 carbon atoms, or R^1 and R^2 together with the nitrogen atom to which they are attached, form a morpholino or S,S-dioxothiomorpholino ring,

in combination with a pharmaceutically acceptable non-toxic inert diluent or carrier.

3,900,563

METHOD OF USING

3-[2-(4-PHENYL-1-PIPERAZINYL)ETHYL]-INDOLINES
George Rodger Allen, Jr., Old Tappan, N.J.; Francis Joseph McEvoy, Pearl River, N.Y.; Vern Gordon De Vries, Ridge-wood, N.J.; Daniel Bryan Moran, Suffern, N.Y., and Ruddy Littell, River Vale, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 371,201, June 18, 1973, abandoned, which is a continuation-in-part of Ser. No. 147,700, May 27, 1971, Pat. No. 3,751,416. This application May 24, 1974, Ser. No. 473,029

Int. Cl. A61K 27/00

U.S. Cl. 424-250

10 Claims

1. A method for the therapeutic management of the manifestations of psychotic disorders, psychoneurotic conditions, anxiety and tension in a warm-blooded animal which comprises administering orally or parenterally to said animal an antipsychotic or antipsychoneurotic or antianxiety amount of a compound of the formula:

wherein X is 5,6-dimethoxy or 5,6-methylenedioxy, Y is hydrogen or methyl, and Z is hydrogen or methoxy, with the proviso that when X is 5,6-dimethoxy and Z is methoxy, then Y must be methyl; or a pharmacologically acceptable acid-addition salt thereof.

3,900,564

OCOTEA ALKALOID FOR RELIEF OF ANXIETY

Giorgio Ferrari, 8 via Lario, Milan, and Cesare Casagrande, 13 via per Brunate, Como, both of Italy

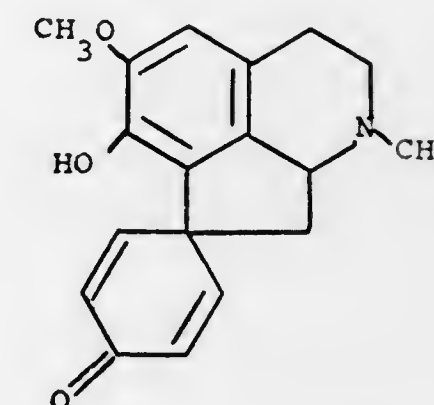
Division of Ser. No. 78,766, Oct. 7, 1970, Pat. No. 3,711,485, which is a continuation-in-part of Ser. No. 676,054, Oct. 18, 1967, abandoned. This application Oct. 30, 1972, Ser. No. 301,841

Int. Cl. A61k 27/00

U.S. Cl. 424-258

7 Claims

1. A therapeutic composition in dosage form for the relief of anxiety in humans comprising, as active principle, a therapeutic compound selected from the group consisting of the alkaloid glaziovine having the formula:



and non-toxic pharmaceutically acceptable acid addition salts thereof, and a physiologically compatible solid excipient, said composition providing said compound in a dose amount of from 10 mcg. to about 50 mg.

3,900,565

HYPOGLYCEMIC COMPOSITIONS CONTAINING BENZHYDRYLACTAMIMIDE DERIVATIVES

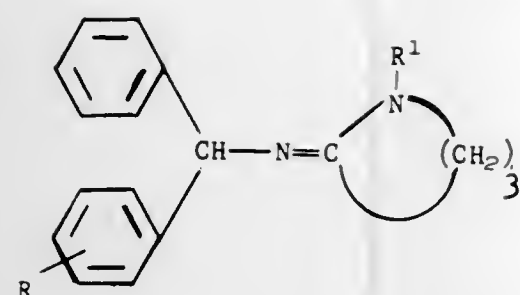
Johann Martin Griser, and Thomas R. Blohm, both of Cincinnati, Ohio, assignors to Richardson-Merrell Inc., Wilton, Conn.

Division of Ser. No. 180,118, Sept. 13, 1971, Pat. No. 3,782,162. This application June 1, 1973, Ser. No. 366,105
Int. Cl. H61k 27/00

U.S. Cl. 424-274

7 Claims

1. A method of inducing a hypoglycemic response in a hyperglycemic patient which comprises administering to said patient an effective hypoglycemic amount of a compound having the formula



wherein R is selected from hydrogen or lower alkoxy of from 1 to 6 carbon atoms; R¹ is selected from hydrogen or lower alkyl of from 1 to 4 carbon atoms; or a pharmaceutically acceptable acid addition salt of said compound.

3,900,566

PHARMACEUTICAL COMPOSITIONS CONTAINING THE TERT BUTYL ESTER OF N-[(1-CARBOXY-L-PROLYL)-OXY]-SUCCINIMIDE AND METHOD OF USE

Wilhelm Konz, Ingelheim am Rhein; Franz Waldeck, Mainz-Hechtsheim, and Hans-Michael Jennewein, Wiesbaden, all of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany

Continuation of Ser. No. 330,182, Feb. 7, 1973, abandoned.

This application Jan. 18, 1974, Ser. No. 434,674
Claims priority, application Germany, Feb. 14, 1972, 2206867

Int. Cl. A61k 27/00

U.S. Cl. 424-274

1 Claim

1. A method for the treatment of gastric hypersecretion and ulceration of the stomach in a warm-blooded animal, which comprises perorally, parenterally or rectally administering to said animal an effective gastric secretion inhibiting or anti-ulcerogenic amount of the tert.butyl ester of N-[(1-carboxy-L-prolyl)-oxy]-succinimide.

3,900,567

ANTIBIOTIC SUBSTANCES

Giancarlo Lancini, Pavia; Ettore Lazzari, and Alberto Diena, both of Milan, all of Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy

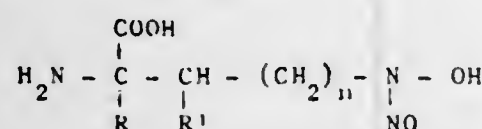
Division of Ser. No. 289,118, Sept. 14, 1972, Pat. No. 3,830,837, which is a continuation-in-part of Ser. No. 559,749, June 23, 1966, Pat. No. 3,823,186. This application Oct. 26, 1973, Ser. No. 410,197

Int. Cl.² A01N 9/20

U.S. Cl. 424-319

1 Claim

1. Method of inhibiting fly reproduction which comprises supplying flies with a diet containing a sterilizing amount of a compound of the general formula



wherein R and R₁ are each hydrogen or a lower alkyl group, and n is an integer from 0 to 4.

3,900,568

1-CHLORO-1-METHYL-2,2,3,3-TETRAFLUOROCYCLOBUTANE FOR GENERAL INHALATION ANESTHETIC

Robert S. Holdsworth; Gerald J. O'Neill, both of Arlington; Charles W. Simons, Bedford, and Vincent L. DiBiasio, Billerica, all of Mass., assignors to W. R. Grace & Co., Cambridge, Mass.

Filed July 26, 1974, Ser. No. 492,343

Int. Cl. A61k 27/00

U.S. Cl. 424-352

1 Claim

1. The process of inducing anesthesia in a mammal, which comprises administering by inhalation to said mammal an effective quantity, to induce anesthesia, of 1-chloro-1-methyl-2,2,3,3-tetrafluorocyclobutane.

3,900,569

DIRECT COMPRESSION VEHICLE

Anthony Monti, Irvington, N.Y., assignor to SuCrest Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 185,344, Sept. 30, 1971, Pat. No. 3,821,414, which is a continuation of Ser. No. 885,980, Dec. 17, 1969, abandoned. This application Sept. 15, 1972, Ser. No. 289,545

Int. Cl. A61j 3/10; A61k 27/00

U.S. Cl. 424-361

4 Claims

1. A particulate composition useful as a direct compression vehicle for forming tablets consisting essentially of a dry mixture of:

- about 100 parts by weight of an intimate co-dried blend of a minor but effective portion of locust bean gum and a major portion of tricalcium phosphate;
- up to about 200 parts of granular tricalcium phosphate;
- locust bean gum as a lubricating agent and disintegrating agent in an amount of from about 1 to about 7 weight per cent, based upon said co-dried blend, and from about 3 to about 7 weight per cent, based upon the combined weight of said co-dried blend and granular tricalcium phosphate; and
- a pharmaceutically-acceptable acidic material as an auxiliary disintegrating agent in an amount of from about 1 to about 7 weight per cent, based upon said co-dried blend, and from about 1 to about 3 weight per cent, based upon the combined weight of said co-dried blend and granular tricalcium phosphate.

3,900,570

FERMENTATION ADJUVANT FOR YEAST LEAVENED BREAD PROCESSES

Edward A. Stigler, Palos Heights, Ill., assignor to Walter M. Christensen, Milwaukee, Wis., a part interest

Continuation-in-part of Ser. No. 185,445, Sept. 30, 1971, abandoned. This application Oct. 23, 1973, Ser. No. 408,551

Int. Cl.² A21D 2/02, 2/04, 2/16, 2/22

U.S. Cl. 426-9

16 Claims

1. An adjuvant for addition to a yeast leavened dough mixture, which adjuvant permits a substantial reduction in the fermentation time of the dough mixture, comprising a dry blended mixture including 0.025 to 10 weight % of an ammonium salt capable of acting as a yeast nutrient, 0.001 to 0.75 weight % of an oxidizing agent selected from the group consisting of potassium bromate, potassium iodate, calcium bromate, calcium iodate, ammonium persulfate, L-ascorbic acid, azocarbonamide and mixtures thereof, and 10 to 90 weight % of a glyceride emulsifying agent capable of at least partially encapsulating said yeast nutrient and said oxidizing agent when dry blended therewith.

3,900,571

PROCESSING OF FRUIT WITHOUT EXPOSURE TO AIR

Wallace J. S. Johnson, Berkeley, Calif., assignor to Up-Right, Inc., Berkeley, Calif.

Filed Sept. 24, 1971, Ser. No. 183,334

Int. Cl.² C12G 1/00; A23B 7/00

U.S. Cl. 426-15

21 Claims

- A process for handling fruit, comprising:
 - harvesting fruit in the field,
 - surrounding the harvested fruit with an inert gas atmosphere while said harvested fruit is in the field,
 - transporting the harvested fruit from the field to a fruit-processing plant,
 - discharging the harvested fruit at the fruitprocessing plant into an enclosed receptacle,
 - maintaining said harvested fruit in an inert gas atmosphere and out of contact with oxidizing air in said enclosed receptacle at said fruit-processing plant and at all times from the time it is first surrounded in the field with said inert gas atmosphere until it has been discharged into the enclosed receptacle at the fruit-processing plant.
- In a process for the conversion of harvested grapes into wine which utilizes a plurality of processing and storage containers interconnected for flow from one container to the next and in which fermentation of the grapes takes place in one of said containers:
 - maintaining a layer of inert gas in contact with the contents of each container to prevent contact of said contents with oxidizing air,
 - supplying inert gas under pressure to one of said containers and forcing the contents therein to flow to another container having a lower pressure therein
 - collecting CO₂ has generated during the fermentation of the grapes and utilizing said gas as said inert gas.

3,900,572

NUTRIENT COMPOSITION FOR PLANTS AND ANIMALS

Herbert R. Peer, Storm Lake, Iowa, assignor to Ferma-Gro Corporation, Storm Lake, Iowa

Filed Mar. 20, 1974, Ser. No. 453,177

Int. Cl. A23c 9/12

U.S. Cl. 426-41

11 Claims

1. A nutrient composition for plants and animals which comprises a cultured whey product inoculated with *Lactobacillus* organisms and fermented in the presence of kelp extract the organism density of said *Lactobacillus* organisms being at least one billion per milliliter when said kelp extract is added and the concentration of said extract during fermentation being 25 to 35 percent solubles, said composition having been maintained at fermenting conditions until the organism density is within the range of from 1.5 billion to about 2.0 billion per milliliter, and the pH of said composition is 4.3 or less.

3,900,573

PROCESS FOR MAKING RETORT STABLE SIMULATED MEAT PRODUCTS

James A. Freck, Park Forest South; Dale H. O'Rell, and Leonard V. Kondrot, both of Chicago, Ill., assignors to American Maize Products Company, New York, N.Y.

Filed Feb. 19, 1974, Ser. No. 443,438

Int. Cl. A23j 3/00

U.S. Cl. 426-274

8 Claims

- A process for preparing a retort stable food product comprising:
 - admixing in aqueous solution a blend comprising a plurality of pieces of edible protein material having a protein content of at least about 15% and from about 10 to about 1,000% by weight of protein material of an inhibited starch material selected from the group consisting of corn starch having a Granular Swelling Power at 95°C. of from about 5 to about 15, waxy corn starch having a Granular Swelling Power at 95°C. of from about 5 to about 25, sorghum starch having a Granular Swelling Power at

- 95°C. of from about 5 to about 15, wheat starch having a Granular Swelling Power at 95°C. of from about 5 to about 15, and tapioca starch having a Granular Swelling Power at 95°C. of from about 5 to about 25;
- cooking the blend at a temperature and for a period of time sufficient to gelatinize a substantial portion of the inhibited starch material without appreciable loss in nutritional value of the protein and without appreciable decomposition or degradation of the protein; and
- cooling the cooked product;
- whereby a retort stable integral product comprising the piece of protein material bound together with inhibited starch material is obtained.

3,900,574

TREATMENT OF CHEESE SLICES TO PREVENT STICKING TOGETHER

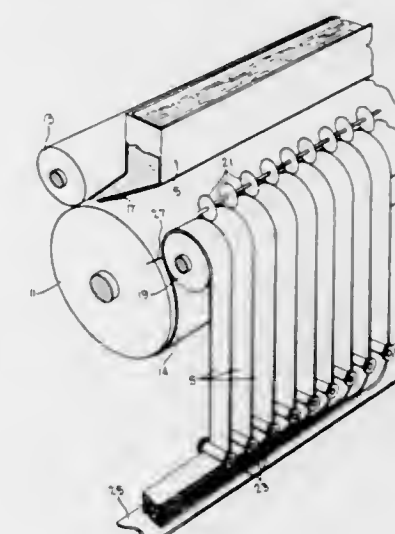
Leonard A. Warwick, Niles, Ill., assignor to Kraftco Corporation, Glenview, Ill.

Continuation-in-part of Ser. No. 141,050, April 29, 1971, abandoned. This application Oct. 3, 1973, Ser. No. 402,892

Int. Cl. A23c 19/00, 19/02, 19/14

U.S. Cl. 426-274

2 Claims



- In a method for the high-speed, continuous preparation of cheese slices which includes the steps of forming the cheese into a sheet on a chilled conveying surface, slitting the cheese sheet into ribbons, stacking the ribbons to form a strip of stacked ribbons and transversely cutting the strip of stacked ribbons to form a stack of cheese slices, the improvement comprising providing an aqueous dispersion of a hydrocolloid, said hydrocolloid being present in said hydrocolloid dispersion at a level of from about two to about five percent by weight of the dispersion, heating said aqueous hydrocolloid dispersion to a temperature of from about 160°F to about 200°F for a period of time of at least about 30 minutes at the lower temperature to at least about 5 minutes at the higher temperature and at least intermediate periods of time at intermediate temperatures so as to effect pasteurization of the dispersion, and spraying said aqueous hydrocolloid dispersion onto at least one surface of said cheese sheet or said cheese ribbons prior to stacking said cheese ribbons, so as to provide a thin film of said hydrocolloid interposed between the cheese slices stacked in face-to-face relationship in said stack at a level of from about 0.01 to about 1.0 grams per square foot of surface of said cheese slices, whereby said cheese slices may be subsequently easily separated one from another, said hydrocolloid being selected from the group consisting of edible food starch and mixtures of edible food starch and a gum selected from the group consisting of guar gum, carob bean gum, gum tragacanth, gum karaya, carrageenan, alginate, and carboxymethyl cellulose, said starch being present in said mixture at a level of at least about fifty percent by weight.

3,900,575

PREPARATION OF COATED HAMS

Joseph Rapoport, Montreal, Canada, assignor to Hygrade Foods Inc., Montreal, Canada

Filed Aug. 6, 1974, Ser. No. 495,277

Int. Cl. A22c 18/00; A23b 1/00

U.S. Cl. 426—305

6 Claims

1. A method of preparing ham which comprises deboning, trimming, curing and defatting a ham; pressing and molding the ham into a container; cooking the ham in said container; removing the cooked ham from said container; applying to all surfaces of the cooked ham a viscous caramel liquid; and deep-fat frying the caramel coated ham at a temperature of 350°F. -400°F. for about 30 seconds to 3 minutes to produce an adherent and uniform rich brown coating thereon.

3,900,576

MEAT EMULSION EXTENDER PROCESS

Arthur August Schulz, Columbus, Ohio, assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Sept. 18, 1972, Ser. No. 290,115

Int. Cl. A22c 11/00

U.S. Cl. 426—311

8 Claims

1. A process for the production of an acceptable extended meat emulsion product which comprises adding to a mixture of meat emulsion ingredients an extender composition comprising from about 39 to about 48.5 percent vegetable protein fiber, from about 5.5 to about 12 percent vegetable protein isolate, from about 2 to about 5 percent albumen, from about 0 to about 6 percent vegetable protein concentrate, from about 4.5 to about 5.5 percent edible whey, from about 0.1 to about 1.5 percent emulsifier, from about 1 to about 5 percent non-fat dried milk solids, from about 9 to about 18 percent gluten or a mixture of flour and water, from about 0 to about 1.5 percent salt, and from about 15.5 to about 19 percent water, said percents being by weight based on the total weight of the extender composition, blending the meat emulsion ingredients and the extender composition to form an extended meat emulsion, and then heating the extended meat emulsion to form the finished product.

3,900,577

METHOD FOR PREPARING EXPANDED DRY GELS

Gerhard J. Haas, Woodcliff Lake, N.J., assignor to General Foods Corporation, White Plains, N.Y.

Filed Aug. 16, 1971, Ser. No. 172,315

Int. Cl. A23g 3/00

U.S. Cl. 426—312

6 Claims

1. A method of producing expanded, dried gels comprising the steps of:

- contacting a gelled material with a gas at a pressure of greater than about 50 p.s.i.g. for a period of time sufficient to enable the gas to diffuse into the gel, said gas being selected from the group consisting of nitrogen, air, carbon monoxide, fluorinated hydrocarbons, ethane, propane, ethylene, neon and argon;
- completely freezing the gelled material at a temperature below about -10°C while still under said pressure;
- releasing the said pressure on the frozen gelled material; and
- drying the gel.

3,900,578

PROCESS FOR PREPARING SO CALLED CRUMB FOR THE MANUFACTURE OF MILK CHOCOLATE

Sandor Tuross, Stockholm, Sweden, assignor to Semper AB, Stockholm, Sweden

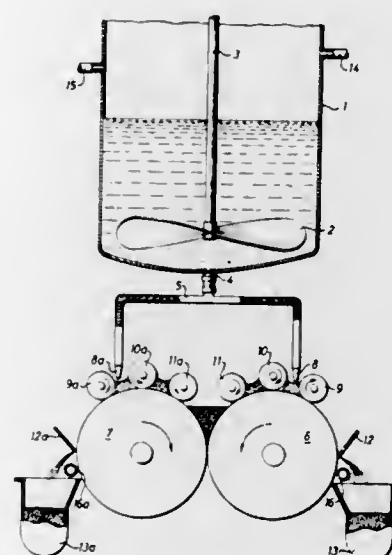
Filed July 30, 1973, Ser. No. 383,561

Claims priority, application Sweden, Aug. 18, 1972, 10811/72

U.S. Cl. 426—580

Int. Cl. A23c 1/00

18 Claims



1. A process for the preparation of crumb for use in the manufacture of chocolate products which comprises admixing first and second streams of reactant materials to form a mixture thereof, feeding said mixture onto a heating means, and concentrating the heat treating said mixture to cause a Maillard reaction between said reactant materials;

said first stream comprising a milk concentrate based upon whole milk or milk having decreased fat content, said milk concentrate having a dry solids content of about 20 to 70% by weight; and

said second stream comprising an aqueous solution or suspension containing one or more amino acids reactive with said milk concentrate of said first stream in the Maillard reaction, said amino acid or acids present in an amount from 0.1 to 4% by weight based on the dry milk solids content of said first stream.

3,900,579

LOW-TEMPERATURE-PULVERIZED ANIMAL FOODS

Yoshikazu Masuda, Kobe, and Tatsumi Inagaki, Kyoto, both of Japan, assignors to Sun Spice Co., Ltd., Japan

Filed Aug. 20, 1973, Ser. No. 389,991

Claims priority, application Japan, Aug. 22, 1972, 47-83889

Int. Cl. A23L 1/31

U.S. Cl. 426—388

12 Claims

1. A nutritious hygienic powdery animal food suitable for human consumption which is obtained without noticeable propagation of saprogenic bacteria by pulverizing to a fine powder at a temperature of -20° to -120°C at least one material selected from the group consisting of bones, cartilage portions, tendons and flesh-bearing bones of animals.

3,900,580

METHOD OF REMOVING CRUMBS FROM COOKING OIL

Weldon C. Boggs, Tampa, Fla., assignor to Food Research & Equipment Co., Tampa, Fla.

Division of Ser. No. 115,031, Feb. 12, 1971, Pat. No. 3,701,313. This application Sept. 11, 1972, Ser. No. 288,073

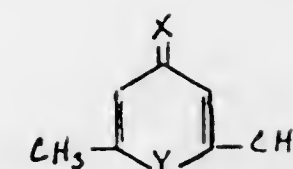
Int. Cl. B01d 43/00

U.S. Cl. 426—417

5 Claims

1. The method of removing crumbs from the cooking oil of a fryer unit having a cooking zone, comprising the steps of:

maintaining a body of crumb-containing cooking oil in the cooking zone at a cooking temperature; diverting at least a portion of the crumbs in the cooking oil to another zone containing a body of entrapped cooking oil at a temperature substantially lower than that in said cooking zone; and removing the crumbs from the entrapped body of oil in said zone of lower temperature by passing a moving element through the entrapped body of cooking oil in the zone of lower temperature.



wherein each of the symbols X and Y represents oxygen or sulfur.

3,900,583

CONTOURED BELT COATING METHOD

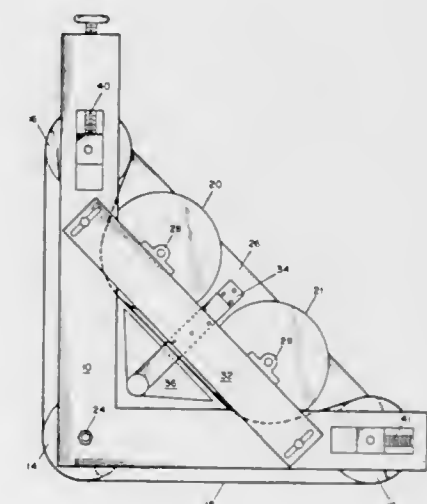
David R. Terry, Wayne, Pa., assignor to American Home Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 170,534, Aug. 10, 1971, abandoned. This application Aug. 6, 1973, Ser. No. 385,789

Int. Cl. B05c 3/04, 3/08

U.S. Cl. 427—3

1 Claim



3,900,581

FLAVORING AGENT

Max Winter, Geneva; Fritz Gautschi, Vaud; Ivon Flament; Max Stoll, both of Geneva, all of Switzerland, and Irving M. Goldman, Niantic, Conn., assignors to Firmenich & Cie, Geneva, Switzerland

Division of Ser. No. 243,866, April 13, 1972, which is a division of Ser. No. 70,560, Sept. 8, 1970, Pat. No. 3,702,253, which is a continuation of Ser. No. 543,069, April 18, 1966, abandoned, which is a continuation-in-part of Ser. No. 452,342, April 30, 1965, abandoned. This application June 24, 1974, Ser. No. 482,693

Int. Cl. A231 1/26

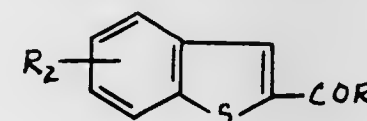
U.S. Cl. 426—535

40 Claims

1. As a new composition of matter a soluble coffee material having added thereto a minor, but flavor-modifying amount of a compound selected from the group of compounds having the general formulae:



wherein R is hydrogen, or an alkyl or thenyl group; and



wherein R₁ and R₂ are hydrogen or alkyl.

3,900,582

FLAVORING AGENT

Max Winter, Geneva; Fritz Gautschi, Vaud; Ivon Flament; Max Stoll, both of Geneva, all of Switzerland, and Irving M. Goldman, Niantic, Conn., assignors to Firmenich & Cie, Geneva, Switzerland

Division of Ser. No. 243,866, April 13, 1972, which is a division of Ser. No. 70,560, Sept. 8, 1970, Pat. No. 3,702,253, which is a continuation of Ser. No. 543,069, April 18, 1966, abandoned, which is a continuation-in-part of Ser. No. 452,342, April 30, 1965, abandoned. This application June 24, 1974, Ser. No. 482,818

Int. Cl. A231 1/26

U.S. Cl. 426—535

16 Claims

1. A composition selected from the group consisting of foodstuffs and beverages to which has been added an effective, flavor improving amount of a pyrone of the formula:

1. A process for coating pharmaceutical tablets which comprises:

- placing a charge of tablets on the upper surface and in the concave region of a contoured, concave, flexible, belt conveyor between two side retainer plates;
- driving said belt conveyor in the direction of an inclined plane created by plural idler sprocket wheels disposed at each side and within the contoured region of said continuous belt conveyor, thereby forming a tumbling bed of said tablets;
- spraying a coating material upon said tumbling bed of tablets, while simultaneously exhausting volatile matter, dust and particle fines while drying said coating material as a film on said tablets and drawing additional coating material in conjunction with dry air through the tumbling tablet bed; and
- discharging the coated tablets from said belt conveyor by decreasing the slope of said inclined plane sufficiently to permit said tablets to exit the region of contour of said belt conveyor in the direction of the original belt conveyor travel.

3,900,584

METHOD FOR ANALYSIS OF TREATED GLASS FIBERS

Klaus D. Rosinski, Granville, and John W. Schroer, Newark, both of Ohio, assignors to Owens-Corning Fiberglass Corporation, Toledo, Ohio

Filed Nov. 13, 1972, Ser. No. 306,267

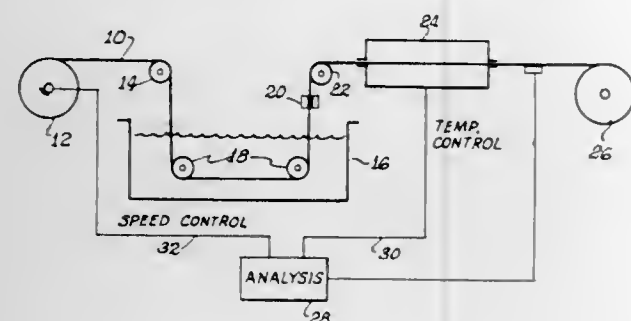
Int. Cl. C03c 25/02; G01n 31/12

U.S. Cl. 427—8

9 Claims

1. In a method for the treatment of glass fibers wherein the glass fibers are coated with a heat-curable polymeric material containing, when cured, water-soluble carbon material and the coated glass fibers are passed through an oven and heated to an elevated temperature at high speed to cure the polymeric material, the improvement comprising selecting a sample of the coated glass fibers having a cured coating, contact-

ing the sample with water at an elevated temperature for a time sufficient to extract the water-soluble carbon material from the cured coating, determining the carbon content of the resulting extract as a measure of the degree of cure of the coating and adjusting at least one of (1) the temperature to which the coated fibers are heated and (2) the speed, in re-



sponse to the carbon content of the aqueous extract whereby at least one of (1) the temperature to which the coated glass fibers are heated is increased and (2) the speed of the coated fibers through the oven is decreased, to increase the degree of cure or at least one of (1) the temperature to which the coated glass fibers are heated is decreased and (2) the speed of the coated fibers is increased, to decrease the rate of cure.

3,900,585

METHOD FOR CONTROL OF IONIZATION ELECTROSTATIC PLATING

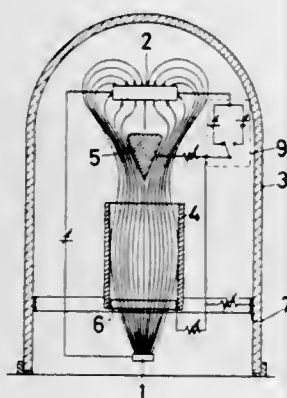
Kiyoshi Matsubara, Higashi-Murayama, Japan, assignor to Agency of Industrial Science & Technology, Tokyo, Japan
Filed Feb. 12, 1973, Ser. No. 331,494

Claims priority, application Japan, Feb. 12, 1972, 47-15006; June 7, 1972, 47-56761; June 21, 1972, 47-62067; June 21, 1972, 47-62068; June 21, 1972, 47-62069

Int. Cl. C23c 11/02

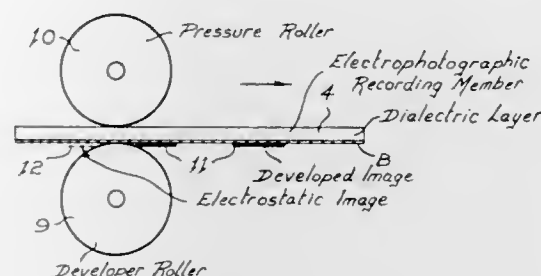
U.S. Cl. 427-13

7 Claims



1. In an ionization electrostatic plating method wherein a DC electric potential is applied in the atmosphere of a rare gas between an anode which is a boat containing a coating material and a cathode which is an article subjected to plating so that glow discharge is generated and then the coating material in the boat is vaporized and the vaporized coating material is deposited on the article, the improvement comprising focusing the electric lines of force occurring in the electric field between said two electrodes by means of a focusing tube, and thereafter dispersing the electric field by means of a dispersing torpedo additionally disposed between the two electrodes, the vaporized gas being ionized and the ionized particles being caused to flow along said electric lines of force and to settle fast on the article.

3,900,586
ELECTROSTATIC DUPLICATING PROCESS
Robert J. Wright, Tramere, Australia, assignor to Research Laboratories of Australia Pty. Limited, Eastwood, Australia
Filed Dec. 20, 1972, Ser. No. 316,754
Int. Cl. G03g 13/08, 13/10, 13/22
U.S. Cl. 427-19 2 Claims



1. An electrostatic duplicating process consisting essentially of the following steps:
a. collating a paper substrate as a receptor sheet with a paper substrate as transfer sheet, said transfer sheet comprising a backing and transferable coating material on one surface thereon, the transferable coating consisting essentially of a wax material containing conductive particles having a pre-selected electrical conductivity character;
b. transferring by pressure transfer part of said transferable coating material to said receptor surface to thereby form electrical conductivity differences between image and background areas on said receptor sheet contacting surface;
c. separating said sheets;
d. contacting the thus imaged surface of the receptor sheet so formed as a master with the dielectric surface of a dielectric recording member simultaneous with application of an electric field therethrough to produce an electrostatic latent image on said dielectric surface of the recording member in accordance with electrical conductivity differences of said receptor sheet master;
e. separating said receptor sheet master and said dielectric recording member;
f. developing said latent image to produce a copy on said dielectric surface by the attraction thereto of electroscopic marking particles; and
g. re-using the receptor sheet master in steps (d) and (e) for at least one additional copy under step (f).

3,900,587
IMAGING PROCESS EMPLOYING TREATED CARRIER PARTICLES

Myron James Lenhard, and Joseph Mammino, both of Penfield, N.Y., assignors to Xerox Corporation, Stamford, Conn.
Division of Ser. No. 218,014, Jan. 14, 1972. This application Jan. 7, 1974, Ser. No. 431,279
Int. Cl. G03g 13/08

U.S. Cl. 427-19

5 Claims

1. An electrostatic imaging process comprising the steps of forming an electrostatic latent image on an imaging surface and developing said electrostatic latent image by contacting said electrostatic latent image with an electrostatic developer mixture comprising finely divided toner particles electrostatically clinging to the surface of larger, dye-treated carrier particles, said carrier particles comprising solid metallic particles selected from the group consisting of metals, metal alloys, metal compounds, and mixtures thereof coated with an adsorbed layer of an organic dye wherein said dye-treated carrier particles are characterized as being resistant to fluctuations in triboelectric properties, whereby at least a portion of said finely divided toner particles are attracted to and held on said imaging surface in conformance to said electrostatic latent image.

3,900,588
NON-FILMING DUAL ADDITIVE DEVELOPER
Donald J. Fisher, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Feb. 25, 1974, Ser. No. 445,389
Int. Cl. G03g 9/02, 13/08

U.S. Cl. 427-19

5 Claims

1. An imaging process comprising the steps of:
a. forming an electrostatic latent image on an imaging surface;
b. developing said latent image by bringing an electrostatic developing mixture within the influence of said latent image, said developing mixture comprising particles, said particles including (1) finely divided electroscopic toner material, (2) a minor portion, based upon the weight of said toner material of a stable, tough, substantially smearless, polymeric additive having an average particle size less than about the average particle size of said finely divided toner material, and (3) a minor proportion based on the weight of said toner material of a finely divided, nonsmearable, abrasive material of a hardness greater than said polymeric additive and toner materials;
c. removing the residual developed image from said imaging surface by a force which causes the toner, polymeric additive and abrasive materials of said developing mixture to be wiped across at least a portion of said imaging surface; and
d. repeating the process sequence at least one additional time.

3,900,589

ELECTROSTATOGRAPHIC IMAGING PROCESS

Nero R. Lindblad, Palmyra; Gordon E. Johnson, Webster, and James H. Sharp, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 277,542, Aug. 3, 1972. This application June 19, 1974, Ser. No. 480,782

Int. Cl. G03g 13/08

U.S. Cl. 427-19

2 Claims

1. An imaging process comprising the steps of:
a. forming an electrostatic latent image on an imaging surface;
b. developing said latent image by bringing an electrostatic developing mixture within the influence of said latent image, said developing mixture comprising particles, said particles including (1) finely divided electroscopic toner material and (2) a minor proportion based on the weight of said toner material of at least one finely divided, solid additive compound selected from the group consisting of phthalic acid, isophthalic acid, terephthalic acid, the metal and ammonium salts thereof;
c. removing at least a portion of at least any residual developed image from said imaging surface; and
d. repeating the process in sequence at least one additional time.

3,900,590

XEROGRAPHIC FUSING APPARATUS

Prafulla S. Dhoble, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 559,852, June 23, 1966, abandoned.

This application Apr. 11, 1974, Ser. No. 459,863

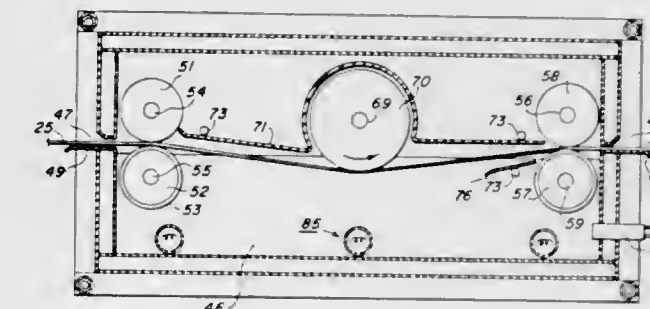
Int. Cl. G03g 13/20, 15/20

U.S. Cl. 427-22

15 Claims

1. Apparatus to heat fix a xerographic toner powder image to a final support material including means to place a toner powder image on a final support material, means to immerse the image bearing support material in a bath of liquid metal such that the metal exerts a pressure on the toner image to support the toner in image configuration, and means to maintain the temperature of the liquid metal at a level sufficient to uniformly heat the toner powder image to the image fixing temperature and below the temperature at which the support material is damaged.

3. A method of heat fixing a heat fusible toner image to a final support material including electrostatically placing a toner image on the final support material wherein toner particles are loosely bonded to said support surface in a raised image configuration, providing a bath of hot highly dense liquid metal, maintaining said bath at a temperature at which the toner image is fixed and below a temperature at which the support material is damaged, moving said image bearing support material below the surface of said bath wherein the dense hot metal exerts a pressure



over the entire surface of said image to uniformly heat said image to the fusing temperature.

15. In the process of making an electrostatically produced copy wherein thermo-responsive particulate material is arranged in a predetermined pattern on a support member, the improvement comprising contacting the support member with a body of liquid sufficient in size and heat content to effect a thermal fixing of said thermo-responsive particulate material without degrading said support member or said thermo-responsive particulate material, and maintaining said contact for a time sufficient to thermally fix said thermo-responsive material to said support member.

3,900,591

DEVELOPED IMAGE TRANSFER

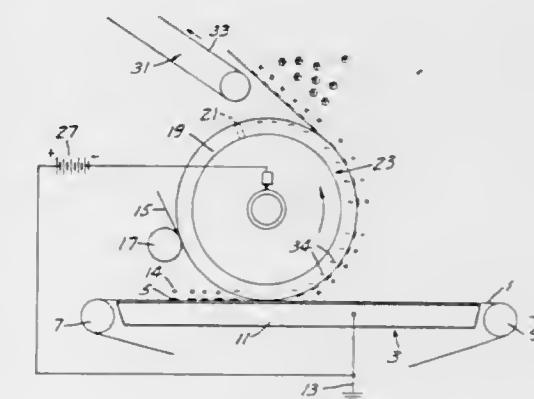
Robert J. Kline, Stillwater, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed June 8, 1973, Ser. No. 368,108

Int. Cl. G03g 13/08

U.S. Cl. 427-24

4 Claims



1. A process comprising:

1. providing contact between a first surface of a web and a transfer member, said transfer member comprising an apertured, electrically conductive support member and a surface layer in the form of a pile fabric having a multiplicity of electrically conductive fibrous loops,
2. vacuum drawings said first surface of said web into intimate contact with said electrically conductive loops whereby said web is stationary relative to said transfer member,
3. contacting a second surface of said web opposing said first surface of said web with a carrier surface bearing particles disposed in a predetermined pattern thereon, said particles having electrical charges of one polarity associated therewith,

4. providing an electrical potential difference between said transfer member and said carrier surface whereby said web acquires an electrical charge of opposite polarity to said one polarity, and
5. separating said web from said carrier surface whereby said particles transfer to said second surface of said web with retention of said predetermined pattern.

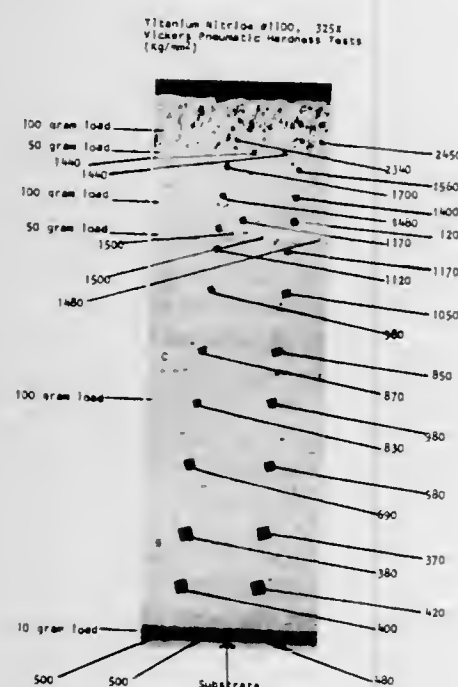
3,900,592

METHOD FOR COATING A SUBSTRATE TO PROVIDE A TITANIUM OR ZIRCONIUM NITRIDE OR CARBIDE DEPOSIT HAVING A HARDNESS GRADIENT WHICH INCREASES OUTWARDLY FROM THE SUBSTRATE

Kurt D. Kennedy, Berkeley, and Glen R. Scheuermann, Novato, both of Calif., assignors to Airco, Inc., Montvale, N.J.
Filed July 25, 1973, Ser. No. 382,308
Int. Cl. C23c 11/08

U.S. Cl. 427-39

6 Claims



1. A method for coating a substrate with a nitride or carbide of titanium or zirconium, comprising, placing the substrate in an evacuated environment, evaporating titanium or zirconium from a crucible in the evacuated environment to produce a vapor and causing the vapor to deposit on the substrate initially as titanium or zirconium, applying an electrical potential during deposition sufficient to produce a voltage difference of at least 200 volts between the substrate and the crucible, and introducing a reactant gas with a gradually increasing partial pressure to the vapor to change the composition of the deposit from its initial composition to increasing nitride or carbide in the direction outwardly from the substrate to produce a hardness gradient in the deposit which increases outwardly from the substrate.

3,900,593

METHOD OF PRODUCING MAGNETIC METAL OXIDE FILMS BONDED TO A SUBSTRATE

Andrew Herczog, Painted Post; Margaret M. Layton, and Dale W. Rice, both of Horseheads, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.
Filed June 16, 1972, Ser. No. 263,586
Int. Cl. H01f 10/00

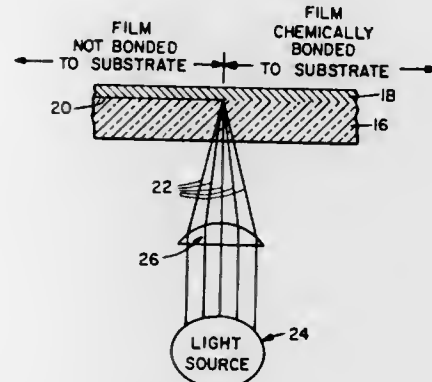
U.S. Cl. 427-53

22 Claims

1. A method of forming a magnetic film device comprising the steps of providing an inorganic, non-magnetic substrate, applying to said substrate a coating of a magnetic metal oxide powder dispersed in a liquid vehicle, heating said substrate and applied coating to a temperature corresponding to at least the vaporizing temperature of

said liquid to volatilize said liquid and leave a film of magnetic metal oxide powder on said substrate, and bonding said film of magnetic metal oxide to said substrate by further heating at least the interface between said film and said substrate to a temperature up to the lower of the softening or sintering temperature of the substrate and film materials for a time sufficient for said film itself to chemically bond to said substrate.

22. A method of forming a magnetic recording and storage device comprising the steps of providing a substrate formed of an ion-exchange strengthened glass,



applying to said substrate by silk screening a coating of a magnetic metal oxide powder selected from the group consisting of magnetite and gamma ferric oxide, said powder being dispersed in screening oil, heating said substrate and applied coating to the annealing point of said substrate to volatilize said screening oil leaving a film of magnetic metal oxide powder on said substrate, and thereafter bonding said film of magnetic metal oxide to said substrate by further heating the interface between said film and said substrate to the softening point of said glass by focusing light through said substrate on said interface for a time sufficient for said film itself to chemically bond to said substrate, said substrate being substantially transparent to said light.

3,900,594

PHOTOCURABLE TRIAZINE CONTAINING POLYENE-POLYTHIOL LACQUER COMPOSITION

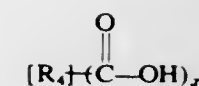
James L. Guthrie, Ashton, and Francis J. Rendulic, Ellicott City, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of Ser. No. 209,369, Dec. 17, 1971, Pat. No. 3,787,303. This application Oct. 25, 1973, Ser. No. 409,615
Int. Cl. B01j 1/10, 1/12

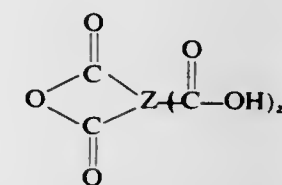
U.S. Cl. 427-53

6 Claims

1. A photocurable lacquer composition comprising (A) a polythiol component containing at least 2 —SH groups per molecule; (B) 2,4,6-tris (allyloxy)s-triazine as polyene; the mole ratio of ene to thiol being from about 0.2:1 to about 5:1; (C) from about 0.0005 to about 50 percent by weight of the composition of a photocuring rate accelerator component; (D) from 1 to about 50 parts by weight per 100 parts by weight of the polyenepolythiol combination of a normally solid, solvent soluble polyester component having a molecular weight from about 500 to about 100,000 prepared by reacting (i) a polybasic acid having the general formula



where R_1 is a saturated or unsaturated hydrocarbyl group having valence of x and from 2 to about 21 carbon atoms and x is at least 2 or (ii) a polybasic acid anhydride having the general formula



where z is 0 or 1, Z is a saturated or unsaturated hydrocarbyl group having from about 2 to about 12 carbon atoms and a valence of 2 when z is 0 and a valence of 3 when z is 1 with (iii) a polyhydric alcohol having the general formula $[R_2]_y-(OH)_x$, where R_2 is a saturated or unsaturated hydrocarbyl or oxyhydrocarbyl group having a valence of y and from 2 to about 30 carbon atoms and y is at least 2.

3,900,595

METHOD OF MAKING WIPING CYLINDER OF STEEL ENGRAVING PRINTING PRESS

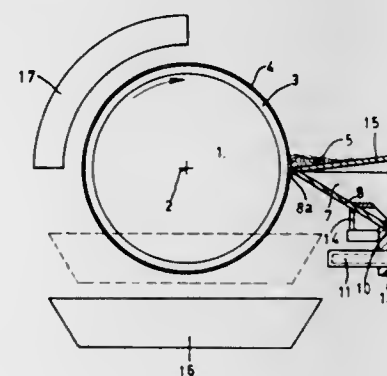
Gualtiero Giori, Lausanne, Switzerland, assignor to De la Rue Giori S.A., Switzerland

Division of Ser. No. 175,224, Aug. 26, 1971, Pat. No. 3,785,286, which is a continuation-in-part of Ser. No. 833,622, June 16, 1969, abandoned, and a continuation-in-part of Ser. No. 462,355, June 8, 1965, abandoned. This application Oct. 24, 1973, Ser. No. 409,265

Claims priority, application Italy, June 18, 1964, 48397/64
Int. Cl. B32b 31/22

U.S. Cl. 427-55

20 Claims



1. A method of making a wiping cylinder of a steel engraving press which comprises providing a base cylinder, covering said base cylinder with a thin layer of rubber, providing a first homogeneous mixture composed of 100 parts by weight of polyvinyl chloride, 30-50 parts by weight of dioctylphthalate, 30-50 parts by weight of tricresylphosphate and 0.5 to 3 parts by weight of a stabilizer; providing a second homogeneous mixture composed of 100 parts by weight of polyvinyl chloride, 25-40 parts by weight of dioctylphthalate, 15-30 parts by weight of tricresylphosphate, 3-10 parts by weight of CaCO_3 , 2-5 parts by weight of graphite and 0.5-3 parts by weight of a stabilizer; initially coating said rubber covering with an initial seamless layer of said first homogeneous mixture having a uniform thickness of from 0.3 to 1 mm; then coating said layer with a plurality of intermediate seamless layers each composed of one of said first and second homogeneous mixtures and each having a uniform thickness of from 0.3 to 1 mm, until a composite coating including said first mentioned layer having a uniform total thickness of from 2 to 3.5 mm. is obtained; and finally coating said composite coating with a final seamless layer of said second homogeneous mixture having a uniform thickness of from 0.3 to 1 mm to

provide a smooth cylindrical surface precisely concentric with the axis of rotation of said wiping cylinder, each of said layers being heat hardened before an overlying layer is applied, said layers of said first mixture being hardened in situ to a hardness of approximately Shore A 60 to 70 and said final layer being hardened in situ to a hardness of approximately Shore A 80 to 95.

3,900,596

METHOD OF PROTECTING EMBEDDED ELECTRONIC COMPONENTS

S. Yen Lee, Upper Marlboro, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sept. 27, 1973, Ser. No. 401,313
Int. Cl. C09D 3/68

U.S. Cl. 427-58

9 Claims

1. A method for the protection of embedded electronic components embedded in a plastic material capable of protecting said electronic components from high temperature and physical shock which comprises

- a. applying onto the surface of said electronic components a highly solvent resistant poly(butylene terephthalate) in an amount sufficient to provide a continuous coating on said electronic components, wherein
 1. said continuous coating has a thickness of from about 2 to 6 mils and
 2. said poly(butylene terephthalate) is applied in an organic solvent solution of 2 to 20 weight percent poly(butylene terephthalate) in said solution, and
- b. drying said continuous coating.

3,900,597

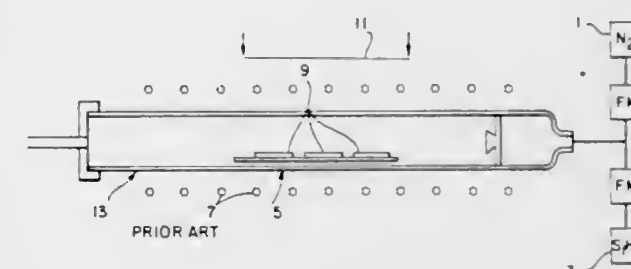
SYSTEM AND PROCESS FOR DEPOSITION OF POLYCRYSTALLINE SILICON WITH SILANE IN VACUUM

Jerry L. Chruma, and Paul G. Hilton, both of Phoenix, Ariz., assignors to Motorola, Inc., Chicago, Ill.

Filed Dec. 19, 1973, Ser. No. 426,396
Int. Cl. C23c 11/00

U.S. Cl. 427-82

13 Claims



1. In a method for depositing polycrystalline silicon material onto a wafer from a gaseous silicon source flowing through a furnace tube, and the furnace is provided with heating means, and is further provided with a first end through which the gaseous silicon source is admitted into the tube, and is further provided with a second end from which the residual gaseous silicon is exhausted, the improvement comprising the steps of: introducing a plurality of wafers into the furnace through the first end;

placing said plurality of wafers into the stream of gaseous silicon such that the broad surface of each of said wafers upon which the polycrystalline material is to deposit is placed perpendicular to the direction of the gas flow; spacing the wafers a minimum of 30 mils between adjacent surfaces;

heating the wafers to a temperature under 700°C for a time sufficient to grow the desired thickness of polycrystalline silicon material;

establishing a vacuum at the exhaust end of the tube for drawing the gaseous silicon over the wafers; continuing the flow of the gaseous silicon for a predetermined period and then closing off the flow of said gaseous silicon; and withdrawing said wafers from the furnace by said first end.

3,900,598

OHMIC CONTACTS AND METHOD OF PRODUCING SAME

Edward L. Hall, and Elliott M. Philofsky, both of Phoenix, Ariz., assignors to Motorola, Inc., Chicago, Ill.

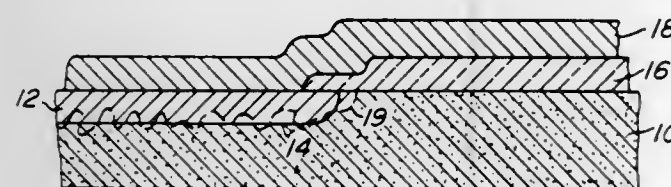
Division of Ser. No. 234,252, March 13, 1972, abandoned.

This application July 9, 1973, Ser. No. 377,673

Int. Cl. C23e 1/08

U.S. Cl. 427—90

5 Claims



1. A method of making an ohmic contact to a semiconductor device comprising the steps of:
forming a protective insulating material pattern on the surface of said device with contact areas of silicon left exposed;
evaporating a layer of contact metal comprising aluminum with a relatively small percentage of at least another metal selected from the group consisting of iron, magnesium, chromium, manganese and cobalt on said pattern and onto said contact area; and
heating said device to form an ohmic contact between said contact metal and said contact areas of silicon;
whereby the nature of the material of the device at said contact areas remains substantially unaffected during the heating forming the ohmic contact and during subsequent heating.

3,900,599

METHOD OF ELECTROLESS PLATING

Nathan Feldstein, Kendall Park, N.J., assignor to RCA Corporation, New York, N.Y.

Filed July 2, 1973, Ser. No. 375,380

Int. Cl. C23C 3/00; B44D 1/02

U.S. Cl. 427—97

10 Claims

1. In a process of electrolessly depositing a metal on a surface which is catalytic for the deposition of said metal by immersing the surface to be plated in a plating bath, where the bath has sufficient dissolved oxygen therein to cause plating skips, the improvement comprising lowering the dissolved oxygen content substantially prior to starting the plating operation.

9. In a process of electrolessly depositing a metal on a surface which is catalytic for the deposition of said metal, comprising

preparing an electroless plating bath by dissolving a salt of said metal and a reducing agent in water, and immersing said surface in said plating bath, the improvement comprising removing at least most of the dissolved oxygen in the water used to prepare said bath prior to adding said salt and said reducing agent.

3,900,600

PARAXYLYLENE-SILANE DIELECTRIC FILMS

Edward C. Spaulding, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 29, 1973, Ser. No. 375,294

Int. Cl. B44d 1/18; C23c 11/00

U.S. Cl. 427—99

8 Claims

1. A method for producing dielectric films comprising admixing halogen substituted paraxylylene dimers and silyl amines in a ratio of 1:1 to 5:1 by weight of dimer to amine, heating the admixture to vaporize the admixture and vapor depositing said admixture upon a substrate under reduced pressure.

3,900,601

TREATMENT OF THIN METALLIC FILMS FOR INCREASED DURABILITY

Helmut Franz, Pittsburgh, and David E. Lecocq, New Kensington, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sept. 28, 1973, Ser. No. 401,756

Int. Cl. C03C 17/10

U.S. Cl. 427—108

11 Claims

1. A method of making a transparent metal coated glass article comprising the steps of

depositing a transparent metallic film of iron, cobalt, nickel, copper, or mixture thereof on a surface of a glass substrate,

heating the metallic film and glass substrate combination to a temperature which is at least 150°C. but below a temperature at which the glass is distorted and maintaining the combination within that temperature range for a time sufficient to substantially reduce the electrical resistance of the metallic film, and thereafter

contacting the metallic film with an aqueous solution comprising water and a weak oxidizing agent selected from the group consisting of alkali metal dichromates, ammonium dichromate, alkali metal perborates, ammonium perborate, alkali metal permanganates and ammonium permanganate present as 0.1 to 10 percent by weight of the solution, the solution having a pH of at least about 4.

3,900,602

METHOD AND DEVICE FOR THE MANUFACTURE OF CATALYTIC LAYERS FOR ELECTRODES IN ELECTROCHEMICAL CELLS, PARTICULARLY FUEL CELLS

Werner Rummel, Grossdebsendorf, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany

Continuation of Ser. No. 142,632, May 12, 1971, abandoned.

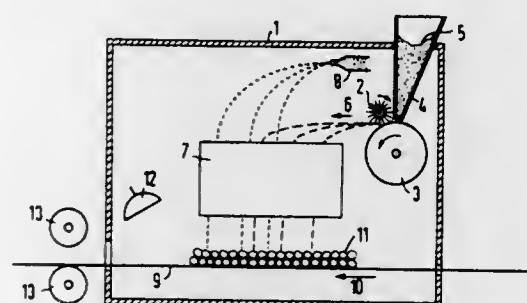
This application Aug. 3, 1973, Ser. No. 385,442

Claims priority, application Germany, May 15, 1970, 2023868

Int. Cl. B01k 3/04; H01n 13/00

U.S. Cl. 427—115

20 Claims



1. Method for the manufacture of porous catalytic layers for electrodes in electrochemical cells, especially fuel cells, from catalyst powder of different grain sizes which comprises moving a planar substrate generally along a predetermined and

generally straight line path, aerating said catalyst powder of different grain sizes with a gas stream, accelerating and directing a stream of catalyst powder initially in a direction substantially parallel to said straight line path and disposed above said moving substrate, whereby the catalyst powder particles of different size and weight are carried a different distance, and utilizing the effect of gravity to cause said stream of catalyst powder to fall by gravity onto said moving substrate thereby to form a planar layer on the substrate with gradation of the catalyst powder forming the planar layer by grain size and in which the pore structure of said planar layer has pore size changes with smaller pores with the smaller grain particles and with the pore sizes increasing with the larger size particles.

3,900,603

METHOD AND DEVICE FOR PRODUCING A THERMOELECTRIC GENERATOR

Gerhard Rittmayer, Erlangen; Theodor Renner, Nurnberg-Reichelsdorf; Georg Grubmüller, Nurnberg, and Dieter Falkenberg, Erlangen, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

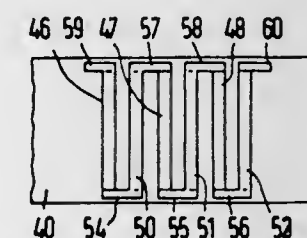
Filed Nov. 23, 1971, Ser. No. 201,355

Claims priority, application Germany, Nov. 23, 1970, 2057538

Int. Cl. B44d 1/18

U.S. Cl. 427—124

10 Claims



1. In a method of producing thermocouple elements, especially for low-power thermoelectric generators, having thermocouple element legs of different conductivity types that are located adjacent one another in alternating sequence, with bridges connecting the ends of the legs of different conductivity so that the legs are connected electrically in series and thermally in parallel, on an electrically insulating carrier, wherein the improvement comprises flash vaporizing ZnSb at a temperature of at least 900°C and from the resulting vapor depositing ZnSb as material for the thermocouple element legs upon the carrier, and then tempering the same to change the ZnSb structure from amorphous to crystalline.

3,900,604

METHOD FOR PRODUCING A MAGNETIC RECORDING MATERIAL

Takashi Tanabe, and Tomio Adachi, both of Sagamihara, Japan, assignors to Teijin Ltd., Osaka, Japan

Division of Ser. No. 300,174, Oct. 24, 1972, abandoned. This

application Nov. 5, 1973, Ser. No. 412,613

Int. Cl. H01f 10/04

U.S. Cl. 427—129

20 Claims

1. A method for producing a magnetic recording material comprising:

1. preparing an unstretched film of a crystalline polymer selected from the group consisting of aromatic linear polyesters, aromatic linear co-polyesters, polyamides and polypropylene,

2. subjecting the unstretched film to a differential crystallization treatment such that one surface of the film will possess a degree of crystallization which is at least 5% higher than that of the other surface of the film,

3. stretching the treated film from step 2 in at least one direction, and

4. thereafter coating a magnetic layer on said other surface.

11. A method for producing a magnetic recording material which comprises

1. preparing an unstretched film of a crystalline polymer selected from the group consisting of aromatic linear



polyesters, aromatic linear copolyesters, polyamides, and polypropylene,

2. uniaxially stretching the unstretched film in one direction,

3. subjecting the uniaxially stretched film of step 2 to a differential crystallization treatment such that one surface of said film obtains a degree of crystallization which is at least 5% higher than the degree of crystallization of the other surface of the film,

4. stretching the treated film of step 3 in a direction at right angles to the direction of the uniaxial stretching and,

5. thereafter coating a magnetic layer on said other surface.

3,900,605

METHOD OF FORMING TRAFFIC MARKERS HAVING SHORT TRACK-FREE TIMES

Robert W. Norris, Jr., 1661 Almond Ln. N.W., Salem, Oreg. 97304

Filed Sept. 5, 1973, Ser. No. 394,587

Int. Cl. G02B 5/128

U.S. Cl. 427—137

26 Claims

1. A method of applying a traffic directing marker to a paved traffic bearing surface which comprises:

a. applying to a traffic bearing surface a wet unset film of a pigmented synthetic organic vehicle resin-containing coating composition which dries inherently track-free within about 6 minutes after application, and

b. applying to the wet coating composition at least a monolayer of light reflecting particulate material, the preponderance of the particles of which being sized so that at least one-half their mass becomes embedded in the coating composition upon application while having a diameter greater than the thickness of the coating film, said particles penetrating substantially the depth of the wet coating composition, said particulate material being applied at such a rate that the individual particles are separated from each other in the coating film by less than their average diameter

c. whereby the applied coating of resin and particles has a track-free time within the order of seconds.

9. A method of applying a traffic directing marker to a paved traffic bearing surface which comprises:

a. applying to a traffic bearing surface a wet unset film of a pigmented synthetic organic vehicle resin-containing coating composition which dries inherently track-free within about six minutes after application, and

b. applying to the wet coating composition at least a monolayer of light reflecting particulate material, the preponderance of the particles of which being sized so that at least one-half their mass becomes embedded in the coating composition upon application while having a diameter greater than the thickness of the coating film, said light reflecting particulate material having been distributed upon the coating composition before it is dry in an amount at least about W weight per unit area A where

$$W = \frac{4}{2.5983^2} \cdot \frac{V}{S} \cdot X \cdot G$$

where

- W = weight of light reflecting particulate material
 A = unit area of the coating composition
 V = volume of the average light reflecting particle
 G = specific gravity of the light reflecting particle
 S = distance between centers of the light reflecting particle evenly distributed as a monolayer in said coating composition, S being about 2D or less, where D is the diameter of the average light reflecting particle,
 c. whereby the applied coating of resin and particles has a track-free time measured within the order of seconds.

3,900,606

TEMPORARY SOIL RELEASE RESINS APPLIED TO FABRICS BY SPRAYING

Harry Creston Mandell, Jr., Wayne, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Division of Ser. No. 171,362, Aug. 12, 1971, Pat. No. 3,782,898. This application Oct. 17, 1973, Ser. No. 407,115
 Int. Cl. B44d 1/22

U.S. Cl. 427-155

4 Claims

1. The process of treating a textile fabric with an acrylic resin to obtain temporary soil release comprising spraying the fabric with acrylic resin in an aqueous medium containing from about 1/4 to about 3 parts of acrylic resin per 5000 parts of water and thereafter drying the fabric to remove water without curing the resin.

3,900,607

POLYLAUROLACTAM POWDERS SUITABLE FOR METAL COATING

Karl-Adolf Muller; Armin Gude, and Gerhard Menzel, all of Marl, Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Germany

Continuation of Ser. No. 364,430, May 29, 1973, abandoned, which is a continuation of Ser. No. 257,977, May 30, 1972, abandoned, which is a continuation of Ser. No. 695,353, Jan. 3, 1968, abandoned. This application Jan. 14, 1974, Ser. No. 432,873

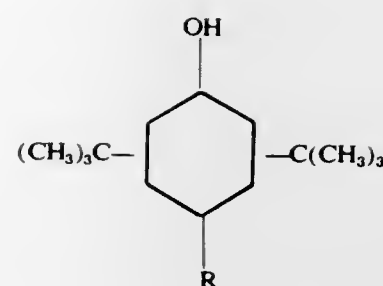
Claims priority, application Germany, Jan. 9, 1967, 41216
 Int. Cl. B44d 1/36; C08g 20/10

U.S. Cl. 427-185

10 Claims

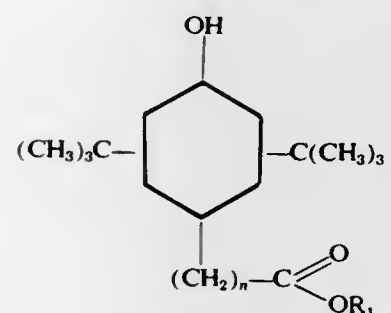
1. In a process of coating a metal substrate with plasticized polylaurolactam powder by the fluidized bed coating process, the improvement comprising employing as said polylaurolactam powder a precipitate recovered from a solution comprising polylaurolactam, a solvent therefor and a plasticizer therefor present in the solution in a concentration of 0.5-3 percent by weight based on the weight of the polylaurolactam,

said solvent being present in sufficient quantities to dissolve said polylaurolactam and said plasticizer, and being a member selected from the group consisting of formic acid, dimethylformamide, 2-ethylhexanol, n-hexanol and cyclohexanone, said plasticizer being at least one member selected from the group consisting of a) a phenol of the formula:



wherein

R is alkyl having from 1 to 18 carbon atoms; b) a hydroxy-phenyl carboxylic acid ester of the formula:



wherein

n is 0 or a positive whole number from 1 to 6 inclusive, and R1 is alkyl having from 1 to 18 carbon atoms; and c) a phosphorous acid ester selected from the group consisting of a trialkyl ester, triphenylester, tri-(alkylphenyl)-ester, a phenyldialkylester and an alkyl diphenyl ester, each alkyl having from 1 to 18 carbon atoms, inclusive, said precipitate having been dried and provided in the particle size required for the fluidized bed coating process.

3,900,608

PREPARATIONS OF OPTICAL BRIGHTENERS

Hubert Dierkes, Cologne; Karl Schonol, Leverkusen; Joachim Walter, Hildorf, and Friedhelm Muller, Odenthal, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Germany

Filed Oct. 20, 1972, Ser. No. 299,297
 Claims priority, application Germany, Oct. 23, 1971, 2152969

Int. Cl. C09k 3/00

U.S. Cl. 427-158

3 Claims

1. A process for whitening of formed fiber materials consisting essentially of treating the formed fibers at temperatures of from 20°-40°C with a whitener liquor which consists essentially of (I) a solution of a dispersion brightener in an organic solvent which is a water immiscible liquid having a boiling point above 150°C and in which the whitener has a minimum solubility at room temperature of 0.3 grams per litre wherein the dispersion brightener is selected from the class consisting of naphthalic acid imides, styryl-triazoles, distyryl derivatives, pyrazoloquinolines, pyrenes, benzoxazoles, pyrazolines, carbostyryls, and coumarines, and wherein the organic solvent is selected from the class consisting of high boiling ethers, phosphoric acid esters, monocarboxylic acid esters, hydroxy carboxylic acid esters, alkanesulfonic acid aryl esters, acetals, epoxidized fatty acids, polymeric esters, alkylbenzenes and dicarboxylic acid esters, in (II) a member selected from the group consisting of aqueous liquors containing an emulsifier for the composition (I) or a water immiscible organic solvent.

3,900,609

METHOD FOR MANUFACTURE OF A REFRACTING, LIGHT PERMEABLE OXIDE LAYER

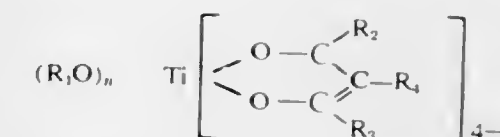
Baptist Wille, Balzers, Liechtenstein, assignor to Balzers Patent- und Beteiligungs - Aktiengesellschaft, Liechtenstein

Division of Ser. No. 132,041, April 7, 1971, Pat. No. 3,783,010. This application June 4, 1973, Ser. No. 366,482
 Claims priority, application Switzerland, Apr. 13, 1970, 005491/70

Int. Cl. C23c 11/00, 13/00

U.S. Cl. 427-166

7 Claims



wherein n is an integer of 2 or 3, R1 is a C2 to C10 alkyl, alkenyl, substituted alkyl or substituted alkenyl group, R2 is a C1 to C6 alkyl, alkoxy, alkenyl or alkenoxy group, R3 is a C1 to C6 alkyl or alkenyl group or a C6 to C10 aryl group and R4 is hydrogen or a C6 alkyl or alkenyl group, and R2 and R3 may be combined as an ethylene or a trimethylene group;

C. coating the article with a film of interpolymer solution on a reverse roll coater or a gravure roll coater; and
 D. drying the film of the interpolymer solution.

3,900,611

PARTICULATE MATTER SUPPRESSION USING A SOLUTION OF A SURFACTANT AND A POLYMER

Dennis Thomas Corbett, Chesterfield, and John Wilson, Selston, both of England, assignors to Hemlab AG, Switzerland

Filed Mar. 9, 1973, Ser. No. 339,795

Int. Cl. B44d 1/02

U.S. Cl. 427-214

20 Claims

1. A method of preventing the movement of particulate matter which comprises applying to the particulate matter an amount sufficient to consolidate the particulate matter into a compact mass adherent to a selected substrate, of an aqueous solution which is non-irritating to humans, which solution comprises a surfactant selected from the group consisting of an amphoteric surfactant and an amphoteric surfactant in combination with an anionic surfactant, and a homo- or copolymer of an unsubstituted or substituted amide, amine, imine or ethoxy residue having a molecular weight of from about 50,000 to about 30,000,000, in a weight ratio of 10:1 to 70:1 when the surfactant is an amphoteric surfactant and 3:1 to 7:1 when the surfactant is an amphoteric surfactant in combination with an anionic surfactant.

3,900,612

METHOD FOR CHEMICAL VAPOR DEPOSITION OF FITTED SURFACES IN COUPLED ARTICLE

Shigetake Okamoto, Tokyo, Japan, assignor to Agency of Industrial Science & Technology, Tokyo, Japan

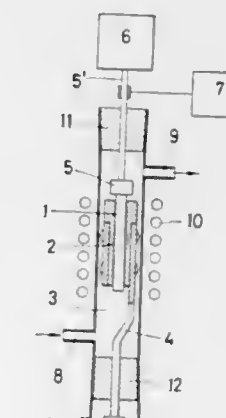
Filed Oct. 11, 1973, Ser. No. 405,536

Claims priority, application Japan, Oct. 11, 1972, 47-101789

Int. Cl. C23c 11/00

U.S. Cl. 427-232

2 Claims



1. A method for the chemical vapor deposition of fitted surfaces of an article which method comprises, inserting a plunger into a barrel assembly, both plunger and barrel assembly being disposed within a plating chamber, the outer surface of the plunger and the inner surface of the barrel being in fitted relationship to one another, conferring a rotational or vibrational motion upon the plunger or the barrel, supplying vapor of a coating material to the plating chamber, and coat-

3,900,610

PROCESS OF MAKING A PRESSURE SENSITIVE ADHESIVE ARTICLE

Lawrence W. McKenna, Jr., Wilbraham, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed Apr. 9, 1973, Ser. No. 349,168

Int. Cl. C09j 7/04; C08f 15/40

U.S. Cl. 427-207

6 Claims

1. A process of manufacture of an article coated with a film of pressure-sensitive resin comprising:

A. preparing an organic solvent solution containing an interpolymer comprising:

1. between 0.5 and 20 weight percent of at least one monomer containing an enolizable keto group selected from the group consisting of N,N-diacetonylacrylamide and N,N-diacetonylmethacrylamide; and

2. at least one monomer selected from the group consisting of esters of acrylic acid and methacrylic acid containing from 6 to 20 carbon atoms;

wherein the interpolymer has a weight average molecular weight in the range of 10,000 to 500,000 and a glass transition temperature in the range of -15° to -75°C;

B. adding an organic solvent solution of a chelate ester of orthotitanic acid to obtain a solution of the interpolymer containing between 0.01 and 4.0 parts of the chelate ester per 100 parts of interpolymer with a stringiness index of less than 0.3 inches and a viscosity in the range of 25 to 5000 cps. at 20°C., wherein the chelate ester is represented by the formula:

ing the fitted surfaces of the plunger and barrel during said rotational or vibrational motion.

3,900,613

PRODUCTION OF SURFACE DIFFUSION ALLOYS

Philippe Marie Galmiche, Clamart, and Andre Hivert, Pontoise, both of France, assignors to Office National d'Etudes et de Recherches Aerospatiales (O.N.E.R.A.), France

Filed June 25, 1973, Ser. No. 373,097

Claims priority, application France, June 30, 1972, 72.23871

Int. Cl.² C23C 9/00, 9/02

U.S. Cl. 427-237

18 Claims

1. In a method of forming a surface diffusion alloy by applying at least one application metal to the inner wall of a hollow metallic part in which a cement comprising a powder of at least one application metal, an inert diluent having a high heat of formation to prevent coalescence or sintering of the particles of the application metal powder during formation of said surface diffusion alloy, and a halogen or halogenated compound for generating vapors of said application metal to the inner wall of the part to be treated, is introduced into the cavity of said hollow part in immediate proximity to said wall, and in which the cement is then heated to generate vapors of the application metal to form a surface diffusion alloy of the application metal and the metallic part at the inner wall of said part; the improvement which comprises:

providing in said cement a surface active agent selected from the group consisting of oleic acid, linoleic acid and ricinoleic acid in an amount sufficient to confer thixotropic properties on the cement such that the cement is temporarily liquefied when subjected to vibration, subjecting the cement within said cavity, prior to heating the cement, to vibration to temporarily liquefy said cement to facilitate penetration of said cement into remote zones of said cavity to bring said cement into immediate proximity to said wall; leaving the cement undisturbed within the cavity until it resumes its initial viscosity; and after heating the cement to form said surface diffusion alloy, removing the cement from within the hollow part.

3,900,614

METHOD OF DEPOSITING A METAL ON A SURFACE OF A SUBSTRATE

David Jacob Lando, Lawrence Twp., Mercer County, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.

Division of Ser. No. 202,305, Nov. 26, 1971, Pat. No. 3,793,072. This application Aug. 16, 1973, Ser. No. 388,842

Int. Cl. B44d 1/18

U.S. Cl. 427-258

2 Claims

1. A method of depositing a metal pattern on a surface of a substrate, which comprises:

a. coating the surface with a solution comprising an activating metal ion; and
b. impressing said coated surface with a wetting sol, comprising an insoluble hydrous oxide of an element selected from the group consisting of Sn, Pb, Ti, V, Cr, Fe and Bi, said hydrous oxide being capable of reducing said activating metal ion to an activating metal to delineate a pattern corresponding to the desired metallic pattern and deposit said activating metal on said delineated pattern.

2. The method as defined in claim 1 which further comprises treating said activating metal-deposited pattern with an electroless metal plating solution to deposit an electroless metal thereon.

3,900,615

PROCESS FOR TREATING WOOD

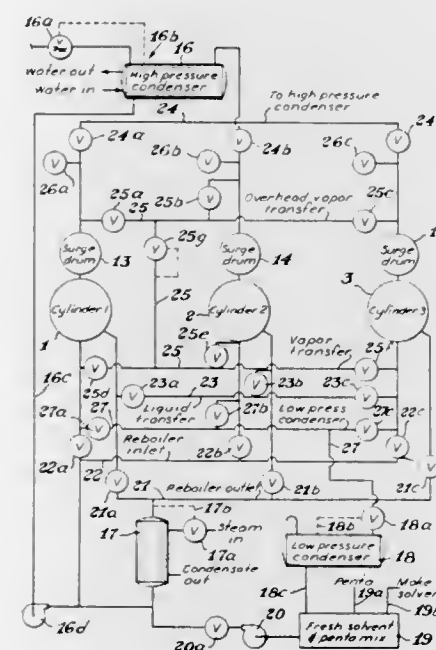
James L. Dunn, Jr., Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Oct. 13, 1972, Ser. No. 297,464

Int. Cl. B27k 3/08, 3/40

U.S. Cl. 427-317

5 Claims



1. A process for treating wood which consists essentially of the steps:

- contacting wood at about 50°C. to about 125°C. with a vaporized chlorinated aliphatic solvent under superatmospheric pressure for a time sufficient to preheat the wood to approximately the temperature of the vaporized solvent;
- immersing the heated wood in a solution of at least one wood treating agent in said chlorinated solvent at about said temperature and under superatmospheric pressure for about 0.1-10 hours;
- removing the excess solution from contact with the thereby impregnated wood; and
- reducing the pressure on the impregnated wood at least to atmospheric pressure, thereby causing vaporization of at least a substantial part of the solvent contained in the wood.

3,900,616

PROCESS FOR COATING A NONPOROUS SUBSTRATE WITH A VINYLIDENE CHLORIDE POLYMER USING A THERMOPLASTIC POLYURETHANE PRECOAT

Carl Moore, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

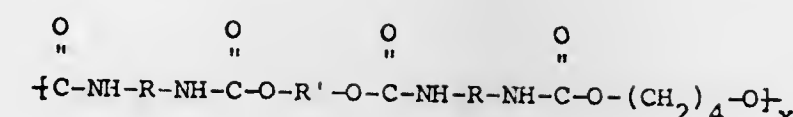
Filed Oct. 20, 1972, Ser. No. 299,237

Int. Cl. B44d 1/16

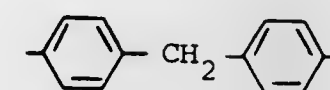
U.S. Cl. 427-385

3 Claims

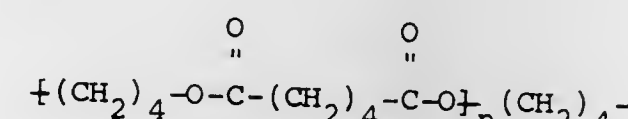
1. In the process of coating a substantially nonporous substrate having a contact angle to water of from about 50° to 75°C. with a vinylidene chloride polymer latex while using a polyurethane precoat wherein said nonporous substrate is first coated with said polyurethane followed by application of an overcoating of said vinylidene chloride polymer latex and drying of said overcoating, the improvement consisting of utilizing as said precoat the dried residue of a coating consisting essentially of a thermoplastic polyester type polyurethane having the formula



where R is



where R' is



where n is an integer of from 1 to 10, and where x is an integer of from about 13 to 40, dissolved in an organic solvent therefore.

3,900,617

METHOD OF RENDERING FLEXIBLE SHEET MATERIAL NON-ADHERENT AND ARTICLE PRODUCED THEREBY

Maurice E. Grenoble, Ballston Lake, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Nov. 27, 1973, Ser. No. 419,372

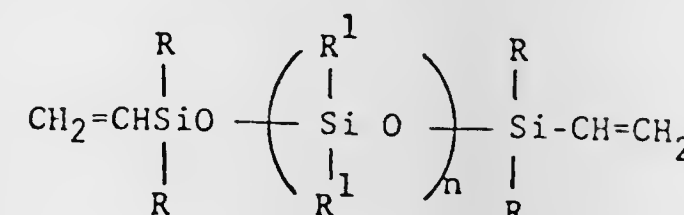
Int. Cl.² B44D 1/22, 1/24; D21H 1/38

U.S. Cl. 427-387

11 Claims

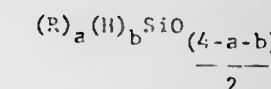
1. A process for rendering flexible sheet material non-adherent to surfaces which normally adhere thereto, which process comprises:

- treating the sheet material with an aqueous emulsion treating bath containing
 - from 1 to 50% by weight of a vinyl chain-stopped polysiloxane having the formula:



wherein R and R¹ are monovalent hydrocarbon radicals free of unsaturation, with at least 50 mole % of the R¹ groups being methyl and n has a value sufficient to provide a fluid material having a viscosity of from 100 to 750,000 centistokes at 25°C.;

- an organic hydrogen-polysiloxane having the formula:



wherein R is as defined above, a is from 0 to 3, b is from 0.005 to 2.0 and the sum of a plus b is from about 0.8 to 3, there being at least two silicon-bonded hydrogen atoms per molecule; and

- a platinum catalyst effective to cause copolymerization of (i) and (ii), and, thereafter,

B. drying the treated material.

3,900,618

PROCESS FOR REDUCING PILLING TENDENCIES OF ACRYLIC FIBERS AND FIBER PRODUCTS THEREOF

Juichi Sasada, Okayama, Japan, assignor to American Cyanamid Company, Stamford, Conn.

Filed Dec. 13, 1973, Ser. No. 424,408

Int. Cl. B44d 1/06; D06m 13/26

U.S. Cl. 427-390

8 Claims

1. A process for reducing the pilling tendencies of acrylic fibers and fiber products thereof which comprises treating an acrylic fiber or product thereof obtained from an acrylonitrile

polymer containing at least 80 weight percent acrylonitrile and any balance of one or more ethylenically unsaturated monomers copolymerizable therewith with an aqueous solution containing a salt of an alkylsulfate of 8 to 16 carbon atoms, said salt selected from sodium, potassium, and ammonium salts, and sodium carbonate, said treatment being carried out at a temperature in the range of about 50° to 100°C. and so as to deposit from about 0.1 to 2.0 weight percent of said alkylsulfate and from about 0.5 to 3.0 weight percent of sodium carbonate, both percentages based on the dry weight of said fiber or fiber product, and thereafter drying the treated fabric at a temperature in the range of about 60° to 120°C.

3,900,619

INHIBITING THE STAINING OF LATEX PAINTS ON WOOD

Robert H. Lalk; Donald L. Schmidt, and Mary R. Thomas, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

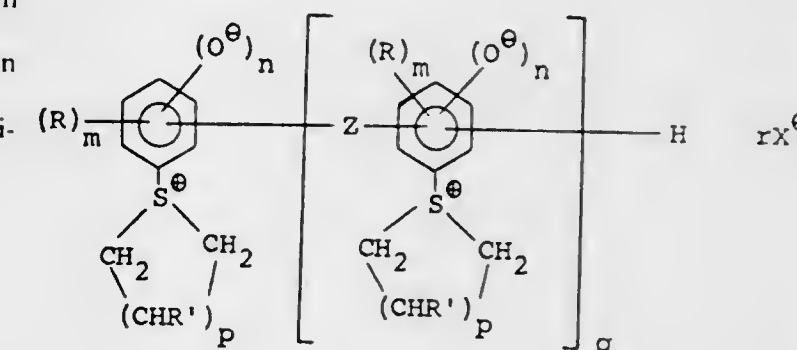
Filed July 26, 1973, Ser. No. 382,978

Int. Cl. B44d 1/26

U.S. Cl. 427-408

13 Claims

1. The process of inhibiting the staining of latex paint applied to a wood surface containing watersoluble tannin comprising applying to the wood surface, prior to or concurrently with the latex paint, an aqueous solution of a water-soluble cyclic sulfonium compound of the formula



wherein each R independently is Cl, phenyl, phenoxy, lower alkyl or lower alkoxy; each R' independently is H, Cl, Br, OH or lower alkyl; Z is a chemical bond, O, S, alkylene or alkylendioxy; m is 0-2, n is 0-1, p is 2-3, q is 0-5, X is a neutralizing anion and r is a number such that the molecule is electrically neutral.

3,900,620

BASIC ALUMINUM SYSTEMS USEFUL AS WOOD-STAIN REDUCING AGENTS

William S. Gilman, South Plainfield; John L. Jones, North Plainfield, and Andrew M. Rubino, New Providence, all of N.J., assignors to Armour Pharmaceuticals Company, Berkeley Heights, N.J.

Filed Sept. 18, 1973, Ser. No. 398,358

Int. Cl. B05d 3/00

U.S. Cl. 427-408

17 Claims

1. A method of preventing staining and discoloration of water-base paint applied to a wood surface due to the leaching of water soluble tannins and natural coloring constituents present in the wood, which method comprises applying to the surface of wood to be painted an aqueous composition comprising a water soluble basic aluminum compound or complex of such compound, said basic aluminum compound or complex being applied in an effective amount to prevent staining of a subsequently applied water-base paint but insufficient to substantially interfere with adhesion between the water-base paint and the treated surface.

3,900,621

IMPREGNATING COMPOSITIONS FOR FIBROUS SHEET MATERIALS

Eduard Muck, Otrokovice; Jaroslav Strachota, Veseli nad Moravou, and Josef Horak, Gottwaldov, all of Czechoslovakia, assignors to Statni vyzkumny ustav kozedelny, Gottwaldov, Czechoslovakia

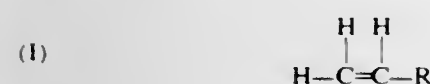
Division of Ser. No. 177,493, Sept. 2, 1971, Pat. No. 3,852,230. This application Sept. 18, 1974, Ser. No. 507,213
Claims priority, application Czechoslovakia, Oct. 14, 1970, 6906-70

Int. Cl. B44d 1/02

U.S. Cl. 427—430

3 Claims

1. A method of impregnating a mat of fibrous material for imparting pliability and softness to the impregnated fibrous material which comprises immersing such a mat into an impregnating composition comprising an aqueous liquid composition consisting essentially of a mixture of about 100 parts of a polyurethane made from hydroxyl poly (tetramethylene oxide), butanediol 1,4 and diphenylmethane-p,p'-diisocyanate to about 5 to 50 parts of a copolymer having a molecular weight of from about 400 to 3,000 and formed from (a) about 1-20 molar % of an olefinic monomer having 2 to 4 carbon atoms and (b) about 99 to 80 molar % of a second olefinic monomer having the formula:



wherein R is a radical selected from the group consisting of linear C₄₋₂₀ alkyl radicals and carbocyclic radicals having the ability to combine with an alkyl radical, said olefinic monomer consisting essentially of hydrocarbon units.

3,900,622

CONCRETE SURFACE TREATING MATERIAL AND METHOD OF TREATING CONCRETE SURFACES

John A. Caramanian, 1021 Summer St., Cincinnati, Ohio 45204

Continuation-in-part of Ser. No. 837,989, June 3, 1969, abandoned. This application Aug. 28, 1973, Ser. No. 392,246

Int. Cl. C08f 45/42

U.S. Cl. 427—445

4 Claims

1. A composition for treating a concrete surface which consists essentially of approximately 26 parts of an epoxy resin, 6.5 parts of an organic elastomeric polysulfide resin which is compatible with the epoxy resin, 19 parts methyl isobutyl ketone, 19 parts ethylene glycol monoethyl ether acetate, 60 parts ethylene glycol monobutyl ether, and 67 parts diluent, all parts being by weight, the composition having a viscosity of 9 to 25 seconds measured with a Number 4 Ford cup.

3,900,623

CARPETS AND RUGS

Thomas L. Hatt, Westervoort (Gld.), Netherlands, assignor to Akzona Incorporated, Asheville, N.C.

Filed Oct. 23, 1973, Ser. No. 408,549

Claims priority, application United Kingdom, Oct. 30, 1972, 50017/72

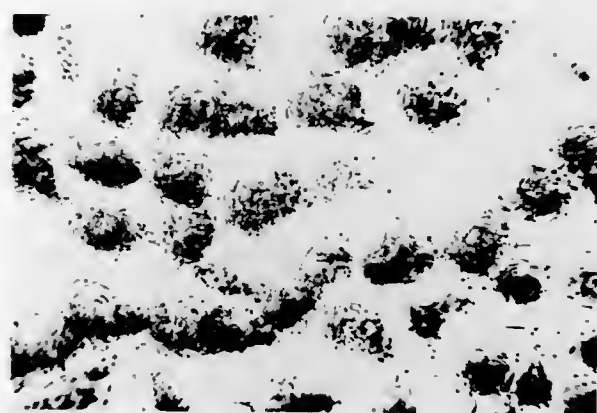
Int. Cl. D03d 27/00; D04h 11/00

U.S. Cl. 428—92

12 Claims

1. A carpet or rug having a cut pile formed by tufts anchored in a backing, each tuft comprising at least two multifilament yarns twisted together to form pile loops, said yarns having been prepared by twisting filaments together, the direction of twist of the yarns to form the pile loops being opposite to the direction of the twist of the filaments, said pile loops being cut whereby said filaments become unwound and entangled only at the tops of the tufts to provide a strong coherent structure.

11. A method for making an improved carpet or rug having tufts of filaments which are entangled at the tops thereof to form a strong coherent structure which comprises twisting filaments at about 50 to about 250 turns per meter to form a yarn, twisting at least two of the resulting yarns together at



about 50 to about 250 turns per meter in a direction opposite to the twist of the filaments, tufting the resulting twisted yarns into a backing on a tufting machine to form pile loops, cutting the pile loops after tufting whereby the cut filaments unwind and become entangled at the top of the tufts.

3,900,624

STATIC CHARGE RESISTANT SYNTHETIC YARNS

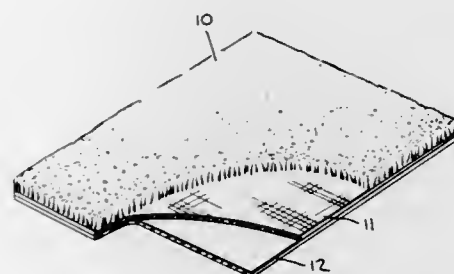
Walter G. Schare, Forge Hollow, Lakeville, Conn. 06039
Continuation-in-part of Ser. No. 187,082, Oct. 6, 1971, Pat. No. 3,778,331. This application July 10, 1973, Ser. No. 377,968

The portion of the term of this patent subsequent to Dec. 11, 1990, has been disclaimed.

Int. Cl. A47g 27/02; B32b 15/08, 27/34

U.S. Cl. 428—97

6 Claims



1. A metallized yarn constituted by a flat ribbon formed of nylon film whose faces are rough lusterless surfaces, the faces of said ribbon being coated with an extremely thin layer of a metal selected from the class consisting of tin and aluminum which covers the rough surfaces to create a non-reflective three-dimensional lattice of high electrical conductivity forming an electrically-conductive path to discharge electrostatic charges.

3,900,625

SELF-EXTINGUISHING COMPOSITE LAMINATE

Wei-Gwo Chen, Houston, Tex., assignor to Griffolyn Company, Inc., Houston, Tex.

Filed Mar. 26, 1973, Ser. No. 344,499

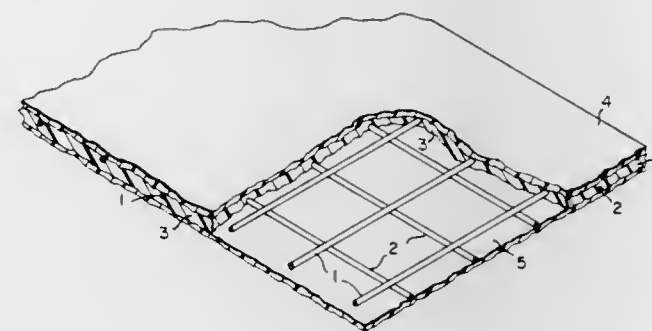
Int. Cl. B32b 3/14, 17/04, 27/12

U.S. Cl. 428—110

2 Claims

1. As an article of manufacture, a flexible foldable plastic laminate comprising a grid of non-woven oriented reinforcing fibers selected from the group consisting of polyamides, polyesters, polyolefins, glass, polymers from halogen containing monomers in which the halogen content is at least 10%, polyester fibers containing a fire retardant halogen content and polyimidozoles having a melting point higher than the melting points of the outer films of said laminate, said films consisting of polyolefin films each less than 11 mil thick and each having

incorporated therein as a fire retardant chlorinated paraffin and antimony oxide, the surfaces of said fibers and the inner surfaces of said films being essentially covered, and mutually united, by an organic adhesive having incorporated therein as



a fire retardant a halogenated lower alkyl phosphate and antimony oxide, said fire retardants being present in said films and said adhesive in sufficient quantity that the laminate formed thereof is self-extinguishing.

3,900,626

TANTALUM WIRE REINFORCED SILICON NITRIDE ARTICLES AND METHOD FOR MAKING THE SAME

John J. Brennan, Portland, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Sept. 4, 1973, Ser. No. 394,432

Int. Cl. B32b 5/02

U.S. Cl. 428—110

2 Claims

1. An impact resistant fiber-reinforced composite article suitable for use in a gas turbine engine environment comprising a plurality of continuous tantalum wires preferentially oriented and completely embedded in a hot-pressed, Si₃N₄ matrix which approaches full densification, each of said wires having a layer of tantalum silicide thereon, said tantalum silicide layer being chemically bonded to said wires and said matrix, said composite article exhibiting, as a mode of breakage as a result of Charpy impact tests, either a combination of ductile fiber elongation plus interfacial splitting or ductile fiber fracture.

3,900,627

CONVEYOR BELT

Attilio Angioletti, and Aurelio Brollo, both of Milan, Italy, assignors to Industrie Pirelli S.p.A., Milan, Italy

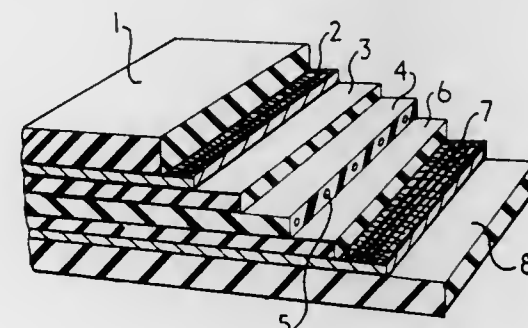
Filed Dec. 14, 1972, Ser. No. 314,983

Claims priority, application Italy, Dec. 17, 1971, 32524/71; France, Nov. 2, 1972, 72.38752; Netherlands, Oct. 10, 1972, 7213693

Int. Cl. B32b 5/12

U.S. Cl. 428—114

6 Claims



1. A conveyor belt comprising a layer of elastomeric material, at least one layer of coplanar cords embedded in the said elastomeric material and disposed parallel to one another and arranged along the larger dimension of the belt, the diameter of the cords being substantially equal to the thickness of the elastomeric material layer, a layer of fabric disposed on each side of the layer of cords, an elastomeric material disposed

between each fabric layer and the adjacent layer of cords and a cover layer of elastomeric material disposed at each face of the conveyor belt, said fabrics having their warp threads arranged along the larger dimension of the conveyor belt and their weft threads arranged transversely to the conveyor belt, said warp threads having an extensibility greater than that of the cord, said weft threads having an extensibility less than that of the warp threads, the ratio of the thickness of the layers of elastomeric material disposed between the fabric and said layer of cords to the diameter of said cords being less than 0.166, and the ratio of the distance between the axes of two cords and the diameter of one cord ranging between 1.5 and 6.

3,900,628

PRETENSIONED SCREEN PANEL

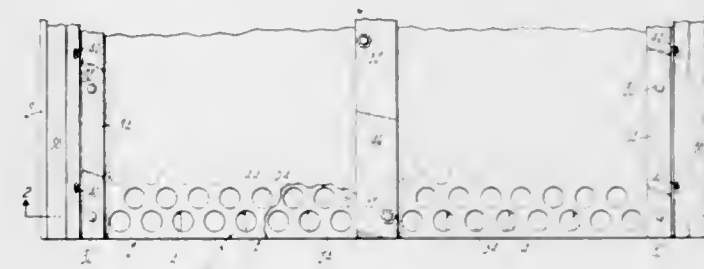
William E. Stewart, Somers, Conn., assignor to Linatex Corporation of America, Stafford Springs, Conn.

Filed June 13, 1973, Ser. No. 369,496

Int. Cl. B07b 1/46; B32b 3/10

U.S. Cl. 428—134

8 Claims



1. A laminated flexible screen panel well suited for use in a vibratory screening operation consisting essentially of a substantially planar laminated sheet structure having an array of screen openings extending therethrough, said laminated structure being comprised of a pretensioned fabric reinforced flexible, nonmetallic backing layer and an abrasion resistant, elastomeric facing layer relatively soft with respect to said backing layer superimposed on and permanently bonded to the backing layer throughout its planar extent, the size of the openings in the backing layer being at least equal to the size of the openings in the facing layer in registry therewith, said elastomeric layer having a substantially planar top wear surface, said backing layer being comprised of a high tensile strength, pretensioned non-extensible material and having sufficient dimensional stability to resist extensive sagging and fluttering across its unsupported transverse extent when subjected to vibratory screening action.

3,900,629

POROUS LAMINATE AND METHOD OF MANUFACTURE

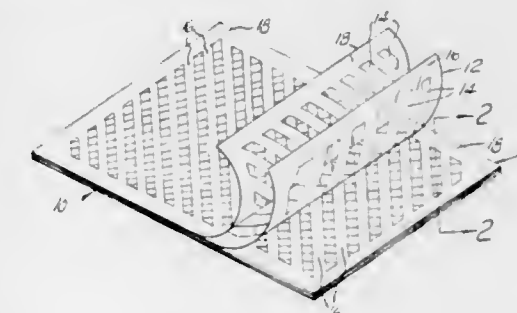
Andrew R. Spencer, Bloomfield Hills, Mich., assignor to The Bendix Corporation, Teterboro, N.J.

Filed Sept. 14, 1973, Ser. No. 397,467

Int. Cl. B32B 3/26

U.S. Cl. 428—136

7 Claims



1. A porous laminate comprising: a plurality of lamina having slot patterns formed therein, said lamina stacked in intimate contact with each other

with said slot patterns of adjacent lamina overlapping and extending transversely to each other to provide intersecting slot patterns, said stacked lamina being bonded to each other to form said laminate, whereby said intersecting slot patterns form fluid flow passages through said laminate.

7. A method of manufacturing a porous material comprising:

forming a slot pattern in a plurality of lamina; stacking said lamina in intimate contact with each other with said slot patterns of adjacent lamina overlapping and extending transversely to each other; and bonding said lamina to each other to form a porous laminate.

3,900,630

DECORATIVE ARTICLE HAVING INORGANIC COATING FILM HAVING RUGGED PATTERN INCLUDING CRACKS AND PROCESS FOR PRODUCTION THEREOF

Hiroshi Makishima, Yokohama; Toshio Shinohara, Fujiwara; Yukio Kawahara, Yokohama; Hiroshi Nii, Kamakura; and Setsuo Ebine, Yokohama, all of Japan, assignors to Dai Nippon Toryo Co., Ltd., Osaka-shi, Japan

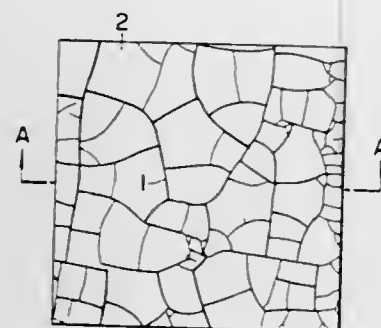
Filed Dec. 28, 1973, Ser. No. 429,175

Claims priority, application Japan, Dec. 29, 1972, 47-3719

Int. Cl. B44d 5/00

U.S. Cl. 428-155

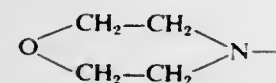
11 Claims



1. A decorative article comprising an inorganic coating film having a rugged pattern including cracks, said inorganic coating film comprising a silicate having the formula



wherein x is a number of from 0.5 to 10 and M is a member selected from the group consisting of (1) alkali metals belonging to Group IA of the Periodic Table, (2) mono-, di-, tri- and tetraamines represented by the formula R_4-N- (R is H , $-CH_2OH$, $-C_2H_4OH$, $-CH_3$, $-C_2H_5$ or the like) and (3) groups represented by the formula $-N=C(NH_2)_2$ or



a hardening agent in an amount of 4 to 30% by weight based on the silicate, and a pigment.

3,900,631

FLEXIBLE NONWOVEN SHEETS FOR USE AGAINST SPLASHING LIQUIDS

Rudolph Woodell, Richmond, Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 24, 1973, Ser. No. 409,025

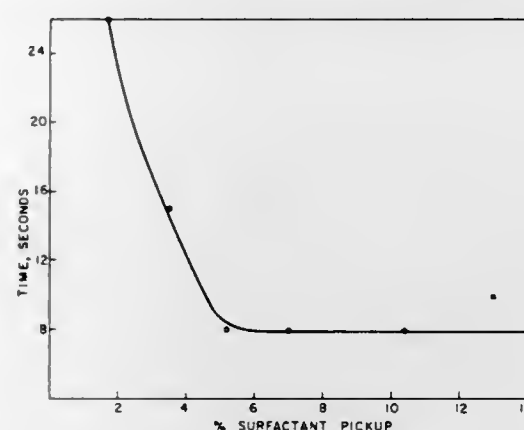
Int. Cl. B44d 1/10, 5/00

U.S. Cl. 428-195

6 Claims

1. A flexible nonwoven sheet for use against splashing liquids comprised of film-fibril elements of linear polyolefin, the film-fibril elements on one side of said sheet being fused together to form a continuous surface and having adhered

thereto a continuous coating of a hydrophobic polymer effective as a liquid barrier, the other side of the sheet having areas



of unfused film-fibril elements and having a wetting agent adsorbed thereon.

3,900,632

LAMINATE OF TISSUE AND RANDOM LAID CONTINUOUS FILAMENT WEB

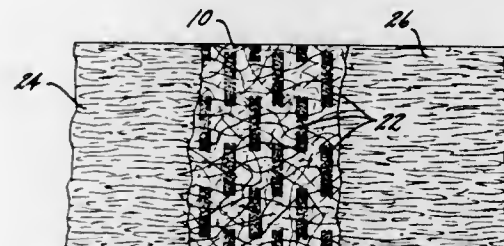
James E. Robinson, Crescent Drive, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Continuation-in-part of Ser. No. 15,033, Feb. 27, 1970, abandoned. This application Apr. 3, 1972, Ser. No. 240,754

Int. Cl. B32b 7/14, 7/10, 3/30

U.S. Cl. 428-196

11 Claims



1. A nonwoven fabric-like laminate comprising, in combination,

a. a low basis weight, single ply nonwoven web of substantially continuous and randomly deposited, molecularly oriented filaments of a hydrophobic thermoplastic polymer, said web prepared by continuous polymer extrusion through a spinneret and filament deposition on a supporting surface and having a basis weight of up to about 0.7 oz./yd.² with the filaments thereof having a denier of about 0.5-about 6,

b. a web of cellulose wadding having a basis weight of about 0.3-about 0.7 oz./yd.² disposed in laminar relationship with respect to the single ply web (a), and

c. patterned areas of adhesive disposed between said webs which penetrate into said cellulose wadding web at spaced open areas in a manner so as to provide delamination resistance in combination with fabric-like flexibility, said nonwoven web and cellulose wadding web combining to provide a material with desirable isotropic strength characteristics, fabric-like opaqueness, absorbency, and a natural fabric feel.

3,900,633

PATTERNED TRANSFER SHEET

Jean Gustave Jules Piron, Allee du Ploche, 1-1400 Nivelles, Belgium

Filed Mar. 19, 1973, Ser. No. 342,584

Claims priority, application United Kingdom, Mar. 28, 1972, 14491/72

Int. Cl. B41m 3/12, 5/00

U.S. Cl. 428-204

11 Claims

1. A patterned transfer sheet carrying on one surface thereof a plurality of elements or points which together form patterns, any selected portion of one or more of said patterns,

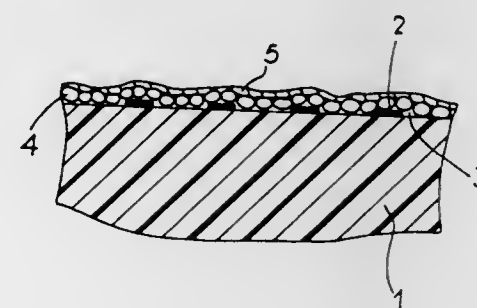
being transferable and adherable to a receptor surface, comprising

1. a light-transmitting temporary support, carrying on its surface,

2. an unplasticized transferable film comprising:

a. a pigmented layer forming the elements or points of the patterns and being composed of a printing ink with two main components;

b. a light-transmitting layer formed of one of the main components of said ink and containing dispersed microcapsules covering at least the portion of the pattern carrying surface of said temporary support, said microcapsules containing a solvent for said light-transmitting film with said solvent having at the very most a swelling action on said printing ink and no solubilizing action on the temporary support, and



3. a coating of a pressure-sensitive adhesive covering said light-transmitting layer, the organic components of said pressure-sensitive adhesive being miscible with said light-transmitting layer and soluble in the solvent contained within said microcapsules so that upon transfer, the light-transmitting layer and the pressure-sensitive adhesive interreactable with one another to provide, after transfer to said receptor surfaces, a strong adhesion to said receptor surface, pressure application to the surface of said sheet opposite the surface carrying said transferable film enabling the transfer to a receptor surface in contact with said film the portion of the patterns, composed of one or more of said elements or points, corresponding to the area of applied pressure.

11. A patterned transfer sheet carrying on one surface thereof a plurality of elements or points which together form patterns, said patterns, or any selected portion of one or more of said patterns, being transferable and adherable to a receptor surface, comprising

1. a light-transmitting temporary support, carrying on its surface,

2. an unplasticized transferable film comprising:

a. a pigmented layer forming the elements or points of the patterns and being composed of a printing ink with two main components;

b. a light-transmitting layer formed of one of the main components of said ink and containing dispersed microcapsules covering at least the portion of the pattern carrying surface of said temporary support, said microcapsules containing a solvent for said light-transmitting film with said solvent having at the very most a swelling action on said printing ink and no solubilizing action on the temporary support, and

3. a coating of a pressure-sensitive adhesive covering said light-transmitting layer, the organic components of said pressure-sensitive adhesive being miscible with said light-transmitting layer and soluble in the solvent contained within said microcapsules so that upon transfer, the light-transmitting layer and the pressure-sensitive adhesive interreactable with one another to provide, after transfer to said receptor surfaces, a strong adhesion to said receptor surface, pressure application to the surface of said sheet opposite the surface carrying said transferable film enabling the transfer to a receptor surface in contact with said film the portion of the patterns, composed of one or more of said elements or points, corresponding to the

area of applied pressure, said temporary support being parchment paper coated with silicone, said ink comprising 10 parts by weight of pigments, 60 parts by weight of ethylhydroxyethylcellulose, 30 parts by weight of nitrocellulose 1/2 seconds, said light-transmitting film comprising 100 parts by weight of ethylhydroxyethylcellulose, 100 parts by weight of microcapsules having a diameter less than 60 microns, said layer of pressure-sensitive adhesive having a thickness of at most 25% of that of said light-transmitting film without taking into account the size of the microcapsules contained in said light-transmitting film, the pressure-sensitive adhesive comprising 10 parts by weight of polyisobutylene having a number average molecular weight of 300,000, 20 parts by weight of polyisobutylene having a number average molecular weight of 8000, 10 parts by weight of polyisobutylene having a number average molecular weight of 820, 13 parts by weight of methylcyclohexane resin and 10 parts by weight of primary particles of silica having a diameter less than 50 millimicrons.

3,900,634

GLAZING PANEL WITH CONDUCTIVE STRIPS

Emile Plumet, Gilly, and Pierre Demoulin, Fleurus, both of Belgium, assignors to Glaverbel-Mecaniver S.A., Watermaal-Boitsfort, Belgium

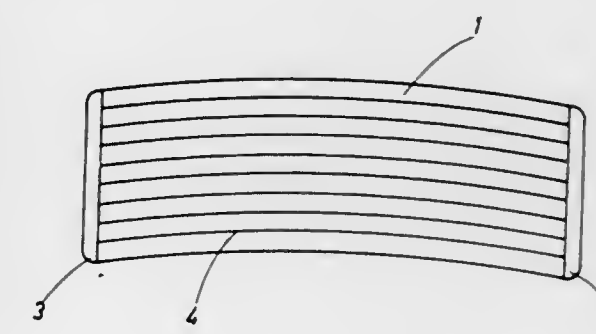
Filed July 12, 1973, Ser. No. 378,402

Claims priority, application Luxemburg, July 21, 1972, 65769

Int. Cl. C23c 17/00; H05b 3/12

U.S. Cl. 428-208

10 Claims



1. In a method of manufacturing an electrically heatable transparent glazing panel by providing a transparent glass substrate with at least one electrically conductive coating strip in which heat can be generated by the Joule effect, the improvement comprising: applying onto said substrate, to form at least one such strip, a coating composition composed of a suspension or paste incorporating electrically conductive metal particles substantially all of which are below 5 microns in size, intermixed with glass particles, the glass particles being composed of intermixed particles of lead borosilicate glasses of different softening points, at least the lower one of which softening points is lower than that of the glass composing said substrate, and substantially all of which glass particles are below 5 microns in size; and subsequently firing such applied composition to cause at least that one of such glasses which has such lower softening point to serve as a binder for the metal particles; and wherein the metal particles are present in the composition in sufficient proportion in relation to the glass particles to render the coating strip electrically conductive.

6. In a transparent glazing panel composed of a glass substrate carrying at least one attached electrically conductive coating strip in which heat can be generated by the Joule effect, the improvement wherein said strip comprises electrically conductive metal particles together with intermixed lead borosilicate glasses of at least two different softening points, at least the lower softening point glass serving as a binder for said metal particles, substantially all of the metal particles are below 5 microns in size and at least the higher softening point

glass is present in the form of particles substantially all of which are below 5 microns in size.

3,900,635

MULTILAYER SHRINKABLE FILM FOR POULTRY BAGS
James O. Funderburk, Jr., Bolingbrook, and Stephen J. Vicik, Darien, both of Ill., assignors to Union Carbide Corporation, New York, N.Y.

Filed Feb. 22, 1972, Ser. No. 227,789

Int. Cl. B32b 27/08

U.S. Cl. 428—213

14 Claims

1. A multilayer heat-shrinkable film having a shrinkage of at least 25 percent in the transverse direction at a temperature of from about 90° to about 95°C., and being suitable for use in fabricating bags for frozen poultry, said film consisting essentially of:

- a. a biaxially oriented first layer comprising a first ethylene polymer selected from the group consisting of ethylene homopolymer having a density not greater than about 0.93, and ethylene copolymer, said first ethylene polymer having a melt index of less than about 2.3; and
- b. a biaxially oriented second layer comprising a blend of an ionomer and a second ethylene polymer, said second ethylene polymer being selected from the group consisting of ethylene homopolymer having a density not greater than about 0.93, and ethylene copolymer; wherein each layer constitutes from about 20 percent to about 80 percent of the total thickness of said film.

3,900,636

METHOD OF TREATING CUTTING EDGES

Francis Russell Curry, Maidenhead, and Colin John Clipstone, Spencers Wood, both of England, assignors to The Gillette Company, Boston, Mass.

Continuation of Ser. No. 218,824, Jan. 18, 1972, abandoned.

This application July 18, 1974, Ser. No. 489,751

Claims priority, application United Kingdom, Jan. 21, 1971, 2847/71

Int. Cl. C23c 17/00

U.S. Cl. 427—38

7 Claims

1. A process for improving a coated or uncoated steel cutting edge, said process comprising implanting ions selected from the group consisting of metals, reactive non-metals and inert gases into said cutting edge, said ions being propelled at said cutting edge in the form of an ion beam at energies of between about 10 to 400 KeV until a dose of between about 1×10^{14} ions/cm² to 6×10^{17} ions/cm has been implanted.

3,900,637

COLLAPSABLE CHRISTMAS TREE APPARATUS

Charles F. Byrd, 1129 New Hampshire Ave., Washington, D.C. 20037, and William Dailey, 36842 Weber, Sterling Heights, Mich. 48077

Filed Nov. 6, 1974, Ser. No. 521,313

Int. Cl. A47g 33/06

U.S. Cl. 428—9

10 Claims

1. A collapsible artificial tree apparatus comprising: a plurality of rotatable tree limbs, each having a free end, an intermediate pivoting section and a base end; an inner means adapted to make contact with the base of said rotatable limbs; an outer means which runs substantially parallel to said inner means and which serves as a fulcrum to support the pivoting section of said rotatable tree limbs; and a lever means for causing said inner means to move in a direction parallel to said outer means, said lever means being adapted to contact both said inner means and said outer means during said movement, wherein the movement of said lever means in a first direction causes said rotatable tree limbs to rotate toward a folded position and movement of said lever means in an

opposite second direction causes said limbs to rotate toward an open position.

3,900,638

INFLATABLE CHRISTMAS TREE ORNAMENT

Salvatore J. Du Bato, 416 Puamamane, Honolulu, Hawaii 96821

Filed May 31, 1974, Ser. No. 474,988

Int. Cl. A47g 33/08

U.S. Cl. 428—11

3 Claims

1. A Christmas tree ornament comprising: a suitably shaped and decorated inflatable hollow body having an orifice; a vertical hollow sleeve open at both ends, one end of the sleeve being secured to the orifice, the sleeve extending out of the body; a flexible elongated member secured at one end to the other end of the sleeve; and a plug adapted for removable sealing engagement with the other end of the sleeve and secured to the other end of the member.

3,900,639

METHOD FOR COATING SURFACES OF A WORKPIECE BY SPRAYING ON A COATING SUBSTANCE

Richard Lauterbach, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

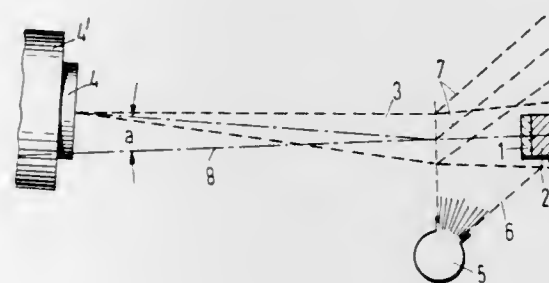
Filed Oct. 29, 1973, Ser. No. 410,891

Claims priority, application Germany, Nov. 7, 1972, 2254491

Int. Cl. B05b 7/16, 7/20

U.S. Cl. 427—34

2 Claims



1. A method of applying a homogeneous coating of material on a surface of a workpiece comprising creating a jet of heated particles of material, directing the jet of particles along a path at the surface to be coated, removing decomposition products from the jet of particles prior to contacting the surface of the workpiece by directing a flow of gas transversely to the path of the jet to deflect the decomposition products from the path of the jet of particles prior to the particles of the jet striking the surface of the workpiece, and collecting the decomposition products deflected from the path of the jet of particles.

3,900,640

HOLLOW, MULTI-LAYERED, CROSS-LINKED PLASTIC STRUCTURES AND PROCESS FOR PRODUCING SAME
Camillo M. Vecchiotti, Ridgewood, N.J., assignor to Amerace Corporation, New York, N.Y.

Filed Oct. 29, 1973, Ser. No. 410,815

Int. Cl.² B65D 85/84, 11/20; B32B 27/36, 27/32

U.S. Cl. 428—36

5 Claims

1. A laminate comprising a first layer of a thermoplastic polyester and a second layer of a cross-linkable polyethylene, the melting point of the polyethylene being lower than the melting point of the polyester, said layers being directly cross-linked at their interface.

3,900,641

METHOD OF FORMING DECORATOR PANELS

Gerald A. Woodman, Bel Air; Joseph Uscher, Studio City, and Henry C. Jacoby, North Hollywood, all of Calif., assignors to Lancaster Products Company, Redondo Beach, Calif.

Continuation of Ser. No. 219,895, Jan. 21, 1972, abandoned.

This application Mar. 15, 1974, Ser. No. 451,579

Int. Cl.² B41M 1/12, 1/30

U.S. Cl. 428—38

13 Claims

1. A simulated stained glass made by creating a raised boundary grid pattern around colored panels located on a sheet of clear plastic, employing the method comprising the steps of:

- a. placing a coarse silk screen, approximating the mesh size used to strain and clean batches of paint, over the plastic sheet;
- b. placing a mask including the desired grid pattern over the screen;
- c. applying a thick viscous opaque paint to the plastic sheet through the masked screen;
- d. removing the screen and mask from the surface of the plastic sheet; and
- e. drying the viscous opaque paint.

3,900,642

BINDING STRIP FOR BOOK LEAVES

Marcel Michel, 13 Rue du Fort, Noisy Le Roi, France

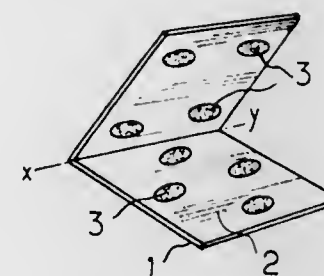
Filed Dec. 11, 1972, Ser. No. 314,242

Claims priority, application France, Dec. 17, 1971, 71.45465

Int. Cl. B32b 3/04; C09j 7/02

U.S. Cl. 428—40

3 Claims



1. An adhesive binding strip comprising a flexible outer sheet having a medial transverse fold, a coating of pressure-sensitive adhesive extending substantially completely over the inner surface of said outer sheet, an inner sheet secured to said outer sheet by said pressure-sensitive adhesive and having openings therethrough which expose areas of said pressure-sensitive adhesive which are distributed to either side of said fold for contact with leaves to be bound, said areas of pressure-sensitive adhesive to one side of said fold being entirely out of registry with said areas of pressure-sensitive adhesive to the other side of said fold when the strip is folded together, and a coating of anti-adhesive material over substantially the entire inner surface of said inner sheet.

3,900,643

DECALCOMANIA WITH REMOVABLE LACQUER COATING

Karl-Heinz Kluge, Mainz, and Alfred Eppich, Zirndorf, both of Germany, assignors to F. Xavier Leipold, Zirndorf, Germany

Filed Dec. 20, 1972, Ser. No. 317,036

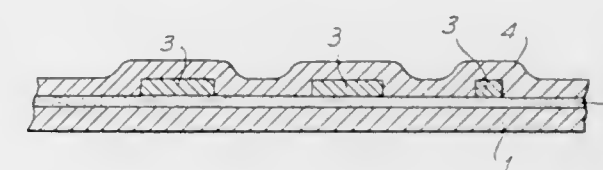
Int. Cl.² B44F 1/00

U.S. Cl. 428—40

6 Claims

1. A decalcomania suitable for the decoration or labelling of articles, comprising a carrier, an adhesive layer on one face of said carrier, an inscription of a pigment-containing insoluble resin on said adhesive, and a lacquer mask over said inscription, said carrier being so bonded to said adhesive layer as to be readily removable from same immediately prior to application of said inscription to an article, and said lacquer

mask being readily removable from said inscription subsequent to application of same to said article by reason of the



fact that said insoluble resin of said inscription is unattached by the solvent from which said lacquer is applied.

3,900,644

HEAT RESISTANT LAMINATE

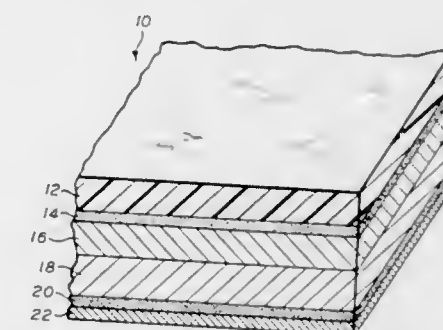
Martin M. Sackoff, and Gregory F. Pulaski, both of Glen Falls, N.Y., assignors to United Merchants and Manufacturers, Inc., New York, N.Y.

Filed Mar. 20, 1973, Ser. No. 343,159

Int. Cl. B32b 15/08

U.S. Cl. 428—40

8 Claims



1. A flexible heat resistant laminate comprising a series of layers bonded together, said layers consisting essentially of a top layer of a transparent polyester film having a high softening point, a second layer of a hard surfaced, flexible non-woven, fibrous strengthening and indentation resistant material, a third layer of a flexible metal foil heat sink, a fourth layer of a pressure-sensitive adhesive, and a bottom layer of a release sheet.

3,900,645

SCORED ADHESIVE LAMINATE

Burton D. Morgan, Hudson, Ohio, assignor to Morgan Adhesives Company, Stow, Ohio

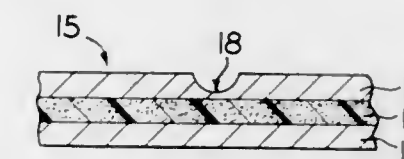
Division of Ser. No. 689,435, Dec. 11, 1967, Pat. No.

3,570,337. This application Oct. 7, 1970, Ser. No. 78,887

Int. Cl. B32b 3/00

U.S. Cl. 428—41

4 Claims



1. A flexible laminate for use as a label, decal or the like, comprising a face sheet, a layer of pressure sensitive adhesive secured to the back surface of said face sheet, and a fiber paper backing layer removably secured to said adhesive layer and having a reduced thickness potential tear line formed in such material, the fibers of the paper backing layer being appreciably compacted at the potential tear line, the paper having a release coating on its inner surface which engages the adhesive layer.

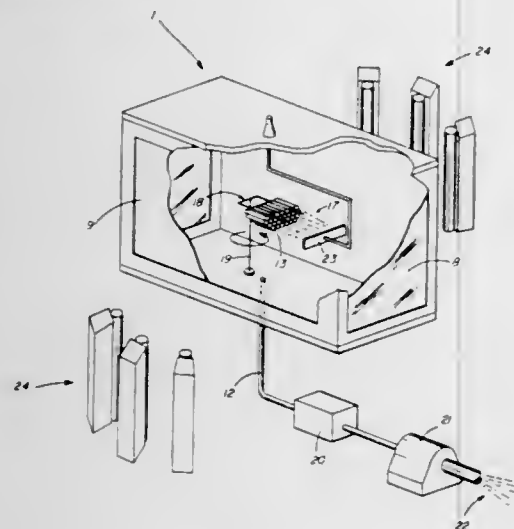
3,900,646

METHOD OF PLATING METAL UNIFORMLY ON AND THROUGHOUT POROUS STRUCTURESRobert A. Clyde, 165 Burlington Ave., Rochester, N.Y. 14619
Filed Feb. 21, 1973, Ser. No. 334,261

Int. Cl. C23c 11/02

U.S. Cl. 427—55

8 Claims



1. A process for uniformly plating metal by vapor deposition on and throughout one of a ceramic or alumina substrate having the structure of one of a honeycomb or sponge, the process comprising heating in an enclosure a rotatably suspended substrate by radiant means until the substrate reaches the decomposition temperature of a thermally decomposable metal bearing gaseous compound, rotating the substrate, passing a thermally decomposable metal bearing compound into the enclosure along with a carrier gas so as to have the gas come into intimate contact with the substrate while continuously rotating the substrate at a rate of at least about two rpm and continuously activating and deactivating the radiant means so as to maintain the temperature of the workpiece at about the decomposition temperature of the metal bearing gas, whereby the metal is uniformly plated on and throughout the substrate.

3,900,647

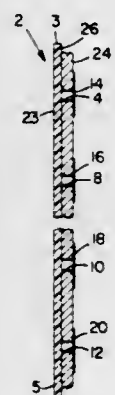
MESSAGE TAPE FOR INSTRUMENT DISPLAY SYSTEMS
Vincent Scardilli, West Orange, and Arthur Sessman, Jersey City, both of N.J., assignors to The Bendix Corporation, Teterboro, N.J.

Filed Dec. 1, 1971, Ser. No. 203,621

Int. Cl. B32b 3/10

U.S. Cl. 428—67

3 Claims



1. A message tape for instrument display systems, formed in a closed loop configuration, comprising:
a clear plastic backing lamination;
a metallic lamination over the backing lamination and having a plurality of messages cut therethrough to the backing lamination;

a plurality of color coding dyes overlaying the metallic lamination and each of said dyes selectively extending through a cut message;
a clear plastic lamination covering the metallic lamination and having an adhesive surface for adhering to the metallic lamination; and
the backing lamination retaining the color coding dyes.

3,900,648

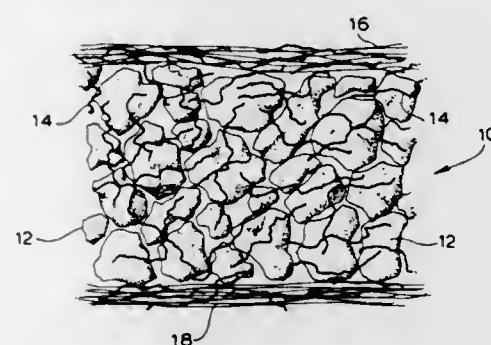
SPACE FILLING MATERIAL AND METHOD
Imre Jack Smith, 283 Hillhurst Blvd., Toronto, Ontario, Canada

Filed Mar. 18, 1974, Ser. No. 452,395

Int. Cl. B32b 3/20, 5/16

U.S. Cl. 428—71

13 Claims



1. A light-weight, space filling material for use as upholstery padding, packing material, thermal insulation, cushion filling, and the like and comprising:
a mass of non-woven crimped synthetic filaments, and,
random shaped cellular foam particles interspersed in said mass and engaged by and entangled in said filaments.

3,900,649

MOULDED ARTICLES

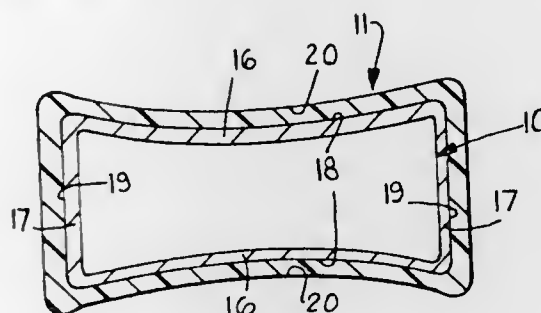
Frederick Leslie Hart, Cressage, and Herbert John Sharp, Greenford, both of England, assignors to GKN Sankey Limited, Stafford and Aro Plastics Development Limited, London, both of, England

Continuation-in-part of Ser. No. 189,937, Oct. 18, 1971, abandoned. This application Jan. 25, 1974, Ser. No. 436,647
Claims priority, application United Kingdom, Oct. 19, 1975, 49523/70

Int. Cl. B32b 7/04

U.S. Cl. 428—76

4 Claims



1. A composite article comprising a rigid, metal reinforcing core completely embedded in a covering layer of plastics material so that the external surface of the core and the internal surface of the covering layer of plastics material are free to move relative to one another and are not bonded together, the plastics material having a coefficient of thermal expansion over a predetermined temperature range greater than the co-efficient of thermal expansion of the metal of the core, the external surface of the core presenting to the internal surface of the covering of plastics material a first, smoothly-curved concave surface part which, at a first temperature at the upper end of said range, is engaged by a portion of the covering layer which has a second, concave, smoothly-curved, external surface, the first and second surfaces being aligned, the curvatu-

re of said first surface and the thickness of said portion of the covering layer being such that at a second temperature at the lower end of said range said portion of the covering layer has lifted away from said first surface thus reducing the tensile stresses which occur in said portion of the covering layer due to differential contraction of the plastics material and the metal of the core as the temperature of the article is reduced from the upper end of said temperature range to the lower end of said range as compared with the tension stresses which would occur in said portion of the plastics material if it were unable to lift off said first concave surface.

b. a layer of adhesive applied to the surface layer and having flock fibers embedded therein, and
c. a foam core adjacent the layer of adhesive and into which the flock fibers extend, said foam core forming a marginal zone with the layer of adhesive and flock fibers, the improvement comprising flock fibers of varying lengths whereby the density of the marginal zone of the foam core decreases approximately continuously to the interior of the core.

3,900,650

FIBRILLAR LOCKING SYSTEM

James W. Sedore, 11 Jason St., Pittsfield, Mass. 01201

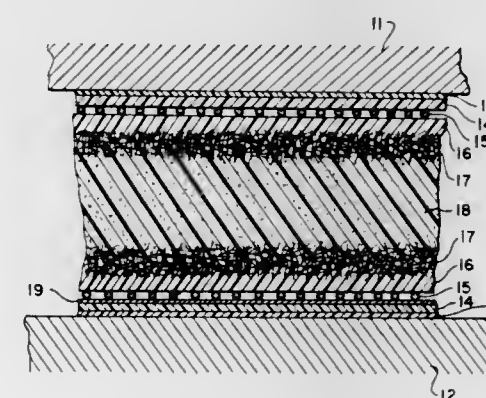
Filed Feb. 8, 1973, Ser. No. 330,544

Int. Cl. B32b 5/18, 27/40; B29d 27/00

U.S. Cl. 428—86

10 Claims

U.S. Cl. 428—92



1. A laminated sandwich panel comprising:
a first outer laminate resin layer;
a first inner layer bonded at an outer surface thereof to said outer laminate resin layer, said first inner layer comprising a mixture of resin and a sufficient quantity of chopped fibers per unit area of said first inner layer to form a fibrillar surface of a multiplicity of said fibers extending from the inner surface of said first inner layer; and
a layer of foamed synthetic resin bonded on one surface to said first inner layer with said extending fibers of said first inner layer interlocking with said layer of foamed synthetic resin.

3,900,651

HEAVY DUTY SANDWICH ELEMENT

Peter Hoppe, Troisdorf; Gustav Drouven, Bensberg; Martin Wandel, Dormagen; Ernst Gutschik, Dormagen; and Dieter Brokmeyer, Dormagen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

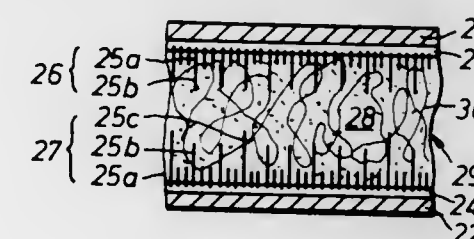
Filed Oct. 31, 1973, Ser. No. 411,521

Claims priority, application Germany, Nov. 11, 1972, 2255454

Int. Cl. B32b 3/14, 3/26

U.S. Cl. 428—86

8 Claims



1. In a heavy duty sandwich element having:
a. a surface layer

3,900,652

MALE PIECE OF THE VELVET TYPE FASTENER

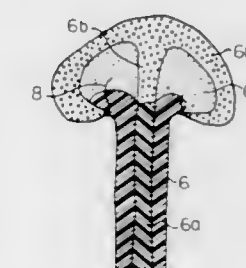
Tohru Uraya, Kobe, and Eichi Kudo, Osaka, both of Japan, assignors to Kanebo, Ltd., Tokyo, Japan

Filed May 22, 1973, Ser. No. 362,802

Claims priority, application Japan, May 29, 1972, 47-65501

Int. Cl. B29d 21/00

2 Claims



1. In a male piece of a velvet type fastener provided with a plurality of male elements projected upright from a base fabric, an improvement comprising, each male element made of a synthetic monofilament yarn composed of a core portion extended along an axis thereof and a sheath portion encircling said core portion, said core portion composed of a first polyamide polymer of a lower melting point while said sheath portion is composed of a second polyamide polymer of higher melting point in comparison with said first nylon polyamide resin, said male element being composed of a stem and a laterally expanded cap formed at a top end portion of said stem, said cap being composed of a core and an outer layer formed with said first polyamide polymer and an intermediate portion being formed with said second polyamide polymer, the temperature difference between said melting points of said first and second polyamide polymers being between 40° and 60°C.

3,900,653

COMPOSITE POLYESTER FILMS AND PROCESS FOR PRODUCING THE SAME

Robert Riboulet, Crepieux, and Eugene Charvet, Saint-Maurice de Beymost, both of France, assignors to La Cellophane, Paris, France

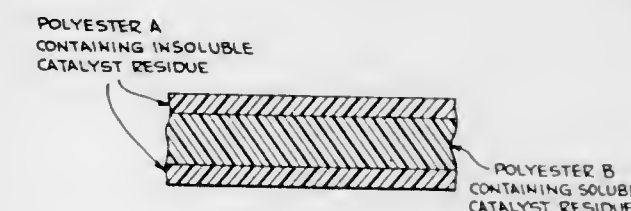
Filed Feb. 13, 1973, Ser. No. 332,183

Claims priority, application France, Feb. 16, 1972, 72.05115

Int. Cl. B32b 33/00, 27/18, 27/36

U.S. Cl. 428—212

9 Claims



1. A composite monoaxially or biaxially oriented polyester laminate consisting essentially of (A) at least one polyester film layer formed from the polycondensation of a dicarboxylic acid and a glycol having from 2 to 6 carbon atoms in the presence of an ester interchange and polycondensation catalyst system, the residue of which is at least substantially insoluble

ble in the polyester melt, and (B) at least one polyester film layer formed by the polycondensation of a dicarboxylic acid and a glycol having from 2 to 6 carbon atoms in the presence of an ester interchange and polycondensation catalyst system, the residue of which is at least substantially soluble in the polyester melt wherein said layer (A) containing the insoluble catalyst residue comprises from 5 to 25% by weight of the composite polyester laminate and wherein said layer (B) containing the soluble catalyst comprises from 95 to 75% by weight of the composite polyester laminate.

3,900,654

COMPOSITE POLYMERIC ELECTRIC HEATING ELEMENT

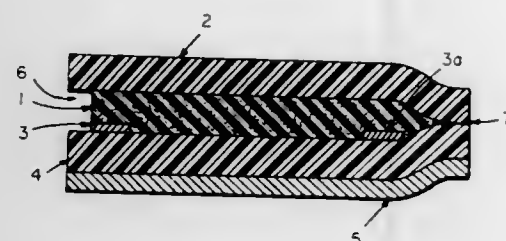
Henry Joseph Stinger, Devon, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 162,870, July 15, 1971, abandoned, which is a continuation-in-part of Ser. No. 60,551, Aug. 3, 1970, abandoned. This application Dec. 11, 1972, Ser. No. 314,021

Int. Cl. H05b 3/36; B32b 27/36, 15/08

U.S. Cl. 428-214

13 Claims



1. A laminated structure useful as an electric heating element which comprises

1. a layer of electrically conductive elastomeric material containing electrically conductive carbon black dispersed in a fluorocarbon elastomer, said layer having a specific resistivity of about 0.1-4 ohm centimeters,

said fluorocarbon elastomer being an elastomeric copolymer of vinylidene fluoride and at least one other fluorine-containing monomer,

the conductive carbon black content of said layer being about 10-100 parts per 100 parts by weight of said elastomer,

2. a film of electrically insulating polymeric material in superposed adherent relation with layer (1), and

3. a conductor means in attached contact with layer (1) for electrically connecting the structure to an electric power supply.

3,900,655

LAMINATED SAFETY GLASS AND/OR PLASTIC

Larry G. Wolgemuth, Cherry Hill, and Benjamin C. Wilbur, Williamstown, both of N.J., assignors to Atlantic Richfield Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 359,822, May 14, 1973, abandoned. This application Jan. 25, 1974, Ser. No. 436,429

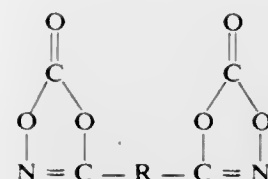
Int. Cl. C08g 22/04; B32b 27/40

U.S. Cl. 428-214

22 Claims

1. A laminated safety glass article comprising an interlayer of a preformed polyurethane elastomer sandwiched between a layer of glass and a second layer selected from the group consisting of glass and rigid transparent plastic wherein said polyurethane is the reaction product of

a. a cyclic nitrile carbonate compound having the formula



wherein R is a divalent hydrocarbon radical having about 1 to 50 carbon atoms, and

b. at least one hydroxyl-containing compound selected from the group consisting of (1) a high molecular weight glycol having a number average molecular weight of from about 550 to about 4,000, and (2) a low molecular weight diol having primary or secondary aliphatic hydroxyl groups and a molecular weight less than about 250, said laminated article being the product of heating and pressing an assembly wherein said preformed elastomer sheet is in interposed relation with said layers.

3,900,656

SYNTHETIC STRUCTURE FOR COVERING A SURFACE

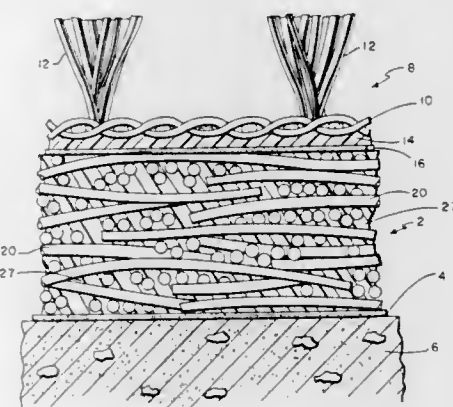
John C. Schmidt, 231 Chestnut St., Haddonfield, N.J. 08033

Filed June 21, 1973, Ser. No. 372,207

Int. Cl. B32b 5/18

U.S. Cl. 428-215

10 Claims



1. In a recreational surface covering a subsurface, including a top wear surface layer selected for a recreational activity, at least one underlayment layer between the top surface and the subsurface comprising,

an integral layer containing substantially uniform adhering strands,

each strand being a closed cell gas inflated organic polymeric material having polyhedral-shaped cells defined by film-like cell walls about 2 microns thick, substantially impervious to the gas contained therein,

each strand being about 50 mils in diameter and about 3 inches long,

the strands being oriented substantially parallel to the plane of the layer in crossing directions,

said strands being bound in a resilient open celled binder material such that the underlayment can be compressed to expell air from the open cells of the binder and yet retains the pneumatic resilience of the trapped gas in the closed cells in the strands, and

means providing a moisture barrier between the underlayment and the environment around the surface,

the thickness of the underlayment layers being at least about 0.5 inches, said thickness being selected to provide in combination with other layers a recreational surface suitable for selected recreational activity.

3,900,657

HEAT RESISTANT MATERIAL

Ryozo Nakayama, and Sigeru Itakura, both of Yokohama, Japan, assignors to Tokai Metals Co., Ltd., Japan

Filed May 5, 1972, Ser. No. 250,690

Claims priority, application Japan, May 17, 1971, 46-32374

Int. Cl. B05c 9/04

U.S. Cl. 428-216

5 Claims

1. A heat resistant material, which consists of an aluminum or aluminum alloy foil of a thickness to 0.02mm having finely powdered aluminum adherently bound to both side surfaces thereof to a thickness of no more than 2 microns.

3,900,658

POLYFLUOROCARBON ARTICLE AND METHOD FOR MAKING THE SAME

Tuneo Fujii, Suita, and Yukiharu Nakamura, Ibaraki, both of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Continuation of Ser. No. 117,021, Feb. 19, 1971, abandoned.

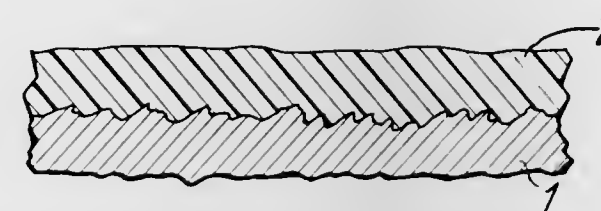
This application July 12, 1973, Ser. No. 378,500

Claims priority, application Japan, Feb. 21, 1970, 45-15121

Int. Cl. B32b 31/24, 27/06

U.S. Cl. 428-220

3 Claims



1. A sintered polyfluorocarbon film or sheet having a chemically metallizing layer on one side in order to improve the adhesiveness of said film or sheet

wherein said polyfluorocarbon is selected from the group consisting of polytetrafluoroethylene and a copolymer of tetrafluoroethylene and hexafluoropropylene and said chemically metallizing layer comprising a water-insoluble crystalline metal salt or oxide of a metal selected from the group consisting of iron, copper, zinc, manganese, chromium, sodium, potassium, and aluminum, wherein said film or sheet consists essentially of said polyfluorocarbon and said chemically metallizing layer.

3,900,659

WOVEN CLOTH SEAM

Donald George MacBean, Pierrefonds, Canada, assignor to JWI Ltd., Montreal, Canada

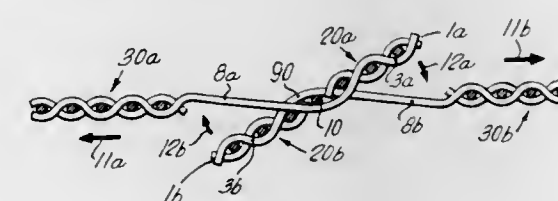
Filed Sept. 18, 1973, Ser. No. 398,444

Claims priority, application United Kingdom, Sept. 23, 1972, 44124/72

Int. Cl. B32B 7/08; D21F 1/12

U.S. Cl. 428-223

17 Claims



1. A seam for joining together two ends of a woven cloth having a length and a width;

said cloth comprising;

a plurality of warp strands extending in the lengthwise direction of said cloth and disposed in side-by-side relationship along the width of said cloth;

a first area of warp adjacent one end of said cloth and formed by said warp strands with interwoven weft strands;

a second area of warp adjacent the other end of the cloth and formed by said warp strands with interwoven weft strands;

a third area of warp interposed between said first and second areas and formed by said warp strands with interwoven weft strands;

said third area having a first end adjacent said first area and a second end adjacent said second area;

a selected first set of warp strands of said first area being joined with corresponding warp strands of said third area by a first weftless continuation of said warp strands;

a selected second set of warp strands of said second area being joined with corresponding warp strands of said third area by a second weftless continuation of said warp strands;

each of said warp strands in said first and second weftless continuations of said warp strands comprising a crimp;

some of said crimps extending in an upward direction relative to said cloth, and others of said crimps extending in a downward direction relative to said cloth;

said seam comprising;

an intermesh of said crimps in said first and said second weftless continuations;

said crimps being adjacent one another along the width of said cloth when said warp strands of said first weftless continuation of said warp strands and said second weftless continuation of said warp strands are intermeshed;

whereby the crimps cooperate to form a cylindrical-like opening along the width of the cloth;

and coupling means being inserted in said cylindrical-like opening to thereby fasten one end of said cloth to the other end thereof;

characterized in that said first area of warp lies on said second weftless continuation between said coupling means and the second end of the third area on one side of the intermesh, and in that said second area of warp lies on said first weftless continuation between said coupling means and the first end of said third area on the other side of the intermesh.

3,900,660

MANUFACTURE OF SILICON METAL FROM A MIXTURE OF CHLOROSILANES

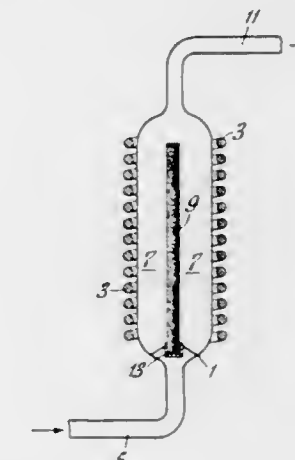
Howard B. Bradley, St. Mary's, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 282,108, Aug. 21, 1972, abandoned, which is a continuation of Ser. No. 81,835, Oct. 19, 1970, abandoned. This application Jan. 11, 1974, Ser. No. 432,438

Int. Cl. C23c 11/06

U.S. Cl. 427-248

1 Claim



1. The process for making polycrystalline silicon metal of semiconductor quality which comprises providing a gaseous chlorosilane mixture of dichlorosilane and trichlorosilane in combination with hydrogen gas in a reactor containing a hot deposition surface at a temperature of about 850°C. to about 1,300°C., causing decomposition of dichlorosilane and tri-

chlorosilane in said reactor and depositing such as polycrystalline metal on said hot deposition surface, and the amount of dichlorosilane in said mixture comprises from about 5 mole percent to about 70 mole percent thereof and the chlorosilane mixture comprises 5 percent to 30 percent of the moles of the combination of said mixture and hydrogen provided in said reactor.

3,900,661

GLASS FIBER REINFORCED ELASTOMERS

Frank Paul McCombs, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Apr. 27, 1973, Ser. No. 354,980

Int. Cl. C07f 7/18; C07d 1/00; B32b 17/04

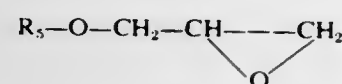
U.S. Cl. 428-250

18 Claims

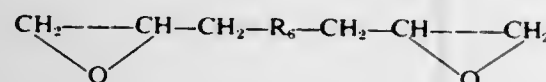
1. Glass fibers having a coating thereon, said coating comprising (A) a blend of resorcinol-aldehyde resin and an elastomer and (B) from 0.1 to 25 percent by weight of a combination of organo silicon compounds comprising 1 to 35% of (1) an amino-substituted organo silane or its hydrolysis products and 99 to 65% of (2) an organo silicon compound containing at least one beta-haloalkoxy group in the form of a reaction product of (a) a halosilane



wherein R_3 is an organic group, X is halogen and e is 0 or an integer from 1 to 2, (b) an alkylene oxide containing 2 to 6 carbon atoms and (c) an epoxide selected from the group consisting of a monoepoxide of the formula



wherein R_5 is a functional organic group selected from the group consisting of aryl, alkyl and substituted alkyl, alkenyl and acryl group and a methacryl group; a diepoxide of the formula



wherein R_6 is a divalent organic group selected from the group consisting of oxyalkyleneoxy, oxyalkyleneoxyalkyleneoxy and a divalent aromatic group; and a cycloalkane diepoxide, with the reaction product containing 1 to 3 epoxide equivalents of (b) and 0.5 to 3.0 epoxide equivalents of (c) per mole of halosilane.

3,900,662

BONDABLE ADHESIVE COATED POLYIMIDE FILM AND LAMINATES

Edward L. Yuan, Philadelphia, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

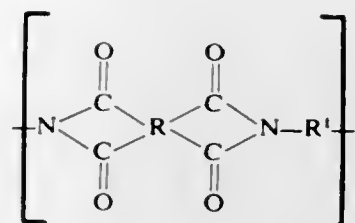
Filed Jan. 17, 1973, Ser. No. 324,493 The portion of the term of this patent subsequent to July 2, 1991, has been disclaimed.

Int. Cl. B32b 27/04

U.S. Cl. 428-252

15 Claims

1. An acrylic adhesive coated polyimide film, at least 2 mils in thickness said polyimide film having the recurring unit:



wherein R is a tetravalent radical containing at least one ring of six carbon atoms, said ring characterized by benzenoid unsaturation, the four carbonyl groups being attached directly to separate carbon atoms in the ring of the R radical and each pair of carbonyl groups being attached to adjacent carbon atoms in the ring of the R radical; and wherein R^1 is a divalent radical containing at least two rings of six carbon atoms, each ring characterized by benzenoid unsaturation, and in which no more than one of the valence bonds is located on any one of said rings of said R^1 radical;

said acrylic adhesive being a terpolymer having 15-65% by weight of the terpolymer of acrylonitrile, methacrylonitrile, or mixtures thereof, 30-84% by weight of the terpolymer of butyl acrylate, ethyl acrylate, 2-ethylhexyl acrylate, lauryl acrylate, or mixtures thereof, and 1-15% by weight of the terpolymer of methacrylic acid, acrylic acid, itaconic acid, or mixtures thereof, said acrylic adhesive also containing a cross-linking resin selected from the group consisting of phenol formaldehyde, melamine formaldehyde and hexamethoxymethyl melamine, said resin being present in an amount of about 1-10% by weight of the terpolymer.

8. Laminate comprising the acrylic adhesive coated polyimide film of claim 1 adhered to at least one substrate selected from the group consisting of metal, woven or non-woven fabric or natural or synthetic fiber, woven or non-woven fabric or natural or synthetic fiber impregnated with polymer, paper of natural or synthetic fibers and film of polymer.

3,900,663

METHOD OF TREATING FABRICS

Eugene S. Barabas, Watchung, N.J., and Edwin M. Smolin, Easton, Pa., assignors to GAF Corporation, New York, N.Y.

Filed Apr. 11, 1973, Ser. No. 349,988

Int. Cl. B44d 1/02, 1/44; C08f 29/42

U.S. Cl. 428-254

20 Claims

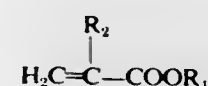
1. A process for treating knitted textile materials, comprising applying to said materials an aqueous emulsion of an interpolymer comprising approximately by weight:

a. 20 to 79% of a vinyl ester having the formula:



wherein R is a straight or branched chain C_{1-18} alkyl radical;

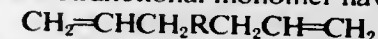
b. 20 to 79% of an ester of an α,β -monoolefinically unsaturated carboxylic acid having the formula:



wherein R_1 is straight or branched lower alkyl and R_2 is hydrogen or C_{1-8} alkyl;

c. 1 to 10% of an α,β -monoolefinically unsaturated carboxylic acid; and

d. 0.5 to 2% of a bifunctional monomer having the formula:



wherein R is selected from the group consisting of oxygen, an amine radical, and a dicarboxylic acid radical, and thereafter subjecting the treated knitted textile materials to curing conditions, whereby 0.1 to 5% by weight of the cured polymeric product per dry weight of the knitted textile material remains on said knitted textile materials.

3,900,664

FLAME PROOFING OF FABRICS

George T. Miller, Lewistown, N.Y., assignor to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.

Filed Mar. 2, 1973, Ser. No. 337,349

Int. Cl. C09d 5/18

U.S. Cl. 428-269

21 Claims

1. Flame proofed synthetic fabric consisting essentially of a normally flammable synthetic material selected from the group consisting of poly(hexamethylene adipamide), polycapromide, and poly(m-phenyleneisophthalamide) which material contains a flame retardant amount of an ammonium salt of phosphoric acid, selected from the group consisting of mono and diammonium acid phosphate and mixtures thereof.

21. A process for increasing the Oxygen Index of a fabric consisting essentially of a normally flammable synthetic polymer material selected from the group consisting of poly(hexamethyleneadipamide), polycapromide, and poly(m-phenyleneisophthalamide) which consists essentially of applying to said polymer material a flame retarding amount of at least one ammonium salt of phosphoric acid selected from the group consisting of mono and diammonium acid phosphate.

3,900,665

FLAME RETARDING OF SOLID SUBSTRATES WITH HYDROXYALKYLPHOSPHONATE CARBAMATES

Edward D. Weil, Hastings-on-Hudson, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

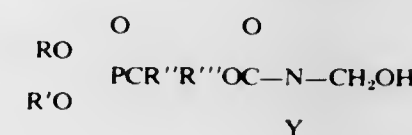
Division of Ser. No. 157,699, June 28, 1971, Pat. No. 3,835,204. This application Aug. 20, 1973, Ser. No. 389,606

Int. Cl. C09d 1/00

U.S. Cl. 428-276

16 Claims

1. A process for flame retarding a flammable, cellulosic solid substrate, said process comprising applying to the substrate an effective amount of at least one hydroxyalkylphosphonate carbamate corresponding to the formula:



where R and R' can be the same or different and are selected from the group consisting of C_1-C_4 alkyl, allyl and C_2-C_4 mono- and dihaloalkyl groups wherein said halo substituents are chloro or bromo and are substituted upon a carbon atom which has at least one intervening carbon atom between it and the oxygen linkage, Y is H or CH_2OH and R'' and R''' can be the same or different and are selected from the group consisting of H and C_1-C_4 alkyl groups and thereafter curing said carbamate so as to form an insoluble fire retardant finish on said substrate.

3,900,666

FLAME RETARDANT TEXTILES BY USE OF NITROGENOUS TYPE RESIN AND ANTIMONY OXIDE

Hubert H. St. Mard, New Orleans; Albert S. Cooper, Jr., and Carl Hamalainen, both of Metairie, La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed June 4, 1974, Ser. No. 476,236

Int. Cl. C09d 1/00

U.S. Cl. 428-290

14 Claims

1. A process for imparting flame retardancy to a blended cotton and halogen-containing synthetic textile, the process comprising:

a. impregnating a blended fabric whose composition is in the range of about from 85-15 percent to 15-85 percent by weight, respectively, of cotton and a halogen-containing synthetic textile, to about from 60 to 100 percent wet pickup with a solution containing:

1. about from 6 to 20 percent of a crosslinking and/or polymer-forming N-methylol-type resin selected from the group consisting of trimethylol melamine, methylated methylol melamine, dimethylol dihydroxy ethylene urea and propylene urea.
2. about from 1 to 8 percent of an acid type catalyst selected from the group consisting of a mixture of zinc acetate and zinc nitrate, a mixture of tartaric acid and ammonium chloride, a mixture of citric acid and magnesium chloride, ammonium chloride, and zirconium acetate; and
3. about from 1 to 20 percent of antimony oxide as a flame retardant additive; and
- b. drying at about 2-4 minutes at about 185°F and curing the impregnated blended fabric for about 2-4 minutes at about 285°F.

3,900,667

REINFORCING WIRE ELEMENT AND MATERIALS REINFORCED THEREWITH

Joris Moens, Kortrijk, Belgium, assignor to N.V. Bekaert S.A., Zvevegem, Belgium

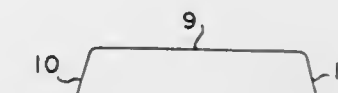
Continuation-in-part of Ser. No. 69,623, Sept. 4, 1970, abandoned. This application Sept. 8, 1972, Ser. No. 287,236

Claims priority, application Netherlands, Sept. 12, 1969, 6913898

Int. Cl. E04c 5/00; B32b 5/16

U.S. Cl. 428-292

4 Claims



1. A two-phase material having increased tensile strength and resistance to crack propagation comprising:
 - a. a hardened matrix material,
 - b. a plurality of wire elements substantially uniformly distributed and randomly oriented in said matrix material so that the average distance between the centroids of each element is less than one-fourth of the wire length of each element,
 - c. said wire elements having a length to diameter ratio of between about 50 to 1 and 200 to 1,
 - d. said wire elements each comprising a substantially straight central portion having a curvature of less than about 45° and having a length of at least one-half of the total length of said element and a pair of terminal portions connected by said central portion,
 - e. said terminal portions comprising a substantially straight terminal part having a length of at least five times the diameter of said elements and further comprising a bending connecting said substantially straight terminal part to said substantially straight central portion,
 - f. said bending being around a radius curvature less than the diameter of said wire segment and forming an angle of between 90° and 135° between said terminal part and said central portion,
 - g. each of said terminal portions being so constructed and arranged that a normal to one of said terminal portions at every point therealong passes outside the other of said terminal portions,
 - h. said elements being thusly so constructed and arranged as to inhibit hooking-in of each of said elements with respect to the other of said elements.

3,900,668

INTERNAL COMPONENTS FOR GAS TURBINES OF PYROLYTIC GRAPHITE SILICON CARBIDE CODEPOSIT

Eugene L. Olcott, Falls Church, Va., assignor to Atlantic Research Corporation, Alexandria, Va.
Continuation-in-part of Ser. No. 161,007, July 9, 1971, Pat. No. 3,717,419, and a continuation-in-part of Ser. No. 65,899, Aug. 21, 1970, Pat. No. 3,738,906. This application Oct. 30, 1972, Ser. No. 301,777. The portion of the term of this patent subsequent to June 12, 1990, has been disclaimed.

Int. Cl. B32h 5/10

U.S. Cl. 428—297

9 Claims

1. A rotor blade, stator vane or shroud ring for a gas turbine prepared from a composite comprising of pyrolytic graphite and silicon carbide in which said pyrolytic graphite comprises layers of crystallites of pyrolytic graphite and said silicon carbide comprises codeposited crystalline aciculae embedded in said crystallites, said aciculae being oriented so that the longitudinal axes of said aciculae are substantially aligned in the c-direction relative to the a-b plane of the associated pyrolytic graphite crystallite, said silicon carbide comprising between about 5% and 95% by volume of said composite.

3,900,669

PRESSURE-SENSITIVE RECORDING SHEET WITH MICROCAPSULES HAVING POLYUREA WALLS

Masataka Kiritani, Shizuoka, Japan, assignor to Fuji Photo Film Co., Ltd., Minami Ashigara-shi, Japan

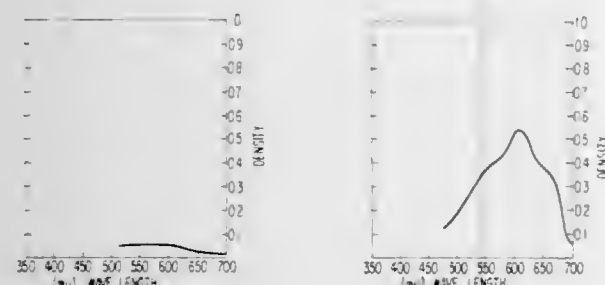
Filed Oct. 19, 1972, Ser. No. 298,888

Claims priority, application Japan, Oct. 21, 1971, 46-83483

Int. Cl. B41m 5/00; B01j 13/00

U.S. Cl. 428—307

23 Claims



1. A pressure-sensitive recording sheet which comprises a base material and (1) a layer of a colorless or substantially colorless color-forming substance rendered colored upon reaction with a developer, encapsulated in walls of a polyurea obtained by the reaction of a polyisocyanate or isocyanate-containing polyisocyanate adduct with a polyamine or polyamine adduct, and (2) a layer of developer capable of giving a colored substance by reaction with said color-forming substance, layers (1) and (2) being on the same surface of said base material.

3,900,670

LAMINATED FILM STRUCTURE

Richard Masayoshi Ikeda, Chadds Ford, Pa., and Rudolph Henry Michel, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 315,561, Dec. 15, 1972, abandoned. This application Sept. 7, 1973, Ser. No. 395,251

Int. Cl. B32b 5/16, 27/08, 27/32

U.S. Cl. 428—308

11 Claims

1. A film laminate consisting essentially of:

a. a biaxially stretched thermoplastic film having a cellular polymer matrix prepared from:

1. a polymer having a crystallinity of at least about 60% at room temperature taken from the group consisting of homopolymers, copolymers, and blends thereof of α -olefins having 2 to 10 carbon atoms, having dispersed therein

2. about 26 to 50 weight percent of an inert filler, based on the weight of the polymer and inert filler, having an average particle size of about 0.3 to 8 microns, wherein the filled polymer has an elongation of at least about 1,000% at a temperature within the range which is above the line drawing temperature and below the melting temperature of the polymer, said film having at least about 30% voids, an elongation at break at 22°C. of at least about 8% in each direction of stretch and about 2 to 40 surface ruptures per square millimeter; laminated to at least one side thereof

b. a polymeric grease-proof layer of about 0.5 to 1 mil taken from the group consisting of:

1. high-density polyethylene wherein the density of the polymer is from about 0.94 to 0.98 g./cc. at 25°C.,

2. polypropylene having a crystallinity of at least about 60%, and

3. an ethylene-based ionomeric resin prepared by copolymerizing a mixture of ethylene and unsaturated monocarboxylic acid in the presence of a free radical polymerization initiator, followed by bringing the copolymer into contact with an ionizable compound to effect cross-linking forming an ionized copolymer, and

c. at least one polymeric layer taken from the group consisting of:

1. 60 to 70 parts by weight of ethylene-vinyl acetate copolymer having an ethylene content of 70 to 85 weight percent based on the weight of the copolymer present, about 20 to 25 weight percent of a wax having a melting point of at least 60°C., about 5 to 15 parts by weight of a dispersing agent of sodium-ammonium rosinate having at least 75% ammonium rosinate content, about 0.5 to 5 parts by weight of ammonium proteinate, about 1 to 10 parts by weight of a polymerized rosin ester and about 0.5 to 5 parts by weight of a stearate salt of a metal selected from Group II of the Periodic Table and having an atomic number between 12 and 30,

2. an ethylene-wax terpolymer composition comprised of 25 to 99 weight percent of a petroleum wax and 75 to 1 weight percent of a terpolymer of at least 65 weight percent ethylene, at least 5 weight percent of an ester, an alkyl acrylate or an alkyl methacrylate and about 0.1 to 3.0 weight percent of a monomeric acid selected from the group of methacrylic, acrylic, itaconic, maleic and fumaric acid,

3. an ethylene-based ionomeric resin prepared by copolymerizing a mixture of ethylene and unsaturated monocarboxylic acid in the presence of a free radical polymerization initiator followed by bringing the copolymer into contact with an ionizable compound to effect crosslinking forming an ionized copolymer,

4. low-density polyethylene wherein the density is about 0.91 to 0.93 g./cc. at 25°C., and

5. a vinylidene chloride copolymer composition.

8. The film laminate of claim 1 additionally including at least one layer of polypropylene having a crystallinity greater than 60% and containing a pigment.

3,900,671

CAPSULE-CARRYING SHEETS OR WEBS

Brian Edward Evans, Beaconsfield, England, assignor to Wiggins Teape Research & Development Limited, London, England

Filed Oct. 6, 1972, Ser. No. 295,484

Claims priority, application United Kingdom, Oct. 18, 1971, 48270/71

Int. Cl. B41c 1/06; B41m 5/00

U.S. Cl. 428—323

9 Claims

1. A process for producing a capsule-carrying sheet or web comprising a base sheet or web having on a surface thereof a coating comprising capsules, protective particles as protection for the capsules, and a binder for the capsules and the protective particles, wherein the protective particles are starch parti-

cles and the binder is a protein binder with the starch particles and the protein binder being both derived from a common milled flour source, which process comprises (a) treating milled flour to provide the starch particles and the protein binder, and (b) coating the starch particles and protein binder onto the base sheet or web together with the capsules.

3,900,672

PROCESS FOR COATING AN OPTICAL MATERIAL AND THE RESULTING PRODUCT

Vivan Joseph Hammond, London; Peter Norgate, Middlesex, both of England; Fumio Onoki, Tokorosawa, Japan; Hajime Kamiya, and Kazuaki Ohno, both of Tokyo, Japan, assignors to Hoya Lens Co., Ltd., Tokyo, Japan

Filed Apr. 4, 1973, Ser. No. 347,824

Int. Cl. B32b 17/06; C03c 17/28

U.S. Cl. 428—334

2 Claims

1. A process for improving the property of the surface of an optical material by providing a coating mixture comprising 25 to 70% by weight of polyacrylic acid, 0.5 to 10% by weight of hexamethoxymethylmelamine, 0.1 to 2% by weight of γ -aminopropyl triethoxysilane, 0.01 to 0.1% by weight of polyethylene glycol fatty acid ester and 25 to 75% by weight of a solvent selected from the group consisting of 2-ethoxyethanol, ethyl alcohol, ethylene glycol, monoethyl ether and a mixed solution of two or more thereof, based on the weight of the mixture, the sum of the percentages being 100%, coating the surface of the optical material with said mixture by a spinning method and drying and hardening the coating at a heating temperature of 50°C to 150°C to form a coating having a thickness of 10 μ to 1,000 μ .

3,900,673

AUTOMOTIVE GLAZING STRUCTURE

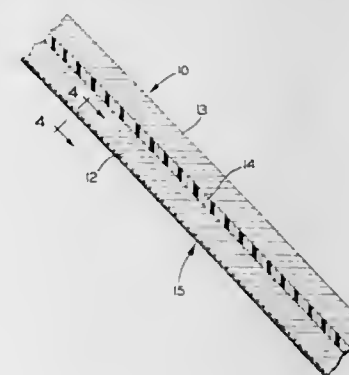
Paul T. Mattimoe, Toledo; Theodore J. Motter, Genoa; John J. Hofmann, Toledo, all of Ohio, and Siegfried H. Herliczek, Ottawa Lake, Mich., assignors to Libbey-Owens-Ford Company, Toledo, Ohio

Continuation-in-part of Ser. No. 284,137, Aug. 28, 1972, abandoned. This application Sept. 13, 1974, Ser. No. 505,830

Int. Cl. B32b 17/06, 27/40

U.S. Cl. 428—339

10 Claims



1. A transparent, temperature stable glazing structure for automotive vehicles that is free of apparent distortion and birefringence color and comprises the combination; with a sheet of glass that is to become the inboard glass sheet when said glazing structure is mounted and that has a second sheet of glass heat and pressure laminated to a surface thereof with an interposed layer of controlled relatively low adhesion-high penetration resistant plastic; of a relatively soft and extensible but penetration resistant protective plastic cover that includes a layer of relatively high adhesion plastic selected from the group consisting of polyvinyl butyral, ionomer resin, polyurethane and polyvinyl chloride heat and pressure laminated to the surface of said inboard glass sheet that is to become the inboard glass surface of said glazing structure, a more durable sheet of stretched plastic selected from the group consisting of polyethylene terephthalate, polyurethane, cellulose triacetate,

fluorinated copolymers of ethylene and propylene, copolymers of acrylic acid esters, and polyvinyl fluoride having a thickness of 0.5 mil to 14 mils arranged with its major axis of stretch at right angles to the horizontal dimension of said glazing structure on said relatively high adhesion plastic layer, and a relatively harder abrasion resistant coating selected from the group consisting of (a) mixtures of polysilicic acid and copolymers of fluorinated monomers with compounds containing alcohol groups, and (b) hydrolysis and condensation products of methytriethoxy silane on the exposed surface of said more durable sheet of stretched plastic, the combined thickness of said interposed layer of relatively low adhesion plastic and said relatively high adhesion plastic layer not exceeding 0.065 inch, and the combined thickness of said plastic sheet and said layers not exceeding 0.075 inch.

3,900,674

INTERPOLYMERS OF ALKYL ACRYLATES, UNSATURATED CARBOXYLIC ACIDS AND UNSATURATED HYDROXYLATED AMIDES AS PRESSURE-SENSITIVE ADHESIVES AND ARTICLES THEREOF

Alfred M. Coffman, Avon Lake, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Continuation-in-part of Ser. No. 321,731, Jan. 8, 1973, abandoned, which is a division of Ser. No. 178,462, Sept. 7, 1971, Pat. No. 3,738,971. This application June 20, 1974, Ser. No. 481,063

Int. Cl. C08f 15/00

U.S. Cl. 428—355

7 Claims

1. A pressure-sensitive adhesive article comprising a backing material and bonded thereto a polymer consisting essentially of (1) from about 76 percent to about 98 percent by weight of an alkyl acrylate wherein the alkyl group contains at least 6 and up to about 18 carbon atoms, (2) up to 20 percent by weight of an alkyl acrylate wherein the alkyl group contains 4 to 5 carbon atoms, (3) from about 2 percent to about 4 percent by weight of an α,β -olefinically unsaturated carboxylic acid, and (4) about 0.04 percent to about 0.15 percent by weight of an N-alkylol amide of an α,β -olefinically unsaturated carboxylic acid, all weights based upon the weight of the polymer.

3,900,675

ROCKET NOZZLE COMPRISING PYROLYTIC GRAPHITE-SILICON CARBIDE MICROCOMPOSITE INSERTS

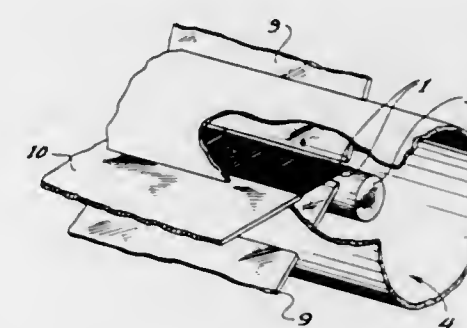
Eugene L. Olcott, Falls Church, Va., assignor to Atlantic Research Corporation, Alexandria, Va.

Division of Ser. No. 65,899, Aug. 21, 1970, Pat. No. 3,738,906. This application Apr. 24, 1973, Ser. No. 354,048. The portion of the term of this patent subsequent to June 12, 1990, has been disclaimed.

Int. Cl. B32b 5/12

U.S. Cl. 428—367

17 Claims



1. Rocket nozzle insert of pyrolytic graphite microcomposite comprising pyrolytic graphite containing embedded therein codeposited silicon carbide comprising aciculae of silicon carbide, the longitudinal axes of said aciculae being

aligned in the *c*-direction relative to the *a-b* plane of the associated pyrolytic graphite crystallite at the point of embedment, said silicon carbide comprising about 5 to 95 percent by volume of said microcomposite, said insert being substantially cylindrical.

4. The rocket nozzle insert of claim 1 in which the microcomposite comprises a matrix containing embedded therein at least one reinforcing refractory filament or strand layer, said filament or strand layer comprising a plurality of unidirectional and substantially parallel, laterally spaced, individual, continuous refractory filaments or strands, said matrix comprising crystallite layers of said pyrolytic graphite-silicon carbide microcomposite nucleated from each of said individual filaments or strands and interconnected to form a continuous matrix phase surrounding and interconnecting each of said individual filaments or strands comprising said embedded at least one filament or strand layer.

3,900,676

ANTISTATIC FILAMENTS

Thomas Alderson, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 752,724, Aug. 14, 1968, abandoned, which is a continuation-in-part of Ser. No. 668,951, Sept. 19, 1967, abandoned. This application Aug. 14, 1973, Ser. No. 388,137

Int. Cl. C08g 41/04; D02g 3/00

U.S. Cl. 428-372

8 Claims

1. A synthetic filament of a fiber-forming, linear polymer selected from the group consisting of polyamides and polyesters having durably antistatic properties due to a content of from 2-15 percent by weight of the filament of an N-alkyl polycarbonamide modifier having a molecular weight of at least about 800 to about 5000 and a bulk Log R in the dry state of less than about 10.5, said modifier being dispersed throughout the filament as a separate phase in the form of conductive, microscopic, elongated particles aligned essentially parallel to the filament axis with a length to diameter ratio of at least about 100, and wherein each alkyl substituent of said polycarbonamide contains from 2 to 18 carbon atoms, at least 40 percent of said N-alkyl polycarbonamide being extractable from said filament on boiling with isopropyl alcohol for two hours, said filament being characterized by a conductivity substantially more than 25 times that of an unmodified filament of the same polymer.

3,900,677

EXPANSION JOINT SEAL

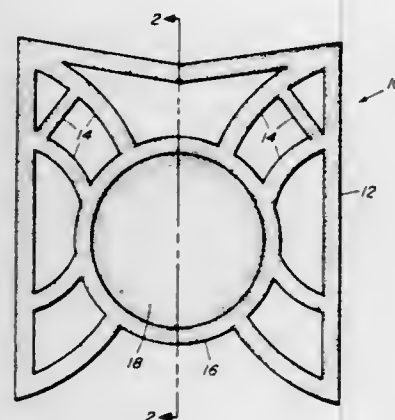
Dennis G. Barber, 11916 Geib Ave., Hartville, Ohio 44632, assignor to Fox Industries, Baltimore, Md.

Filed Nov. 24, 1972, Ser. No. 309,517

Int. Cl. E01c 11/10

U.S. Cl. 428-373

6 Claims



1. An expansion joint seal for sealing a joint between spaced sections, comprising:

a resilient outer shell for engaging adjacent surfaces of the spaced sections;
a resilient inner shell;
a sponge-like core held within the inner shell and being contiguously surrounded thereby for providing outwardly directed forces, the sponge-like core being composed of a material which is substantially crystallization free and capable of maintaining resiliency over a wide environmental temperature range; and
a plurality of web-like ribs disposed between the inner and outer shells, the ribs extending substantially radially from the inner shell toward the outer shell and being affixed to the interior surfaces of the outer shell and to the exterior surfaces of the inner shell, the ribs transmitting the outwardly directed forces of said core to the outer shell to urge said outer shell into sealing engagement with the spaced sections.

3,900,678

COMPOSITE FILAMENTS AND PROCESS FOR THE PRODUCTION THEREOF

Itsuo Aishima; Noboru Fukuma; Hisaya Sakura; Hiroshi Chayamiti; Toshio Okamoto; Yuzuru Doi, and Hiroshi Henmi, all of Nobeoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 588,332, Oct. 21, 1966, abandoned. This application July 20, 1970, Ser. No. 64,020

Claims priority, application Japan, Oct. 23, 1965, 40-64794; Feb. 25, 1966, 41-11104

Int. Cl. D02g 3/02

U.S. Cl. 428-374

3 Claims

1. A composite filament comprised of two components disposed in side-by-side relationship or eccentric sheath-core relationship, a first component being crystalline polypropylene homopolymer and a second component being selected from the group consisting of a random copolymer of propylene and 0.5 to 20 mole % of another olefin and a block copolymer of propylene and 1.0 to 40 mole % of another olefin, said other olefin of the copolymer being selected from the group consisting of ethylene, butene-1, hexene-1, octene-1, 4-methylpentene-1, 3-methylbutene-1 and styrene, said composite filament having a crimp-developing force of more than 15 %.

3,900,679

GLASS FIBER REINFORCED ELASTOMERS

Alfred Marzocchi, Cumberland, R.I., assignor to Owens-Corning Fiberglass Corporation, Toledo, Ohio

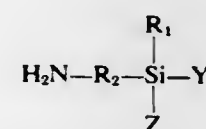
Continuation-in-part of Ser. No. 154,098, June 17, 1971, abandoned. This application July 23, 1973, Ser. No. 381,456

Int. Cl. C08f 15/40; C03c 25/02

U.S. Cl. 428-378

15 Claims

1. Glass fibers having a thin coating thereon, said coating comprising a terpolymer formed by the interpolymerization of butadiene, styrene and an amino silane having the formula



wherein Z is hydrogen or a readily hydrolyzable group, R₁ is alkenyl, R₂ is a divalent organic group selected from the group consisting of alkylene, arylene and cyclohexylene and Y is selected from the group consisting of R₁, R₂ and Z, or the corresponding silanols and siloxanes, with the terpolymer containing 60 to 80% by weight of butadiene, 5 to 40% by weight of styrene and 0.1 to 40% by weight of the amino silane.

3,900,680

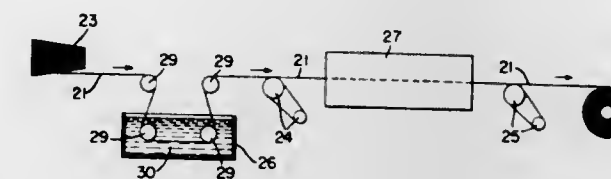
CORD FOR EXTENSIBLE BELT

Sidney R. Fix, Lincoln, Nebr., assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Continuation of Ser. No. 232,833, March 8, 1972, abandoned, which is a division of Ser. No. 26,457, March 5, 1970, Pat. No. 3,666,584, which is a division of Ser. No. 739,674, June 25, 1968, Pat. No. 3,566,706. This application Nov. 19, 1973, Ser. No. 417,316

Int. Cl. F16g 1/00

U.S. Cl. 428-378

4 Claims



1. A heat-treated textile cord of the type for reinforcing power transmission belts and comprised of filaments of synthetic thermoplastic material selected from at least one of the group consisting of nylon and polyester, said cord produced by the method consisting of heat-treating the cord while in a relaxed state for an interval of time of from about 60 seconds to about 180 seconds and at a temperature of from about 350°F to about 480°F and simultaneously relaxing the cord from about 1 to about 3% of its original length.

3,900,681

INSULATED ELECTRICAL CONDUCTOR

Robert Bruce Walters, Oxford, Conn., assignor to General Electric Company, New York, N.Y.

Filed Aug. 22, 1973, Ser. No. 390,618

Int. Cl. H01b 3/44

U.S. Cl. 428-379

4 Claims

1. An electrical conductor having a dielectric polymeric insulation resistant to flow and dripping at flame temperatures, comprising a metal conductor insulated with a cross-link cured polymeric composition comprising, in relative parts by weight:

100 parts of ethylene-vinyl acetate copolymer comprising 70 to 95 parts by weight of ethylene and 30 to 5 parts by weight of vinyl acetate;
about 25 to 150 parts of hydrated alumina;
about 2 to 25 parts of silicone elastomer having a viscosity in excess of about one million centipoises;
and about 2 to 10 parts of an organo tertiary peroxide curing agent.

3,900,682

PREPARATION OF CHEMICALLY CONVERTIBLE TAPE

Lynn J. Taylor, Haslett, Mich., assignor to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 189,449, Oct. 14, 1971, Pat. No. 3,816,162. This application Mar. 8, 1973, Ser. No. 339,278

Int. Cl. B44d 1/02

U.S. Cl. 427-386

7 Claims

1. A process for preparing a tape which comprises preparing a mixture of a pyrolyzable polymeric binder, a solvent for said binder and a polymerizable organic member, said pyrolyzable polymeric binder being solid at a temperature of about 40°F. to about 120°F. and said polymerizable organic member being polymerizable at or above the pyrolyzing temperature of the binder;

applying said mixture to a surface;
and drying said mixture at a temperature between about 0°C. and 200°C.

3,900,683

AZIDOFORMATES AND THEIR USE

James N. Haynes, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

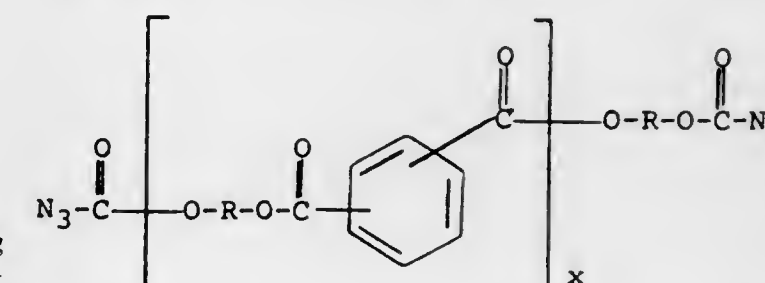
Division of Ser. No. 231,741, March 3, 1972, Pat. No. 3,814,657, which is a division of Ser. No. 93,399, Nov. 27, 1970, Pat. No. 3,686,231, which is a continuation-in-part of Ser. No. 887,382, Dec. 22, 1969, abandoned. This application Dec. 18, 1973, Ser. No. 425,906

Int. Cl. E06B 3/12

U.S. Cl. 428-409

2 Claims

1. An article of manufacture comprising polyester material, at least one surface of which has been modified by contacting with an omega-hydroxyalkyl phthalate azidoformate having the formula



where R is an alkylene radical containing 2 to 10 carbon atoms and x is an integer from 1 to 10 and heating the thus contacted polyester material to a temperature sufficient to substantially decompose the azidoformate groups on the omega-hydroxyalkyl phthalate azidoformate.

3,900,684

METHOD OF FORMING A FLUOROCARBON POLYMER CONTAINING COATING ON A SUBSTRATE
John Wilmar Edwards, Welwyn Garden City, and Barry William Farrant, St. Neots, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed June 4, 1973, Ser. No. 367,004

Claims priority, application United Kingdom, June 9, 1972, 27011/72

Int. Cl. C08f 3/24; B32b 15/08

U.S. Cl. 428-421

9 Claims

1. A method of forming a fluorocarbon polymer-containing coating on a substrate comprising applying to a substrate, an aqueous composition having a polytetrafluoroethylene polymer or copolymer dispersed therein and an aluminum hydroxylchloride as an adhesive dissolved therein, and heating the composition on the substrate sufficiently to remove volatile components therefrom and to form a layer on the substrate the weight of the polymer or copolymer having from 10 to 50 grams per 100 grams of composition and weight of aluminum provided by the aluminum hydroxylchloride being at least 3 grams per 100 grams of the polymer or copolymer.

3,900,685

CELLULOSE-POLYMER COMPOSITES

Norman G. Gaylord, New Providence, N.J., assignor to Champion International Corporation, New York, N.Y.

Division of Ser. No. 32,736, April 28, 1970, Pat. No. 3,765,934. This application Mar. 22, 1973, Ser. No. 343,921

Int. Cl. B32b 21/08; B27k 3/50; B44d 1/26

U.S. Cl. 428-420

14 Claims

1. A process for the preparation of a laminate which comprises impregnating at least two sheets of porous, cellulosic material with a polymerizable equimolar complex of styrene and maleic anhydride, superimposing said sheets on one another and thereafter subjecting said complex in situ to non-catalytic polymerization, the anhydride groups in the resultant polymer reacting with cellulosic hydroxyl groups whereby bonds are formed between the polymer and said cellulosic material.

3,900,686

ADHESION CONTROL FOR SAFETY GLASS LAMINATES
 Vernon G. Ammons, Glenshaw, and James C. Vanek, New Kensington, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

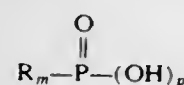
Filed Oct. 3, 1973, Ser. No. 403,138

Int. Cl. B32b 27/00

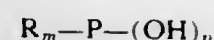
U.S. Cl. 428—425

11 Claims

1. An energy absorbing laminate comprising a transparent, thin, energy absorbing layer of a polyurethane composition bonded on at least one of its major surfaces to a glass sheet, said composition containing (a) an organic phosphorous acid selected from the class consisting of



and



wherein R may be alkyl containing from 1 to 18 carbon atoms, aryl, alkaryl, alkoxy, aryloxy or an alkaryloxy group and may be linked directly to the phosphorus atom or linked by means of an oxygen atom, m and p are integers of from 1 to 2 and m plus p must equal 3, and (b) an organic silane having the structural formula:



wherein m and n are whole integers of from 1 to 3 and m plus n is equal to 4, wherein X is a group which can hydrolyze to yield a hydroxyl group and R is an organic moiety selected from the class consisting of alkyl groups containing from 1 to 5 carbon atoms, aryl, vinyl and epoxy containing organic moieties present in amounts sufficient to control the degree of adhesion of the polyurethane to the glass such that the polyurethane layer is adhered to the glass sheet with a degree of adhesion of about 1 to 10 pounds per lineal inch, and this degree of adhesion being maintained when the laminate is subjected to 100 percent relative humidity at 120°F. for 5 days; the organic phosphorus acid and the organic silane being present in the polyurethane composition in concentrations of about 0.01 to 0.30 percent by weight and 0.05 to 0.5 percent by weight, respectively, based on total weight of the polyurethane composition and the weight ratio of organic phosphorus acid to organic silane being within the range of 0.05 to 0.80 inclusive.

3,900,687

PROCESS FOR COATING A SURFACE AND THE COATED SURFACE

Arthur L. Meader, Jr., Berkeley, and William L. Runyon, Jr., Richmond, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Sept. 10, 1973, Ser. No. 396,042

Int. Cl. E01c 7/35; B44d 1/14

U.S. Cl. 428—425

15 Claims

12. A process for coating a surface comprising:

A. Applying a primer to a surface to be coated to promote adhesion,

B. Applying a seal coat to said primed surface, said seal coat comprising 10 to 40 parts by weight of a polyurethane precursor, 2 to 10 parts by weight of a dark heat-absorbing filler, and 25 to 75 parts by weight of a substantially inert nonvolatile extender selected from the group consisting of cut-back asphalts and extender oils, 0 to 25 parts by weight of a volatile solvent, and 10 to 40 parts by weight of an inert filler, wherein said polyurethane precursor comprises 8 to 34 parts by weight of a high-molecular-weight polyol and 0 to 8 parts by weight of a low-molecular-weight chain stiffener,

C. Allowing said seal coat to stand for a time sufficient to allow entrained gases to escape from said seal coat and said primed surface,

D. Applying to the surface of seal coat a membrane-forming coating comprising (1) 15 to 60 parts by weight of a polyurethane precursor, (2) 20 to 80 parts by weight of a substantially inert nonvolatile extender selected from the group consisting of cut-back asphalts and extender oils, (3) 6 to 20 parts by weight of a polyisocyanate, (4) 0 to 20 parts by weight of a volatile solvent, and (5) 0 to 1.0 part by weight of a polyurethane-forming reaction catalyst, wherein said polyurethane precursor comprises 15 to 60 parts by weight of a high-molecular-weight polyol and 2 to 10 parts by weight of a low-molecular-weight chain stiffener.

3,900,688

TEXTILE SUBSTRATE HAVING COATINGS OF POLYCARBONATE-POLYUREA ELASTOMER

Wilhelm Thoma, Bergisch-Neukirchen; Klaus Noll; Josef Pedain, both of Cologne, and Hans Joachim Koch, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 23, 1973, Ser. No. 408,977

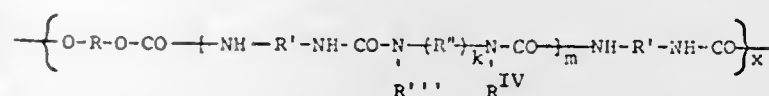
Claims priority, application Germany, Oct. 25, 1972, 2252280

Int. Cl. B32B 27/40

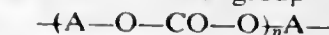
U.S. Cl. 428—246

6 Claims

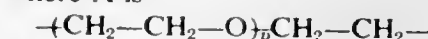
1. Laminates comprising a textile substrate which is a woven or knitted fabric or fleece and having bonded thereto a bonding coat and a top coat of an aliphatic, segmented polycarbonate-polyurea elastomer of the general formula:



in which R is the group



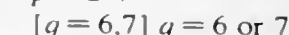
where A is



or



and



and in which

R' and R'' are the same or different and represent divalent

C₄-C₁₈ aliphatic and/or C₃-C₂₀ cycloaliphatic radicals,

R''' and R'''' is H or C₁-C₆ aliphatic radicals,

k = 0 or 1,

m = 0-4, and

x = 5-200

and wherein at least 20 mol percent of the aliphatic and cycloaliphatic groups are cycloaliphatic, with the proviso that in the top coat A is 0-40% by weight $-(\text{CH}_2-\text{CH}_2-\text{O})_p\text{C}-\text{H}_2-\text{CH}_2-$ and [40-100%] 60-100% by weight $-(\text{CH}_2)_q$.

3,900,689

SUBSTRATES TREATED WITH CHROMIUM(III) COMPLEXES TO INCREASE THE ADHESION OF ORGANIC POLYMERS THERETO

Alden J. Deyrup, West Chester, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 210,833, Dec. 22, 1971, Pat. No.

3,787,326, which is a continuation-in-part of Ser. No. 119,608, March 1, 1971, abandoned, which is a continuation-in-part of

Ser. No. 25,097, April 2, 1970, abandoned. This application June 25, 1973, Ser. No. 373,145

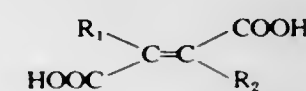
Int. Cl. B32b 15/04, 17/06, 27/06

U.S. Cl. 428—432

30 Claims

15. A composite article comprising a metal or metal oxide or glass substrate having bonded thereto an organic polymer

through a thin layer of the composition comprising one or more water-soluble coordination complexes of (a) chromium (III) derived from a water-soluble salt thereof with a noncoordinated anion, which salt yields $\text{Cr}(\text{H}_2\text{O})_6^{3+}$ in water; with (b) a trans-acid of the formula



wherein R₁ and R₂ are the same or different and are H, alkyl, —CH₂COOH or phenyl; provided that the total number of carbon atoms in said trans-acid is an integer in the range 4-10, inclusive, said composition being selected from the group consisting of

- complexes whose aqueous solutions have a purple-blue color and give a characteristic broad band light absorption spectrum having maxima at about 5750 Å and 4120 Å, said noncoordinated anion being nitrate (Type I);
- complexes whose aqueous solutions have a clear medium green color and give a characteristic broad band light absorption spectrum having maxima at about 5850 Å, 4300 Å and 3620 Å (Type II); and
- complexes whose aqueous solutions have a blue color and give a characteristic broad band light absorption spectrum having maxima at about 5700 Å and 4120 Å, said noncoordinated anion being nitrate (Type III).

3,900,690

PROCESS FOR THE PRODUCTION OF DIMENSIONALLY STABLE, PLANAR MATERIALS COATED ON ONE SIDE

Günther Schwarz, Hiltrup, Germany, assignor to Glasurit Werke M. Winkelmann GmbH

Continuation of Ser. No. 264,588, June 20, 1972, abandoned.

This application May 13, 1974, Ser. No. 469,292

Claims priority, application Germany, July 2, 1971, 2132925

Int. Cl. B05C 9/04; B44D 1/02

U.S. Cl. 428—447

5 Claims

1. A method for producing a dimensionally stable porous cellulosic substrate by impregnating the uncoated side opposite to that bearing a moistureproof impermeable surface coating with silicone fluids, and drying said coating, the improvement comprising applying to said uncoated side of said substrate a solution containing 90 - 97 percent by weight of a solvent selected from the group consisting of organic hydrophilic solvents or solvents containing not less than 10 percent of said hydrophilic solvents and 3 - 10 percent by weight of silicone fluid having a viscosity of 0.65 - 1,000,000 centistokes and a molecular weight between about 600 - 400,000.

3,900,691

METHOD OF COATING A POLYOLEFIN SURFACE AND THE COATED ARTICLE

Oren L. Marrs, and Larry P. Mozer, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 279,099, Aug. 9, 1972,

abandoned. This application June 13, 1974, Ser. No. 479,124

Int. Cl. B32b 27/32; B65d 23/02

U.S. Cl. 428—451

9 Claims

4. A polyolefin article having a multilayer coating on the surface thereof to reduce permeability, said coating comprising:

a primer coating in contact with the polyolefin article surface, said primer coating comprising a tackifier and a copolymer of at least one conjugated diene of 4 to 12 carbon atoms and at least one monovinyl-substituted aromatic hydrocarbon, said diene and aromatic hydrocarbon being in a weight ratio of 60/40 to 85/15, said copolymer being a block copolymer of the form (A-B)_xY, where each A is a nonelastomeric polymer segment, each B is an elastomeric polymer segment, Y is an atom or group of

atoms derived from a polyfunctional compound having at least 3 reactive sites, and x is an integer of at least 3; and a barrier coating in contact with the primer coating, said barrier coating comprising a polymer of vinyl chloride or vinylidene chloride or a copolymer of vinyl chloride and vinylidene chloride.

3,900,692

METHODS FOR MODIFYING ASPHALTS AND EMULSIONS USEFUL THEREFOR

Friz S. Rostler, Berkeley, Calif., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 142,067, May 10, 1971, Pat. No.

3,769,246, which is a continuation-in-part of Ser. No. 108,596, Jan. 21, 1971, Pat. No. 3,763,074, which is a division of Ser.

No. 714,424, March 30, 1968, Pat. No. 3,577,250. This application Jan. 8, 1973, Ser. No. 321,571 The portion of the term of this patent subsequent to May 4, 1988, has been disclaimed.

Int. Cl. B44D 1/09; C09D 3/48, 11/10

U.S. Cl. 428—489

16 Claims

1. A method of treating asphalt in an asphalt-aggregate structure, said method comprising impregnating said asphalt-aggregate structure by applying to the surface thereof an oil-in-water emulsion, the oil phase being from about 10 to about 80% by weight of the emulsion containing polymer having an average molecular weight in the range above 10,000, said polymer being substantially insoluble in normal pentane, said polymer being in solution in said oil, at a polymer concentration of about 2 to about 25% by weight of said oil, said asphalt and said polymer being mutually soluble in said oil, said oil having an initial boiling point which is not substantially below about 300°C. at 760 mm. Hg., and said oil being substantially free of asphaltene and substantially soluble in n-pentane.

5. The method of rubberizing asphalt in an asphalt-aggregate pavement, said method comprising impregnating said asphalt pavement by applying to the surface thereof an oil-in-water emulsion, the oil phase being from about 10 to about 80% by weight of the emulsion containing a dissolved elastomer, substantially insoluble in n-pentane, in an amount ranging between about 2 to about 25% by weight of said oil, said oil having an initial boiling point which is not substantially below about 300°C. at 760 mm Hg., said oil being substantially free of asphaltene and substantially soluble in n-pentane and said elastomer and said asphalt being mutually soluble in said oil, the quantity of said emulsion applied to said asphalt being sufficient to incorporate said elastomer in said asphalt to at least about 0.1% by weight of the said asphalt.

9. A method of treating asphalt which comprises applying to said asphalt an oil-in-water emulsion comprising as an oil phase, a solution in oil of a polymer or mixture of polymers which are substantially soluble in n-pentane and a polymer or mixture of polymers which are substantially insoluble in n-pentane at a polymer concentration of about 2 to about 25% by weight of the oil, said oil having solvent properties for asphalt and for pentane-soluble polymers and pentane-insoluble polymers, the ratios of the polymers are from 9 parts by weight of polymer which are substantially insoluble in n-pentane to 1 part by weight of polymers which are substantially soluble in n-pentane to a ratio of 1 part by weight of the polymers substantially insoluble in n-pentane to 9 parts by weight of the polymers which are substantially soluble in n-pentane.

12. The method of treating an asphaltic surface which comprises applying to said surface of an oil in water emulsion comprising an oil phase consisting essentially of an oil having an initial boiling point which is not substantially below 300°C. at 760 mm. Hg. and is substantially free of asphaltene and is substantially soluble in normal pentane and having solvent properties for asphalt, a mixture of compatible polymers dissolved in said oil phase, said polymers being in concentration of about 2 to about 25% by weight based on said oil phase and

a cationic emulsifier, said polymers including a mixture of a polymer which is substantially insoluble in n-pentane and a polymer which is substantially soluble in n-pentane in weight ratio to each other in the range of 9:1 to 1:9.

3,900,693

DIELECTRIC RESINS

John R. Wyhof, Newark, Del., assignor to ICI United States Inc., Wilmington, Del.

Division of Ser. No. 362,540, May 21, 1973, Pat. No. 3,865,789. This application Oct. 10, 1974, Ser. No. 513,890
Int. Cl.² B05D 5/12; G03G 5/04

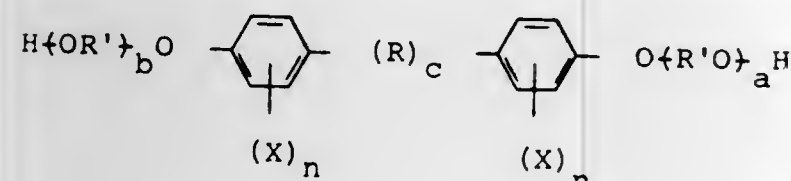
U.S. Cl. 428-511

10 Claims

1. An electrographic recording element comprising a base support having coated thereon a layer of a dielectric resin said resin comprising the reaction product of

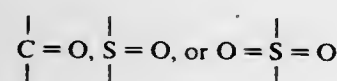
a. a dicarboxylic acid or an anhydride thereof, provided that at least 80 mol percent of said acid or anhydride is an alpha unsaturated dicarboxylic acid, an anhydride thereof, an aromatic dicarboxylic acid or an anhydride thereof, and

b. a polyol blend comprising a first polyol having the following formula:



wherein

R is an alkylidene group containing from 1 to 4 carbon atoms, a cycloalkylidene group containing 5 or 6 carbon atoms, oxygen, sulfur, or a radical having one of the following formulas:



c is 0 or 1;

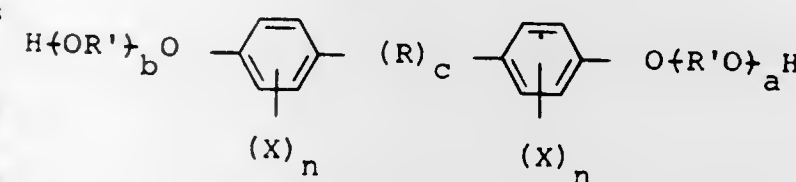
X is halogen or an alkyl radical containing from 1 to 3 carbon atoms;

n is an integer equal to from 0 to 4;

R' is an alkylene group containing from 2 to 4 carbon atoms or the radical $\text{CH}_2\text{CH}_2\phi$; and

a and b are integers each of which is equal to at least 1 and the sum of which is equal to about 2, provided that the sum must be equal to at least 2.0

and a second polyol having the following general formula:



wherein R, c, X, R', and n are as defined above and a and b are integers each of which is equal to at least 1 and the sum of which is equal to from about 4 to about 16, wherein the amount of acid or anhydride employed is sufficient to introduce from about 0.8 to about 1.2 carboxyl groups per hydroxyl group in the polyol blend.

3,900,694

HOT MELT ADHESIVE CONTAINING AMORPHOUS POLYPROPYLENE

Lawrence D. Jurrens, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 148,221, May 28, 1971. This application Aug. 30, 1972, Ser. No. 284,836

Int. Cl. B32b 21/06

U.S. Cl. 428-513

7 Claims

1. A laminate exhibiting good bond strength at crosshead speeds of 0.2 inches per minute as tested by ASTM D 1876-61T comprising at least two porous strata bonded by a distinct interlayered stratum of a hot melt adhesive consisting of (1) 25 to 35 percent by weight amorphous polypropylene having a molecular weight range of 500 to 15,000; (2) 35 to 45 percent by weight of crystalline olefin copolymer of 95 to 98 percent by weight polypropylene and 5 to 2 percent by weight ethylene; and (3) 40 to 20 percent by weight of a polyterpene tackifier.

ELECTRICAL

3,900,695

ELECTRIC INDUCTION FURNACE

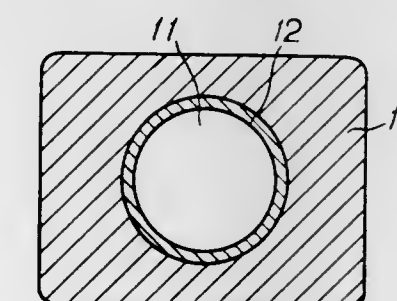
Conny Andersson, Viken; Bertil Hanäs, Vasteras; Torsten Körsell, and Jan Nilsson, both of Robertsfors, all of Sweden, assignors to Allmänna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed May 16, 1974, Ser. No. 470,604

Claims priority, application Sweden, May 18, 1973, 7307026

Int. Cl.² H05B 5/12

U.S. Cl. 13-26



1. An electric induction furnace having a crucible for containing a metal melt and an electric induction coil for inductively heating a melt in said crucible, said coil being a coiled tubular conductor through which a cooling liquid can be flowed; wherein the improvement comprises said conductor having inner and outer metal layers, said inner layer being a metal selected from the class consisting of copper and copper alloy, and the outer layer being some other metal and which is substantially free from copper, said other metal being a metal selected from the class consisting of aluminum and aluminum alloy, said layers having integrated interfaces substantially free from electrical resistance.

3,900,696

CHARGING AN ELECTRIC FURNACE

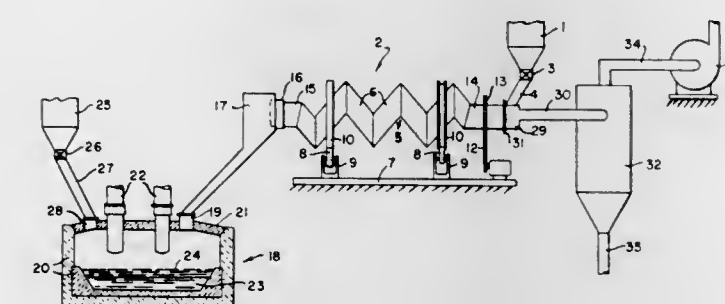
Jack E. Tress, and Willard I. Hunter, both of Albany, Oreg., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Division of Ser. No. 450,636, March 13, 1974. This application Aug. 26, 1974, Ser. No. 500,797

Int. Cl.² F27D 3/08

U.S. Cl. 13-33

8 Claims



1. Apparatus for melting and refining particulate metals which comprises:

an electric furnace closed to the atmosphere;
conduit means communicating between the interior of the electric furnace and the discharge end of a rotating feeding device, said feeding device comprising an unobstructed tubular container of undulant shape disposed with its longitudinal axis in a substantially horizontal attitude and rotatable about that axis;
means to introduce particulate metal charge material into the end of said container opposite said discharge end;

means to rotate said container about its longitudinal axis to thereby advance said charge material through said container, and
means to withdraw gases produced within said electric furnace through said conduit means and through said feeding device in counterflow relationship to said advancing charge material.

3,900,697

ELECTRIC WIRE INSULATING COVER

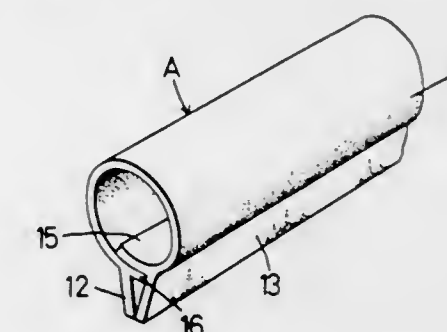
Masamitsu Yotsugi, No. 1-9, 5-chome Fukata-cho, Naka-ku, Kobe-shi, Hyogo-ken, Japan

Filed May 2, 1974, Ser. No. 466,128

Int. Cl.² H01B 17/58

U.S. Cl. 174-5 R

1 Claim



1. A covering arrangement for insulating electric wires comprising an elongated inwardly resilient flexible cylindrical body split along its length so as to provide two longitudinal straight edges, sized to hold an electric wire therein, so constructed that the two longitudinal edges overlap, and two straight longitudinal projections extending outwardly from said cylindrical body each situated a different short distance from one of said longitudinal straight edges, said projections touching each other at the outer ends thereof but separated at the inner ends so as to form a triangular space between the two projections.

3,900,698

ELECTRIC WIRE INSULATING COVER

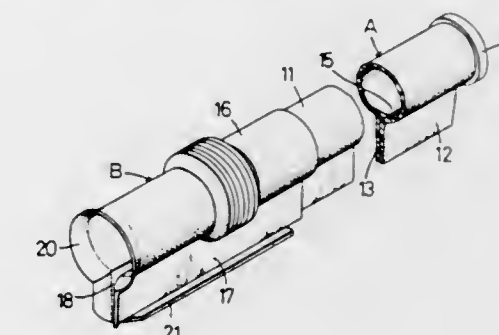
Sanji Yotsugi, No. 3-19, Umeno-cho, Takarazuka-shi, Japan

Filed May 2, 1974, Ser. No. 466,129

Int. Cl. H02g 1/02; H01b 17/00

U.S. Cl. 174-5 R

1 Claim



1. An electric wire insulating arrangement comprising in combination:

a. an elongated flexible split cylindrical body (11) with two lateral projections (12, 13) disposed to face each other in parallel with a small clearance therebetween, one of said projections (12) comprising an extension of a first outer wall as well as an inner cylindrical wall portion, the other projection (13) extending outward from a second outer cylindrical wall portion of which the inner portion continues spirally inwards to overlap the first wall portion, an

outer flange edge (22) at least at one end of said cylindrical body; and,

b. a longitudinally flexible split cylindrical coupling (16) of a diameter slightly larger than the outer diameter of said body (11) with two lateral coupling projections (17, 18) forming extensions of the cylindrical wall and with a frusto-conical opening at one end, said coupling projections being so spaced and said opening so sized that said body (11) can pass therethrough, a groove (19) in said coupling receiving said flange edge (22) and holding it firmly therein, and a longitudinal protective piece (21) attached to one of said coupling projections (18) and extending over to the other projection (17) disposed to cover the clearance therebetween, said body (11) and coupling (16) when nested one in the other forming a protecting covering for a wire.

3,900,699

HIGH-VOLTAGE AND COOLANT FEED APPARATUS FOR LOW TEMPERATURE COOLED CONDUCTORS

Peter Penczynski, Erlangen; Gunther Matthaus, Spardorf; Peter Massek, Forchheim, and Johann Liendl, Erlangen, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

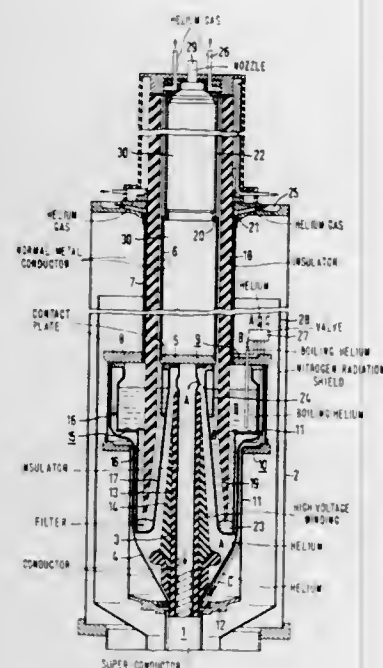
Filed May 23, 1974, Ser. No. 472,684

Claims priority, application Germany, May 30, 1973, 2327628

Int. Cl. H01b 7/34; H01v 11/00

U.S. Cl. 174—15 BH

17 Claims

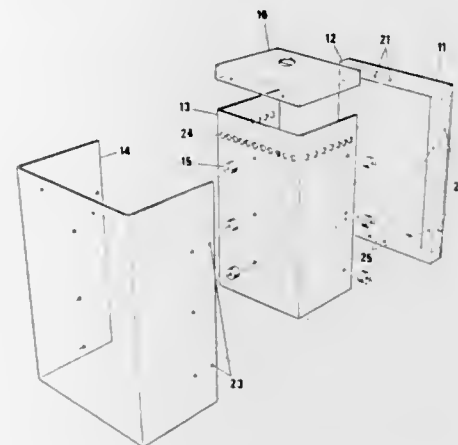


1. In a high-voltage and coolant feed apparatus including low temperature cooled electrical conductors disposed in a concentric arrangement with respect to each other, and each of which is coupled to one of a plurality of normally conductive electrical conductors disposed in the gas stream of an evaporating cooling medium and separated from each other by an electrical insulation member disposed therebetween, the improvement comprising a first vessel having an open end and containing a coolant into which one end of said electrical insulation member extends, said vessel comprising an inner hollow cylindrical shell and an outer hollow cylindrical shell concentrically disposed about said shell with said inner shell being fabricated of electrical insulation material, with at least one inner low temperature conductor extending through an inner space formed by said inner shell and being coupled to an inner normally conductive conductor, and at least one outer low temperature cooled conductor being coupled to an outer normally conductive conductor externally of said insulation member.

3,900,700
PROTECTIVE ENCLOSURE
Fernand W. Gaudet, Mount Royal, Canada, assignor to Canadian Marconi Company, Montreal, Canada
Filed Feb. 4, 1974, Ser. No. 439,361
Int. Cl. H05k 7/20

U.S. Cl. 174—16 R

1 Claim



1. A protective enclosure for electronic or other equipment comprising a rigid back plate provided with means for mounting the back plate and for mounting the protected equipment on the back plate and for mounting shields to the back plate; inner and outer metal shields held together as one unit by rivetting and held apart to allow for air circulation by spacers; a metal cover complete with vertical lip which fits over the inner shield and is welded to the back plate; ventilation holes cut in the inner shield below the top cover lip with the top cover in place.

3,900,701
HIGH TEMPERATURE ELECTRICAL CABLE
Francis Derrick Bayles, Montreal; Michael Alan Dudley, Beaconsfield, and John C. Metzler, Pierrefonds, all of Canada, assignors to Canada Wire and Cable Limited, Toronto, Canada

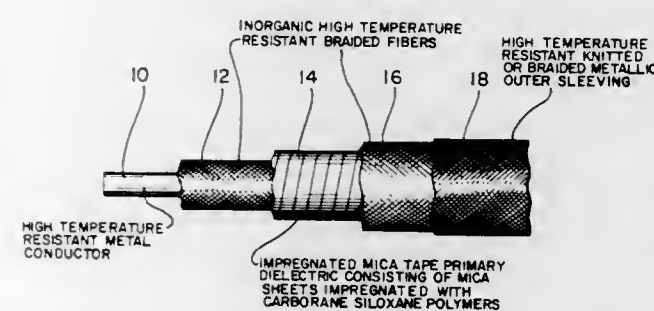
Filed July 15, 1974, Ser. No. 488,409

Claims priority, application Canada, June 21, 1974, 203090

Int. Cl. H01b 7/18, 3/04

U.S. Cl. 174—102 R

19 Claims



1. A high temperature electrical cable comprising:
a. a central conductor made of a metal capable of essentially maintaining its useful service at high temperatures;
b. a covering of electrical insulating material applied over said conductor and consisting of at least one inner layer of inorganic high temperature material providing essentially complete coverage of said conductor and a smooth base for subsequent layers, at least two layers of primary dielectric material consisting of impregnated mica tapes made of reconstituted mica sheets impregnated with carborane siloxane polymers, and at least one outer layer of inorganic high temperature material over said impregnated mica tapes; and
c. an outer layer protective sleeving applied by knitting or braiding over said outer layer of inorganic high tempera-

ture material and consisting of at least one high temperature resistant metal wire.

3,900,702
RIBBON-SHAPED CONDUCTOR ARRANGEMENT FOR SUPERCONDUCTORS WHICH PERMITS EASE OF COOLING

Cord Albrecht, Erlangen, and Hans Lamatsch, Nuremberg, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

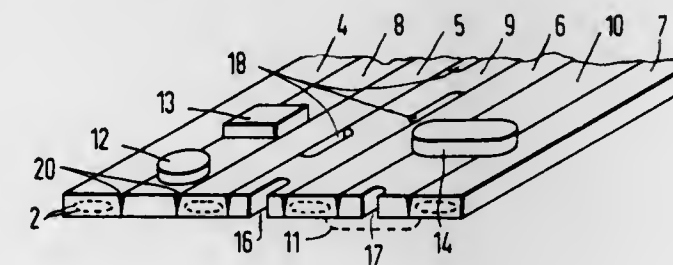
Filed Nov. 27, 1973, Ser. No. 419,232

Claims priority, application Germany, Nov. 30, 1972, 2258703

Int. Cl. H01v 11/00; H01b 5/00

U.S. Cl. 174—126 CP

11 Claims



1. In a ribbon-shaped conductor which comprises a plurality of individual conductors made of electrically normal conducting metals which are arranged side-by-side and welded together, with some but not all of the individual conductors having embedded therein superconductors wherein the improvement comprises forming at least some of the individual conductors not containing superconductors so that at least portions of said individual conductors are of a different thickness than that of the individual conductors containing said superconductors.

3,900,703
TRAINING SIMULATORS FOR SUBMARINE PERISCOPES

John Edward Tickle, Heald Green, England, assignor to Ferranti Limited, Hollinwood, England

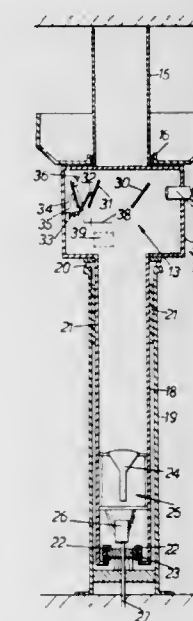
Filed Aug. 30, 1973, Ser. No. 392,926

Claims priority, application United Kingdom, Aug. 30, 1972, 40165/72

Int. Cl. H04n 7/18

U.S. Cl. 178—6

12 Claims



1. A training simulator for a submarine periscope located in a room having a floor and a ceiling and including a viewing station containing optical focussing and range finding apparatus, a hollow periscope tube in fixed relationship with, and

extending downwardly from, the viewing station, a hollow support column fixed to the floor, extending between the floor and the viewing station and enclosing the periscope tube, bearing means arranged to support the periscope tube within the support column, said bearing means being arranged to permit rotation of the viewing station and periscope tube about the longitudinal axis of the support column, and a television monitor located within the periscope tube and arranged to provide a scene for the viewing station.

3,900,704
ARBS TV TRACKER

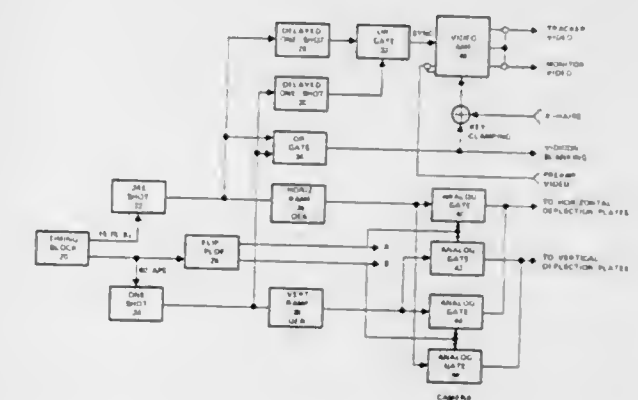
Virgil E. Thomas, Jr., and Donald G. Quist, both of China Lake, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 31, 1972, Ser. No. 278,492

Int. Cl. H04N 3/16

U.S. Cl. 178—6.8

2 Claims



1. A television tracking system comprising:
a television camera tube providing a video output;
a platform on which said camera tube is mounted; and
processing means for processing said video output and providing an output that is coupled to, for controlling, said platform and an output that is the system output, comprising
means coupled to said video output for amplifying said video output
and controlling the scan and scan mode of said tube, including
a timing clock for establishing the timing rate of said amplifying and controlling means,
horizontal and vertical ramp generators coupled to at least one output of said timing clock, and
first switching means coupled to the outputs of said ramp generators for selectively applying the output of said horizontal ramp generator to the horizontal deflection plates, and, the output of said vertical ramp generator to the vertical deflection plates, of said tube, and the output of said horizontal ramp generator to the vertical deflection plates, and the output of said vertical ramp generator to the horizontal deflection plates, of said tube, and
means coupled to said amplifying and controlling means for generating signals descriptive of the error with which the system is tracking a target of interest and providing said error signals to said platform;
wherein said television camera tube has a first scan and a second scan and said second scan is at right angles to said first scan; and
wherein said processing means includes components which are used to process both the video output associated with said first scan and the video output associated with the second scan.

3,900,705

DUAL DIGITAL VIDEO SWITCHER

Ian A. Richter, Cocoa Beach, Fla., assignor to The United States of America as represented by The National Aeronautics and Space Administration Office of General Counsel-Code GP, Washington, D.C.

Filed Sept. 25, 1973, Ser. No. 400,467

Int. Cl.² H04N 7/18

U.S. Cl. 178-6.8

9 Claims



1. a system for manually and automatically coupling video signals from a plurality of cameras to a monitoring apparatus comprising:

- a video switching circuit,
- means for coupling said plurality of video signals to said video switching circuit,
- means for coupling said monitoring apparatus to said switching circuit,
- manual select means coupled to said video switching circuit for manually selecting the coupling of a predetermined video signal to said monitoring apparatus,
- scanning means activating said video switching circuit for sequentially coupling said video signals to said monitoring apparatus, and
- means for selectively controlling the duration that said video signals are coupled to said monitoring apparatus as said video signals are sequentially coupled to said monitoring apparatus, and
- said means for selectively controlling the duration that said video signal are coupled to said monitoring apparatus includes
 - a shift register
 - means for selectively triggering said shift register for producing pulses at a first and second rate for selectively controlling the duration that said video signals are coupled to said monitoring apparatus,

whereby a plurality of video signals can be monitored both manually and automatically sequentially with the duration that said video signals are coupled to said monitoring apparatus being selectively controlled.

3,900,706

METHOD OF GENERATING MONITORABLE VIDEO INFORMATION FROM RECORDS ON RECORD MEMBERS

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840
Continuation-in-part of Ser. No. 746,504, July 22, 1968, Pat. No. 3,804,978, which is a continuation of Ser. No. 347,999, Feb. 26, 1964, which is a continuation-in-part of Ser. No. 765,401, Oct. 6, 1958, abandoned, and a continuation-in-part of Ser. No. 148,513, June 1, 1971. This application Jan. 24, 1974, Ser. No. 436,075

Int. Cl. G11b 7/08; H04n 5/06, 5/30

U.S. Cl. 178-7.2

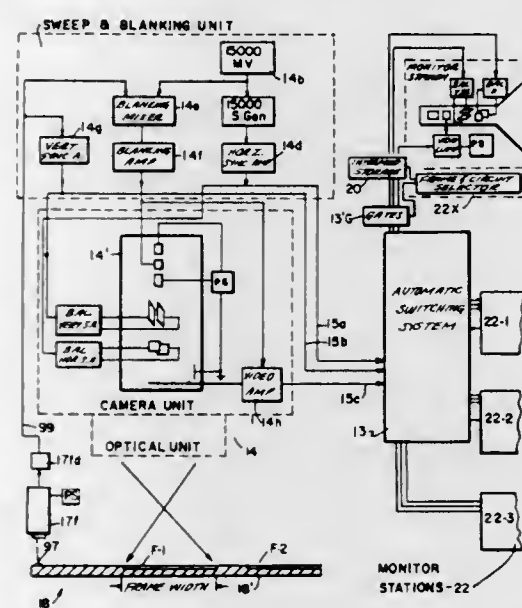
14 Claims

1. A method of reproducing video information recorded in tandem array along a record track of a record member having a sequence of information containing frame recordings and a sequence of synchronizing indicia associated with said frame recordings respectively, comprising:

- relatively moving said record member and a video pick-up means in a manner to carry said frame recordings successively through the scanning zone of said video pick-up means,
- interrogating said frame recordings as they pass through said scanning zone and generating respective full-frame video picture signals on an output of said video pick-up, interrogating the synchronizing indicia associated with

each frame recording as the frame recording approaches the scanning zone and developing frame vertical sync signals thereof at a frequency related to the rate of movement of the synchronizing indicia through the scanning zone,

passing said full-frame video picture signals and said vertical sync signals to a television receiver having a viewing screen, and



applying said frame vertical sync signals to control the generation of images defined by the respective frame recordings on said viewing screen by employing said frame vertical sync signals to condition the image writing means of said television receiver to write respective images on its screen.

3,900,707

SPEAKER APPARATUS

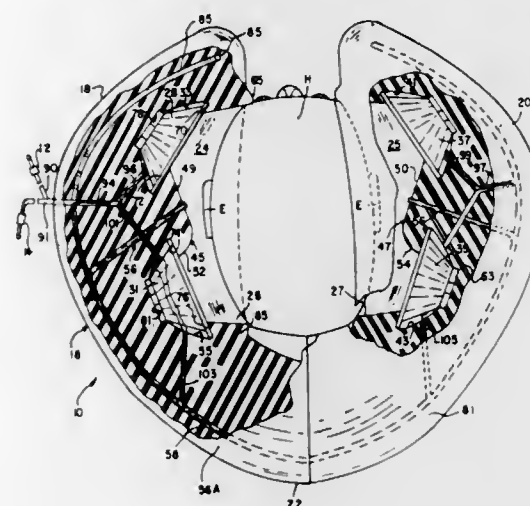
Brian A. Hanson, Woodridge, Ill., assignor to Hear-Muffs, Inc., Downers Grove, Ill.

Filed June 6, 1973, Ser. No. 367,521

Int. Cl.² H04M 1/05; H04R 5/00

U.S. Cl. 179-156 R

11 Claims



1. Speaker apparatus adapted to be worn on the head of a user and adapted to be coupled to a sound reproducing system for causing sounds to be emitted from said apparatus, said speaker apparatus comprising:

- a first and second pair of oppositely-disposed spaced-apart members for engaging the head of the user over the ears of the user, said members each having respective first and second chambers including respective first and second openings facing substantially toward one another for receiving the ears of the user, said ears occupying first and second central portions of the respective first and second openings;

means defining a first pair of spaced-apart front and rear cavities opening into said second chamber;

means defining a second pair of spaced-apart front and rear cavities opening into said second chamber;

a first pair of front and rear sound transmitting units mounted within said first pair of respective front and rear cavities and positioned with their front faces generally facing said first chamber;

a second pair of front and rear sound transmitting units mounted within said second pair of respective front and rear cavities and positioned with their front faces generally facing said second chamber;

conducting means adapted to couple each one of said sound transmitting units to the sound reproducing system;

means defining a pair of longer rear acoustic paths extending in acoustic communication between the respective mid portions of the front faces of said rear transmitting units and the respective mid points of the first and second chambers for guiding sound emanating from the rear units therealong to the ears of the user when positioned within said first and second openings; and

means defining a pair of shorter front acoustic paths extending in acoustic communication between the respective mid portions of the front faces of the respective front transmitting units and the respective mid points of the first and second central portions of the openings of said first and second chambers for guiding sound emanating from said front units therealong, to the ears of the user when positioned within said first and second openings, said longer rear acoustic paths being substantially greater in length than said shorter front acoustic paths to guide sound moving from said rear transmitting units energized by the system through greater distance to said first and said second openings than the distances through which sound moves from said front transmitting units energized by the system to said first and said second openings.

3,900,708

SELECTIVE ECHO SUPPRESSOR

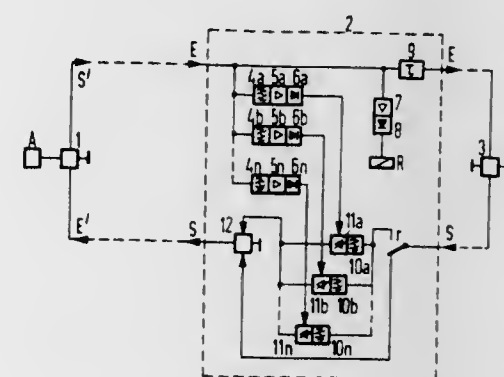
Hermann Bendel, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Continuation of Ser. No. 240,294, March 31, 1972. This application Apr. 5, 1973, Ser. No. 348,207

Int. Cl. H04b 3/20

U.S. Cl. 179-170.2

21 Claims



1. An echo suppressor for a speaking circuit of a fourwire transmission system having a transmitting path and a receiving path, comprising: a set of first filters connected in said transmitting path; a plurality of continuously controllable regulating means each of which is connected to and associated with a respective first filter to control signal passage therethrough; a set of second filters connected to said receiving path, each of said second filters having a partial frequency range covering a separate portion of the total frequency range of said second filters, and each of said first filters having a partial frequency range corresponding to that of a separate second filter; a plurality of signal evaluation elements each of which is connected between a respective second filter and the regulating means associated with its corresponding first filter and opera-

ble to control signal passage through said corresponding first filter in accordance with the level of speech signals in said receiving path which are within the corresponding partial frequency range; means for establishing an operation threshold for said plurality of evaluation elements, whereby attenuation is controlled in the respective partial frequency ranges proportionally with respect to signal levels above said threshold at the outputs of the respective second filters; and a speech detector connected to and controlled from the receiving path and a transfer device connected to said transmitting path and connected to and controlled by said speech detector to bridge and bypass said first filters if no speech signal is present in the receiving path.

3,900,709

MULTIPLE SWITCH ASSEMBLY HAVING INDEPENDENT OPERATORS ROTATABLY CUMMING DISCRETE LEAF SPRING TYPE CONTACT ASSEMBLIES

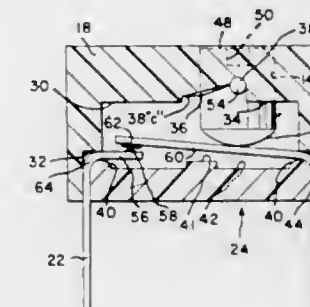
Wilmer Lee Sheesley, Harrisburg, and William Vito Pauza, Palmyra, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of Ser. No. 454,530, March 25, 1974, abandoned. This application Apr. 15, 1974, Ser. No. 460,843

Int. Cl.² H01H 21/12, 1/26

U.S. Cl. 200-5 R

17 Claims



1. A package containing one or more separate electrical switches, which comprises:

- an insulating housing consisting of a base and a cover and having an interior space in which one or more switches are positioned, said cover having one or more distinct apertures extending into the interior space, each aperture being in alignment with a switch, said base having interior support means for supporting the one or more switches;
- one or more electrical switch contact assemblies stamped and formed from a coplanar sheet of material, each switch contact assembly having a fixed arm extending into the interior space from one side of the housing and a resilient movable arm extending obliquely upwardly into the interior space from another side of the housing with the free end thereof being spaced above the free end of the fixed arm, and further, legs integral with and extending from each arm depending from the respective sides of the housing for insertion into electrical circuit openings;
- one or more actuating means movably positioned in the one or more apertures and in biasing contact with the one or more movable arms for removably moving the movable arm into contact with the fixed arm thereby permitting an electrical current which may be present in one arm to flow therefrom to the other arm; and
- retaining means positioned on the one or more actuating means for retaining, in cooperation with the biasing contact of the one or more movable arms, the actuating means in the apertures.

3,900,710

SQUEEZABLY ACTUATED GENERAL PURPOSE ELECTRIC SWITCH

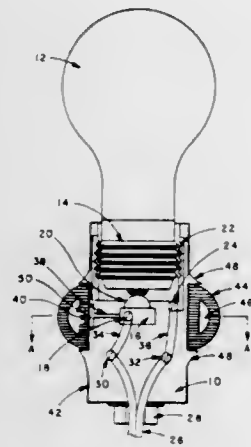
John Potter, Star Rt. Box 47, Rt. 515, Vernon, N.J. 07462

Filed Oct. 1, 1973, Ser. No. 402,007

Int. Cl.² H01H 35/34

U.S. Cl. 200—81 H

2 Claims



1. A squeezably actuated general purpose electric switch comprising in combination:

- a housing;
- a push on-push off electrical switch mounted within said housing having an electrical input terminal for receiving a conductor of electrical power and an electrical output terminal for transmitting electrical power to an appliance;
- an actuator for said push switch slideably mounted within said housing, said actuator having an end face communicating with the exterior of said housing; and
- a flexible hollow squeezable switch member in the shape of a toroid surrounding said housing filled with a substantially non-compressible liquid secured to said housing, said member having an expandable surface portion in communication with said actuator end face, said expandable surface portion being relatively thinner than the remaining surface of said member.

3,900,711

ELECTRICAL CONTACTOR ASSEMBLY FOR HIGH FREQUENCY APPLICATIONS

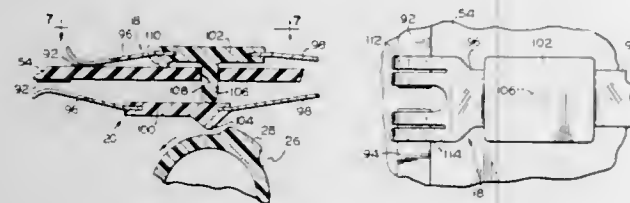
Kenneth C. Holland, Portland, Oreg., assignor to Tektronix Inc., Beaverton, Oreg.

Division of Ser. No. 361,362, May 17, 1973, abandoned, which is a division of Ser. No. 114,273, Feb. 10, 1971, Pat. No. 3,753,170. This application Feb. 4, 1974, Ser. No. 439,177

Int. Cl. H01h 1/00

U.S. Cl. 200—238

3 Claims



1. An electrical contact member for engagement and disengagement with a fixed contact member, comprising:

- a resilient mounting member for mounting the contact member on a mounting means and a free end;
- a resilient contact member having one end defining a U shaped contact member for reducing inductance of said contact member and a free end; and
- insulation means engaging both said free ends for insulatingly connecting said resilient mounting member and said resilient contact member and for reducing capacitance therebetween.

3,900,712

KEYBOARD SWITCH ARRANGEMENT

Satoshi Fukao, Kasugai, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Japan

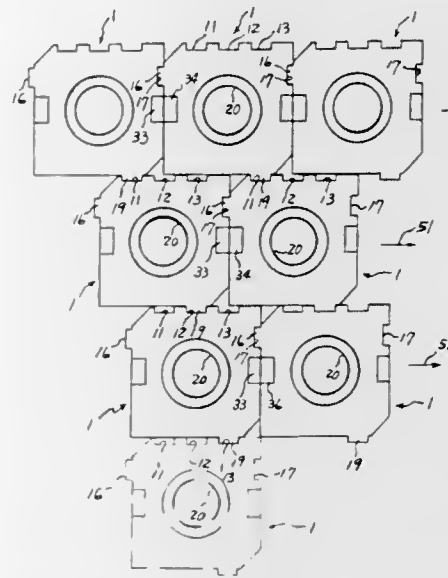
Filed Jan. 18, 1974, Ser. No. 434,591

Claims priority, application Japan, Feb. 23, 1973, 48-22564

Int. Cl. H01h 13/04; B41j 5/08

U.S. Cl. 200—307

8 Claims



8. A keyboard switch arrangement comprising in combination:

- a base plate having engaging holes therein;
- a plurality of key switch units arranged side by side on said base plate, each including a key stem, a push button attached thereon, key stem holder block with four outer side walls, an upper and lowest portions fixed on said base plate, preventing said key stem from slipping out, including engaging projections provided at said lowest portion inserted into corresponding engaging holes formed in said base plate, said holder blocks having substantially a square shape in cross-section, and having at least one wall comprising thereon a plurality of vertically oriented grooves, and switch means located within said holder blocks operated by manipulative depressing said push button;
- coupling means provided on said outer side walls of each of said holder blocks and comprising a plurality of grooves on a first side wall, a ridge on a second side wall opposite to said first side wall, a groove on a third side wall and a ridge on a fourth side wall opposite to said third side wall, said ridges and grooves extending vertically on said respective outer side walls, said coupling means interlocking one holder block with adjacent holder blocks and holding said holder blocks stably in various modes on said base plate in a manner that a ridge on a fourth side wall of one block is fitted with a groove on a third side wall of an adjacent holder block, and a ridge on a second side wall of the one block is selectively fitted with one of grooves on a first side wall of another adjacent holder block.

3,900,713

THERMAL LIMITER CONSTRUCTION AND ELECTRICAL SWITCH AND SYSTEM UTILIZING THE SAME

Emil Robert Plasko, Dayton, Ohio, assignor to Micro Devices Corporation, Dayton, Ohio

Division of Ser. No. 344,745, March 26, 1973, Pat. No. 3,829,809. This application June 4, 1974, Ser. No. 476,313

Int. Cl. H05b 9/06

U.S. Cl. 219—10.55 D

6 Claims

1. In an electrical control system for a micro-wave oven that has a pair of power source lead means leading from a power source to the energy generating means for the oven, the im-

provement comprising an oven door operated electrical switch in one of said power source lead means that is normally closed only when said door is in a closed position thereof and is normally open only when said door is in an open position thereof, a thermally responsive device in one of said power source lead means for opening its respective power source lead means when said device is sensing a certain temperature condition, and means for creating said certain temperature condition when said switch abnormally remains closed and said oven door is opened to terminate the operation of said energy generating means, said means for creating said certain temperature condition comprising a branch lead means for electrically interconnecting said two power source lead means together, said branch lead means interconnecting to the power

heater, said forming means further including surface portion means for contacting a heat-conductive element against which the plastic stud is formed, and said heat conduit including a portion closely adjacent said forming means more restrictive to heat transmission than the forming means, said portion being capable of transmitting heat to said forming means faster than the forming means radiates heat away to ambient atmosphere but slower than the heat conductive element and stud conduct away heat from said forming means.

3,900,715

TICKET ISSUING AND COLLECTION SYSTEMS

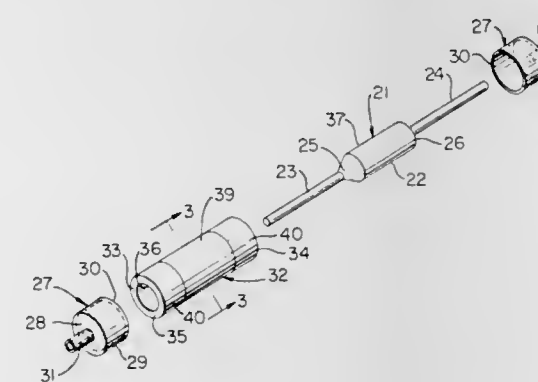
Alec Patrick James, Sutton Coldfield, England, assignor to National Research Development Corporation, London, England

Division of Ser. No. 00,014, Jan. 2, 1970, abandoned. This application Mar. 21, 1972, Ser. No. 236,583

Int. Cl.² G06K 5/00; G07F 7/00

U.S. Cl. 235—61.7 R

8 Claims



source lead means that has said switch therein at a point intermediate said switch and said energy generating means, said branch lead means having an electrically operated heater means disposed therein adjacent said device for creating said certain temperature condition sensed by said device when current flows through said branch lead means, and another electrical switch means disposed in said branch lead means, said other electrical switch means normally being open only when said door is in a closed position thereof and being normally closed only when said door is in an open condition thereof whereby said heater means is only energized if the first named switch is abnormally closed and said door is in an open condition thereof, said other switch means carrying said device and said heater means, said heater means and said device being readily replaceable together as a single unit.

3,900,714

HEATED TOOL FOR HEADING PLASTIC STUDS

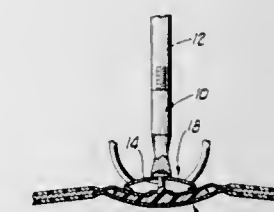
Lewis R. Beyer, 1020 Brookpark Rd., Cleveland, Ohio 44109

Filed Oct. 17, 1973, Ser. No. 407,073

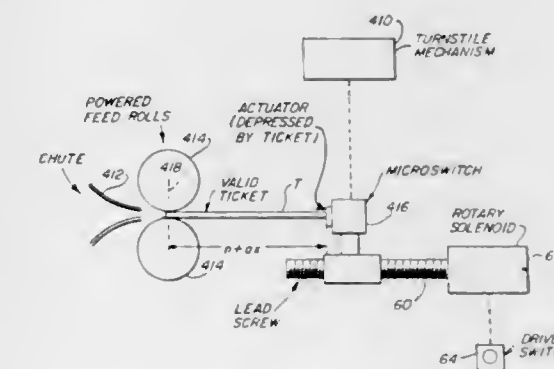
Int. Cl. H05b 1/00; B23k 3/02; B32b 31/00

U.S. Cl. 219—229

6 Claims



1. A tool for heading a plastic stud against a heat-conductive element, comprising a heater, heat-conductive forming means including a concave head-forming surface for heating and forming an end of a plastic stud, and a thermally conductive heat conduit connecting said forming means to said



1. A transport vehicle ticket system designed to collect the exact fare from each passenger boarding a transport vehicle traveling over a multiple time- or spatial-interval route wherein the fare due to be paid by each passenger upon boarding is directly related to the number of intervals to be traveled by that passenger, regardless of whether the passenger is traveling to the end of the line, or is disembarking sooner, said ticket system including:

- ticket issuing apparatus including:
 - means for collecting the particular fare tendered by each passenger;
 - means for determining the amount so tendered; and means for issuing a ticket, to each such passenger, having applied thereon by said issuing means a significant portion of a length $n + (a+b)x$, wherein:
 - n is a constant length greater than or equal to zero, provided to be greater than zero when needed to permit the significant portion to be long enough for the ticket to be properly handled;
 - x is a constant increment of length, greater than zero, chosen to represent an individual interval of travel,
 - a corresponds to the number of intervals the vehicle has traveled along said route prior to the boarding of each particular passenger; and
 - b corresponds to the number of intervals that passenger wishes to travel between boarding and disembarking from the vehicle; and
- ticket receiving apparatus, including:
 - means for tentatively accepting each ticket tendered by each disembarking passenger;
 - means associated with said tentatively accepting means for registering the lapsing of each of said intervals, as the vehicle travels from one end of the route to the other and for detecting the length of said significant portion of each ticket so tendered, the detecting means including means for discriminating between a ticket for which said length is less than, and, instead, is at least equal to that length which would have been provided on the ticket had the disembarking passenger indeed paid the exact fare for the number of intervals actually traveled.

3,900,716

OPTICAL STATIC CARD READER

Hidetsugu Kawabata, Hirakata; Toshio Yamashita, Katano; Hiroshi Uda, Kashiwara; Manabu Yoshida, and Saburo Kitamura, both of Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

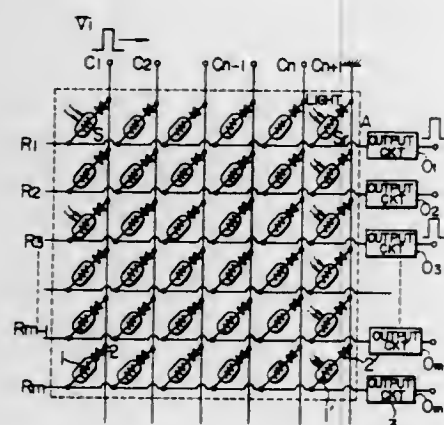
Filed Oct. 12, 1973, Ser. No. 406,038

Claims priority, application Japan, Oct. 17, 1972, 47-104270; Oct. 17, 1972, 47-104271; July 23, 1973, 48-82952

Int. Cl. G06k 7/14; H01j 39/12

U.S. Cl. 235-61.11 E

10 Claims



4. An optical static card reader for reading a card having holes therein comprising:

a plurality of electrically separated column electrodes extending in a first direction,

a plurality of electrically separated row electrodes extending in a second direction,

a plurality of reference light sensor and blocking diode pairs, each of said reference light sensors being connected in series with a corresponding blocking diode, one end of each of said reference light sensor and blocking diode pairs being connected to the same column electrode, the other ends of said reference light sensor and blocking diode pairs being connected to corresponding row electrodes,

a plurality of reading light sensor and blocking diode pairs, each of said reading light sensors being connected in series with a corresponding blocking diode, a reading light sensor and blocking diode pair being connected between each of said row electrodes and each of said column electrodes not connected to a reference light sensor and blocking diode pair, the blocking diodes connected to said reference light sensors being connected to conduct current in a first direction with respect to said column and row electrodes and the blocking diodes connected to said reading light sensors being connected to conduct current in the opposite direction, the resistances of said reference and reading light sensors having similar variations,

a plurality of column terminals connected to corresponding column electrodes for sequentially receiving recording electrical signals,

a plurality of row terminals connected to corresponding row electrodes, a readout signal being produced at a row terminal in accordance with the relative values of the resistance of the reading sensor supplied with said reading signal and the resistance of the reference sensor of the corresponding row,

means for maintaining the column electrode to which said reference light sensor and blocking diode pair are connected at a predetermined bias potential, and

output interface circuit means connected to said row terminals, said interface circuit means being rendered operative by said readout signal, said reading light sensors being arranged to correspond to the possible positions of apertures in said card to be read by said card reader.

3,900,717

APPARATUS FOR SCANNING RAISED INDICIA

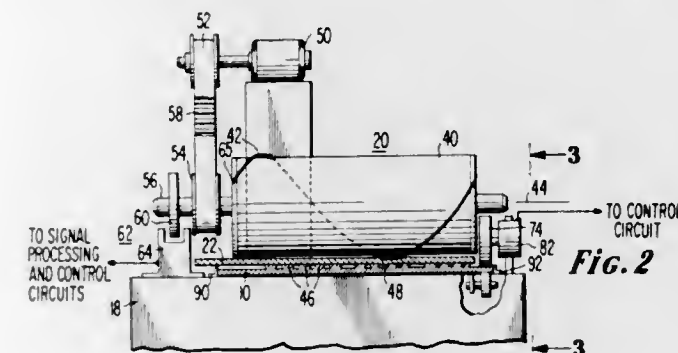
Chin Tao Wu, Hightstown, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 18, 1973, Ser. No. 425,935

Int. Cl. G06k 7/04

U.S. Cl. 235-61.11 C

7 Claims



1. Scanning apparatus for reading raised indicia comprising, in combination:

elongated transducer means of the type which produces a signal in response to being compressed at least a given amount at any point along its length, positioned along a line to be read of said raised indicia; and

means adapted to serially depress points along the length of said transducer means, said depression being of an amount such that said transducer means is compressed at least said given amount only at points where said raised indicia is located, whereby said signals produced by said transducer means will be indicative of said raised indicia.

3,900,718

SYSTEM FOR COUNTING PILLS AND THE LIKE

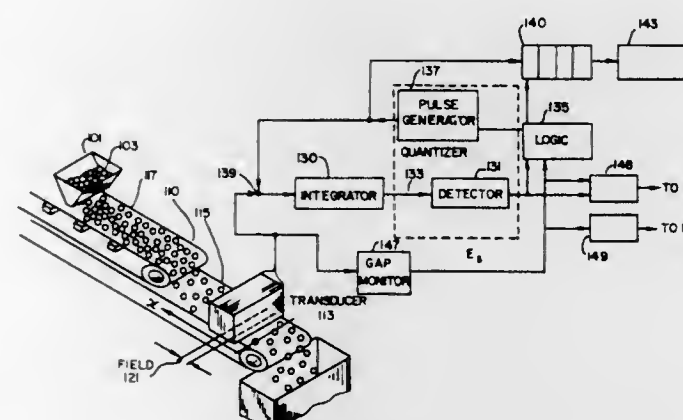
Harold H. Seward, 16 Frost St., Arlington, Mass. 02174

Filed Dec. 26, 1973, Ser. No. 427,789

Int. Cl. G06M 7/02; G06G 7/18

U.S. Cl. 235-150.51

13 Claims



1. Apparatus for counting parts presented in groups separated by gaps, said parts generally characterized by contributing substantially equally to the integral of a transducer's response thereto, said apparatus comprising:

transducing means for detecting said parts and having a response,

first means for forming an integral, connected to said transducing means to operate said response,

second means for dividing said formed integral by a number of equal fractional measures, including means for varying said measures such that on the average an integral number n of said measures are required to form a quotient of one with a single part's contribution to said formed integral, the integer n being selected to be even,

third means for counting said measures and accumulating both the number of odd multiples of half said integer ($n/2$) and a fractional remainder,

fourth means for detecting said gaps, said fourth means having an output signal; and

fifth means responsive to said fourth means for clearing said third means of said remainder upon the detection of a gap and after said measures have been counted by said third means.

3,900,719

HYBRID ARITHMETIC DEVICE

Satoshi Yamauchi, Tokyo, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

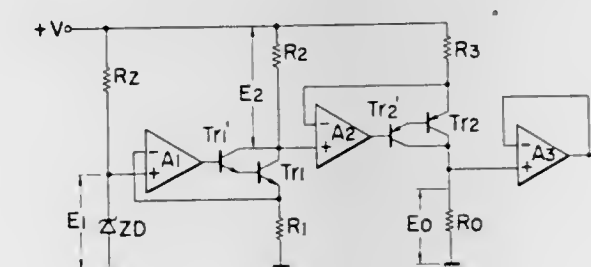
Filed Apr. 27, 1973, Ser. No. 355,061

Claims priority, application Japan, May 1, 1972, 47-43497

Int. Cl. G06j 1/00; G06g 7/16

U.S. Cl. 235-150.52

5 Claims



1. A hybrid arithmetic, device comprising:

a first stage including a first resistor, a Zener diode connected to said first resistor, a first transistor amplifier having an output and an input, second and third resistors connected to the output of said first transistor amplifier, a first operational amplifier having a plurality of inputs and an output, the output thereof being connected to the input of said first transistor amplifier, one of said inputs of said first operational amplifier being connected to the point of interconnection between said Zener diode and said first resistor, the other input of said first operational amplifier being connected to a feedback path from the output of said first transistor amplifier;

a second stage including a second transistor amplifier having an input and an output, fourth and fifth resistors connected to the output of said second transistor amplifier, a second operational amplifier having a plurality of inputs and an output, the output of said second operational amplifier being connected to the input of said second transistor amplifier, one of the inputs of said second operational amplifier being connected to the output of said first transistor amplifier and the other input thereof being connected to a feedback path from the output of said second transistor amplifier;

means for setting the values of at least a selected pair of said resistors to selected digital values representing the values of arithmetic operands so as to derive across the fifth resistor an output voltage whose value is a measure of the result of a selected arithmetic operation on said operands.

3,900,720

METHOD AND APPARATUS FOR APPLYING AN INSTALLATION DIMENSION TO A BEVEL GEAR

Erhard Konersmann, Zurich, and Rudolf Gruber, Bichelsee, both of Switzerland, assignors to Werkzeugmaschinenfabrik Oerlikon-Bührle AG, Zurich, Switzerland

Filed July 1, 1974, Ser. No. 484,776

Int. Cl. G01M 13/02

U.S. Cl. 235-151.32

3 Claims

1. An apparatus for applying an installation dimension at a bevel gear having a shoulder and a front surface, comprising:

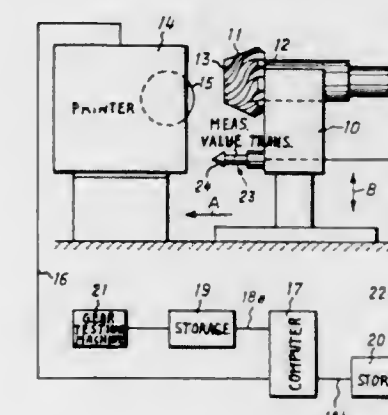
a. a bevel gear testing machine for determining the shoulder dimension of the bevel gear;

b. a storage for storing the determined shoulder dimension, said storage being operatively connected with the bevel gear testing machine;

c. a measuring device for determining the distance between the shoulder and the front surface of the bevel gear and which distance constitutes the addendum dimension of the bevel gear;

d. said measuring device incorporating a measurement value transmitter and a feeler for measuring said addendum dimension;

e. a further storage for storing said addendum dimension of the bevel gear operatively connected with the measurement value transmitter of said measuring device;



f. a marking device for applying data to the bevel gear, said marking device comprising a printer mechanism containing a rotatably mounted number wheel for each numerical value which is to be applied at the front surface of the bevel gear;

g. said marking device further including a support at which there is located said bevel gear and said feeler of said measuring device;

h. a computer for the addition of both the stored shoulder dimension and the addendum dimension into a block dimension;

i. said computer being operatively connected with said two storage devices and with the marking device for transmitting the block dimension from the computer to the marking device.

3,900,721

SERIAL-ACCESS LINEAR TRANSFORM

Jeffrey M. Speiser, and Harper John Whitehouse, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 14, 1974, Ser. No. 442,530

Int. Cl. G06f 15/34

U.S. Cl. 235-156

6 Claims

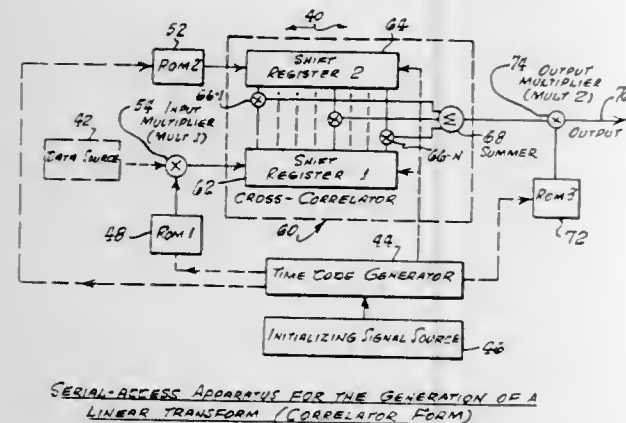
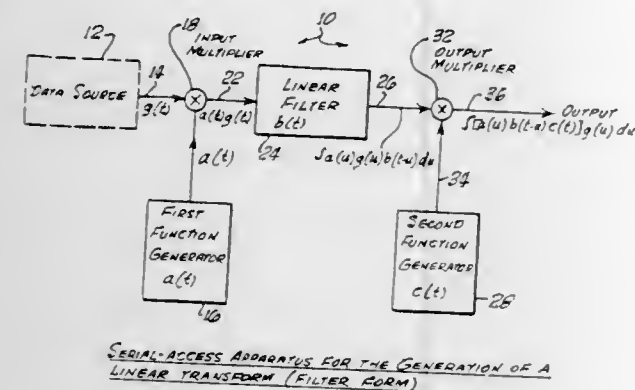
1. A serial-access linear transform apparatus, suitable for signal processing systems requiring the rapid generation of linear transforms of a spatial or temporal signal, where the transform is in sampled form consisting of a series of N -sample terms, and where the signal consists of a series of N -sample pulses, comprising:

a data source, for providing the signal which is to be processed into a linear transform, the output of the data source being the function $g(t)$;

a first function generator, which generates a function $a(t)$; an input multiplier, whose two inputs are the outputs, $g(t)$ and $a(t)$, of the data source and the first function generator, for multiplying the two inputs, the output of the multiplier being $a(t)g(t)$;

a linear filter having an impulse response $b(t)$, whose input is the output signal, $a(t)g(t)$, of the input multiplier and whose output is the signal $a(u)g(u)b(-u)du$;

a second function generator, which generates the function $c(t)$;



an output multiplier, whose inputs are the outputs of the linear filter and of the second function generator, and whose output is the desired sequence of terms of the linear transform, namely $a(u)b(t-u)c(t)g(u)du$.

3,900,722

MULTI-CHIP CALCULATOR SYSTEM HAVING CYCLE AND SUBCYCLE TIMING GENERATORS

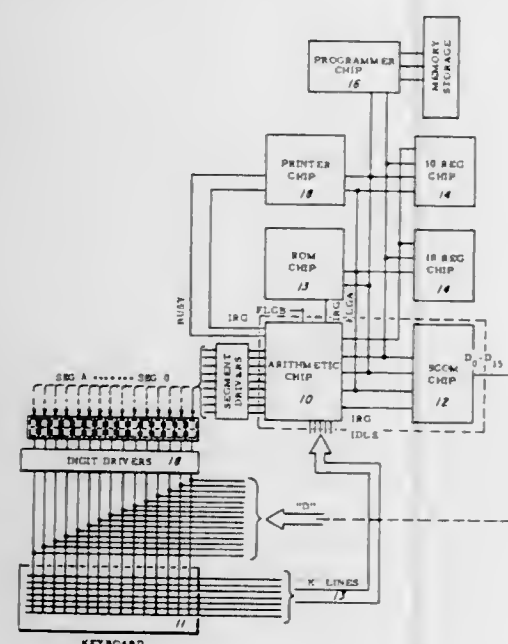
Michael J. Cochran, Richardson, and Charles P. Grant, Jr., Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sept. 13, 1973, Ser. No. 397,060

Int. Cl.² G06F 1/04

U.S. Cl. 235-152

13 Claims



1. In a portable electronic calculator system implemented on at least two semiconductor chips, the combination comprising:

- a first cycle timing generator and a first subcycle timing generator on one of said semiconductor chips for generating cycle times and subcycle times thereon;

- a second cycle timing generator and a second subcycle timing generator on the other of said semiconductor chips for respectively generating cycle times and subcycle times thereon;
- means on said one chip for generating the condition signal upon the occurrence of an internal timing condition on said one chip, said occurrence synchronized with said cycle times and subcycle times generated by said first cycle and subcycle generators; and
- means on said other chip responsive to said condition signal for synchronizing said second cycle and subcycle timing generators with said first cycle and subcycle generators.

3,900,723

APPARATUS FOR CONTROLLING COMPUTER PIPELINES FOR ARITHMETIC OPERATIONS ON VECTORS

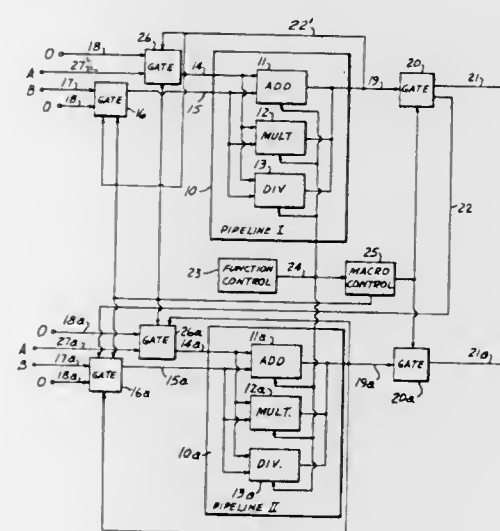
Lewis R. Bethany, St. Paul; Daniel J. Desmonds, Roseville, and Donald P. Tate, St. Paul, all of Minn., assignors to Control Data Corporation, Minneapolis, Minn.

Filed May 28, 1974, Ser. No. 473,652

Int. Cl.² G06F 7/38

U.S. Cl. 235-156

4 Claims



1. Apparatus for controlling first and second arithmetic pipelines in a computer, wherein said first pipeline includes first and second inputs and a first output and first arithmetic means connected between said first and second inputs and said first output, and wherein said second pipeline includes third and fourth inputs and a second output and second arithmetic means connected between said third and fourth inputs and said second output, each of said first and second arithmetic means accomplishing arithmetic operations on operands appearing at respective ones of said first, second, third and fourth inputs to derive respective resultants, said operands being arranged in a plurality of continuous streams, each stream forming a respective operand vector, said apparatus comprising:

first gate means connected to said first input and having fifth, sixth and seventh inputs for selectively processing data appearing at a selected one of said fifth, sixth and seventh inputs to said first input;

second gate means connected to said second input and having eighth, ninth and tenth inputs for selectively processing data appearing at a selected one of said eighth, ninth and tenth inputs to said second input;

third gate means connected to said third input and having eleventh, twelfth and thirteenth inputs for selectively processing data appearing at a selected one of said eleventh, twelfth and thirteenth inputs to said third input;

fourth gate means connected to said fourth input and having fourteenth, fifteenth, sixteenth and seventeenth inputs for selectively processing data appearing at a selected one of said fourteenth, fifteenth, sixteenth and seventeenth inputs to said fourth input;

means connecting said fifth, eighth and seventeenth inputs to said first output to receive data from said first pipeline; means connecting said sixth and twelfth inputs to a source of one of said operand vectors; means connecting said seventh, tenth, thirteenth and sixteenth inputs to a source of data representative of a zero value; means connecting said ninth and fifteenth inputs to a source of a second of said operand vectors; means connecting said eleventh and fourteenth inputs to said second output to receive data from said second pipeline; and control means for selectively operating said first, second, third and fourth gate means to selectively process data and operands appearing at selected inputs of said first, second, third and fourth gate means to respective first, second, third and fourth inputs of said respective first and second pipelines.

3,900,724

ASYNCHRONOUS BINARY MULTIPLIER USING NON-THRESHOLD LOGIC

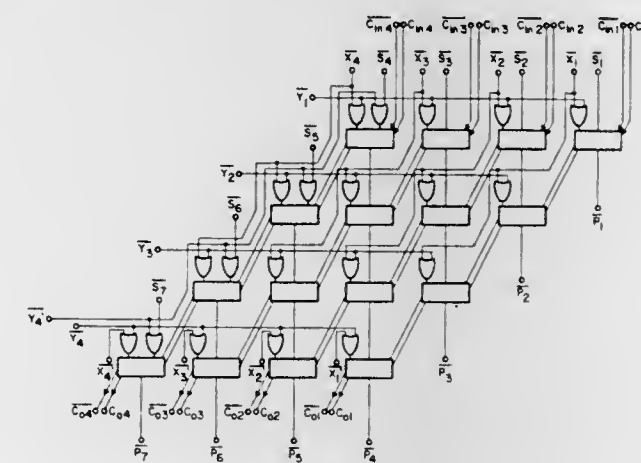
George W. McIver, Redondo Beach, and James L. Buie, Panorama City, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Feb. 11, 1974, Ser. No. 441,099

Int. Cl. G06F 7/50, 7/52

U.S. Cl. 235-164

15 Claims



1. A multiplier using a sequential-add algorithm to multiply together two binary numbers, said multiplier comprising:

- a first set of signal lines extending in one direction for carrying signals representing the bits of a first number;
- a second set of signal lines extending across said first set for carrying signals representing the bits of a second number, said first and second set of signal lines intersecting to form a matrix, with a single pair of intersecting signal lines forming a single matrix position; and
- logic circuit means for generating the appropriate cross product for each one of said matrix positions and adding that cross product to the appropriately weighted cross products generated at other ones of said matrix positions; the circuitry at each one of said matrix positions comprising

- means including not more than six input lines for receiving from the circuitry at other matrix positions of said multiplier complementary binary signals representing sum or carry inputs;
- means including not more than two lines for receiving external binary signals representing one bit of each of the numbers to be multiplied together;
- a first plurality of logic circuits for forming the appropriate complementary binary signals representing cross products between the external signals;
- a second plurality of non-threshold logic gates connected to receive the complementary binary signals from said first plurality of logic circuits and connected

with said input lines to form not more than eight AND gates;

- a third plurality of non-threshold logic gates connected to the outputs of said AND gates to form four OR gates; and
- means including not more than four output lines connected to the outputs of said OR gates for transmitting to succeeding stages of said multiplier complementary binary signals representing sum and carry outputs respectively.

3,900,725

NAVIGATION LIGHT FOR BOATS

John F. Komon, Windsor, Canada, assignor to Aqua-Marine Manufacturing Limited, Toronto, Canada

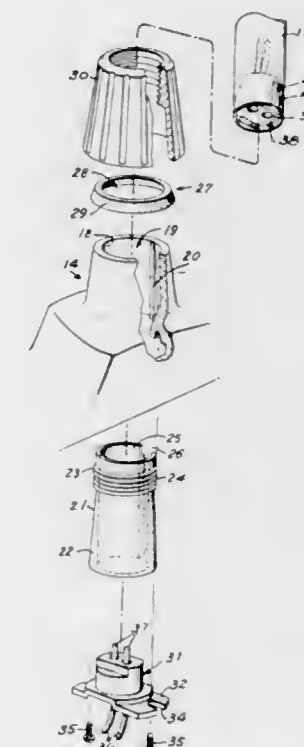
Continuation of Ser. No. 178,324, Sept. 7, 1971, abandoned.

This application Feb. 25, 1974, Ser. No. 445,216

Int. Cl. B63b 45/04

U.S. Cl. 240-7.5

4 Claims



1. A navigation light for boats comprising a post, illuminating means carried by said post, a mounting bracket adapted to be mounted on a boat and having an opening of tapered cross-section defined by tapered side walls extending therethrough, said mounting bracket having an upstanding neck through which the opening in said bracket extends, a bushing mounted in the opening in said bracket and slidable therein to a limited extent in one direction parallel to the longitudinal axis of the opening in said bracket, said bushing having an outer surface, a part of said outer surface being tapered to conform generally to said tapered side walls and engaging said tapered side walls, said bushing having a threaded neck, said threaded neck projecting beyond said neck of said bracket, said bushing also having an opening of cross-section complementary to the cross-section of said post, and said opening extending through said bushing and through said threaded neck thereof in the same general direction as the opening in said bracket, said post being mounted in the opening in said bushing, said bushing having a slot therein extending from said outer surface into the opening in said bushing and extending from one end of said bushing to the other end thereof, and a cap member having an opening therethrough which said post extends,

said cap member being threadably engageable with said threaded neck of said bushing and adapted to draw said part of said outer surface of said bushing into tight engagement with said tapered side walls defining the opening in said bracket by moving said bushing in said one direction, whereby the width of at least a part of said slot is decreased and said bushing is drawn into tight gripping engagement with said post,

said cap member having a skirt portion extending over said neck of said bracket and spaced apart from said neck of said bracket,

a first electrical element,

said first electrical element being positioned in the lower end of said post comprising openings therein and spaced contacts in said openings,

a second electrical element having spaced prongs,

means for mounting and circumferentially locating said second electrical element on said bracket with said second electrical element substantially closing the lower end of said opening in said bushing and with said prongs extending upwardly into the opening in said bushing,

the prongs on said second electrical element extending into said openings in said first electrical elements to provide an electrical connection therebetween when said post is supported on said base,

and electric lead means extending between said first electrical element and said illuminating means for completing a circuit thereto.

3,900,726

COMPACT FOLLOW SPOT

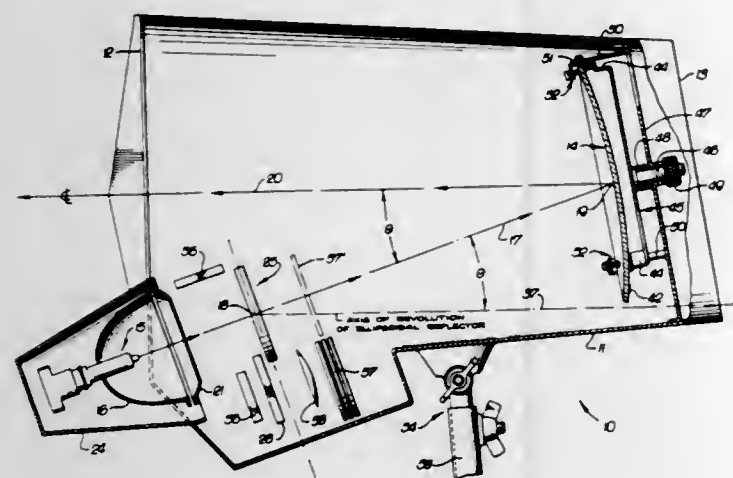
Clyde L. Tichenor, Van Nuys, Calif., assignor to Berkey-Colortan, Inc., Burbank, Calif.

Filed Apr. 25, 1974, Ser. No. 464,133

Int. Cl. F21v 7/00

U.S. Cl. 240—41.35 R

16 Claims



1. A compact follow spotlight comprising:

a housing having one end that is optically transparent, an elliptic mirror mounted within said housing near the other end thereof, the reflecting surface of said mirror comprising a section of an ellipsoid of revolution, said section being offset to one side of a meridian plane including the axis of revolution of said ellipsoid, and

a light source mounted within said housing near said one end remote from the near focus of said ellipsoid of revolution and offset to one side thereof so as to be substantially out of the path of light reflected from said mirror, said light source being arranged to project light past an object to be imaged placed at the near focus of said ellipsoid of revolution and toward said mirror, light from said source being reflected by said mirror through said transparent end and focused by said elliptic mirror in a distant focal plane coinciding with the far focus of said ellipsoid of revolution.

3,900,727

LAMP WITH TUBULAR BULB AND REFLECTOR

Hugo Hutz, Steinstrasse 1, 8032 Grafelfing, Germany
Continuation of Ser. No. 358,104, May 7, 1973, abandoned.

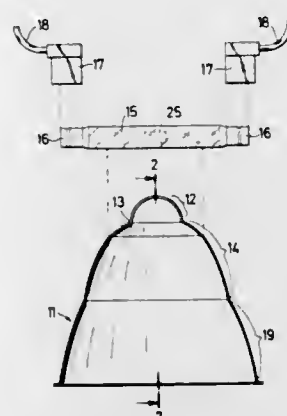
This application Sept. 17, 1974, Ser. No. 506,697

Claims priority, application Germany, May 8, 1972, 222529; Feb. 17, 1973, 2308003

Int. Cl. F21r 7/00

U.S. Cl. 240—41.35 R

16 Claims



1. An electric lamp which produces a rotationally symmetric light beam with a very high illuminating efficiency, comprising a reflector having two diametrically opposed apertures, said reflector being rotationally symmetric about an axis parallel to the light beam of the lamp and a tubular-shaped discharge bulb extending through said apertures and having an illuminating arc of a length which is short in comparison to the total bulb length, said opposed apertures being of a size greater than the diameter of said bulb, said apertures terminating immediately forward of said bulb in the direction of the light beam and being located so that said reflector encloses essentially only said short illuminating arc portion of the bulb, the residual major portion of said bulb extending on the outside of said reflector.

3,900,728

HAND HELD DEVICE FOR ACTIVATING A CHEMILUMINESCENT WAND

Gordon B. Holcombe, 603 Santa Barbara Ave., Millbrae, Calif. 94030

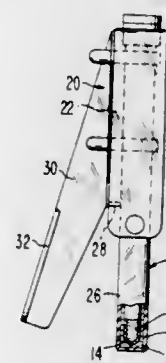
Continuation-in-part of Ser. No. 350,946, April 13, 1973, Pat. No. 3,829,678. This application July 22, 1974, Ser. No.

490,892

Int. Cl. F21v 21/00

U.S. Cl. 240—52 R

7 Claims



1. Apparatus for activating a chemiluminescent wand having a first chemical in an inner frangible tube and a second chemical in an outer flexible casing encompassing the inner tube, the apparatus comprising:

a bracket for restraining one end of the wand, and allowing the other end of the wand to extend free from the bracket, the bracket including a fulcrum portion which bears against the wand intermediate its opposite ends, and

a lever arm rigidly connected to the bracket and extending toward the free end of the wand, the lever arm, the fulcrum portion and the free end of the wand all residing in the same plane, whereby a user of the apparatus activates the wand by squeezing together the free end of the wand and the lever arm thereby bending and fracturing the inner frangible tube of the wand over the fulcrum portion and generating chemiluminescence.

3,900,729

LAMP SHADE CENTER

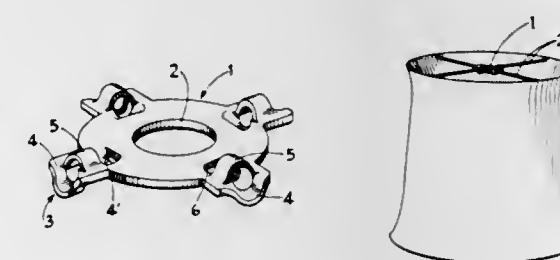
Peter S. Smith, Nabnasset, and Richard B. Theurer, Burlington, both of Mass., assignors to Massachusetts Machine Shop Inc., Boston, Mass.

Filed Mar. 11, 1974, Ser. No. 449,779

Int. Cl. F21v 17/00

U.S. Cl. 240—136

3 Claims



1. A lamp shade center formed of a flat metal stock stamping having a hole in its middle and a plurality of retainers spaced radially from the center of said hole for receiving radial lamp shade support wires, each said retainer comprising at least three wire supporting lanced sections spaced radially along an axis in the plane of said stock, the first and third of which are deformed in one direction normal to said plane of said stock, and the intervening section deformed in the opposite direction from said plane of said stock, said lanced sections being connected to one another at their ends and severed from one another at their middle portions, said lanced sections defining together a radially extending tunnel-like opening terminating at a positive inner stop defined by the edge of said metal stock from which the innermost said section was separated during lancing, said retainers adapted for securing said wires by being simultaneously deformed by a press, thereby to grip and retain said wires.

3,900,730

DEVICE FOR PHOTOELECTRICALLY MONITORING DYNAMIC PROCESSES

Walter Gith, Monchengladbach, Germany, assignor to Schlafhorst & Co., Monchengladbach, Germany

Continuation of Ser. No. 124,177, March 15, 1971, abandoned. This application Oct. 9, 1973, Ser. No. 404,760

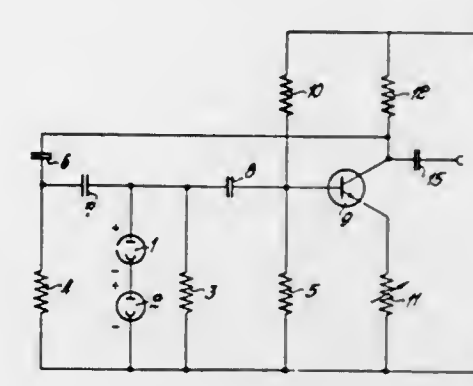
Int. Cl. H01j 39/12

U.S. Cl. 250—206

6 Claims

1. A device for carrying out a method of photoelectrically monitoring dynamic processes, comprising a silicon photoelectric element, an ohmic resistance connected directly in parallel with said photoelectric element and having a resistivity such that said photoelectric element with respect to a direct current component therein caused by a substantially non-deviating light source is substantially short-circuited thereby, a bandpass connected across said photoelement, said ohmic resistance comprising a part of said bandpass, said

bandpass including means for providing an in phase supplementary AC potential across said photoelement, whereby said



bandpass comprises an RC generator operating below the amplitude limit of its oscillatory potential.

3,900,731

METHOD AND APPARATUS FOR STABILIZING THE GAIN OF A PHOTOMULTIPLIER

Philippe Chevalier, Paris, and Bronislav Seeman, Meudon, both of France, assignors to Schlumberger Technology Corporation, New York, N.Y.

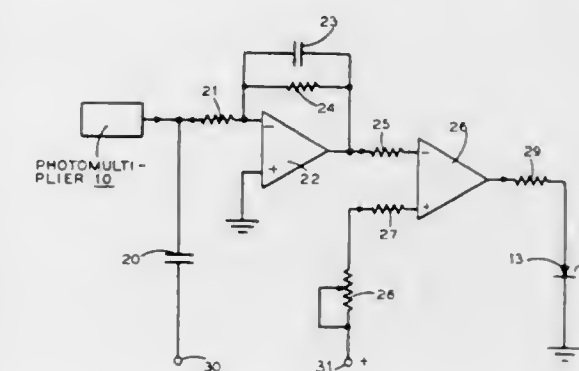
Filed Jan. 22, 1973, Ser. No. 326,197

Claims priority, application France, Jan. 24, 1972, 72.02181

Int. Cl. H01J 39/12

U.S. Cl. 250—207

11 Claims



8. A system for stabilizing the gain of a photomultiplier having at least an anode and a photocathode comprising, a light source of variable intensity operative to illuminate said photocathode, means for providing a source of reference current to a selected value, means for determining the mean or average anode current of the photomultiplier, and means coupled to said light source and said anode current determining means for comparing the mean or average anode current of said photomultiplier and said selected value of reference current and operative continuously to generate a control signal representative of the difference between said mean or average anode current and said selected value of reference current for varying the intensity of illumination of said light source in response to the changes in the value of said difference to stabilize said photomultiplier gain.

3,900,732

ENCODER DISC MOUNT AND ALIGNING TOOL

John E. Costales, Canoga Park, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Apr. 15, 1974, Ser. No. 460,871

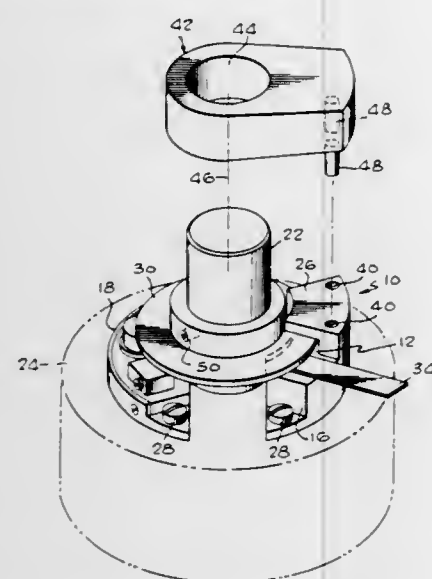
Int. Cl. G01D 5/36; B25B 27/14

U.S. Cl. 250—231 SE

4 Claims

1. An encoder assembly in combination with an alignment tool for aligning an encoder detecting assembly with a rotatable encoder plate having a rotating shaft, comprising:

- a. a removable tool including a void adapted to fit about said shaft;
b. at least two prongs depending from said tool and spaced from said void; and



- c. said encoder detecting assembly including at least two discrete receiving means capable of simultaneously receiving said at least two prongs when said void is fitted about said shaft,
whereby said encoder detecting assembly is capable of being fixed relative to said rotatable encoder plate at a resolution of 500 cycles per revolution of said encoder plate.

3,900,733

METHODS AND APPARATUS FOR MEASURING THE DENSITY OF GEOLOGICAL FORMATIONS

Bronislav Seeman, Meudon, France, assignor to Schlumberger Technology Corporation, New York, N.Y.

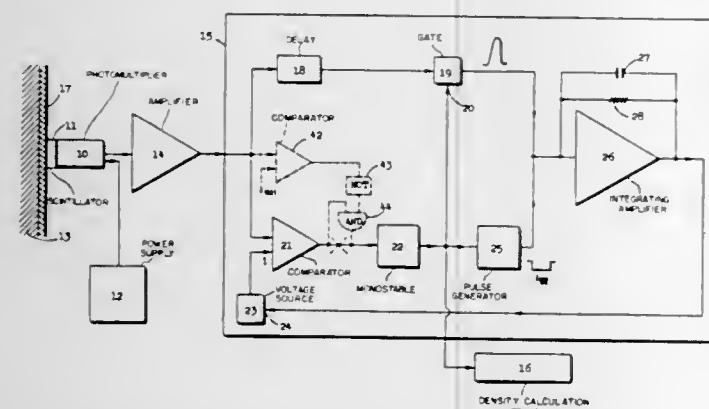
Filed Jan. 24, 1973, Ser. No. 326,379

Claims priority, application France, Jan. 24, 1972, 72.02181; Dec. 11, 1972, 72.43983

Int. Cl. G01v 5/00

U.S. Cl. 250-262

26 Claims



1. A method of correcting borehole barite effects on gamma radiation detected from a formation of interest to determine a formation characteristic free of barite distortion comprising the steps of:

deriving a plurality of spectra of detected gamma radiation energies that are representative of detected formation gamma radiation and exceed a threshold energy value; and

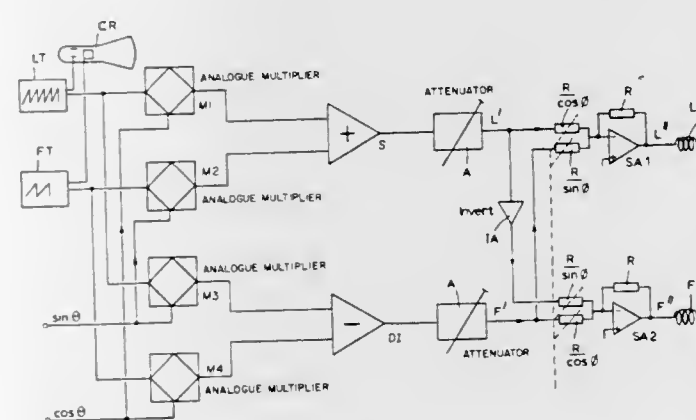
comparing the spectra with one another to produce an output signal representative of a predetermined relationship therebetween to enable determination from the output signal of an adjusted threshold energy value corresponding to a minimum energy level for a formation characteristic determining spectra that results in the correction of borehole barite effects on the spectra of detected gamma radiation.

3,900,734
SCANNING ELECTRON-BEAM INSTRUMENT
David Kynaston; Peter Irving Tillett, and Richard Stephen Paden, all of Cambridge, England, assignors to Cambridge Scientific Instruments Limited, Cambridge, England
Filed Apr. 18, 1974, Ser. No. 462,295
Claims priority, application United Kingdom, Apr. 19, 1973, 19142/73

Int. Cl. H01j 37/26

U.S. Cl. 250-311

2 Claims



1. A scanning electron beam instrument comprising means for forming a fine probe of electrons along an axis, a variable-focus electromagnetic final lens acting on said probe, line and frame time base generators capable of generating line and frame scanning signals, line and frame scanning coils disposed to act on said probe ahead of said final lens whereby to cause the formation of a raster on a specimen placed at the focus of said final lens, variable control means controlling the focal length of said final lens, signal mixing means connected to said frame and time base generators and operative to mix said signals and feed derived line and frame scanning signals to said line and frame scanning coils respectively, said derived signals being such as to rotate said raster about said axis as compared with a raster produced by said first-mentioned signals, an interconnection between said signal-mixing means and said variable control means such as to vary the rotation of said raster by said signal-mixing means in opposition to rotation of said raster introduced by said final lens, whereby the orientation of said raster at the focus is independent of the focal length of said final lens at least over a range of focal lengths, and relative attenuating means interposed between at least one of said time base generators and said signal mixing means, capable of varying the dimension of said raster at the focus in a given direction transverse to said axis.

3,900,735

CORONA DISCHARGE APPARATUS

Helmut Jahn, Frankfurt am Main, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany
Continuation of Ser. No. 287,330, Sept. 8, 1972, abandoned.

This application Mar. 27, 1974, Ser. No. 455,485

Claims priority, application Germany, Sept. 10, 1971, 2145268

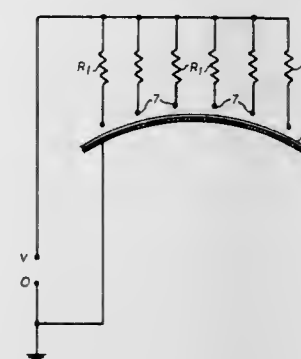
Int. Cl. G03g 15/00

U.S. Cl. 250-324

20 Claims

1. A corona-discharge apparatus for applying a substantially uniform electrostatic charge to a grounded photoconductive surface, comprising frame means, a plurality of at least three thin corona discharge wires clamped in said frame means and disposed above and substantially parallel to said photoconductive surface, and a plurality of resistors, each resistor being connected at one end to one single high voltage and at the

other end to a group of said wires, wherein said discharge wires are in sufficiently close proximity to one another to



provide a substantially uniform electrostatic discharge over said photoconductive surface.

3,900,736

METHOD AND APPARATUS FOR POSITIONING A BEAM OF CHARGED PARTICLES

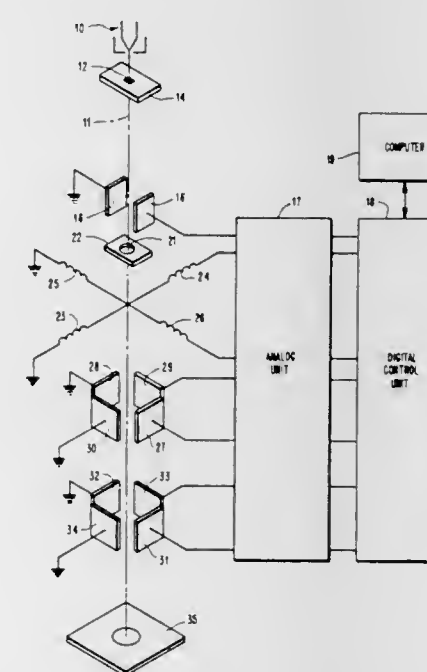
Michel S. Michail, Wappingers Falls; Ollie C. Woodard, Poughkeepsie, and Hannon S. Yourke, New York, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 28, 1974, Ser. No. 437,585

Int. Cl. H01J 37/00

U.S. Cl. 250-492 A

27 Claims



1. A method of positioning a beam of charged particles comprising:

ascertaining the actual location and shape of a four-sided area of a target in which the beam is to be applied relative to the location and shape of a design four-sided area; directing the beam over the target after ascertaining the actual location of the area of the target and its shape relative to the location and shape of the design area; and moving the beam in a predetermined path at each of a plurality of predetermined positions within the design area in accordance with a predetermined pattern while dynamically electronically compensating at each of the predetermined positions for the deviation of the actual position within the actual area from the predetermined position due to the actual area having a different location and shape relative to the location and shape of the design area to cause the beam to be shifted from the predetermined position and applied at the deviated actual position

so that a pattern is written within the actual area in accordance with the predetermined pattern.

3,900,737

ELECTRON BEAM EXPOSURE SYSTEM

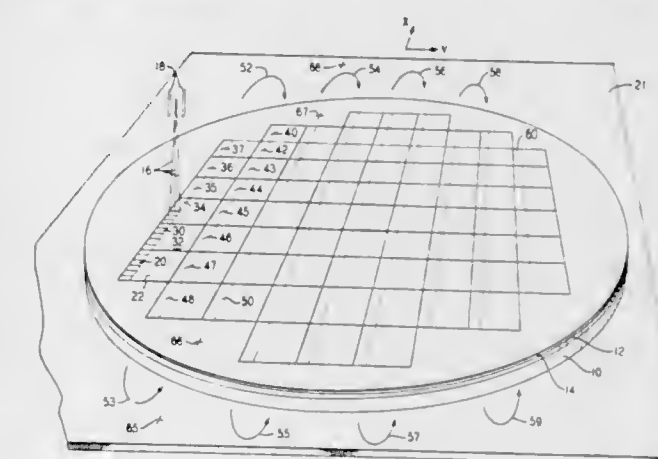
Robert Jacob Collier, New Providence, and Donald Richard Herriott, Morris Twp., Morris County, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 18, 1974, Ser. No. 461,876

Int. Cl. H01j 37/26; B23k 9/00

U.S. Cl. 250-492 A

13 Claims



1. An exposure system for selectively irradiating each of multiple subregions of a radiation-sensitive resist layer, each of said subregions including plural abutting stripe areas, correspondingly-positioned stripe areas in said respective subregions constituting a set of such areas, a single pattern being respectively associated with each different set of stripe areas, said system comprising

means for sequentially scanning a radiant beam over the plural sets of correspondingly-positioned stripe areas in said respective subregions in a set-by-set way, one stripe area at a time, in a two-dimensional way, and means for intensity modulating said radiant beam in accordance with plural specified patterns as the respective plural sets of correspondingly-positioned stripe areas are scanned.

3,900,738

NON-CONTACT MEASURING GAUGE

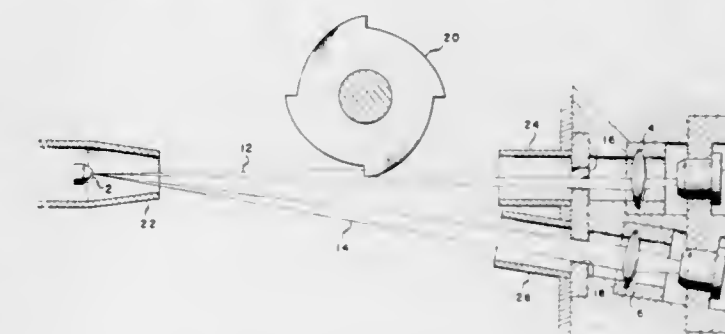
Russell M. McKay, Sr., Los Altos, Calif., assignor to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.

Filed May 23, 1973, Ser. No. 363,185

Int. Cl. G01N 21/30

U.S. Cl. 250-560

6 Claims



1. In a non-contact measuring gauge the improvement comprising:

a base comprising an elongated flat member, means for producing a non-coherent light rigidly affixed to said base, a detector housing rigidly affixed to said base, said detector housing including a face plate defining a first aperture and a second aperture,

a first detector mounted within said detector housing aligned with said first aperture,
 a second detector mounted within said detector housing aligned with said second aperture,
 a first lens system and a second lens system coaxially mounted between said means for producing non-coherent light and said first detector and said second detector respectively for focusing said non-coherent light on said detectors,
 said first and second detector positioned equal radial distance from said non-coherent light means and aligned to simultaneously receiving radiation from said non-coherent light means, whereby
 said detectors generate an output in response to and proportional to the non-coherent light impinging on said detectors.

3,900,739

DEVICE FOR PROVIDING A CURRENT SUPPLY TO INDUCTIVE LOADS BY USE OF A BATTERY AND A D.C. PULSE TRANSFORMER POSITIONED BETWEEN BATTERY AND LOAD

Wilhelm Morawski, and Heinrich Raethel, both of Munich, Germany, assignors to Messerschmitt-Bolkow-Blohm G.m.b.H., Munich, Germany

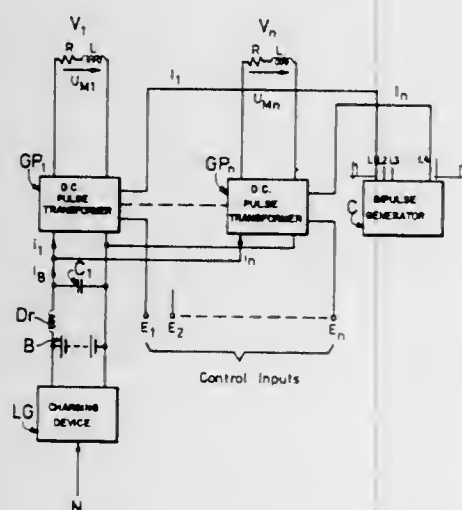
Filed Aug. 28, 1973, Ser. No. 392,229

Claims priority, application Germany, Aug. 29, 1972, 2242353

Int. Cl. B60m 3/06; H02j 7/00

U.S. Cl. 307-41

9 Claims



1. A device for controlling the current supply to a plurality of inductive loads, comprising:

a battery;
 a plurality of normally open d.c. pulse transformer means equal in number to the number of said inductive loads connected between said battery and said inductive loads, each of said d.c. pulse transformer means having input terminals and output terminals thereon, said input terminals being connected to each other and to said battery so that said battery supplies an amount of electrical energy to each of said d.c. pulse transformer means, said inductive loads each being connected to said output terminals on a respective one of said d.c. pulse transformer means; control means for effecting a controlled sequential closing and opening of said d.c. pulse transformer means to effect a momentary connection of said battery to one of said inductive loads, at least one of said inductive loads being energized through a closed one of said d.c. pulse transformer means to thereby momentarily energize one of said inductive loads while the remainder of said inductive loads remains unenergized;

cross-over means for connecting said energized inductive load to said input terminals of said d.c. pulse transformer means in response to said control means opening the

connection of said battery and said one of said d.c. pulse transformer means so that the electrical energy in said inductive load will be transmitted to said input terminals including the input terminals of next sequentially operated d.c. pulse transformer means to be dissipated through the inductive load connected to said output terminals of said next sequentially operated d.c. pulse transformer means; and
 battery protection means for preventing said electrical energy from said inductive load damaging said battery.

3,900,740

CONTROL DEVICE OF COPYING MACHINE

Hideo Akimoto, and Hiromitsu Kamiyama, both of Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

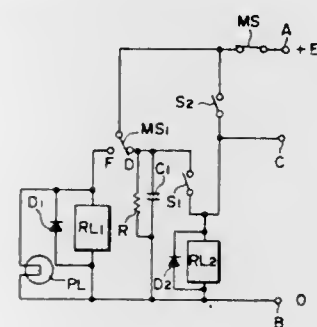
Filed Feb. 6, 1974, Ser. No. 440,246

Claims priority, application Japan, Feb. 8, 1973, 48-16897

Int. Cl. G03G 15/00

U.S. Cl. 307-112

5 Claims



1. A control device for a copying machine comprising:
 a switch movable from a first state to a second state when the copying machine has been operated for a predetermined number of cycles;
 an indicator for indicating that the machine has been operated for said predetermined cycles, said indicator being inoperable when said switch is in said first state and operable when said switch is in said second state;
 a stop signal causing means for generating signals for stopping the operation of the machine, said stop signal causing means being inoperable when said switch is in said first state and operable when said switch is in said second state; and
 means for making said stop signal causing means inoperable when said switch is in said second state without changing the second state to the first state.

3,900,741

FAULT TOLERANT CLOCK APPARATUS UTILIZING A CONTROLLED MINORITY OF CLOCK ELEMENTS

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of; William M. Daly, West Newton, and John F. McKenna, Jr., Gloucester, both of Mass.

Filed Apr. 26, 1973, Ser. No. 354,612

Int. Cl. H02K 19/08; H03K 19/42; G06F 11/08

U.S. Cl. 307-204

5 Claims

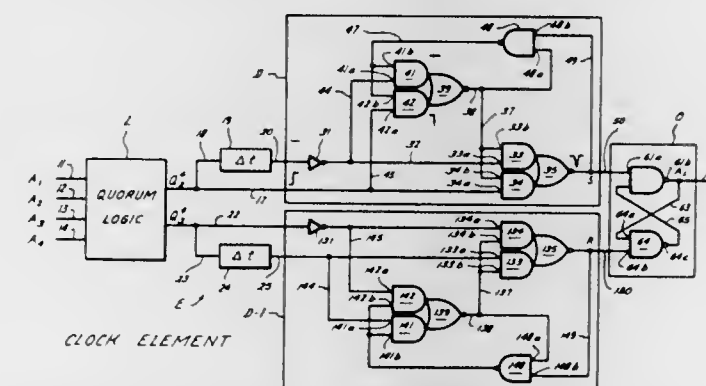
1. A fault tolerant clock apparatus for providing a digital clock signal despite a number r of failures of individual clock elements thereof, said apparatus comprising:

a plurality of n individual clock elements connected to each other to receive output clock signals from all of said plurality of clock elements, each of said clock elements including

quorum logic means for forming control signals responsive to transitions between digital logic levels in the output signals of a controlling minority of a number x of said individual clock elements,

output means comprising bistable digital logic means electrically connected to said quorum logic means for form-

ing the digital clock signal in response to the control signals from said quorum logic means wherein the clock signal is formed despite failure of individual clock elements in the clock apparatus, said quorum logic means forming a first of said control signals for setting the output bistable logic means to a first logic level in response to transitions in logic level of the controlling minority x of



individual clock elements and said quorum logic means forming a second of said control signals for resetting the output bistable logic means to the second logic level in response to transitions in logic levels of an integral number y of clock elements wherein r , n , and x are positive integers, x is equal to or greater than $r+1$, n is equal to or greater than $3r+1$, and y is equal to or less than $n-r$.

3,900,742

THRESHOLD LOGIC USING COMPLEMENTARY MOS DEVICE

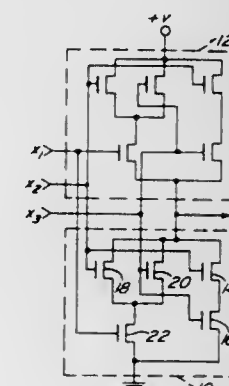
Daniel Hampel, Westfield; Kalman J. Prost, East Windsor, and Norman R. Scheinberg, Fort Lee, all of N.J., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 24, 1974, Ser. No. 482,306

Int. Cl. H03K 19/42, 19/08, 19/36

U.S. Cl. 307-211

7 Claims



1. A majority logic gate for indicating when the sum of the integer weights of any one of a plurality of selected combinations of a multiplicity of weighted input signals is greater than half the sum of the weights of all of the input signals, said sum of the weights of all of the input signals being an odd integer comprising, in combination: first, second and output terminals;

a first network having a plurality of parallel-connected circuits, each of said first network circuits having a plurality of source-to-drain series-connected first network MOS devices of a first channel conductivity type, each of said first network MOS devices having a gate for receiving a respective one of said input signals associated with a respective one of said selected combinations, the source of the first MOS device in each of said first network circuits commonly connected to said first terminal and the drain of the last MOS device in each of said first network circuits commonly connected to said output terminal; and

a second network having a plurality of parallel-connected circuits, each of said second network circuits having a plurality of source-to-drain series-connected second network MOS devices of a second channel conductivity type opposite to said first channel conductivity type, each of said second network MOS devices having a gate for receiving a respective one of said input signals associated with a respective one of said selected combinations, the source of the first of said second network MOS device in each of said second network circuits commonly connected to said second terminal and the drain of the last MOS device in each of said second network circuits commonly connected to said output terminal; whereby said first and second networks for a complementary MOS circuit.

3,900,743

CHARGE AMPLIFIER

Paul Kessler Weimer, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

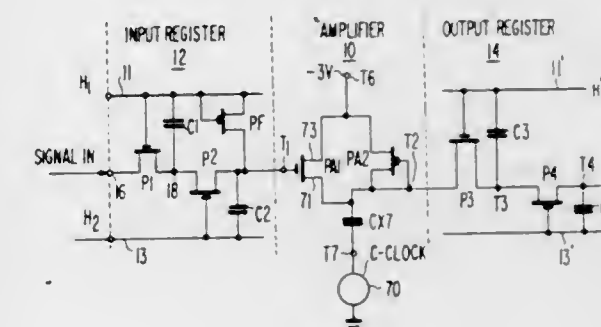
Filed Aug. 31, 1973, Ser. No. 393,554

Claims priority, application United Kingdom, Sept. 25, 1972, 44294/72

Int. Cl. G11C 19/28, 19/18; H01L 29/78

U.S. Cl. 307-221 D

9 Claims



1. In combination with a charge transfer register comprised of insulated-gate field-effect devices having a capacitive terminal, means for amplifying the charge at said capacitive terminal, comprising:

an insulated-gate field-effect transistor of same conductivity type as said devices having first and second electrodes defining the ends of a conduction path and a control electrode;
 means connecting said control electrode to said capacitive terminal;
 a control terminal;
 a capacitor whose capacitance is greater than the capacitance at said capacitive terminal;
 means connecting said capacitor between said control terminal and one end of the conduction path of said transistor;
 means for applying a control signal to said control terminal of a polarity and amplitude to operate said insulated-gate field-effect transistor in the source follower mode for producing a charge signal across said capacitor in phase with and directly proportional to the signal present at said capacitive terminal; and
 means connected across the conduction path of said transistor responsive to the termination of said control signal for restoring the charge condition existing across said capacitor prior to the application of said control signal.

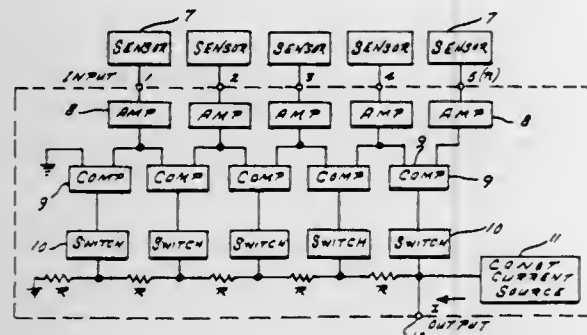
3,900,744

HIGH SPEED ELECTRONIC CHANNEL DISCRIMINATOR
Uve H. W. Lammers, Chelmsford, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 4, 1974, Ser. No. 439,661
Int. Cl.² H03K 5/20

U.S. Cl. 307—235 R

1 Claim



1. A high speed parallel processor for determining the maximum signal output channel of a one-dimensional n-channel array comprising

- a parallel array of n signal sensing devices,
 - a signal level comparator connected to compare the outputs of each adjacent pair of sensors, and a signal level comparator connected to compare the output of the first sensor with zero signal, each said comparator having first and second inputs and an output and being adapted to generate a switch actuating output signal only when the second input signal level is greater than the first input signal level,
 - means connecting the first and second inputs of adjacent comparators,
 - a constant current source,
 - n resistors connected in series between said constant current source and ground,
 - an output terminal connected between the nth resistor and said constant current source,
 - a switch connected between the nth resistor and ground, and
 - a switch connected between each resistor and ground,
- the output of each comparator being connected to and effective to actuate a discrete switch.

3,900,745

WAVEFORM GENERATOR

Takeshi Oku, Kawanishi, and Masaru Tanaka, Toyonaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

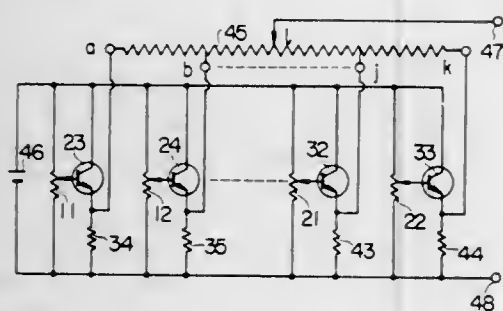
Filed July 23, 1973, Ser. No. 381,569

Claims priority, application Japan, July 28, 1972, 47-76169; July 28, 1972, 47-76170

Int. Cl. H03k 1/14, 4/00

U.S. Cl. 307—260

1 Claim



1. A waveform generator comprising:
- a plurality of emitter-follower type transistor amplifiers having their bases connected to respective variable voltage sources;
 - a multi-tapped potentiometer having a variable sliding terminal displaceable along substantially the entire length of

said potentiometer and having a plurality of taps, each of said taps being connected to an emitter output of a respective one of said transistor amplifiers, thereby providing an output of arbitrary waveform at the variable sliding terminal of said potentiometer;

another emitter-follower type transistor amplifier having a base connected to the sliding terminal of said multi-tapped potentiometer;

a variable resistor having one end connected to the emitter of said another transistor amplifier as the emitter resistance;

a pair of output terminals connected to the sliding terminal of said variable resistor and the other end of said resistor, respectively; and

a variable d.c. voltage source interposed in the connection between one of said output terminals and said variable resistor.

3,900,746

VOLTAGE LEVEL CONVERSION CIRCUIT

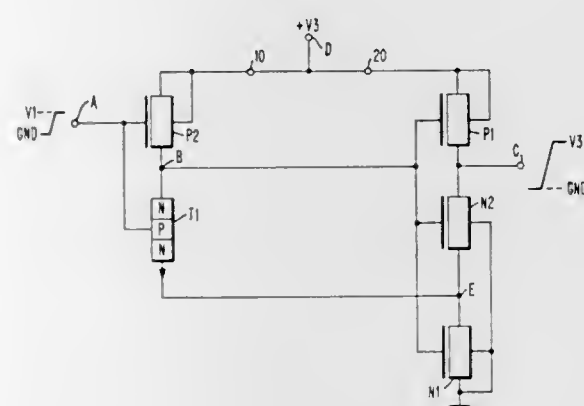
Wayne R. Kraft, and Robert P. Lowden, both of Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 3, 1974, Ser. No. 466,562

Int. Cl.² H03F 3/16, 3/18; H03K 3/14

U.S. Cl. 307—264

11 Claims



1. A voltage level translating circuit providing at its output terminal a signal having a voltage level within a first predetermined range in response to a signal at its input terminal having a voltage level within a second predetermined range comprising:

- first and second reference potentials;
- a bipolar transistor, said input signal being applied to the base of said bipolar transistor; a complementary field effect transistor inverter means including a first field effect transistor of a first channel type and a second field effect transistor of a second channel type complementary to said first channel type; said complementary field effect transistor inverter means connected to said first reference potential for generating said output signal, the gate electrodes of the complementary field effect transistors of said inverter means being connected to the collector of said bipolar transistor;
- resistance means connected between the collector of said bipolar transistor and said first reference potential; and
- variable current sink means connected to the emitter of said bipolar transistor and to said inverter means and being responsive to the voltage level at the collector of said bipolar transistor for holding said output terminal at said second reference potential when the bipolar transistor is non-conductive and for operating said bipolar transistor in the emitter-follower mode when said bipolar transistor is conductive.

3,900,747

DIGITAL CIRCUIT FOR AMPLIFYING A SIGNAL

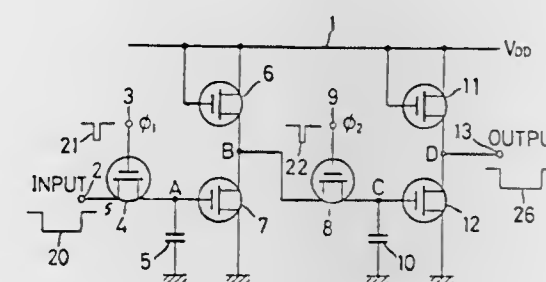
Hiroshi Yamazaki, and Tetsuo Ando, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 208,161, Dec. 15, 1971, abandoned. This application July 12, 1973, Ser. No. 378,512

Int. Cl. H03k 3/33; H011 1/100

U.S. Cl. 307—304

2 Claims



1. A digital circuit for providing an output signal at a boosted level with respect to an input signal, comprising input and output terminals for respectively receiving the input signal and delivering the output signal, a MIS field effect transistor having a source-drain circuit connected between said input and output terminals, means for supplying a first clock pulse to the gate electrode of said MIS field effect transistor during the occurrence of said input signal, a semiconductor substrate of one conductivity type connected to ground, first and second diffusion regions of the opposite conductivity type formed in said substrate with a relatively small interval between said regions and with said second diffusion region being in an electrically floating state, an insulating layer on said substrate extending from over a part of said first diffusion region and over substantially the entire area of said second diffusion region and said interval, a conductive layer covering said insulating layer for forming a capacitance with the latter, means connecting said conductive layer to said output terminal, and means for supplying a second clock pulse to said first diffusion region, said first and second clock pulses being sufficiently different in phase to avoid overlapping thereof and the time interval from said second clock pulse to said first clock pulse determining the pulse width of a portion of said output signal, which is boosted with respect to said input signal by the magnitude of said second clock pulse.

3,900,748

TORSIONAL CERAMIC TRANSDUCER

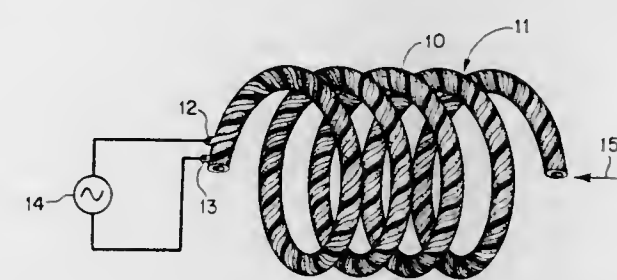
Robert Adler, Northfield, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Jan. 31, 1972, Ser. No. 222,201

Int. Cl.² H01L 41/04

U.S. Cl. 310—9.6

12 Claims



1. A transducer comprising:
- a coiled element of ferroelectric material;
 - means, including a pair of electrodes spaced apart on a surface of said element and individually canted with respect to the centerline of said element, for inducing torsional stress about the coiled centerline of said element;

and terminal means for coupling a signal source to the electrodes in said pair to create change in elongation of said coil in the direction of its axis.

3,900,749

PERMANENT MAGNET GENERATOR

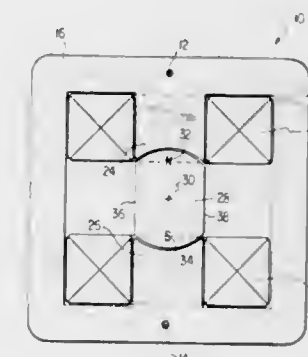
Roy C. Carriker, Lancaster, Pa., assignor to HMW Industries, Inc., Lancaster, Pa.

Filed Apr. 2, 1974, Ser. No. 457,163

Int. Cl. H02k 21/12

U.S. Cl. 310—156

18 Claims



1. An electromagnetic device for use as a generator or alternator comprising a plurality of magnetic laminations arranged to form a stack, each of said laminations being of at least substantially square configuration and formed as a single piece to reduce the magnetic reluctance of the lamination, each of said laminations having a pair of opposed legs with the legs of the laminations in said stack aligned to form a pair of opposed magnetic cores, a coil wound around each of said cores, the thickness of the coil around each core being at least approximately equal to the length of each core, and a permanent magnet rotor mounted for rotation between said cores, said rotor including a permanent magnet which is magnetized in a direction perpendicular to the rotational axis of said rotor, the spacing (A) between the tips of said cores being equal to the length (B) of the legs forming said cores which is in turn equal to the width (C) of said cores, and the width (D) of said frames being equal to at least approximately one-half the width (C) of said cores.

3,900,750

METAL HALIDE DISCHARGE LAMP HAVING HEAT ABSORBING COATING

William I. Bamberg, Medford, and William M. Keeffe, Rockport, both of Mass., assignors to GTE Sylvania Incorporated, Danvers, Mass.

Filed June 3, 1974, Ser. No. 475,733

Int. Cl.² H01J 61/52

U.S. Cl. 313—44

6 Claims



1. An arc discharge lamp comprising an arc tube, made of high silica glass and having press seals at each end, containing a filling including inert starting gas, mercury and metal halide, having electrodes sealed therein at opposite ends and having a coating on the ends of said arc tube, said coating comprising

a first layer of a dark or gray heat absorbing material and a second layer of a white heat reflecting material, said dark or gray heat absorbing material comprising zirconium diboride.

3,900,751

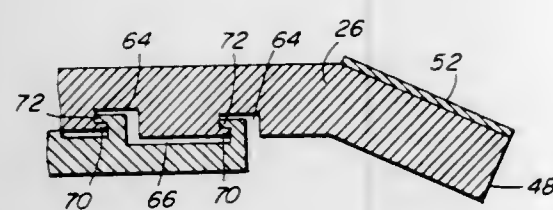
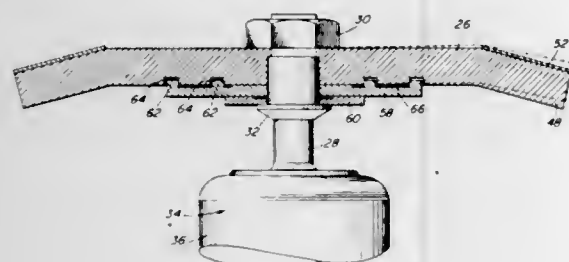
ROTATING ANODE X-RAY TUBE

William P. Holland, West Reading; Robert E. Azud, Ridgefield, and Thomas J. Koller, Huntington, all of Conn., assignors to The Machlett Laboratories, Inc., Stamford, Conn.
Filed Apr. 8, 1974, Ser. No. 459,245

Int. Cl. H01j 35/04

U.S. Cl. 313-60

4 Claims



1. An x-ray tube comprising an evacuated envelope containing an anode including a target, means for rotating said target about a perpendicular axis, cathode means spaced from said anode for generating a beam of electrons and directing same onto one side of said target, and retainer means engaging said target and physically restraining it from deformation resulting from heat generated by impingement of electrons thereon, said retainer means comprising a member disposed adjacent the side of the target opposite the cathode means, the adjacent surfaces of said target and member having interfitting means for physically restraining the target from deformation when thermally stressed, said interfitting means comprising at least one ridge on one of said adjacent surfaces and at least one aligned groove in the other of said adjacent surfaces, said ridge residing within said groove, said ridge and groove being provided with interlocking means.

3,900,752

GLOW DISCHARGE DISPLAY DEVICE WITH INTERSECTING ELECTRODE SYSTEMS SEALED BETWEEN OPPOSING PLATES

George Frederick Weston, Salfords, near Redhill, England, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Nov. 1, 1973, Ser. No. 411,760

Claims priority, application United Kingdom, Nov. 20, 1972, 53508/72

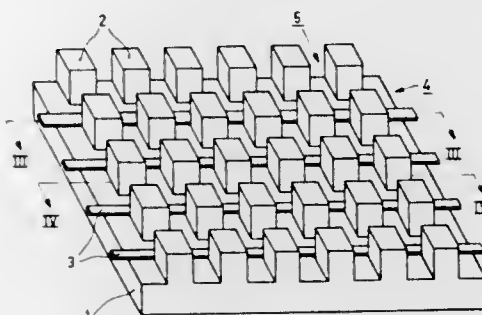
Int. Cl. H01j 17/00

U.S. Cl. 313-188

10 Claims

1. A glow discharge display device comprising first and second substantially parallel electrically insulating plates facing one another with a discharge gas atmosphere between them, first and second sets of elongate electrical conductors extending between and substantially parallel to the plates with the conductors of the first set spaced from and crossing those of the second set to form a cross-bar addressing system for the resulting array of electric discharge paths through said atmosphere defined by the effective cross-points of the conductors of the first set with those of the second, the surface of the first plate which faces the second plate comprising an array of electrically insulating posts thereon which extend between the

conductors of the first set towards the second plate, the conductors of the second set running between the end of said posts and the second plate so that each part of each conductor of the second set which links a pair of adjacent said cross-points is situated between the end of an individual post and the



second plate, and members on said second plate of electrically insulating material extending in the length direction of the conductors of the second set to fill the space formed by the array of insulating posts in the direction perpendicular to the first set of conductors.

3,900,753

HIGH PRESSURE SODIUM VAPOR LAMP HAVING LOW STARTING VOLTAGE

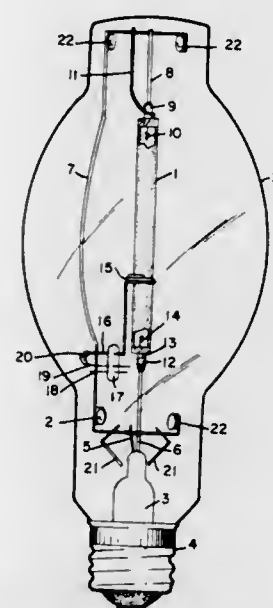
Donald A. Richardson, Beverly, Mass., assignor to GTE Sylvania Incorporated, Danvers, Mass.

Filed May 28, 1974, Ser. No. 473,613

Int. Cl. H01j 61/54

U.S. Cl. 313-198

5 Claims



1. A high pressure sodium arc discharge lamp comprising an alumina arc tube disposed within an outer jacket, the arc tube having an electrode at each end and containing a fill including sodium, mercury and a Penning gas mixture; a wire ring starting aid encircling the arc tube, more proximate one electrode than the other, and electrically connected to said other electrode through a temperature actuated switch which is normally closed at room temperature and which is open during normal lamp operation, thereby electrically disconnecting the wire ring starting aid.

3,900,754

ELECTRIC DISCHARGE LAMP

David Robert Mason; Susan Margaret Cole, both of Runcorn; Maurice Arthur Cayless, and David Osborn Wharmby, both of London, all of England, assignors to Thorn Lighting Limited, London, England

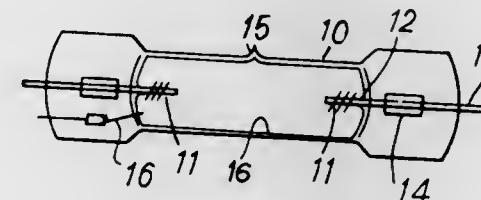
Filed Jan. 18, 1974, Ser. No. 434,382

Claims priority, application United Kingdom, Jan. 19, 1973, 2953/73

Int. Cl. H01j 61/33

U.S. Cl. 313-221

9 Claims



1. An electrical discharge lamp comprising: an arc tube; components including a pair of spaced electrodes in said arc tube and respective conductive leads or supports for said electrodes; a gaseous fill in said tube; and a transparent, defect-free, solution-deposited protective coating of a vitreous compound selected from metal phosphates and arsenates on at least the internal surface of the arc tube and the exposed surfaces of said leads or supports which tend to react with said fill during operation of the lamp.

3,900,755

ARC SUPPRESSING COATING FOR METAL-DIELECTRIC INTERFACE SURFACES

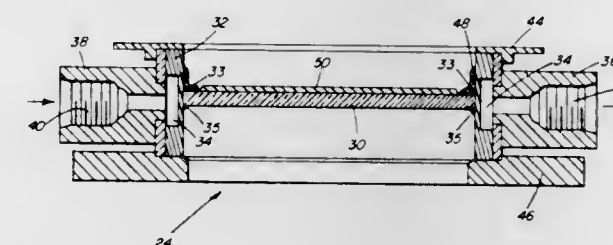
Lawrence H. Tisdale, Wakefield, and Leonard Lesensky, Lexington, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed June 26, 1972, Ser. No. 266,003

Int. Cl. H01p 1/00, 7/06

U.S. Cl. 313-212

3 Claims



1. An electromagnetic energy electron discharge device comprising:

an evacuated envelope having an access opening; a high power window assembly for sealing said access opening including a body of a dielectric material permeable to electromagnetic wave energy and hermetically joined to a support body of a metallic material; and a coating of an oxide of a dielectric material selected from the group including silicon, alumina and titanate disposed solely on the interface surfaces of said joined bodies to be exposed to vacuum to substantially reduce surface electric field strengths in the interface regions; said coating having a thickness averaging in the range of about 1,000-2,000 Angstrom units.

3,900,756

LONG-LIFE CARBON ELECTRODES FOR WEATHER TESTER AND THE LIKE

Shigeru Suga, Yoyogi 5-20-2, Shibuya-Ku, Tokyo, Japan
Filed Oct. 7, 1974, Ser. No. 512,882

Int. Cl. H05b 31/10; H01j 1/02

U.S. Cl. 313-354

1 Claim



1. In a carbon arc lamp for use in weather testers and the like and including pairs of upper and lower electrodes, each of said upper and lower electrodes comprised of a core portion formed of a luminous material, a carbonaceous portion surrounding said core portion and a layer of copper or like material positioned over said carbonaceous portion, the improvement which comprises the diameter ratio of the upper to the lower electrodes being within the range of 1.4 - 1.6 : 1.0, and the ratio of the sectional area of the carbonaceous portion to that of the core portion in the upper carbon electrodes being within the range of 9 - 14 : 1 with the ratio in the lower carbon electrodes being within the range of 5 - 9 : 1, whereby an improved carbon electrode combination is provided in which the upper and lower carbon electrodes have the same rate of combustion to length and can provide spectroscopically stabilized light at a discharge voltage and current of 50 V and 60A respectively, normally used in weather testers, and which also has improved long-life performance in excess of 24 hours of continuous lighting.

3,900,757

SHADOW MASK AND PHOSPHOR SCREEN FOR COLOR CATHODE RAY TUBE HAVING MAJOR AXES OF APERTURES AND ELEMENTS CANTED TO BEAM SCAN DIRECTION

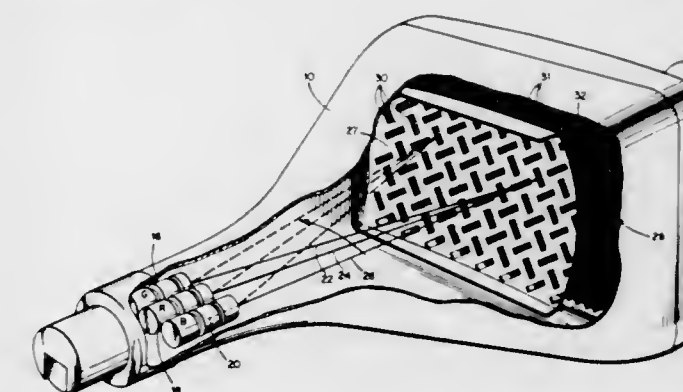
Sam H. Kaplan, Chicago, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed June 20, 1973, Ser. No. 371,901

Int. Cl. H01J 29/07, 29/30, 31/20

U.S. Cl. 313-402

25 Claims



1. A shadow mask for use in a color cathode ray tube, comprising a sheet of electrically conductive material having formed therein a plurality of rows of elongated, equally spaced, electron-transmissive apertures which are arranged such that the major axes of the apertures in each row are parallel and canted relative to the direction of electron beam scan across the mask, the apertures in any given row having an angle of canting which is of opposite polarity to the angle of canting of the apertures in adjoining rows.

3,900,758

GASEOUS DISCHARGE DISPLAY PANEL WITH FLUORESCENT BODIES SURROUNDED BY LIGHT ATTENUATING MATERIAL

Shizuo Andoh, and Norihiko Nakayama, both of Kobe, Japan, assignors to Fujitsu Ltd., Tokyo, Japan

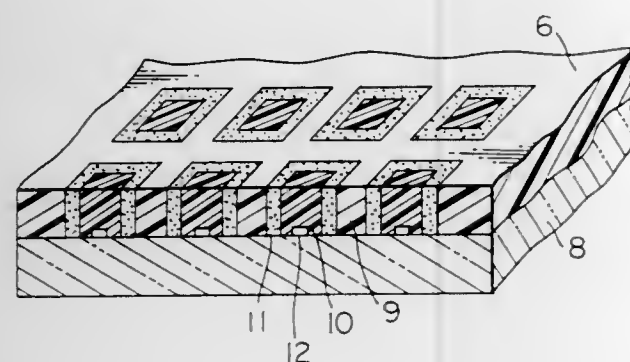
Filed Mar. 22, 1973, Ser. No. 343,699

Claims priority, application Japan, Mar. 27, 1972, 47-29761

Int. Cl. H01j 61/42

U.S. Cl. 313-485

11 Claims



1. A matrix type display panel utilizing surface discharge comprising,
 - a. a pair of dielectric substrates facing each other, at least one of said dielectric substrates being transparent,
 - b. X electrodes which are provided on one of said substrates,
 - c. a first dielectric layer covering said electrodes,
 - d. Y electrodes disposed parallel to one another and at right angles to said X electrodes on said first dielectric layer so that discharge parts of said X electrodes are formed on the co-planar surface with said Y electrodes through said first dielectric layer near each crossing portion of said X and Y electrodes,
 - e. a second dielectric layer which covers said X and Y electrodes so that a discharge space is formed between the other of said dielectric substrates and said second dielectric layer,
 - f. an ionizable gas in said discharge space,
 - g. means for sealing said gas within said space,
 - h. fluorescent bodies corresponding to every discharge part on the inside surface of said other dielectric substrate and
 - i. a layer of ultra-violet light-attenuating material disposed completely around the sides of said fluorescent bodies but leaving exposed ends of said bodies facing said discharge space.

3,900,759

DEVICE FOR OBSERVING WAVEFORM REPEATED AT HIGH FREQUENCY

Kazuo Fujisawa, Osaka, Japan, assignor to Osaka University, Osaka, Japan

Filed Mar. 14, 1974, Ser. No. 450,972

Claims priority, application Japan, June 25, 1973, 48-71539

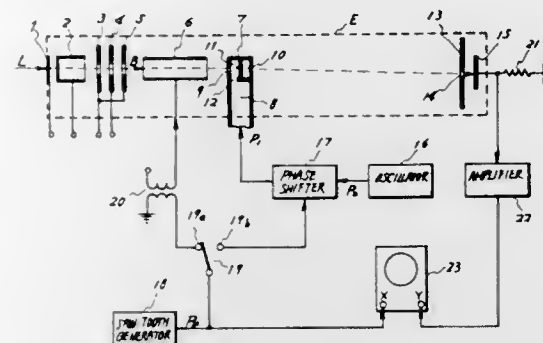
Int. Cl. H01j 31/26

U.S. Cl. 315-10

4 Claims

1. A device for observing a waveform repeated at a high frequency, comprising means of producing an electron beam having a density variation according to the waveform to be observed, means for generating a microwave voltage which is synchronous with the repetition rate of the waveform to be observed, means for deflecting said electron beam under control of said microwave voltage, means for sweeping the phase difference between said electron beam and microwave voltage at a low frequency, means for collecting said electron beam only at a position corresponding to a predetermined

deflection effected by said deflecting means, and means for displaying the magnitude of the electron flow collected by said



collecting means along the phenomenon axis and said phase difference along the time axis.

3,900,760

ELECTRON BEAM TUBE HAVING POST DEFLECTION LENS

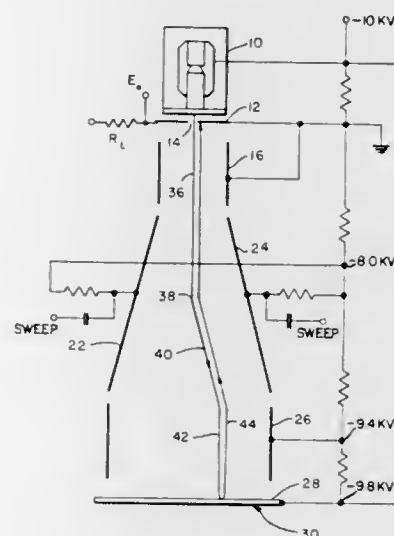
William E. Glenn, Jr., Stamford, and Robert E. Rutherford, Jr., New Canaan, both of Conn., assignors to CBS Inc., New York, N.Y.

Division of Ser. No. 159,132, July 2, 1971, abandoned. This application Mar. 12, 1973, Ser. No. 340,154

Int. Cl. H01J 29/70

U.S. Cl. 315-17

8 Claims



1. An electron tube comprising:
 - an elongated envelope having a longitudinal axis;
 - target means supported within said envelope at one end thereof having an unobstructed surface for receiving an electron beam scanned thereacross;
 - an electron gun mounted in said envelope adjacent the other end thereof operative to direct an electron beam along said longitudinal axis;
 - electrostatic focusing means mounted within said envelope adjacent said electron gun and disposed around said longitudinal axis for focusing said electron beam onto the surface of said target means;
 - electrostatic deflection means mounted within said envelope adjacent said electrostatic focusing means and disposed around said longitudinal axis for scanning said electron beam across the surface of said target means, said deflection means having a center of deflection positioned on said longitudinal axis;
 - electrostatic lens means including a conductive structure mounted within said envelope and surrounding said longitudinal axis outside the path of said electron beam for all scanning positions thereof and axially disposed between and in proximity with the surface of said target means and said deflection means; and

means for applying to said conductive structure, to said deflection means and to the unobstructed surface of said target means predetermined potentials having values related to each other to cause the focal point of said electrostatic lens means to be substantially coincident with the center of deflection of said deflection means, to cause an electron beam deflected by said deflection means to be diverted into a path normally incident upon the surface of said target means and to decelerate said normally incident beam to substantially zero velocity at the surface of said target means.

3,900,761

HIGH INTENSITY METAL ARC DISCHARGE LAMP

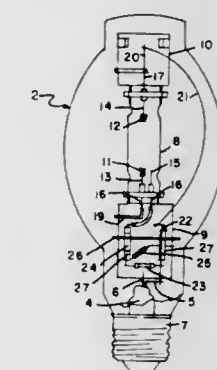
Robert W. Freese, Manchester; Ronald C. Lekebusch, Goffstown, and Paul W. Ulcickas, Manchester, all of N.H., assignors to GTE Sylvania Incorporated, Danvers, Mass.

Filed Nov. 30, 1973, Ser. No. 420,671

Int. Cl. H05b 37/00

U.S. Cl. 315-60

2 Claims



1. A metal halide arc discharge lamp comprising: an arc tube containing an ionizable discharge-sustaining fill including mercury and a metal halide; a first and a second main electrode disposed within the arc tube adjacent the first main electrode; and an electrical circuit within said lamp, said circuit capable of increasing the peak starting voltage applied between said first main and starter electrodes above the peak voltage applied by an external power supply during normal operation of said lamp, said circuit including a diode and two resistors, the diode and one of said resistors being in series between said first main electrode and said starter electrode, and said two resistors being in series between said starter electrode and the external lead-in wire for said starting electrode.

3,900,762

METHOD AND APPARATUS FOR PROJECTING MATERIALS INTO AN ARC DISCHARGE

Charles Sheer, Teaneck, N.J.; Samuel Korman, Hewlett, N.Y.; Derek J. Angier, Peapack, and Robert P. Cahn, Millburn, both of N.J., assignors to Sheer-Korman Associates, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 159,616, July 6, 1971, abandoned. This application Aug. 30, 1973, Ser. No. 392,928

Int. Cl. H05b 31/26; H05h 1/00

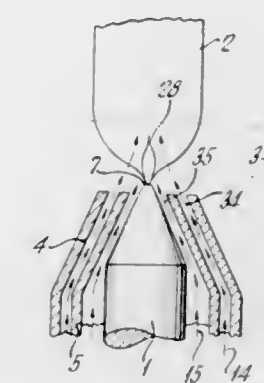
U.S. Cl. 315-111

13 Claims

1. A process for energizing fluid medium in the conduction column of a free-burning electric arc comprising: establishing an arc discharge between an anode and a cathode having a conical tip whereby a plasma bubble is formed at the cathode tip and whereby said arc discharge forms a contraction of the current-carrying area in the transition region in the vicinity of the cathode;

forcefully projecting fluid medium along the surface of said conical tip of said cathode into and through the contraction of the current-carrying area in the transition region in the vicinity of the cathode and along a path which intersects above the plasma bubble; and

simultaneously interposing between said fluid medium and said conical tip of said cathode in a direction parallel to



the surface of said conical tip a stream of gas that is chemically inert toward the cathode material during operation.

3,900,763

LIGHTING CONTROL DEVICE

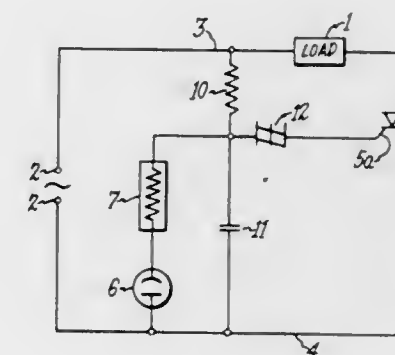
Charlie B. Turner, Hendersonville, N.C., assignor to General Electric Company, N.Y.

Filed May 9, 1974, Ser. No. 468,392

Int. Cl. H05B 37/02

U.S. Cl. 315-156

11 Claims



1. A control device for controlling the operation of a load comprising, in combination, a source of alternating current, load means energized by said alternating current source, controlled switch means connected in series with said alternating current source and said load means and being normally non-conductive to block current flow to said load means and having control electrode means to render it conductive, actuating means connected to said alternating current source and to said control electrode means for applying a control signal to said control electrode means, said actuating means including a resistance and a capacitance connected together in series and voltage sensitive symmetrical switch means connected to the junction of said resistance and capacitance and to said control electrode means being in series discharge relation with said capacitance, and sensor circuit means including sensor means and snap-action symmetrical switch means connected in series across said capacitance, said snap-action symmetrical switch means operating to turn said controlled switch means, and thereby said load means, on and off with rapid switching action at threshold ambient conditions to which said sensor means is responsive.

3,900,764

CATHODE RAY TUBES FOR DISPLAYING LETTERS AND THE LIKE

Mikiharu Tanji; Yoshimasa Yamanaka, and Isao Takahashi, all of Ise, Japan, assignors to Ise Electronics Corporation, Ise, Japan

Continuation of Ser. No. 103,679, Jan. 4, 1971, abandoned.

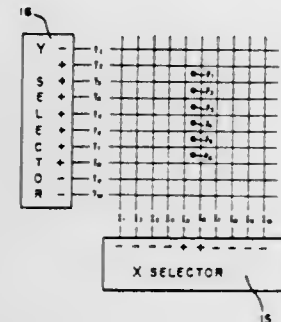
This application Feb. 7, 1973, Ser. No. 330,303

Claims priority, application Japan, Jan. 27, 1970, 45-6846

Int. Cl. H01j 29/70

U.S. Cl. 315-365

3 Claims



1. In a cathode ray tube for displaying letters of the type comprising an evacuated envelope having a display screen at one end thereof, a cathode electrode at the other end for emitting electrons and an electron lens system including deflection means, the improvement which comprises pattern forming means positioned between said cathode electrode and said electron lens system, said pattern forming means including an insulator substrate provided with a plurality of perforations arranged in a matrix, and a plurality of groups of parallel conductors disposed on the opposite sides of said substrate to form rows and columns of said matrix, each one of said perforations being positioned in a square defined by two pairs of parallel conductors belonging to different groups; and means for selectively applying potentials of the same or opposite polarities upon all of said parallel conductors to cause selected ones of said perforations in squares defined by pairs of said selected conductors on opposite sides of said substrate energized with the same polarity potential to have a superposed positive field of predetermined magnitude to permit said electrons to pass through said selected ones of said perforations toward said display screen to display thereon a desired letter, the remainder of said perforations having a superposed field intensity that is negative relative to any value of field intensity greater than half said positive field of predetermined magnitude.

3,900,765

HIGH VOLTAGE PULSE REGULATOR

Stanley Bart, Chicago, and Raymond J. Magdziarz, Wood Dale, both of Ill., assignors to Admiral Corporation, Schaumburg, Ill.

Continuation of Ser. No. 130,081, April 1, 1971, abandoned.

This application June 11, 1973, Ser. No. 368,957

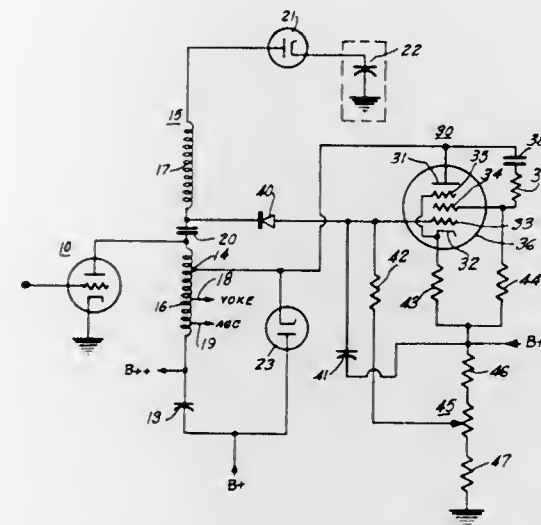
Int. Cl. H01j 29/70

U.S. Cl. 315-411

2 Claims

1. In a color television receiver including a picture tube: a high voltage system comprising an autotransformer having a first winding and a second winding; a first capacitor connected between said first and second windings; an amplifier connected to said first winding for driving said transformer with an oscillatory signal; a deflection yoke coupled to said first winding; a damper connected across a portion of said first winding cooperating with said amplifier and deflection yoke to produce a scan voltage having a waveform characterized by a slowly rising trace portion and a rapidly decaying retrace portion; rectifying means coupled to said second winding developing high voltage DC current for said picture tube; a sensing diode with one side connected to the junction between said second winding and said first capacitor, a voltage regulating vacuum tube with its control grid connected to the second side of said sensing diode; a first resistor connected between

the cathode and control grid of said voltage regulating vacuum tube; a second capacitor; and a second resistor connected in



series with said second capacitor between the anode and cathode of said voltage regulating vacuum tube to shape keying pulse.

3,900,766

CORONA DISCHARGE APPARATUS FOR PARTICLE COLLECTION

Takehiko Kawada, Yokohama, Japan, assignor to Denki Onkyo Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 228,638, Feb. 23, 1972, abandoned.

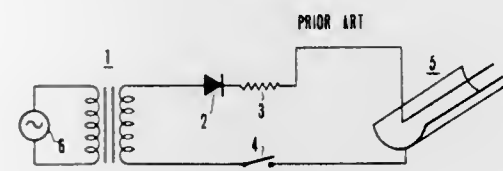
This application Nov. 2, 1973, Ser. No. 412,180

Claims priority, application Japan, Mar. 3, 1971, 46-13943; Feb. 26, 1971, 46-11648

Int. Cl. H01t 19/00

U.S. Cl. 317-3

2 Claims



1. An electrostatic precipitator comprising: a source of alternating low voltage with one grounded terminal; a high voltage ceramic piezoelectric transformer having input terminals connected across said low voltage and a high voltage, high impedance output terminal with no DC connection to ground; rectifier means coupled to said output terminal including voltage multiplier means for producing relative to ground a high direct output voltage and an intermediate direct potential; an atmospheric ionizing device having spaced electrodes one of which is grounded connected across said high direct output voltage and operative to electrostatically charge particles suspended in the medium between said electrodes; and a particle collector having spaced electrodes one of which is grounded connected across said high direct output voltage and a third electrode positioned between said spaced electrodes and connected to be maintained at said intermediate direct potential; the grounded electrodes of said device and said collector being directly connected to said grounded terminal.

3,900,767

SURGE ARRESTOR

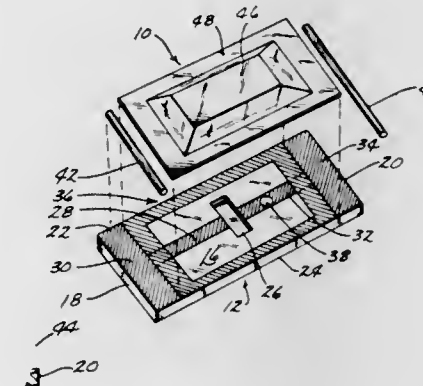
Herman R. Person, Columbus, Nebr., assignor to Dale Electronics, Inc., Columbus, Nebr.

Filed Apr. 26, 1973, Ser. No. 354,483

Int. Cl. H02h 1/04, 3/22

U.S. Cl. 317-61.5

13 Claims



1. A surge arrester comprising, a flat substrate material having a top surface and opposite ends, said substrate material having a spark gap notch formed in its top surface, a first electrode on said top surface extending from one side of said notch towards one end of said substrate material, a second electrode on said top surface extending from the other side of said notch towards the other end of said substrate material, first and second leads secured to said first and second electrodes respectively, and a sealed cover means secured to said top surface extending over said notch, said cover means being secured at its periphery to said top surface and being positioned between said first and second leads.

3,900,768

ELECTRIC SPARK GENERATING DEVICE FOR IGNITORS

Nobuyoshi Moriya, Omiya, Japan, assignor to Mansei Kogyo Kabushiki Kaisha, Saitama, Japan

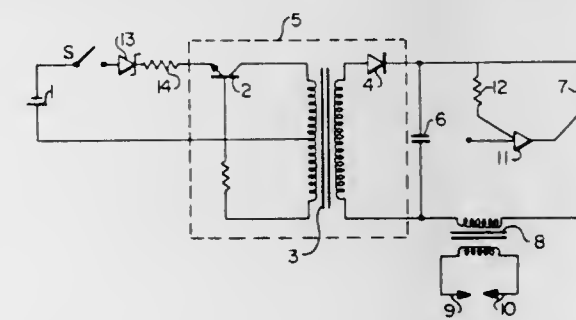
Filed Sept. 12, 1974, Ser. No. 505,377

Claims priority, application Japan, Sept. 19, 1973, 45-109235[U]

Int. Cl. F23q 3/00

U.S. Cl. 317-96

7 Claims



1. An electric spark generating device for ignitors comprising: a power supply; a switch means connected in series with said power supply; an inverter means connected to said switch means; a diode connected in series with said inverter means; a condenser means connected to said diode to store a charge voltage supplied from said power supply; a silicon controlled rectifier connected to said condenser means to discharge the charge voltage on said condenser means; a trigger means connected to the gate of said silicon controlled rectifier to trigger said silicon controlled rectifier

at a predetermined level of the charge voltage on said condenser means; and a step-up transformer having a primary winding and a secondary winding, the primary winding of said step-up transformer being connected between the cathode electrode of said silicon controlled rectifier and said condenser means and the secondary winding of said step-up transformer being connected to ignition electrodes.

3,900,769

ELECTRONIC MODULAR PACKAGE HAVING A PRINTED CIRCUIT ASSEMBLY

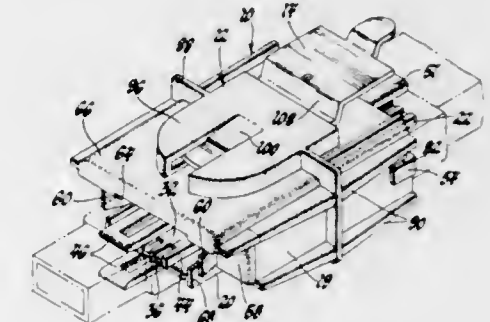
Andrew Russo, Jr., Fowler, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed June 13, 1974, Ser. No. 478,839

Int. Cl. H02B 1/02

U.S. Cl. 317-101 DH

2 Claims



1. An electronic modular package having a printed circuit assembly comprising: a hard circuit board having first and second terminal blocks secured thereto adjacent the opposite ends thereof respectively, said first terminal block having a width less than that of the end portion of said circuit board to which it is secured, said second terminal block having a width greater than the width of said first terminal block and slightly greater than the maximum width of said circuit board; a rigid plastic, hollow elongated housing of generally rectangular cross section having a larger opening at one end and a smaller opening at an opposite end, said circuit board being disposed in said housing by sliding said circuit board with said first and second terminal blocks secured thereto into said housing through said larger opening first terminal block first until said first terminal block is disposed in said smaller opening and said second terminal block is disposed in said larger opening; latch means comprising cooperative portions of said first terminal block and portions of said housing adjacent said smaller aperture for securing said circuit board within said housing, said latch means constituting the sole means preventing withdrawal of said circuit board whereby said circuit board is substantially isolated from forces associated with pushing a mating connector onto said first terminal block, and stop means comprising cooperative portions of said second terminal block and said housing adjacent said larger opening for limiting insertion of said circuit board into said housing, said stop means constituting the sole means limiting insertion of said circuit board into said housing whereby said circuit board is substantially isolated from forces associated with pushing a mating connector onto said second terminal block.

3,900,770

ELECTRIC FENCE SHOCKER CIRCUIT

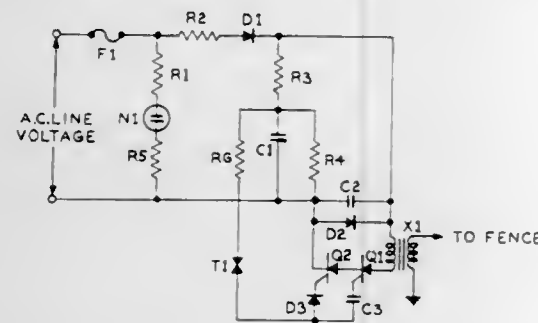
Lance R. Kaufman, Milwaukee, Wis., assignor to Gentron Corporation, Milwaukee, Wis.

Filed Jan. 18, 1974, Ser. No. 434,479

Int. Cl. H03k 17/56

U.S. Cl. 317-148.5 B

2 Claims



1. In an electric fence shocker circuit including a capacitor, a transformer primary winding, and a silicon controlled rectifier, means connecting said capacitor, said transformer primary winding, and the anode-cathode circuit of said silicon controlled rectifier together in series, means for charging said capacitor, and trigger means coupled to the gate electrode of said silicon controlled rectifier for firing the same to discharge the charge on said capacitor through said transformer primary winding, the improvement comprising a second silicon controlled rectifier, means connecting the anode-cathode circuit of both silicon controlled rectifiers together in series, and means coupling trigger pulses to the gate electrodes of both silicon controlled rectifiers, whereby if one of the silicon controlled rectifiers should suffer an interim mode failure, the other silicon controlled rectifier will hold said series circuit open until the gate electrode of said other silicon controlled rectifier is triggered by said trigger means, there being a capacitor connected in series with the gate electrode of one silicon controlled rectifier and a diode connected in series with the gate electrode of the other silicon controlled rectifier.

3,900,771

TRANSISTOR WITH HIGH CURRENT DENSITY

Gerhard Krause, Ebersberg, Germany, assignor to Siemens Aktiengesellschaft, Erlangen, Germany

Continuation of Ser. No. 198,313, Nov. 12, 1971, abandoned.

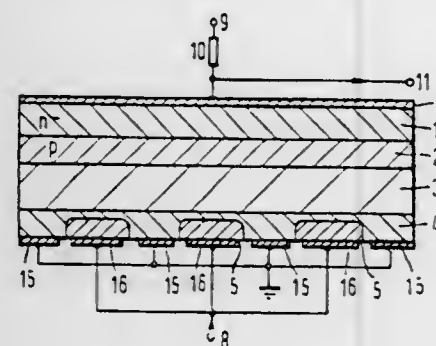
This application July 30, 1973, Ser. No. 383,792

Claims priority, application Germany, Nov. 25, 1970, 2058070

Int. Cl. H01l 11/00

U.S. Cl. 357/7

9 Claims



1. A continuously controllable transistor comprising a first emitter zone, a base zone, a collector zone and a second emitter zone successively superposed one on the other, a collector-base barrier layer disposed between said base zone and said collector zone, means for applying a voltage across said superposed zones with increased current density in the collector-base barrier layer, in which, when in operation, the ratio of the current of charged particles of one conductivity type (i_1), from the base zone to the collector zone, to the

current of charged particles of the other conductivity type (i_2), from the collector zone to the base zone, approximately equals the ratio of the drift velocities of the particles of said one conductivity type and of said other conductivity type in the collector-base barrier layer.

3,900,772

DIGITALLY VARIABLE CAPACITOR

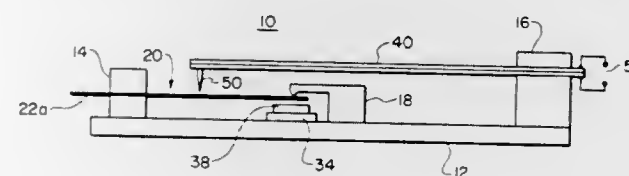
Josef H. Anderl, Eatontown, and Albert C. Colaguri, Long Branch, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 29, 1974, Ser. No. 518,448

Int. Cl. H01G 5/16

U.S. Cl. 317-250

4 Claims



1. A digitally variable capacitor comprising: a sheet metal comb having a rigid spine and a plurality of flexible parallel resilient fingers; each of said fingers being of equal length, the free ends of said fingers each being capacitor elements of different areas; a rigid common capacitor electrode for said capacitor elements; a thin dielectric member affixed to said common capacitor electrode located between the common capacitor electrode and the capacitor elements, the capacitor elements being normally urged by the respective fingers away from the dielectric member, and an independently controllable activator for each finger of said comb for selectively forcing the respective capacitor element into engagement with the dielectric member or for releasing the finger.

3,900,773

ELECTRICAL CAPACITORS

Ian G. Bowkley, and Nigel J. Goff, both of Leatherhead, England, assignors to E. R. A. Patents Limited, Leatherhead, England

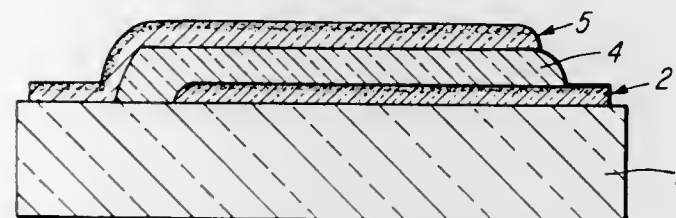
Filed June 11, 1973, Ser. No. 368,833

Claims priority, application United Kingdom, June 12, 1972, 27298/72

Int. Cl. H01g 1/01

U.S. Cl. 317-258

2 Claims



1. In an electrical capacitor comprising a ceramic substrate, a base electrode comprising a layer of finely divided precious metal, a first layer of glass adhering said base electrode to said substrate; a layer of glass-ceramic high permittivity dielectric comprising a fine dispersion of high permittivity ferroelectric crystals throughout said layer; a top electrode comprising a layer of finely divided precious metal and a second layer of glass adhering said top electrode to said layer of dielectric; the improvement which comprises said second layer of glass having the ability to soften in the temperature range 700°-850°C and on further heating to re-crystallize at temperatures below 700°-850°C.

1,000°C of compositions selected from the group consisting of A. 45.4% Nb₂O₅, 8.9% SiO₂, 13.8% BaO, 19.6% PbO, 7.9% SrO, 1% Al₂O₃ and 3.5% B₂O₃;

B. 45.4% Nb₂O₅, 4.4% SiO₂, 13.8% BaO, 19.6% PbO, 7.9% SrO, 1% Al₂O₃, 8.0% B₂O₃;

C. 45.5% Nb₂O₅, 8.9% SiO₂, 13.8% BaO, 19.7% PbO, 7.9% SrO and 4.2% B₂O₃;

D. 62.2% Nb₂O₅, 9.7% Na₂O, 10% CdO, 6% TiO₂ and 12% SiO₂;

E. 60.7% Nb₂O₅, 9.4% Na₂O, 9.6% CdO, 12% SiO₂ and 8.3% Ta₂O₅;

F. 44% Nb₂O₅, 8.6% SiO₂, 16.1% BaO, 23.1% PbO, 3.8% SrO, 1% Al₂O₃ and 3.4% B₂O₃;

G. 45.2% Nb₂O₅, 8.8% SiO₂, 8% BaO, 23.8% PbO, 9.8% SrO, 1% Al₂O₃ and 3.5% B₂O₃;

H. 47.1% Nb₂O₅, 9.2% SiO₂, 17.3% BaO, 11.6% PbO, 10.2% SrO, 1% Al₂O₃ and 3.6% B₂O₃, the stated percentages being the approximate percent by weight of the listed ingredients in said second layer of glass.

3,900,774

OIL-IMPREGNATED CAPACITOR

Yasuo Iijima, Kobe, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

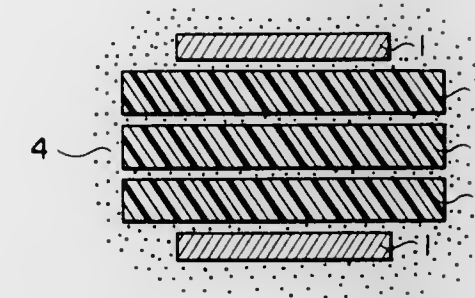
Filed Dec. 26, 1973, Ser. No. 427,690

Claims priority, application Japan, Dec. 28, 1972, 47-3328; Feb. 5, 1973, 46-14890; Sept. 18, 1973, 46-105730

Int. Cl. H01g 3/195

U.S. Cl. 317-258

6 Claims



1. An oil-impregnated capacitor having a thin insulator sheet sandwiched between two electrodes, said thin insulator sheet consisting of a plastic film having haze no lower than 20 percent.

3,900,775

METALLIZED FILM CAPACITOR

Kazushige Takashima, Kawanishi; Katumi Nishigaki, Ikeda, and Terumasa Yamashita, Kobe, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed June 24, 1974, Ser. No. 482,585

Int. Cl. H01g 3/175

U.S. Cl. 317-258

2 Claims



1. A metallized film capacitor comprising a polyethylene terephthalate film both sides of which are metallized, and a non-metallized polypropylene film, both said films being wound at the same time, the thickness of said polypropylene film being 70 to 90% of that of said polyethylene terephthalate film.

3,900,776

PROCESS AND APPARATUS FOR PROLONGING THE USEFUL LIFETIME OF A REPEATEDLY CHARGED ELECTROPHOTOGRAPHIC LAYER

Willi Lanker, Zumikon, Switzerland, assignor to Turlabor AG, Zumikon, Switzerland

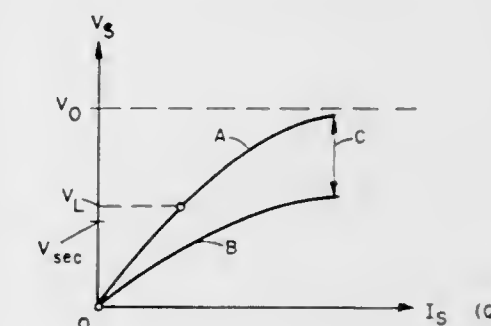
Filed Sept. 17, 1973, Ser. No. 398,134

Claims priority, application Switzerland, Oct. 16, 1972, 15081/72

Int. Cl. H01t 19/00

U.S. Cl. 317-262 A

16 Claims



1. Apparatus comprising: a holding device receiving a layer thereon; a charging device including means for charging the layer to a voltage value (V_1) less than the new value (V_0) of the layer's saturation voltage so that the secondary corona current (I_{sec}) is at most 10% of the current (I_s) flowing to the layer; the charging device including a control electrode having openings therein with such openings in at least a part thereof being of a size (w) less than 1.7 millimeters; and the electrode being spaced less than 4 millimeters from the layer and being arranged equidistant therefrom on the side of the layer facing the charging device.

3,900,777

FEED CONTROL APPARATUS FOR A GRINDING MACHINE

Hirotaka Sumi, Nagoya; Isao Suzuki, Okazaki; Isamu Yokoe, Obu, and Tetsuo Matsuzaki, Nishio, all of Japan, assignors to Toyoda Koki Kaisha, Ltd., Kaisha, Japan

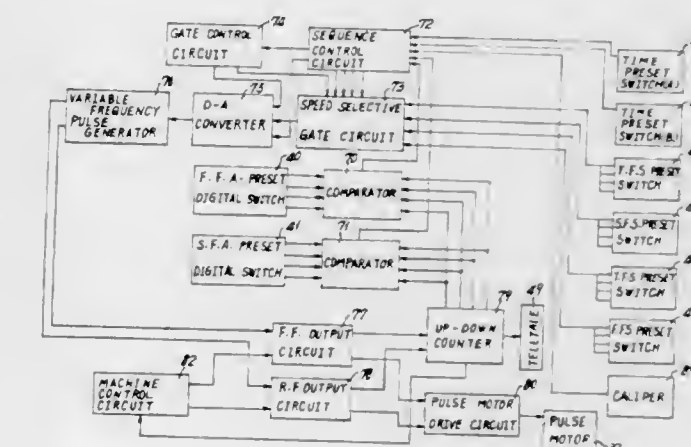
Filed Oct. 26, 1973, Ser. No. 410,283

Claims priority, application Japan, Oct. 28, 1972, 47-108219

Int. Cl. G05b 19/24

U.S. Cl. 318-39

13 Claims



1. Feed control apparatus for a grinding machine having tool and workpiece supports which respectively support a tool and a workpiece, comprising: variable frequency pulse generating means for generating a series of pulse signals;

caliper means for measuring said workpiece and for generating a plurality of caliper signals when said workpiece is ground to predetermined sizes;

a stepping motor for causing relative motion between said supports in response to said pulse signals;

counter means for counting the number of said pulse signals supplied to said stepping motor to detect a distance between said supports;

first presetting means for digitally presetting feeding amounts through which said supports are relatively moved from each other before the caliper signal is generated by said caliper means;

second presetting means for digitally presetting first and second series of feeding speeds of said stepping motor, said first and second series of the feeding speeds being respectively utilized before and after said caliper signal is generated by said caliper means;

comparing means for comparing the contents of said counter means and said first presetting means and for generating match signals when said contents coincide; and

control means for selecting one of said second presetting means to supply a digital value preset in said selected presetting means to said variable frequency pulse generator in response to said match signals and said caliper signals in order to perform the relative motion between said supports at the feeding speed directed by said digital value.

3,900,778

ARCHERY TARGET MATS OF STAGGERED CORRUGATED PLASTIC

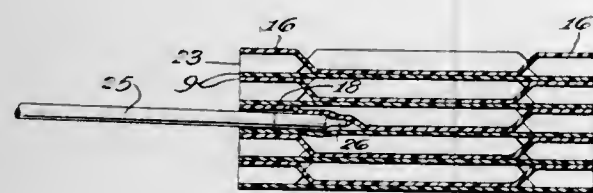
Ralph C. Bruner, Tulsa, Okla., assignor to Brunswick Corporation, Skokie, Ill.

Filed Dec. 7, 1973, Ser. No. 422,906

Int. Cl.² F41J 3/00

U.S. Cl. 273-102 B

14 Claims



1. A target mat for projectile comprising: a roll of fluted corrugated material, the roll having a core portion,

the corrugated material comprising a first flat sheet of material adhered to a second sheet of corrugated material, the first and second sheets having side edges,

the corrugated material comprising a plurality of longitudinally extending rows of staggered corrugations along the thickness of the corrugated material, with adjacent corrugations having common boundaries, the corrugations in each row staggered relative to the corrugations in any adjacent row,

wherein each corrugation has a cross section such that the projectile of a given diameter can fit therein only by stretching and deforming the corrugation,

the corrugated material being spirally bound in the roll, whereby layers of corrugations are superimposed one over the other,

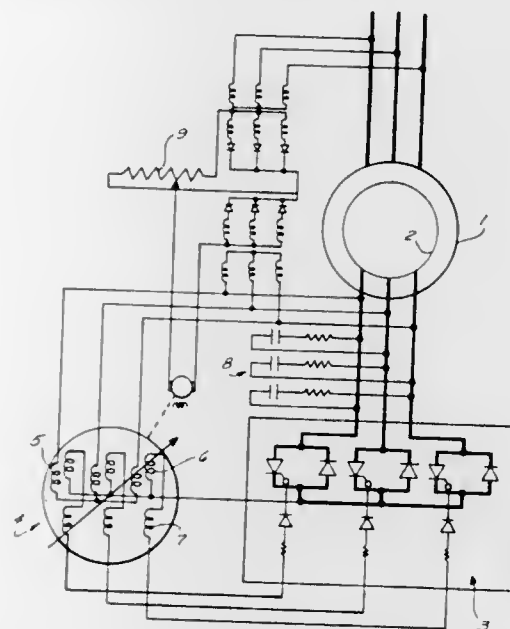
means to fasten the layers together to prevent their coming apart, and

the side edges of the first and second sheets of the roll defining the target mat surface and back.

3,900,779
STARTING AND REGULATOR DEVICE FOR
ASYNCHRONOUS MOTORS WITH A WOUND ROTOR
Ivan Yakovlev Kondratenko, Sofia, Bulgaria, assignor to Nipkiep, Sofia, Bulgaria
Filed Aug. 18, 1972, Ser. No. 281,997
Claims priority, application Bulgaria, Aug. 25, 1971, 18434
Int. Cl. H02k 17/34

U.S. Cl. 318-197

3 Claims



1. A control system for an asynchronous motor having stator and rotor windings, a voltage being applied to said rotor windings, said system comprising a plurality of controlled rectifiers in circuit with said rotor windings, said controlled rectifiers having control electrodes; a rotary phase shifter having rotor windings inductively energized in response to the voltage applied to the motor rotor windings and directly connected through resistors and diodes to the control electrodes of said rectifiers, said control electrodes being unconnected except for the connections to said phase-shifter rotor windings through said resistors and diodes, said phase shifter rotor being angularly displaceable to control the firing time of said controlled rectifiers; and condensers connected in circuit with the motor rotor windings.

3,900,780

CONTROL CIRCUIT FOR ELECTRIC MOTORS
Kinzi Tanikoshi, Tokyo, Japan, assignor to Canon Kabushiki Kaisha and Canon Seiki Kabushiki Kaisha, both of Tokyo, Japan

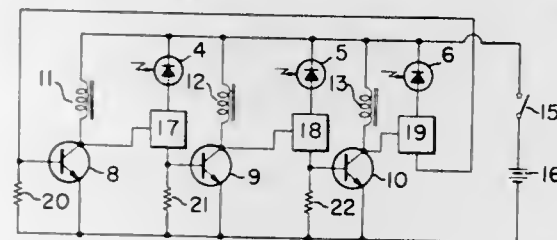
Filed Feb. 5, 1973, Ser. No. 329,843

Claims priority, application Japan, Feb. 3, 1972, 47-12409

Int. Cl. H02k 29/00

U.S. Cl. 318-254

12 Claims



1. A control circuit for an electric motor having a plurality of driving coils and a rotor driven by the successive energization of said coils, said control circuit comprising:

a plurality of switching means, each arranged to control the energization of a different one of said coils,

a plurality of transducers, each arranged to produce output control signals for actuation of an associated one of said switching means during the turning of said rotor through a different sector, said transducers being arranged such

that their respective control signal producing sectors overlap whereby, at different intervals of rotor movement, output control signals are produced simultaneously by two transducers whose switching means produce successive coil energization,

and gating means having two inputs connected respectively to receive signals indicative of the outputs of each of said two transducers to prevent actuation of the switching means associated with one of said two transducers in response to control signal outputs from the other of said two transducers, said gating means having an output connected to the switching means associated with said one transducer to permit actuation of said switching means by control signal outputs from said one transducer in the absence of control signal outputs from said other transducer whereby a uniform and continuous energization, in succession, of said coils is presented to said rotor.

3,900,781

MOTOR SPEED CONTROL SYSTEM WITH TIMED SPEED REFERENCE CLAMP AND SPEED ERROR SPILL-THROUGH CIRCUIT

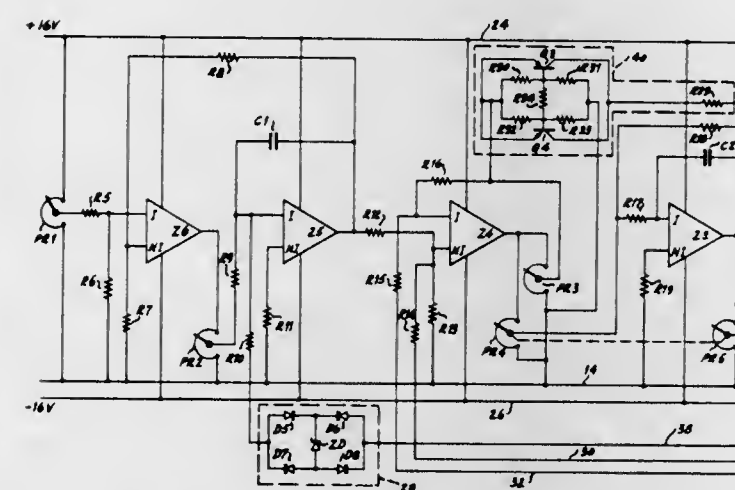
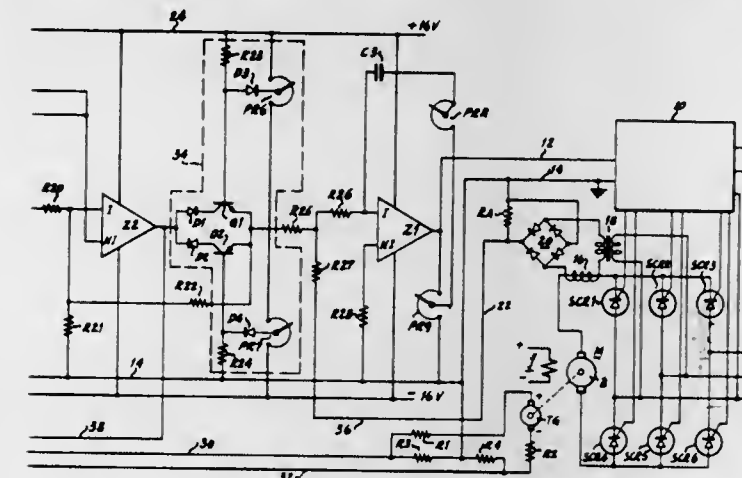
Charles E. Smith, Wauwatosa; Karl M. Hink, Hartland, both of Wis.; Donald J. Greening, deceased, late of Mequon, Wis., and by Dorothy Greening, executrix, Mequon, Wis., assignors to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed June 27, 1973, Ser. No. 373,989

Int. Cl. H02p 7/30

U.S. Cl. 318-271

6 Claims



1. In a D.C. motor control system, the combination with means for adjustably supplying energy to a motor armature, of control means for supplying the first mentioned means with a control voltage which is variable as a function of a speed reference voltage, a speed error feed back voltage and a current error feed back voltage, and comprising:

a. speed reference means including means for presetting a desired magnitude of speed reference voltage and means holding change of such voltage to a predetermined timed rate following changes in adjustment of said presetting means,

b. current limit clamp means responsive to an input signal, which is a function of said speed error feed back and said speed reference voltages, rising to or exceeding a preset value to clamp said control voltage to a value holding the motor armature current to a corresponding limited value, and

c. timed reference rate of change clamp means in circuit with said current limit clamp means and with said means holding change of said speed reference voltage to predetermined timed rate following adjustment of said presetting means, and responsive to said control voltage being clamped to said value holding the armature current to a corresponding limited value to subject the last mentioned means to a voltage which causes the rate of change in the speed reference voltage to be clamped to a rate corresponding to the actual rate of change in motor speed if the latter voltage has not attained its preset magnitude.

3,900,782

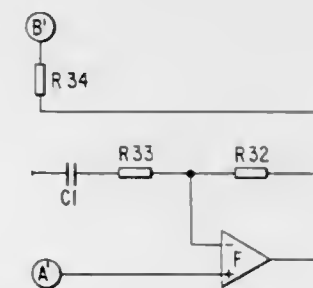
SYSTEM FOR COMPENSATING FOR TEMPERATURE VARIATIONS IN A MAGNETIC DISC DRIVE
Peter Hammerschmitt, Anaheim, Calif., assignor to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed July 18, 1974, Ser. No. 489,692

Int. Cl. G05d 23/275

U.S. Cl. 318-634

4 Claims



1. In a disc drive system of the type having a movable head which is servoed to the desired track in accordance with a scale located in an environment which is likely to have a different temperature T_1 than the temperature T_2 of the disc and head arm, and comprising means for generating a first voltage proportional to the track position and the temperature differential between T_1 and T_2 ; means for generating a second voltage proportional to track position and the temperature differential between T_1 and a reference temperature T_3 ; and means for summing said first and second voltages together to provide a correcting signal to said servo whereby said head may be accurately positioned to the desired track irrespective of overall temperature variations or differences in the temperatures T_1 and T_2 , the improvement which comprises means for generating a third voltage proportional to the temperature gradient between the temperatures T_2 and T_1 and means for feeding the third voltage as an additional control voltage to said servo.

3,900,783

BATTERY CHARGING CIRCUIT

Rollie R. Herzog, Burnt Hills, N.Y., and Robert P. Alley, Danville, Ill., assignors to General Electric Company, Indianapolis, Ind.

Filed Apr. 8, 1974, Ser. No. 458,861

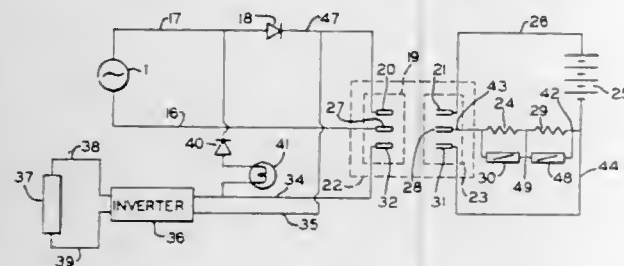
Int. Cl.² H02J 7/00

U.S. Cl. 320-2

10 Claims

1. A battery charging circuit comprising: first and second leads for connection to an A.C. source; a first rectifier connected to said first lead and arranged for connection to one side of the battery for providing uni-directional charging current for the battery;

said second lead arranged for connection to the other side of the battery;
third and fourth leads for connection to a load;
a two-part, selectively-severable junction device having a first section and a second section; said first section including first, second and third connectors, said first rectifier and said third lead connected to said first connector, said second lead connected to said second connector, said fourth lead connected to said third connector;



said second section being connected to the battery and having fourth, fifth and sixth connectors for mating respectively with the first, second and third connectors; said fourth connector connected to the one side of the battery, said fifth and sixth connectors connected to the other side of the battery;
indication means and a second rectifier connected in a series circuit relationship; between said fourth lead and said first lead, said indication means providing an indication when one of said second and fourth leads is not electrically connected to the other side of the battery and providing an indication of charging of the battery.

3,900,784

CONVERTER FOR BATTERY CHARGER

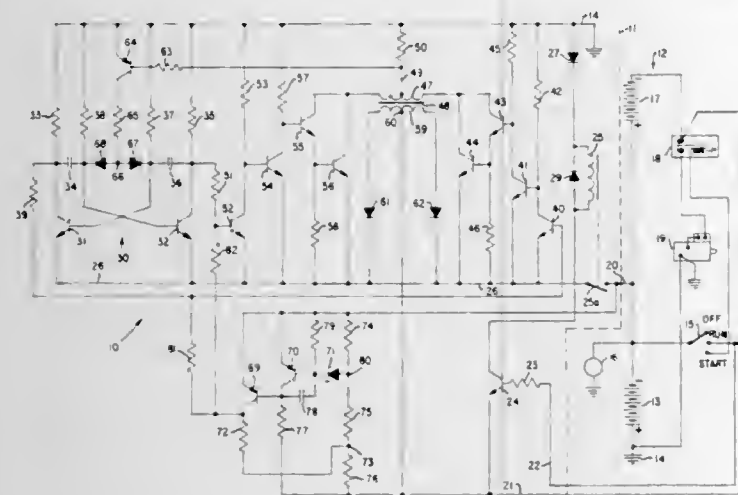
Helmut K. Seike, Toledo, Ohio, assignor to Eltra Corporation, Toledo, Ohio

Filed July 10, 1974, Ser. No. 487,011

Int. Cl. H02j 7/14

U.S. Cl. 320-6

11 Claims



1. A converter for charging a battery from a direct current source comprising, in combination, a free running multivibrator having first and second periodic outputs, a transformer having primary and secondary windings, said primary winding having first and second winding portions, means for applying current from the source to said first primary portion during the first output from said multivibrator, means for applying current from the source to said second primary portion during the second output from said multivibrator, means for rectifying the output from said secondary winding to obtain a direct current for charging the battery, and means for increasing the operating frequency of said multivibrator as the output power from said transformer increases above a predetermined level.
8. In a vehicle including a main battery for operating an electrical system within the vehicle, a charger for the main battery operated from the vehicle's engine and an auxiliary battery connected in series with the main battery for supplying a high

voltage for starting the engine, a converter for charging the auxiliary battery comprising, in combination, a free running multivibrator having first and second periodic outputs, a transformer having primary and secondary windings, said primary winding having first and second winding portions, means for applying current from the main battery and charger to said first primary portion during the first output from said multivibrator, means for applying current from the main battery and charger to said second primary portion during the second output from said multivibrator, means for rectifying the output from said secondary winding to obtain a direct current for charging the auxiliary battery, and means for increasing the operating frequency of said multivibrator as the power from said transformer increases above a predetermined level.

8. In a vehicle including a main battery for operating an electrical system within the vehicle, a charger for the main battery operated from the vehicle's engine and an auxiliary battery connected in series with the main battery for supplying a high voltage for starting the engine, a converter for charging the auxiliary battery comprising, in combination, a free running multivibrator having first and second periodic outputs, a transformer having primary and secondary windings, said primary winding having first and second winding portions, means for applying current from the main battery and charger to said first primary portion during the first output from said multivibrator, means for applying current from the main battery and charger to said second primary portion during the second output from said multivibrator, means for rectifying the output from said secondary winding to obtain a direct current for charging the auxiliary battery, and means for increasing the operating frequency of said multivibrator as the power from said transformer increases above a predetermined level.

3,900,785

DEVICE FOR MONITORING THE CHARGING CURRENT FOR A STORAGE BATTERY OF ACCUMULATORS

Andre Alric; Xavier Carlet; Robert Nozeran, and Pierre Gentet, all of Haute Garonne, France, assignors to Societe Nationale Industrielle Aerospatiale, Paris, France

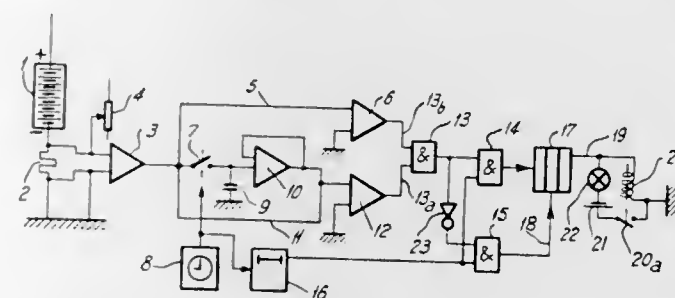
Filed Apr. 9, 1974, Ser. No. 459,335

Claims priority, application France, Apr. 17, 1973, 73.13846

Int. Cl.² H02J 7/00; H02H 3/08

U.S. Cl. 320-39

17 Claims



1. Device for monitoring the charging current for a storage battery of accumulators, specially for releasing an alarm if the charging current continuously increased during a predetermined time, said device comprising means for deriving an electric voltage proportional to the charging current, a memory system, timer means for generating recurrent timing signals, switching means operable by each one of said timing signals for storing the instantaneous value of said electric voltage in said memory system, means for comparing the previously stored value of said electric voltage with its actual value, a pulse counter having a counting input, a reset input and an output, means for generating, at a time just preceding the timing signal which follows next said one timing signal, a first or a second pulse according to whether said actual value is superior or inferior to said stored value, means for transmitting said first or second pulse to said counting input or to said reset input of the counter, respectively, and an alarm device connected to the output of said counter.

3,900,786

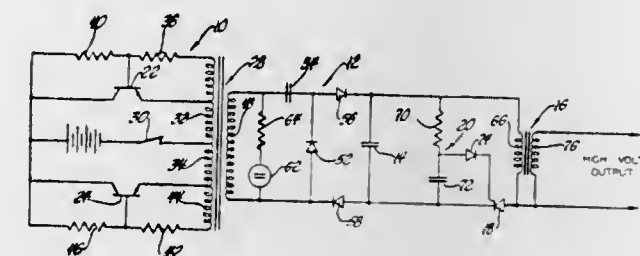
HIGH VOLTAGE PULSE GENERATING CIRCUIT
Richard James Jordan, Roseville, Mich., assignor to General Marine, Inc., Bloomfield Hills, Mich.

Continuation of Ser. No. 284,309, Aug. 28, 1972. This application Dec. 21, 1973, Ser. No. 463,001

Int. Cl. H02m 3/22

U.S. Cl. 321-2

11 Claims



1. A high voltage pulse generating circuit comprising an alternating voltage source, a charging circuit including a coupling capacitor, a rectifier and a storage capacitor connected in series across said source, a thyristor including an anode, a cathode and a gate, a discharging circuit including the anode and cathode of the thyristor, and an induction coil connected in series across said storage capacitor, and control means connected with the gate of said thyristor for turning on the thyristor at controlled switching intervals to discharge the storage capacitor through said induction coil, the frequency of said source being high enough in relation to said controlled switching intervals so that there is at least one charging cycle for each switching interval whereby there is at least one discharging cycle during each switching interval, said coupling capacitor being the sole charging path for said storage capacitor whereby the current drawn from said source during the discharge cycle is limited by the impedance of said coupling capacitor.

3,900,787

ADAPTER FOR AUTOMATICALLY ADAPTING DC EQUIPMENT FOR ENERGIZATION BY A FIRST OR SECOND AC VOLTAGE OF DIFFERENT AMPLITUDES
Manfred Köster, Kronberg, Taunus, Germany, assignor to Braun Aktiengesellschaft, Frankfurt am Main, Germany

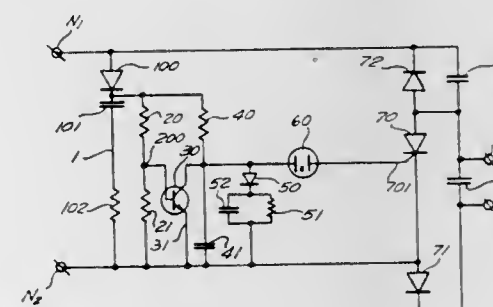
Filed Mar. 21, 1974, Ser. No. 453,372

Claims priority, application Germany, Mar. 22, 1973, 2314220; Sept. 17, 1973, 2346775

Int. Cl.² H02M 7/19

U.S. Cl. 321-15

19 Claims



8. A system for automatically adapting equipment requiring a determined DC operating voltage for energization by a first or second AC voltage, said second AC voltage having substantially twice the amplitude of said first AC voltage, said system having a first and second input terminal for receiving said AC voltage and a first and second output terminal for furnishing said DC voltage, comprising, in combination, output rectifier means for rectifying the applied AC voltage and furnishing a corresponding DC voltage, said DC voltage constituting said operating voltage when said AC voltage is said second AC voltage, said output rectifier means comprising a first and second halfwave rectifier circuit connected to form a fullwave rectifier circuit, said first half-wave rectifier circuit comprising

a first and second diode having, respectively, a cathode and an anode connected to said first and second input terminal, said second halfwave rectifier circuit comprising a first and second diode having, respectively, an anode and a cathode connected to said first and second input terminal; voltage doubler circuit means for doubling said corresponding DC voltage when connected to said output rectifier means, said voltage doubler circuit means comprising a first and second voltage doubler capacitor connected, respectively, in parallel with said first diode of said first halfwave rectifier circuit and said second diode of said second halfwave rectifier circuit; and voltage responsive means responsive to said applied AC voltage for connecting said voltage doubler circuit means to said rectifier means when said AC voltage is said first AC voltage and for disconnecting said voltage double circuit means from said rectifier means when said AC voltage is said second AC voltage, said voltage responsive means comprising means for connecting said first and second voltage doubler element to said first and second half-wave rectifier circuit respectively when said AC voltage energizing said equipment is said first AC voltage.

3,900,788

VOLTAGE MULTIPLIER

Reinhard Behn, and Gerhard Hoyler, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

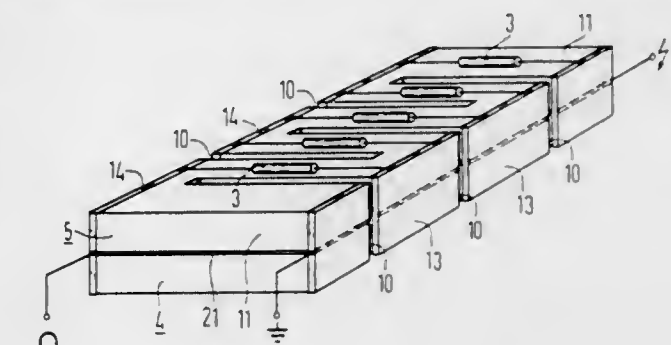
Filed Mar. 21, 1974, Ser. No. 453,426

Claims priority, application Germany, Mar. 23, 1973, 2314674

Int. Cl. H01g 3/07; H02m 7/24

U.S. Cl. 321-15

12 Claims



1. A voltage multiplier having two rows of serially connected capacitors and terminals between capacitors on each row, a diode connecting each capacitor terminal on one row with a capacitor terminal on another row, all of said diodes being connected in series to pass pulses of one polarity only, said diodes being arranged to charge each capacitor, said two rows of serially connected capacitors consisting of end contacted layer capacitors which are integrally joined to one another, said end contacted layer capacitors being split into individual capacitors by slots which extend from one end face of the capacitor through the capacitive zone thereof to a point short of the opposite end face, the individual capacitors having unslotted portions of the metal coatings which serially connect each other, all of the terminals of a row of serially connected capacitors being formed in an end face, whereby said diodes may be readily connected from the terminals on the end face of one row of capacitors to the terminals on the end face of the other row of capacitors.

3,900,789

THYRISTOR SWITCHING POWER CIRCUIT

Michael Koubek, Ortlindestrasse 2, 8000 Munich 81, Germany

Filed June 4, 1973, Ser. No. 366,502

Claims priority, application Germany, June 12, 1972, 2228542

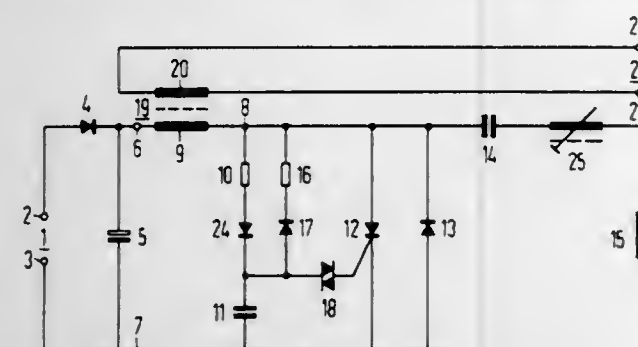
Int. Cl. H02m 7/00

U.S. Cl. 321-47

5 Claims

1. A thyristor switching power unit comprising two a.c. input terminals, a rectifier stage including a first diode and a first capacitor connected across said a.c. input terminals, a

pair of terminals in said rectifier stage at opposite ends of said capacitor through which a d.c. voltage may be taken off, one of said a.c. input terminals and one of said d.c. supply terminals being connected together and to a reference potential, a first coil connected between the other of said d.c. supply terminals and a first circuit point, said first circuit point and said reference potential having therebetween four parallel connections, the first comprising the series connection of a first resistor and a second capacitor, the second comprising a thyristor, the third comprising a second diode which lies in an anti-parallel line direction to said thyristor and the fourth



comprising the series connection of a third capacitor and a second coil, there also being a series connected second resistor and third diode connected between said first circuit point and a second circuit point in the circuit between said first resistor and said second capacitor, a diac, said diac being connected between said second circuit point and the ignition electrode of said thyristor, in which said fourth one of said parallel connections also includes in series with said capacitor and said second coil, a compensating coil means for adjusting the switch-through time of said thyristor and said second diode.

3,900,790

CONSTANT CURRENT CIRCUIT

Mitsuo Ohsawa, Fujisawa, Japan, assignor to Sony Corporation, Tokyo, Japan

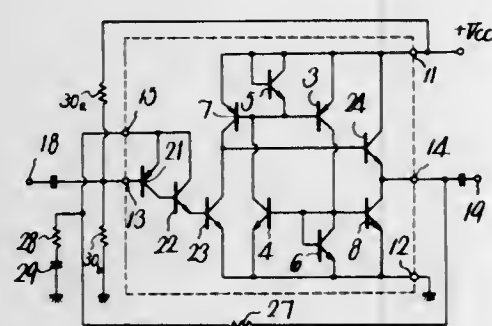
Filed June 1, 1973, Ser. No. 365,849

Claims priority, application Japan, June 6, 1972, 47-56349; June 6, 1972, 47-56350

Int. Cl.² G05F 1/56; H03F 3/213

U.S. Cl. 323-4

3 Claims



1. In combination an amplifier circuit having a constant current circuit as a load therefor, comprising: a first amplifying transistor having an input electrode supplied with a signal to be amplified and an output electrode, the first amplifying transistor being connected in a grounded emitter type configuration; a second amplifying transistor having an output electrode and an input electrode connected to the output electrode of the first amplifying transistor, the second amplifying transistor being connected in a grounded collector type configuration; a voltage source having at least two output terminals; first and second transistors, the base and collector electrodes of the first transistor being respectively connected to the collector and base electrodes of the second transistor, the respective emitter electrodes of the first and second transistors being connected to separate terminals of the voltage

source; third and fourth unidirectional conducting devices for providing biasing voltages between the base and emitter electrodes of each of the first and second transistors; at least one further transistor, the base and emitter electrodes of said at least one further transistor being connected to the base and emitter electrodes of a corresponding one of the first and second transistors; whereby the collector current of said at least one further transistor with respect to the voltage source is utilizable as a constant current source; and the collector electrode of said at least one further transistor being connected to the output electrode of a corresponding one of the first and second amplifying transistors.

3,900,791

VOLTAGE TRANSFORMER FOR COMPLETELY INSULATED, METAL-CLAD HIGH-VOLTAGE INSTALLATIONS

Gerhard Kleen, and Albert Herrmann, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

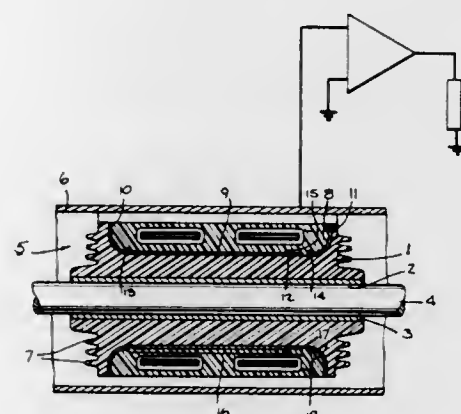
Filed May 17, 1974, Ser. No. 471,014

Claims priority, application Germany, May 17, 1973, 2325448

Int. Cl. H01f 27/00; H01b 9/00

U.S. Cl. 323-93

10 Claims



1. A voltage transformer for a fully-insulated, metal-encapsulated, high-voltage installation such as a switching installation or the like having a metal outer tube containing a high-voltage conductor therein comprising: an extended-surface area electrode disposed in spaced relation to the high-voltage conductor; an insulating body for carrying said electrode in spaced relation to the high-voltage conductor, said electrode and the high-voltage conductor conjointly defining a high-voltage capacitor, said insulating body constituting the dielectric of said high-voltage capacitor; and, a low-voltage capacitor also being arranged on said insulating body so as to be carried thereby and being connected to said high-voltage capacitor, said high-voltage capacitor and said low-voltage capacitor conjointly defining a voltage divider.

3,900,792

METHOD AND APPARATUS FOR GENERATING REACTIVE POWER

Gottfried Moltgen, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Jan. 3, 1974, Ser. No. 430,569

Claims priority, application Germany, Jan. 5, 1973, 2300445

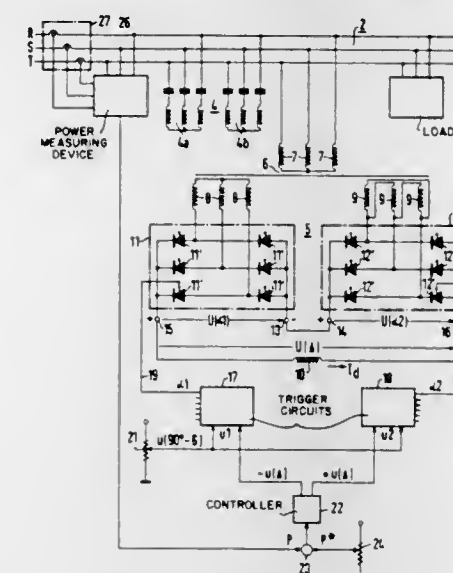
Int. Cl. H02j 3/18

U.S. Cl. 323-102

11 Claims

1. A method for the operation of an arrangement for generating reactive power, which arrangement includes a capacitor installation and two controlled converters, each connected to an A-C system having at least one phase, with the two controlled converters connected to each other on the D-C side through a smoothing choke and wherein the converters are controlled in a control range with control angles which differ

from each other, except for a common control range limit comprising the steps of controlling the control angles of the



two converters such that their sum is always smaller than 180 by a predetermined angular amount.

3,900,793

EDDY CURRENT TESTING APPARATUS INCLUDING A ROTATING HEAD WITH PROBE AND NULL CIRCUIT MEANS MOUNTED THEREON INCLUDING ROTARY TRANSFORMER WINDINGS

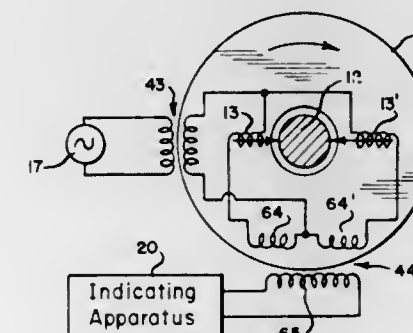
Sven E. Mansson, Holviksnas, Sweden, assignor to Magnetic Analysis Corporation, Mount Vernon, N.Y.

Filed Feb. 25, 1974, Ser. No. 445,116

Int. Cl. G01r 33/12

U.S. Cl. 324-40

6 Claims



1. Eddy current testing apparatus for the nondestructive testing of objects which comprises

- a rotating head through which an object is fed,
- a source of alternating or pulsed current,
- a first rotary transformer having a stationary winding supplied from said source and a winding on said rotating head,
- probe means mounted on said rotating head for inducing eddy currents in said object when energized with alternating or pulsed current and responding to variations in the eddy currents in the presence of defects or flaws in the object,
- a second rotary transformer having a stationary winding and a pair of windings on said rotating head,
- null circuit means mounted on said rotating head and including said probe means and said pair of windings of the second rotary transformer for receiving alternating or pulsed current from said first rotary transformer and producing in the stationary winding of the second rotary transformer a null signal output in the absence of defects or flaws in a said object and output signals varying from said null in the presence of defects or flaws,
- and quadrature-detecting indicating means supplied with the output signals in the stationary winding of said second

rotary transformer for indicating defects or flaws in said object.

3,900,794

ELECTRONIC POWER METERING DEVICE

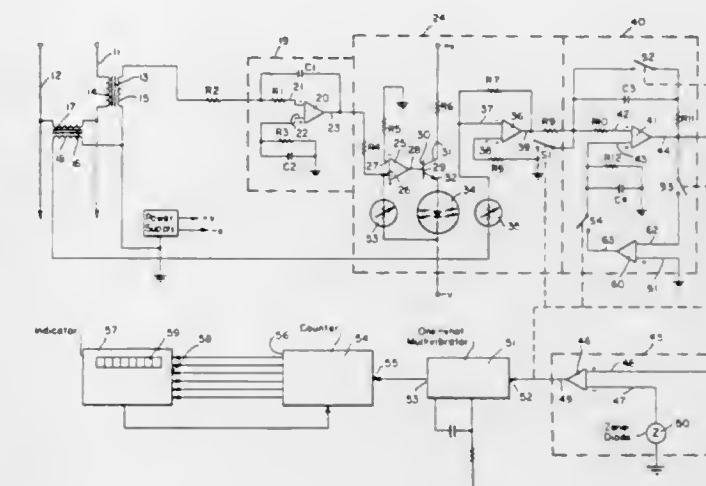
Gregory R. Bell, 1504 Prospect Ave., Redondo, Calif. 90254

Filed Feb. 25, 1974, Ser. No. 445,143

Int. Cl.² G01R 7/00, 11/32

U.S. Cl. 324-142

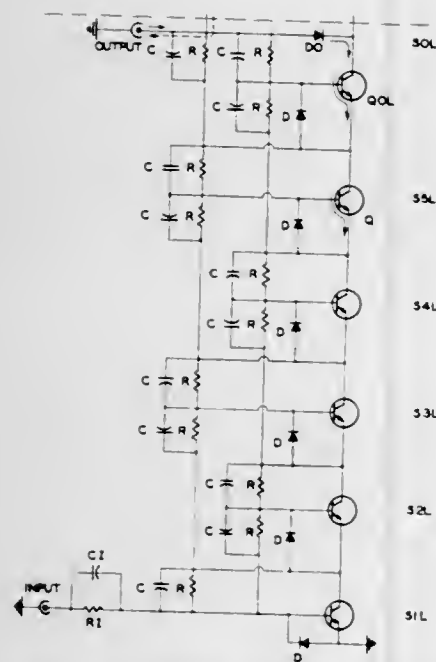
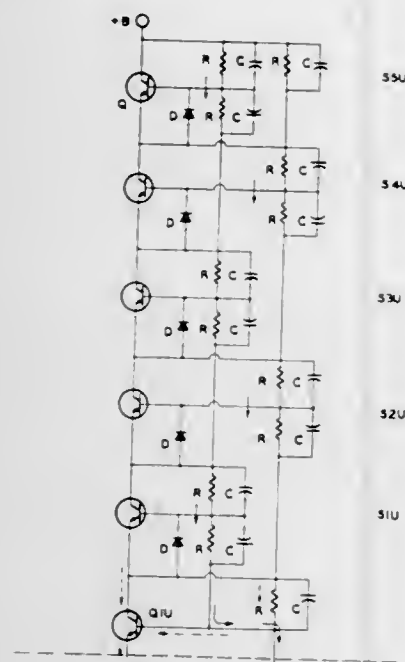
9 Claims



1. In a device for measuring the power used by an electrical system, a power to frequency converter, comprising:

- voltage sensing means for sampling the instantaneous voltage electrically coupled across the electrical system, said voltage sensing means having a voltage output that is proportional to and in phase with the instantaneous voltage;
- current sensing means for measuring the instantaneous current electrically coupled in series with the electrical system, said current sensing means having a voltage output that is proportional to and in phase with the instantaneous current;
- electronic multiplication means for electronically multiplying the voltage outputs of said voltage sensing means and said current sensing means, said electronic multiplication means being electrically coupled to said voltage sensing means and said current sensing means and having a voltage output that is proportional to and in phase with the instantaneous power;
- integrating means for accumulating the voltage output of said electronic multiplication means, electrically coupled to said electronic multiplication means, said integrating means having a voltage output that is proportional to the amount of power used by the electrical system over a period of time;
- reference means for providing a reference voltage;
- comparator means for comparing the voltage output of said integrator means to the reference voltage, electrically coupled to said integrating means and to said reference means, said comparator means also providing a voltage signal when the output voltage of said integrating means reaches or exceeds the reference voltage; and
- nulling means for nulling the voltage output of said integrating means to zero volts when the voltage signal is received from said comparator means, electrically coupled to said comparator means and to said integrating means.

the amplifier, and



reverse voltage preventing means coupled across said second and third electrode of said active element for preventing an application of a large reverse potential thereto.

3,900,801

GAIN CONTROLLED DIFFERENTIAL AMPLIFIER

Hiroshi Furuno, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed July 29, 1974, Ser. No. 492,837

Claims priority, application Japan, Aug. 8, 1973, 48-93337[U]

Int. Cl.² H03G 3/30

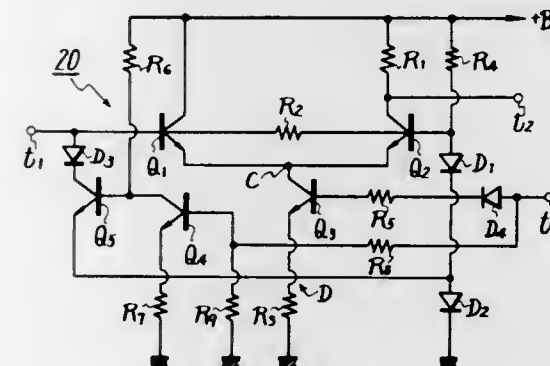
U.S. Cl. 330—29

9 Claims

1. A differential amplifier, comprising:

first and second amplifying transistor means connected in differential amplifier configuration and having respective emitter electrodes connected in common, one of said first and second amplifying transistor means being provided with a signal input terminal and the other of said first and second amplifying transistor means being provided with a signal output terminal;

a control input terminal for receiving a control signal; first control means connected to said common connected emitter electrodes and coupled to said control input terminal for receiving said control signal, said first control means being responsive to said control signal applied thereto for varying the currents flowing through said first and second amplifying transistor means; and



second control means connected to the base electrode of said one amplifying transistor means provided with said input terminal and coupled to said control input terminal for receiving said control signal, said second control means being responsive to said control signal applied thereto to vary the voltage at said base electrode and to thereby vary the gain of said differential amplifier.

3,900,802

TWO STAGE GAS DYNAMIC LASER

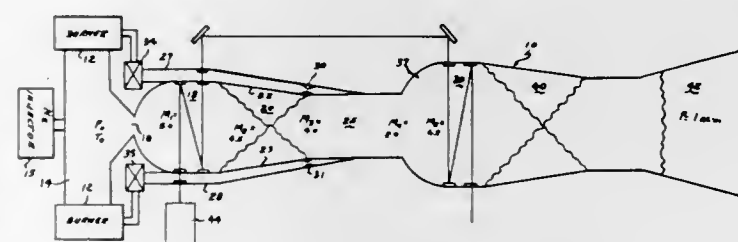
Robert W. Milling, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed June 8, 1973, Ser. No. 369,031

Int. Cl. H01s 3/08

U.S. Cl. 331—94.5 G

3 Claims



1. A two stage gas dynamic laser comprising: a plenum chamber means for supplying a high temperature, high pressure gas dynamic lasing medium to said plenum chamber; means for rapidly expanding said lasing medium to provide a population inversion in a first optical cavity; means for providing a first set of oblique shock waves in the gas flow path in the output of the first optical cavity to slightly compress the gas; means for adding heat to the gas after the slight compression to obtain a major compression of the gas; means for rapidly expanding the gas to provide a population inversion in a second optical cavity; means for providing a second set of oblique shock waves in the gas flow path in the output of the second optical cavity to decelerate the flow; a subsonic diffuser in the output of the oblique shock producing means and means for extracting laser energy from said first optical cavity and said second optical cavity.

3,900,803

LASERS OPTICALLY PUMPED BY LASER-PRODUCED PLASMA

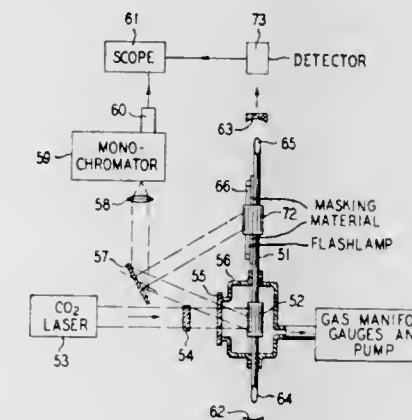
William Thomas Silfvast, and Obert Reeves Wood II, both of Holmdel Twp., Monmouth County, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 24, 1974, Ser. No. 463,616

Int. Cl.² H01S 3/09

U.S. Cl. 331—94.5 P

5 Claims



1. Apparatus for the stimulated emission of coherent radiation, comprising a first body of material having a pair of optically connected energy levels between which a population inversion can be established, and means for optically pumping said body to establish said population inversion including means for supplying a quantity of a second material about said body, and laser means for creating a plasma in said quantity of said second material in a generally cylindrical volume substantially paralleling the surface of said body to generate visible and ultraviolet radiation from said volume, said plasma being optically closely-coupled with said body.

3,900,804

MULTITUBE COAXIAL CLOSED CYCLE GAS LASER SYSTEM

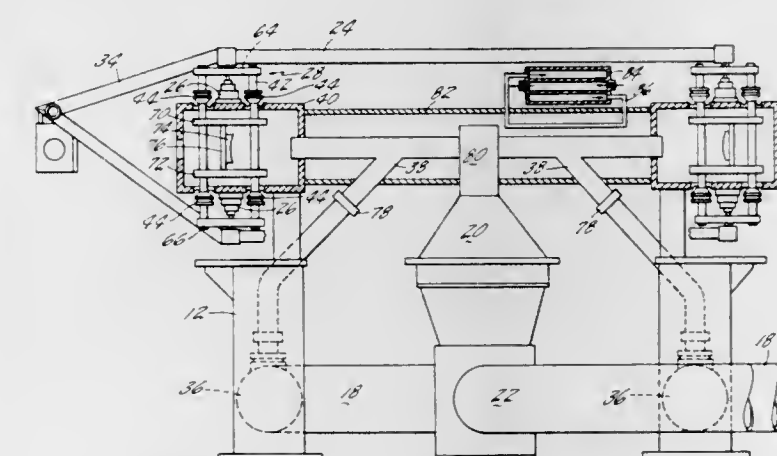
Jack W. Davis, East Hartford, and Allan P. Walch, Manchester, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Dec. 26, 1973, Ser. No. 427,960

Int. Cl. H01s 3/22

U.S. Cl. 331—94.5 T

5 Claims



1. A closed cycle system for the production of laser radiation with a gaseous working medium which is circulated in a loop through the system comprising:

a convection laser having a gas inlet and a gas discharge and including:

an unstable resonator section formed between two curved reflecting surfaces which have a common optical axis about which is positioned a plurality of electric discharge tubes;

means for providing an electric discharge along the optical axis to produce laser radiation in the resonator;

a flat reflecting surface positioned on the axis to couple laser radiation from the resonator as an output beam having an annular cross section; and

means for cooling the laser reflecting surfaces;

an exhaust heat exchanger which provides cooling to the working medium;

first flow means joining the laser gas discharge to the exhaust heat exchanger;

a main circulator for maintaining continuous circulation of the working medium through the laser loop;

second flow means joining the exhaust heat exchanger to the main circulator, and second flow means including means for insulating the exhaust heat exchanger from vibrations in the main circulator;

a circulator heat exchanger which provides cooling to the working medium;

third flow means joining the circulator heat exchanger to the circulator;

fourth flow means joining the circulator heat exchanger to the laser inlet, the fourth flow means including means for insulating the laser inlet from vibrations in the circulator heat exchanger;

a makeup feed gas supply joined to the one of flow means to provide a continuous fresh supply of working medium;

a gas removal system joined to the third flow means to maintain steady state pressure conditions in the system loop and to remove contaminants from the working medium during operation of the system; and

a standoff device fixedly interconnecting the second and fourth flow means for avoiding the imposition of side loadings on the laser as a result of pressure differentials inside and outside of said flow means and for avoiding loading at least part of the flow means with twisting moments.

3,900,805

DIRECTIONAL COUPLER FOR TRANSMISSION LINES

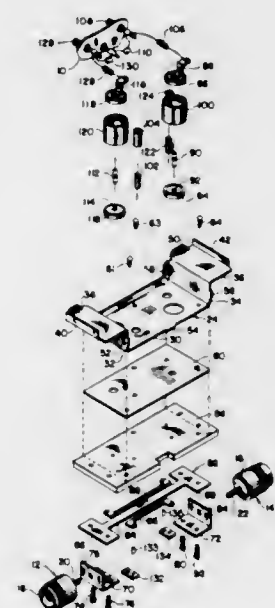
Harold E. Stevens, Lyndhurst, Ohio, assignor to Coaxial Dynamics, Cleveland, Ohio

Division of Ser. No. 192,529, Oct. 26, 1971, Pat. No. 3,829,770. This application Mar. 22, 1974, Ser. No. 453,786

Int. Cl.² H01P 5/18

U.S. Cl. 333—10

11 Claims



1. A directional coupler for detecting and measuring unidirectional flow of power in a transmission line comprising an electrically conductive elongated housing having transmission line input and output connectors mounted thereon,

an electrically conductive partition member positioned within and engaging said housing to define a first and a second chamber for substantially preventing the passage of power between the input and output connectors.

of electrical fields from said first chamber to said second chamber,
 an insulative board having first and second oppositely facing surfaces,
 a first electrically conductive film layer secured to said first surface of said insulative board, said board secured to at least a portion of said partition member with said first film layer sandwiched therebetween,
 a second electrically conductive film layer secured to at least a portion of said second surface of said insulative board thereby defining a predetermined impedance between said first and second film layers,
 a third electrically conductive film layer and secured to at least a portion of said second surface of said board in spaced, mutual coupling with respect to said second film layer thereby defining a predetermined mutual impedance between said second and third film layers,
 said transmission line input and output connectors respectively having one terminal coupled to said second film layer and its other terminal coupled to said partition member,
 and a signal developing network mounted on the side of said partition member opposite said insulative board and coupled to said first and third film layers to develop an output signal representative of the unidirectional line voltage of the signal propagated along the transmission line for a given line characteristic impedance.

3,900,806

GROUP-DELAY EQUALIZER USING A MEANDER FOLDED TRANSMISSION LINE

Ignazio Caroli, Rome, Italy, assignor to Seleniz-Industrie Elettroniche Associate S.p.A., Italy

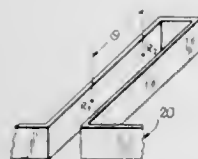
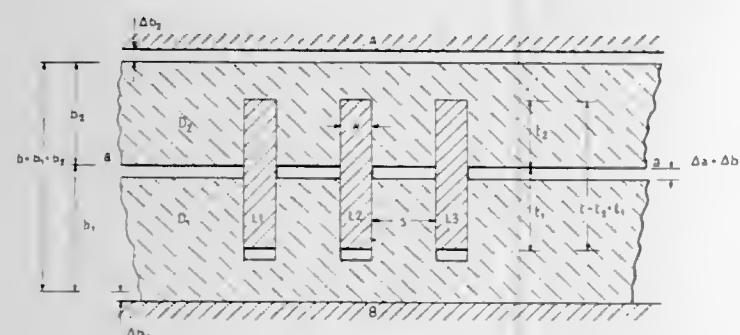
Filed Apr. 4, 1974, Ser. No. 457,825

Claims priority, application Italy, Apr. 13, 1973, 49461/73

Int. Cl. H01p 9/00; H03h 7/16

U.S. Cl. 333—28 R

2 Claims



1. A group-delay equalizer for microwave frequencies, comprising a meander folded transmission line, and adjusting means for changing separately the electric lengths of said folded transmission line associated to two different modes of propagation of the electromagnetic energy along said line, wherein said folded line is located between two ground planes, said adjusting means comprising a first block of substantially homogeneous dielectric material into which is immersed the aforesaid strip line partially folded lengthwise, a second block of dielectric material substantially similar to said first dielectric block of which it is possible to adjust the immersion of said line; means for changing the distance of one of said ground planes with respect to the outer surface of said first dielectric block, and means for changing the distance of the other of said ground planes to which is fixed said second dielectric block in order to change the immersion of said second dielectric block into said folded line.

MAGNETICALLY CONTROLLED SWITCHING DEVICE

Michihiro Hamada, Yokohama; Youji Maeda, Sagami-hara, and Shinichi Inoue, Yokohama, all of Japan, assignors to Fujitsu Ltd., Tokyo, Japan

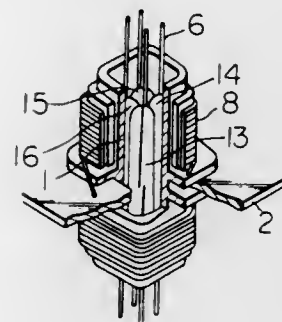
Filed Oct. 23, 1973, Ser. No. 408,816

Claims priority, application Japan, Oct. 31, 1972, 47-125984[U]; Oct. 30, 1972, 47-109074; Oct. 31, 1972, 47-125985[U]

Int. Cl. H01H 67/30

U.S. Cl. 335—152

3 Claims



1. A magnetically controlled switching assembly comprising:
 a. a plurality of reed switches having lead terminals which are bent;
 b. a plurality of coil forms for containing said reed switches about which the driving coils of said reed switches are wound, said forms having unfilled apertures in the end portions thereof through which said bent lead terminals are passed; and
 c. multiple vertical and horizontal conductors which are composed of magnetic material for connecting said leads at crosspoints of a matrix in row and column directions.

3,900,808

MAGNETIC LENS ASSEMBLIES FOR CORPUSCULAR RAY DEVICES WHICH OPERATE UNDER VACUUM

Helmut Zerbst, Reinhard Weyl, and Isolde Dietrich, all of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

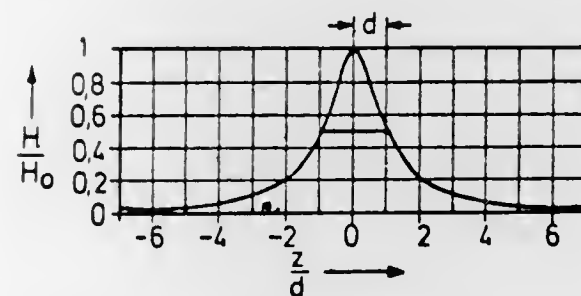
Filed June 26, 1967, Ser. No. 648,623

Claims priority, application Germany, Sept. 21, 1966, 5105968

Int. Cl. H01f 7/00

U.S. Cl. 335—210

12 Claims



1. In a magnetic lens assembly for a corpuscular ray device which is to operate under vacuum, such as an objective lens assembly of an electron microscope, a pair of coaxial shielding cylinders spaced from each other and having a common axis coinciding with a lens axis of the assembly, said shielding cylinders being made of a superconductive material, a cryogenic refrigerating means thermally connected with said cylinders, lens winding means surrounding said cylinders for generating a magnetic field, said cylinders concentrating said field in the region of a corpuscular ray traveling along said lens axis and said shielding cylinders respectively terminating in a pair of end faces which are directed toward each other and which define between themselves a lens gap which is devoid of any

shielding components made of superconductive material, said gap having a magnitude which at a predetermined value of field intensity beyond said lens gap and said shielding cylinders provides a maximum value of field intensity in the lens gap and a field gradient in the lens gap along said lens axis resulting in an aperture error constant of the lens assembly which is less than a predetermined value.

3,900,809

ABSORPTION APPARATUS FOR ADJACENTLY DISPOSED MAGNET COILS

Dieter Kullmann, Langenzenn, and Helmut Marsing, Neunkirchen A. B., both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

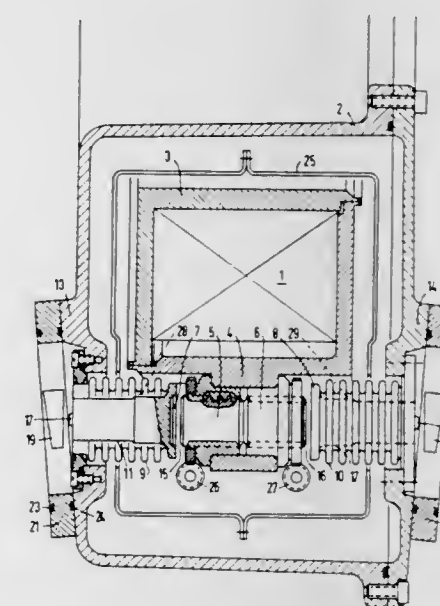
Filed June 27, 1974, Ser. No. 483,525

Claims priority, application Germany, July 5, 1973, 2334251

Int. Cl. H01f 7/22

U.S. Cl. 335—216

11 Claims



1. In a force absorption apparatus for a plurality of adjacently disposed magnet coils between which forces interact, each of said coils being disposed in a low-temperature coolant tank which is surrounded by a vacuum housing at normal temperature, means for providing a force-transmitting coupling between adjacent ones of said coolant tanks, comprising: at least one first support member, coupled to said coolant tank, movable axially along the longitudinal axis thereof; and at least one second support member, coupled to said vacuum housing and movable axially with respect thereto, disposed axially adjacent said first support member for engagement therewith.

3,900,810

TIME DELAY CAPSULE FOR MAGNETIC CIRCUIT BREAKER

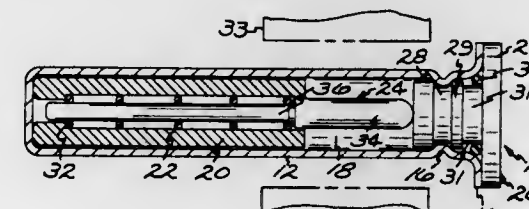
Aime J. Grenier, N. Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed June 26, 1974, Ser. No. 483,466

Int. Cl. H01F 7/18

U.S. Cl. 335—239

6 Claims



1. An improved time delay capsule for a magnetic circuit breaker or the like comprising a tube having an open end and

a closed end, a magnetic core having an axial bore with a reduced diameter portion forming a shoulder within the bore adjacent one end of the core, the magnetic core being slidably disposed in the tube with said one end of the core at the closed end of the tube, a liquid of selected viscosity disposed in the tube, a coil spring disposed within the axial bore in the core and having one spring end engaging said shoulder, a stem having a reduced diameter portion fitted within the coil spring and having a head portion slidable in the bore in the magnetic core and engaging the opposite end of the coil spring, a cap fitted into the open end of the tube to engage the head portion of the stem, and means spaced from the coil spring sealing the cap to the tube.

3,900,811

ECONOMICAL PRESSURE TRANSDUCER ASSEMBLIES, METHODS OF FABRICATING AND MOUNTING THE SAME

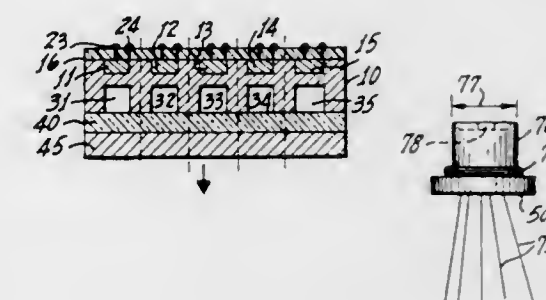
Anthony D. Kurtz, Englewood; Amnon Brosh, Demarest; Charles L. Gravel, River Edge, and Joseph R. Mallon, Alpine, all of N.J., assignors to Kolite Semiconductor Products, Inc., Ridgefield, N.J.

Filed Dec. 11, 1973, Ser. No. 423,713

Int. Cl. G01L 1/22

U.S. Cl. 338—2

14 Claims



1. A pressure transducer assembly, comprising
 a. a member of silicon having a top surface upon which is located at a relatively central area thereof at least one piezoresistive element responsive to an external force for varying its resistance accordingly, and a bottom surface having an aperture, said aperture being of a diameter to enclose said relatively central area on said top surface to thereby encircle said area of said top surface upon which said element is located,
 b. a layer of glass secured to the bottom surface of said member to close said aperture,
 c. a layer of silicon dioxide covering said top surface of said member to thereby cover said element for protecting the same against deleterious substances present in a force transmitting environment, and
 d. a wafer of a semiconductor material secured to said layer of glass on the surface opposite to that secured to said member to serve as an attenuator for said transducer.

3,900,812

STRAIN GAGE TRANSDUCER

Given A. Brewer, Marion, Mass., assignor to Brewer Engineering Laboratories, Inc., Marion, Mass.

Filed Mar. 25, 1974, Ser. No. 454,460

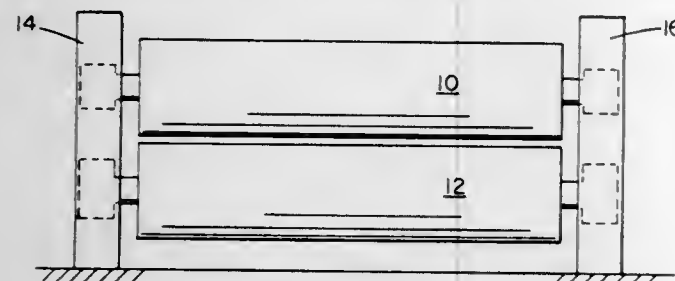
Int. Cl. G01I 1/22

U.S. Cl. 338—2

3 Claims

1. In combination with a bearing assembly having an outer non-rotatable element with a cylindrical outer surface positioned within a fixed bearing support having an inner surface spaced radially outwardly from said bearing non-rotatable element outer surface, bearing mounting means for measuring bearing stresses, mounting said non-rotatable element within said bearing support, said non-rotatable element being supported externally solely by said bearing mounting means,

said bearing mounting means comprising a plurality of pads positioned adjacent the inner surface of said bearing support and having inner faces positioned radially inwardly of said inner surface, and a plurality of transducers mounted by said bearing support, each said transducer comprising a cup shaped support portion including an outer wall and a flat base closing one end of said outer wall,



a columnar member secured to said base concentrically spaced within said outer wall and extending therebeyond, providing a contact end, and at least one strain gage element secured to said columnar member between said base and said contact end, the said contact end of a transducer being in contact with a said pad for transmission of forces from said pad to said transducer.

3,900,813

GALVANO-MAGNETO EFFECT DEVICE

Noboru Masuda, Kawaguchi, and Hisashi Takiguchi, Tokyo, both of Japan, assignors to Denki Onkyo Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 183,007, Sept. 23, 1971, abandoned.

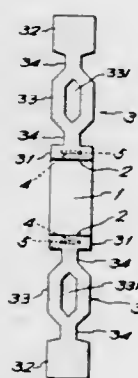
This application Jan. 11, 1974, Ser. No. 432,834

Claims priority, application Japan, Sept. 28, 1970, 45-84799

Int. Cl. H01c 7/16

U.S. Cl. 338—32 R

5 Claims



1. A galvano-magneto effect device comprised of:

- a semiconductor element having terminal sections wherein electrodes are formed and coated with a thermally fusible conductive material at said terminal sections, and
- a plurality of conductive lead frames each comprising two wide ends, one end formed as the coupling end connected to one of said electrodes, the other end formed as a connection terminal to be connected to a circuit, a wide reinforcing part and narrow neck portions coupling said reinforcing part between said coupling end and said connection terminal, wherein at least said coupling end is formed thin and has a prior coating of a thermally fusible conductive material which is melted to join with the conductive material forming the electrodes of said semiconductor element, wherein when the lead frames and semiconductor elements are brought together and the conductive material of the coupling ends and that of the electrodes are bonded, the lead frames are thereby bonded to the electrodes.

3,900,814

REVOLUTION SENSING APPARATUS

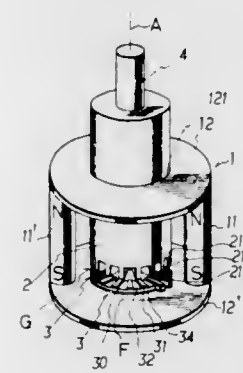
Noboru Masuda, Kawaguchi, Japan, assignor to Denki Onkyo Company, Ltd., Tokyo, Japan

Filed May 31, 1973, Ser. No. 365,502

Int. Cl. H01c 7/16

U.S. Cl. 338—32 R

13 Claims



1. A revolution sensing apparatus for sensing the rotation of a machine said apparatus comprising

- a fixed yoke made of a magnetic material and having a flat part,
- a moving yoke made of a magnetic material having an extreme end opposed to said flat part with a gap therebetween said moving yoke being adapted to be moved by the revolution torque of said machine in a direction along said flat part, said moving yoke having a plurality of projected segments facing said flat part of the fixed yoke the projected segments being arranged in a direction of movement of said moving yoke,
- a magnetism generating means operatively connected to at least one of said yokes, and
- at least one magneto-resistance effect device having two ends and having at least one magnetism sensing part positioned in said gap opposed to said projected segment said magneto-resistance effect device comprising a magnetism sensing semiconductor plate and at least one shorting segment made of a conductive material and arranged across said semiconductor plate in a direction intersecting the direction of movement of said moving yoke, whereby said magneto-resistance effect device includes a plurality of magnetism sensing parts which are formed with intervals therebetween said shorting segment being positioned within said intervals in the direction of movement of the moving yoke and wherein said magnetism sensing parts are adapted to simultaneously oppose said projected segments,

wherein said both yokes are arranged so that a magnetic circuit is formed by said magnetism generating means and the magnetic flux crossing said gap at a right angle to the direction of movement of said moving yoke, and wherein the magnetic flux concentrated by said projected segment is applied to said magnetism sensing parts in sequence as said moving yoke moves.

3,900,815

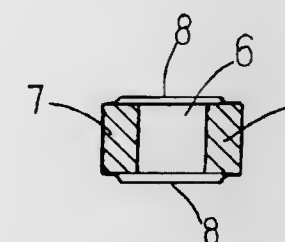
ELEMENT FOR DETECTION OF COMBUSTIBLE GASES AND SMOKE

Naoyoshi Taguchi, 1-2 Uemachi Ikeda Nagata-ku, Kobe, Japan
Continuation of Ser. No. 164,850, July 26, 1971, abandoned, which is a division of Ser. No. 800,798, Jan. 21, 1969, Pat. No. 3,625,756. This application Sept. 19, 1973, Ser. No. 398,710

Int. Cl. H01c 13/00

U.S. Cl. 338—34

7 Claims



1. A gas sensing element comprising a porous body that includes a powdered tin oxide semiconductor and at least two electrodes secured to said body for the passage of an electric current therethrough.

3,900,816

ELECTROMAGNETIC DRIVEN VARIABLE RESISTANCE DEVICE

Tetsuhiro Kiyono, Wakuya, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

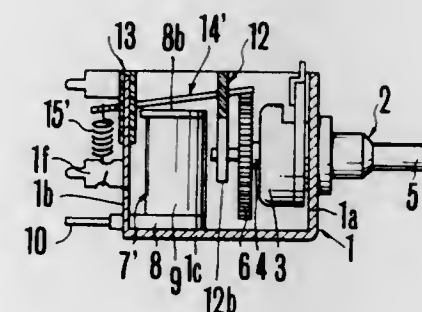
Filed Oct. 29, 1974, Ser. No. 518,950

Claims priority, application Japan, Oct. 30, 1973, 48-121980

Int. Cl. H01c 13/00

U.S. Cl. 338—116

6 Claims



1. An electromagnetic driven variable resistance device comprising

- a case having side walls,
- a variable resistor provided with a rotating shaft and mounted onto one side-face of said case, said shaft being rotatable to vary resistance value of said resistance device,
- a drive-gear rotatably mounted on said rotating shaft,
- a pair of electromagnetic solenoids mounted to said case and having electrical terminals,
- a pair of movable driving-pawl members made of magnetic material each of which is pivotally mounted in relationship to said solenoid and positioned above said solenoids and able to engage a tooth of said drive-gear so as to rotate said drive-gear,
- a stopper plate attached to said case for position-limitation of said pair of movable driving-pawl members, and
- a spacer being attached to said case for pivotally supporting said pair of movable driving-pawl members, said stopper plate and said spacer being made of non-metallic material.

3,900,817

SPHERICAL POTENTIOMETER WITH BALL CONTACT MEANS

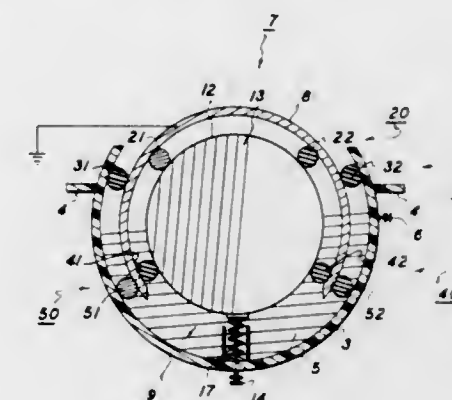
Vernon E. Punt, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 10, 1973, Ser. No. 423,633

Int. Cl. H01c 5/04

U.S. Cl. 338—157

4 Claims



1. A potentiometer comprising:
a first hollow stationary sphere,
a first continuous convoluted strip of resistive material carried on the inner surface of said first sphere,
a first terminal means coupled to one end of said first strip of resistive material,
a stationary ball surface located within said first sphere,
a second continuous convoluted strip of resistive material carried by said ball surface,
a second terminal means coupled to one end of said second strip of resistive material,
a second hollow sphere, and
bearing means for mounting said second sphere for rotational movement intermediate said ball surface and said first sphere, said means including at least two conductive ball bearings, one in contact with said first strip and the other in contact with said second strip.

3,900,818

NON HERMETIC SEALED LINEAR TRIMMING POTENTIOMETER

Louis H. Berkelhamer, Glencoe, and William H. Schapira, Skokie, both of Ill., assignors to North American Philips Corporation, New York, N.Y.

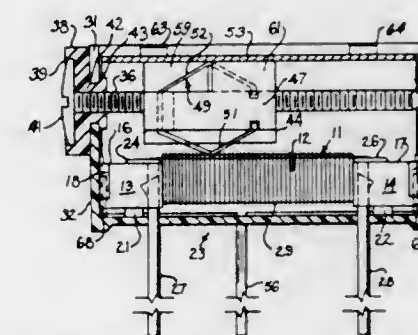
Continuation of Ser. No. 110,859, Jan. 29, 1971, abandoned.

This application Dec. 26, 1973, Ser. No. 427,623

Int. Cl. H01c 5/02

U.S. Cl. 338—176

12 Claims



1. A potentiometer comprising:
A. An elongated resistive element including an elongated insulating member and a plurality of turns of resistance wire wound thereon, said insulating member having a central cylindrical portion which in turn has a substantially flat portion of the upper surface, said substantially flat portion including a central longitudinal ridge, said turns of resistance wire being tautly wound across said ridge.

B. A shell in which said resistive element is fixedly located, said shell comprising:

1. a pair of side walls and a bottom wall substantially parallel to said resistive element, and
2. a pair of end walls joining the ends of the side walls and the bottom wall to form an open-topped shell surrounding said resistive element;
- C. A conductive collector plate extending parallel to said resistive element across the top of said shell and mechanically connected to said walls to cooperate with said wall and said resistive element to form a substantially enclosed space;
- D. A slider positioned directly between said resistive element and said collector plate and longitudinally movable within said enclosed space along the length of said resistive element;
- E. A contact spring attached to said slide to move therewith and comprising one portion resiliently contacting the ridge position of said resistive element and another portion resiliently engaging the proximal surface of said collector plate and
- F. Means to move the slider along its range of travel.

3,900,819

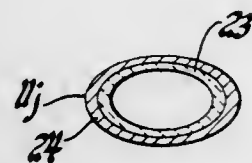
THERMAL DIRECTIONAL FLUID FLOW TRANSDUCER
Robert S. Djourup, Wellesley, Mass., assignor to Environmental Instruments, Inc., Natick, Mass.

Filed Feb. 7, 1973, Ser. No. 330,400

Int. Cl. H01c 15/00

U.S. Cl. 338—320

1 Claim



1. A directional fluid flow sensor comprising:
 - a. at least two similar thermally and physically separated resistive electrical conductors;
 - b. each of said conductors having a length at least equal to the largest cross section dimension of the conductor;
 - c. each of said electrical conductors including a hollow electrically non-conductive refractory cylindrical substrate supporting body extending the length of the conductor, and a conductive resistance film having a non-zero temperature coefficient adhered to the outer surface of the substrate body and extended over the length of the substrate body;
 - d. a thermo insulating bridging means operatively disposed between, and closing the gap between said electrical conductors over the length of the conductors, thereby preventing connected flow around one conductor independent of the other conductor, the overall shape of the sensor being figure eight in cross section, with the conductors being exposed to ventilation over at least a majority of their surface, and with the conductor pair cross section itself used to define the fluid dynamic cross section of a figure eight cross section which is exposed to the fluid stream where the resulting local stagnation region caused by impinging flow at its point of separation against an electrical conductor is therefore small with respect to the conductor cross section, each conductor exhibiting a change in electrical resistivity as a function of temperature; and,
 - e. each of said electrical conductors being provided with electrical connection means, whereby each electrical conductor can be electrically heated by an electrical current passing through each conductor.

3,900,820

LINE SUPERVISORY CIRCUIT

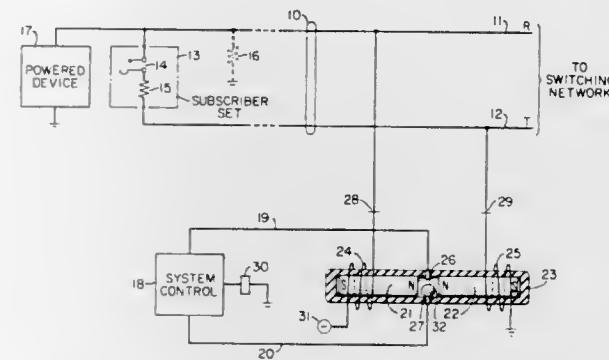
Cyrus Frank Ault, Wheaton, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 25, 1974, Ser. No. 445,060

Int. Cl. H01h 29/00

U.S. Cl. 335—52

6 Claims



1. An electrical switch device comprising a magnetic armature movably mounted in its longitudinal axis, a first and a second spaced-apart terminal between said armature and a backup means along a second axis transverse to said longitudinal axis, means for completing an electrical circuit between said terminals comprising a pliant, electrically conductive globule positioned between said armature and said backup means in said first axis and between said terminals in said second axis, and means for moving said armature against said globule to distort said last-mentioned globule into contact with said terminals comprising an energizable winding coupled to said magnetic armature.

3,900,821

INTEGRATED FREQUENCY SELECTIVE DEMODULATION CIRCUIT

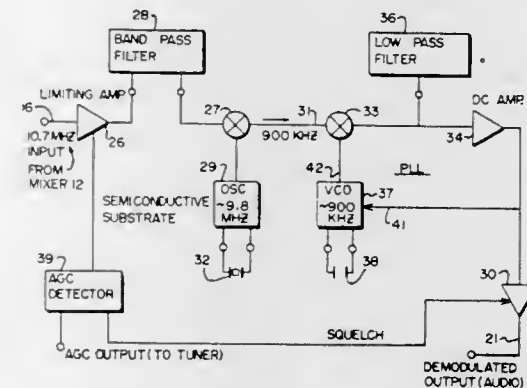
Keith Knubbe, Cupertino; Werner H. Hoeft, San Jose, and Gary Nelson, Santa Clara, all of Calif., assignors to Signetics Corporation, Sunnyvale, Calif.

Filed Dec. 17, 1973, Ser. No. 425,216

Int. Cl. H03D 3/24

U.S. Cl. 329—122

3 Claims



1. An integrated frequency selective demodulator circuit for demodulating a frequency modulated (FM) input signal having a fixed carrier frequency comprising: a frequency oscillator of fixed frequency, a first mixer for mixing said FM input signal with said oscillator frequency to provide an FM difference signal having a carrier frequency substantially less than said input signal carrier frequency; a phase-locked loop (PLL) detector coupled to said first mixer and demodulating said FM difference signal said PLL detector including a second mixer, filtering means coupled to the output of said second mixer, and providing a filtered output serving as a frequency control signal and a voltage controlled oscillator

(VCO) coupled between the output of said filtering means and said second mixer for providing an output signal to said second mixer for tracking said difference signal said VCO having a fixed value timing capacitor; a semiconductive substrate in which said first mixer and said PLL detector are integrated, said VCO having a free running frequency determined exclusively by fixed value components which are substantially integrated into said substrate and by said fixed value timing capacitor which is external to said substrate; and audio amplifier means for amplifying said frequency control signal.

3,900,822

PROPORTIONAL SOLENOID

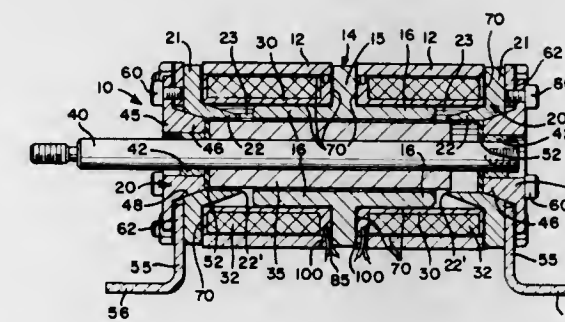
David R. Hardwick, Dayton, and George T. Coors, Tipp City, both of Ohio, assignors to Ledex, Inc., Dayton, Ohio

Filed Mar. 12, 1974, Ser. No. 450,310

Int. Cl. H01f 7/18

U.S. Cl. 335—268

7 Claims



1. For use with double and single acting solenoids, the combination comprising an annular hub having an abutment portion defining a radial wall and a cylindrical sleeve portion, a base axially spaced from said hub, means on said base forming an annular pole portion and having means defining a second radial wall in axially spaced relation to said hub wall, a cylindrical axially extended armature, means mounting said armature for axial movement within said hub, an electrical coil assembly including a spool-shaped coil form made essentially of high heat conductive material, said coil form having an inside surface received on said hub sleeve portion and having radial end faces in respective heat transferring abutment with said hub and base walls, an electrical coil wound on said form, and one end of said coil form having means defining a radially outwardly opening channel proportioned to receive the magnet wire of said coil and to receive the external power leads therein providing a space for electrical connection with said coil wires.

3,900,823

AMPLIFYING AND PROCESSING APPARATUS FOR MODULATED CARRIER SIGNALS

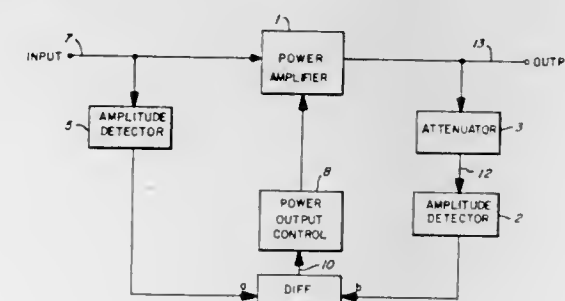
Nathan O. Sokal, and Alan D. Sokal, both of 4 Tyler Rd., Lexington, Mass. 02173

Filed Mar. 28, 1973, Ser. No. 345,509

Int. Cl. H03y 3/00

U.S. Cl. 330—149

20 Claims



1. In a signal processing system of the type having

1. a system input terminal for receiving the signal to be processed,
2. a system output terminal at which the processed signal is provided,
3. a power amplifier having its output fed to the system output terminal,
4. means coupling the system input terminal to the input of the power amplifier,
5. control means for controlling the amplitude of the output of the power amplifier,
6. a differential amplifier having its output connected to the control means and emitting an error signal thereto in response to the input signals applied to the differential amplifier,
7. means providing a first signal path connecting the system input terminal to a first input of the differential amplifier, the first signal path having in it an amplitude detector,
8. means for sensing the output of the power amplifier and providing an electrical signal related thereto, and
9. means providing a second signal path connecting the output sensing means to second input of the differential amplifier, the second signal path having in it an amplitude detector,

the improvement wherein

at least one of the first and second signal paths has a non-linear function generator in it which acts upon the signal fed by that path to the differential amplifier.

3,900,824

METHODS OF PREVENTING CYCLE SKIPPING IN PROCESSING ACOUSTIC WELL-LOGGING SIGNALS
Jean Claude Trouiller, Chaville, and Guy Lafont, Paris, both of France, assignors to Schlumberger Technology Corporation, New York, N.Y.

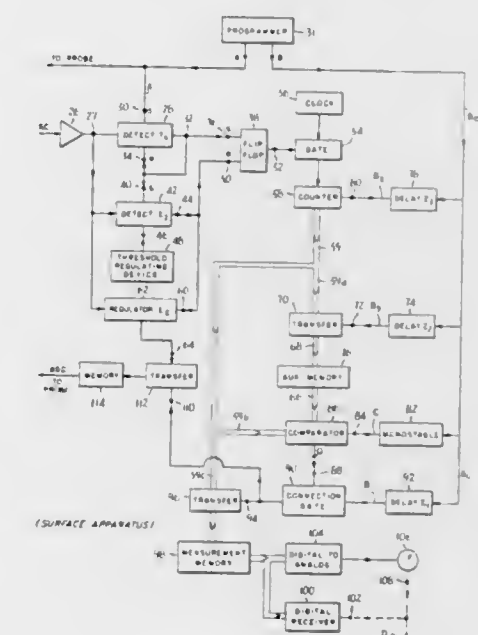
Filed Feb. 16, 1973, Ser. No. 332,926

Claims priority, application France, Feb. 17, 1972, 72.05300

Int. Cl. G01v 1/40

U.S. Cl. 340—15.5 AC

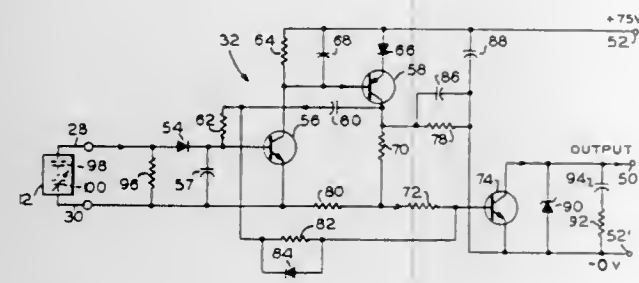
5 Claims



1. A method of correcting random errors in the measurement of the transit time between two points of an acoustic wave in earth formations traversed by a borehole, comprising the steps of

lowering an acoustic well-logging probe into a borehole, generating successive acoustic waves by means of said probe, generating a composite electric signal corresponding thereto,

a fluid tube means for producing a pressure wave within said tube when a vehicle contacts such tube;
a piezoelectric transducer means coupled to an open end of said tube for producing an electrical output pulse in response to receipt of said pressure wave; and



an electronic switch circuit including a monostable multivibrator having its input connected to said transducer so that said multivibrator is triggered directly by the transducer output pulse without amplification to produce a multivibrator output pulse.

3,900,831

OPERATION LAMP AND STEER INDICATOR

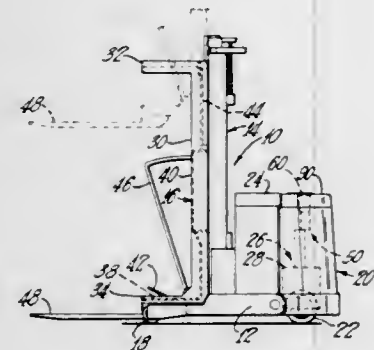
Henry J. Houseman, Fairless Hills, and Gerald W. Skulley, Doylestown, both of Pa., assignors to Eaton Corporation, Cleveland, Ohio

Filed July 12, 1973, Ser. No. 378,753

Int. Cl.² B60Q 1/00

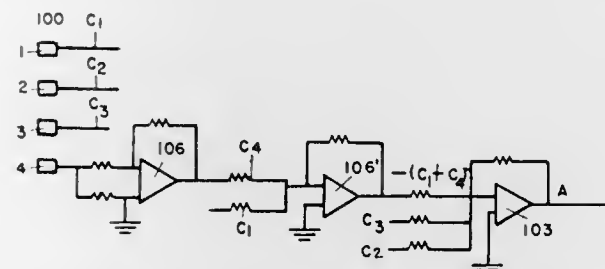
U.S. Cl. 340—52 R

8 Claims



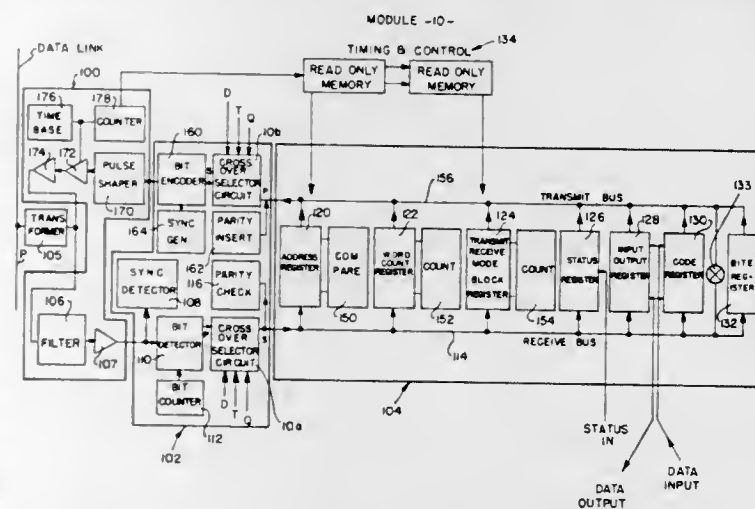
1. In a vehicle having a frame, at least one steerable ground engaging wheel for guiding movement of said vehicle, and an operator's station positionable remotely above said steerable wheel: support means operatively mounting said steerable wheel to said frame for steering rotation about a substantially vertical axis and for rotation about a substantially horizontal axis, a light transmitting member operatively connected to said steerable wheel for rotation about said vertical axis and having a light receiving surface and a light emitting surface, and a light source including an electrical circuit for energization thereof, said electrical circuit having an electrical flasher unit connected electrically in series with said light source and connected electrically in parallel with a normally closed battery discharge indicator, opening of said discharge indicator due to a low battery voltage condition putting said flasher in series with said light source to cause said light source to flash indicating a low battery voltage condition, said light source being operatively mounted on said frame in position to illuminate said light receiving surface, and said light emitting surface being oriented in a fixed predetermined position relative to said horizontal axis capable of indicating the orientation of said steerable wheel to an operator at said operator's station positioned remotely from said steerable wheel.

3,900,832
BAR CODE PROCESSING AND DETECTING SYSTEM
Leland J. Hanchett, Winchester, Mass., assignor to Taplin Business Machines Incorporated, Burlington, Mass.
Filed Sept. 17, 1973, Ser. No. 398,035
Int. Cl. G06k 9/18
U.S. Cl. 340—146.3 Z 2 Claims



1. A bar code reading and processing system including
a. a linear array of light sensitive sensor cells;
b. a plurality of individual pre-amplifiers for amplifying individually the output of each of said cells of said array;
c. a plurality of inverters for inverting the output of a portion of said plurality of pre-amplifiers;
d. a plurality of summing amplifiers for adding the non-inverted outputs and the inverted outputs of said plurality of pre-amplifiers;
e. a plurality of parallel connected diodes each in the output circuit of one of said plurality of summing amplifiers; and
f. a quantizer circuit connected to said plurality of diodes, said quantizer circuit including
g. a pair of parallel connected amplifying circuits both connected to the output of said plurality of diodes, said pair of amplifying circuits including
h. a first amplifying circuit having a capacitor charged through a diode and means for short-circuiting said diode in intervals of time;
i. a second amplifying circuit including a delay line; and
j. a comparator having a pair of inputs of which one is energized by said first amplifying circuit and the other is energized by said second amplifying circuit.

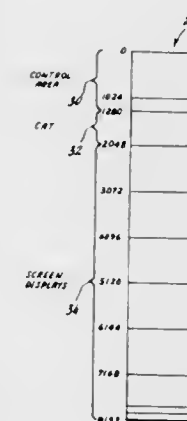
3,900,833
DATA COMMUNICATION SYSTEM
R. Timothy Rogers, Wayne, N.J., assignor to The Singer Company, Little Falls, N.J.
Filed Mar. 18, 1974, Ser. No. 451,974
Int. Cl.² H04Q 9/00
U.S. Cl. 340—147 C 10 Claims



1. In a digital data transmission system, an interface module for coupling a subsystem, or the like, to a common communication link and which includes:
a receiving section having a decoder for accepting and detecting multi-section control words and data words;
a common bus connected to said decoder in said receiving section for receiving detected control words and data words from the decoder;

a plurality of logic elements having inputs parallel coupled to said common bus; and
logic circuitry connected to said logic elements for steering the individual sections of the control word into different ones of said logic elements.

3,900,834
MEMORY UPDATE APPARATUS UTILIZING CHAIN ADDRESSING
Richard C. Casey, Darien; Robert J. Duggan, Monroe; Stephen A. Grosky, Monroe; Dixon Teh-Chao Jen, Monroe; John J. Serra, Monroe; Donald Shaffer Whitehead, New Haven, and Thomas E. Boyce, Milford, all of Conn., assignors to The Bunker-Ramo Corporation, Oak Brook, Ill.
Filed Sept. 5, 1972, Ser. No. 286,575
Int. Cl. G06f 7/28, 15/40, 13/00
U.S. Cl. 340—172.5 32 Claims

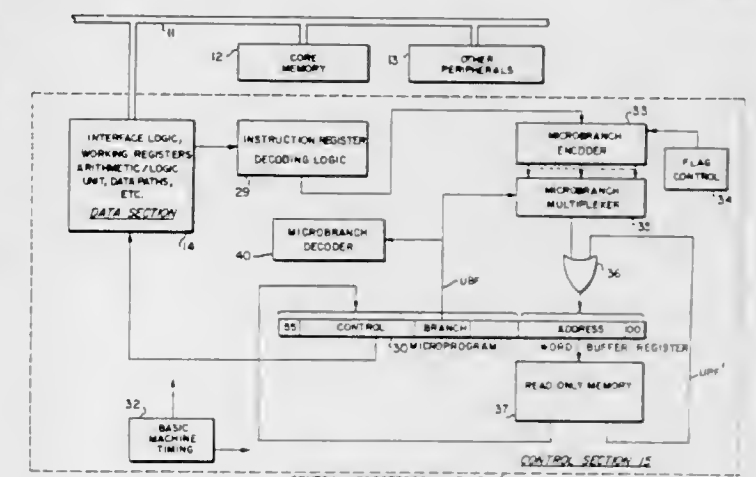


WORD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	0	1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
2	0	1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
3	0	1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
4	0	1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
5	0	1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
6	0	1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
7	0	1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
8	0	1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
9	0	1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
10	0	1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
11	0	1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
12	0	1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
13	0	1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
14	0	1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
15	0	1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
16	0	1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
17	0	1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
18	0	1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
19	0	1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
20	0	1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0

1. In a system having a programmable control unit for receiving, storing and updating rapidly changing information concerning a large plurality of different data items, said unit including a memory for storing information relating to a plurality of different items, information for a given item being stored at one or more memory locations therein, apparatus for effecting the updating of information relating to a given item in the memory at which information relating to a given item is stored with a single update message to the unit comprising:

address table storing means having a plurality of storage locations for storing a table comprised of a plurality of entries, each stored in a different storage location, each of said entries containing a cell address identifying a different item storing memory location and a chain address identifying another storage location storing a table entry;
table entry accessing means responsive to an update message relating to the given item for accessing a first table entry from one of said storage locations;
updating means responsive to the cell address in an accessed table entry and to said update message for updating the information for the item at the identified memory location;
said table entry accessing means including means responsive to the chain address in a previously accessed table entry for accessing the next table entry from the storage location identified by the chain address;
said updating means and said table entry accessing means being repetitively operative until all memory locations containing information relating to the given item have been updated.

3,900,835
BRANCHING CIRCUIT FOR MICROPROGRAM CONTROLLED CENTRAL PROCESSOR UNIT
C. Gordon Bell, Lincoln; John E. Buzynski, Townsend; Charles H. Kaman, Newton Highlands, and James F. O'Loughlin, Westford, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.
Filed Sept. 24, 1973, Ser. No. 400,342
Int. Cl. G06f 9/16
U.S. Cl. 340—172.5 5 Claims

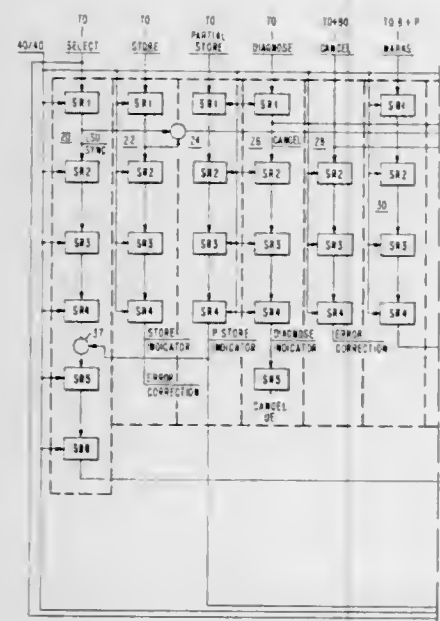
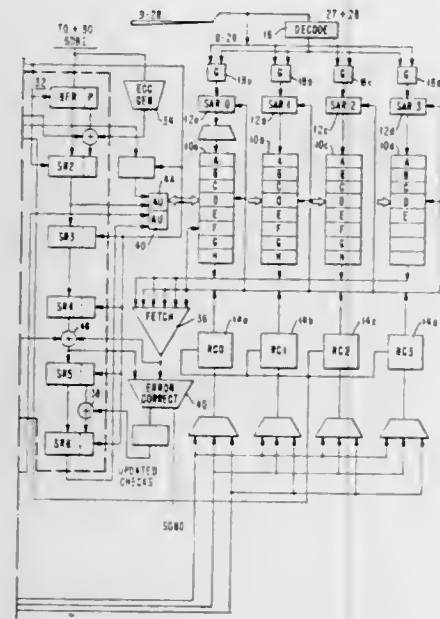


1. A microprogram configured central processor comprising:
A. a read-only memory for storing microprogram words, each microprogram word having a control portion and an address portion for at least partly identifying the next word to be retrieved in sequence, at least one of the microprogram words being a branching word,
B. a modifier circuit receiving the address portion of each microprogram word retrieved from memory and for modifying that address in response to certain conditions,
C. a buffer register for storing each microprogram word to be executed in sequence, said buffer register being connected for receiving directly the control portion of a microprogram word from said memory, said read-only memory including means for retrieving a next word thereupon in response to the address portion in said buffer register,
D. timing means for defining alternate ready and transfer intervals, said modifier circuit being enabled during a ready interval and producing a modified address for transfer to said buffer register during a subsequent transfer interval.

3,900,836
INTERLEAVED MEMORY CONTROL SIGNAL HANDLING APPARATUS USING PIPELINING TECHNIQUES
George P. Salvo, Poughkeepsie, N.Y., assignor to IBM Corporation, Armonk, N.Y.
Filed Nov. 30, 1973, Ser. No. 420,492
Int. Cl.² G06F 9/00
U.S. Cl. 340—172.5 4 Claims

1. In an interleaved memory having a plurality of storage units each of which internally uses a plurality of timed operating pulses that are generated by a separate ring counter driven by a clocking source which determines the intervals at which the storage units can be operated, an improved storage control unit comprising:
a. a plurality of multi stage shift registers driven by said clocking source for receiving control information for instructing the memory to perform either a fetch, store or partial store operation;
b. means for supplying a control signal to at least the ring counter supplying operating pulses to the storage unit of interleaved memory being accessed and to the shift registers to start the ring counter and the shift registers so that as a result of the shift registers being driven by the same

clocking source as the ring counter the shift registers and ring counter operate in synchronism; and
c. logic means coupling inputs of the memory units to selected stages in first plurality of shift registers for generating control signals that permit the passage of data into the



accessed memory unit only at those times that the control signals generated from the control information in the selected stages of the plurality of shift registers indicates data should be entered into the accessed memory unit of the interleaved memory to perform one of the fetch, store or partial store operations.

3,900,837

VARIABLY ADDRESSABLE SEMICONDUCTOR MASS MEMORY

John C. Hunter, Phoenix, Ariz., assignor to Honeywell Information Systems, Inc., Phoenix, Ariz.

Filed Feb. 4, 1974, Ser. No. 439,677

Int. Cl. G11c 13/00, 11/40

U.S. Cl. 340-173 R

8 Claims

1. An integrated-circuit store having connected thereto from an external source means for transmitting an address signal, means for transmitting a data signal, and means for transmitting at least one control signal and adapted to receive

address and control signals from said external source and to transfer data signals to and from said external source, said store comprising a body of semiconductor material, a plurality of basic circuits formed on said body of semiconductor material as a common substrate, and means for connecting said transmitting means to at least one of said plurality of basic circuits, each one of said basic circuits comprising:

a bus portion including at least one address signal line, a data signal line, and a plurality of control signal lines, said bus portion interconnecting said plurality of basic circuits;

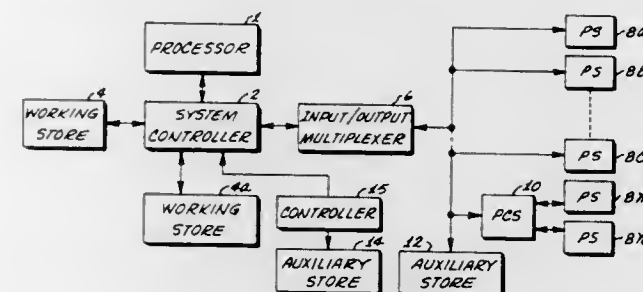
first means for storing said data signals;

second means for storing an address;

third means for storing at least one status signal;

means responsive to said third storage means for selectively enabling said second storage means to store a unique address transmitted over said address signal line;

fourth means for selectively inhibiting the operation of said enabling means, said fourth means being responsive to the contents of said third means and to an inhibit control signal transmitted over a predetermined one of said control signal lines;



fifth means, associated with said predetermined control signal line, for ordering said one basic circuit relative to the other basic circuits of said integrated-circuit store, said fifth means being responsive to the contents of all of said third means of the basic circuits of higher order than said one basic circuit to selectively generate said inhibit control signal over said predetermined control signal line to the basic circuits of lower order;

means for controlling the transfer of data signals between said data signal line and said first storage means;

means responsive to a comparison between address signals received over said at least one address signal line and said stored address for actuating said controlling means;

second means for connecting said at least one address signal line to said actuating means, for connecting said data signal line to said first storage means, and for connecting said control signal lines to said third storage means; and means for disabling said second connecting means, thereby disconnecting said one basic circuit from said signal bus.

3,900,838

HYBRID STORAGE CIRCUIT

Siegfried Kurt Wiedmann, Stuttgart, Germany, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 25, 1974, Ser. No. 445,700

Claims priority, application Germany, Feb. 27, 1973, 2309616

Int. Cl. G11c 11/40

U.S. Cl. 340-173 R

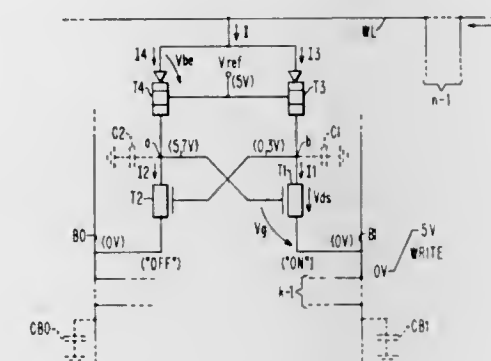
16 Claims

1. A low power dissipating memory cell comprising:

a pair of field effect storage transistors, each having two current conducting terminals and a gate terminal, a first one of said current conducting terminals of each field effect storage transistor being connected to the gate terminal of the other field effect storage transistor to form a bistable storage circuit;

a pair of bipolar load transistors, each having an emitter, collector and base terminal, the emitter-collector path of

each of said bipolar load transistors being serially connected to said first one of said current conducting terminals of each of said pair of field effect storage transistors; a pair of bit lines, each bit line connected to the second



current conducting terminal of one of said field effect storage transistors; and a word line commonly connected to both of said bipolar load transistors.

3,900,839

APPARATUS AND METHOD FOR MEASURING SPEED OF SOUND IN LIQUID

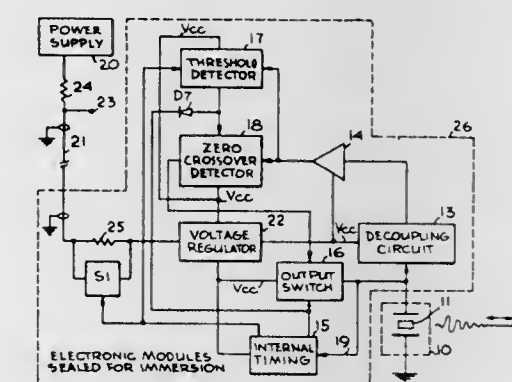
Thomas H. Lynch, Canoga Park, and Hudson T. Patten, III, Santa Susana, both of Calif., assignors to The Bunker-Ramo Corporation, Oak Brook, Ill.

Continuation of Ser. No. 242,261, April 7, 1972, which is a continuation of Ser. No. 10,686, Jan. 22, 1970, which is a division of Ser. No. 776,998, Nov. 19, 1968, Pat. No. 3,522,580. This application Feb. 8, 1974, Ser. No. 440,913

Int. Cl. G08C 19/16; G01V 1/00

U.S. Cl. 340-203

3 Claims



1. In a system for monitoring measurements made at a remote location from the monitoring location, the combination of:

measuring means at said remote location, said measuring means having an electrical signal output whose repetition rate varies as a function of a physical input,

a power cable extending between said monitoring location and said remote location,

an electrical power source at said monitoring location for providing electrical power for said measuring means,

a first resistance means at said monitoring location connected between said electrical power source and said cable,

a second resistance means at said remote location having one end connected to said power cable,

a switch means connected in parallel with said second resistance means and coupled to said electrical signal output for shunting said second resistance means at a rate in accordance with the repetition rate of said electrical signal output,

a voltage regulator at said remote location having its input connected to the other end of said second resistance means and its output connected to said measuring means

for providing a stabilized voltage output for said measuring means, and

means coupled to the other end of said second resistance means for holding said other end at a substantially fixed potential in the presence of the shunting provided by said switch means, the resulting output voltage signal at the junction between said power cable and said second resistance means thereby having a repetition rate which varies in accordance with the rate of shunting of said second resistance means by said switch means, said resulting output voltage signal propagating to said monitoring location via said power cable to thereby permit monitoring at said monitoring location of the measurements made by said measuring means by monitoring rate variations of said resulting output voltage signal.

3,900,840

WARNING DEVICE FOR BRAKE SYSTEMS AND THE LIKE

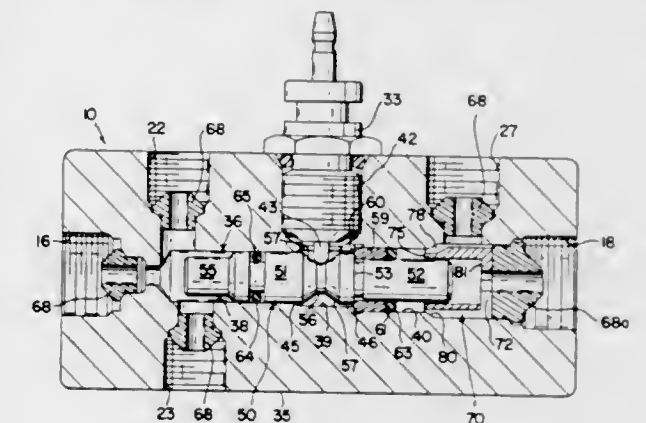
Kenneth B. Swanson, Bannister, Mich., assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Feb. 22, 1974, Ser. No. 444,765

Int. Cl. G08b 21/00; B60t 11/34, 17/22

U.S. Cl. 340-242

1 Claim



1. A failure warning device for indicating a pressure differential between first and second fluid-pressurized systems, said device comprising:

a housing;
a cylindrically stepped bore within said housing;
said bore having a first portion at one end thereof, a second intermediate portion larger than said first portion, and a third portion larger than said second portion at the opposite end of said bore, said first portion in fluid communication with said first fluid-pressurized system, said third bore portion in fluid communication with said second fluid-pressurized system;

a cylindrically stepped shuttle-piston within said bore, said piston having a large diameter portion disposed within said first bore portion and a smaller diameter portion within said third bore portion;

a reset sleeve member receiving said small diameter piston portion and disposed within said third bore portion, said sleeve having an axial end positioned at the juncture of said second and third bore portions and at the juncture of said first and second piston portions when said fluid-pressurized systems are at approximately equal pressures to maintain said piston in a centered position within said bore;

a first seal between said large diameter piston portion and said first bore portion preventing fluid communication from said first bore portion to said second bore portion independent of the axial position of said piston within said bore;

a second seal within said third bore portion at the opposite axial end of said sleeve preventing fluid communication between said third bore portion and said second bore portion independent of the axial position of said piston within said bore;

signal means associated with said piston and extending within said second bore sensing axial displacement of said piston within said bore to actuate a signal device in response to said axial displacement;

said device further includes stop means limiting displacement of said piston in one axial direction within said bore when failure occurs in said second brake system;

said stop means including an inlet port in said housing in fluid communication with said second system and axially aligned with and at the end of said third bore portion, an outlet port in said housing angularly disposed from said inlet port and a cylindrically-hollowed, open-ended retainer disposed within said third bore between said inlet and outlet ports; and said retainer having a base surface with an opening therethrough at one of its axial end faces abutting a stop defined by said inlet port, said smaller diameter piston always extending within said retainer with the retainer length such that the interior of said base surface is in engagement with the end of said smaller diameter piston portion when said piston is axially shifted in one direction upon failure in pressure of said second system, and a plurality of flutes formed about the exterior of said retainer for supporting said retainer in said bore while defining a plurality of longitudinally-extending slots permitting unimpeded fluid communication between said outlet port and said third bore, the other axial end face defined as an annulus and effective to maintain said first seal undeformed about said smaller diameter piston portion and within said third bore upon failure in pressure of said second system.

3,900,841

INTRUSION ALARM CONTROL SYSTEM

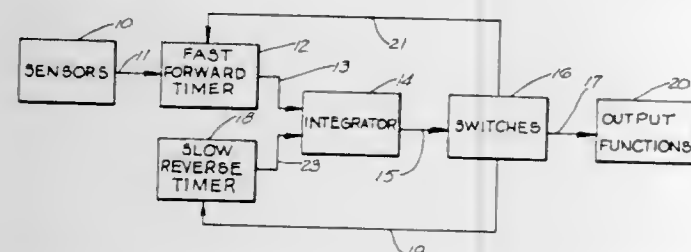
Ernest J. Buckles, 4604 Moore Rd., Middletown, Ohio 45042

Filed Mar. 22, 1974, Ser. No. 453,677

Int. Cl.² G08B 13/02

U.S. Cl. 340-258 R

16 Claims



1. An intrusion alarm control system for protecting property against intrusion comprising:

- at least one sensor associated with said property for producing an output signal in response to an intrusion;
- timing means having first and second inputs, said first timing means input being connected to said sensor, said timing means producing first and second groups of sequential, preselected timing signals defining, respectively, first and second timing cycle portions, wherein said first group of preselected timing signals are reversibly produced in response to said output signal from said sensor at a rate reflecting the severity of said intrusion, and said second group of preselected timing signals are irreversibly produced in response to a signal at said second input of said timing means;
- a plurality of switches each having an input and an output, said inputs of said switches being connected to said timing means, and a first one of said switches having its output connected to said second timing means input, each of said switches being actuatable by at least one of said preselected timing signals of at least one of said groups, said first switch being actuatable by the last one of said preselected timing signals of said first group, whereby, actuation of said first switch causes said timing means to initiate production of said second group of sequential preselected timing signals; and

- a plurality of output functions each connected to one of said outputs of one of said switches other than said first switch, each of said output functions being activated upon actuation of its respective one of said switches.

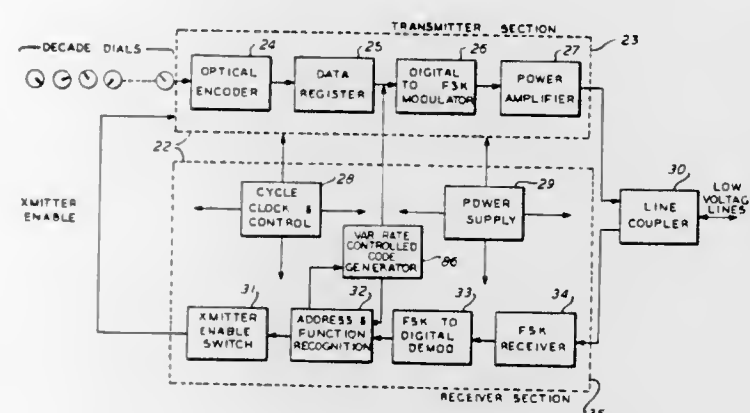
3,900,842

REMOTE AUTOMATIC METER READING AND CONTROL SYSTEM

Salvatore R. Calabro, Belleville, N.J.; John A. Calabro, Forest Hills, N.Y., and Peter R. Mich, East Orange, N.J., assignors to Automated Technology Corporation, Hackensack, N.J. Continuation-in-part of Ser. No. 346,167, March 29, 1973, abandoned. This application Dec. 26, 1973, Ser. No. 427,724 Int. Cl. H04m 11/04

U.S. Cl. 340-310 A

7 Claims



1. A system for remote reading of data measured by consumption meters, comprising in combination:

- a plurality of consumption meters, positioned at selected field points, each said meter including means for translating the readings thereof into one of a plurality of digitally encoded forms;
- means at each of said meters for modulating the carrier with said encoded data;
- means for coupling said modulated carrier onto the power network of the community in which said meters are located;
- a central control station coupled to said power network, for providing address signals to said meters;
- said meters including address return means; and said central station including means for evaluating the address transmission characteristics of said power network, and means for applying control signals to said power network for selection of one of said encoded forms at said meters, for varying the mode of data transmission in response to the detected transmission characteristics of said network.

3,900,843

GYRO PICKOFF APPARATUS TO SENSE DEVIATIONS OF A VEHICLE AXIS FROM A GYRO SPIN AXIS

Lincoln S. Ferriss, Madison, N.J., assignor to The Singer Company, Little Falls, N.J.

Division of Ser. No. 286,024, Sept. 5, 1972, Pat. No. 3,808,542. This application Aug. 15, 1973, Ser. No. 388,602 Int. Cl. H03k 13/20

U.S. Cl. 340-347 AD

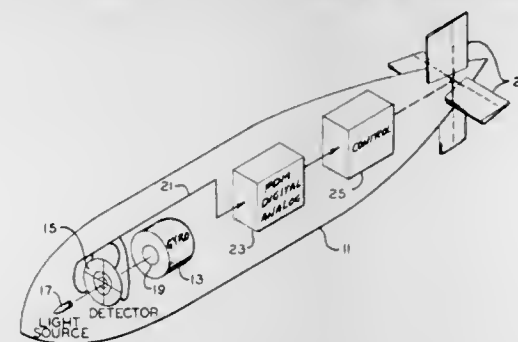
6 Claims

1. Gyro pickoff apparatus to sense deviations of a vehicle axis from the gyro spin axis comprising:

- a silicon optical detector divided into four quadrants by mutually perpendicular X and Y planes having their intersection coincident with the vehicle axis fixed to the vehicle and providing a separate output for each quadrant;
- a light source and a mirror mounted on the gyro and arranged to reflect light from said source onto said detector such as to trace a circle centered at the center of said detector when said detector and gyro are aligned to activate said detector sequentially as said gyro rotates and adapted to activate each quadrant for equal periods of

time when said gyro and detector are aligned whereby misalignment will cause said circle to shift thereby causing said detector to output signals of unequal duration from said four quadrants;

- resolving means to convert said four quadrant outputs into two pulse duration modulated signals proportional respectively to an X and Y deviation of the vehicle;



- first and second pulse duration modulation to digital conversion means to convert the said X and Y signals to digital outputs each of said digital outputs being proportional to the ratio of the "on" time to the total pulse cycle time of its respective pulse duration modulated input.

3,900,844

ANALOG AND DIGITAL DATA INTERCONVERSION SYSTEM

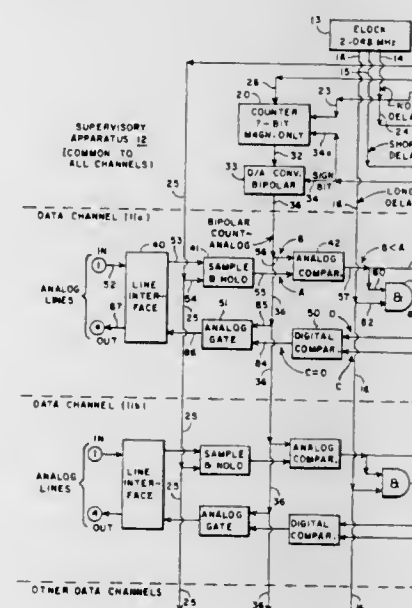
Leon D. Wald, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 3, 1973, Ser. No. 402,991

Int. Cl.² H03K 13/02

U.S. Cl. 340-347 C

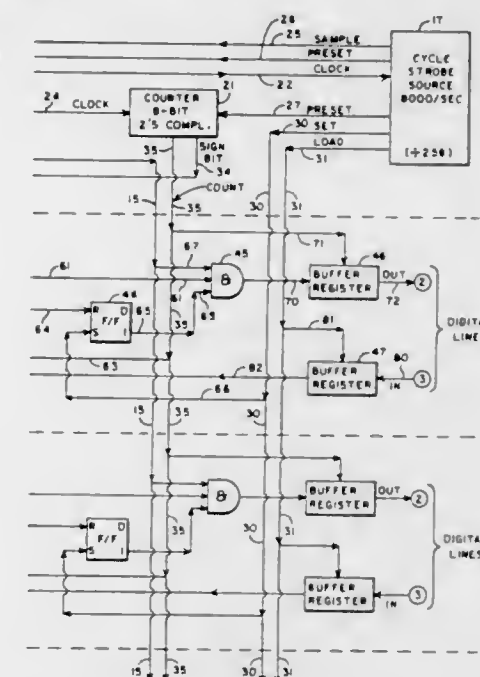
6 Claims



1. Apparatus for interconverting analog and digital signals comprising, in combination:

- a source of clock pulses;
- a cycle strobe pulse source for giving a strobe pulse output after each predetermined number of clock pulses;
- an n-bit, 2's complement counter giving a first count output which cyclicly passes through a range of values extending from a maximum to a minimum;
- a (n-1)-bit, magnitude-only counter giving a second count output which cyclicly passes through a range of values extending from a maximum to a minimum;
- means connecting said counters for simultaneous actuation by said clock pulses;
- means for presetting said counters to maximum values in response to said strobe pulse output;
- a bipolar digital-to-analog converter giving an analog output determined in magnitude by the second count output and in sign by a sign bit from said n-bit counter; and
- a converter channel including first and second converting means each receiving the first count and analog outputs,

said first converting means for receiving an input digital signal and including means comparing the input digital signal with the first count output and giving an output signal determined by the value of the analog output at the time the first count output becomes equal to the input



3,900,845

KEY INPUT CIRCUIT

Takao Tsuki, Kokubunji, and Yoshikazu Hatsukano, Kodaira, both of Japan, assignors to Hitachi, Ltd., Japan

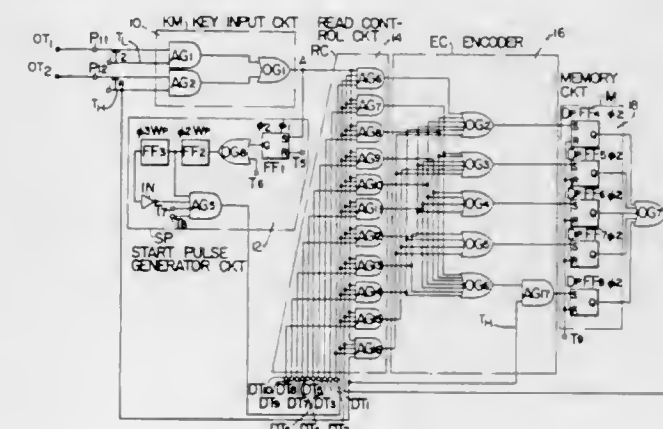
Filed July 23, 1973, Ser. No. 381,486

Claims priority, application Japan, July 21, 1972, 47-72532

Int. Cl. H04I 15/06

U.S. Cl. 340-365 E

9 Claims



- A key input circuit comprising key controlled means for providing respective key signals representing selective key actuation, said key controlled means comprising a plurality of keys, timing pulse generator means for generating a series of sequential timing pulses and means for applying a respective timing pulse to one terminal of each of said keys, another terminal of each of said keys being connected together to a common terminal providing said key signals; read control circuit means responsive to said key signals for generating respective output signals, said read control circuit means comprising a plurality of AND gates each directly receiving the output of said common terminal, a respective one of said timing pulses and a control signal; and gate means responsive to said output signals for generating said control signal to inhibit further operation of said read control circuit means.

3,900,846

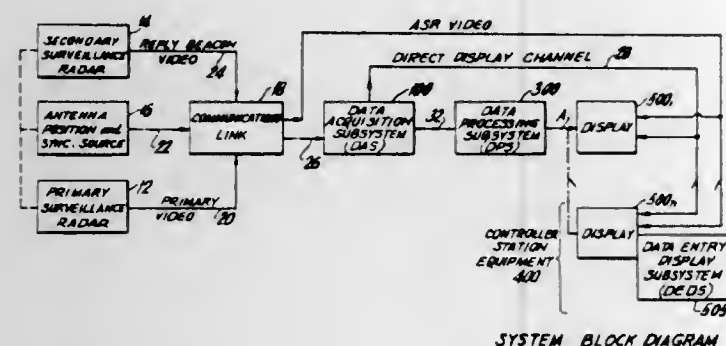
COMPUTER AUTOMATED RADAR TERMINAL SYSTEM
John Gibbon, Morris Plains; Burt Heacock, Berkeley Heights; Richard Lipnick, Scotch Plains; John Strenkowski, Wippany, and Matthew Tutino, Basking Ridge, all of N.J., assignors to Lockheed Electronics Co., Inc., Plainfield, N.J.

Filed Jan. 14, 1974, Ser. No. 432,885

Int. Cl. G01s 9/56

U.S. Cl. 343-6 R

45 Claims



1. In combination in an automated radar data processing system for displaying alpha-numeric information characterizing beacon wave returns generated by aircraft-mounted transponders within the area of said system responsive to secondary surveillance radar interrogations and a primary surveillance radar video wave produced by non-cooperative reflections from said aircraft; said system comprising data acquisition means for receiving said beacon wave returns, said data acquisition means including means for providing a regenerated beacon code wave, a digital range wave characterized by a monotonically increasing value related to the time elapsed since the last emitted secondary surveillance radar interrogation, and digital azimuth information corresponding to the orientation of the secondary surveillance radar when the last transponder interrogation pulse was issued therefrom; data processing means for receiving said signals provided by said data acquisition means; and display means, including plural displays, for displaying alpha-numeric information supplied thereto by said data processing means and for displaying said primary surveillance radar video wave which is supplied thereto; said data processing means includes memory means, said memory means including plural storage means each associated with a different one of said displays, each of said plural storage means including plural storage subportions thereof for storing data characterizing the display presentation to be made for different ones of subject aircraft within the area of said system, subportions of said plural storage means relating to a like aircraft being linked together by stored pointers therein, said memory means including main data base storage means therein, said main data base storage means including plural subportions therein each associated with a different one of the aircraft within the area of said system, said subportions of said main data base storage means including linking means for storing the address of a subportion of one of said plural storage means storing the display information with respect to a like aircraft.

3,900,847

SATELLITE AIDED VEHICLE AVOIDANCE SYSTEM
Ernest R. Steele, 100 North St., Bath, Maine 04530, assignor to The United States of America as represented by the United States National Aeronautics and Space Administration Office of General Counsel-Code GP, Washington, D.C.

Filed Jan. 21, 1972, Ser. No. 219,722

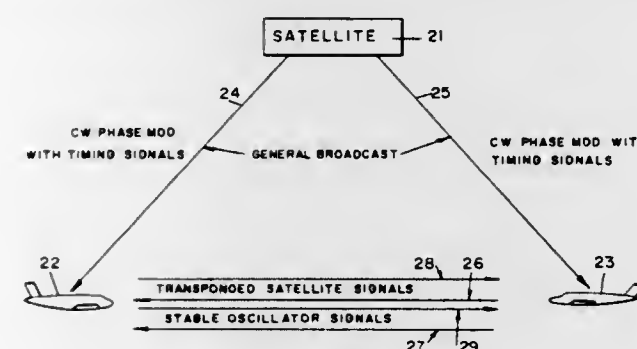
Int. Cl. G01s 9/56

U.S. Cl. 343-6.5 R

20 Claims

1. A method of measuring range from a protected vehicle to an intruding vehicle with the aid of a signal transmitted by a satellite to a population of vehicles comprising the steps of:

receiving in each of the vehicles the satellite transmitted signal;
transponding the satellite transmitted signal by said intruding vehicle;
receiving the transponded signal in said protected vehicle;
utilizing in said protected vehicle the satellite transmitted signal, directly received by said protected vehicle, and the satellite transmitted signal transponded by said intruding vehicle, to derive a propagation delay of the transponded satellite signal relative to the directly received satellite signal and a Doppler difference between the directly



received satellite signal frequency and the transponded satellite signal frequency;
transmitting by said intruding vehicle an additional signal;
receiving said additional signal in said protected vehicle;
measuring in said protected vehicle the Doppler shift of said additional signal; and
deriving in said protected vehicle the range from said protected vehicle to said intruding vehicle as the product of the said propagation delay, the speed of light, and the ratio of the said Doppler shift to the said Doppler difference.

3,900,848

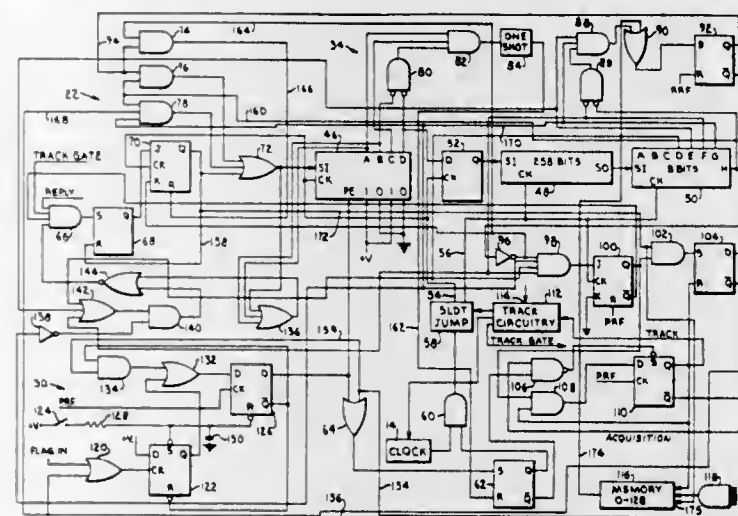
SYNCHRONOUS PULSE DIGITAL FILTER
William E. Mears, Leawood, Kans., assignor to Sperry Rand Corporation, New York, N.Y.

Filed July 20, 1973, Ser. No. 381,344

Int. Cl. G01s 9/16, 9/56

U.S. Cl. 343-7.3

19 Claims



1. In a ranging system employing repeated range scans each initiated by a search pulse, a detector for use in a receiver for locating a synchronous return pulse occurring among random pulses received during each range scan, said detector comprising:

information storage means having a number of memory bits representing a corresponding number of range intervals covering the range being scanned;
input means coupled with said storage means for delivering received pulses thereto for storage in memory, and including means for correlating pulse information stored in

memory during a given range scan with newly arriving pulses received at the same range intervals during a subsequent range scan,
said correlating means causing said storage means to accumulate multiple pulse information at the range at which the synchronous return pulse is occurring and, in each range scan, effecting the destruction of previously stored pulse information at those range intervals where random pulses were received during the previous range scan; and
output means responsive to said multiple pulse information for indicating range acquisition when such information corresponds to a predetermined return pulse count sufficient to verify the identity of the synchronous return pulse.

3,900,849

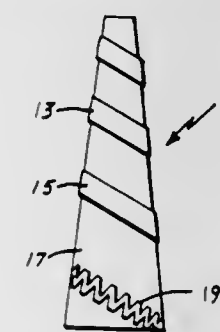
CONICAL UNBALANCED SPIRAL RADAR MODULATOR
William G. Scott, Saratoga; John H. Zickgraf, San Diego, and Dennis A. Petron, Santa Ana, all of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 17, 1973, Ser. No. 404,460

Int. Cl. G01s 9/02; H01Q 1/38

U.S. Cl. 343-18 D

1 Claim



1. A system for modulating and reflecting radar signals comprising:

- a conical surface;
- a first spiral conductor mounted on the conical surface;
- a second spiral conductor mounted on the conical surface interleaved between the first spiral conductor and having a zigzag configuration at the wide base of the conical surface; and
- a variable impedance load connecting the first and second spiral conductors and including
 - first and second sources of time varying voltages,
 - a first varactor having the terminals thereof inductively connected to the first voltage source,
 - a second varactor having the terminals thereof inductively connected to the first voltage source,
 - a third varactor having the terminals thereof inductively connected to the second voltage source,
 - first and second capacitors in series connecting the second and third varactors with the junction of the first and second capacitors being connected to one spiral conductor, and
 - a third capacitor connecting the first and third varactors with the junction of the third varactor and the third capacitor being connected to the other spiral conductor.

3,900,850

DIGITAL PULSE TRAIN TRACKER

Lynn J. Ullman, Ellicott City, and Raymond G. Green, Baltimore, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 24, 1969, Ser. No. 809,778

Int. Cl. G01s 9/14

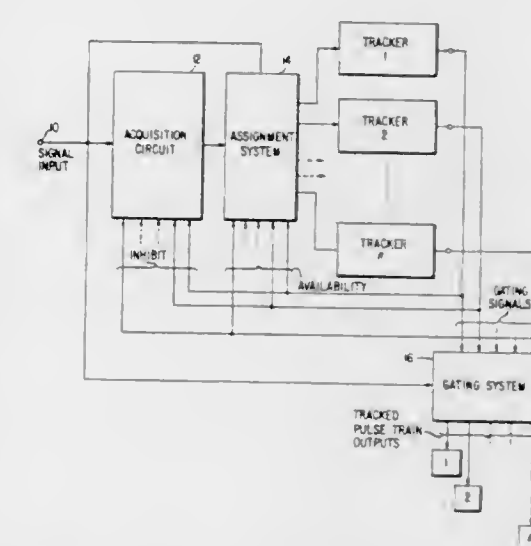
U.S. Cl. 343-7.3

17 Claims

1. A pulse train tracking system for selectively tracking pulse trains derived from a signal input of composite pulse

trains wherein successive pulses of a given train are separated by substantially equal inter-pulse periods, comprising:

first means responsive to a master clock pulse train for digitally measuring the inter-pulse period between a given pulse of said signal input and a successive pulse thereof received within an interval of predetermined minimum and maximum inter-pulse periods after said given pulse, a plurality of second means responsive to said input signal for selectively and independently different respective trains of pulses, and each of said second means being responsive to the inter-pulse period measurement of said first means for establishing a prediction of the inter-pulse period in accordance with the master clock pulse rate and a gate defined by a predetermined number of master clock pulses within which is predicted the occurrence of the next successive pulse of a train including the given and successive pulses for tracking of that train, said first means being operative to effect said digital measurement for each of a plurality of sets of said given and successive pulses in said input signal, in sequence, and available ones of said second means are selectively rendered responsive to said measurements by said first means for independently tracking of the corresponding trains of pulses,
third means responsive to an error between the predicted and actual occurrences of each of successive pulses of that train received within corresponding, successive ones of said gates, said third means controlling said second



means to effect a corresponding correction in the prediction by said second means of the occurrence of the respectively next successive pulses,
said third means including quantizing means responsive to said digital error measurements to produce a digital correction signal in response to receipt and accumulation of a predetermined number of master clock pulses corresponding to said measurements,
said first means also including means to compare inter-pulse periods and establish a prediction of the inter-pulse period of a pulse train to be tracked,
said third means also effecting measurement, at the master clock pulse rate, the magnitude of said errors between said predicted and actual occurrences of said successive pulses of said train of pulses and producing a digital correction signal in response to said digital error measurements,
said first means also being responsive to the digital correction signal of said third means for effecting a correction of the prediction of the inter-pulse period of the train of pulses being tracked and said first means being responsive to receipt of a first pulse from said input preceding said given pulse by an inter-pulse period substantially equal to the inter-pulse period measured between said given and successive pulses for effecting said digital measurement.

3,900,851

MULTI-CHANNEL WIDEBAND OSCILLOGRAPH

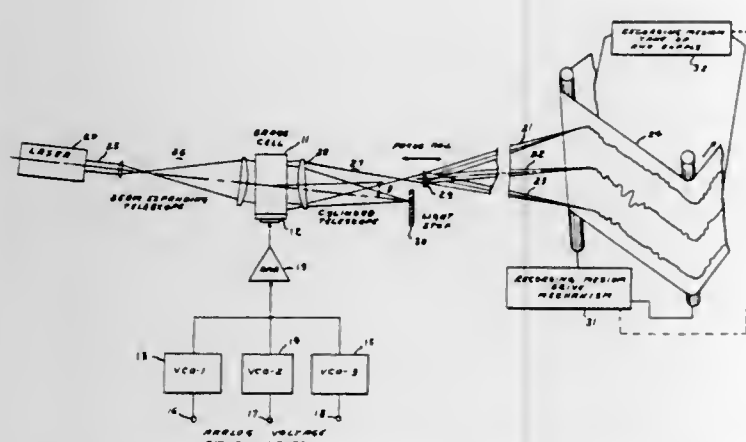
Shawn G. Bucy, Fairborn, and John Takacs, New Carlisle, both of Ohio, assignors to Abex Corporation, New York, N.Y.

Filed Jan. 7, 1974, Ser. No. 431,268

Int. Cl.² G01D 9/30

U.S. Cl. 346—49

1 Claim



1. A multi-channel recording oscillograph for recording oscillographic traces of a plurality of analog voltage input signals comprising:

- a plurality of voltage controlled frequency modulated oscillators, wherein a separate voltage controlled oscillator is associated with and receives a particular input signal of the said plurality of input signals and provides a separate, respective, determined bandwidth frequency modulated output signal responsive to its said input signal;
- a broadband amplifier receiving the said output signals from the said plurality of voltage controlled oscillators and providing a composite output signal of the said signals from the said plurality of voltage controlled oscillators;
- an acousto-optic Bragg cell having a coupled transducer, a determined optical aperture, and a bandwidth of operation at least equal to the sum of the said bandwidths of the said plurality of voltage controlled oscillators;
- means for applying the output of the said broadband amplifier to the said transducer of the Bragg cell;
- a laser providing a continuous wave beam of monochromatic coherent light;
- a beam expanding telescope cooperating with the said laser beam expanding the said laser beam to approximately the size of the said determined optical aperture of the Bragg cell and directing the said expanded beam onto the said aperture;
- a moving photo-sensitive recording medium, photo responsive to the said monochromatic laser light;
- a focusing telescope receiving the laser light passing through the said Bragg cell focusing the deflected laser light, formed into individual beams respective to each of the said plurality of oscillators by the said Bragg cell, onto the said moving photosensitive recording medium; and
- an optical mask positioned within the said focusing telescope for preventing any direct beam of laser light from being emitted through the said focusing telescope.

3,900,852

DEVELOPING METHOD FOR PLAIN PAPER COPYING

Curt Robert Raschke, Warrensville Heights, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio

Filed Jan. 30, 1974, Ser. No. 438,161

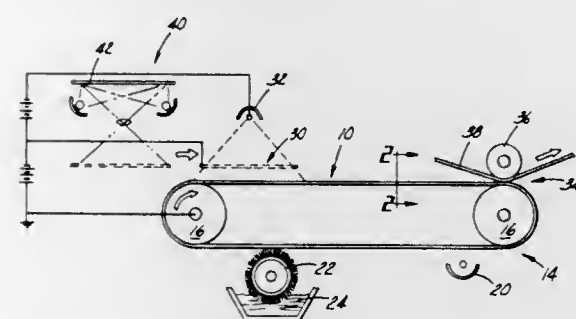
Int. Cl.² G03G 15/16

U.S. Cl. 346—74 ES

2 Claims

1. The method of producing plain paper copies of data sheets by first toning a carrier surface and thereafter imaging, comprising the steps of:

- providing a dielectric surface with a conducting back
- applying a uniform electrostatic charge to said dielectric surface
- applying a triboelectric toner in a uniform coating onto said charged dielectric surface



- neutralizing the electrostatic charge in a pattern corresponding to said data sheet; and thereby substantially loosening said toner from said dielectric surface; and
- physically attracting said loosened toner onto a final copy carrying sheet;

whereby, the dielectric sheet is toned and thereafter imaged as contrasted with the common methods of imaging and thereafter toning.

3,900,853

STYLUS ACTUATOR

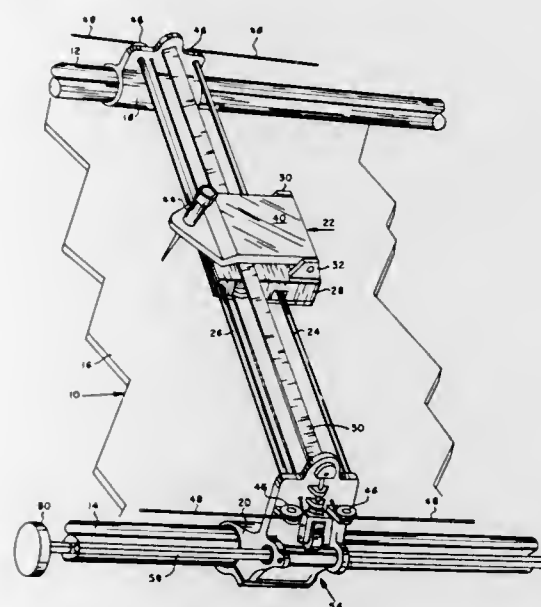
Robert Gordon White, Portland, Oreg., assignor to Tektronix Inc., Beaverton, Oreg.

Filed May 6, 1974, Ser. No. 466,943

Int. Cl.² G01D 15/24

U.S. Cl. 346—139 R

3 Claims



1. In a graphic recorder having a recording element for recording information on a recording medium, a first pair of guide rods disposed adjacent a plotting surface along a first recording axis, a pair of carriage members adapted for movement along said first pair of guide rods, a second pair of guide rods mounted between said carriage members and positioned along a second recording axis orthogonal with said first recording axis, and a stylus holder slidably mounted on said second guide rods for movement over a plotting surface, said stylus holder including a pivotal plate carrying said recording element actuator comprising:

- selectively actuatable energizing means having first and second rotational positions;
- a rotatable shaft connected to said energizing means and disposed in axial parallelism with said first pair of guide rods;
- first cam means slidably mounted on said rotatable shaft and carried by one of said carriage members, said first cam means having a substantially cylindrical shape with a groove extending longitudinally along the outer surface thereof;

pivotal bar means disposed parallel to said second pair of guide rods and passing between said pivotal plate and said plotting surface, said pivotal bar means having a first rotational position about a longitudinal axis thereof for holding said recording element in a non-recording position and a second rotational position for holding said recording element in a recording position; and coupling means operatively connected to said one of said carriage members to transmit rotational motion of said energizing means to said pivotal bar means for selectively moving said recording element in and out of engagement with said recording medium, said coupling means including pushrod means engaging said first cam means at one end thereof and said pivotal bar means at the other end thereof,

wherein said rod means rests in said groove in said first cam means in one rotatable position and on the outside wall of said first cam means in the second rotatable position so that any force exerted by said rod means upon said first cam means is directed toward the axis of said first cam means to thereby preclude torque from being applied to said first cam means and said energizing means in either of two rotatable positions thereof.

3,900,854

EXPOSURE APPARATUS FOR FORMING FLUORESCENT SCREENS OF COLOUR PICTURE TUBES

Kuniharu Osakabe, and Fumiaki Yonai, both of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

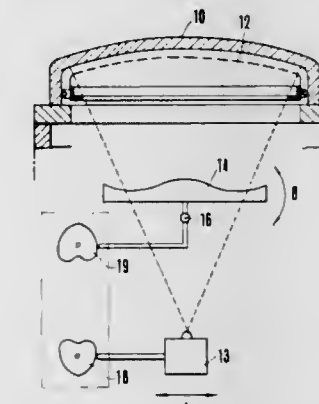
Filed Feb. 21, 1974, Ser. No. 444,351

Claims priority, application Japan, Apr. 6, 1973, 48-38715

Int. Cl. G03b 27/00

U.S. Cl. 354—1

9 Claims



1. In exposure apparatus for forming a fluorescent screen of a color picture tube of the type comprising means for supporting a panel of said color picture tube, said panel being coated with a photosensitive film on the inner surface thereof, and said panel being provided with a slot type color selection electrode on the inside thereof, an exposure light source adapted to direct exposure light to the inner surface of said panel and positioned a predetermined distance spaced apart from said inner surface, and an optically transparent body interposed between said exposure light source and said color selection electrode for diffracting said exposure light, the improvement which comprises driving means for linearly moving said exposure light source in a plane containing an axis extending in the longitudinal direction of the slots of said color selection electrode and for simultaneously oscillating said optically transparent body with respect to said plane.

3,900,855

EXPOSURE CONTROL SYSTEM AND METHOD

John W. Stempeck, Belmont, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Nov. 12, 1973, Ser. No. 414,887

Int. Cl. G03b 7/08

U.S. Cl. 354—29

23 Claims

1. An exposure control system comprising: exposure mechanism means selectively movable between a

first position in blocking relation to an exposure opening and a second position defining a given aperture value in unblocking relation to the exposure opening, said exposure mechanism means defining a progressive variation of aperture values over the exposure opening when so moved between said first and said second positions;

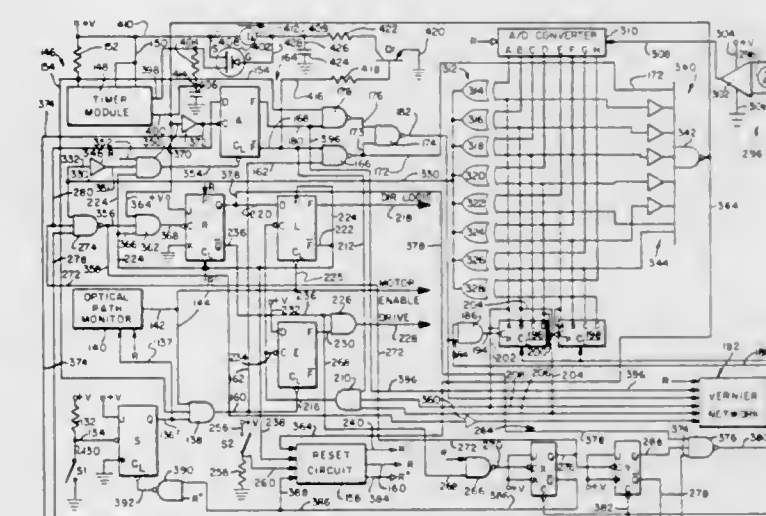
drive means energizable to effect movement of said exposure mechanism means between said first and said second position;

exposure evaluating means having an output the value of which corresponds with an exposure evaluation of a scene;

converter means responsive to said exposure evaluating means output and operative to derive a digital representation of the said value thereof; and

control means including:

counter means responsive to an input pulse train for sequentially counting the received pulses thereof and deriving a time dependent digital representation of the number of said pulses received,



means when actuated for energizing said drive means to move said exposure mechanism means toward said second position to initiate an exposure interval during which scene light rays pass through the exposure opening and then in response to coincidence between said digital representations of said counter means and said converter means for energizing said drive means to move said exposure mechanism means to block said exposure opening and terminate said exposure interval, said energizing means including generator means for deriving said pulse train input to said counter at one frequency during energization of said exposure mechanism means effecting movement thereof from said first to said second position and at another frequency during location of said exposure mechanism means in said second position so as to vary the time dependent digital representation of said counter as a function of both said variation of aperture values and said given aperture value.

3,900,856

AUTOMATIC EXPOSURE CONTROL DEVICE

Tatsuya Taguchi, Tokyo, and Yukio Iura, Yokosuka, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed June 14, 1973, Ser. No. 369,783

Claims priority, application Japan, June 26, 1972, 47-063920

Int. Cl. G03b 9/02

U.S. Cl. 354—45

5 Claims

1. An automatic exposure control device in an interchangeable lens type camera incorporating an exposure meter having an indicator therein, comprising:

means for scanning said indicator of the exposure meter, said scanning means including a movable scanning member, a stop member, and restoring spring means for said movable member;

aperture control means;

drive means for said movable member of said scanning means and for said aperture control means, said drive means including means for release of said drive means from an initial position thereof and for rotation thereof in a predetermined direction upon initiation of picture taking;

a pivoted locking member shaped and disposed for locking said drive means, in one position of said locking member, by a locking engagement with said drive means, said locking member being biased by bias means for the direction of movement towards said position of locking engagement;

first mechanical transmission means for transmitting the driving force of said drive means to said aperture control means;

second mechanical transmission means for transmitting the driving force of said drive means to said movable member of said scanning means, including a rocker lever pivotably mounted on a force delivery member of said second transmission means and having one end engageable with said locking member and having pivot coupling means on its other end to which said movable member of said scanning means is pivotably coupled for linkage of movement; said locking member being so mounted and the mutually

3,900,857 FLASH SYNCHRONIZING CAMERA WITH MECHANICALLY AND ELECTRICALLY TIMED SHUTTER

Kayoshi Tsujimoto, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

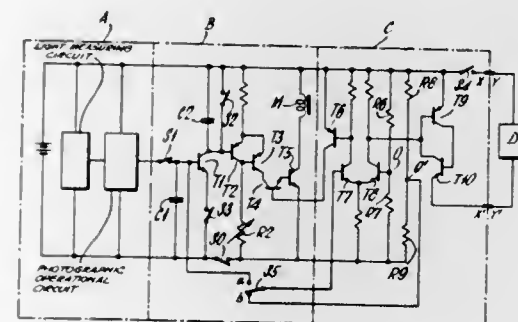
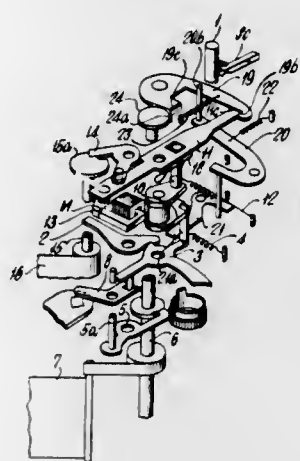
Filed Mar. 1, 1974, Ser. No. 447,446

Claims priority, application Japan, Mar. 12, 1973, 48-28673; May 12, 1973, 48-52992

Int. Cl. G03B 7/08, 9/58

U.S. Cl. 354—50

14 Claims



1. In a camera having a focal plane shutter, means for controlling the shutter opening operation, first control means for electrically controlling the shutter closing operation and second control means for mechanically controlling the shutter closing operation with a predetermined delay from the shutter opening operation in place of said first control means at an inoperable condition of said first control means, the combination comprising:

means changeable from a first to a second condition when a flash device is connected with said camera; switching means for causing said first controlling means to be in said inoperable condition with said changeable means in said second condition; whereby the shutter closing operation of said camera is controlled by said second control means when the camera is used with the flash device.

3,900,858 CAMERA TO MICROSCOPE ADAPTOR WITH A SPECIAL OPTICAL ELEMENT

Mary Conlin McCann, Belmont; William T. Plummer, and Vivian K. Walworth, both of Concord, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 3, 1973, Ser. No. 420,913

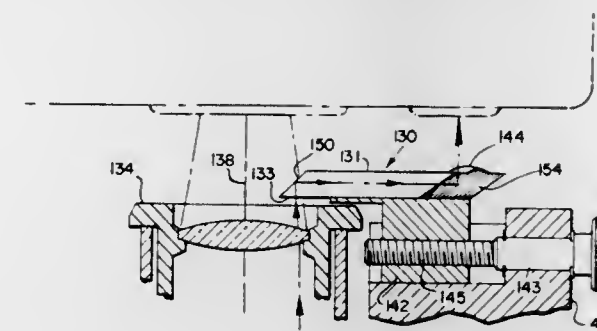
Int. Cl. G03b 17/48

U.S. Cl. 354—79

7 Claims

1. An optical element intended for coupling the automatic exposure control of a photographic camera having a rectangular photographic format to an image-forming optical instrument by diverting light from at least one portion of said image that will not fit within said format to said automatic exposure control, said optical element comprising:

a first reflecting surface parallel to an edge of said format and oriented to reflect light from said optical instrument laterally with respect to said camera's optic axis; a second reflecting surface oriented to reflect said light into said camera's automatic exposure control; a dioptric surface, between said second reflecting surface



and said automatic exposure control, for changing the solid angle subtended by said light so as to increase the amount of said light reaching the photosensitive detector of said automatic exposure control; and a homogeneous transparent medium through which said light travels from said first reflecting means to said dioptric surface via said second reflecting means.

3,900,859 APPARATUS AND METHOD FOR OPTICAL ANNOTATION OF ORTHOPHOTOGRAPHS

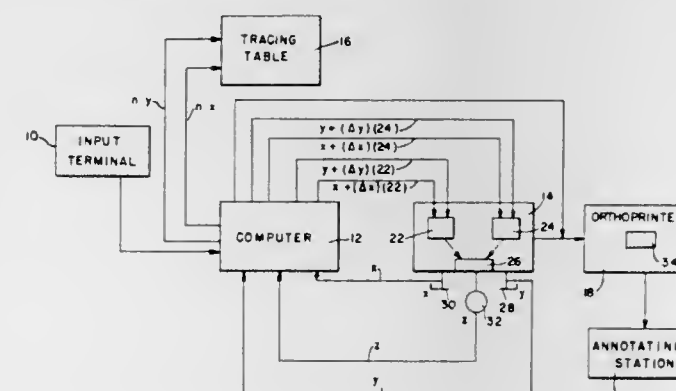
Seymour Jack Friedman, Alexandria, Va., assignor to O.M.I. Corporation of America, Alexandria, Va.

Filed Jan. 15, 1974, Ser. No. 433,535

Int. Cl. G03b 17/24

U.S. Cl. 354—109

3 Claims



1. An orthophotographic printer for producing annotated orthophotographs comprising, in combination:

- a first photocarriage for supporting an aerial photograph with inherent distortions therein;
- means for translating said first photocarriage in a first and a second plane;
- a second photocarriage for supporting sensitized recording film;
- means for translating said second photocarriage in a first and a second plane, said planes being spaced from, but parallel to, the planes within which said first photocarriage is translated;
- an optical transmission train for optically rectifying the inherent distortions in the aerial photograph while projecting images from said photograph onto the recording film, said optical transmission train including:

- a first light source and a first lens with a narrow scanning slit positioned above the aerial photograph to illuminate selected portions thereof and thus project images therefrom through said first photocarriage and toward said sensitized recording film, and

- an exposure mask with a narrow slit positioned above said sensitized recording film to allow the projected images to expose only selected areas of the sensitized recording film as the first and second photocarriages are translated relative to one another;

f. means for optically annotating the orthophotograph as same is produced on the recording film by successive exposures, said means comprising:

- projection means disposed in operative relationship to said optical transmission train;
- a series of transparencies with distinct cartographic images retained within said projection means;
- a second light source and a second lens positioned in alignment with said projection means for illuminating said transparencies and projecting the cartographic images from said transparencies toward said optical transmission train, and
- mirror means positioned within said optical transmission train at an acute angle to the images illuminated by said first and second light sources and projected by said first and second lenses, and
- said mirror means reflecting the images of the transparencies illuminated by said second light source onto said exposure mask positioned above said sensitized recording film while permitting the image of the selected portion of the aerial photograph illuminated by said first light source to fall onto said exposure mask.

3,900,860 PHOTOGRAPHIC CAMERA AND FLASH LAMP SELECTION SYSTEM

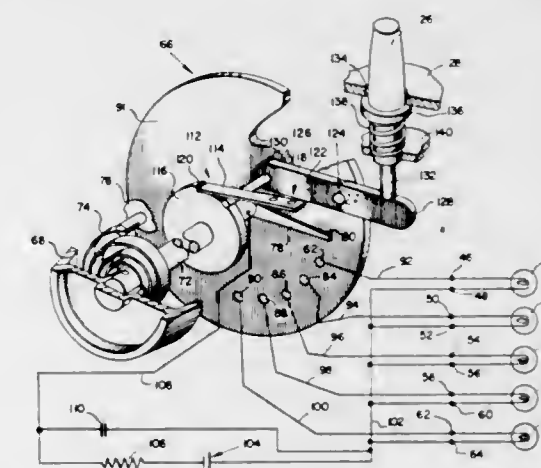
Walter G. Lehmann, Somerville, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 26, 1973, Ser. No. 427,812

Int. Cl. G03b 15/03

U.S. Cl. 354—126

44 Claims



42. A photographic camera operable in conjunction with an array of flash lamps for effecting artificially illuminated photographic exposures, the array of flash lamps including a pair of input terminals in electrical communication with each flash lamp thereof, said camera comprising:

means for initiating a photographic exposure cycle; means for mounting the array of flash lamps and a source of electrical energy; and means for firing the flash lamps in a predetermined sequence with one flash lamp only being fired responsive to each operation of said exposure cycle initiating means, said firing means including:

means for sequentially coupling each pair of the input terminals to the source of electrical energy to facilitate the sequential firing of the flash lamps, said sequentially coupling means including a displaceably mounted electrical contact member arranged to sequentially couple the source of electrical energy to the pairs of input terminals; means responsive to the operation of said exposure cycle initiating means for rendering said sequentially coupling means operative; and

means responsive to the firing of each of the flash lamps for rendering said sequentially coupling means inoperative to effect the firing of the next unfired flash lamp, whereby each operation of said exposure cycle initiating means will effect only the firing of the first unfired flash lamp in the array and the next operation of said exposure cycle initiating means will effect the firing of the next unfired flash lamp in the array.

3,900,861

CAMERA FOR MICROPHOTOGRAPHY

Gert-Rudiger Aust, Siegfried Hainy, and Erich Korf, all of Dresden, Germany, assignors to VEB Pentacon, Dresden, Germany

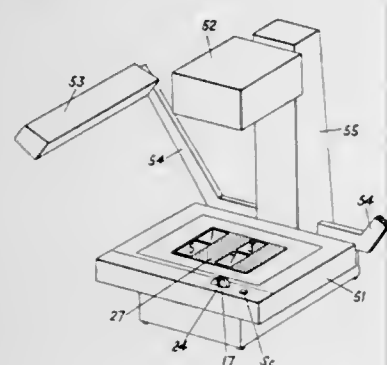
Filed Oct. 9, 1973, Ser. No. 404,253

Claims priority, application Germany, Nov. 8, 1972, 316680; Germany, Jan. 13, 1973, 2301731; United Kingdom, June 29, 1973, 15270/73

Int. Cl. G03b 19/02

U.S. Cl. 354-209

3 Claims



1. In a microfilm camera having a housing enclosing a camera shutter and an intermittently movable film transport mechanism including a transport motor, and a switch device operable by said shutter, the provision of a change-over switch connected in series with the film transport switch and movable between one position for "overall exposure" and another position for "partial exposure" of the film format, the circuit through the transport motor being completed to transport the film with the change-over switch in the "overall exposure" position when the transport switch is actuated by the shutter while the circuit through the transport motor is open with the change-over switch in the "partial exposure" position and wherein there is provided in said camera housing a counter mechanism, comprising a step-wise movable counting member, means for moving said counting member by one step upon each successive operation of the shutter with said change-over switch in the "partial exposure" position and a trip cam on said counting member for actuating said change-over switch into the "overall exposure" position upon the last desired operation of the shutter with said change-over switch in the "partial exposure" position, said means for moving said counting member being operated electromagnetically and connected in series with said transport switch by way of said change-over switch.

3,900,862

DEVELOPING APPARATUS FOR PHOTOCOPY MACHINES

Frank Prescott Bennett, Northbrook, Ill., and Eduard Feitzinger, Vestal, N.Y., assignors to GAF Corporation, New York, N.Y.

Filed Apr. 25, 1974, Ser. No. 464,123

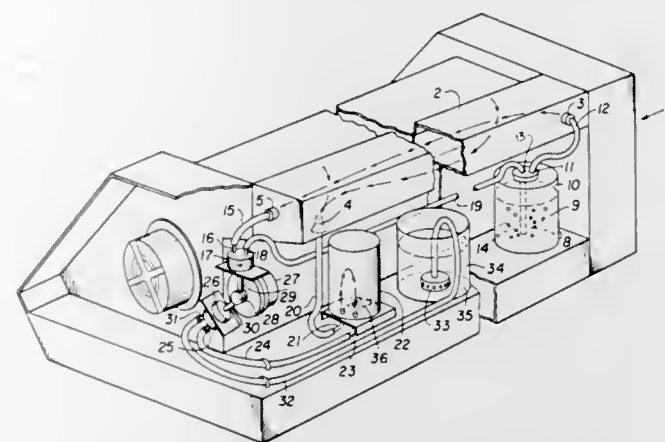
Int. Cl. G03D 7/00

U.S. Cl. 354-300

17 Claims

1. A developing apparatus for photocopy machines comprising, in combination, a developing chamber having an inlet for receiving developing medium, an outlet for discharging said developing medium, and means for transporting sensi-

tized paper therethrough in the line of flow of developing medium from the inlet to the outlet; means for introducing developing medium into said developing chamber in controlled amounts via said inlet; and a vacuum pump in communication with said outlet to remove said developing medium



from the developing chamber; said vacuum pump being adapted to pump a greater volume of developing medium from said developing chamber than is introduced thereto, to maintain the internal pressure of said developing chamber at below atmospheric, and thereby avoid external leakage of developing medium.

3,900,863

LIGHT-EMITTING DIODE WHICH GENERATES LIGHT IN THREE DIMENSIONS

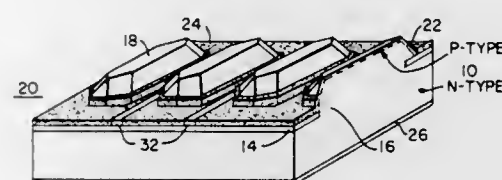
He B. Kim, Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 13, 1974, Ser. No. 469,588

Int. Cl. H01L 29/61; H01S 33/19; H01L 29/06, 29/04

U.S. Cl. 357-17

6 Claims



1. A light-emitting solid-state device which will generate light proximate a plurality of different surfaces which are in more than one plane, said device comprising:

- a substrate formed of predetermined n-type material having a selected surface of predetermined crystallographic orientation;
- a thin layer of inorganic dielectric material adhered over said selected surface of said substrate, said thin layer having provided therein at least one aperture of predetermined size and configuration and positioned in predetermined crystallographic orientation with respect to said selected surface;
- an epitaxial facet grown island of said n-type material extending from said substrate and projecting a predetermined distance through and beyond the aperture in said dielectric layer;
- a thin p-type layer overlaying the portions of said island which project beyond the aperture in said dielectric layer, with the boundary between said n-type material and said p-type layer defining a multiplanar light-emitting p-n junction;
- first metallic electrode means contacting said p-type layer; and
- second metallic electrode means contacting another surface of said substrate.

3,900,864

MONOLITHIC LED DISPLAYS

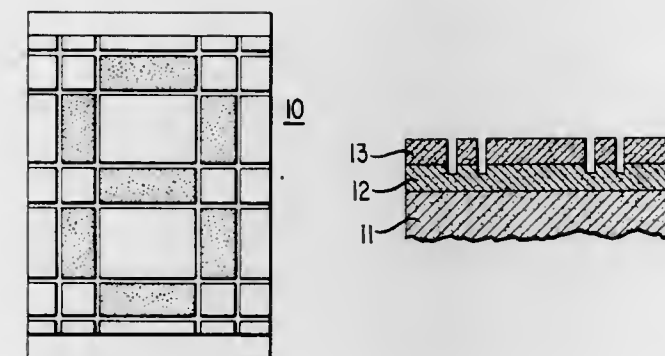
Paul Daniel Dapkus, Bernardsville; Richard Wayne Dixon, Morristown, and Walter Werner Weick, Somerville, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of Ser. No. 361,252, May 17, 1973. This application Oct. 9, 1973, Ser. No. 404,599

Int. Cl. H05b 33/00

U.S. Cl. 357-18

7 Claims



1. A light-emitting diode display device comprising a planar indirect band gap semiconductor chip, a large area, essentially planar, p-n junction formed within a major portion of the surface of the chip, a multiplicity of grooves formed into said major portion of the surface of the chip with a depth below the p-n junction and greater than the width of the grooves, each of said grooves defining an island on the chip and the islands defining the active light-emitting regions of the display, the said grooves providing a means for more effectively isolating the light-emitting regions, and electrical contacts to the islands and to the layer of the p-n junction remote from the surface.

3,900,866

APPARATUS FOR AND METHOD OF GRAPHICAL RECORDING

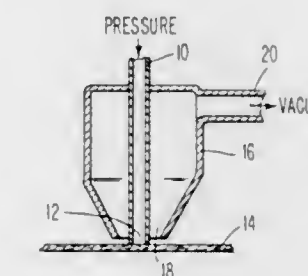
Barry A. Bell, Glenside, and Edward L. Weiss, Quakertown, both of Pa., assignors to Leeds & Northrup Company, North Wales, Pa.

Continuation-in-part of Ser. No. 270,327, July 10, 1972, Pat. No. 3,793,638. This application Feb. 11, 1974, Ser. No. 441,204

Int. Cl. G01d 15/16

U.S. Cl. 346-1

19 Claims



1. A method of applying ink to a record receiving medium comprising the steps of: directing a fountain of ink toward said record receiving medium through a discharge port; contacting said record receiving medium at a selected area with said fountain of ink; and evacuating the area substantially surrounding said discharge port through a vacuum port so as to confine the fountain of ink to said selected area and remove said ink after contact with said record receiving medium, said selected area having a diameter substantially smaller than the inside diameter of said vacuum port.

3,900,867

INTERROGATOR-RESPONSOR SYSTEM FOR DIFFERENT INTERROGATOR CODES

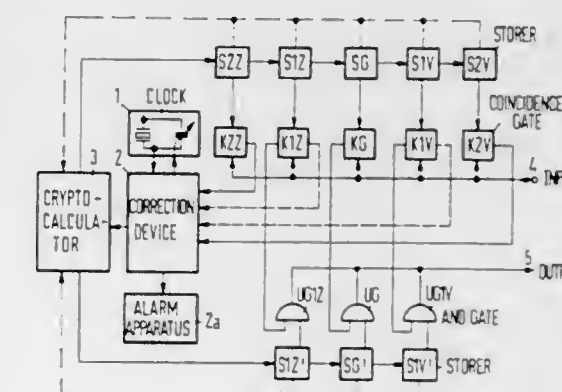
Gerhard Wagner, Schaftlach, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Continuation-in-part of Ser. No. 110,888, Jan. 29, 1971, abandoned. This application Feb. 9, 1973, Ser. No. 331,173

Int. Cl. G01s 9/56

U.S. Cl. 343-6.5 LC

12 Claims



1. In an interrogation-answer system for secondary radar with time dependently changed codes which are transmitted successively in time by an interrogation apparatus and at least one answering apparatus having means for receiving an interrogation code and means producing and storing therein the time-dependent program of the interrogation codes to be expected from the interrogation apparatus and providing time-dependent answering codes which are related in such a predetermined manner to the interrogation codes that for each one of the interrogation codes one predetermined answer code is transmitted to the interrogation apparatus, the interrogation apparatus and the answering apparatus each having a clock connected thereto and operable to provide the same time standard for controlling the code sequence, the answering apparatus comprising means storing codes repre-

3,900,865

GROUP III-V COMPOUND PHOTOEMITTERS HAVING A HIGH QUANTUM EFFICIENCY AND LONG WAVELENGTH RESPONSE

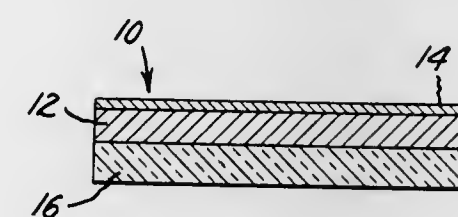
Donald L. Schaefer, Skaneateles, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 846,155, July 30, 1969, Pat. No. 3,672,992. This application Dec. 10, 1971, Ser. No. 206,947

Int. Cl. H01L 27/14, 31/00, 29/161

U.S. Cl. 357-30

2 Claims



1. A photoemitter with an improved infrared response comprising a semiconductive layer of a Group III-V compound having a bandgap equal to a desired photoelectric threshold, a 10-100A thick film of a second III-V compound atop said substrate, said second III-V compound nominally having a bandgap wider than the bandgap of said underlying layer, and electropositive metal ions absorbed within the surface of said film in an amount sufficient to lower the surface work function of said film to the desired photoelectric threshold.

senting past, present and future time as respective past, present and future interrogation codes, means connected to said storage means for comparing the received interrogation code with the past, present and future codes to determine lead or lag of the answering apparatus time standard with respect to that of the interrogation apparatus, and means connected to said comparing means and to said clock of said answering apparatus for correcting the production of the time dependently changed codes in the answering apparatus.

3,900,868

APPARATUS AND METHOD FOR PULSE TRACKER RANGING EQUIPMENT WITH INCREASED RESOLUTION

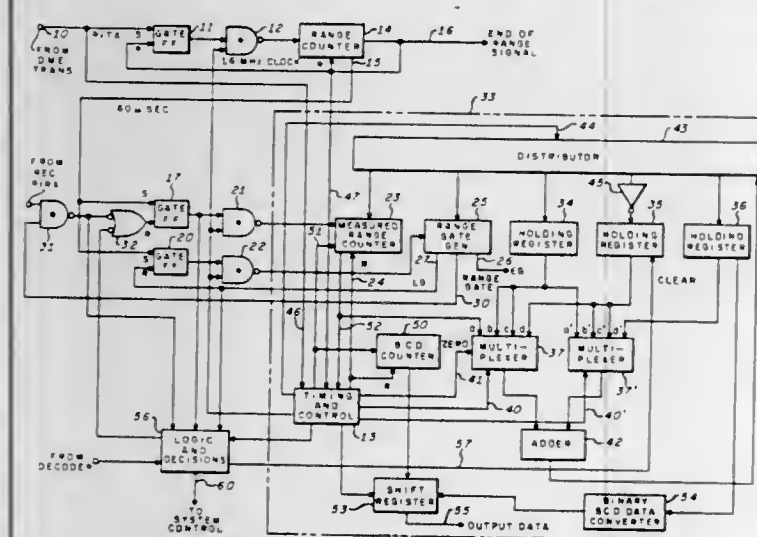
Joseph J. Bock, and William S. Dunham, both of Phoenix, Ariz., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Mar. 22, 1974, Ser. No. 453,613

Int. Cl.² G01S 9/14, 9/56

U.S. Cl. 343-7.3

36 Claims



1. In a digital pulse tracker ranging system having a transmitter-receiver for transmitting pulses to an object and receiving corresponding return pulses from said object, respectively, said system including apparatus for predicting the ranges from said transmitter-receiver with respect to said object for said transmitted pulses to provide digital predicted range signals, respectively, said range predicting apparatus comprising range gate generating means for generating range gate pulses in accordance with said predicted ranges at the expected times of receipt of said return pulses, respectively, range measuring means for measuring the transit times between said transmitted pulses and said corresponding return pulses that coincide with said range gate pulses to provide digital measured range signals, respectively, subtracting means for obtaining the differences between said digital measured range signals and said digital predicted range signals to provide digital range error signals, respectively, accumulating means for algebraically accumulating said digital range error signals to provide the algebraic sum thereof, first multiplying means for multiplying the latest generated of said digital range error signals by a first number of absolute value less than unity to provide additional digits of resolution thereby providing a current range error signal, second multiplying means for multiplying said accumulated sum of said digital range error signals by a second number of absolute value less than unity to provide additional digits of resolution thereby providing an accumulated range error signal, and summing means for obtaining the algebraic sum of the latest of said predicted range signals, said current range error signal and said accumulated range error signal to provide the next of said predicted range signals.

3,900,869 RADAR SIGNAL ANALYZING SYSTEM

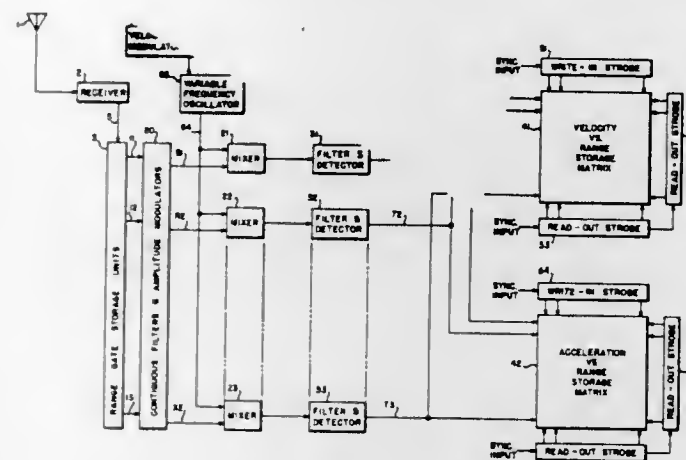
Garold K. Jensen, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 27, 1967, Ser. No. 650,157

Int. Cl.² G01S 9/42

U.S. Cl. 343-7.7

11 Claims



1. In a moving target detection apparatus, a system for analyzing a sequence of signals whose amplitude envelope varies with the doppler information derived from a moving target, said system comprising: means to store said sequence of signals, means to repeatedly read out said stored signals during a plurality of equal duration readout intervals, means to produce a succession of analyzing signals each having a duration equal to one of said readout intervals, means to stepwise vary the frequencies of said succession of analyzing signals, means to continuously vary the frequencies of said succession of analyzing signals, means to mix said repeatedly readout signals with said succession of frequency signals; and filter means to receive the output from said mixer means and to pass a signal whenever the instantaneous frequency of the readout signals differs from the instantaneous frequency of the analyzing signals by a frequency which is passed by said filter.

3,900,870 ELECTRONIC COUNTER-COUNTERMEASURES SYSTEM FOR EMPLOYMENT AGAINST ENEMY JAMMING

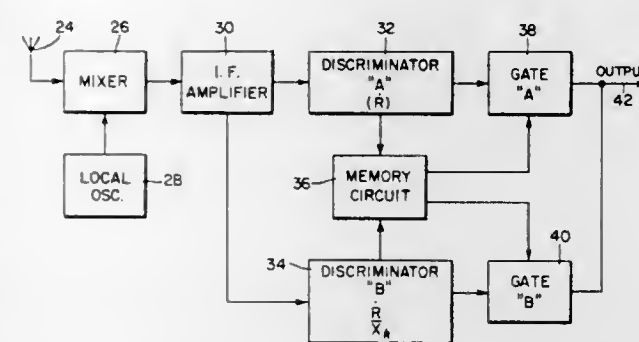
Owen F. Foin, Jr., Fresno, and Frank P. Miley, Camarillo, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 5, 1965, Ser. No. 477,620

Int. Cl.² G01S 9/46; H04K 3/00

U.S. Cl. 343-7 A

7 Claims



1. In signal processing apparatus of the type wherein a signal is radiated from a source toward a moving target, with the energy reflected therefrom then being received at a third point as a Doppler signal and utilized to provide an indication as to the location of such target, the latter being provided with means for receiving the radiated signal from said source and

transmitting energy to said third point in the form of a false Doppler signal which differs in character from the true Doppler signal and is intended to provide an erroneous indication as to the actual location of said target, the combination of: means at said third point for receiving the energy arriving from said target; a first discriminator having a predetermined response rate; a second discriminator having a response rate different from that of said first discriminator; means for applying to both of said discriminators the energy received from said target; a pair of gating units connected to the respective outputs of said discriminators; and means, including a memory network connected to both said discriminators, for controlling the circuit status of said gating units in accordance with the reception by said two discriminators of either a true Doppler signal or a false Doppler signal from said target, whereby the indication provided as to the location of said target will at all times be accurately representative thereof.

3,900,871

CONTIGUOUS FILTER TRACKING WINDOW FOR RADAR

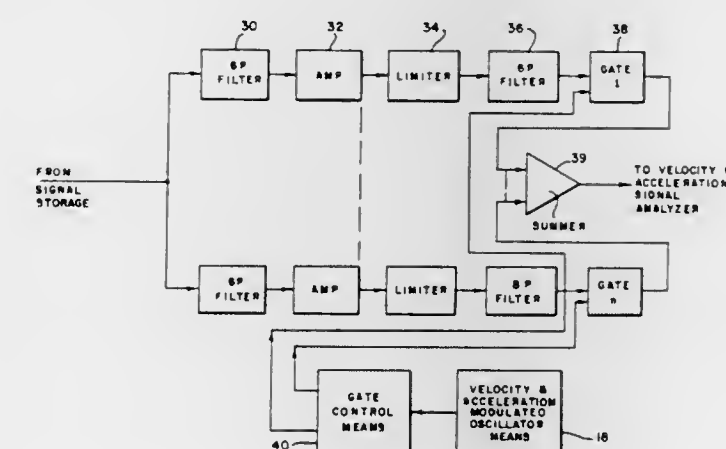
Garold K. Jensen, Alexandria, Va., and James E. McGeogh, Silver Spring, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 11, 1971, Ser. No. 154,237

Int. Cl.² G01S 9/44

U.S. Cl. 343-8

2 Claims



1. A contiguous filter covering a given bandwidth of doppler frequencies and separated into a set of n contiguous channels which divide the total bandwidth into narrower bandwidths equal to the doppler bandwidth divided by n , each channel comprising, in combination: bandpass filter means having a bandwidth larger than the doppler frequency divided by n ; gating means connected to receive the output of said bandpass filter; gate control means connected to said gating means for producing enabling signals for opening said gating means to permit signals to be passed therethrough; and velocity-and-acceleration modulated oscillator means connected to said gate control means for controlling the production of said enabling signals so that the gating means in said set of contiguous channels are opened and closed serially with no time overlap, each gating means being opened only for the time taken by the velocity-and-acceleration modulated signal to completely sweep the dopplerbandwidth-divided-by- n bandwidth of that particular gating means' associated filter.

3,900,872

RADAR DATA CONVERTER AND DISPLAY SYSTEM

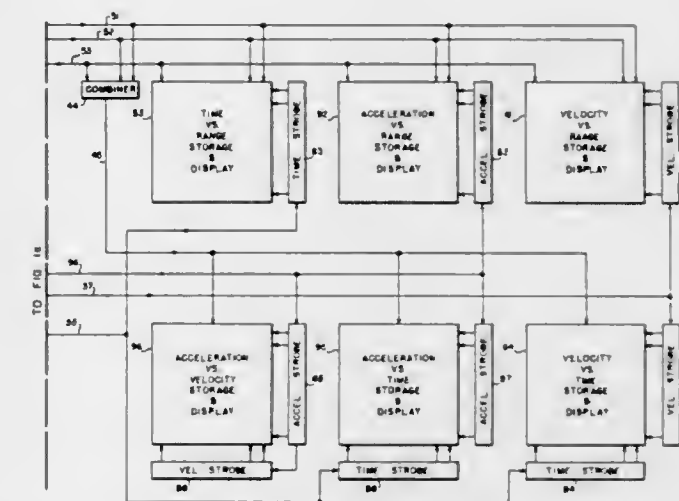
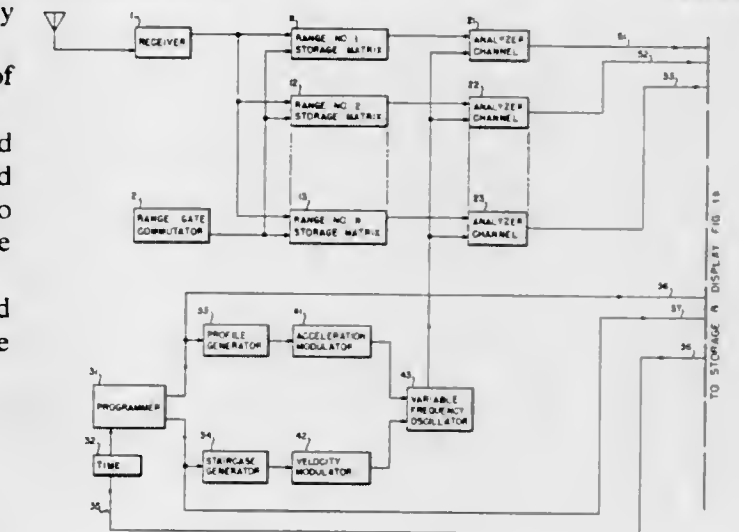
Garold K. Jensen, Alexandria, Va., and James E. McGeogh, Silver Spring, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 27, 1967, Ser. No. 649,794

Int. Cl.² G01S 9/44

U.S. Cl. 343-9

11 Claims



1. A radar system comprising: receiver means for receiving radar echo signals and providing on a plurality of output lines doppler signals related in frequency to the movement of distant objects with each one of said output lines carrying doppler signals derived from a different one of a plurality of predetermined range intervals; oscillator means whose output is stepped repetitively through a sequence of different constant frequencies and varying frequencies which vary at different rates; analyzer means connected to said plurality of output lines and to said oscillator means to produce on a plurality of analyzer output lines analyzer signals whenever said doppler signals differ in frequency from the frequency of said oscillator signals by predetermined amounts with each of said analyzer output lines carrying analyzer signals derived from a different one of said plurality of predetermined range intervals; a two-dimensional storage matrix comprising a plurality of storage elements connected to store the signals appearing on said analyzer output lines; strobing means connected to said storage matrix to sequentially gate open said storage elements in unison with the stepping of said oscillator output; and a two-dimensional array of display devices associated with said storage matrix with each of said display devices connected to a different one of said plurality of storage elements to indicate when a signal is stored in said storage element.

3,900,873

INSTALLATION FOR MEASUREMENT BY RADIO-ELECTRIC TRANSMISSION OF A DISTANCE BETWEEN TWO STATIONS

Pierre Bouvier, Suresnes, and Max Schumperli, Vaucresson,
both of France, assignors to Electronique Marcel Dassault,
Paris, France

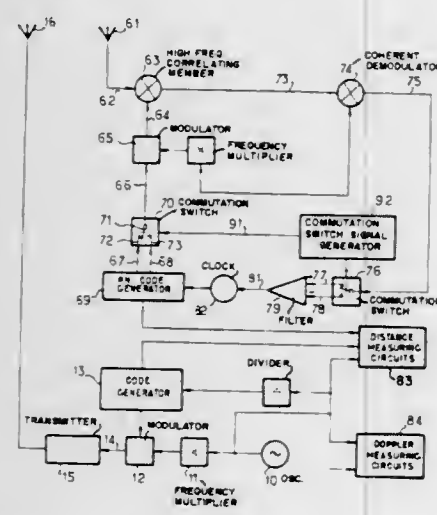
Filed July 30, 1973, Ser. No. 383,568

Claims priority, application France, Aug. 2, 1972, 72.27890

Int. Cl. G01s 9/24, 9/56

U.S. Cl. 343-12 R

4 Claims



1. In a ranging system of the type in which a first signal is transmitted from a first station to a second station which upon reception thereof transmits a second signal to said first station, each station including a PN code generator for phase modulating said signals and means for correlating the PN generated code with the PN modulated received signal in order to derive at said first station the distance between said two stations by generating the correlations of two successive PN codes spaced apart by one period of the PN code bit sequence and by controlling a delay-lock tracking loop by the difference between said two correlations, the improvement at least one of said stations comprising:

commutation switch means having two inputs connected to said PN code generator and one single output connected to said correlating means, and

a commutation switch signal generator operatively connected to said commutation switch means, whereby the PN modulated received signals are successively and alternately correlated with said successive PN codes locally generated at said one station.

3,900,874

DIVERSITY COMBINATION OF RADAR SIGNALS

Robert S. Larkin, Denville; Nean K. Lund, and Charlton E. Williams, both of Berkeley Heights, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 27, 1963, Ser. No. 268,488

Int. Cl. G01S 3/30, 9/02

U.S. Cl. 343-16 R

6 Claims

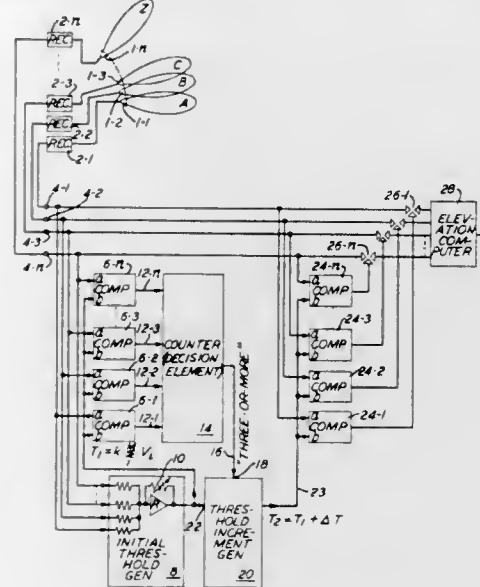
2. In an information processing system having a plurality of input conductors carrying individual signals of which at most two are at any instant principal signals, the others being spurious, the identities of said principal signals changing from instant to instant,

and having means for utilizing said principal signals, apparatus for rejecting spurious signals which comprises, means for continuously additively combining all of said signals to develop a reference threshold of a magnitude in excess of the majority of said signals,

means for comparing each individual signal with said reference threshold to develop an indication for each signal which exceeds said threshold,

means for counting the indications thus developed,

means for developing a control signal in response solely to a count of three-or-more indications,
means responsive to said control signal for developing a threshold increment,



and means for passing to said utilization means only those video signals that exceed said threshold and said threshold increment.

3,900,875

FM-CW FUZE SYSTEM

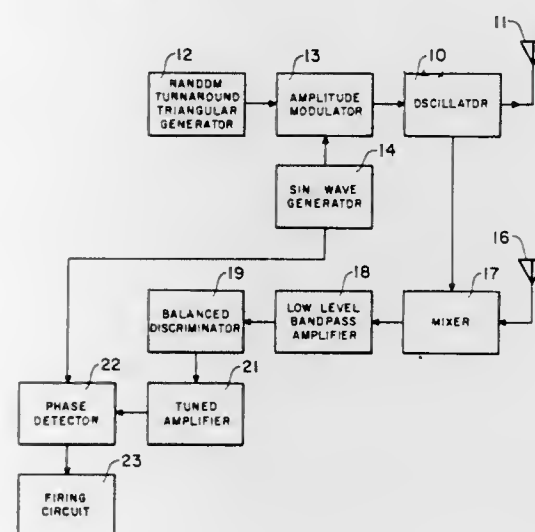
David F. Scheets, Corona, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 29, 1961, Ser. No. 99,320

Int. Cl. F42C 13/04

U.S. Cl. 343-7 PF

5 Claims



2. In a fuze system the combination comprising: a random turnaround triangular generator having an output; an amplitude modulator having a first input coupled to the output of said triangular generator a second input and an output; a low frequency sin wave generator having an output coupled to the second input of said modulator; a transmitting antenna; an oscillator having an input coupled to the output of said modulator and an output coupled to said transmitting antenna; a mixer having first and second inputs and an output; a receiving antenna coupled to the first input of said mixer, the second input of said mixer being coupled to the output of said oscillator; a low level amplifier having an input coupled to the output of said mixer and having an output; a firing circuit having an input; a phase detector having a first input coupled to the output of said low level amplifier, a second input coupled to the output of said sin wave generator and an output coupled to the input of said firing circuit.

3,900,876

AUTOMATIC OMEGA SIGNAL PATTERN SYNCHRONIZING SYSTEM

Kazuo Tsukada, Kakogawa; Mitsuru Sunagawa, Himeji, and Yoshiharu Kanzaki, Akashi, all of Japan, assignors to Fujitsu Ltd., Kawasaki, Japan

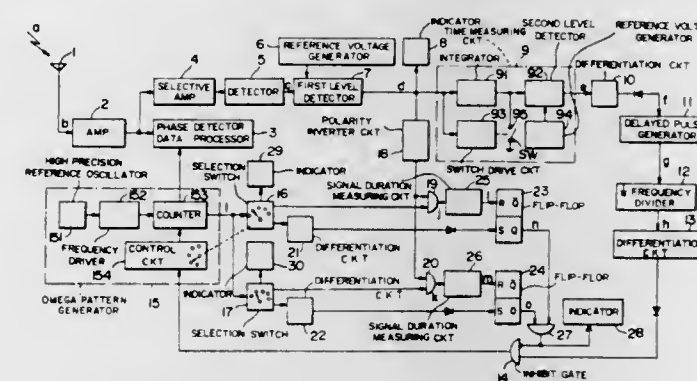
Filed July 11, 1973, Ser. No. 378,312

Claims priority, application Japan, July 11, 1972, 47-69400

Int. Cl. G01S 1/30

U.S. Cl. 343-105 R

5 Claims



1. An automatic omega signal pattern synchronizing system comprising detection means responsive to a received signal for providing a first output indicative of a received signal above a predetermined level and a second output indicative of the received signal above a predetermined level also having a predetermined duration, a pattern generator producing an output signal, means responsive to the second output of said detection means for resetting said pattern generator, and means for detecting the time difference between said first output of said detection means and the output signal of said pattern generator and producing an inhibit output signal when the output signal of said pattern generator is synchronized with the received signal within a predetermined time difference for inhibiting the resetting of said pattern generator.

3,900,877

ELEVATION MEASURING DEVICE FOR PHASE-INTERFEROMETER AIRCRAFT LANDING SYSTEM

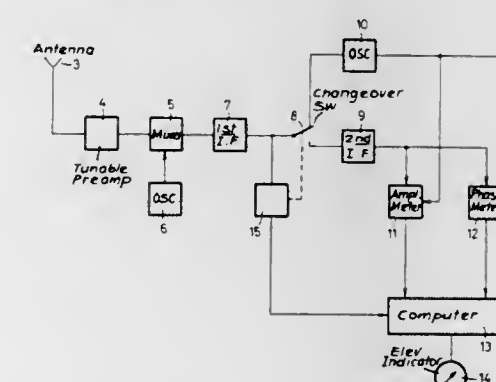
Karl Kohler, Heimerdingen, Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed July 16, 1973, Ser. No. 379,251

Int. Cl. G01S 1/44

U.S. Cl. 343-108 M

5 Claims



1. In an air navigation system, a device for air-derivation of elevation angle of an airborne receiver, with respect to a ground beacon array transmitting R.F. pulses of equal magnitude and phase cyclically and successively from a commutated linear array of N equally spaced radiator elements, said system further including a reference pulse for identifying the beginning of a cycle of commutation at said ground beacon and for providing a phase and amplitude standard in said receiver, the combination comprising:

means within said receiver for measuring the phase and amplitude of the pulses corresponding to a first sub-group of successive ones of said radiator elements and of a second sub-group of said radiator elements to provide a corresponding pair of sets of phase and amplitude values;

means within said receiver for modifying the phase and amplitude of received energy of each pulse in each of said groups to simulate a directive beam scanning pattern of received energy;

means for determining the vector sum of said pulses within each of said sets on a pulse-to-pulse basis;

and means for deriving the phase difference of the two vector sums corresponding to said sub-groups, said phase difference representing a measure of elevation angle.

3,900,878

MINE RESCUE SYSTEM

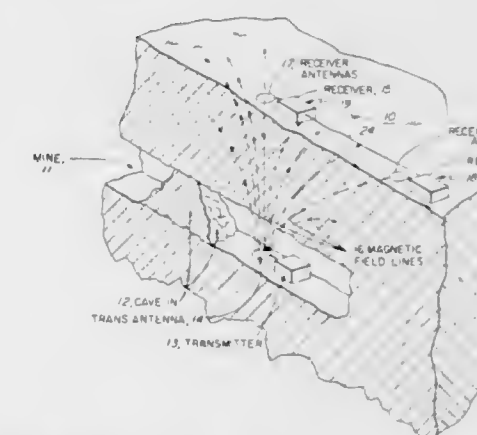
Carson K. H. Tsao, Braintree, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Feb. 14, 1973, Ser. No. 332,532

Int. Cl. G01S 3/02

U.S. Cl. 343-112 R

8 Claims



1. In combination:

means for transmitting a signal through a region of earth, said signal having a frequency below 3 kHz, said transmitting means being located beneath the surface of the earth; means for determining the position upon the surface of the earth below which lies said signal transmitting means comprising:

first and second means for receiving said signal upon the surface of the earth, said second receiving means being movable with respect to said second receiving means; means for comparing the phase of said signal as received at said first receiving means with the phase of said signal as received at said second receiving means; and means for determining the position upon the surface of the earth where the phase of said signal as received at said second receiving means is at a maximum lead over the phase of said signal as received at said first receiving means.

3,900,879

ELECTRONIC COUNTERMEASURES SYSTEM

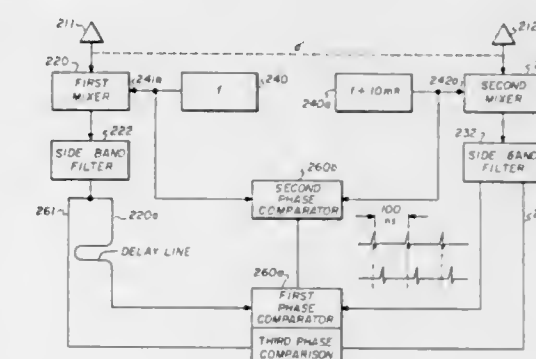
Lewinter, Sidney W., West Orange, N.J., assignor to The Singer Company, Little Falls, N.J.

Filed Apr. 11, 1968, Ser. No. 720,674

Int. Cl. G01S 3/48

U.S. Cl. 343-113 R

6 Claims



1. A system for measuring the angle of arrival and the frequency of a radiated wave with respect to a defined line, comprising in combination,

ence signal applied thereto, reference signal generating means coupled to said tape transport mechanism for generating a reference signal which varies in dependence upon the speed of the tape over the recording head, a threshold circuit coupled to said reference signal generator means for producing a control signal when the speed of the tape exceeds a predetermined fraction of its full speed, and means responsive to said control signal to render said oscillator means operative to clock the transfer of data through said data transfer circuit.

3,900,891

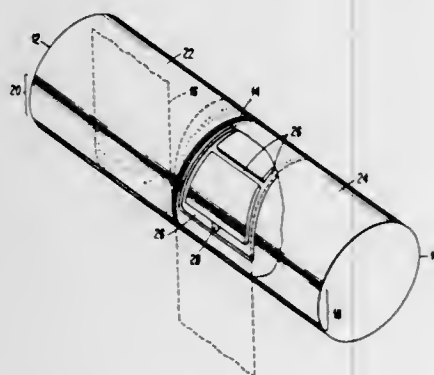
ROTATING-HEAD MANDREL WITH CAM SURFACE
Donald E. Griffiths; Clement H. Kalthoff, and Edward G. Laenen, all of Boulder, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 26, 1973, Ser. No. 428,143

Int. Cl.² G11B 5/48, 5/54, 5/60

U.S. Cl. 360—84

7 Claims



1. On a cylindrical mandrel for supporting tape wrapped about the mandrel in the region of a rotor carrying a magnetic head, the improvement comprising:

a cam surface superimposed on the cylindrical surface of the mandrel, said cam surface being shaped so that, in planar cross-section perpendicular to the axis of the mandrel, the mandrel with cam surface resembles the cross-sectional shape of an eyeball sectioned from front to back;

said cam surface lifting the tape away from the rotating magnetic head as the head crosses the edge of tape;

said cam surface uniformly supporting the length of tape crossing the cam surface of the mandrel to the cylindrical portion of the surface of the mandrel so that tape flutter as the tape transitions from said cam surface to the cylindrical surface of the mandrel is minimized.

3,900,892

MAGNETIC VIDEO RECORDING AND REPRODUCING APPARATUS

Hiroshi Sugaya, Suita, and Hiroo Hosono, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 189,902, Oct. 18, 1971, abandoned.

This application Jan. 29, 1974, Ser. No. 437,629

Claims priority, application Japan, Oct. 19, 1970, 45-92525; Oct. 27, 1970, 45-94851; Dec. 18, 1970, 45-116067; Dec. 29, 1970, 45-124710

Int. Cl.² G11B 15/66, 15/26

U.S. Cl. 360—85

5 Claims

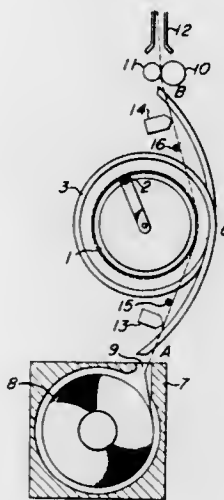
1. A magnetic video recording and reproducing apparatus comprising:

a cylindrical tape guide bearing a single rotary head;

a leader tape attached to the forward end of a magnetic tape, the rigidity and width of said leader tape being greater than the rigidity and width of the magnetic tape; an elongated leader tape guide, having a longitudinal opening portion, wound over an angular range of 360° of the outer periphery of said cylindrical tape guide substan-

tially in a helical form with said opening portion facing said tape guide;

tape transport means for introducing said leader tape into one end of said leader tape guide, the axis of said cylindrical tape guide being inclined with respect to the axis of the helix of said helical opening portion in such a manner that the angle between the axis of said inclined cylindrical tape guide and the longitudinal center line of a portion of said leader tape guide including said one end of said leader tape guide into which said magnetic tape is intro-



duced in a forward winding operation is larger than the angle between the axis of the helix of said helical opening and said longitudinal center line thereby to ensure closed winding of the magnetic tape on said tape guide over an angular range of 360° for continuous recording on the so wound magnetic tape by said single magnetic head, said magnetic tape being transported on said tape guide along a passage in a form similar to said helical form of said tape guide; and

means for taking up said leader tape and magnetic tape from the other end of said leader tape guide.

3,900,893

AIR BEARING SUPPORTED FLEXIBLE DISC DEVICE WITH OPPOSITELY ROTATING STABILIZATION PLATE

Kunio Hirose, Jouyo, and Akira Mayeda, Nishinomiya, both of Japan, assignors to Sanyo Electric Company, Ltd., Osaka, Japan

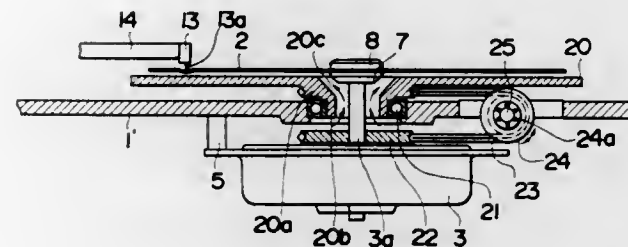
Filed Feb. 12, 1974, Ser. No. 441,886

Claims priority, application Japan, Feb. 16, 1973, 48-19591

Int. Cl. G11b 5/60, 17/02

U.S. Cl. 360—99

4 Claims



1. A recording and/or reproducing device for use with a flexible foil type record which is rotated at high speed, which comprises in combination:

a mounting spindle for engaging the record substantially at its center to cause the record to rotate therewith;

a stationary plate arranged to underlie the record;

a rotatable stabilization plate situated between said record and said stationary plate;

means defining at least one passage for the introduction of air between said record and said rotatable stabilization plate;

transducer means for coacting with the record;

means supporting said transducer means for movement in a radial direction relative to said record;

separate means for rotating said mounting spindle together with said record and said rotatable stabilization plate in opposite directions with respect to each other thereby inducing a flow of air from the passage, between the record and said rotatable stabilization plate, and away from the center of the record to form a rotation induced air cushion to permit the record to hover parallel above the rotatable stabilization plate in spaced relation to the latter.

3,900,894

WRITE-ERASE CIRCUITS FOR ROTATING HEAD DIGITAL MAGNETIC RECORDERS

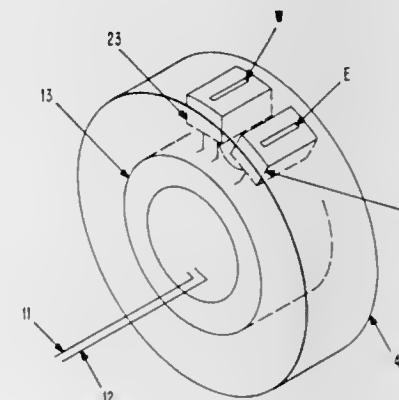
Rahmat A. Aziz, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 31, 1974, Ser. No. 519,740

Int. Cl.² G11B 5/09, 5/47, 5/52, 15/12

U.S. Cl. 360—108

8 Claims



1. For use in a rotating head signal recorder:

an improved write-erase apparatus including in combination:

a rotating transformer having a stationary center-tapped primary winding, and a rotatable center-tapped secondary winding magnetically coupled to said center-tapped primary winding,

a center-tapped recording coil for a recording head having its opposite ends respectively connected to ends of said secondary winding and mounted for rotation therewith, and

an erase coil element electrically interconnected between the center taps of said secondary winding and said recording coil.

3,900,895

MAGNETIC READ-RECORD HEAD WITH HOUSING LOCATOR STRUCTURE

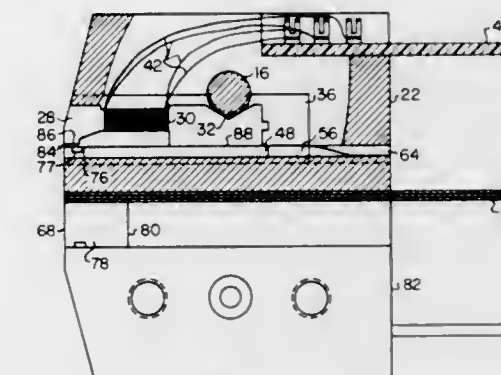
William I. Girdner, and John H. Miller, III, both of San Jose, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 12, 1973, Ser. No. 405,943

Int. Cl.² G11B 5/27, 5/25, 5/105, 5/42

U.S. Cl. 360—121

4 Claims



1. An electromagnetic read-record head having a read-record surface and comprising:

a plurality of electromagnetic transducers, each comprising a transducer core having a transducing end with a first pole face and a first read-record surface portion, having a middle segment with a coil wound thereabout, and having another end with a positioning notch therein;

a transducer frame having a support section to support the transducing end of each transducer, the support section having a second read-record surface portion, and the transducer frame also having a cylindrical support bar with annular slots and spaced apart from and parallel to the support section for supporting and positioning each transducer core other end by engaging each transducer positioning notch, thereby providing mutual alignment of the transducer first pole faces;

shielding means comprising a magnetic shield between each two transducers for magnetically shielding each transducer from others of the transducers each shield having a notch for engaging one of the annular slots in the support bar;

return means for providing a separate magnetic flux path for flux in each transducer core comprising a plurality of return cores, each having a second pole face at one end, and positioned in substantial alignment with the transducers, with each first pole face facing one second pole face and spaced apart therefrom forming a transducing gap between each transducer core and return core at the read-record surface; and

holding and positioning means for holding and positioning the return cores in corresponding alignment with the transducer cores comprising a return frame having a substantially flat read-record surface portion with a lengthwise edge, and having a face formed at substantially a right angle to the flat read-record surface portion, the face extending along the lengthwise edge and holding the return cores therein.

DESIGN PATENTS

GRANTED AUGUST 19, 1975

ERRATA

For
CLASS

048-003.....

See
PATENT NO.

236,367

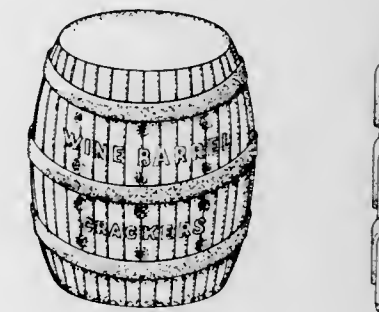
DESIGNS

GRANTED AUGUST 19, 1975

236,292
CRACKER

Albert C. Friedrich, San Jose, Calif., assignor to
Wine Barrel Corporation, Campbell, Calif.
Filed Nov. 8, 1973, Ser. No. 414,074
Term of patent 14 years
Int. Cl. D1—01

U.S. Cl. D1—15



236,294
NECKTIE

Robert R. Newell, 2828 N. Atlantic Ave.,
Daytona Beach, Fla. 32018
Filed Jan. 29, 1974, Ser. No. 437,544
Term of patent 14 years
Int. Cl. D2—02

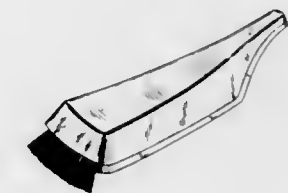
U.S. Cl. D2—351



236,295
BRUSH TYPE SWEEPER FOR LITTER
AND THE LIKE

Noel W. Fleury, London, England, assignor to
Bissell, Inc., Grand Rapids, Mich.
Filed Aug. 5, 1974, Ser. No. 494,768
Term of patent 14 years
Int. Cl. D4—01

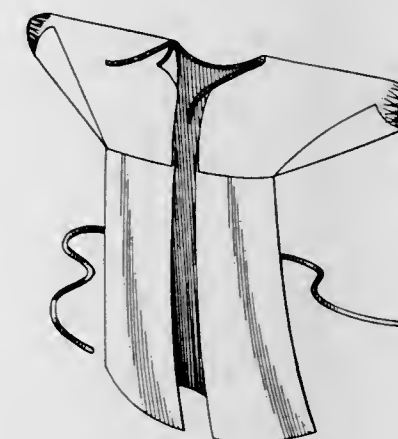
U.S. Cl. D4—12



236,293
SURGICAL GOWN

Percival C. Banks, Deerfield, Ill., assignor to
American Hospital Supply Corporation
Filed Feb. 28, 1973, Ser. No. 336,516
Term of patent 14 years
Int. Cl. D2—17

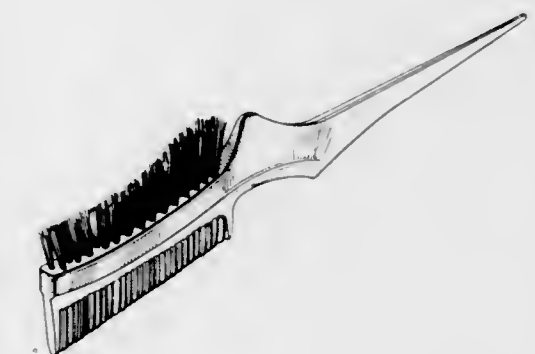
U.S. Cl. D2—17



236,296
COMBINED BRUSH AND COMB

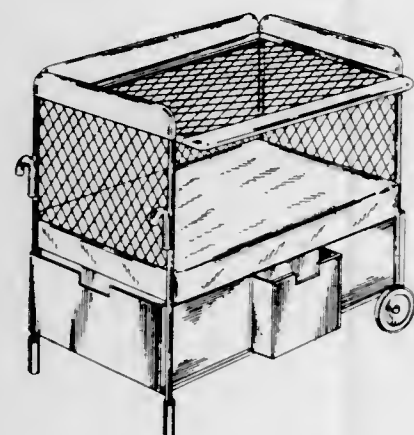
Richard M. Hyman, Iowa City, Iowa, assignor to
Cooper Laboratories, Inc.
Filed Jan. 14, 1974, Ser. No. 433,065
Term of patent 14 years
Int. Cl. D4—02

U.S. Cl. D4—21



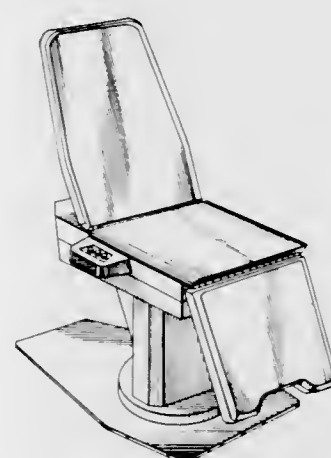
236,297
COMBINED CRIB AND DRESSING TABLE
 Herbert K. Saxe, 302 W. 79th St.,
 New York, N.Y. 10024
 Filed June 25, 1973, Ser. No. 373,478
 Term of patent 14 years
 Int. Cl. D6—01

U.S. Cl. D6—6



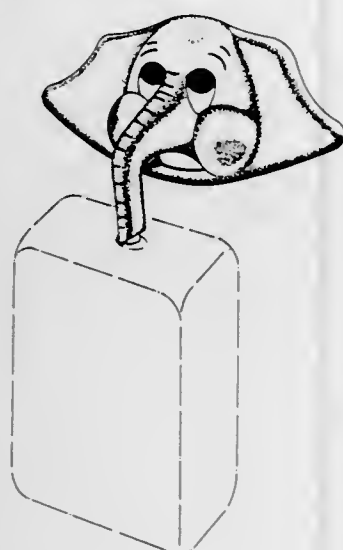
236,299
MEDICAL EXAMINATION CHAIR
 Larry K. Long, Tempe, Thomas C. Knight, Scottsdale,
 and William F. Jackson and John W. Winter, Phoenix,
 Ariz., assignors to Advanced Management Engineering
 & Research Co., Phoenix, Ariz.
 Filed Feb. 22, 1973, Ser. No. 334,831
 Term of patent 14 years
 Int. Cl. D6—01

U.S. Cl. D6—22



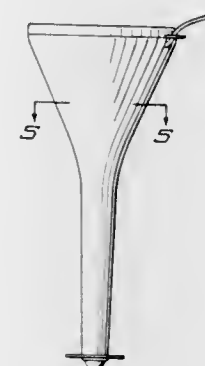
236,298
SOAP HOLDER
 Robert D. Baca, 259 Elm St.,
 San Bruno, Calif. 94066
 Filed June 24, 1974, Ser. No. 482,325
 Term of patent 14 years
 Int. Cl. D23—02

U.S. Cl. D6—90



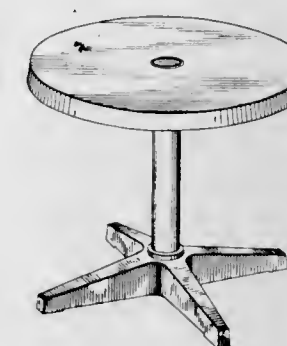
236,300
PORTABLE SEAT
 George J. Hartinger, 3906 Thomas Ave. N.,
 Minneapolis, Minn. 55412
 Continuation-in-part of design application Ser. No.
 184,647, Sept. 28, 1971. This application July 20, 1973,
 Ser. No. 381,156
 Term of patent 14 years
 Int. Cl. D6—01

U.S. Cl. D6—26



236,301
TABLE
 Manus Mudde, Berkel-Enschot, Netherlands, assignor to
 Dart Industries Inc., Los Angeles, Calif.
 Filed Jan. 22, 1973, Ser. No. 325,913
 Term of patent 14 years
 Int. Cl. D6—03

U.S. Cl. D6—27



236,302
CHAIR
 Alfred J. Prizlow, Bloomfield Hills, Mich., assignor to
 GF Business Equipment, Inc., Youngstown, Ohio
 Filed Aug. 25, 1971, Ser. No. 175,034
 Term of patent 14 years
 Int. Cl. D6—01

U.S. Cl. D6—31



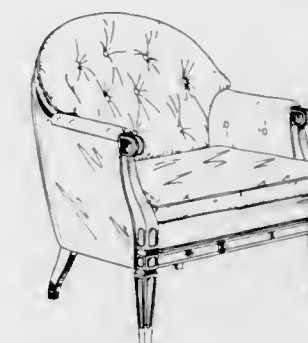
236,303
CHAIR
 Alfred J. Prizlow, Bloomfield Hills, Mich., assignor to
 GF Business Equipment, Inc., Youngstown, Ohio
 Filed Aug. 25, 1971, Ser. No. 175,035
 Term of patent 14 years
 Int. Cl. D6—01

U.S. Cl. D6—31



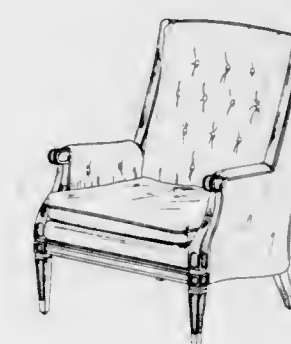
236,304
CHAIR
 Morris F. Fisher, Carmel, Ind., assignor to
 Jackson Chair Co., Inc., Danville, Ky.
 Filed Mar. 25, 1974, Ser. No. 454,120
 Term of patent 14 years
 Int. Cl. D6—01

U.S. Cl. D6—67



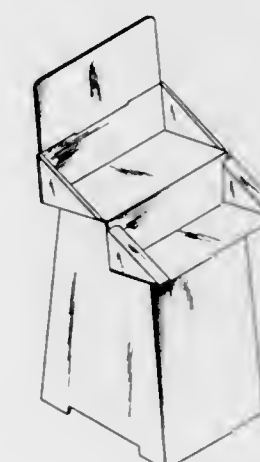
236,305
CHAIR
 Morris F. Fisher, Carmel, Ind., assignor to
 Jackson Chair Co., Inc., Danville, Ky.
 Filed Mar. 25, 1974, Ser. No. 454,121
 Term of patent 14 years
 Int. Cl. D6—01

U.S. Cl. D6—67



* 236,306
MERCHANDISE DISPLAY STAND
 Arthur E. Spicler, Floral Park, N.Y., assignor to
 Jonathan Leigh Inc., New York, N.Y.
 Filed Apr. 17, 1974, Ser. No. 461,776
 Term of patent 14 years
 Int. Cl. D20—02

U.S. Cl. D6—85



236,307

WALL MOUNTED VANITY CABINET

Jean-Paul Dransart, Voiron, Isere, France, assignor to Allibert Exploitation, Puteaux, Hauts-de-Seine, France

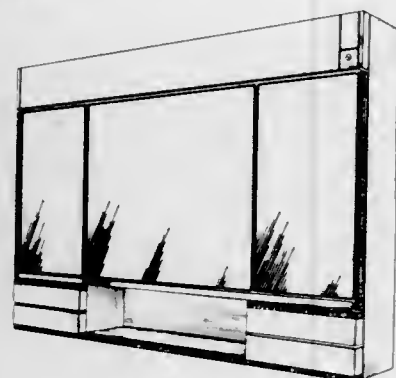
Filed July 23, 1973, Ser. No. 381,596

Claims priority, application France Jan. 23, 1973

Term of patent 7 years

Int. Cl. D6—04

U.S. Cl. D6—104



236,308

CIGARETTE PACK DISPENSER

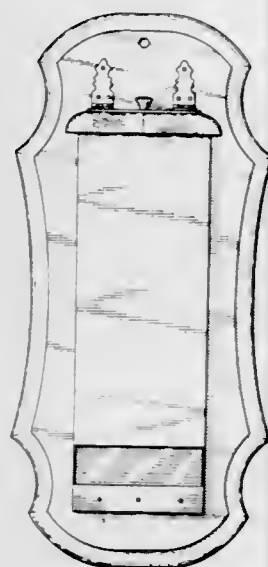
Maurene J. Ball, 6531 Monaco St., Commerce City, Colo. 80022

Filed Sept. 11, 1974, Ser. No. 504,879

Term of patent 14 years

Int. Cl. D6—04

U.S. Cl. D6—114



236,309

KNOCKDOWN TABLE

Robert T. Howitt, Leominster, Mass.

Filed Oct. 10, 1973, Ser. No. 405,018

Term of patent 14 years

Int. Cl. D6—03

U.S. Cl. D6—176



236,310

DRINKING GLASS OR SIMILAR ARTICLE

Michio Yamato and Hiroshi Yokoo, Tokyo, Japan, assignors to Suntory Limited, Los Angeles, Calif.

Filed Dec. 12, 1973, Ser. No. 424,154

Term of patent 14 years

Int. Cl. D7—01

U.S. Cl. D7—6



236,311

DRINKING GLASS OR SIMILAR ARTICLE

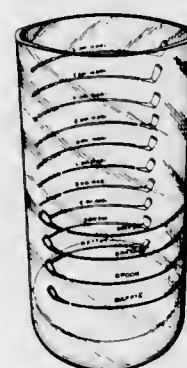
Michio Yamato and Hiroshi Yokoo, Tokyo, Japan, assignors to Suntory Limited, Los Angeles, Calif.

Filed Dec. 12, 1973, Ser. No. 424,155

Term of patent 14 years

Int. Cl. D7—01

U.S. Cl. D7—6



236,312

PATTY MAKER

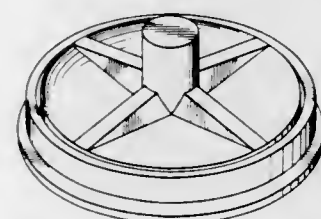
De Peyster D. Brown, 4281 Admirable Drive, Portuguese Bend, Calif. 90274

Filed Aug. 27, 1973, Ser. No. 391,858

Term of patent 14 years

Int. Cl. D7—02

U.S. Cl. D7—43



236,313

CORN GRATER

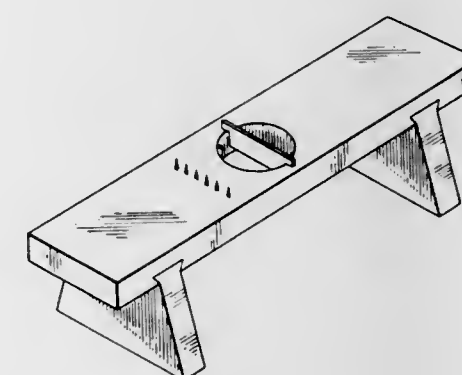
Emeline H. Malpas, The Secret Farmhouse, Little River, Calif. 95456

Filed Jan. 11, 1974, Ser. No. 432,737

Term of patent 14 years

Int. Cl. D7—04

U.S. Cl. D7—47



236,314

MEASURING PITCHER

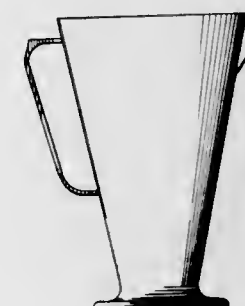
Gerald Y. Sugai, 3379 Weatherford Court, Simi Valley, Calif. 93063

Filed Apr. 18, 1974, Ser. No. 461,985

Term of patent 14 years

Int. Cl. D7—01

U.S. Cl. D7—64



236,315

COMBINED VACUUM BOTTLES, SANDWICH BOX AND CARRYING CASE THEREFOR

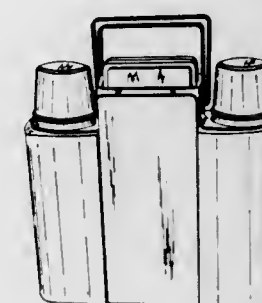
Ronald D. Russo, Colchester, Conn., assignor to King-Seeley Thermos Co.

Filed Apr. 8, 1974, Ser. No. 458,537

Term of patent 14 years

Int. Cl. D3—01; D7—99

U.S. Cl. D7—76

236,316
OVEN

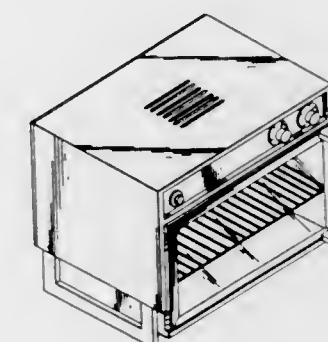
Donald J. Booty, Frankfort, Ill., and Irving R. Belinkoff, Queens Village, and David W. Balter, Bronx, N.Y., assignors to LCA Corporation, Yonkers, N.Y.

Filed Aug. 24, 1973, Ser. No. 378,857

Term of patent 14 years

Int. Cl. D7—02

U.S. Cl. D7—126



236,317

SPOON OR SIMILAR ARTICLE

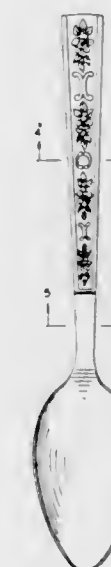
Colin B. Richmond II, Oneida, N.Y., assignor to Oneida Ltd., Oneida, N.Y.

Filed Mar. 1, 1974, Ser. No. 447,096

Term of patent 14 years

Int. Cl. D7—03

U.S. Cl. D7—137



236,318

SPOON OR SIMILAR ARTICLE

Colin B. Richmond II, Oneida, N.Y., assignor to
Oneida Ltd., Oneida, N.Y.
Filed Apr. 29, 1974, Ser. No. 464,892
Term of patent 14 years
Int. Cl. D7—03

U.S. Cl. D7—137

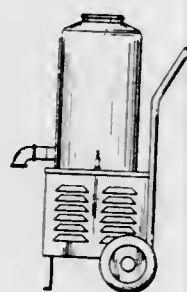


236,319

VACUUM CLEANER HOUSING

Richard Lawrence Jakubowski, P.O. Box 1412,
Fort Myers, Fla. 33902
Filed Jan. 28, 1974, Ser. No. 437,539
Term of patent 14 years
Int. Cl. D7—05

U.S. Cl. D7—166



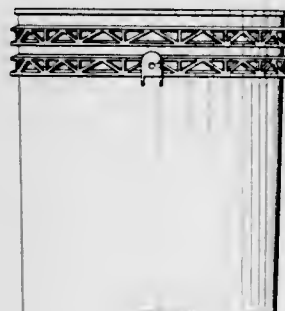
236,320

BUCKET

Cecil Renou, Johannesburg, Transvaal, Republic of South
Africa, assignor to Renou Plastics (Proprietary) Limited,
Isando, Transvaal, Republic of South Africa
Filed Mar. 22, 1974, Ser. No. 454,016
Claims priority, application Republic of South Africa
Jan. 29, 1974

Term of patent 7 years
Int. Cl. D7—07

U.S. Cl. D7—187

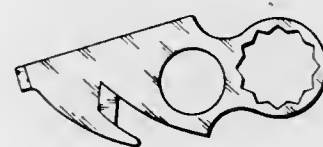


236,321

SKINNING KNIFE

Walter V. Cromoga, 3540 Portland Ave.
Tacoma, Wash. 98404
Filed Feb. 25, 1974, Ser. No. 445,387
Term of patent 14 years
Int. Cl. D8—03

U.S. Cl. D8—20

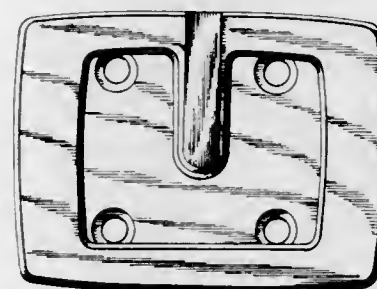


236,322

BUCKLE

Edward M. Stolarz, Yorktown Heights, N.Y., assignor to
Presto Lock Company, Division of Walter Kidde &
Company, Inc., Elmwood Park, N.J.
Filed Jan. 30, 1974, Ser. No. 437,931
Term of patent 14 years
Int. Cl. D8—07

U.S. Cl. D8—122



236,323

DECORATIVE HIDDEN HOOK

Carolyn L. Johnsen and Walter J. Johnsen, both of 921
Kirby Drive, La Habra, Calif. 90631
Filed Dec. 26, 1973, Ser. No. 428,357
Term of patent 3½ years
Int. Cl. D8—08

U.S. Cl. D8—257



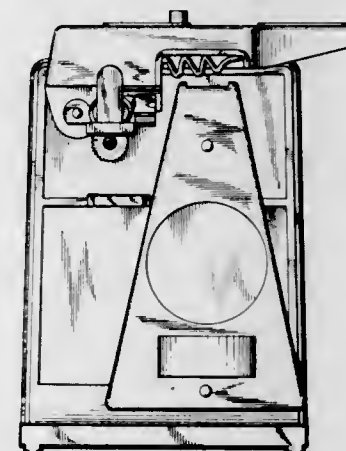
236,324

**COMBINED CAN OPENER AND KNIFE
SHARPENER**

Carl E. Richard, Enfield, and Gerald E. Rideout, South
Windsor, Conn., assignors to General Signal Corpora-
tion

Filed Aug. 27, 1973, Ser. No. 392,150
Term of patent 14 years
Int. Cl. D7—99

U.S. Cl. D8—35



236,325

PACKAGE FOR CATHETERS

David Carleton Miller, Camillus, N.Y., assignor to
Ethicon, Inc., Somerville, N.J.

Filed Aug. 8, 1973, Ser. No. 386,814
Term of patent 14 years
Int. Cl. D9—106; D24—04

U.S. Cl. D9—187

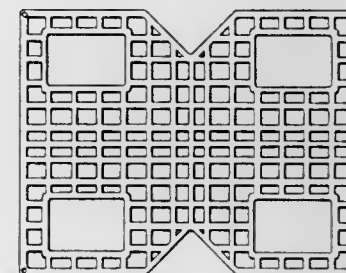


236,326

STACKING AID FOR CONTAINERS

Lionel F. Trebilcock, Girard, Ohio, assignor to
Litco Plastics, Vienna, Ohio
Filed Apr. 6, 1973, Ser. No. 348,748
Term of patent 14 years
Int. Cl. D9—99

U.S. Cl. D9—294

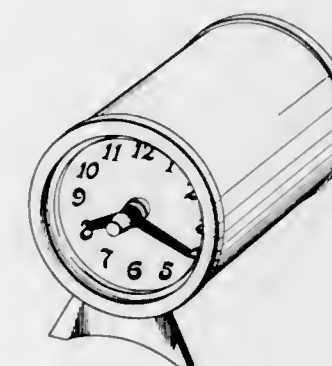


236,327

CLOCK OR SIMILAR ARTICLE

Morris W. Wilson, Fairfield, Conn., assignor to
General Electric Company
Filed Nov. 9, 1973, Ser. No. 414,368
Term of patent 7 years
Int. Cl. D10—01

U.S. Cl. D10—23

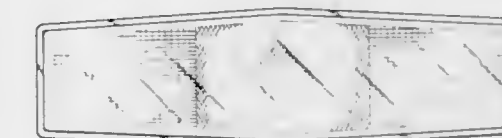


236,328

REFLECTOR

Walter Dorwin Teague, Jr., Nyack, N.Y., assignor to
Amerace Corporation, New York, N.Y.
Filed Sept. 3, 1974, Ser. No. 502,894
Term of patent 14 years
Int. Cl. D10—06

U.S. Cl. D10—111

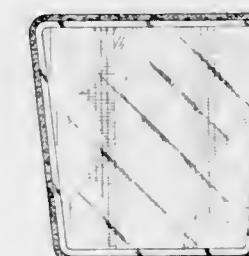


236,329

REFLECTOR

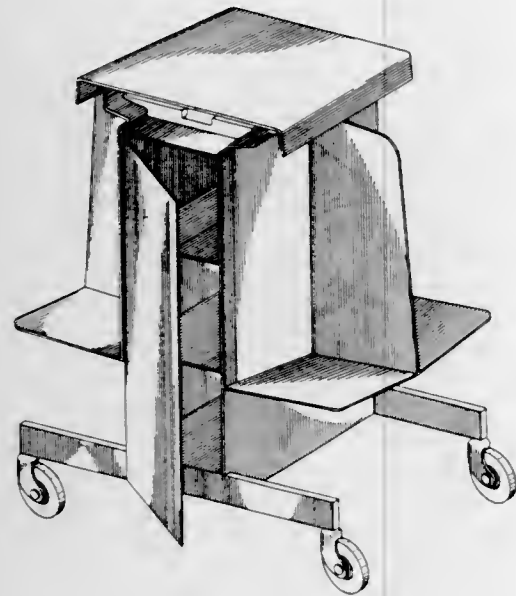
Walter Dorwin Teague, Jr., Nyack, N.Y., assignor to
Amerace Corporation, New York, N.Y.
Filed Sept. 3, 1974, Ser. No. 502,979
Term of patent 14 years
Int. Cl. D10—06

U.S. Cl. D10—111



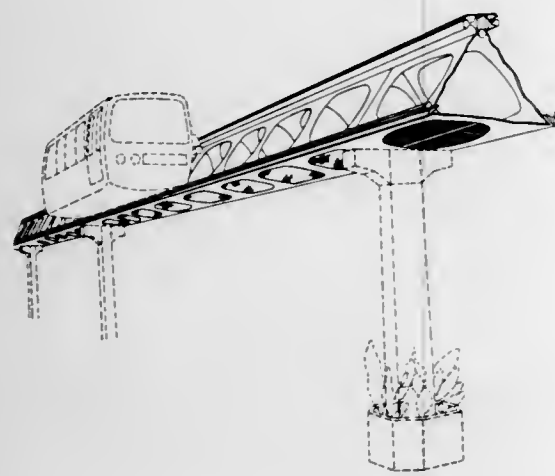
236,330
REPRODUCTION MACHINE STACKING CART
 Jacob W. Patla, Fairport, N.Y., assignor to
 Xerox Corporation, Stamford, Conn.
 Filed Dec. 27, 1973, Ser. No. 428,935
 Term of patent 14 years
 Int. Cl. D12—02

U.S. Cl. D12—28



236,331
BEAM FOR ELEVATED RAILWAY
 Lawrence K. Edwards, 565 Arastradero Road,
 Palo Alto, Calif. 94306
 Filed Oct. 2, 1973, Ser. No. 402,841
 Term of patent 14 years
 Int. Cl. D12—99

U.S. Cl. D12—49



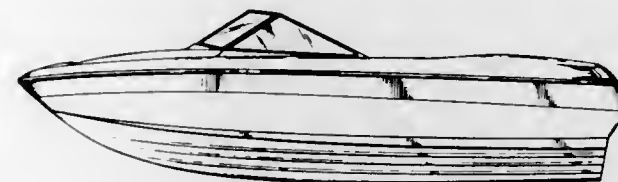
236,332
BOAT
 David T. Livingston, Seattle, Wash., assignor to
 Reinell Boats, Inc., Marysville, Wash.
 Filed Aug. 27, 1973, Ser. No. 391,748
 Term of patent 14 years
 Int. Cl. D12—06

U.S. Cl. D12—62



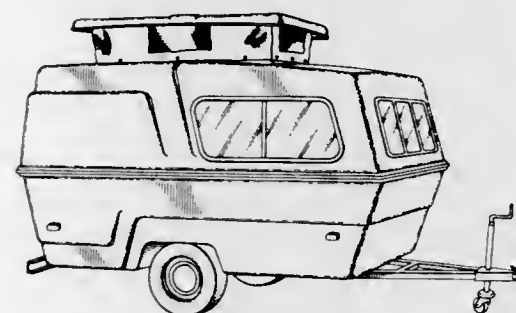
236,333
BOAT
 David T. Livingston, Seattle, Wash., assignor to
 Reinell Boats, Inc., Marysville, Wash.
 Filed Aug. 30, 1973, Ser. No. 393,058
 Term of patent 14 years
 Int. Cl. D12—06

U.S. Cl. D12—62



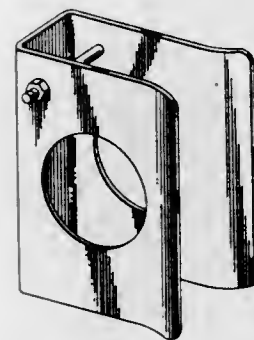
236,334
CAMPER TRAILER
 Joseph G. Heath, Northridge, Calif., assignor to
 Hunter Structures, Inc., Santa Monica, Calif.
 Filed Nov. 24, 1972, Ser. No. 309,606
 Term of patent 14 years
 Int. Cl. D12—10

U.S. Cl. D12—103



236,335
BICYCLE HOLDER
 Michael J. Lacivita, 3220 Eldora Drive,
 Youngstown, Ohio 44511
 Filed Jan. 24, 1974, Ser. No. 436,386
 Term of patent 7 years
 The portion of the term of the patent subsequent to
 Aug. 2, 1980, has been disclaimed
 Int. Cl. D8—99

U.S. Cl. D12—115



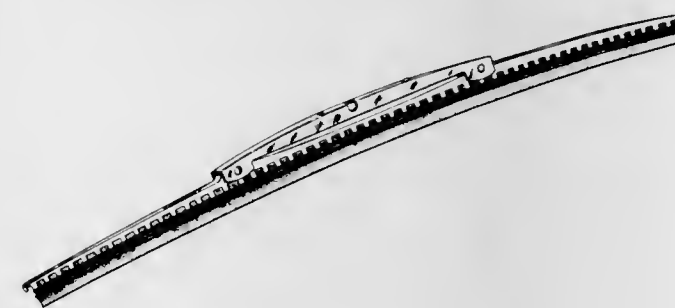
236,336
BICYCLE FORK
 Thomas D. Seifert, Aracadia, Calif., assignor to
 LRV Industries, South El Monte, Calif.
 Filed Nov. 4, 1974, Ser. No. 520,632
 Term of patent 14 years
 Int. Cl. D12—11

U.S. Cl. D12—118



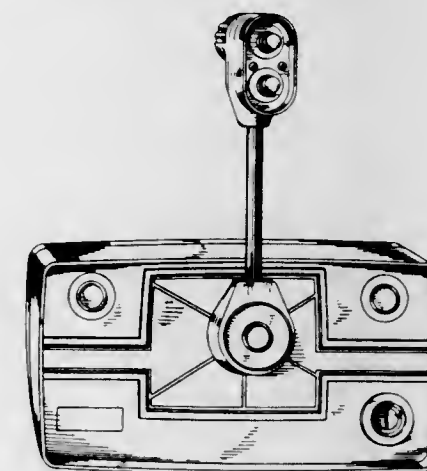
236,337
VEHICLE WINDSHIELD WIPER BLADE ASSEMBLY
 Raymond A. Deibel, West Falls, N.Y., assignor to
 Trico Products Corporation, Buffalo, N.Y.
 Filed Aug. 8, 1973, Ser. No. 386,522
 Term of patent 14 years
 Int. Cl. D12—16

U.S. Cl. D12—155



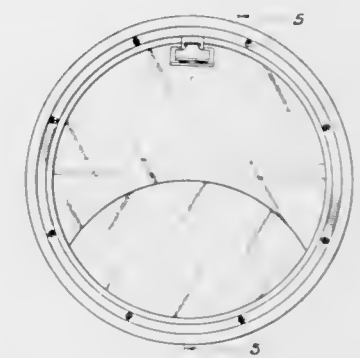
236,338
SINGLE HANDLE MARINE ENGINE CONTROL HOUSING
 Arthur F. Miller, Oshkosh, Wis., assignor to
 Brunswick Corporation, Skokie, Ill.
 Filed May 1, 1974, Ser. No. 465,909
 Term of patent 14 years
 Int. Cl. D12—06

U.S. Cl. D12—179



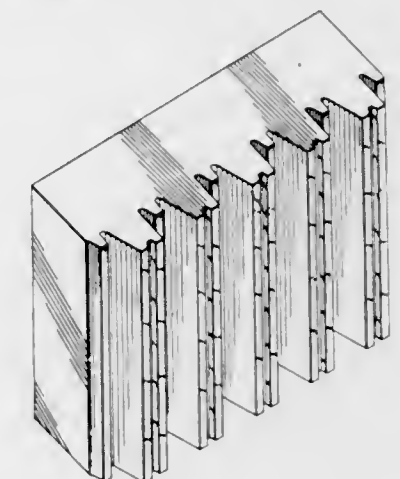
236,339
CIRCULAR TRAILER WINDOW
 Lynn S. Polk, San Bernardino, Calif., assignor to
 Le Van Specialty Company, Inc.
 Filed June 18, 1973, Ser. No. 371,248
 Term of patent 14 years
 Int. Cl. D12—16

U.S. Cl. D12—183



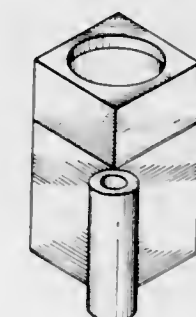
236,340
EXTERIOR MOLDED PANEL FOR DATA PROCESSING UNITS
 Richard G. Clayton, Detroit, Mich., assignor to
 Burroughs Corporation, Detroit, Mich.
 Filed Aug. 9, 1973, Ser. No. 387,109
 Term of patent 14 years
 Int. Cl. D14—99; D25—01

U.S. Cl. D13—1 J



236,341
COMBINED CLIP DISPENSER AND PENCIL HOLDER
 Robert M. Leedy, 7 Martindale Road,
 Short Hills, N.J. 07078
 Filed Nov. 19, 1973, Ser. No. 417,278
 Term of patent 14 years
 Int. Cl. D19—02

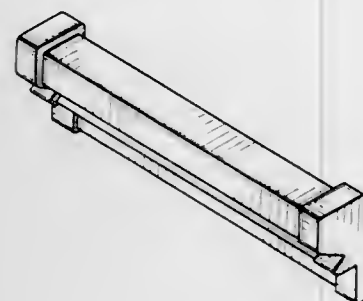
U.S. Cl. D19—75



236,342

SHEET MATERIAL HOLDER
Geronimo A. Dango, 805 Coronado Terrace,
Los Angeles, Calif. 90026
Filed Sept. 19, 1973, Ser. No. 398,580
Term of patent 14 years
Int. Cl. D19—02

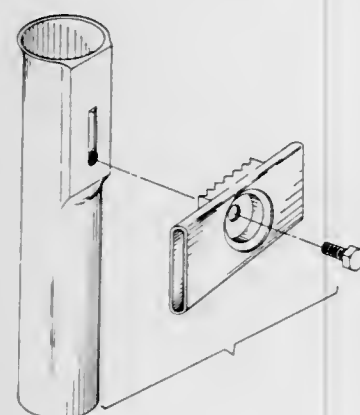
U.S. Cl. D19—91



236,343

FISH ROD HOLDER
Leon A. Polzin, P.O. Box 54,
Cuero, Tex. 77954
Filed Sept. 4, 1973, Ser. No. 394,104
Term of patent 14 years
Int. Cl. D22—05

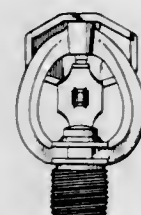
U.S. Cl. D22—22



236,344

SPRINKLER
Theodore Vorkapich, Brunswick, Ohio, assignor to
American LaFrance, Inc., Willoughby, Ohio
Filed Jan. 18, 1974, Ser. No. 434,683
Term of patent 14 years
Int. Cl. D23—01

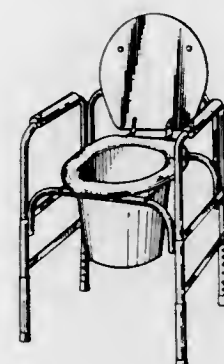
U.S. Cl. D23—6



236,345

BEDSIDE COMMODORE
Morton I. Thomas, Bakertown Road,
Monroe, N.Y. 10950
Filed June 4, 1973, Ser. No. 366,500
Term of patent 14 years
Int. Cl. D23—02

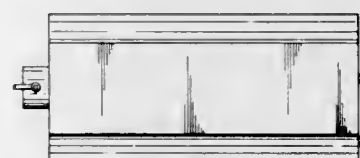
U.S. Cl. D23—48



236,346

WOOD BURNING HEATER
Samuel B. Kemple, Independence, Mo., assignor to
Four Seasons Woodburning Heater Co., Inc.
Filed Mar. 13, 1974, Ser. No. 450,820
Term of patent 14 years
Int. Cl. D23—03

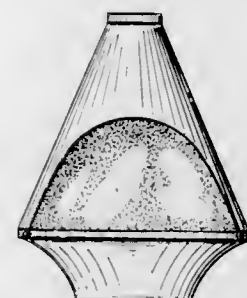
U.S. Cl. D23—93



236,347

FREE STANDING FIREPLACE
Glen D. Crownover, Santa Rosa, Calif., assignor to
Malm Fireplaces, Inc., Santa Rosa, Calif.
Filed Aug. 30, 1972, Ser. No. 284,745
Term of patent 14 years
Int. Cl. D23—03

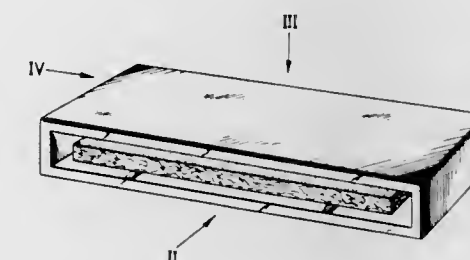
U.S. Cl. D23—97



236,348

AIR FRESHENER
Georg Schimanski, Rummenohl, Germany, assignor to
Globol-Werk GmbH, Neuburg an der Donau, Germany
Filed Sept. 11, 1973, Ser. No. 396,285
Claims priority, application Germany June 5, 1973
Term of patent 14 years
Int. Cl. D23—99

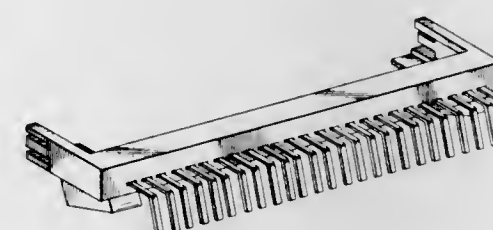
U.S. Cl. D23—150



236,349

MULTI-CONTACT DIELECTRIC HOUSING FOR RECEIVING AN OPTICAL DISPLAY READOUT DEVICE
Abul Abbas Mesbahuddin Ahmed, Harrisburg, Pa.,
assignor to AMP Incorporated, Harrisburg, Pa.
Filed Feb. 23, 1973, Ser. No. 335,218
Term of patent 14 years
Int. Cl. D13—03

U.S. Cl. D26—1 B



236,350

CALCULATOR
Elmer J. Stoltz, Castro Valley, and Richard A. Nyquist,
Menlo Park Calif., assignors to The Singer Company,
New York, N.Y.
Filed Dec. 26, 1973, Ser. No. 427,877
Term of patent 14 years
Int. Cl. D18—01

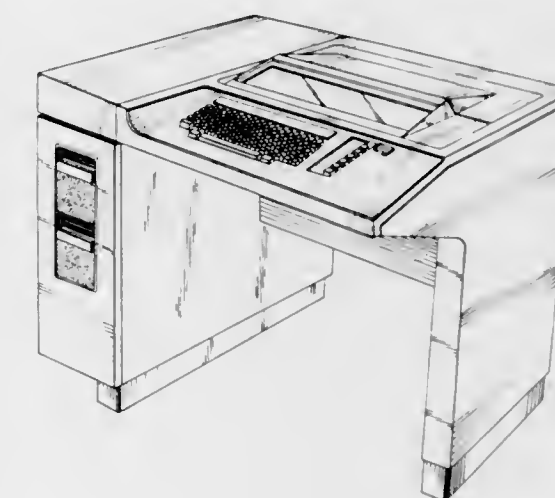
U.S. Cl. D26—5 C



236,351

TAPE UNIT AND CONSOLE FOR A DATA SYSTEM
Richard G. Clayton, Detroit, and Jerry J. Sims, South-
field, Mich., assignors to Burroughs Corporation,
Detroit, Mich.
Filed Dec. 17, 1973, Ser. No. 424,935
Term of patent 14 years
Int. Cl. D14—02

U.S. Cl. D26—5 C

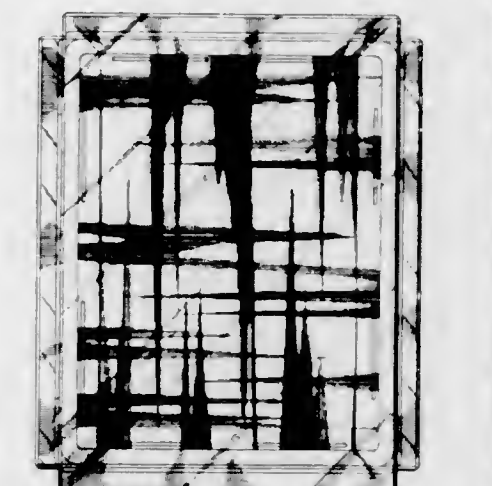


236,352

LIGHT EMITTING GAS DISCHARGE MATRIX DISPLAY PANEL
Fred E. Mansur, Temperance, Mich., and Charles W.
Salisbury, Rising Sun, and John C. Baker, Toledo, Ohio,
assignors to Owens-Illinois, Inc.
Continuation-in-part of design application Ser. No.
159,083, July 1, 1971, now Patent No. D. 230,983,
dated Mar. 26, 1974. This application Jan. 4, 1974,
Ser. No. 431,001

The term of this patent subsequent to
Mar. 26, 1988, has been disclaimed
Term of patent 14 years
Int. Cl. D14—02

U.S. Cl. D26—5 C

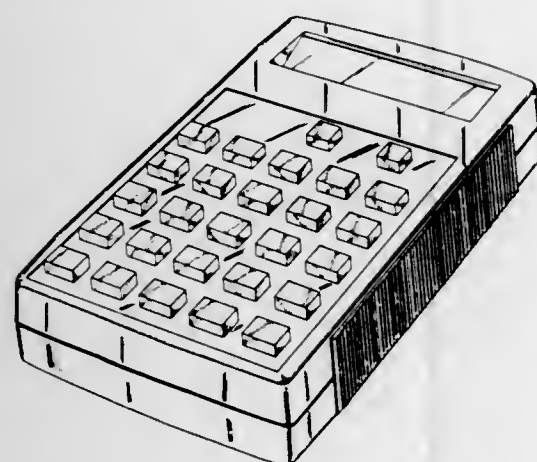


236,353

CALCULATOR

Manfred Link, Nuremberg, Germany, assignor to
Triumph Werke Nurnberg A.G.
Filed Apr. 26, 1974, Ser. No. 464,318
Claims priority, application Germany Nov. 12, 1973
Term of patent 14 years
Int. Cl. D18—01

U.S. Cl. D26—5 C

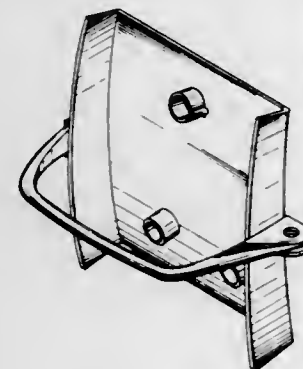


236,354

LOCKING DEVICE FOR TELEPHONE DIALS

Carmelo Rodriguez, 35—41 Fort Washington Ave.
(Apt. 1A), New York, N.Y. 10032
Filed Mar. 29, 1974, Ser. No. 456,023
Term of patent 14 years
Int. Cl. D8—07; D14—03

U.S. Cl. D26—14 A

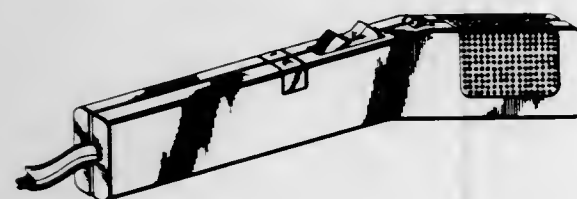


236,355

MICROPHONE OR SIMILAR ARTICLE

Peter Quay Yang, New York, N.Y., assignor to
Lanier Electronic Laboratory, Inc., Atlanta, Ga.
Filed Apr. 1, 1974, Ser. No. 456,595
Term of patent 14 years
Int. Cl. D14—01

U.S. Cl. D26—14 J

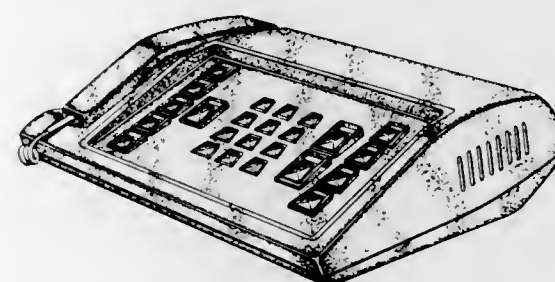


236,356

TELEPHONE INSTRUMENT

John Forrest Henshaw, Mill Valley, Victor Herbert Henshaw, Alamo, and Charles Phillips, San Francisco, Calif., assignors to Litton Business Telephone Systems, Inc., Sunnyvale, Calif.
Filed Dec. 18, 1974, Ser. No. 534,076
Term of patent 14 years
Int. Cl. D14—03

U.S. Cl. D26—14 A

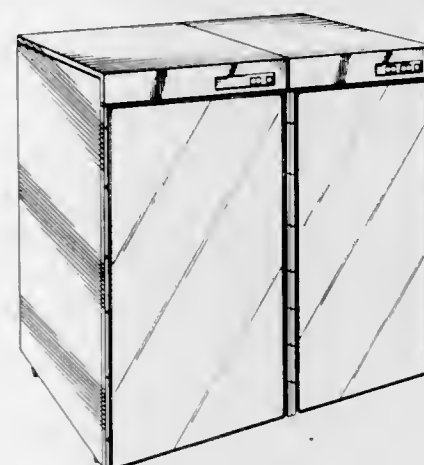


236,357

CABINET FOR A DATA SYSTEM

Richard G. Clayton, Detroit, Mich., assignor to
Burroughs Corporation, Detroit, Mich.
Filed Sept. 20, 1973, Ser. No. 399,124
Term of patent 14 years
Int. Cl. D14—02

U.S. Cl. D26—5 C



236,358

CIGARETTE LIGHTER

William R. Forelli, 19 Compo Road,
Westport, Conn. 06880
Filed May 24, 1974, Ser. No. 472,976
Term of patent 14 years
Int. Cl. D27—05

U.S. Cl. D27—39

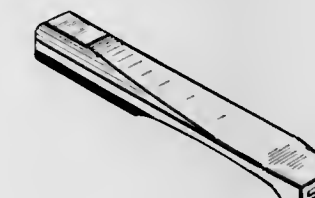


236,359

CIGAR TIP

Theodore Eron, Demarest, N.J., assignor to
American Brands, Inc., New York, N.Y.
Filed July 30, 1973, Ser. No. 384,119
Term of patent 14 years
Int. Cl. D27—02

U.S. Cl. D27—7



236,360

MEDALLION

Charles E. Youngblood, 1360 Bradbury Road,
San Marino, Calif. 91108
Filed Aug. 17, 1973, Ser. No. 389,355
Term of patent 14 years
Int. Cl. D11—02

U.S. Cl. D29—19 R



236,361

CHESS-MAN OR SIMILAR ARTICLE

Gabriel Vincente Maura, Apartado CK,
Rio Piedras, Puerto Rico
Filed Feb. 1, 1974, Ser. No. 438,583
Claims priority, application Spain Aug. 3, 1973
Term of patent 14 years
Int. Cl. D21—01

U.S. Cl. D34—5 CH



236,362

RIDER TRAINER

Sam Reeves, 3711 Kris,
Fort Worth, Tex. 76118
Filed Aug. 6, 1973, Ser. No. 386,056
Term of patent 14 years
Int. Cl. D21—03

U.S. Cl. D34—5 L

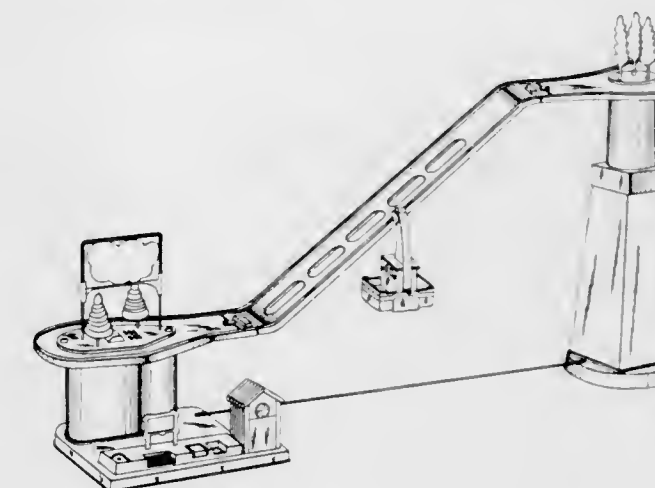


236,363

COMBINED TOY TRACKWAY AND GONDOLA

Kazuyuki Hashimoto, Tokyo, Japan, assignor to
Toytown Corporation, Tokyo, Japan
Filed Nov. 20, 1973, Ser. No. 417,505
Term of patent 14 years
Int. Cl. D21—01

U.S. Cl. D34—15 A

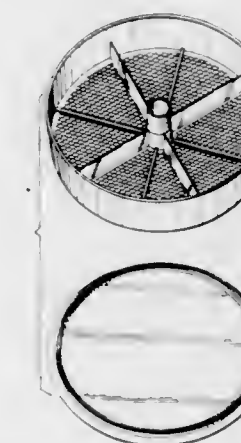


236,364

CIRCULAR SPROUTER WITH A BOTTOM COVER

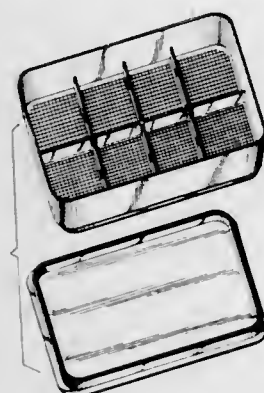
Harold Lavar Fox, 2823 Loran Heights Drive,
Salt Lake City, Utah 84109
Filed July 11, 1974, Ser. No. 487,454
Term of patent 14 years
Int. Cl. D11—02

U.S. Cl. D35—3 A



236,365
RECTANGULAR OR SQUARE SPROUTER
WITH A BOTTOM COVER
 Harold Lavar Fox, 2823 Loran Heights Drive,
 Salt Lake City, Utah 84109
 Filed July 11, 1974, Ser. No. 487,455
 Term of patent 14 years
 Int. Cl. D11—02

U.S. Cl. D35—3 A



236,367
CEILING LAMP
 Harden Estell, 827 E. 18th St.,
 Oakland, Calif. 94606
 Filed Nov. 23, 1973, Ser. No. 418,198
 Term of patent 14 years
 Int. Cl. D26—05

U.S. Cl. D48—3



236,368
PICTURE HOLDING PENDANT
 Kent L. Jacobson, Moraga, Calif., assignor to
 Tyrrell Jewelers, Inc., Walnut Creek, Calif.
 Filed Dec. 21, 1973, Ser. No. 427,078
 Term of patent 14 years
 Int. Cl. D11—01

U.S. Cl. D45—15



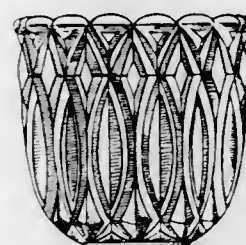
236,366
WINDROWER TRACTION UNIT HOOD
AND BODY PANELLING
 Joe Paul Leinhauser, Ottumwa, Iowa, and James Mervyn
 Conner, Mamaroneck, N.Y., assignors to Deere & Com-
 pany, Moline, Ill.
 Filed Jun. 27, 1973, Ser. No. 374,027
 Term of patent 14 years
 Int. Cl. D15—03

U.S. Cl. D40—1 E



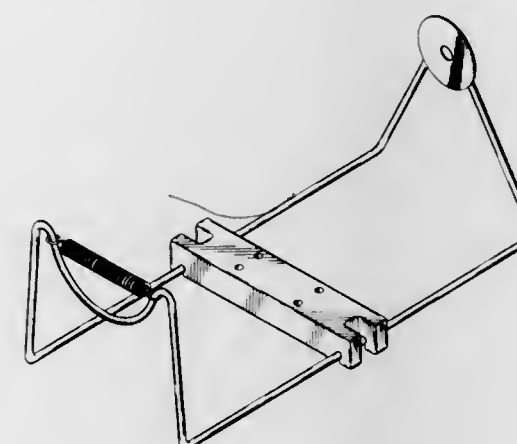
236,369
CANDLEHOLDER
 Preston J. Frazier, Jr., Houston, Tex., assignor to
 Faroy, Inc.
 Filed Aug. 30, 1973, Ser. No. 393,149
 Term of patent 14 years
 Int. Cl. D7—01; D26—01

U.S. Cl. D48—2



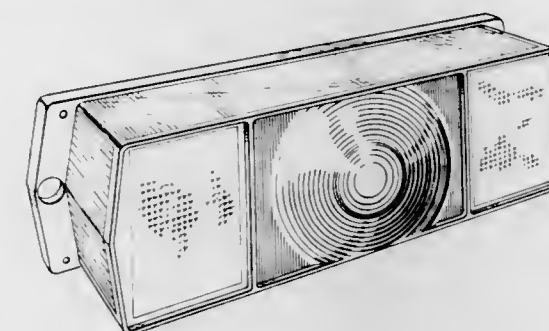
236,370
TROUBLE LIGHT SUPPORT
 Harry L. Martin, 2324 N. Ricketts,
 Sherman, Tex. 75090
 Filed Sept. 10, 1973, Ser. No. 395,534
 Term of patent 14 years
 Int. Cl. D26—99

U.S. Cl. D48—4 A



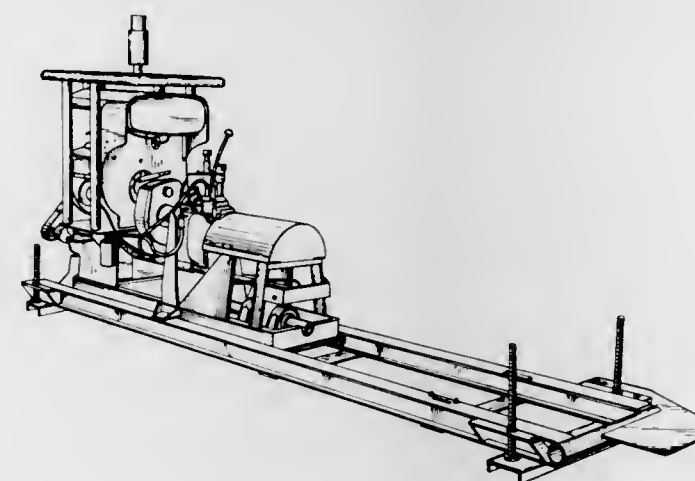
236,371
TAIL LIGHT
 Peter E. Brudy, Willowdale, Ontario, Canada, assignor to
 Dominion Auto Accessories Limited, Toronto, Ontario,
 Canada
 Filed Aug. 9, 1973, Ser. No. 387,203
 Term of patent 14 years
 Int. Cl. D26—06

U.S. Cl. D48—32 R



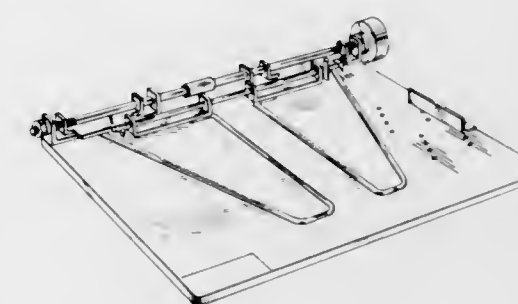
236,372
PORTABLE EARTH BORING MACHINE
 Richard P. Dunn, Wichita Falls, Tex., assignor to
 International Boring Systems Co., Inc., Wichita Falls,
 Tex.
 Filed Aug. 7, 1972, Ser. No. 278,349
 Term of patent 14 years
 Int. Cl. D15—04

U.S. Cl. D54—14 R



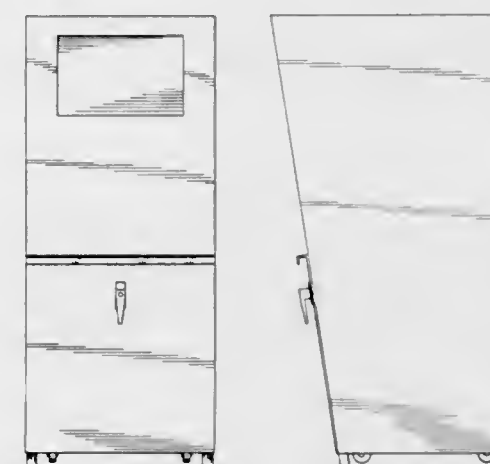
236,373
MACHINE FOR CASING BOOKS
 Charles T. Grosz III, Los Altos, and Danilo P. Buan,
 Pleasanton, Calif., assignors to Velo-Bind, Inc., Sunny-
 vale, Calif.
 Filed Apr. 18, 1973, Ser. No. 352,345
 Term of patent 14 years
 Int. Cl. D18—04

U.S. Cl. D55—1 R



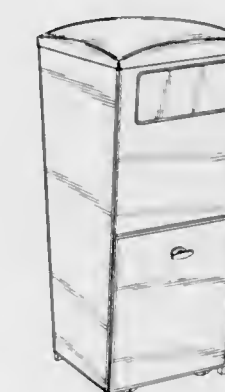
236,374
TRASH COMPACTOR
 Dario J. Moriconi, Bloomfield Hills, Mich., assignor to
 McClain Industries Inc., Utica, Mich.
 Filed Jan. 14, 1974, Ser. No. 433,133
 Term of patent 14 years
 Int. Cl. D7—07; D15—99

U.S. Cl. D55—1 B



236,375
TRASH COMPACTOR
 Dario J. Moriconi, Bloomfield Hills, Mich., and Earl S.
 Edwards, Windsor, Ontario, Canada, and Kenneth D.
 McClain, Utica, Mich., assignors to McClain Industries
 Inc., Utica, Mich.
 Filed Feb. 14, 1974, Ser. No. 442,314
 Term of patent 14 years
 Int. Cl. D7—07; D15—99

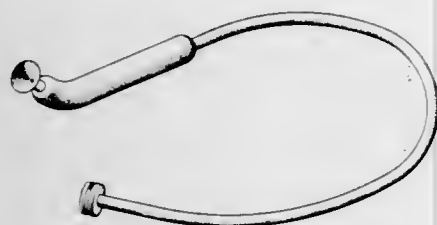
U.S. Cl. D55—1 B



236,376

CONTACT LENS INSERTING AND REMOVING DEVICE
Edward R. Updegraff, 6094 Montgomery Court,
San Jose, Calif. 95135
Filed Dec. 3, 1973, Ser. No. 421,188
Term of patent 14 years
Int. Cl. D16—06

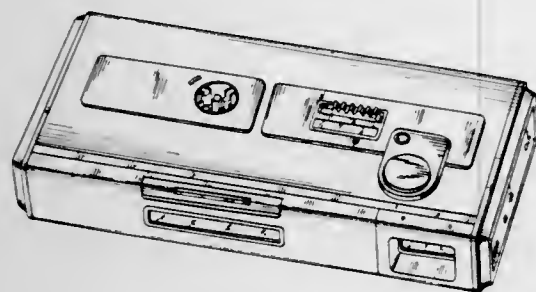
U.S. Cl. D57—1 R



236,377

CAMERA OR SIMILAR ARTICLE
Yoshiro Takata, Nagaokakyo, and Eiko Otsuki, Osaka,
Japan, assignors to Minolta Camera Kabushiki Kaisha,
Osaka, Japan
Filed Nov. 5, 1973, Ser. No. 413,107
Claims priority, application Japan Dec. 29, 1972
Term of patent 14 years
Int. Cl. D16—01

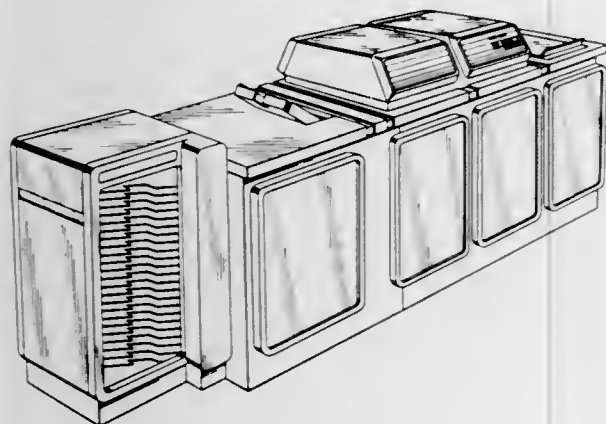
U.S. Cl. D61—1 B



236,378

DOCUMENT DUPLICATING AND SORTING MACHINE
Daniel N. Yanofsky, Jericho, N.Y., assignor to
Pitney-Bowes, Inc., Stamford, Conn.
Filed Dec. 3, 1973, Ser. No. 421,150
Term of patent 14 years
Int. Cl. D16—03

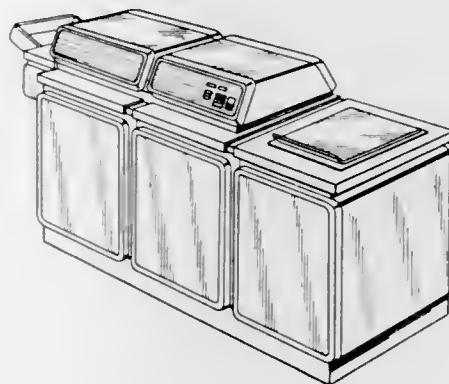
U.S. Cl. D61—1 Q



236,379

DUPLICATING MACHINE
Daniel N. Yanofsky, Jericho, N.Y., assignor to
Pitney-Bowes, Inc., Stamford, Conn.
Filed Dec. 3, 1973, Ser. No. 421,151
Term of patent 14 years
Int. Cl. D16—03

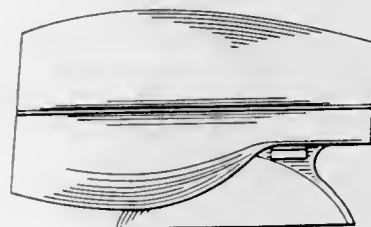
U.S. Cl. D61—1 Q



236,380

PROJECTION CABINET
Charles Topfer, Mentor, Ohio, assignor to
Rappaport Exhibits, Inc.
Filed Mar. 11, 1974, Ser. No. 449,971
Term of patent 14 years
Int. Cl. D16—02

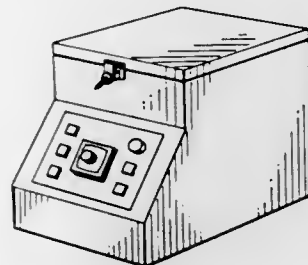
U.S. Cl. D61—1 N



236,381

X-RAY FILM DUPLICATOR/SUBTRACTOR UNIT
Richard L. Evenson, and William J. Overton, Portland,
Oreg., assignors to Northwest Refining Company, Port-
land, Oreg.
Filed Mar. 29, 1974, Ser. No. 455,989
Term of patent 14 years
Int. Cl. D16—04

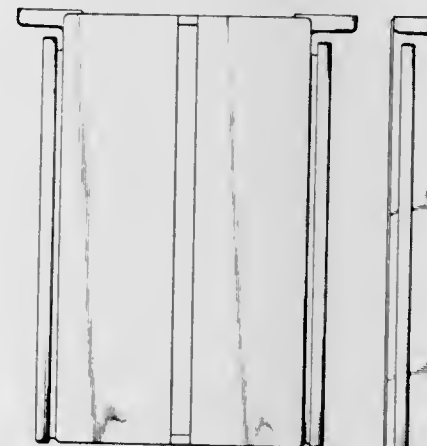
U.S. Cl. D61—1 Q



236,382

DRIVE HOUSING AND GUIDES FOR GAUGE SUPPORT CARRIAGE FOR PRESS BRAKE OR THE LIKE
Gerald V. Roch, Indianapolis, Ind., assignor to
Hurco Manufacturing Company, Inc.
Filed July 30, 1973, Ser. No. 383,589
Term of patent 14 years
Int. Cl. D15—09

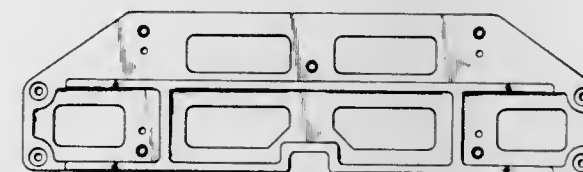
U.S. Cl. D63—1



236,383

GAUGE SUPPORT CARRIAGE WITH OFFSET ENDS FOR PRESS BRAKE OR THE LIKE
Gerald V. Roch, Indianapolis, Ind., assignor to
Hurco Manufacturing Company, Inc.
Filed July 30, 1973, Ser. No. 383,590
Term of patent 14 years
Int. Cl. D15—09

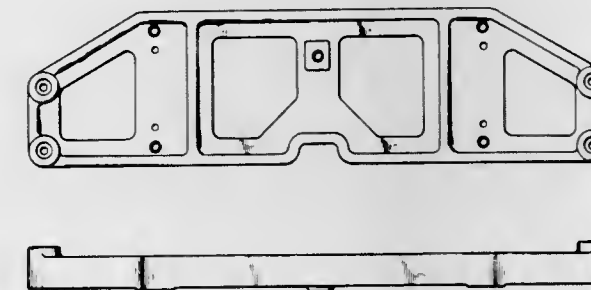
U.S. Cl. D63—1



236,384

GAUGE SUPPORT CARRIAGE FOR PRESS BRAKE OR THE LIKE
Gerald V. Roch, Indianapolis, Ind., assignor to
Hurco Manufacturing Company, Inc.
Filed July 30, 1973, Ser. No. 383,591
Term of patent 14 years
Int. Cl. D15—09

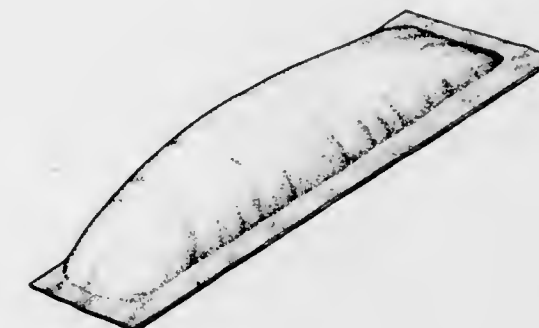
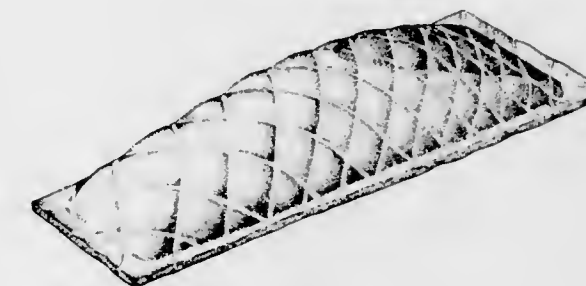
U.S. Cl. D63—1



236,385

DISPOSABLE SANITARY PAD
Robert Celander, Pixbo, Jan-Åke Noll, Molndal, and
Urban Widlund, and Kerstin Strandberg, Pixbo, Sweden,
assignors to AB Stios, Göteborg, Sweden
Filed Nov. 21, 1973, Ser. No. 417,802
Claims priority application Sweden May 21, 1973
Term of patent 14 years
Int. Cl. D24—04

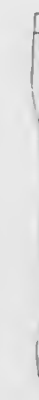
U.S. Cl. D83—1 A



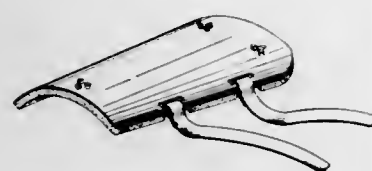
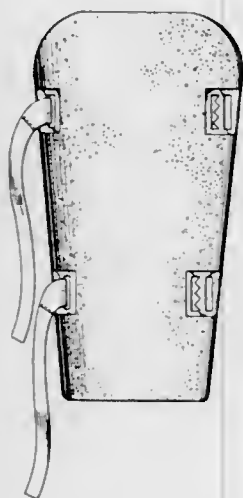
236,386

OSTOMY DRAINAGE BAG
Marvin Katzman, 1520 202nd St., Bayside, N.Y. 11360,
and Neil De Fluri, 952 Arnet Ave., Union, N.J. 07083
Filed Jan. 21, 1974, Ser. No. 435,121
Term of patent 14 years
Int. Cl. D24—03

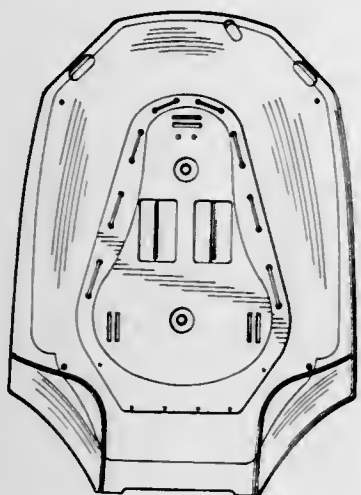
U.S. Cl. D83—1 P



236,387
HOLDER FOR OSTOMY DRAINAGE BAG
 Marvin Katzman, 1520 202nd St., Bayside, N.Y. 11360,
 and Neil De Fluri, 952 Arnet Ave., Union, N.J. 07083
 Filed Jan. 28, 1974, Ser. No. 437,134
 Term of patent 14 years
 Int. Cl. D2—02; D24—03
 U.S. Cl. D83—1 P



236,388
DIVER BACK PACK
 William D. Walters, 2940 Andros Ave.,
 Costa Mesa, Calif. 92626
 Filed June 5, 1972, Ser. No. 260,062
 Term of patent 14 years
 Int. Cl. D3—02
 U.S. Cl. D87—1 R



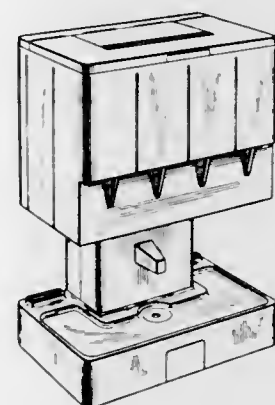
236,389
QUILL BOX
 Olin H. Baker, Madison, Ind., assignor to Meese, Inc.
 Filed Jan. 14, 1974, Ser. No. 432,960
 Term of patent 14 years
 Int. Cl. D9—04
 U.S. Cl. D87—1 R



236,390
TRAVEL CASE
 Frederick K. Bauer, P.O. Box 1705,
 Beverly Hills, Calif. 90213
 Filed Apr. 30, 1973, Ser. No. 355,581
 Term of patent 14 years
 Int. Cl. D3—01
 U.S. Cl. D87—5 F



236,391
CASING FOR A DISPENSING MACHINE
 Robert Berk Audette, Mosman, New South Wales,
 Australia, assignor to Cafe-Bar International Pty., Ltd.,
 North Sydney, New South Wales, Australia
 Filed Dec. 27, 1973, Ser. No. 428,775
 Term of patent 14 years
 Int. Cl. D15—08
 U.S. Cl. D94—3 B



LIST OF PATENTEEES

TO WHOM

PATENTS WERE ISSUED ON THE 19TH DAY OF AUGUST, 1975

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- Aaltonen, Olavi August: *See—*
 Kaasila, Kuuko Johannes; Toivanen, Toivo Adrian; Harkki, Seppo
 Untamo; Neimela, Toivo Isak; Makiirtti, Simo A.; Malmstrom,
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- AB Bofors: *See—*
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- Abbott Laboratories: *See—*
 Liston, Max D., 3,900,289.
- Abe, Keiji: *See—*
 Terajima, Kazuki; Tomita, Shigeru; Matsuda, Yoshindo; and Abe,
 Keiji, 3,900,422.
- Abex Corporation: *See—*
 Bucy, Shawn G.; and Takacs, John, 3,900,851.
- Abramitis, Walter W., to Akzona Incorporated. Composition and
 method for controlling suckers in tobacco. 3,900,307, Cl. 71-78.000.
- ACF Industries, Incorporated: *See—*
 Josephson, Edgar F., 3,899,981.
- Acme Highway Products Corporation: *See—*
 Crone, Alfred F., 3,900,271.
- Activox, Inc.: *See—*
 Rongved, Paul I., 3,900,394.
- Adachi, Tomio: *See—*
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- Adamovske Strajirny, narodni podnik: *See—*
 Jurny, Josef; and Sedlak, Vaclav, 3,899,970.
- Adams, Frank H.; and Anderson, Robert F., to Universal Oil Products
 Company. Metal, sulfur and nitrogen removal from hydrocarbons
 utilizing moving-bed reactors. 3,900,390, Cl. 208-210.000.
- Adams, Frederick John, to Cam Gears Limited. Servo assemblies and
 systems. 3,899,890, Cl. 60-552.000.
- Adams Rite Manufacturing Company: *See—*
 Bradstock, Richard L., 3,899,906.
- Addressograph-Multigraph Corporation: *See—*
 Raschke, Curt Robert, 3,900,852.
- Adler, Robert, to Zenith Radio Corporation. Torsional ceramic trans-
 ducer. 3,900,748, Cl. 310-9.600.
- Admiral Corporation: *See—*
 Burt, Stanley; and Magdziarz, Raymond J., 3,900,765.
- Advance Enterprises, Inc.: *See—*
 Faltin, Hans G., 3,899,947.
- Agafonov, Ivan Fedorovich: *See—*
 Somov, Boris Stepanovich; Mamin, Alexandr Ilich; Novikov, An-
 drei Porfirievich; Filippov, Vyacheslav Ivanovich; Khirdzhiev,
 Sergei Grigorievich; Gurevich, Vladimir Zakharovich; Voronov,
 Nikolai Stefanovich; and Agafonov, Ivan Fedorovich,
 3,899,908.
- Agence Nationale de Valorisation de la Recherche (ANVAR): *See—*
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- Agency of Industrial Science & Technology: *See—*
 Matsubara, Kiyoshi, 3,900,585.
- Okamoto, Shigetake, 3,900,612.
- Agfa-Gevaert Aktiengesellschaft: *See—*
 Herzhoff, Peter; Gref, Hans; Maus, Fritz; Platz, Stephan; Friedsam,
 Josef; Schweicher, Wolfgang; Behr, Rolf; Wasser, Willi; and
 Browatzki, Kurt, 3,900,326.
- Airco, Inc.: *See—*
 Kennedy, Kurt D.; and Scheuermann, Glen R., 3,900,592.
- Aishima, Itsuho; Fukuma, Noboru; Sakura, Hisaya; Chayamiti, Hiroshi;
 Okamoto, Toshio; Doi, Yuzuru; and Henmi, Hiroshi, to Asahi Kasei
 Kogyo Kabushiki Kaisha. Composite filaments and process for the
 production thereof. 3,900,678, Cl. 428-374.000.
- Ajinomoto Co., Inc.: *See—*
 Enei, Hitoshi; Sato, Katsuaki; Anzai, Yasuo, and Okada, Hiroshi,
 3,900,368.
- Akahori, Toyohiko: *See—*
 Irie, Sadanao; Tomomoto, Kenichi; Akahori, Toyohiko; and
 Simomura, Kazuhisa, 3,900,369.
- Akasaka, Masonori: *See—*
 Ono, Michakaze; Sahara, Hajime; and Akasaka, Masonori,
 3,900,285.
- Akimoto, Hideo; and Kamiyama, Hiromitsu, to Konishiroku Photo In-
 dustry Co., Ltd. Control device of copying machine. 3,900,740, Cl.
 307-112.000.
- Akiyama, Taichiro. Apparatus for closing a cut end of a blood vessel.
 3,899,914, Cl. 72-410.000.
- Akzo N.V.: *See—*
 Beck, Heinz, 3,900,335.
- Akzona Incorporated: *See—*
 Abramitis, Walter W., 3,900,307.
- Brassard, Hans-Joachim A.; and Erkens, Andreas, 3,899,927.
- Hatt, Thomas L., 3,900,623.
- Albanese, James: *See—*
 Lisbin, Arthur; Ianney, George; and Albanese, James, 3,900,133.
- Albrecht, Cord; and Lamatsch, Hans, to Siemens Aktiengesellschaft.
 Ribbon-shaped conductor arrangement for superconductors which
 permits ease of cooling. 3,900,702, Cl. 174-126.00P.
- Albright, William H. Registration-adjusting printing plate saddle.
 3,899,972, Cl. 101-415.100.
- Alcan Research and Development Limited: *See—*
 Read, Peter John; Latimer, Keith Graham; Reynolds, Terence
 David Warren; Munson, David, deceased; and Munson, George,
 administrator, 3,899,820.
- Alderson, Thomas, to du Pont de Nemours, E. I., and Company. Anti-
 static filaments. 3,900,676, Cl. 428-372.000.
- Alexander, Jury Vladimirovich: *See—*
 Filipin, Nikolai Andreevich; Alexander, Jury Vladimirovich; Pod-
 dubny, Jury Alexandrovich; Mozhukhin, Valentin Sergeevich,
 and Neugodov, Petr Petrovich, 3,900,339.
- Alexandrescu, Doina: *See—*
 Constantinescu, Petre; Oachis, Emil; Trimbilas, Dorin; and Alex-
 andrescu, Doina, 3,900,301.
- Alfa-Laval AB: *See—*
 Goldsmith, Frank Edward, 3,900,005.
- Allen, George Rodger, Jr.; McEvoy, Francis Joseph; DeVries, Vern
 Gordon; Moran, Daniel Bryan; and Littell, Ruddy, to American Cy-
 anamid Company. Intermediate indolines. 3,900,495, Cl.
 260-326.11R.
- Allen, George Rodger, Jr.; McEvoy, Francis Joseph; De Vries, Vern
 Gordon; Moran, Daniel Bryan; and Littell, Ruddy, to American Cy-
 anamid Company. Method of using 3-[2-(4-phenyl)-1-piperazinyl]ce-
 thyl-indolines. 3,900,563, Cl. 424-250.000.
- Alley, Robert P.: *See—*
 Herzog, Rolie R.; and Alley, Robert P., 3,900,783.
- Allied Chemical Corporation: *See—*
 Lohr, Thomas E.; and Sack, John J., 3,900,210.
- Taub, Bernard, and Harnish, Daniel F., 3,900,433.
- Alling, Richard L.; and Iffland, Roger L., to Torrington Company. The
 Tab race. 3,900,235, Cl. 308-235.000.
- Allis-Chalmers Corporation: *See—*
 Schoffmann, Rudolf, 3,900,066.
- Allmanna Svenska Elektriska Aktiebolaget: *See—*
 Andersson, Conny; Hanas, Bertil; Korsell, Torsten; and Nilsson,
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- Elmgren, Staffan; and Svensson, Lennart, 3,900,189.
- Alps Electric Co., Ltd.: *See—*
 Kiyono, Tetsuhiro, 3,900,816.
- Alric, Andre; Carlet, Xavier; Nozeran, Robert; and Gentet, Pierre, to
 Societe Nationale Industrielle Aerospatiale. Device for monitoring
 the charging current for a storage battery of accumulators.
 3,900,785, Cl. 320-39.000.
- Aluminum Plumbing Fixture Corporation: *See—*
 McPhee, John L., 3,900,180.
- Amerace Corporation: *See—*
 Korejwa, Alfred; Lauer, Walter J.; and Ruda, Richard E.,
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- Vecchiotti, Camillo M., 3,900,640.
- American Bank Note Company: *See—*
 D'Amato, Salvatore F.; Kimball, John J.; and Lednicer, Oliver,
 3,900,219.
- American Cyanamid Company: *See—*
 Allen, George Rodger, Jr.; McEvoy, Francis Joseph; DeVries,
 Vern Gordon; Moran, Daniel Bryan; and Littell, Ruddy,
 3,900,495.
- Allen, George Rodger, Jr.; McEvoy, Francis Joseph; De Vries,
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 3,900,563.
- Sasada, Juichi, 3,900,618.
- American Home Products Corporation: *See—*
 Sulkowski, Theodore S., 3,900,494.
- Terry, David R., 3,900,583.
- American Hospital Supply Corporation: *See—*
 McPhee, Charles J., 3,900,028.
- American Maize Products Company: *See—*
 Freck, James A.; O'Rell, Dale H.; and Kondrot, Leonard V.,
 3,900,573.
- American Petrosience Corporation: *See—*
 Lamel, Arthur E.; Squire, William D.; and Whitehouse, Harper J.,
 3,900,827.
- Ammons, Vernon G.; and Vanek, James C., to PPG Industries, Inc.
 Adhesion control for safety glass laminates. 3,900,686, Cl.
 428-425.000.
- AMP Incorporated: *See—*
 Sheesley, Wilmer Lee; and Pauza, William Vito, 3,900,709.
- Woolley, Harold Oakley, Jr.; and Ryle, Bernard Groene,
 3,900,257.
- Anaconda Company, The: *See—*
 Costas, Louis P., 3,900,349.
- Anders, Josef H.; and Colaguri, Albert C., to United States of Amer-
 ica, Army. Digitally variable capacitor. 3,900,772, Cl. 317-250.000.

- Anderson Company, The: *See*—
Wittwer, Robert O.; and Harbison, William H., 3,899,800.
- Anderson, Raymond G. Addition of a stab ground wire to electrical receptacles, i.e. switches and plugs. 3,900,238, Cl. 339-14.00R.
- Anderson, Richard W.; and Frick, Hughie R., to Dow Chemical Company, The. Preparation of fluorinated cyclobutyl alkyl ether copolymers. 3,900,380, Cl. 204-163.00R.
- Anderson, Robert B.: *See*—
Kelly, William F.; and Anderson, Robert B., 3,899,891.
- Anderson, Robert F.: *See*—
Adams, Frank H.; and Anderson, Robert F., 3,900,390.
- Anderson, Rodney H.: *See*—
Smith, Duane R.; and Anderson, Rodney H., 3,900,227.
- Anderson, Ronald L.; and Kessler, Harry T., Jr. Corn husking machine. 3,900,036, Cl. 130-5.00D.
- Andersson, Conny; Hanas, Bertil; Korsell, Torsten; and Nilsson, Jan, to Allmanna Svenska Elektriska Aktiebolaget. Electric induction furnace. 3,900,695, Cl. 13-26.000.
- Ando, Tetsuo: *See*—
Yamazaki, Hiroshi; and Ando, Tetsuo, 3,900,747.
- Andoh, Shizuo; and Nakayama, Norihiko, to Fujitsu Ltd. Gaseous discharge display panel with fluorescent bodies surrounded by light attenuating material. 3,900,758, Cl. 313-485.000.
- Andrassy, Imre A.: *See*—
Pomerantz, Alfred S.; and Andrassy, Imre A., 3,900,798.
- Andress, Harry J., Jr.; and Ashjian, Henry, to Mobil Oil Corporation. Lubricant compositions containing acetal or ketal detergents. 3,900,411, Cl. 252-52.00R.
- Andrews, Sydney Alan, to TRW Inc. Insert for securing in a hole. 3,900,130, Cl. 220-378.000.
- Angier, Derek J.: *See*—
Sheer, Charles; Korman, Samuel; Angier, Derek J.; and Cahn, Robert P., 3,900,762.
- Angioletti, Attilio; and Broilo, Aurelio, to Industrie Pirelli S.p.A. Conveyor belt. 3,900,627, Cl. 428-114.000.
- Anhalt, John William; and Goodman, David Samuel, to International Telephone and Telegraph Corporation. Electrical socket adaptor. 3,900,239, Cl. 339-17.0CF.
- Aniforms, Inc.: *See*—
Bunin, Morey, 3,899,848.
- Anzai, Hisao: *See*—
Shimada, Kazushi; Maeda, Toru; Nishizawa, Tamotu; Narisada, Takehiko; Anzai, Hisao; and Sasaki, Yosataka, 3,900,453.
- Anzai, Yasuo: *See*—
Enoi, Hitoshi; Sato, Katsuaki; Anzai, Yasuo; and Okada, Hiroshi, 3,900,368.
- Aoki, Risaburo. Hemodialyzer. 3,900,402, Cl. 210-321.000.
- Apalikov, Iury Ignatievich; Konon, Iury Alexeevich; Pervukhin, Leonid Borisovich; and Tsemakhovich, Boris Davydovich. Method of cladding metal articles. 3,900,147, Cl. 228-107.000.
- Apel, Wolfgang, to VEB Pentacon. Still picture projector. 3,900,254, Cl. 353-68.000.
- Appel, Hansgunter: *See*—
Dietrich, Manfred; Schnetger, Jochen; Haas, Friedrich; Marwede, Gunter, and Appel, Hansgunter, 3,900,532.
- Appels, Johannes Arnoldus; and Verkuiljen, Wilhelmus Henricus Cornelis Gerardus, to U.S. Philips Corporation. Method of manufacturing semiconductor devices in which silicon oxide regions inset in silicon are formed by a masking oxidation, wherein an intermediate layer of polycrystalline silicon is provided between the substrate and the oxidation mask. 3,900,350, Cl. 148-175.000.
- Aqua-Marine Manufacturing Limited: *See*—
Komon, John F., 3,900,725.
- Aramaki, Keichi, to Nippon Kokan Kabushiki Kaisha. Prestress type rolling mill. 3,899,910, Cl. 72-239.000.
- Arco Nuclear Company: *See*—
Purdy, David L.; and Williams, John F., 3,900,152.
- ARCO Polymers, Inc.: *See*—
Johnson, Keith G.; and Limbach, Anthony Paul, 3,900,544.
- Armco Steel Corporation: *See*—
Lorenzetti, James J.; and Cordea, James N., 3,900,347.
- Armour Pharmaceuticals Company: *See*—
Gilman, William S.; Jones, John L.; and Rubino, Andrew M., 3,900,620.
- Armstrong, Beverly W., to Richards Manufacturing Company, Inc. Method of attachment of a prosthesis to a membrane. 3,899,822, Cl. 29-450.000.
- Armstrong Cork Company: *See*—
King, Thomas Y., 3,900,441.
- Aro Plastics Development Limited: *See*—
Hart, Frederick Leslie; and Sharp, Herbert John, 3,900,649.
- Arthur D. Little, Inc.: *See*—
Palmour, Hayne, III; and Huckabee, Marvin L., 3,900,542.
- Arvin, John R.; Sullivan, Robert E.; Troth, Dennis L.; and Verdouw, Albert J., to General Motors Corporation. Combustion apparatus with secondary air to vaporization chamber and concurrent variance of secondary air and dilution air in a reverse sense. 3,899,881, Cl. 60-39.650.
- Asahi Kasei Kogyo Kabushiki Kaisha: *See*—
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- Ashe, Benedict H., Jr.: *See*—
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- Ashjian, Henry: *See*—
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- Asoyants, Grigory Bagradovich: *See*—
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- Asselin, Pierre Henri Leon: *See*—
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- Asselin, Robert Raymond Maurice; and Asselin, Pierre Henri Leon. Machines for edge-trimming and bevelling spectacle lenses. 3,899,851, Cl. 51-101.0LG.
- Astero, Jan-Erik, to Lindaco Ltd. Optical projecting apparatus. 3,900,253, Cl. 353-63.000.
- Ateliers Roannais de Constructions Textiles: *See*—
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- Wolgemuth, Larry G.; and Wilbur, Benjamin C., 3,900,655.
- Atomic Energy of Canada Limited: *See*—
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- Strathdee, Graeme Gilroy, 3,900,557.
- Ault, Cyrus Frank, to Bell Telephone Laboratories, Incorporated. Line supervisory circuit. 3,900,820, Cl. 335-52.000.
- Aust, Gert-Rudiger; Hainy, Siegfried; and Korf, Erich, to VEB Pentacon. Camera for microphotography. 3,900,861, Cl. 354-209.000.
- Austin, Lowell W.; and Wilson, Walter Alexander, to National Steel Corporation. Apparatus for electroplating. 3,900,383, Cl. 204-211.000.
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Calabro, Salvatore R.; Calabro, John A.; and Mich, Peter R., 3,900,842.
- Automobiles Peugeot: *See*—
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- Ayers, Ronald Frederick. Thermographic apparatus. 3,899,997, Cl. 118-68.000.
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Philipp, Adolf H.; Demerson, Christopher A.; and Hummer, Leslie G., 3,900,477.
- Aziz, Rahmat A., to International Business Machines Corporation. Write-erase circuits for rotating head digital magnetic recorders. 3,900,894, Cl. 360-108.000.
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- Azzi, Victor D.; and Wyeth, John, to Kingston-Warren Corporation. The Gravity storage system. 3,900,112, Cl. 211-148.000.
- B. F. Goodrich Company, The: *See*—
Coffman, Alfred M., 3,900,674.
- Ohm, George D., 3,900,231.
- Baboian, Robert, to Texas Instruments Incorporated. Electrolytic separation of metals. 3,900,375, Cl. 204-140.000.
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Dehnert, Johannes, 3,900,460.
- Bahler, Andre; Gschwend, Norbert; and Scheier, Heinrich, to Sulzer Brothers Limited. Metacarpophalangeal joint. 3,899,796, Cl. 3-1.910.
- Bailey, Dennis H.: *See*—
Bailey, Henry E.; Bailey, Dennis H.; and Bailey, Richard E., 3,899,874.
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- Baillie, Robert A., to Great Canadian Oil Sands Limited. Method for upgrading bituminous froth. 3,900,389, Cl. 208-188.000.
- Baker Perkins, Inc.: *See*—
Loomans, Bernard A., 3,900,187.
- Bakewell, Joseph J., to Dynamics Research Corporation. Method and apparatus for television tube shadow mask. 3,900,359, Cl. 156-242.000.
- Balas, John Thomas, to Wheaton Industries. Magnetic cell stirrer. 3,900,186, Cl. 259-21.000.
- Baldwin, Marshall G.: *See*—
Kirk, Lawrence J.; and Baldwin, Marshall G., 3,900,059.
- Balzars Patent- und Beteiligungs- Aktiengesellschaft: *See*—
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- Bamberg, William I.; and Keffe, William M., to GTE Sylvania Incorporated. Metal halide discharge lamp having heat absorbing coating. 3,900,750, Cl. 313-44.000.
- Banerjee, Bani R.; Gangal, Mukund D.; and Black, Sigmund, to Lee-Norse Company. Anchoring pin and method for structures such as mine and tunnel roofs and side walls. 3,899,893, Cl. 61-45.00B.
- Banitt, Elden H.; and Bronn, William R., to Riker Laboratories, Inc. Derivatives of pyrrolidine and piperidine. 3,900,481, Cl. 260-293.770.
- Barabas, Eugene S.; and Smolin, Edwin M., to GAF Corporation. Method of treating fabrics. 3,900,663, Cl. 428-254.000.
- Baranski, Ronald S.; and Baur, Leslie L., to Zenith Radio Corporation. Automatic apparatus for inserting a CRT mask into its mating panel. 3,899,812, Cl. 29-25.190.

- Barber, Dennis G., to Fox Industries. Expansion joint seal. 3,900,677, Cl. 428-373.000.
- Barclay, Francis W.; Frey, J. Richard; Wilson, James N.; and Besant, Robert W., to Atomic Energy of Canada Limited. Fluid shut-down system for a nuclear reactor. 3,900,365, Cl. 176-22.000.
- Bard, Allen J.; and Takvoryan, Nurhan E., to Bell-Northern Research, Ltd. Electrochemical luminescent solutions and devices incorporating such solutions. 3,900,418, Cl. 252-301.20R.
- Bardoncelli, Franco; and Grossi, Giuseppe, to Comitato Nazionale per l'Energia Nucleare. Selective extraction of metals from acidic uranium (VI) solutions using neo-tridecano-hydroxamic acid. 3,900,551, Cl. 423-9.000.
- Barnes, Walter P., Jr. Apparatus for distracting or compressing longitudinal bone segments. 3,900,025, Cl. 128-92.00D.
- Bart, Stanley; and Magdziarz, Raymond J., to Admiral Corporation. High voltage pulse regulator. 3,900,765, Cl. 315-411.000.
- Bartels, Manfred, to Empisal Knitmaster Luxembourg S.A. Device for automatic selection of the knitting needles in a hand-operated knitting machine. 3,899,899, Cl. 66-75.000.
- Bartlett, Fred J.; Bevis, Paul A.; Hoyt, Hazen L., III; and Mercer, Francis T., to Xerox Corporation. Cassette opening mechanism. 3,900,405, Cl. 250-468.000.
- BASF Aktiengesellschaft: *See*—
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- BASF Wyandotte Corporation: *See*—
Ciko, John D., 3,900,284.
- Bashan, Robert N., to Dow Chemical Company, The. Catamenial tampons. 3,900,030, Cl. 128-285.000.
- Batson, William A., to Singer Company, The. Spindle drive assembly for a surface-treating machine. 3,899,852, Cl. 51-170.00T.
- Batzer, Hans: *See*—
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- Bauch, Ernst, to Neumunstersche Maschinen-und Apparatebau GmbH. Crimping of synthetic plastic filaments. 3,899,811, Cl. 28-72.120.
- Baumgartner, Werner: *See*—
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- Baur, Leslie L.: *See*—
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- Baxter, Ivor Renton, to Marconi Company Limited, The. Optical velocity measuring apparatus. 3,900,262, Cl. 356-28.000.
- Baxter Laboratories, Inc.: *See*—
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- Bayer Aktiengesellschaft: *See*—
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- Dietrich, Manfred; Schnetger, Jochen; Haas, Friedrich; Marwede, Gunter; and Appel, Hansgunter, 3,900,532.
- Hildebrand, Dietrich; Kruckenberg, Winfried; Kuhnel, Werner; Molls, Hans Heinz; and Wolf, Karlheinz, 3,900,283.
- Hoppe, Peter; Drouven, Gustav; Wandel, Martin; Gutschik, Ernst; and Brokmeier, Dieter, 3,900,651.
- Huper, Fritz, 3,900,488.
- Seng, Florin; Ley, Kurt; and Metzger, Georg, 3,900,562.
- Thoma, Wilhelm; Noll, Klaus; Pedain, Josef; and Koch, Hans Joachim, 3,900,688.
- Voss, Peter; Niederprum, Hans; and Beyl, Volker, 3,900,508.
- Wingler, Frank; and Muller, Richard, 3,900,435.
- Wolf, Gerhard Dieter; and Bentz, Francis, 3,900,448.
- Bayles, Francis Derrick; Dudley, Michael Alan; and Metzler, John C., to Canada Wire and Cable Limited. High temperature electrical cable. 3,900,701, Cl. 174-102.00R.
- Beach, Shirley M., to Phillips Cables Limited. Method and apparatus for sheathing cable cores. 3,899,824, Cl. 29-458.000.
- Beaty, William Ralph, Jr., to Continental Oil Company. Catalytic hydrocarbon conversion process. 3,900,430, Cl. 252-463.000.
- Beauty Masters, Ltd.: *See*—
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- Beck, Heinz, to Akzo N.V. Paper sizing. 3,900,335, Cl. 106-213.000.
- Beck, Henry T.; and Koehler, Rudolph, to Noma Lites Canada Limited. Apparatus for molding lamp sockets onto paired insulated conductors. 3,900,278, Cl. 425-123.000.
- Beck, Wolfgang; Brunner, Friedrich C.; Frisch, Peter U.; Ivancic, Blanka; Schwerdt, Friedrich W.; and Vogtmann, Theodor, to International Business Machines Corporation. Method for stripping layers of organic material. 3,900,337, Cl. 134-3.000.
- Becker, John E., to Cluvaran Associates Ltd. Hydraulic coupling with reservoir. 3,899,887, Cl. 60-347.000.
- Beckers, Norman L., to Diamond Shamrock Corporation. Stabilized methylene chloride. 3,900,524, Cl. 260-652.50R.
- Bednar, John P.; and Weaver, Harvey N., to Tele-Vend Systems. Coin operated timing device. 3,900,093, Cl. 194-9.00T.
- Beer, Ludwig A., to Monsanto Company. Process for impact modification of high nitrile polymers. 3,900,528, Cl. 260-876.00R.
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- Beerwerth, Wolfgang; Geppert, Albrecht; and Schimmer, Rigobert, to Licentia Patent-Verwaltungs-G.m.b.H. Formation of solder layers. 3,900,153, Cl. 228-246.000.
- Begley, Russell D.: *See*—
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- Behn, Reinhard; and Hoyer, Gerhard, to Siemens Aktiengesellschaft. Voltage multiplier. 3,900,788, Cl. 321-15.000.
- Behr, Rolf: *See*—
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Enns, Kurt; Byerley, John J.; and Beingessner, Clare J., 3,900,377.
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- Bell, C. Gordon; Buzynski, John E.; Kaman, Charles H.; and O'Loughlin, James F., to Digital Equipment Corporation. Branching circuit for microprogram controlled central processor unit. 3,900,835, Cl. 340-172.500.
- Bell, Gregory R. Electronic power metering device. 3,900,794, Cl. 324-142.000.
- Bell & Howell Company: *See*—
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- Westover, Dwight G.; and Grant, Frederic F., 3,900,191.
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- Bell, Reuben H.; and Foley, Kevin M., to Owens-Corning Fiberglass Corporation. Flame retardants for plastic foams. 3,900,506, Cl. 260-448.80A.
- Bell, Rupert B., to R. L. Kuss & Co., Inc. Fuel tank filter. 3,900,397, Cl. 210-128.000.
- Bell Telephone Laboratories, Incorporated: *See*—
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- Collier, Robert Jacob; and Herriott, Donald Richard, 3,900,737.
- Dapkus, Paul Daniel; Dixon, Richard Wayne; and Weick, Walter Werner, 3,900,864.
- Larkin, Robert S.; Lund, Nean K.; and Williams, Charlton E., 3,900,874.
- Silfvast, William Thomas; and Wood II, Obert Reeves, 3,900,803.
- Bellasio, Elvio; and Cristiani, Franco, to Gruppo Lepetit, S.p.A. 2-Aryl-3-isopropylamino-1-butanols. 3,900,515, Cl. 260-501.170.
- Bellis, Carlo: *See*—
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- Beloit Corporation: *See*—
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- Belstad, Arne: *See*—
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- Bendel, Hermann, to Siemens Aktiengesellschaft. Selective echo suppressor. 3,900,708, Cl. 179-170.200.
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- Spencer, Andrew R., 3,900,629.
- Benedict, Charles E.; and Oliver, Calvin C., to Wayne H. Colony Company, Inc.; and Controlled Acoustics, Inc. Lug strap for weaving loom. 3,900,052, Cl. 139-153.000.
- Benitz, Earl. Expandable bit screw holding screwdriver. 3,900,057, Cl. 145-50.00E.
- Bennett, Frank Prescott; and Feitzinger, Eduard, to GAF Corporation. Developing apparatus for photocopy machines. 3,900,862, Cl. 354-300.000.
- Bennett, James G.: *See*—
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- Bentz, Francis: *See*—
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- Berg, Bengt Frans Allan, to K A Bergs Smide AB. Safety hook. 3,899,806, Cl. 24-241.0PL.
- Berger, Sol J. Coupon display and clip therefor. 3,899,841, Cl. 40-11.000.
- Bergh, Gunnar; Brass, Kjell; Hessner, Jorgen; and Varberg, Thomas, to Sonnak Batterier A/S. Method of assembling storage batteries and injection mould for carrying out the method. 3,900,343, Cl. 136-134.00R.
- Berkelhamer, Louis H.; and Schapira, William H., to North American Philips Corporation. Non hermetic sealed linear trimming potentiometer. 3,900,818, Cl. 338-176.000.
- Berkey-Colortran, Inc.: *See*—
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- Berkhouse, Thomas W., to International Paper Company. Dispenser carton. 3,900,158, Cl. 229-17.00S.
- Berman, Herbert M.; and Hooper, Ira, to Composite Construction Systems, Inc. Construction form support member. 3,900,182, Cl. 249-24.000.
- Bertin & Cie: *See*—
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- Bertin, Jean Henri, to Bertin & Cie. Ground effect machine pressure fluid cushion confining walls. 3,900,079, Cl. 180-121.000.
- Bertrams, Johannes Kurt, deceased; and by Mulken, Casper Antonius Henricus, administrator, to U.S. Philips Corporation. Skirting board. 3,900,240, Cl. 339-21.00R.
- Bertrand, Pierre; and Nony, Maurice, to Compteurs Schlumberger. Pneumatic controllers. 3,899,959, Cl. 92-100.000.
- Besant, Robert W.: *See*—
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- Bethany, Lewis R.; Desmonds, Daniel J.; and Tate, Donald P., to Control Data Corporation. Apparatus for controlling computer pipelines for arithmetic operations on vectors. 3,900,723, Cl. 235-156.000.
- Bethlehem Steel Corporation: *See*—
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- Bevis, Paul A.: *See*—
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- Beyer, Lewis R. Heated tool for heading plastic studs. 3,900,714, Cl. 219-229,000.
- Beyl, Volker: *See*—
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- Biddell, William G.: *See*—
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- Biland, Hans Rudolf: *See*—
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- Billeter, Henry R., to Sloan Valve Company. Automatic double-acting slack adjuster. 3,900,086, Cl. 188-202,000.
- Bisker, Richard Gordon: *See*—
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- Bjushgens, Georgy Sergeevich: *See*—
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- Black, Sigmund: *See*—
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- Blackman, Maurice R. Wrapper for bread and the like. 3,900,161, Cl. 229-87,00B.
- Blair, Gerald E.: *See*—
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- Blanton, Bobby D.; and Shepherd, Glen C., to Texas Instruments Incorporated. Automatic defrosting control system. 3,899,895, Cl. 62-155,000.
- BLH Electronics, Inc.: *See*—
Iage, David A.; and Senour, Donald A., 3,900,828.
- Bliznjuk, Valentin Ivanovich: *See*—
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- Blohm, Thomas R.: *See*—
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- Blomquist, Seppo Ilmari: *See*—
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- BMR Security Products Corporation: *See*—
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- Bock, Joseph J.; and Dunham, William S., to Sperry Rand Corporation. Apparatus and method for pulse tracker ranging equipment with increased resolution. 3,900,868, Cl. 343-7,300.
- Boehringer Ingelheim GmbH: *See*—
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- Boeing Company, The: *See*—
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- Boerger, David H.; Krugler, Allen D., Jr.; and Willoughby, Donald A., to Ford Motor Company. By-pass section throttling valve in a refrigeration system. 3,899,897, Cl. 62-196,000.
- Boggs, Weldon C., to Food Research & Equipment Co. Method of removing crumbs from cooking oil. 3,900,580, Cl. 426-417,000.
- Bogusch, Renate: *See*—
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- Bok, Edward. Pen with ink injection system. 3,900,268, Cl. 401-230,000.
- Bolotin, Josif Mironovich: *See*—
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- Bolyanovsky, Dmitry Mikhailovich: *See*—
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- Bonin, Alexandr Romanovich: *See*—
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- Borg-Warner Corporation: *See*—
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- Newton, Alwin B., 3,900,277.
- Bosco, Joseph. Utility blade holder. 3,899,828, Cl. 30-151,000.
- Bourges, Bernard M., to Societa Anonyme Poclair. Apparatus for adjusting the relative inclinations of pivotable members. 3,900,113, Cl. 212-35,0HC.
- Bouvier, Pierre; and Schumperli, Max, to Electronique Marcel Dassault. Installation for measurement by radio-electric transmission of a distance between two stations. 3,900,873, Cl. 343-12,00R.
- Bouweconomisch en Technologisch Adviesbureau B.V.: *See*—
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- Bowen, James Harold; and Sollman, Kenneth John, to Union Carbide Corporation. Hydrodynamic drag reduction dispenser-metering system. 3,900,043, Cl. 137-101,210.
- Bowkley, Ian G.; and Goff, Nigel J., to E. R. A. Patents Limited. Electrical capacitors. 3,900,773, Cl. 317-258,000.
- Boyce, Thomas E.: *See*—
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- Boyd, John F.: *See*—
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- Bradbury, Wilburn F. Ski edge sharpener. 3,899,942, Cl. 76-89,000.
- Bradley, Howard B., to Union Carbide Corporation. Manufacture of silicon metal from a mixture of chlorosilanes. 3,900,660, Cl. 427-248,000.
- Bradstock, Richard L., to Adams Rite Manufacturing Company. Lock mechanism. 3,899,906, Cl. 70-139,000.
- Brass, Kjell: *See*—
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- Brassard, Hans-Joachim A.; and Erken, Andreas, to Akzona Incorporated. Method and apparatus for the measurement of crimp contraction. 3,899,927, Cl. 73-160,000.
- Braun Aktiengesellschaft: *See*—
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- Brennan, John J., to United Aircraft Corporation. Tantalum wire reinforced silicon nitride articles and method for making the same. 3,900,626, Cl. 428-110,000.
- Brettschneider, Johannes: *See*—
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- Brewer Engineering Laboratories, Inc.: *See*—
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- Brewer, Given A., to Brewer Engineering Laboratories, Inc. Strain gage transducer. 3,900,812, Cl. 338-2,000.
- Bricout, Catherine, heir: *See*—
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- Bricout, Didier, heir: *See*—
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- Bricout, Henri, deceased; by Bricout, Marie, heir; by Bricout, Didier, heir; by Bricout, Catherine, heir; and by Bricout, Veronique, heir, to Societe d'Applications des Machines Motrices. Fluid distributor. 3,900,137, Cl. 222-309,000.
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- Brimhall, George Henry, II. Ski pole locking assembly. 3,899,904, Cl. 70-58,000.
- Brink, David L., to University of California, The Regents of the. Lignocellulosic molding method and product. 3,900,334, Cl. 106-163,000.
- Brisbane, Arthur P.: *See*—
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- Brocart, Alain, to Societe Nationale des Poudres et Explosifs. Ignition device for explosive charges. 3,899,973, Cl. 102-27,00R.
- Brockelsby, Norman D., to Dutton-Lainson Company. Winch mount and plate with coupler ball adapter. 3,900,214, Cl. 280-414,00R.
- Broghammer, Werner, to Dual Gebruder Steidinger. Operating mode switch for different type of tapes. 3,900,889, Cl. 360-69,000.
- Brokmeier, Dieter: *See*—
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- Brollo, Aurelio: *See*—
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- Bronn, William R.: *See*—
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- Brooks, Dean P.: *See*—
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- Brosh, Amnon: *See*—
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- Brother Kogyo Kabushiki Kaisha: *See*—
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- Brown, Derek James: *See*—
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- Brown, John F., Jr., to General Electric Company. Miniature probe containing multifunctional electrochemical electrodes. 3,900,382, Cl. 204-195,00M.
- Brown, Omar L., to Frazee, Ermal C. Easy open can end resistant to pressure. 3,900,128, Cl. 220-269,000.
- Brown, R. G., to Council of the London Borough of Hounslow, The. Sound insulating window. 3,899,861, Cl. 52-616,000.
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- Brown & Williamson Tobacco Corporation: *See*—
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- Brueggemann, Walter H.; and Gilhart, Jack S., to Ferro Corporation. Catalytic crystalline glass fibers and method. 3,900,306, Cl. 65-33,000.
- Brumlik, George C., to Ingrip Fasteners, Inc. Self-gripping device with preformed gripping elements. 3,899,803, Cl. 24-204,000.
- Bruner, Ralph C., to Brunswick Corporation. Archery target mats of staggered corrugated plastic. 3,900,778, Cl. 273-102,00B.
- Brunner, Friedrich C.: *See*—
Beck, Wolfgang; Brunner, Friedrich C.; Frasch, Peter U.; Ivancic, Blanka; Schwerdt, Friedrich W.; and Vogtmann, Theodor, 3,900,337.
- Bruno, Anthony T.: *See*—
Speno, Martin J.; and Bruno, Anthony T., 3,900,392.
- Brunswick Corporation: *See*—
Bruner, Ralph C., 3,900,778.
- Bruschtein, Fabio B.; and Lyftgot, Dennis L., to Dow Chemical Company, The. Wallboard tape joint composition and adhesive therefor containing water soluble polyacrylamide, limestone, asbestos, mica and cellulose ether. 3,900,434, Cl. 260-17,00R.
- Bryant, Samuel T., to Texas Instruments Incorporated. Automatic defrosting control system. 3,899,896, Cl. 62-155,000.
- Bucher, Robert, to Sulzer Brothers Limited. Apparatus and method for supplying pile warp threads in a loom for weaving terry cloth. 3,900,051, Cl. 139-25,000.
- Buchser, William J., to Whirlpool Corporation. Thread adaptor. 3,900,220, Cl. 285-177,000.
- Buck K. G., Firma: *See*—
Schiesl, Alois, 3,899,977.
- Buckler, Robert Thomas; Hartzler, Harold Eugene; Hayao, Shin; and Nichols, Gust, to Miles Laboratories, Inc. Phenyl- and (substituted)-phenyl-1,2,3-triazole-alkanoic and -alkenoic acids. 3,900,492, Cl. 260-308,00A.
- Buckles, Ernest J. Intrusion alarm control system. 3,900,841, Cl. 340-258,00R.
- Bucy, Shawn G.; and Takacs, John, to Abex Corporation. Multi-channel wideband oscilloscope. 3,900,851, Cl. 346-49,000.
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- Buie, James L.: *See*—
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- Buisson, Marc Francois Bernard: *See*—
Stakic, Ratko; Buisson, Marc Francois Bernard; and Rousseau, Gilbert James, 3,899,883.
- Bujas, Roke; and Ringot, Claude, to Commissariat a l'Energie Atomique. Process for making a fuel element for high temperature nuclear reactors. 3,900,358, Cl. 156-215,000.
- Bundesen, Lorenz; Brettschneider, Johannes; and Knapp, Heinrich, to Robert Bosch G.m.b.H. Fuel metering device for internal combustion engines. 3,900,014, Cl. 123-119,00R.
- Bunin, Morey, to Aniforms, Inc. Animated cartoon character and method. 3,899,848, Cl. 46-126,000.
- Bunker-Ramo Corporation, The: *See*—
Casey, Richard C.; Duggan, Robert J.; Grosky, Stephen A.; Jen, Dixon Teh-Chao; Serra, John J.; Whitehead, Donald Shaffer; and Boyce, Thomas E., 3,900,834.
- Lynch, Thomas H.; and Patten, Hudson T., III, 3,900,839.
- Burba, Christian: *See*—
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- Burekhardt, Manfred H., to Daimler-Benz Aktiengesellschaft. Control valve for accumulator systems, especially for servo brakes of motor vehicles. 3,900,046, Cl. 137-596,000.
- Burin, Viktor Leon-tievich: *See*—
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- Burke, George K.; Raines, Kenneth; and Le Fevre, Robert J., to Burrin Medical Products, Inc. Roller clamp for tubing. 3,900,184, Cl. 251-6,000.
- Burke, Richard K.: *See*—
Oliver, Haven D.; Burke, Richard K.; Dobson, Herbert, Jr.; and Grant, Leon E., 3,900,401.
- Burr, John F. Hoist conversion unit for small tractors. 3,900,185, Cl. 254-139,100.
- Burrin Medical Products, Inc.: *See*—
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- Burtch, Kurt A.; and Lewis, James A., to Gulf & Western Manufacturing Company. Roll feed micro-adjustment indicator. 3,900,142, Cl. 226-100,000.
- Buryan Associates: *See*—
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- Buser, Max: *See*—
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- Butterworth Manufacturing Company, Inc.: *See*—
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- Butti, Adriano; and Prino, Giuseppe, to Crinos Industria Farmacobiologica S.p.A. Mixed salts of polysulfuric esters of naturally occurring glycopeptides with metals and organic bases, and process for producing same. 3,900,458, Cl. 260-112,00R.
- Buzynski, John E.: *See*—
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- Byerley, John J.: *See*—
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- Byrd, Charles F.; and Dailey, William. Collapsible Christmas tree apparatus. 3,900,637, Cl. 428-9,000.
- Byron Jackson, Inc.: *See*—
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- Bystron, Bruno; Hoerber, W. Gerhard; and Goldammer, Georg, to Schubert & Salzer Maschinenfabrik Aktiengesellschaft. Apparatus for automatically cutting garments. 3,899,949, Cl. 83-565,000.
- C. Eugen Maier Metalverarbeitung GmbH: *See*—
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- Cahn, Robert P.: *See*—
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- Calabro, John A.: *See*—
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- Calabro, Salvatore R.; Calabro, John A.; and Mich, Peter R., to Automated Technology Corporation. Remote automatic meter reading and control system. 3,900,842, Cl. 340-310,00A.
- Calder, Peter Henry; Gupta, Prem Chandra, and Lewis, William James, to Rolls-Royce (1971) Limited. Jet propulsion powerplant. 3,900,177, Cl. 244-53,00R.
- Calgon Corporation: *See*—
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- Cam Gears Limited: *See*—
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- Cambridge Scientific Instruments Limited: *See*—
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- Campbell Chain Company: *See*—
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- Campbell, Claude E.: *See*—
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- Canada Wire and Cable Limited: *See*—
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- Canadian Marconi Company: *See*—
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- Canadian Patents and Development Limited: *See*—
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- Canon Kabushiki Kaisha: *See*—
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- Taguchi, Tatsuya; and Iura, Yukio, 3,900,856.
- Tanikoshi, Kinzi, 3,900,780.
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- Cantales, Joseph. Stackable plastic garbage can with integral top. 3,900,106, Cl. 206-519,000.
- Caposell, Charles D.: *See*—
Marriott, Carroll L.; Patzer, Hans E.; Hall, Ronald D.; Caposell, Charles D.; and Klein, Aaron David, 3,900,353.
- Caramanian, John A. Concrete surface treating material and method of treating concrete surfaces. 3,900,622, Cl. 427-445,000.
- Carlet, Xavier: *See*—
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- Carlson, Carl E.: *See*—
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- Carlson, Guy C., Jr.; and Haak, Willard J., to Caterpillar Tractor Company. Radial piston fluid translating device with cylinder positioning means. 3,899,957, Cl. 91-490,000.
- Caroli, Ignazio, to Seleniz-Industrie Elettroniche Associate S.p.A. Group-delay equalizer using a meander folded transmission line. 3,900,806, Cl. 333-28,00R.
- Carpenter, Charles W., to Hercules Incorporated. Method for bonding pile yarns onto rigid thermoplastics. 3,900,354, Cl. 156-73,200.
- Carrier, Vernon J. Castor for use with pile carpet. 3,899,801, Cl. 16-45,000.
- Carriker, Roy C., to HMW Industries, Inc. Permanent magnet generator. 3,900,749, Cl. 310-156,000.
- Carson, Bradley A.: *See*—
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- Casagrande, Cesare: *See—*
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- Casey, Richard C.; Duggan, Robert J.; Grosky, Stephen A.; Jen, Dixon Teh-Chao; Serra, John J.; Whitehead, Donald Shaffer; and Boyce, Thomas E., to Bunker-Ramo Corporation, The. Memory update apparatus utilizing chain addressing. 3,900,834, Cl. 340-172.500.
- Cassidy, John Edward, to Imperial Chemical Industries Limited. Phosphoric materials. 3,900,331, Cl. 106-85.000.
- Castaneda, Ben; and Staab, Norbert A. Surveyors tape repair tool. 3,899,818, Cl. 29-243.560.
- Caterpillar Tractor Company: *See—*
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- Cayless, Maurice Arthur: *See—*
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- CBS Inc.: *See—*
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- Celanese Corporation: *See—*
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- Centre de Recherches Metallurgiques: *See—*
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- Cerrioli, Paolo: *See—*
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- Chadwick, Michael Dickenson; Jackson, Peter Woodall; and Brown, Derek James, to International Research and Development Company Limited. Explosive welding of submerged pipes. 3,900,148, Cl. 228-107.000.
- Champion International Corporation: *See—*
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- Chandley, George D.; and Lamb, John N., to Hitchiner Manufacturing Co., Inc. Metal casting. 3,900,064, Cl. 164-51.000.
- Chang, Charles H., to GAF Corporation. Anthraquinone dyes containing a 2-aryloxyalkoxy carbamate moiety, their intermediates, and a process for their preparation. 3,900,472, Cl. 260-247.10A.
- Chao, Hung-Chi; Gross, John H.; Judd, Robert R.; and Rueckl, Roger L., to United States Steel Corporation. Process for the production of high apparent density water atomized steel powders. 3,900,309, Cl. 75-0.5BA.
- Chappelow, Cecil C., Jr.; and Engel, James F., to Kerr-McGee Corporation. N-cycloalkyl hydroxamic acids. 3,900,514, Cl. 260-500.50H.
- Charvet, Eugene: *See—*
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- Chatten, Clarence K.; Eller, Saul A.; Folb, Reece; and Brisbane, Arthur P., to United States of America, Navy. Weather resistant segmented fairing for a tow cable. 3,899,991, Cl. 114-235.00F.
- Chatterji, Jiten; Holtmyer, Marlin D.; and Tiner, Robert L., to Halliburton Company. Gelling liquid hydrocarbons. 3,900,070, Cl. 166-308.000.
- Chaudhuri, Kiranendu B., to Swiss Aluminum Ltd. Method of controlling the thickness of the lateral ledges in a cell for the electrolytic recovery of aluminum. 3,900,371, Cl. 204-67.000.
- Chayamiti, Hiroshi: *See—*
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- Chemische Werke Huls Aktiengesellschaft: *See—*
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- Chen, Wei-Gwo, to Griffolyn Company, Inc. Self-extinguishing composite laminate. 3,900,625, Cl. 428-110.000.
- Cheremukhin, Georgy Alexeevich: *See—*
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- Cherry, Richard A.: *See—*
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- Chevalier, Philippe; and Seeman, Bronislav, to Schlumberger Technology Corporation. Method and apparatus for stabilizing the gain of a photomultiplier. 3,900,731, Cl. 250-207.000.
- Chevron Research Company: *See—*
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- Meader, Arthur L., Jr.; and Runyon, William L., Jr., 3,900,687.
- Chichester, Willard L.; and Holtkamp, Donald A., to Clark Equipment Company. Hydrostatic propulsion system. 3,900,075, Cl. 180-6.300.
- Chikamura, Takao: *See—*
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- Childs, William V.; Ashe, Benedict H., Jr.; and Hudson, Paul S., to Phillips Petroleum Company. Recycle of acyl fluoride and electrochemical fluorination of esters. 3,900,372, Cl. 204-81.000.
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- Christ, Alfred; Tognola, Sergio; and Lehmann, Rolf, to Escher Wyss GmbH. Blade for applying a flowable substance to a moving article. 3,899,999, Cl. 118-405.000.
- Christensen, Carl W.; and Isaacson, Calvin M., to Shipley Company, Inc. Light sensitive quinone diazide composition with N-3-oxohydrocarbon substituted acrylamide. 3,900,325, Cl. 96-91.00D.
- Christensen, Walter M.: *See—*
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- Christmann, Harold F.; and Teel, Paul H., to Petro-Tex Chemical Corporation. Manganese ferrite catalyzed oxidative dehydrogenation. 3,900,525, Cl. 260-680.00E.
- Chruma, Jerry L.; and Hilton, Paul G., to Motorola, Inc. System and process for deposition of polycrystalline silicon with silane in vacuum. 3,900,597, Cl. 427-82.000.
- Chupp, John Paul, to Monsanto Company. 1,2,3,5-Oxathiadiazolin-4-one, 2-oxides. 3,900,484, Cl. 260-301.000.
- Ciba-Geigy AG: *See—*
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- Ciba-Geigy Corporation: *See—*
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- Ciko, John D., to BASF Wyandotte Corporation. Process for the removal of silver nitrate stains. 3,900,284, Cl. 8-109.000.
- Cincinnati Milacron Chemicals Inc.: *See—*
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- Cincinnati Milacron, Inc.: *See—*
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- Cities Service Oil Company: *See—*
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- Citizen Watch Co., Ltd.: *See—*
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- Clampitt, Richard L.; and Hessert, James E., to Phillips Petroleum Company. Aqueous gels and uses thereof. 3,900,406, Cl. 252-8.55C.
- Clare, Michael A., to Sidcor, Inc. Brake released accelerator holder. 3,900,087, Cl. 192-3.00T.
- Clark, Alexander B., Jr. Corner pad. 3,900,156, Cl. 229-14.00C.
- Clark Equipment Company: *See—*
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- Clark, Richard J.: *See—*
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- Clarke, Charles M., to Celanese Corporation. Process for the continuous carbonization and graphitization of a stabilized acrylic fibrous material. 3,900,556, Cl. 423-447.000.
- Class, Gottfried, to Gesellschaft für Kernforschung m.b.H. Restraint system for core elements of a reactor core. 3,900,367, Cl. 176-87.000.
- Clayton Manufacturing Company: *See—*
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- Clements, Alwin S.: *See—*
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- Clifford, Graham F.; and Spurrier, Mack W., to Gaston County Dyeing Machine Co. Means for transferring yarn packages from a winding tube to a core for dyeing. 3,899,817, Cl. 29-234.000.
- Cline, Edwin Lee, to Clayton Manufacturing Company. Recorder and computer type brake analyzer and method. 3,899,916, Cl. 73-126.000.
- Clipstone, Colin John: *See—*
 Curry, Francis Russell; and Clipstone, Colin John, 3,900,636.
- Cluaran Associates Ltd.: *See—*
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- Clyde, Robert A. Method of plating metal uniformly on and throughout porous structures. 3,900,646, Cl. 427-55.000.
- Coaxial Dynamics: *See—*
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- Cochran, Michael J.; and Grant, Charles P., Jr., to Texas Instruments Incorporated. Multi-chip calculator system having cycle and subcycle timing generators. 3,900,722, Cl. 235-152.000.
- Coffman, Alfred M., to B. F. Goodrich Company. The. Interpolymers of alkyl acrylates, unsaturated carboxylic acids and unsaturated hydroxylated amides as pressure-sensitive adhesives and articles thereof. 3,900,674, Cl. 428-355.000.
- Cohen, Arthur I.: *See—*
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- Cohen, Noal; De Silva, Wijitha; and Hueppi, Gerhard, to Hoffmann-La Roche Inc. 7-Oxa-3-thia-1-aza spiro[5.5]undec-1-ene. 3,900,469, Cl. 260-243.00R.
- Colaguori, Albert C.: *See—*
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- Cole, Susan Margaret: *See—*
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- Colgate-Palmolive Company: *See—*
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 Kirk, Lawrence J.; and Baldwin, Marshall G., 3,900,059.
- Collier, Robert Jacob; and Herriott, Donald Richard, to Bell Telephone Laboratories, Incorporated. Electron beam exposure system. 3,900,737, Cl. 250-492.00A.

- Collins, Keith Douglas, to Lucas Aerospace Limited. Spark ignition systems for internal combustion engines. 3,900,017, Cl. 123-148.00E.
- Combustion Engineering, Inc.: *See—*
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- Comitato Nazionale per l'Energia Nucleare: *See—*
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- Commissariat à l'Energie Atomique: *See—*
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- Commonwealth of Australia, The: *See—*
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- Commonwealth Scientific and Industrial Research Organization: *See—*
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- Composite Construction Systems, Inc.: *See—*
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- Compteurs Schlumberger: *See—*
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- Compton, William A.; Duffy, Thomas E.; and Seegall, Manfred I., to International Harvester Company. Apparatus for indicating gas temperatures. 3,899,878, Cl. 60-39.28T.
- Conner, Jack S., to Northrop Corporation. Expendable self-powered target with stabilizing control. 3,900,198, Cl. 273-105.400.
- Conner, William R., Jr., to Stahl-Urban Company. Apparatus for guiding limp material. 3,899,986, Cl. 112-214.000.
- Consolidated Video Systems: *See—*
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- Constantinescu, Petre; Oachis, Emil; Trimitas, Dorin; and Alexandrescu, Doina, to Intreprinderea Metalul Rosu Cluj. Air treatment apparatus. 3,900,301, Cl. 55-257.000.
- Constructions Navales et Industrielles de la Mediterranee (C.N.I.M.): *See—*
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- Conti, Fulvio. Plant for steaming and fixing dyes at high or low temperature on printed or dyed fabrics. 3,899,902, Cl. 68-5.00D.
- Continental Can Company, Inc.: *See—*
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- Continental Oil Company: *See—*
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- Control Data Corporation: *See—*
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- Controlled Acoustics, Inc.: *See—*
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- Cook, Charles A.; and Hajduk, Thaddeus J., to Zenith Radio Corporation. Apparatus for application of lacquer coating to cathode ray tube panels. 3,899,994, Cl. 118-6.000.
- Cook, John F. Continuously-variable-gear-ratio automatic transmission. 3,899,941, Cl. 74-781.00R.
- Cooper, Albert S., Jr.: *See—*
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- Cooper, Glenn D.; and Bennett, James G., to General Electric Company. Process for the preparation of polyphenylene ethers with cuprous and cupric amine catalyst. 3,900,445, Cl. 260-47.0ET.
- Coors, George T.: *See—*
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- Copeland, Andrew P. Boot. 3,900,224, Cl. 296-23.0MC.
- Copeland, T. D.: *See—*
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- Copsey, Mervyn John; and Wilby, Brian Hanson, to Electricity Council, The. Cleaning of metal surfaces. 3,900,376, Cl. 204-141.500.
- Corbett, Dennis Thomas; and Wilson, John, to Hemlab AG. Particulate matter suppression using a solution of a surfactant and a polymer. 3,900,611, Cl. 427-214.000.
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- Corning Glass Works: *See—*
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- Cosden Oil & Chemical Company: *See—*
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- Costales, John E., to Litton Systems, Inc. Encoder disc mount and aligning tool. 3,900,732, Cl. 250-231.0SE.
- Costas, Louis P., to Anaconda Company, The. Silicon brass resistant to parting corrosion. 3,900,349, Cl. 148-32.000.
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- Cowden, Ernest A.: *See—*
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- Coyle, Jan R.; and Stevens, Robert W. Sonic color system. 3,900,886, Cl. 358-82.000.
- Crabb, Elmer R., to Caterpillar Tractor Company. Planetary torque proportional differential. 3,899,938, Cl. 74-710.500.
- Crawford, Donald C.: *See—*
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- Crawford, Howard H. Plate type nail holder for edgers, trimmers, or other applications. 3,900,071, Cl. 172-15.000.
- Crawford, James E., to Owens-Illinois, Inc. Method for forming graft copolymers employing the reaction product of hydrogen peroxide and ethylene-acrylic acid alkali salt copolymers. 3,900,530, Cl. 260-877.000.
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- Crinos Industria Farmacobiologica S.p.A.: *See—*
 Butti, Adriano; and Prino, Giuseppe, 3,900,458.
- Cristiani, Franco: *See—*
 Bellasio, Elvio; and Cristiani, Franco, 3,900,515.
- Crone, Alfred F., to Acme Highway Products Corporation. Joint forming seal assembly. 3,900,271, Cl. 404-68.000.
- Crum, William Norman. Earth working device with predetermined grade indicating assembly. 3,900,073, Cl. 172-430.000.
- Cunha, Joseph J., to Overhead Door Corporation. Adjustable king pin. 3,900,213, Cl. 280-407.000.
- Curry, Francis Russell; and Clipstone, Colin John, to Gillette Company, The. Method of treating cutting edges. 3,900,636, Cl. 427-38.000.
- Curtiss, Walter W., Jr., to Goodyear Tire & Rubber Company, The. Method of fabricating large tires. 3,900,061, Cl. 152-352.000.
- Cutler-Hammer, Inc.: *See—*
 Smith, Charles E.; Hink, Karl M.; Greening, Donald J., deceased; and Greening, Dorothy, executrix, 3,900,781.
- Dachs, Martin R. Optical communication system. 3,900,404, Cl. 250-199.000.
- Dai-ichi Kogyo Seiyaku Co. Ltd.: *See—*
 Yada, Akira; and Hori, Yuji, 3,900,463.
- Dai Nippon Tōryō Co., Ltd.: *See—*
 Makishima, Hiroshi; Shinohara, Toshio; Kawahara, Yukio; Nii, Hiroshi; and Ebine, Setsuo, 3,900,630.
- Daikin Kogyo Co., Ltd.: *See—*
 Fujii, Tuncuo; and Nakamura, Yukiharu, 3,900,658.
- Dailey, William: *See—*
 Byrd, Charles F.; and Dailey, William, 3,900,637.
- Daimler-Benz Aktiengesellschaft: *See—*
 Burckhardt, Manfred H., 3,900,046.
- Dainichiesei Color & Chemicals Mfg. Co., Ltd.: *See—*
 Kawamura, Kimihide; and Horiguchi, Shojiro, 3,900,459.
- Dale Electronics, Inc.: *See—*
 Person, Herman R., 3,900,767.
- D'Alelio, Gaetano F. Halogenated esters of phosphorus-containing acids. 3,900,536, Cl. 260-952.000.
- Dalter, Raymond S.; and White, Sidney S., to Cincinnati Milacron Chemicals Inc. Lubricating oil compositions containing sulfur-chlorinated styrene derivatives. 3,900,409, Cl. 252-48.800.
- Daly, William M.: *See—*
 United States of America, National Aeronautics and Space Administration; Daly, William M.; and McKenna, John F., Jr., 3,900,741.
- D'Amato, Salvatore F.; Kimball, John J.; and Lednicer, Oliver, to American Bank Note Company. Document having a concealed marking and method of making same. 3,900,219, Cl. 283-6.000.
- Dapkus, Paul Daniel; Dixon, Richard Wayne; and Weick, Walter Werner, to Bell Telephone Laboratories, Incorporated. Monolithic led displays. 3,900,864, Cl. 357-18.000.
- Darlington, Henry S., to Teledyne Mid-America Corporation. Child resistant closure for collapsible tube. 3,900,123, Cl. 215-216.000.
- Davies, John; and Skinner, Dennis E., to USM Corporation. Rotary coating applying nozzles. 3,899,998, Cl. 118-323.000.
- Davis, Benjamin; and Pearce, Derek Roger, to Glaxo Laboratories Limited. Pharmaceutical compositions. 3,900,561, Cl. 424-238.000.
- Davis, Billy W., to Schlumberger Technology Corporation. Method for making a foam seismic streamer. 3,900,543, Cl. 264-45.300.
- Davis, Jack W.; and Walch, Allan P., to United Aircraft Corporation. Multitube coaxial closed cycle gas laser system. 3,900,804, Cl. 331-94.50T.
- Davis, Matthew L. Lightweight cement compositions for building and other purposes. 3,900,332, Cl. 106-97.000.
- Day, Robert H., to Illinois Tool Works Inc. Packages of containers. 3,900,103, Cl. 206-431.000.
- De la Rue Giori S.A.: *See—*
 Giori, Gualtiero, 3,900,595.
- Deacon, Brian Matthew: *See—*
 Maheux, Peter Francis; and Deacon, Brian Matthew, 3,900,242.
- de Courcy, Rowland J. J., to Douglas-Rownson Limited. Live roller conveyor. 3,900,097, Cl. 198-127.00R.
- Deering Milliken Research Corporation: *See—*
 Lesley, Bascum G., 3,899,901.
- Dehnert, Johannes, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Water-soluble diazo compounds containing a pyrazole component. 3,900,460, Cl. 260-160.000.
- de Jong, Lodewikus N. J., to Shell Oil Company. Hydraulic mining method. 3,900,226, Cl. 299-17.000.
- Delage, Pierre: *See—*
 Poignant, Pierre; and Delage, Pierre, 3,900,308.
- DeLeon, Walter L., to United States Steel Corporation. Plate length measuring gage. 3,899,831, Cl. 33-141.00B.
- Delgross, Eugene J.; and Carlson, Carl E., to United Aircraft Corporation. Duplex composite tape. 3,900,150, Cl. 228-185.000.
- DeLuca, Robert D., to Corning Glass Works. Method of forming conductive layer on oxide-containing surfaces. 3,900,305, Cl. 65-30.000.
- Demerson, Christopher A.: *See—*
 Philipp, Adolf H.; Demerson, Christopher A.; and Humber, Leslie G., 3,900,477.
- Demoulin, Pierre: *See—*
 Plumat, Emile; and Demoulin, Pierre, 3,900,634.
- Denki Onkyo Company, Ltd.: *See—*
 Kawada, Takehiko, 3,900,766.

- Masuda, Noboru; and Takiguchi, Hisashi, 3,900,813.
Masuda, Noboru, 3,900,814.
Dennison Manufacturing Company: *See—*
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De Silva, Wijitha: *See—*
Cohen, Noal; De Silva, Wijitha; and Hueppi, Gerhard, 3,900,469.
Desmonds, Daniel J.: *See—*
Bethany, Lewis R.; Desmonds, Daniel J.; and Tate, Donald P., 3,900,723.
Deutsch, Ralph: *See—*
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Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
von Behenburg, Walter; and Offermanns, Heribert, 3,900,466.
DeVries, Vern Gordon: *See—*
Allen, George Rodger, Jr.; McEvoy, Francis Joseph; DeVries, Vern Gordon; Moran, Daniel Bryan; and Littell, Ruddy, 3,900,495.
Allen, George Rodger, Jr.; McEvoy, Francis Joseph; DeVries, Vern Gordon; Moran, Daniel Bryan; and Littell, Ruddy, 3,900,563.
Deyrup, Alden J., to du Pont de Nemours, E. I., and Company. Substrates treated with chromium(III) complexes to increase the adhesion of organic polymers thereto. 3,900,689, Cl. 428-432.000.
Dhoble, Prafulla S., to Xerox Corporation. Xerographic fusing apparatus. 3,900,590, Cl. 427-22.000.
Diamond Shamrock Corporation: *See—*
Beckers, Norman L., 3,900,524.
DiBasio, Vincent L.: *See—*
Holdsworth, Robert S.; O'Neill, Gerald J.; Simons, Charles W.; and DiBasio, Vincent L., 3,900,568.
Dichter, Hans-Joachim. Containers with stoppers. 3,900,122, Cl. 215-31.000.
Dickinson, William B.; and Vaupotic, Marcia P., to Sterling Drug Inc. N-(2-pyridyl)-1-polymethyleneiminiothiocarbonylamides. 3,900,480, Cl. 260-293.690.
Didenko, Zoya Vasilievna: *See—*
Tjutjunnikov, Anatoly Borisovich; Tjutjunnikov, Boris Nikanorovich; Marchenko, Alexandr Nikolaevich; Burin, Viktor Leonovich; Bolotin, Josif Mironovich; Drozdov, Anatoly Sergeevich; Koval, Leonid Petrovich; Didenko, Zoya Vasilievna; Ljubushkin, Georgy Vasilievich; Budnik, Jury Mikhailovich; Moskin, Vladimir Dmitrievich; and Bolyanovsky, Dmitry Mikhailovich, 3,900,537.
Diel, Peter J.; and Schmid, Wolfgang, to Ciba-Geigy Corporation. Quinoxaline-di-N-oxide derivatives. 3,900,473, Cl. 260-250.00Q.
Diena, Alberto: *See—*
Lancini, Giancarlo; Lazzari, Ettore; and Diena, Alberto, 3,900,567.
Diepeveen, John C. Apparatus for incremental movement of die frame. 3,900,145, Cl. 228-4.100.
Dierkes, Hubert; Schonol, Karl; Walter, Joachim; and Muller, Friedrich, to Bayer Aktiengesellschaft. Preparations of optical brighteners. 3,900,608, Cl. 427-158.000.
Dietrich, Isolde: *See—*
Zerbst, Helmut; Weyl, Reinhard; and Dietrich, Isolde, 3,900,808.
Dietrich, Manfred; Schnetger, Jochen; Haas, Friedrich; Marwede, Gunter; and Appel, Hansgunter, to Bayer Aktiengesellschaft. Low viscosity paste rubber compositions. 3,900,532, Cl. 260-879.000.
Dietze, Wolfgang; Schnoller, Manfred; Mladenovich, Tomislav; and Baumgartner, Werner, to Siemens Aktiengesellschaft. Method of producing shaped semiconductor bodies. 3,900,039, Cl. 134-3.000.
Digital Equipment Corporation: *See—*
Bell, C. Gordon; Buzynski, John E.; Kaman, Charles H.; and O'Loughlin, James F., 3,900,835.
Dilworth, John Lewis, to McCulloch Corporation. Diaphragm pump method and apparatus. 3,900,276, Cl. 417-542.000.
Director-General of the Agency of Industrial Science and Technology: *See—*
Terajima, Kazuki; Tomita, Shigeru; Matsuda, Yoshindo; and Abe, Keiji, 3,900,422.
Di Salvo, Ronald M.; and Yates, Robert W., to RedKen Laboratories. Method and apparatus for analyzing hair structure. 3,900,252, Cl. 353-39.000.
Distribution Supply Corporation: *See—*
Jennings, Donald G., 3,899,816.
Dixon, Richard Wayne: *See—*
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Djorup, Robert S., to Environmental Instruments, Inc. Thermal directional fluid flow transducer. 3,900,819, Cl. 338-320.000.
Doble, James W. Convertible utility cart. 3,900,202, Cl. 280-8.000.
Dobson, Herbert, Jr.: *See—*
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Doi, Haruo: *See—*
Komatsu, Noboru; Kamigaito, Osami; Suzuki, Takatoshi; Doi, Haruo; Sano, Kazuya; Yamamoto, Nobuyuki; Kandori, Toshio; and Tsuzuki, Yukikazu, 3,900,429.
Doi, Kikuo: *See—*
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Doi, Yuzuru: *See—*
Aishima, Itsuho; Fukuma, Noboru; Sakura, Hisaya; Chayamiti, Hiroshi; Okamoto, Toshio; Doi, Yuzuru; and Henmi, Hiroshi, 3,900,678.
Doman, David G.: *See—*
Hamer, Brian; and Doman, David G., 3,900,054.
Domenighetti, Domenico. Compacting machine with movable ballast. 3,900,272, Cl. 404-130.000.
Douglas-Rownson Limited: *See—*
de Courcy, Rowland J. J., 3,900,097.
Dow Chemical Company, The: *See—*
Anderson, Richard W.; and Frick, Hughie R., 3,900,380.
Bashan, Robert N., 3,900,030.
Bruschtein, Fabio B.; and Lyftgot, Dennis L., 3,900,434.
Dunbar, Joseph E.; and Rogers, Joan H., 3,900,471.
Dunn, James L., Jr., 3,900,615.
Kuchek, Henry A., 3,900,296.
Lalk, Robert H.; Schmidt, Donald L.; and Thomas, Mary R., 3,900,619.
Markley, Lowell D., 3,900,509.
McMillan, William J., 3,899,805.
Mitchell, Albertha B.; McKinley, Suzanne V.; and Rakshys, Joseph W., Jr., 3,900,451.
Moore, Carl, 3,900,616.
Oliver, Bruce L.; and Heinemeyer, Ben W., 3,900,550.
Schlosser, James A.; and Trumbull, Walter A., 3,899,913.
Dow Corning Corporation: *See—*
Vincent, Gary A., 3,900,416.
Dowling, Donald J.; and Boyd, John F., to Texaco Inc. Acoustic permeability log utilizing differential travel time measurements. 3,900,826, Cl. 340-15.5TN.
Downing, Noel L., to General Motors Corporation. Turbine engine fuel control. 3,899,879, Cl. 60-39.28R.
Doyle, Robert L.; and Swezy, Montgomery C., to Western Progress, Inc. Signalling device with a sign having provision for spilling of wind and with a support. 3,899,843, Cl. 40-125.00G.
Doyle, Robert O.; Kirsch, Jordan; and Thomis, Wendt, to Super 8 Sound, Inc. Synchronizer system for a motion picture sound recorder. 3,900,251, Cl. 352-12.000.
Draft Meter Corporation: *See—*
Paranto, Archie V., 3,900,136.
Drawert, Manfred; Griebisch, Eugen; Krieger, Bernhard; Schepp, Horst; and Burba, Christian, to Schering Aktiengesellschaft. Polyesteramide resin. 3,900,436, Cl. 260-18.00N.
Drayer, Dennis E.: *See—*
Kersch, Keith M.; Pouska, George A.; Drayer, Dennis E.; and Tackett, James E., Jr., 3,900,041.
Merrill, La Vaun S., Jr.; Drayer, Dennis E.; Gogarty, William B.; and Pouska, George A., 3,900,391.
Dresser Industries, Inc.: *See—*
Giardini, Virgil Victor; and Bisker, Richard Gordon, 3,900,056.
Wyant, Reece E., 3,899,833.
Drouven, Gustav: *See—*
Hoppe, Peter; Drouven, Gustav; Wandel, Martin; Gutschik, Ernst; and Brokmeier, Dieter, 3,900,651.
Drozdov, Anatoly Sergeevich: *See—*
Tjutjunnikov, Anatoly Borisovich; Tjutjunnikov, Boris Nikanorovich; Marchenko, Alexandr Nikolaevich; Burin, Viktor Leonovich; Bolotin, Josif Mironovich; Drozdov, Anatoly Sergeevich; Koval, Leonid Petrovich; Didenko, Zoya Vasilievna; Ljubushkin, Georgy Vasilievich; Budnik, Jury Mikhailovich; Moskin, Vladimir Dmitrievich; and Bolyanovsky, Dmitry Mikhailovich, 3,900,537.
Du Pont de Nemours, E. I.: *See—*
Jaswal, Iqbal Singh; and Pugi, Kalev, 3,900,450.
Dual Gebruder Steidinger: *See—*
Broghammer, Werner, 3,900,889.
Du Bato, Salvatore J. Inflatable Christmas tree ornament. 3,900,638, Cl. 428-11.000.
Dubs, Paul; Kuntzel, Heiner; and Pesaro, Mario, to Givaudan Corporation. 2-Thietanols and their preparation. 3,900,498, Cl. 260-327.00R.
Duckworth, Clifford. Method of and apparatus for handling web-like material. 3,900,141, Cl. 226-53.000.
Dudko, Daniil Andreevich: *See—*
Paton, Boris Evgenievich; Gusev, Vladimir Alexeevich; Dudko, Daniil Andreevich; Maximovich, Boleslav Ivanovich; and Asoyants, Grigory Bagradovich, 3,900,149.
Dudley, John S., to Dennison Manufacturing Company. Label printer. 3,899,971, Cl. 101-292.000.
Dudley, Michael Alan: *See—*
Bayles, Francis Derrick; Dudley, Michael Alan; and Metzler, John C., 3,900,701.
Duennenberger, Max: *See—*
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Duffy, Thomas E.: *See—*
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Duggan, Robert J.: *See—*
Casey, Richard C.; Duggan, Robert J.; Grosky, Stephen A.; Jen, Dixon Teh-Chao; Serra, John J.; Whitehead, Donald Shaffer; and Boyce, Thomas E., 3,900,834.
Dulux Australia Ltd.: *See—*
Lubbock, Frederick John; and Polgar, Livia, 3,900,336.
Dunbar, Joseph E.; and Rogers, Joan H., to Dow Chemical Company. The. Phenylene and xylene bis(aminocarbotriothioates). 3,900,471, Cl. 260-246.00B.
Dunham, William S.: *See—*
Bock, Joseph J.; and Dunham, William S., 3,900,868.

- Dunn, James L., Jr., to Dow Chemical Company. The. Process for treating wood. 3,900,615, Cl. 427-317.000.
Dunston, Frank. Cable ladder fire escape. 3,900,081, Cl. 182-73.000.
du Pont de Nemours, E. I., and Company: *See—*
Alderson, Thomas, 3,900,676.
Deyrup, Alden J., 3,900,689.
Ikeda, Richard Masayoshi; and Michel, Rudolph Henry, 3,900,670.
Jackson, Harold Leonard, 3,900,287.
Marcus, Sanford Morton; and Patterson, Frank Knowles, 3,900,432.
Stinger, Henry Joseph, 3,900,654.
Takeshita, Tsuneichi, 3,900,379.
van Gulick, Norman Martin, 3,900,447.
Woodell, Rudolph, 3,900,631.
Yuan, Edward L., 3,900,662.
Durham, Roger Owen. Chain retention device for elliptical sprockets. 3,899,932, Cl. 74-243.0NC.
Durling, Harold, to Midland-Ross Corporation. Pneumatic brake system incorporating a double check valve. 3,900,230, Cl. 303-84.00A.
Dutton-Lainson Company: *See—*
Brockelsby, Norman D., 3,900,214.
Dvorak, Jim. Bar shear. 3,899,950, Cl. 83-588.000.
Dworski, Michael. Fish lure. 3,899,847, Cl. 43-42.090.
Dynamics Research Corporation: *See—*
Bakewell, Joseph J., 3,900,359.
Dyott, Richard Burnaby; and Stewart, John Hill, to Post Office, The. Coupler for liquid core optical waveguides. 3,900,245, Cl. 350-96.00C.
E. R. A. Patents Limited: *See—*
Bowkley, Ian G.; and Goff, Nigel J., 3,900,773.
E. R. Squibb & Sons, Inc.: *See—*
Krapcho, John, 3,900,478.
Eastman Kodak Company: *See—*
Parsons, William F.; Blair, Gerald E.; and Maier, Clarence C., 3,900,328.
Robertson, Jeffrey C., 3,900,169.
Zannucci, Joseph S.; and Lappin, Gerald R., 3,900,442.
Easton, Walter C. Shank head for drop spindle. 3,899,869, Cl. 57-37.000.
Eaton Corporation: *See—*
Houseman, Henry J.; and Skulley, Gerald W., 3,900,831.
Klein, Richard Edward, 3,899,924.
Ebina, Setsuo: *See—*
Makishima, Hiroshi; Shinohara, Toshio; Kawahara, Yukio; Nii, Hiroshi; and Ebina, Setsuo, 3,900,630.
Eckerstrom, Gunnar Sten Gustav Birger; and Eriksson, Sven Willner, to AB Bofors. Guidance system for an anti-aircraft missile. 3,900,175, Cl. 244-3.130.
Eder, Bernhard: *See—*
Gluck, Maternus; Eder, Bernhard; and Kriegner, Walter, 3,899,850.
Edgewater Corporation: *See—*
Huchette, Paul V.; and Hall, Homer H., Jr., 3,900,357.
Edwards, John Wilmar; and Farrant, Barry William, to Imperial Chemical Industries Limited. Method of forming a fluorocarbon polymer containing coating on a substrate. 3,900,684, Cl. 428-421.000.
Effinger, Cecil S. Paper guide and support for free platen typewriter. 3,900,098, Cl. 197-127.00R.
Eguchi, Osamaru: *See—*
Fukai, Masakazu; Fujiwara, Shinji; Serizawa, Hiroyuki; Eguchi, Osamaru; Kuramoto, Yukimasa; and Chikamura, Takao, 3,900,882.
Ehara, Toshiyasu: *See—*
Takahashi, Toshio; Tagaya, Ryosaku; and Ehara, Toshiyasu, 3,900,266.
Ehrlich, Don E., to TRW Inc. Stud feeder for stud welding tools. 3,900,131, Cl. 221-169.000.
Eibner, Jules A., to Sperry Rand Corporation. Speed tolerant recording and recovery system. 3,900,890, Cl. 360-73.000.
Eisai Co., Ltd.: *See—*
Takahashi, Toshio; Tagaya, Ryosaku; and Ehara, Toshiyasu, 3,900,266.
Ekstedt, Edward E., to General Electric Company. Combustor systems. 3,899,884, Cl. 60-39.74R.
Electricity Council, The: *See—*
Copey, Mervyn John; and Wilby, Brian Hanson, 3,900,376.
Electronique Marcel Dassault: *See—*
Bouvier, Pierre; and Schumperli, Max, 3,900,873.
Eller, Saul A.: *See—*
Chatten, Clarence K.; Eller, Saul A.; Folb, Reece; and Brisbane, Arthur P., 3,899,991.
Elmgren, Staffan; and Svensson, Lennart, to Allmanna Svenska Elektriska Aktiebolaget. Equipment for treating materials at high temperature and at high pressure. 3,900,189, Cl. 266-5.00E.
Eltra Corporation: *See—*
Seike, Helmut K., 3,900,784.
Emerson Electric Co.: *See—*
Roddy, Joseph T.; and Begley, Russell D., 3,900,234.
Emmel, Ludwig: *See—*
Horlein, Gerhard; Salbeck, Gerhard; and Emmel, Ludwig, 3,900,499.
Emoto, Takeo: *See—*
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Empisal Knitmaster Luxembourg S.A.: *See—*
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Endo, Takaya: *See—*
Fujimatsu, Wataru; Sato, Shui; Kojima, Tamotsu; Endo, Takaya; and Minahara, Kazumi, 3,900,483.
Endres, Dan D.; and Lafond, Esther M., to Kimberly-Clark Corporation. Disposable diaper with reinforced waistband and tape attachment means. 3,900,031, Cl. 128-287.000.
Enei, Hitoshi; Sato, Katsuki; Anzai, Yasuo; and Okada, Hiroshi, to Ajinomoto Co., Inc. Fermentative production of riboflavine. 3,900,368, Cl. 195-96.000.
Engel, James F.: *See—*
Chappelow, Cecil C., Jr.; and Engel, James F., 3,900,514.
Enns, Kurt; Byerley, John J.; and Beingsner, Clare J. Reduction of toxicity of aqueous solutions. 3,900,377, Cl. 204-149.000.
Entreprise d'Equipements Mecaniques et Hydrauliques E.M.H.: *See—*
Lecomte, Claude, 3,899,990.
Entzmann, Karl: *See—*
Zukriegel, Hans; and Schrom, Eike Karl, 3,900,348.
Environmental Instruments, Inc.: *See—*
Djorup, Robert S., 3,900,819.
Eppich, Alfred: *See—*
Kluge, Karl-Heinz; and Eppich, Alfred, 3,900,643.
Era, Akio; and Emoto, Takeo, to Mitsui Mining & Smelting Co., Ltd. Method for continuous production of electrolytic manganese dioxide. 3,900,385, Cl. 204-96.000.
Eriksson, Sven Willner: *See—*
Eckerstrom, Gunnar Sten Gustav Birger; and Eriksson, Sven Willner, 3,900,175.
Erkens, Andreas: *See—*
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Ernst Leitz G.m.b.H.: *See—*
Heitmann, Knut; and Schneider, Eckart, 3,900,264.
Escher Wyss GmbH: *See—*
Christ, Alfred; Tognola, Sergio; and Lehmann, Rolf, 3,899,999.
Essmann, Carl J. Writing implement for persons with greatly impaired or lost eyesight. 3,899,839, Cl. 35-38.000.
Ethyl Corporation: *See—*
Lee, Thomas E.; and Laurent, Sebastian M., 3,900,415.
Malec, Robert E., 3,900,410.
Etud S.A.: *See—*
Tanguy, Pierre J., 3,899,961.
Evans, Brian Edward, to Wiggins Teape Research & Development Limited. Capsule-carrying sheets or webs. 3,900,671, Cl. 428-323.000.
Everett, Robert A. Aircraft. 3,900,176, Cl. 244-6.000.
Ewing, Marlin B. Trailer hitch. 3,900,212, Cl. 280-406.00A.
Exxon Nuclear Company, Inc.: *See—*
Gehri, Aime, 3,900,116.
Exxon Research and Engineering Company: *See—*
Lyons, Richard K., 3,900,554.
Riley, Kenneth L.; and Sawyer, Willard H., 3,900,427.
F. Bender Limited: *See—*
Lawrence, John Charles, 3,899,975.
Fabbria Italiana Magneti Marelli S.p.A.: *See—*
Vignozzi, Pietro; and Cerioli, Paolo, 3,900,013.
Fairchild, James Logan, to Kerr-McGee Chemical Corporation. Automatic control of crystal size distribution. 3,900,292, Cl. 23-273.00R.
Falkenberg, Dieter: *See—*
Rittmayer, Gerhard; Renner, Theodor; Grubmuller, Georg; and Falkenberg, Dieter, 3,900,603.
Faltin, Hans G., to Advance Enterprises, Inc. Auxiliary trim-out unit for printed webs. 3,899,947, Cl. 83-113.000.
Farley, David Elmer: *See—*
Rumpf, Regis Robert; Farley, David Elmer; and Guilbault, Lawrence James, 3,900,338.
Farooq, Saleem: *See—*
Karrer, Friedrich; and Farooq, Saleem, 3,900,507.
Farr, Glyn Phillip Reginald, to Girling Limited. Improvements in hydraulically and mechanically actuable brake systems with automatic adjusters. 3,900,084, Cl. 188-196.00F.
Farrant, Barry William: *See—*
Edwards, John Wilmar; and Farrant, Barry William, 3,900,684.
Fattore, Vittorio; Moreschini, Paolo; and Notari, Bruno, to Snam Progetti S.p.A. Catalysts for the oxidation of olefines. 3,900,426, Cl. 252-439.000.
Federico, Arthur. Pastry baking apparatus. 3,899,962, Cl. 99-447.000.
Feitzinger, Eduard: *See—*
Bennett, Frank Prescott; and Feitzinger, Eduard, 3,900,862.
Feldstein, Nathan, to RCA Corporation. Method of electroless plating. 3,900,599, Cl. 427-97.000.
Fels, Harlan H.: *See—*
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Ferguson, Alan Norman, to Minnesota Mining and Manufacturing Company. Silver halide emulsion containing aromatic azocarbonamide antifog agent. 3,900,321, Cl. 96-76.00R.
Ferma-Gro Corporation: *See—*
Peer, Herbert R., 3,900,572.
Ferranti Limited: *See—*
Tickle, John Edward, 3,900,703.
Ferrari, Giorgio; and Casagrande, Cesare. Ocotea alkaloid for relief of anxiety. 3,900,564, Cl. 424-258.000.
Ferrell, Wesley: *See—*
Neville, James J.; Ferrell, Wesley; and Shichman, Daniel, 3,900,062.
Ferriss, Lincoln S., to Singer Company. The. Gyro pickoff apparatus to sense deviations of a vehicle axis from a gyro spin axis. 3,900,843, Cl. 340-347.0AD.

Ferro Corporation: *See—*
Brueggemann, Walter H.; and Gilhart, Jack S., 3,900,306.
Fetzek, Richard J. Pull out table for attachment beneath an automobile dashboard. 3,899,982, Cl. 108-25,000.
Filipin, Nikolai Andreevich; Alexander, Jury Vladimirovich; Podubny, Jury Alexandrovich; Mozhzhukhin, Valentin Sergeevich; and Neugodov, Petr Petrovich. Method for washing a vessel in a hermetically closed chamber. 3,900,339, Cl. 134-22,00R.
Filippov, Vyacheslav Ivanovich: *See—*
Somov, Boris Stepanovich; Mamin, Alexandr Ilich; Novikov, Andrei Porfirievich; Filippov, Vyacheslav Ivanovich; Khirdzhiev, Sergei Grigorievich; Gurevich, Vladimir Zakharovich; Voronov, Nikolai Stefanovich; and Agafonov, Ivan Fedorovich, 3,899,908.
Fink, Richard H., to Campbell Chain Company. Coupling link for chain and the like. 3,899,873, Cl. 59-85,000.
Finn Equipment Company, The: *See—*
Keyes, Richard E.; and Justice, Neil, 3,899,984.
Firmenich & Cie: *See—*
Winter, Max; Gautschi, Fritz; Flament, Ivon; Stoll, Max; and Goldman, Irving M., 3,900,581.
Winter, Max; Gautschi, Fritz; Flament, Ivon; Stoll, Max; and Goldman, Irving M., 3,900,582.
Fisher, Donald J., to Xerox Corporation. Non-filming dual additive developer. 3,900,588, Cl. 427-19,000.
Fix, Sidney R., to Goodyear Tire & Rubber Company, The. Cord for extensible belt. 3,900,680, Cl. 428-378,000.
Flament, Ivon: *See—*
Winter, Max; Gautschi, Fritz; Flament, Ivon; Stoll, Max; and Goldman, Irving M., 3,900,581.
Winter, Max; Gautschi, Fritz; Flament, Ivon; Stoll, Max; and Goldman, Irving M., 3,900,582.
Flanigan, Eugene E.; Heintzelman, Quinton L.; and Ricketts, James M., to General Motors Corporation. Gas turbine engine power shift transmission power train. 3,899,877, Cl. 60-39,140.
Fleischer, Wolfgang; and Knuth, Kurt, to Licentia Patent-Verwaltungs-G.m.b.H. Wireless remote operation of an RF receiver. 3,900,880, Cl. 343-228,000.
Florig, Albert J., to Florig Equipment Company, Inc. Hopper closure assembly. 3,899,980, Cl. 105-299,000.
Florig Equipment Company, Inc.: *See—*
Florig, Albert J., 3,899,980.
Flumm, Paul T.; and Harris, Vernon B., to Robertshaw Controls Company. Digital timer and time indicator drums therefor. 3,899,872, Cl. 58-125,00C.
FMC Corporation: *See—*
Koch, Walter T.; and Horsky, Eugene G., 3,900,356.
Nack, Michael R.; and Crawford, Donald C., 3,900,096.
Foin, Owen F., Jr.; and Mile, Frank P., to United States of America, Navy. Electronic counter-countermeasures system for employment against enemy jamming. 3,900,870, Cl. 343-7,00A.
Folb, Reece: *See—*
Chatten, Clarence K.; Eller, Saul A.; Folb, Reece; and Brisbane, Arthur P., 3,899,991.
Foley, Kevin M.: *See—*
Bell, Reuben H.; and Foley, Kevin M., 3,900,506.
Food Research & Equipment Co.: *See—*
Boggs, Weldon C., 3,900,580.
Forbes Jones, Robin Mackay, to International Nickel Company, Inc., The. Castable nickel-chromium stainless steel. 3,900,316, Cl. 75-128,00A.
Ford Motor Company: *See—*
Boerger, David H.; and Krugler, Allen D., Jr.; and Willoughby, Donald A., 3,899,897.
Mercer, Nelson M., Jr., 3,899,922.
Muller, George H., 3,900,222.
Fouche, Glynn E., Jr.: *See—*
Stanley, Leonard A.; and Fouche, Glynn E., Jr., 3,899,810.
Fouts, Robert E. Angle adaptor fitting. 3,900,221, Cl. 285-276,000.
Fowler, Oliver W., to Brown & Root, Inc. Method and apparatus for laying pipelines. 3,900,146, Cl. 228-103,000.
Fox Industries: *See—*
Barber, Dennis G., 3,900,677.
Fraiture, Luc F., to Organisation Europeenne de Recherches Spatiales. Attitude measurement system for satellite. 3,899,928, Cl. 73-178,00R.
Francardi, Mario Tullo, to Italcementi S.p.A. Fabbriche Riunite Cemento. Apparatus for determining the point of colour change in volumetric chemical analyses. 3,900,291, Cl. 23-253,00R.
Frank Speno Railroad Ballast Cleaning Company, Inc.: *See—*
Speno, Martin J.; and Bruno, Anthony T., 3,900,392.
Franz, Helmut; and Lecocq, David E., to PPG Industries, Inc. Treatment of thin metallic films for increased durability. 3,900,601, Cl. 427-108,000.
Frasch, Peter U.: *See—*
Beck, Wolfgang; Brunner, Friedrich C.; Frasc, Peter U.; Ivancic, Blanka; Schwerdt, Friedrich W.; and Vogtmann, Theodor, 3,900,337.
Frase, Roland J.: *See—*
Johnson, Otto E.; Frase, Roland J.; and Treptow, Ernest G., 3,900,201.
Fraser, Lawrence J.; and Parker, Delmer G., to Xerox Corporation. Developing apparatus. 3,900,001, Cl. 118-637,000.
Frazee, Ermal C.: *See—*
Brown, Omar L., 3,900,128.
Frechling, Hank. Toolpost structure. 3,899,944, Cl. 82-36,000.

Freck, James A.; O'Rell, Dale H.; and Kondrot, Leonard V., to American Maize Products Company. Process for making retort stable simulated meat products. 3,900,573, Cl. 426-274,000.
Fred Storm Industrial Designs, Inc.: *See—*
Storm, Fred K.; and Smiley, Eldridge H., 3,899,829.
Freese, Robert W.; Lekebusch, Ronald C.; and Ulickas, Paul W., to GTE Sylvaia Incorporated. High intensity metal arc discharge lamp. 3,900,761, Cl. 315-60,000.
Frey, J. Richard: *See—*
Barclay, Francis W.; Frey, J. Richard; Wilson, James N.; and Besant, Robert W., 3,900,365.
Frick, Hughie R.: *See—*
Anderson, Richard W.; and Frick, Hughie R., 3,900,380.
Friedemann, Wolfgang: *See—*
Germescheid, Hans Gunther; Friedemann, Wolfgang; and Geisler, Roland, 3,900,370.
Friedman, Seymour Jack, to O.M.I. Corporation of America. Apparatus and method for optical annotation of orthophotographs. 3,900,859, Cl. 354-109,000.
Friedsam, Josef: *See—*
Herzhoff, Peter; Gref, Hans; Maus, Fritz; Platz, Stephan; Friedsam, Josef; Schweicher, Wolfgang; Behr, Rolf; Wasser, Willi; and Browatzki, Kurt, 3,900,326.
Friestad, Isak Andreas, to Norsk Hydro A.S. Means for feeding fluid materials to a prilling bucket. 3,900,164, Cl. 239-222,000.
Fritsch, Werner: *See—*
Radscheit, Kurt; Stache, Ulrich; Fritsch, Werner; and Haede, Werner, 3,900,502.
Froberg, Robert W.: *See—*
Robba, William A.; and Froberg, Robert W., 3,900,540.
Froumajou, Armand, to Automobiles Peugeot; and Regie Nationale des Usines Renault. Control device for a gearbox of a vehicle. 3,899,934, Cl. 74-471,0XY.
Fry, William Lawrence, to Rist's Wires & Cables Limited. Wiring harness. 3,900,241, Cl. 339-59,00M.
Fuchs, Hermann; and Meininger, Fritz, to Hoechst Aktiengesellschaft. Sulfuric acid ester of 1-aminobenzene-4-(β -hydroxyethyl-sulfone)-2-sulfonic acid, the 4-vinylsulfone compound thereof and a process for their preparation. 3,900,510, Cl. 260-458,000.
Fuchser, Fritz: *See—*
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Hayashi, Takao; and Matsukawa, Hiroharu, 3,900,216.
Hayashi, Takao; Matsukawa, Hiroharu; and Ishige, Sadao, 3,900,217.
Kato, Hajime; and Hayashi, Takao, 3,900,215.
Kiritani, Masataka, 3,900,669.
Miyamoto, Akio; and Matsukawa, Hiroharu, 3,900,218.
Oishi, Yasushi; Hayashi, Jun; and Yoshida, Yoshinobu, 3,900,322.
Tada, Sugihiko; Nishigaki, Yasuo; and Sugiyama, Masatoshi, 3,900,523.
Fuji, Tuneso; and Nakamura, Yukiharu, to Daikin Kogyo Co., Ltd. Polyfluorocarbon article and method for making the same. 3,900,658, Cl. 428-220,000.
Fujimatsu, Wataru; Sato, Shui; Kojima, Tamotsu; Endo, Takaya; and Minahara, Kazumi, to Konishiroku Photo Industry Co., Ltd. γ -(2-[1-H]pyridone)- γ -pivalyl-5-(γ -2,4-di-t-amyl-phenoxybutylamide)-acetanilides and derivatives. 3,900,483, Cl. 260-294,900.
Fujisawa, Kazuo, to Osaka University. Device for observing waveform repeated at high frequency. 3,900,759, Cl. 315-10,000.
Fujitsu Ltd.: *See—*
Andoh, Shizuo; and Nakayama, Norihiko, 3,900,758.
Hamada, Michihiro; Maeda, Youji; and Inoue, Shinichi, 3,900,807.
Tsukada, Kazuo; Sunagawa, Mitsuru; and Kanzaki, Yoshiharu, 3,900,876.
Fujiwara, Shinji: *See—*
Fukai, Masakazu; Fujiwara, Shinji; Serizawa, Hiroyuki; Eguchi, Osamaru; Kuramoto, Yukimasa; and Chikamura, Takao, 3,900,882.
Fukai, Masakazu; Fujiwara, Shinji; Serizawa, Hiroyuki; Eguchi, Osamaru; Kuramoto, Yukimasa; and Chikamura, Takao, to Matsushita Electric Industrial Co., Ltd. Photoconductor element. 3,900,882, Cl. 357-30,000.
Fukao, Satoshi, to Brother Kogyo Kabushiki Kaisha. Keyboard switch arrangement. 3,900,712, Cl. 200-307,000.
Fukuma, Noboru: *See—*
Aishima, Itsuho; Fukuma, Noboru; Sakura, Hisaya; Chayamiti, Hiroshi; Okamoto, Toshio; Doi, Yuzuru; and Henmi, Hiroshi, 3,900,678.
Fukunaga, Yoshiaki: *See—*
Morimoto, Toshio; and Fukunaga, Yoshiaki, 3,900,174.
Fuller, Ronald George. Marine steering device. 3,899,992, Cl. 115-42,000.
Funderburk, James O., Jr.; and Vicik, Stephen J., to Union Carbide Corporation. Multilayer shrinkable film for poultry bags. 3,900,635, Cl. 428-213,000.
Furlenmeier, Andre; Lanz, Paul; Quitt, Peter; Vogler, Karl, deceased; by Vogler, Franziska, heir; by Vogler, Niklaus E., heir; and by Vogler, Heinrich, heir, to Hoffmann-La Roche Inc. 6-Acyl derivatives of aminopenicillanic acid. 3,900,464, Cl. 260-239,100.
Furuno, Hiroshi, to Sony Corporation. Gain controlled differential amplifier. 3,900,801, Cl. 330-29,000.
Fusey, Pierre, to Societe Anonyme: Banque pour l'Expansion Industrielle "Banexi". Method of accelerating the biodegradation of petroleum products. 3,900,421, Cl. 252-312,000.

G. D. Societa in Accomandita Semplice di Enzo Seragnoli e Ariosto Seragnoli: *See—*
Seragnoli, Ariosto, deceased; and Romano, Elazar, legal representative, 3,899,863.
Gadsby, William, to Kanrich, Nathaniel G. Peaked roof structure of polyurethane molded building panels with integral, bonded, low-density urethane insulation backing. 3,899,855, Cl. 52-90,000.
GAF Corporation: *See—*
Barabas, Eugene S.; and Smolin, Edwin M., 3,900,663.
Bennett, Frank Prescott; and Feitzinger, Eduard, 3,900,862.
Chang, Charles H., 3,900,472.
Gallen, Thomas J. Apparatus for spray coating articles. 3,900,000, Cl. 118-630,000.
Gallman, Otice. Decorative stud setting tool. 3,900,143, Cl. 227-109,000.
Galmiche, Philippe Marie; and Hivert, Andre, to Office National d'Etudes et de Recherches Aerospatiales (O.N.E.R.A.). Production of surface diffusion alloys. 3,900,613, Cl. 427-237,000.
Galperin, Alexandr Lvovich: *See—*
Zabotin, Alexandr Alexandrovich; Onikov, Eduard Arshakovich; Galperin, Alexandr Lvovich; Loschilin, Evgeny Dmitrievich; Lileev, Valerian Petrovich; German, Roman Anatolievich; Rutkevich, Zinoviy Yakovlevich; and Sakharov, Boris Alexandrovich, 3,900,049.
Gangal, Mukund D.: *See—*
Banerjee, Bani R.; Gangal, Mukund D.; and Black, Sigmund, 3,899,893.
Garrett, Clyde Barner; and Thayer, William Stansbury, to Koppers Company, Inc. Method and apparatus for accurate die-cutting. 3,899,945, Cl. 83-38,000.
Garrison, Harold Keith: *See—*
White, Allen A.; Garrison, Harold Keith; and Brooks, Dean P., 3,899,966.
Gaston County Dyeing Machine Co.: *See—*
Clifford, Graham F.; and Spurrier, Mack W., 3,899,817.
Gaudet, Fernand W., to Canadian Marconi Company. Protective enclosure. 3,900,700, Cl. 174-16,00R.
Gautschi, Fritz: *See—*
Winter, Max; Gautschi, Fritz; Flament, Ivon; Stoll, Max; and Goldman, Irving M., 3,900,581.
Winter, Max; Gautschi, Fritz; Flament, Ivon; Stoll, Max; and Goldman, Irving M., 3,900,582.
Gay, Walter A.; and Tobin, John H., to Olin Corporation. Process for preparing para-fluoroanilines. 3,900,519, Cl. 260-580,000.
Gaylord, Norman G., to Champion International Corporation. Cellulose-polymer composites. 3,900,685, Cl. 428-420,000.
Gehrder Knauf Westdeutsche Gipswerke: *See—*
Knauf, Karl, 3,900,333.
Gee, James E.; and Fels, Harlan H., to Caterpillar Tractor Company. Vehicle for surf zone work. 3,900,077, Cl. 180-9,460.
Gehri, Aime, to Exxon Nuclear Company, Inc. Fuel element shipping shim for nuclear reactor. 3,900,116, Cl. 214-10,50R.
Geisler, Robert L.; Koury, James L.; and Johnston, Arch D., to United States of America, Air Force. Acoustic emission system for solid propellant burn rate measurements. 3,899,919, Cl. 73-35,000.
Geisler, Roland: *See—*
Germescheid, Hans Gunther; Friedemann, Wolfgang; and Geisler, Roland, 3,900,370.
Gendron, Wilfred H., to United States Envelope Company. Continuous form envelopes. 3,900,159, Cl. 229-69,000.
General Dynamics Corporation: *See—*
Mimken, Frederick J., 3,900,797.
General Electric Company: *See—*
Brown, John F., Jr., 3,900,382.
Cooper, Glenn D.; and Bennett, James G., 3,900,445.
Ekstedt, Edward E., 3,899,884.
Grenoble, Maurice E., 3,900,617.
Herzog, Rolfe R.; and Alley, Robert P., 3,900,783.
Johnston, Richard Paul; and Levins, Dave Baer, 3,900,274.
Powers, Robert W., 3,900,381.
Schaefer, Donald L., 3,900,865.
Turner, Charlie B., 3,900,763.
Walters, Robert Bruce, 3,900,681.
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General Mills Chemicals, Inc.: *See—*
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General Motors Corporation: *See—*
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Downing, Noel L., 3,899,879.
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General Tire & Rubber Company, The: *See—*
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Gentet, Pierre: *See—*
Alic, Andre; Carlet, Xavier; Nozeran, Robert; and Gentet, Pierre, 3,900,785.
Gentron Corporation: *See—*
Kaufman, Lance R., 3,900,770.
Georg Fischer Aktiengesellschaft: *See—*
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Geppert, Albrecht: *See—*
Beerwerth, Wolfgang; Geppert, Albrecht; and Schimmer, Rigobert, 3,900,153.
Gerlach, C. Richard: *See—*
Parke, James G.; and Gerlach, C. Richard, 3,900,165.
German, Roman Anatolievich: *See—*
Zabotin, Alexandr Alexandrovich; Onikov, Eduard Arshakovich; Galperin, Alexandr Lvovich; Loschilin, Evgeny Dmitrievich; Lileev, Valerian Petrovich; German, Roman Anatolievich; Rutkevich, Zinoviy Yakovlevich; and Sakharov, Boris Alexandrovich, 3,900,049.
Germescheid, Hans Gunther; Friedemann, Wolfgang; and Geisler, Roland, to Henkel & Cie G.m.b.H. Process for treating aluminum surfaces. 3,900,370, Cl. 204-38,00A.
Gesellschaft fur Kernforschung m.b.H.: *See—*
Class, Gottfried, 3,900,367.
GF Business Equipment, Inc.: *See—*
Goulsh, Gabriel J.; Terlecki, Leo; and Wright, Alan R., 3,900,236.
Giardini, Virgil Victor; and Bisker, Richard Gordon, to Dresser Industries, Inc. Vapor recovery nozzle. 3,900,056, Cl. 141-93,000.
Gibbon, John; Heacock, Burt; Lipnick, Richard; Strenkowski, John; and Tutino, Matthew, to Lockheed Electronics Co., Inc. Computer automated radar terminal system. 3,900,846, Cl. 343-6,00R.
Gibson, David K., to International Business Machines Corporation. Sheet feeding apparatus. 3,900,192, Cl. 271-3,100.
Gilhart, Jack S.: *See—*
Brueggemann, Walter H.; and Gilhart, Jack S., 3,900,306.
Gillette Company, The: *See—*
Curry, Francis Russell; and Clipstone, Colin John, 3,900,636.
Gillette, Deighton D., to Iowa State University Research Foundation, Inc. System for exchanging blood ultrafiltrate. 3,900,398, Cl. 210-196,000.
Gilman, William S.; Jones, John L.; and Rubino, Andrew M., to Armour Pharmaceuticals Company. Basic aluminum systems useful as wood-stain reducing agents. 3,900,620, Cl. 427-408,000.
Ginger, Roger D.; and Samour, Carlos M., to Kendall Company, The. Trifluoroalkyl, fluorobenzyl, pentafluorobenzyl, fluorobenzene-sulfonyl, and pentafluorobenzene-sulfonyl theophyllines. 3,900,474, Cl. 260-256,000.
Giori, Gualtiero, to De la Rue Giori S.A. Method of making wiping cylinder of steel engraving printing press. 3,900,595, Cl. 427-55,000.
Girdner, William I.; and Miller, John H., III, to Hewlett-Packard Company. Magnetic read-record head with housing locator structure. 3,900,895, Cl. 360-121,000.
Girling Limited: *See—*
Farr, Glyn Phillip Reginald, 3,900,084.
Harrison, Anthony William, 3,900,085.
Hiscox, Leonard Ramsey, 3,900,228.
Girman, Stephen J., to Lehigh Press, Inc., The. Pop-up carton construction. 3,900,100, Cl. 206-45,130.
Gith, Walter. Device for photoelectrically monitoring dynamic processes. 3,900,730, Cl. 250-206,000.
Giunta, Joseph S.; and Lazzaretti, Louis G., to United States Steel Corporation. Flux feeding method and apparatus. 3,900,065, Cl. 164-273,00R.
Givaudan Corporation: *See—*
Dubs, Paul; Kuntzel, Heiner; and Pesaro, Mario, 3,900,498.
Schenk, Hanspeter; and Sigg-Grutter, Trudi, 3,900,520.
GKN Sankey Limited: *See—*
Hart, Frederick Leslie; and Sharp, Herbert John, 3,900,649.
Glasgow, David G.: *See—*
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Glasurit Werke M. Winkelmann GmbH: *See—*
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Glaxo Laboratories Limited: *See—*
Davis, Benjamin; and Pearce, Derek Roger, 3,900,561.
Underwood, William George Elphinstone; and Long, Alan Gibson, 3,900,487.
Glazebrook, Gerald L., to National Building Industries. Marine panel hanging assembly. 3,899,989, Cl. 114-84,000.
Glenn, William E., Jr.; and Rutherford, Robert E., Jr., to CBS Inc. Electron beam tube having post deflection lens. 3,900,760, Cl. 315-17,000.
Gluck, Maternus; Eder, Bernhard; and Kriegner, Walter, to Semperit AG. Carrier bodies for plants. 3,899,850, Cl. 47-37,000.
Godsey, Frank W., Jr., to Buryan Associates. Magnetic suspension systems for vehicles. 3,899,979, Cl. 104-148,0MS.
Goff, Nigel J.: *See—*
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Gogarty, William B.: *See—*
Merrill, La Vaun S., Jr.; Drayer, Dennis E.; Gogarty, William B.; and Pouska, George A., 3,900,391.
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Bystron, Bruno; Hoerber, W. Gerhard; and Goldammer, Georg, 3,899,949.
Goldman, Irving M.: *See—*
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Goldman, Marvin A.; and Goldman, Jerome N., to Penn-Plax Plastics, Inc. Automatic circulating hatchery. 3,900,004, Cl. 119-3,000.

- Goldsmith, Frank Edward, to Alfa-Laval AB. Milking machine. 3,900,005, Cl. 119-14.410.
- Goodman, David Samuel: *See—*
Anhalt, John William; and Goodman, David Samuel, 3,900,239.
- Goodsite, James R., to Westvaco Corporation. Bathtub package. 3,900,101, Cl. 206-320.000.
- Goodyear Tire & Rubber Company, The: *See—*
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- Fix, Sidney R., 3,900,680.
- Herman, Eugene T.; and McIntosh, Kenneth W., 3,900,280.
- Gordesky, Stanley E.: *See—*
Sim, James S. Y.; Van Horn, Maurice H.; Cohen, Arthur I.; Gordesky, Stanley E.; and Gordon, Stanley I., 3,900,559.
- Gordon, Stanley I.: *See—*
Sim, James S. Y.; Van Horn, Maurice H.; Cohen, Arthur I.; Gordesky, Stanley E.; and Gordon, Stanley I., 3,900,559.
- Gotaverken Angteknik AB: *See—*
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- Goto, Hideyuki; Morishita, Shoji; and Usami, Takashi. Paper currency dispensing envelope. 3,900,160, Cl. 229-71.000.
- Goto, Toshiro; and Nishino, Yoshinori, to Hitachi Shipbuilding and Engineering Co. Ltd. Method of internally winding reinforcing material and of producing reinforced synthetic pipe. 3,900,355, Cl. 156-74.000.
- Goulash, Gabriel J.; Terlecki, Leo; and Wright, Alan R., to GF Business Equipment, Inc. File interlock. 3,900,236, Cl. 312-217.000.
- Grabner, Andreas; and Horst, Claus, to Niro-Plan AG. Offsetting machine for cleaning containers. 3,900,040, Cl. 134-127.000.
- Grant, Charles P., Jr.: *See—*
Cochran, Michael J.; and Grant, Charles P., Jr., 3,900,722.
- Grant, Frederic F.: *See—*
Westover, Dwight G.; and Grant, Frederic F., 3,900,191.
- Grant, Leon E.: *See—*
Oliver, Haven D.; Burke, Richard K.; Dobson, Herbert, Jr.; and Grant, Leon E., 3,900,401.
- Gravel, Charles L.: *See—*
Kurtz, Anthony D.; Brosh, Amnon; Gravel, Charles L.; and Malon, Joseph R., 3,900,811.
- Greaser, Sheridan H.; and Russell, Edwin T., to Union Carbide Corporation. Galvanic cell structures employing coiled electrodes. 3,900,340, Cl. 136-13.000.
- Great Canadian Oil Sands Limited: *See—*
Baillie, Robert A., 3,900,389.
- Greco, Nicholas P., to Koppers Company, Inc. Production of catechol. 3,900,522, Cl. 260-621.00H.
- Green, Raymond G.: *See—*
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- Greening, Donald J., deceased: *See—*
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- Greening, Dorothy, executrix: *See—*
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- Gref, Hans: *See—*
Herzhoff, Peter; Gref, Hans; Maus, Fritz; Platz, Stephan; Friedsam, Josef; Schweicher, Wolfgang; Behr, Rolf; Wasser, Willi; and Browatzki, Kurt, 3,900,326.
- Grenier, Aime J., to Texas Instruments Incorporated. Time delay capsule for magnetic circuit breaker. 3,900,810, Cl. 335-239.000.
- Grenoble, Maurice E., to General Electric Company. Method of rendering flexible sheet material non-adherent and article produced thereby. 3,900,617, Cl. 427-387.000.
- Griebsch, Eugen: *See—*
Drawert, Manfred; Griebsch, Eugen; Krieger, Bernhard; Schopp, Horst; and Burba, Christian, 3,900,436.
- Griffith, Glen R.; and Deutsch, Ralph, to Nippon Gakki Seizo Kabushiki Kaisha. Key switch scanning and encoding system. 3,899,951, Cl. 84-1.010.
- Griffith, Huw Bevan: *See—*
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- Griffiths, Donald E.; Kalthoff, Clement H.; and Laenen, Edward G., to International Business Machines Corporation. Rotating-head mandrel with cam surface. 3,900,891, Cl. 360-84.000.
- Griffolyn Company, Inc.: *See—*
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- Griser, Johann Martin; and Blohm, Thomas R., to Richardson-Merrell Inc. Hypoglycemic compositions containing benzhydryllactamide derivatives. 3,900,565, Cl. 424-274.000.
- Grosky, Stephen A.: *See—*
Casey, Richard C.; Duggan, Robert J.; Grosky, Stephen A.; Jen, Dixon Teh-Chao; Serra, John J.; Whitehead, Donald Shaffer; and Boyce, Thomas E., 3,900,834.
- Gross, John H.: *See—*
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- Grossi, Giuseppe: *See—*
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- Grubb, Everett F.; Hagedorn, Erwin C.; and Monks, Joseph R., to Owens-Illinois, Inc. Glass compositions. 3,900,329, Cl. 106-52.000.
- Gruber, Rudolf: *See—*
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- Grubmuller, Georg: *See—*
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- Gruppo Lepetit, S.p.A.: *See—*
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- Cricchio, Renato; and Lancini, Giancarlo, 3,900,465.
- Lancini, Giancarlo; Lazzari, Ettore; and Diena, Alberto, 3,900,567.
- Gschwend, Norbert: *See—*
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- GTE Sylvania Incorporated: *See—*
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- Freese, Robert W.; Lekebusch, Ronald C.; and Ulcickas, Paul W., 3,900,761.
- Marcucci, Rudolph, 3,900,237.
- Richardson, Donald A., 3,900,753.
- Gude, Armin: *See—*
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- Guilbault, Lawrence James: *See—*
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- Gulf & Western Manufacturing Company: *See—*
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- Gunby, Leslie, to PPG Industries, Inc. Method of assembling a bipolar electrode having friction welded conductor/connector means and bipolar electrode formed thereby. 3,900,384, Cl. 204-286.000.
- Gunst, Dennis, to Schwartzman, Morris, a part interest. Inflatable structural component. 3,899,797, Cl. 5-350.000.
- Gupta, Prem Chandra: *See—*
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- Gurevich, Vladimir Zakharovich: *See—*
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- Gusev, Vladimir Alexeevich: *See—*
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- Guthrie, James L.; and Rendulic, Francis J., to W. R. Grace & Co. Photocurable triazine containing polyene-polythiol lacquer composition. 3,900,594, Cl. 427-53.000.
- Gutschik, Ernst: *See—*
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- Haak, Willard J.: *See—*
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- Haas, Friedrich: *See—*
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- Haas, Gerhard J., to General Foods Corporation. Method for preparing expanded dry gels. 3,900,577, Cl. 426-312.000.
- Haberkorn, Klaus, to Zellweger, Ltd. Yarn clamping device. 3,899,809, Cl. 28-64.000.
- Habermeier, Jürgen; Batzer, Hans; and Porret, Daniel, to Ciba-Geigy Corporation. Polyglycidyl compounds containing N-heterocyclic structure. 3,900,493, Cl. 260-309.500.
- Haden, Elard L., to Continental Oil Company. Method and apparatus for continual compilation of a well data log. 3,899,926, Cl. 73-153.000.
- Haede, Werner: *See—*
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- Hagedorn, Erwin C.: *See—*
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- Hagerty, John P., to Hagerty Research and Development Co., Inc. Electro-magnetic energizer. 3,899,885, Cl. 60-203.000.
- Hagerty Research and Development Co., Inc.: *See—*
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- Haggerty, William Andrew, to Cincinnati Milacron, Inc. Method of electrochemical machining. 3,900,374, Cl. 204-129.500.
- Hague, John M., III: *See—*
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- Hainy, Siegfried: *See—*
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- Hajduk, Thaddeus J.: *See—*
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- Hall, Edward L.; and Philofsky, Elliott M., to Motorola, Inc. Ohmic contacts and method of producing same. 3,900,598, Cl. 427-90.000.
- Hall, Homer H., Jr.: *See—*
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- Hall, Joseph F., Jr. Method for minimizing deviation in optical dispersion systems. 3,900,263, Cl. 356-74.000.
- Hall, Ronald D.: *See—*
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- Halliburton Company: *See—*
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- Hamada, Michihiro; Maeda, Youji; and Inoue, Shinichi, to Fujitsu Ltd. Magnetically controlled switching device. 3,900,807, Cl. 335-152.000.

- Hamalainen, Carl: *See—*
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- Hamamatsu TV Co., Ltd.: *See—*
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- Hambro Forest Products, Inc.: *See—*
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- Hamer, Brian; and Doman, David G., to Kitchens of Sara Lee (Canada) Ltd. Automatic icing machine for cakes. 3,900,054, Cl. 141-1.000.
- Hamilton, Arthur C., to Texcon Limited. Textile cone. 3,900,168, Cl. 242-118.320.
- Hamilton, Haldon L., to Hambro Forest Products, Inc. Fastening machine. 3,900,144, Cl. 227-155.000.
- Hamilton, Ramon D.; and Schneider, William P., to Upjohn Company, The. Extract containing prostaglandins. 3,900,513, Cl. 260-468.00D.
- Hammerschmitt, Peter, to BASF Aktiengesellschaft. System for compensating for temperature variations in a magnetic disc drive. 3,900,782, Cl. 318-634.000.
- Hammond, Vivan Joseph; Norgate, Peter; Onoki, Fumio; Kamiya, Hajime; and Ohno, Kazuaki, to Hoya Lens Co., Ltd. Process for coating an optical material and the resulting product. 3,900,672, Cl. 428-334.000.
- Hampel, Daniel; Prost, Kalman J.; and Scheinberg, Norman R., to United States of America, Navy. Threshold logic using complementary mos devices. 3,900,742, Cl. 307-211.000.
- Hanas, Bertil: *See—*
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- Hanchett, Leland J., to Taplin Business Machines Incorporated. Bar code processing and detecting system. 3,900,832, Cl. 340-146.30Z.
- Hanna, Daniel C. Pit mounted brush assembly. 3,899,799, Cl. 15-21.00D.
- Hanson, Brian A., to Hear-Muffs, Inc. Speaker apparatus. 3,900,707, Cl. 179-156.00R.
- Harbison, William H.: *See—*
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- Harding, Richard John Arthur; and Moss, Colin Roy, to Hawker Siddeley Dynamics Ltd. Cell cooling. 3,899,976, Cl. 102-70.20R.
- Hardwick, David R.; and Coors, George T., to Ledex, Inc. Proportional solenoid. 3,900,822, Cl. 335-268.000.
- Harkki, Seppo Untamo: *See—*
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- Harnau, Hans-Dieter, to Rheinmetall GmbH. Electric propulsive charge igniter. 3,899,974, Cl. 102-46.000.
- Harned, Frederick G., to Continental Can Company, Inc. Trapezoidal container having end-flaps that wedgingly entrap a tray. 3,900,104, Cl. 206-491.000.
- Harnett, Rodney David. Educational apparatus. 3,899,837, Cl. 35-8.00B.
- Harnish, Daniel F.: *See—*
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- Harris, Harry Gordon, Jr.: *See—*
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- Harrison, Anthony William, to Girling Limited. Improvement relating to brake adjusters. 3,900,085, Cl. 188-196.00D.
- Harrison, Earnest R., Jr., to Westinghouse Electric Corporation. Electronic compass system. 3,899,834, Cl. 33-352.000.
- Harrison, Ronnie M.: *See—*
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- Hart, Donald R.: *See—*
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- Hart, Frederick Leslie; and Sharp, Herbert John, to GKN Sankey Limited; and Aro Plastics Development Limited. Moulded articles. 3,900,649, Cl. 428-76.000.
- Hartzler, Harold Eugene: *See—*
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- Harvey, Leslie Augustus: *See—*
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- Hasegawa, Nobuo; Yamashita, Toshio; and Kitamura, Saburo, to Matsushita Electric Industrial Co., Ltd. Photoconductive cell matrix assembly. 3,900,883, Cl. 357-32.000.
- Hatada, Kenji: *See—*
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- Hatsukano, Yoshikazu: *See—*
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- Hatt, Thomas L., to Akzona Incorporated. Carpets and rugs. 3,900,623, Cl. 428-92.000.
- Hattori, Osamu: *See—*
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- Haubner, Georg; Hofer, Walter; and Schmaldienst, Peter, to Robert Bosch G.m.b.H. Capacitor discharge ignition system for an internal combustion engine. 3,900,016, Cl. 123-148.00C.
- Haug, Theobald: *See—*
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- Hausfeld, Brian A., to United States of America, Air Force. Valve system for confined vortex flow system. 3,899,925, Cl. 73-147.000.
- Hauth, Jean-Marc Laurent, to Pont-a-Mousson A.G. Self-releasing brake device. 3,900,083, Cl. 188-72.200.
- Hawker Siddeley Dynamics Ltd.: *See—*
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- Hayao, Shin: *See—*
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- Hayashi, Jun: *See—*
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- Hayashi, Takao; and Matsukawa, Hiroharu, to Fuji Photo Film Co., Ltd. Method for producing clay coated paper for pressure sensitive copying paper. 3,900,216, Cl. 282-27.500.
- Hayashi, Takao; Matsukawa, Hiroharu; and Ishige, Sadao, to Fuji Photo Film Co., Ltd. Pressure-sensitive copying paper. 3,900,217, Cl. 282-27.500.
- Hayashi, Takao: *See—*
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- Hayes, John C., to Universal Oil Products Company. Hydroprocessing of hydrocarbons. 3,900,386, Cl. 208-111.000.
- Haynes, James N., to Hercules Incorporated. Azidoformates and their use. 3,900,683, Cl. 428-409.000.
- Heacock, Burt: *See—*
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- Hear-Muffs, Inc.: *See—*
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- Heikkila, Risto Markus: *See—*
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- Heitmann, Knut; and Schneider, Eckart, to Ernst Leitz G.m.b.H. Electro-optical step marker. 3,900,264, Cl. 356-111.000.
- Heller, William C., Jr.: *See—*
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- Hemlab AG: *See—*
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- Hendershot, William B.: *See—*
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- Hendrickson, Paul S.: *See—*
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- Hengelhaupt, Hans-Georg, to Triumph Werke Nurnberg A.G. Type-writer ribbon arrangement. 3,900,099, Cl. 197-159.000.
- Henkel & Cie G.m.b.H.: *See—*
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- Henmi, Hiroshi: *See—*
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- Henry, Allan L., to Stauffer Chemical Company. Bag packing apparatus. 3,900,055, Cl. 141-67.000.
- Heppell, Douglas Fraser, to Raymond Lee Organization, Inc., The, a part interest. Electrically heated plastic pipe. 3,900,047, Cl. 138-33.000.
- Hercules Incorporated: *See—*
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- Haynes, James N., 3,900,683.
- Herzog, Andrew; Layton, Margaret M.; and Rice, Dale W., to Corning Glass Works. Method of producing magnetic metal oxide films bonded to a substrate. 3,900,593, Cl. 427-53.000.
- Herliczek, Siegfried H.: *See—*
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- Herman, Eugene T.; and McIntosh, Kenneth W., to Goodyear Tire & Rubber Company, The. Apparatus for stretching a tubular work piece. 3,900,280, Cl. 425-392.000.
- Hernandez, Antonio Januario. Safe having a concealed compartment. 3,899,983, Cl. 109-54.000.
- Herriott, Donald Richard: *See—*
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- Herrmann, Albert: *See—*
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- Herwig, Walter: *See—*
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- Herzhoff, Peter; Gref, Hans; Maus, Fritz; Platz, Stephan; Friedsam, Josef; Schweicher, Wolfgang; Behr, Rolf; Wasser, Willi; and Browatzki, Kurt, to Agfa-Gevaert Aktiengesellschaft. Process and apparatus for heating up and thermostating solutions of high solids content for coating of web materials at a given temperature and for lowering the viscosity of such solutions which have a structural viscosity. 3,900,326, Cl. 96-114.800.
- Herzog, Rollie R.; and Alley, Robert P., to General Electric Company. Battery charging circuit. 3,900,783, Cl. 320-2.000.

- Hessert, James E.: See—
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- Hessner, Jorgen: See—
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- Hesston Corporation, Inc.: See—
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- Heurten, Olof Torgny. Holder for absorbent pads, such as infants napkins. 3,900,032, Cl. 128-290.00H.
- Hewlett-Packard Company: See—
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- Hilado, Alfonso. Self-locking differential for motor vehicles. 3,899,939, Cl. 74-715.000.
- Hildebrand, Dietrich; Kruckenberger, Winfried; Kuhnel, Werner; Molls, Hans Heinz; and Wolf, Karlheinz, to Bayer Aktiengesellschaft. Process for the dyeing of materials consisting of anion-modified polyacrylonitrile, polyamide and polyester fibres. 3,900,283, Cl. 8-21.00A.
- Hiler, Roy R.; and Hohl, Robert W., to Penco Products Inc. Storage rack. 3,900,111, Cl. 211-177.000.
- Hilfman, Lee, to Universal Oil Products Company. Removal of aromatic impurities. 3,900,388, Cl. 208-143.000.
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- Hinnant, Harris O., to Texaco Inc. Vibrator-type reflection seismic surveying. 3,900,825, Cl. 340-15.5TS.
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- Hirose, Kunio; and Mayeda, Akira, to Sanyo Electric Company, Ltd. Air bearing supported flexible disc device with oppositely rotating stabilization plate. 3,900,893, Cl. 360-99.000.
- Hirs, Gene, to Hydromat Filter Company. Method of and apparatus for filtering. 3,900,395, Cl. 210-80.000.
- Hiscox, Leonard Ramsey, to Girling Limited. Wheel slide protection system. 3,900,228, Cl. 303-21.0CC.
- Hitachi, Ltd.: See—
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- Hitachi Shipbuilding and Engineering Co. Ltd.: See—
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- Hitomi, Nobuteru: See—
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- Hoechst Aktiengesellschaft: See—
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- Hoffmann-La Roche Inc.: See—
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- Hohne, Karl; and Bogusch, Renate, to Siemens Aktiengesellschaft. Silver catalyst and a method of its manufacture. 3,900,342, Cl. 136-120.0FC.
- Holcombe, Gordon B. Hand held device for activating a chemiluminescent wand. 3,900,728, Cl. 240-52.00R.
- Holdsworth, Robert S.; O'Neill, Gerald J.; Simons, Charles W.; and DiBasio, Vincent L., to W. R. Grace & Co. 1-Chloro-1-methyl-2,2,3,3-tetrafluorocyclobutane for general inhalation anesthetic. 3,900,568, Cl. 424-352.000.
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- Holland, William P.; Azud, Robert E.; and Koller, Thomas J., to Machlett Laboratories, Inc., The. Rotating anode x-ray tube. 3,900,751, Cl. 313-60.000.
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- Honeywell Inc.: See—
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- Hoppe, Peter; Drouven, Gustav; Wandel, Martin; Gutschik, Ernst; and Brokmeier, Dieter, to Bayer Aktiengesellschaft. Heavy duty sandwich element. 3,900,651, Cl. 428-86.000.
- Hoppmann Corporation: See—
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- Hoppmann, Kurt H., to Hoppmann Corporation. Rotating method of sorting particulate articles. 3,900,107, Cl. 209-73.000.
- Hoppner, Werner F.; and Shogren, David K., to Xerox Corporation. Exposure apparatus. 3,900,258, Cl. 355-51.000.
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- Horiguchi, Shojiro: See—
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- Horlein, Gerhard; Salbeck, Gerhard; and Emmel, Ludwig, to Hoechst Aktiengesellschaft. (Thio) phosphoric acid and (thio) phosphonic acid esters and amides. 3,900,499, Cl. 260-327.0TH.
- Horstra, Gerard, to N.V. Internationale Octrooi Maatschappij "Octropa". Method and apparatus for determining the degree of platelet aggregation in blood. 3,900,290, Cl. 23-230.00B.
- Horr, Claus: See—
Graber, Andreas; and Horr, Claus, 3,900,040.
- Horwell, Henry George; and Luke, John Anthony, to Brown & Williamson Tobacco Corporation. Tobacco-smoke filters. 3,900,037, Cl. 131-10.000.
- Horsky, Eugene G.: See—
Koch, Walter T.; and Horsky, Eugene G., 3,900,356.
- Hosono, Hiroo: See—
Sugaya, Hiroshi; and Hosono, Hiroo, 3,900,892.
- Houseman, Henry J.; and Skulley, Gerald W., to Eaton Corporation. Operation lamp and steer indicator. 3,900,831, Cl. 340-52.00R.
- Howe, Robert James: See—
Kelso, David Allen; and Howe, Robert James, 3,900,140.

- Howells, Paul W., to Syracuse University Research Corporation. Wind-neutralizing passage. 3,899,960, Cl. 98-32.000.
- Hoya Lens Co., Ltd.: See—
Hammond, Vivan Joseph; Norgate, Peter; Onoki, Fumio; Kamiya, Hajime; and Ohno, Kazuaki, 3,900,672.
- Hoyler, Gerhard: See—
Behn, Reinhard; and Hoyler, Gerhard, 3,900,788.
- Hoyt, Hazen L., III: See—
Bartlett, Fred J.; Bevis, Paul A.; Hoyt, Hazen L., III; and Mercer, Francis T., 3,900,405.
- Huchette, Paul V.; and Hall, Homer H., Jr., to Edgewater Corporation. Composite material springs and manufacture. 3,900,357, Cl. 156-185.000.
- Huckabee, Marvin L.: See—
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- Huddle, Carl F., to Jon Vredevoogd; and Tension Structures Co., part interest to each. Method of erection for a pretensioned membrane structure. 3,899,854, Cl. 52-80.000.
- Hudson, Paul S.: See—
Childs, William V.; Ashe, Benedict H., Jr.; and Hudson, Paul S., 3,900,372.
- Hueppi, Gerhard: See—
Cohen, Noal; De Silva, Wijitha; and Hueppi, Gerhard, 3,900,469.
- Huffman, Herman M.: See—
Swanson, Kenneth B.; and Huffman, Herman M., 3,899,889.
- Hull, R. Dell. Closed face spinning reel. 3,900,167, Cl. 242-84.20A.
- Hulse, Lauren L.: See—
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- Hulsehos, Jan, to Cities Service Oil Company. Process for recovering dissolved copper from solutions containing copper. 3,900,314, Cl. 75-109.000.
- Human Circle, Inc., The: See—
Puinno, Carmen, 3,900,018.
- Humber, Leslie G.: See—
Philipp, Adolf H.; Demerson, Christopher A.; and Humber, Leslie G., 3,900,477.
- Hunt, Harold R.; and Vanderveen, John W., to Phillips Petroleum Company. Apparatus and method for forming pellets. 3,900,547, Cl. 264-117.000.
- Hunter, John C., to Honeywell Information Systems, Inc. Variably addressable semiconductor mass memory. 3,900,837, Cl. 340-173.00R.
- Hunter, Willard L.: See—
Tress, Jack E.; and Hunter, Willard L., 3,900,696.
- Hunter, Willard L.; White, Jack C.; and Stickney, William A., to United States of America, Interior. Preparation of highly pure titanium tetrachloride from perovskite or titanite. 3,900,552, Cl. 423-76.000.
- Hunyar, Csaba K., to United Artists Music and Records Group, Inc. Phonograph record profile tracer. 3,899,832, Cl. 33-174.00P.
- Huper, Fritz, to Bayer Aktiengesellschaft. Production of 6-aminopenicillanic acid. 3,900,488, Cl. 260-306.70C.
- Hurst, John, to W. R. Grace & Co. Waterproofing means and method. 3,900,102, Cl. 206-411.000.
- Husted, Royce H. Brake control valve including failsafe means for manually pumping brakes of a vehicle. 3,900,229, Cl. 303-52.000.
- Hutz, Hugo. Lamp with tubular bulb and reflector. 3,900,727, Cl. 240-41.35R.
- Hydromat Filter Company: See—
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- Hygrade Foods Inc.: See—
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- Ianney, George: See—
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- Ichimura, Takeo: See—
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- Ichise, Yoshio: See—
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- ICI United States Inc.: See—
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- Idler, Gustav: See—
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- Iffland, Roger L.: See—
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- Ii, Masatake: See—
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- Iijima, Tetsuya, to Nissan Motor Co., Ltd. Change-speed transmission for passenger automobile. 3,899,940, Cl. 74-759.000.
- Iijima, Yasuo, to Matsushita Electric Industrial Co., Ltd. Oil-impregnated capacitor. 3,900,774, Cl. 317-258.000.
- Iizuka, Michio, to Hope Kabushiki Kaisha. Toe fixture for a ski safety binding. 3,900,207, Cl. 280-11.35T.
- Ikeda, Richard Masayoshi; and Michel, Rudolph Henry, to du Pont de Nemours, E. I., and Company. Laminated film structure. 3,900,670, Cl. 428-308.000.
- Illinois Tool Works Inc.: See—
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- Imperial Chemical Industries Limited: See—
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Edwards, John Wilmar; and Farrant, Barry William, 3,900,684.
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- Inagaki, Tatsumi: See—
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- Industrie Pirelli S.p.A.: See—
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- Ing. C. Olivette & C., S.p.A.: See—
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- Ingrip Fasteners, Inc.: See—
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- Inose, Mitsuo, to Japan Patent Center Inc. Stick game set. 3,900,197, Cl. 273-1.00R.
- Inoue, Shinichi: See—
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- Inoue, Shohei; Kanbe, Masaki; Takada, Tadamiichi; Miyazaki, Nobuyuki; and Yokokawa, Masanori, to Nippon Oil Seal Industry Company Limited. Catalyst for copolymerizing epoxy compounds with carbon dioxide. 3,900,424, Cl. 252-428.000.
- Inoue, Tadao; and Nakamura, Takeo, to Hitachi, Ltd. Crane apparatus. 3,900,114, Cl. 212-83.000.
- Intec Corporation: See—
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Beck, Wolfgang; Brunner, Friedrich C.; Frisch, Peter U.; Ivancic, Blanka; Schwerdt, Friedrich W.; and Vogtmann, Theodor, 3,900,337.
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- International Harvester Company: See—
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- International Nickel Company, Inc., The: See—
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- International Paper Company: See—
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- International Research and Development Company Limited: See—
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- International Standard Electric Corporation: See—
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- International Telephone and Telegraph Corporation: See—
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- Intreprinderea Metalul Rosu Cluj: See—
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- Iowa State University Research Foundation, Inc.: See—
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- Irie, Sadanao; Tomomoto, Kenichi; Akahori, Toyohiko; and Simomura, Kazuhisa, to Osaka Gas Company, Ltd.; and Kyushu Refractories Co., Ltd. Coal charging cover and seal for the coal charging hole of a coke oven. 3,900,369, Cl. 202-247.000.
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- Isaacson, Calvin M.: See—
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- Isham, Allan B.; and Shenk, Wilbur, III, to Owens-Corning Fiberglass Corporation. Reinforced thermoplastic pipe. 3,900,048, Cl. 138-144.000.
- Ishige, Sadao: See—
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- Ishikawa, Katsukiyo; and Shibata, Takayuki, to Nippon Paint Co., Ltd. Metallic can glued with synthetic resin product. 3,900,126, Cl. 220-75.000.
- Itakura, Sigeru: See—
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- Itogihan Company, Ltd.: See—
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- Ivani, Edward J., to Rynco Scientific Corporation. Semi-rigid, gas permeable contact lenses. 3,900,250, Cl. 351-160.000.
- Ivey, John S., to Borg-Warner Corporation. One way fluid operated coupling. 3,900,089, Cl. 192-85.0AA.

- Iwasaki, Shozo, to Kabushiki Kaisha Akashi Seisakusho. Dial indicator for sensing surface variations. 3,899,931, Cl. 74-34.000.
- J. G. Anschutz GmbH: See—
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- J. H. Channon, Inc.: See—
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- J. Koehle KG: See—
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- J & S Aluminum Inc.: See—
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- Jackson, George Edward, to Union Carbide Corporation. Warp knitted garments and apparatus and method for making the same. 3,899,900, Cl. 66-87.000.
- Jackson, Harold Leonard, to du Pont de Nemours, E. I., and Company. Exhaust disperse dyeing of synthetic polymers utilizing a saturated liquid fluorocarbon. 3,900,287, Cl. 8-174.000.
- Jackson, Larry L. Centrifugal auto-priming pump. 3,900,273, Cl. 415-88.000.
- Jackson, Peter Woodall: See—
Chadwick, Michael Dickenson; Jackson, Peter Woodall; and Brown, Derek James, 3,900,148.
- Jacobson, Amnon. Solution comprising a lacrymator. 3,900,560, Cl. 424-45.000.
- Jacoby, Henry C.: See—
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- Jahn, Helmut, to Hoechst Aktiengesellschaft. Corona discharge apparatus. 3,900,735, Cl. 250-324.000.
- Jakob, Hans, to Maschinenfabrik Goebel, GmbH. Adjustment arrangement for circular slitting knives. 3,899,948, Cl. 83-497.000.
- James, Alec Patrick, to National Research Development Corporation. Ticket issuing and collection systems. 3,900,715, Cl. 235-61.70R.
- Janson, Thomas R.: See—
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- Japan Patent Center Inc.: See—
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- Jayne, Laurence I.; and Magnuson, Roland A., to Pacific Car and Foundry Company. Empty cartridge forward ejection mechanism for rapid fire weapon. 3,899,954, Cl. 89-33.00F.
- Jen, Dixon Teh-Chao: See—
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- Jennewein, Hans-Michael: See—
Konz, Wilhelm; Waldeck, Franz; and Jennewein, Hans-Michael, 3,900,566.
- Jennings, Donald G., to Distribution Supply Corporation. Press for pallet disassembly. 3,899,816, Cl. 29-200.00D.
- Jensen, Garold K., to United States of America, Navy. Radar signal analyzing system. 3,900,869, Cl. 343-7.700.
- Jensen, Garold K.; and McGeogh, James E., to United States of America, Navy. Contiguous filter tracking window for radar. 3,900,871, Cl. 343-8.000.
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- Jiles, Overton Jackson. Transmission control apparatus for a vehicle or the like. 3,899,935, Cl. 74-473.00R.
- Jin, Jung II: See—
Kraft, Paul; and Jin, Jung II, 3,900,455.
- Jinnette, Jimmy Gray. Automatic sequence unit for product feeding to live stock. 3,900,008, Cl. 119-51.130.
- John Laing and Son Limited: See—
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- Johnson, Gordon E.: See—
Lindblad, Nero R.; Johnson, Gordon E.; and Sharp, James H., 3,900,589.
- Johnson, John David. Property boundary marker. 3,899,856, Cl. 52-98.000.
- Johnson, Keith G.; and Limbach, Anthony Paul, to ARCO Polymers, Inc. Method for the continuous extrusion of multiple small cross-section thermoplastic polymeric resinous foam profiles. 3,900,544, Cl. 264-45.500.
- Johnson, Marvin F. L., to Atlantic Richfield Company. Method of determining catalytic activity by measuring the relative reflectance of the catalyst. 3,900,267, Cl. 356-209.000.
- Johnson, Marvin M.; Tabler, Donald C.; and Nowack, Gerhard P., to Phillips Petroleum Company. Selective removal of 1,2 Polyenes and acetylenic compounds from conjugated-diene feed using a nickel, iron or cobalt arsenide catalyst. 3,900,526, Cl. 260-681.500.
- Johnson, Otto E.; Frase, Roland J.; and Treptow, Ernest G., to International Harvester Company. Semi-mounted carrier. 3,900,201, Cl. 280-5.00H.
- Johnson, Wallace J. S., to Up-Right, Inc. Processing of fruit without exposure to air. 3,900,571, Cl. 426-15.000.
- Johnson, William H., to Research Corporation. Modular tobacco handling and curing system and method. 3,899,836, Cl. 34-225.000.
- Johnsson, Berndt-Ola Folke, to Moderna Butiksinredningar AB. Watching mirror. 3,900,243, Cl. 350-6.000.
- Johnston, Arch D.: See—
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- Johnston, Richard Paul; and Levins, Dave Baer, to General Electric Company. Remote controlled actuation system for the rotor of a gas turbine engine. 3,900,274, Cl. 416-155.000.
- Jon Vredevoogd: See—
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- Jones, John L.: See—
Gilman, William S.; Jones, John L.; and Rubino, Andrew M., 3,900,620.
- Jones & Laughlin Steel Corporation: See—
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- Jones, Spencer D.: See—
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- Jordan, Richard James. High voltage pulse generating circuit. 3,900,786, Cl. 321-2.000.
- Josephson, Edgar F., to ACF Industries, Incorporated. Baffled bulk shipment of perishable lading in insulating box cars and refrigerator cars. 3,899,981, Cl. 105-355.000.
- Jourdan-Laforte, Eric, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procédés Georges Claude. Process for generating an oxidizing reagent for the treatment of polluted water. 3,900,555, Cl. 423-365.000.
- Joy Manufacturing Company: See—
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- Judd, Robert R.: See—
Chao, Hung-Chi; Gross, John H.; Judd, Robert R.; and Rueckl, Roger L., 3,900,309.
- Jurny, Josef; and Sedlak, Vaclav, to Adamovske Strajirny, narodni podnik. Apparatus for transferring paper sheets between successive printing units. 3,899,970, Cl. 101-230.000.
- Jurrens, Lawrence D., to Phillips Petroleum Company. Hot melt adhesive containing amorphous polypropylene. 3,900,694, Cl. 428-513.000.
- Justice, Neil: See—
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- JWI Ltd.: See—
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- K A Bergs Smide AB: See—
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- K & H Products, Ltd.: See—
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- Kaasila, Kauko Johannes; Toivanen, Toivo Adrian; Harkki, Seppo Untamo; Neimela, Toivo Isak; Makiirtti, Simo A.; Malmstrom, Rolf E.; Tuominen, Tapio Kalevi; Aaltonen, Olavi August; and Noponen, Veikko H., to Outokumpu Oy. Process for suspension smelting of finely-divided oxide and/or sulfide ores and concentrates. 3,900,310, Cl. 75-23.000.
- Kabas, Guglielmo: See—
Schlapfer, Hans; and Kabas, Guglielmo, 3,900,419.
- Kabushiki Kaisha Akashi Seisakusho: See—
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- Kabushiki Kaisha Suwa Seikosha: See—
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- Kabushiki Kaisha Toyota Chuo Kenkyusho: See—
Komatsu, Noboru; Kamigaito, Osami; Suzuki, Takatoshi; Doi, Haruo; Sano, Kazuya; Yamamoto, Nobuyuki; Kandori, Toshio; and Tsuzuki, Yukikazu, 3,900,429.
- Kajinaga, Yoshihiro: See—
Ito, Shunji; Morioka, Yasuaki; Kajinaga, Yoshihiro; Sakurada, Ichio; and Nitta, Minoru, 3,899,821.
- Kallianos, Andrew G.; Warfield, Albert H.; and Simpson, Melvyn I., to Liggett & Myers Incorporated. 3,5-Disubstituted-2-hydroxyacetophenones. 3,900,521, Cl. 260-592.000.
- Kalthoff, Clement H.: See—
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- Kaman, Charles H.: See—
Bell, C. Gordon; Buzynski, John E.; Kaman, Charles H.; and O'Loughlin, James F., 3,900,835.
- Kamaya, Naoki, to Sony Corporation. Tape cassette. 3,900,172, Cl. 242-198.000.
- Kamigaito, Osami: See—
Komatsu, Noboru; Kamigaito, Osami; Suzuki, Takatoshi; Doi, Haruo; Sano, Kazuya; Yamamoto, Nobuyuki; Kandori, Toshio; and Tsuzuki, Yukikazu, 3,900,429.
- Kamiya, Hajime: See—
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- Kamiyama, Hiromitsu: See—
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Komatsu, Noboru; Kamigaito, Osami; Suzuki, Takatoshi; Doi, Haruo; Sano, Kazuya; Yamamoto, Nobuyuki; Kandori, Toshio; and Tsuzuki, Yukikazu, 3,900,429.
- Kanebo, Ltd.: See—
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- Kaneke, Teruo: See—
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- Kanrich, Nathaniel G.: See—
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- Kanzaki, Yoshiharu: See—
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- Kaplan, Sam H., to Zenith Radio Corporation. Shadow mask and phosphor screen for color cathode ray tube having major axes of apertures and elements canted to beam scan direction. 3,900,757, Cl. 313-402.000.
- Karlen, Urs: See—
Kolliker, Hans Peter; Karlen, Urs; and Hindermann, Peter, 3,900,496.
- Karrer, Friedrich; and Farooq, Saleem, to Ciba-Geigy Corporation. Ether and thioether containing thioesters. 3,900,507, Cl. 260-455.00R.
- Katayama, Yoshifumi; Kotera, Nobuo; Murayama, Yoshimasa; and Yoshida, Isao, to Hitachi, Ltd. Negative resistance device and method of controlling the operation. 3,900,881, Cl. 357-3.000.
- Kato, Hajime; and Hayashi, Takao, to Fuji Photo Film Co., Ltd. Record sheet. 3,900,215, Cl. 282-27.500.
- Kato, Mitsuru: See—
Sato, Akihiro; Takeda, Saburo; Konotsune, Shiro; Kato, Mitsuru; and Tonoike, Takao, 3,900,454.
- Katz, Joseph J.; and Janson, Thomas R., to United States of America, Energy Research and Development Administration. Photochemical stimulation of nerves. 3,900,034, Cl. 128-393.000.
- Kaufman, Benjamin, to Colgate-Palmolive Company. Composition for cleaning and glazing furs. 3,900,407, Cl. 257-8.570.
- Kaufman, Lance R., to Centron Corporation. Electric fence shocker circuit. 3,900,770, Cl. 317-148.50B.
- Kaukeinen, Ralph M., to Corning Glass Works. Filtering extrusion batch material. 3,900,546, Cl. 26-102.000.
- Kawabata, Hidetsugu; Yamashita, Toshio; Uda, Hiroshi; Yoshida, Manabu; and Kitamura, Saburo, to Matsushita Electric Industrial Co., Ltd. Optical static card reader. 3,900,716, Cl. 235-61.11E.
- Kawada, Takehiko, to Denki Onkyo Company, Ltd. Corona discharge apparatus for particle collection. 3,900,766, Cl. 317-3.000.
- Kawahara, Yukio: See—
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- Kawakami, Ken-Ichi; Hatada, Kenji; and Yamaguchi, Yasuhiko, to Toray Industries, Inc. Method for surface treatment of plastics. 3,900,538, Cl. 264-22.000.
- Kawamoto, Tamio: See—
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- Kawamura, Kimihide; and Horiguchi, Shojiro, to Dainichiseika Color & Chemicals Mfg. Co., Ltd. Process for preparing high molecular weight azo pigment. 3,900,459, Cl. 260-157.000.
- Kawasaki Steel Corporation: See—
Ito, Shunji; Morioka, Yasuaki; Kajinaga, Yoshihiro; Sakurada, Ichio; and Nitta, Minoru, 3,899,821.
- Kawashima, Teruaki, to Yoshida Kogyo Kabushiki Kaisha. Slider. 3,899,804, Cl. 24-205.15R.
- Kay, Carl Joseph, to Products Research & Chemical Corporation. Method and composition for repairing asphalt pavement. 3,900,439, Cl. 260-28.5AS.
- Keedwell, Cyril A., to Pall Corporation. Process for preparing integral absorbent pad bandages and product. 3,900,027, Cl. 128-268.000.
- Keeffe, William M.: See—
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- Kehr, Helmut: See—
Hoppe, Gerhard; Leppek, Heinrich; Rensmann, Leo; and Kehr, Helmut, 3,900,361.
- Keiper, Fritz: See—
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- Kellogg, James R. Loading tailgate for trucks. 3,900,118, Cl. 214-84.000.
- Kelly, Paul P.: See—
Tanck, Elinor J.; Hulse, Lauren L.; and Kelly, Paul P., 3,900,414.
- Kelly, William F.; and Anderson, Robert B. Post-tensioned prestressed pile assembly. 3,899,891, Cl. 61-56.000.
- Kelso, David Allen; and Howe, Robert James, to K & H Products, Ltd. Rotatable carrying apparatus for video tape cameras and similar items. 3,900,140, Cl. 224-5.00V.
- Kelson, Gary: See—
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- Kendall Company, The: See—
Ginger, Roger D.; and Samour, Carlos M., 3,900,474.
- Stanley, Leonard A.; and Fouche, Glynn E., Jr., 3,899,810.
- Vida, Julius A.; and Hooker, Mary L., 3,900,475.
- Kennedy, Kurt D.; and Scheuermann, Glen R., to Airco, Inc. Method for coating a substrate to provide a titanium or zirconium nitride or carbide deposit having a hardness gradient which increases outwardly from the substrate. 3,900,592, Cl. 427-39.000.
- Kerr-McGee Chemical Corporation: See—
Fairchild, James Logan, 3,900,292.
- Kerr-McGee Corporation: See—
Chappelow, Cecil C., Jr.; and Engel, James F., 3,900,514.
- Kersch, Keith M.; Pouska, George A.; Drayer, Dennis E.; and Tackett, James E., Jr., to Marathon Oil Company. Modification of particle hardness in waxy crude oil slurries. 3,900,041, Cl. 137-13.000.
- Kessler, Harry T., Jr.: See—
Anderson, Ronald L.; and Kessler, Harry T., Jr., 3,900,036.
- Ketzer, Manfred, to U.S. Philips Corporation. Recording and/or playback apparatus. 3,900,173, Cl. 242-201.000.
- Keyes, Richard E.; and Justice, Neil, to Finn Equipment Company, The. Device generating and directing a flow of combustion supporting gaseous media. 3,899,984, Cl. 110-18.00R.
- Khirdzhiev, Sergei Grigorievich: See—
Somov, Boris Stepanovich; Mamin, Alexandr Ilich; Novikov, Andrei Porfirievich; Filippov, Vyacheslav Ivanovich; Khirdzhiev, Sergei Grigorievich; Gurevich, Vladimir Zakharovich; Voronov, Nikolai Stefanovich; and Agafonov, Ivan Fedorovich, 3,899,908.
- Kiefer, Jurg: See—
Rembold, Heinz; Haug, Theobald; Wyler, Sigfried; and Kiefer, Jurg, 3,900,449.
- Kihara Sangyo Kabushiki Kaisha: See—
Kihara, Sueo, 3,899,798.
- Kihara, Sueo, to Kureha Kagaku Kogyo K.K.; and Kihara Sangyo Kabushiki Kaisha. Method for manufacturing insole for a shoe. 3,899,798, Cl. 12-146.00B.
- Kim, He B., to Westinghouse Electric Corporation. Light-emitting diode which generates light in three dimensions. 3,900,863, Cl. 357-17.000.
- Kimball, John J.: See—
D'Amato, Salvatore F.; Kimball, John J.; and Lednicer, Oliver, 3,900,219.
- Kimberly-Clark Corporation: See—
Endres, Dan D.; and Lafond, Esther M., 3,900,031.
- Robinson, James E., 3,900,632.
- Kimura, Masakazu; Nanamatsu, Satoshi; Doi, Kikuo; and Matsushita, Shigeo, to Nippon Electric Company Limited. Lanthanum titanate single crystal electro-optic modulator. 3,900,246, Cl. 350-150.000.
- King, Henry L.; and McGee, John W., to Monsanto Company. Production of basic dyeable polyester from terephthalic acid. 3,900,527, Cl. 260-75.00S.
- King, Thomas Y., to Armstrong Cork Company. Zinc and molybdenum-containing compounds as smoke depressants for poly(vinyl chloride) resin compositions. 3,900,441, Cl. 260-31.8HA.
- Kingston-Warren Corporation, The: See—
Azzi, Victor D.; and Wyeth, John, 3,900,112.
- Kinsolving, C. Richard, to Richardson-Merrell Inc. Method of measuring histamine release from mast cells. 3,900,558, Cl. 424-8.000.
- Kiritani, Masataka, to Fuji Photo Film Co., Ltd. Pressure-sensitive recording sheet with microcapsules having polyurea walls. 3,900,669, Cl. 428-307.000.
- Kirk, Lawrence J.; and Baldwin, Marshall G., to Colgate-Palmolive Company. Mounting device. 3,900,059, Cl. 150-1.000.
- Kirsch, Jordan: See—
Doyle, Robert O.; Kirsch, Jordan; and Thomis, Wendl, 3,900,251.
- Kisbany, Frederick N. Laboratory wear resistance test machine for tires. 3,899,917, Cl. 73-8.000.
- Kitai, Kiyoshi, to Seiko Koki Kabushiki Kaisha. Clock with dial illumination. 3,899,871, Cl. 58-50.00R.
- Kitamura, Saburo: See—
Hasegawa, Nobuo; Yamashita, Toshio; and Kitamura, Saburo, 3,900,883.
- Kawabata, Hidetsugu; Yamashita, Toshio; Uda, Hiroshi; Yoshida, Manabu; and Kitamura, Saburo, 3,900,716.
- Kitchens of Sara Lee (Canada) Ltd.: See—
Hamer, Brian; and Doman, David G., 3,900,054.
- Kiyono, Tetsuhiro, to Alps Electric Co., Ltd. Electromagnetic driven variable resistance device. 3,900,816, Cl. 338-116.000.
- Kizu, Taisuke: See—
Takahashi, Koichi; Hitomi, Nobuteru; and Kizu, Taisuke, 3,899,898.
- Klapwijk, Dick, to Bouweconomisch en Technologisch Adviesbureau B.V. Method of restoring a wooden beam. 3,900,541, Cl. 264-35.000.
- Kleen, Gerhard; and Herrmann, Albert, to Siemens Aktiengesellschaft. Voltage transformer for completely insulated, metal-clad high-voltage installations. 3,900,791, Cl. 323-93.000.
- Klein, Aaron David: See—
Marriott, Carroll L.; Patzer, Hans E.; Hall, Ronald D.; Caposelli, Charles D.; and Klein, Aaron David, 3,900,353.
- Klein, Richard Edward, to Eaton Corporation. Strain gauge system. 3,899,924, Cl. 73-141.00A.
- Kleiner, Hans-Jerg: See—
Racky, Werner; Kleiner, Hans-Jerg; and Herwig, Walter, 3,900,444.
- Klier, Werner Adolph. Lawn mower. 3,899,866, Cl. 56-13.800.
- Kline, Robert J., to Minnesota Mining and Manufacturing Company. Developed image transfer. 3,900,591, Cl. 427-24.000.
- Kluge, Karl-Heinz; and Eppich, Alfred, to Leopold, F. Xavier. Decalcomania with removable lacquer coating. 3,900,643, Cl. 428-40.000.
- Knapp, Heinrich: See—
Bundesen, Lorenz; Brettschneider, Johannes; and Knapp, Heinrich, 3,900,014.
- Knauf, Karl, to Gebrüder Knauf Westdeutsche Gipswerke. Mortars and the like. 3,900,333, Cl. 106-109.000.
- Knight, Albert E. Adjustable blade and carrying means. 3,900,072, Cl. 172-238.000.
- Knubbe, Keith; Hoeft, Werner H.; and Kelson, Gary, to Signetics Corporation. Integrated frequency selective demodulation circuit. 3,900,821, Cl. 329-122.000.
- Knuth, Kurt: See—
Fleischer, Wolfgang; and Knuth, Kurt, 3,900,880.
- Kobayashi, Toshio; Susa, Kenzo; and Taniguchi, Satoshi, to Hitachi, Ltd. Photoconductive material comprising a solid solution of (Cd,Pb)S. 3,900,431, Cl. 252-501.000.
- Kobelt, Jack R. Engine remote control. 3,900,090, Cl. 192-094.
- Koch, Friedhelm; and Siepermann, Walter. Roll press. 3,899,965, Cl. 100-155.000.
- Koch, Hans Joachim: See—
Thoma, Wilhelm; Noll, Klaus; Pedain, Josef; and Koch, Hans Joachim, 3,900,688.

- Koch, Walter T.; and Horsky, Eugene G., to FMC Corporation. Method for making a cellular cushioning structure. 3,900,356, Cl. 156-145.000.
- Kocks, Friedrich; and Lippert, Hans Joachim, to Kocks, Friedrich. Apparatus for casting hollow ingots. 3,900,067, Cl. 164-332.000.
- Koehle, Joachim, to J. Koehle KG. Fastener means for an article of jewelry. 3,899,802, Cl. 24-73.0HR.
- Koehler, Rudolph: *See—*
Beck, Henry T.; and Koehler, Rudolph, 3,900,278.
- Kohler, Karl, to International Standard Electric Corporation. Elevation measuring device for phase-interferometer aircraft landing system. 3,900,877, Cl. 343-108.00M.
- Kojima, Tamotsu: *See—*
Fujimatsu, Wataru; Sato, Shui; Kojima, Tamotsu; Endo, Takaya; and Minahara, Kazumi, 3,900,483.
- Kolite Semiconductor Products, Inc.: *See—*
Kurtz, Anthony D.; Brosh, Amnon; Gravel, Charles L.; and Mallon, Joseph R., 3,900,811.
- Koller, Thomas J.: *See—*
Holland, William P.; Azud, Robert E.; and Koller, Thomas J., 3,900,751.
- Kolliker, Hans Peter; Karlen, Urs; and Hindermann, Peter, to Ciba-Geigy AG. Anthraquinone dyestuffs. 3,900,496, Cl. 260-326.00C.
- Komatani, Taro; Yamada, Kazuo; Oguri, Eizo; and Tokuda, Yasunori, to Takeda Chemical Industries, Ltd. Process for concentrating a polysaccharide suspension. 3,900,462, Cl. 260-209.00R.
- Komatsu, Noboru; Kamigaito, Osami; Suzuki, Takatoshi; Doi, Haruo; Sano, Kazuya; Yamamoto, Nobuyuki; Kandori, Toshio; and Tsuzuki, Yukikazu, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Catalyst for purifying exhaust gases. 3,900,429, Cl. 252-462.000.
- Komon, John F., to Aqua-Marine Manufacturing Limited. Navigation light for boats. 3,900,725, Cl. 240-7.500.
- Kondratenko, Ivan Yakovlev, to Nipkiep. Starting and regulator device for asynchronous motors with a wound rotor. 3,900,779, Cl. 318-197.000.
- Kondrot, Leonard V.: *See—*
Freck, James A.; O'Rell, Dale H.; and Kondrot, Leonard V., 3,900,573.
- Konersmann, Erhard; and Gruber, Rudolf, to Werkzeugmaschinenfabrik Oerlikon-Bührle AG. Method and apparatus for applying an installation dimension to a bevel gear. 3,900,720, Cl. 235-151.320.
- Konishiroku Photo Industry Co., Ltd.: *See—*
Akimoto, Hideo; and Kamiyama, Hiromitsu, 3,900,740.
- Fujimatsu, Wataru; Sato, Shui; Kojima, Tamotsu; Endo, Takaya; and Minahara, Kazumi, 3,900,483.
- Konon, Jury Alexeevich: *See—*
Apalikov, Jury Ignatievich; Konon, Jury Alexeevich; Pervukhin, Leonid Borisovich; and Tsemakhovich, Boris Davydovich, 3,900,147.
- Konotsune, Shiro: *See—*
Sato, Akihiro; Takeda, Saburo; Konotsune, Shiro; Kato, Mitsuru; and Tonoike, Takao, 3,900,454.
- Konz, Wilhelm; Waldeck, Franz; and Jennewein, Hans-Michael, to Boehringer Ingelheim GmbH. Pharmaceutical compositions containing the tert butyl ester of N-[(1-carboxy-L-prolyl)-oxy]-succinimide and method of use. 3,900,566, Cl. 424-274.000.
- Koppers Company, Inc.: *See—*
Garrett, Clyde Barner; and Thayer, William Stansbury, 3,899,945.
- Greco, Nicholas P., 3,900,522.
- Korejwa, Alfred; Layer, Walter J.; and Ruda, Richard E., to Amerace Corporation. Process for producing oblong hose. 3,900,545, Cl. 264-89.000.
- Korf, Erich: *See—*
Aust, Gert-Rudiger; Hainy, Siegfried; and Korf, Erich, 3,900,861.
- Korman, Samuel: *See—*
Sheer, Charles; Korman, Samuel; Angier, Derek J.; and Cahn, Robert P., 3,900,762.
- Korsell, Torsten: *See—*
Andersson, Conny; Hanas, Bertil; Korsell, Torsten; and Nilsson, Jan, 3,900,695.
- Koryagin, Vladimir Vasilievich: *See—*
Privalov, Petr Leonidovich; Makurin, Pavel Semenovich; Plotnikov, Valerian Valerievich; Koryagin, Vladimir Vasilievich; Polpudnikov, Viktor Sergeevich; and Stepanjuk, Georgy Pavlovich, 3,899,918.
- Kosel, George E., to Philip A. Hunt Chemical Corporation. Liquid toners with an amphipathic graft type polymeric molecule. 3,900,412, Cl. 252-62.100.
- Koster, Manfred, to Braun Aktiengesellschaft. Adapter for automatically adapting DC equipment for energization by a first or second AC voltage of different amplitudes. 3,900,787, Cl. 321-15.000.
- Kotera, Nobuo: *See—*
Katayama, Yoshifumi; Kotera, Nobuo; Murayama, Yoshimasa; and Yoshida, Isao, 3,900,881.
- Koubek, Michael. Thyristor switching power circuit. 3,900,789, Cl. 321-47.000.
- Koury, James L.: *See—*
Geisler, Robert L.; Koury, James L.; and Johnston, Arch D., 3,899,919.
- Koval, Leonid Petrovich: *See—*
Tjutjunnikov, Anatoly Borisovich; Tjutjunnikov, Boris Nikanorovich; Marchenko, Alexandr Nikolaevich; Burin, Viktor Leonovitch; Bolotin, Josif Mironovich; Drozdov, Anatoly Sergeevich; Koval, Leonid Petrovich; Didenko, Zoya Vasilievna; Ljubushkin, Georgy Vasilievich; Budnik, Jury Mikhailovich; Moskvina, Vladimir Dmitrievich; and Bolyanovsky, Dmitry Mikhailovich, 3,900,537.
- Krackeler, Joseph J.; and Biddell, William G., to National Distillers and Chemical Corporation. Flame retardant polyethylene composition and coating process. 3,900,533, Cl. 260-897.00A.
- Kraft, Paul; and Jin, Jung II, to Stauffer Chemical Company. Process to emulsion polymerize vinyl chloride. 3,900,455, Cl. 260-92.80W.
- Kraft, Wayne R.; and Lowden, Robert P., to International Business Machines Corporation. Voltage level conversion circuit. 3,900,746, Cl. 307-264.000.
- Kraftco Corporation: *See—*
Warwick, Leonard A., 3,900,574.
- Kralowetz, Bruno. Tool for machining round sections. 3,899,814, Cl. 29-105.00R.
- Kramer, Josef: *See—*
Irmischer, Klaus; Kramer, Josef; and Nowak, Herbert, 3,900,467.
- Krapcho, John, to E. R. Squibb & Sons, Inc. 2-Methyl-2-piperidino-3'-(trifluoromethyl) propiophenone. 3,900,478, Cl. 260-293.800.
- Krause, Gerhard. Transistor with high current density. 3,900,771, Cl. 317-235.00R.
- Krenzer, John, to Velsicol Chemical Corporation. New substituted 1,2,4-thiadiazolidine-3,5-diones. 3,900,485, Cl. 260-302.00D.
- Krenzer, John: *See—*
Richter, Sidney B.; and Krenzer, John, 3,900,497.
- Kreyenborg, Joachim; and Kreyenborg, Udo. Filter apparatus for extrusion presses. 3,900,399, Cl. 210-236.000.
- Kreyenborg, Udo: *See—*
Kreyenborg, Joachim; and Kreyenborg, Udo, 3,900,399.
- Krieger, Bernhard: *See—*
Drawert, Manfred; Griebisch, Eugen; Krieger, Bernhard; Schepp, Horst; and Burba, Christian, 3,900,436.
- Kriegner, Walter: *See—*
Gluck, Maternus; Eder, Bernhard; and Kriegner, Walter, 3,899,850.
- Kruck, Ralph E., to VCA Corporation. Package having bottle support member therein. 3,900,121, Cl. 215-12.00R.
- Kruckenberg, Winfried: *See—*
Hildebrand, Dietrich; Kruckenberg, Winfried; Kuhnle, Werner; Molls, Hans Heinz; and Wolf, Karlheinz, 3,900,283.
- Krugler, Allen D., Jr.: *See—*
Boerger, David H.; Krugler, Allen D., Jr.; and Willoughby, Donald A., 3,899,897.
- Kubo, Shunichi: *See—*
Sato, Tadashi; and Kubo, Shunichi, 3,900,003.
- Kuchek, Henry A., to Dow Chemical Company. The Composite magnesium-titanium conductor. 3,900,296, Cl. 29-197.000.
- Kudo, Eiichi: *See—*
Uraya, Tohru; and Kudo, Eiichi, 3,900,652.
- Kuehn, Donald E.; and Lyon, John Keith, to TRW Inc. Apparatus for handling parts. 3,900,132, Cl. 221-251.000.
- Kuhnle, Werner: *See—*
Hildebrand, Dietrich; Kruckenberg, Winfried; Kuhnle, Werner; Molls, Hans Heinz; and Wolf, Karlheinz, 3,900,283.
- Kukulowicz, Adolph F. Tandem wheeled roller skate. 3,900,203, Cl. 280-11.200.
- Kullmann, Dieter; and Marsing, Helmut, to Siemens Aktiengesellschaft. Absorption apparatus for adjacently disposed magnet coils. 3,900,809, Cl. 335-216.000.
- Kumagai, Naoki, to Itogihan Company, Ltd. Apparatus for supplying thin, flat articles. 3,900,115, Cl. 214-1.00Q.
- Kummer, Franz: *See—*
Mai, Gerhard; Siepmann, Reiner; and Kummer, Franz, 3,900,428.
- Kunttu, Kalevi Johan: *See—*
Tuovinen, Frans Heikki; Blomquist, Seppo Ilmari; Heikkilä, Risto Markus; Honkasalo, Jorma Bruno; and Kunttu, Kalevi Johan, 3,900,117.
- Kuntzel, Heiner: *See—*
Dubs, Paul; Kuntzel, Heiner; and Pesaro, Mario, 3,900,498.
- Kuramoto, Yukimasa: *See—*
Fukai, Masakazu; Fujiwara, Shinji; Serizawa, Hiroyuki; Eguchi, Osamaru; Kuramoto, Yukimasa; and Chikamura, Takao, 3,900,882.
- Kuraray Co., Ltd.: *See—*
Ohara, Osamu; and Wakabayashi, Nobuyoshi, 3,900,440.
- Yamane, Tadayuki; and Hirano, Yutaka, 3,900,549.
- Kurasawa, Kazuo: *See—*
Soga, Hiromu; Minamida, Katsuhiro; Kurasawa, Kazuo; and Ii, Masatake, 3,900,887.
- Kureha Kagaku Kogyo K.K.: *See—*
Kihara, Sueo, 3,899,798.
- Kurtz, Anthony D.; Brosh, Amnon; Gravel, Charles L.; and Mallon, Joseph R., to Kolite Semiconductor Products, Inc. Economical pressure transducer assemblies, methods of fabricating and mounting the same. 3,900,811, Cl. 338-2.000.
- Kuwada, Yutaka; Natsugari, Hideaki; and Meguro, Kanji, to Takeda Chemical Industries, Ltd. Antiinflammatory and analgesic oxadiazole benzodiazocinones. 3,900,490, Cl. 260-307.00A.
- Kynaston, David; Tillett, Peter Irving; and Paden, Richard Stephen, to Cambridge Scientific Instruments Limited. Scanning electron-beam instrument. 3,900,734, Cl. 250-311.000.
- Kyushu Refractories Co., Ltd.: *See—*
Irie, Sadanao; Tomomoto, Kenichi; Akahori, Toyohiko; and Simomura, Kazuhisa, 3,900,369.
- La Cellophane: *See—*
Riboulet, Robert; and Charvet, Eugene, 3,900,653.

- Labruière, Jean Edmond, to Constructions Navales et Industrielles de la Méditerranée (C.N.I.M.). Self-propelled fin stabilized projectiles and launchers therefor. 3,899,953, Cl. 89-1.819.
- Laenen, Edward G.: *See—*
Griffiths, Donald E.; Kalthoff, Clement H.; and Laenen, Edward G., 3,900,891.
- Lafond, Esther M.: *See—*
Endres, Dan D.; and Lafond, Esther M., 3,900,031.
- Lafont, Guy: *See—*
Trouiller, Jean Claude; and Lafont, Guy, 3,900,824.
- Lage, David A.; and Senour, Donald A., to BLH Electronics, Inc. On-board tire strut fault apparatus for aircraft and the like. 3,900,828, Cl. 340-27.00R.
- L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procédes Georges Claude: *See—*
Jourdan-Laforte, Eric, 3,900,555.
- Sermanet, Gerard, 3,899,930.
- Lalk, Robert H.; Schmidt, Donald L.; and Thomas, Mary R., to Dow Chemical Company, The. Inhibiting the staining of latex paints on wood. 3,900,619, Cl. 427-408.000.
- Lalley, John J.; and Lalley, Laurel E. Teaching aid. 3,899,838, Cl. 35-31.00G.
- Lalley, Laurel E.: *See—*
Lalley, John J.; and Lalley, Laurel E., 3,899,838.
- Lamadrid, Rene G., to Baxter Laboratories, Inc. Blood leak detector. 3,900,396, Cl. 210-94.000.
- Lamatsch, Hans: *See—*
Albrecht, Cord; and Lamatsch, Hans, 3,900,702.
- Lamb, John N.: *See—*
Chandley, George D.; and Lamb, John N., 3,900,064.
- Lambeg Industrial Research Association: *See—*
Robinson, Eric, 3,900,425.
- Lambert, Robert R., to Wehr Corporation. Air conduit and diffuser assembly. 3,899,823, Cl. 29-455.000.
- Lamel, Arthur E.; Squire, William D.; and Whitehouse, Harper J., to American Petroscience Corporation. Telemetering system for oil wells using reaction modulator. 3,900,827, Cl. 340-18.0NC.
- Lamellen und Kupplungsbau GmbH: *See—*
Maucher, Paul, 3,900,091.
- Lammers, Uve H. W., to United States of America, Air Force. High speed electronic channel discriminator. 3,900,744, Cl. 307-235.00R.
- Lancaster Products Company: *See—*
Woodman, Gerald A.; Uscher, Joseph; and Jacoby, Henry C., 3,900,641.
- Lancini, Giancarlo; Lazzari, Ettore; and Diena, Alberto, to Gruppo Lepetit S.p.A. Antibiotic substances. 3,900,567, Cl. 424-319.000.
- Lancini, Giancarlo: *See—*
Cricchio, Renato; and Lancini, Giancarlo, 3,900,465.
- Landau, Raphael, to Ozalid Company, Ltd. Treatment of synthetic polyester film products. 3,900,324, Cl. 96-87.00R.
- Lando, David Jacob, to Western Electric Company, Incorporated. Method of depositing a metal on a surface of a substrate. 3,900,614, Cl. 427-258.000.
- Langlois, Roland E.; and Roberson, Cletis L., to Owens-Corning Fiberglass Corporation. Method for producing glass fiber bulk product. 3,900,302, Cl. 65-8.000.
- Lanker, Willi, to Turlabor AG. Process and apparatus for prolonging the useful lifetime of a repeatedly charged electrophotographic layer. 3,900,776, Cl. 317-262.00A.
- Lanz, Paul: *See—*
Furlenmeier, Andre; Lanz, Paul; Quitt, Peter; Vogler, Karl, deceased; Vogler, Franziska, heir; Vogler, Niklaus E., heir; and Vogler, Heinrich, heir, 3,900,464.
- Lapierre, Philippe D., to Societe Anonyme dite: Omnium de Prospective Industrielle S.A. Apparatus for the local treatment of yarns, for example the non-continuous dyeing of textile yarns. 3,899,903, Cl. 68-205.00R.
- Lappin, Gerald R.: *See—*
Zannucci, Joseph S.; and Lappin, Gerald R., 3,900,442.
- Larkin, Robert S.; Lund, Nean K.; and Williams, Charlton E., to Bell Telephone Laboratories, Incorporated. Diversity combination of radar signals. 3,900,874, Cl. 343-16.00R.
- Larsen, Larry D.; Schuck, Lee; Pekarek, Joseph C.; and Mott, Richard C., to Honeywell Inc. Installation and test tool for ionization smoke detector. 3,900,795, Cl. 324-158.00R.
- Larsen, Raymond B.; and Holmes, Donald E., to LRC, Inc. Matrix printer with overlapping print dots. 3,900,094, Cl. 197-1.00R.
- Larson, Harold B. Automatic plant watering apparatus. 3,900,134, Cl. 222-52.000.
- Larsson, Bjorn E.: *See—*
Zdanowski, Richard E.; and Larsson, Bjorn E., 3,900,438.
- Latimer, Keith Graham: *See—*
Read, Peter John; Latimer, Keith Graham; Reynolds, Terence David Warren; Munson, David, deceased; and Munson, George, administrator, 3,899,820.
- Lauber, Leo E.; and Cowden, Ernest A. Orthopedic cast and method of constructing same. 3,900,024, Cl. 128-91.00R.
- Laurel Bank Machine Co., Ltd.: *See—*
Uchida, Isamu; Watanabe, Kenkichi; and Sentoku, Hideshi, 3,899,864.
- Laurent, Sebastian M.: *See—*
Lee, Thomas E.; and Laurent, Sebastian M., 3,900,415.
- Lauterbach, Richard, to Siemens Aktiengesellschaft. Method for coating surfaces of a workpiece by spraying on a coating substance. 3,900,639, Cl. 427-34.000.
- Lawrence, John Charles, to F. Bender Limited. Dispensing apparatus. 3,899,975, Cl. 102-63.000.
- Layer, Walter J.: *See—*
Korejwa, Alfred; Layer, Walter J.; and Ruda, Richard E., 3,900,545.
- Layton, Margaret M.: *See—*
Herczog, Andrew; Layton, Margaret M.; and Rice, Dale W., 3,900,593.
- Lazzaretti, Louis G.: *See—*
Giunta, Joseph S.; and Lazzaretti, Louis G., 3,900,065.
- Lazzari, Ettore: *See—*
Lancini, Giancarlo; Lazzari, Ettore; and Diena, Alberto, 3,900,567.
- Le Bouchage Mecanique: *See—*
Marcel, Henri, 3,900,124.
- Leatherman, Alfred F., to Heller, William C., Jr. Self-heating composite bonding means and method. 3,900,360, Cl. 156-272.000.
- Lecocq, David E.: *See—*
Franz, Helmut; and Lecocq, David E., 3,900,601.
- Lecomte, Claude, to Entreprise d'Equipements Mecaniques et Hydrauliques E.M.H. Systems for anchoring ships at sea. 3,899,990, Cl. 114-230.000.
- Ledex, Inc.: *See—*
Hardwick, David R.; and Coors, George T., 3,900,822.
- Lednicer, Oliver: *See—*
D'Amato, Salvatore F.; Kimball, John J.; and Lednicer, Oliver, 3,900,219.
- Lee, Charles D., Jr.; and Mulligan, William L., to Parks-Cramer Company. Control arrangement for yarn piecing apparatus. 3,899,868, Cl. 57-34.00R.
- Lee, George W. Sand removal tool for wells. 3,900,074, Cl. 175-242.000.
- Lee-Norse Company: *See—*
Banerjee, Bani R.; Gangal, Mukund D.; and Black, Sigmund, 3,899,893.
- Lee, S. Yen, to United States of America, Army. Method of protecting embedded electronic components. 3,900,596, Cl. 427-58.000.
- Lee, Thomas E.; and Laurent, Sebastian M., to Ethyl Corporation. Magnetic glass. 3,900,415, Cl. 252-62.510.
- Leeds & Northrup Company: *See—*
Bell, Barry A.; and Weiss, Edward L., 3,900,866.
- Le Fevre, Robert J.: *See—*
Burke, George K.; Raines, Kenneth; and Le Fevre, Robert J., 3,900,184.
- Lehigh Press, Inc.: *See—*
Girman, Stephen J., 3,900,100.
- Lehman, Bruce, to Universal Oil Products Company. Vapor-liquid separation apparatus. 3,900,300, Cl. 55-184.000.
- Lehmann, Rolf: *See—*
Christ, Alfred; Tognola, Sergio; and Lehmann, Rolf, 3,899,999.
- Lehmann, Walter G., to Polaroid Corporation. Photographic camera and flash lamp selection system. 3,900,860, Cl. 354-126.000.
- Leimgruber, Willy; and Weigle, Manfred, to Hoffmann-La Roche Inc. Process for the preparation of aminomethylene malononitrile. 3,900,511, Cl. 260-465.50R.
- Leininger, Robert Irvin; Preston, Joseph Ronald; and Lower, Brenton Ray, to Ortho Pharmaceutical Corporation. Dilator for cervical canal. 3,900,033, Cl. 128-344.000.
- Leipold, F. Xavier: *See—*
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- Lekebusch, Ronald C.: *See—*
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- Lelieveld, Hubertus Leonardus Maria: *See—*
Muys, Gerard Tuynenburg; Lelieveld, Hubertus Leonardus Maria; and van der Hulst, Robert, 3,899,862.
- Lemelson, Jerome H. Method of generating monitorable video information from recordings on record members. 3,900,706, Cl. 178-7.200.
- Lenhard, Myron James; and Mammino, Joseph, to Xerox Corporation. Imaging process employing treated carrier particles. 3,900,587, Cl. 427-19.000.
- Leppek, Heinrich: *See—*
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- Lesensky, Leonard: *See—*
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- Lesk, Israel A., to Motorola, Inc. Thin low temperature EPI regions by conversion of an amorphous layer. 3,900,345, Cl. 148-1.500.
- Lesley, Bascum G., to Deering Milliken Research Corporation. Salvage guide and break-out preventor for knitting machines. 3,899,901, Cl. 66-149.00R.
- Leupold & Stevens, Inc.: *See—*
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- Levelator Corporation: *See—*
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- Lever Brothers Company: *See—*
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- Levine, Irving E., to Chevron Research Company. Methoxymethane sterilization method. 3,900,288, Cl. 21-58.000.
- Levins, Dave Baer: *See—*
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- Lewinter, Sidney W., to Singer Company, The. Electronic countermeasures system. 3,900,879, Cl. 343-113.00R.

Lewis, Geoffrey Arthur, to Lucas Aerospace Limited. Mechanical linkage. 3,899,936, Cl. 74-479.000.
 Lewis, James A.: *See—*
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 Calder, Peter Henry; Gupta, Prem Chandra; and Lewis, William James, 3,900,177.
 Ley, Kurt: *See—*
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 Liautaud, Jean A., to Subsea Equipment Associates Limited. Apparatus for connection between submarine conduits. 3,899,894, Cl. 61-72.300.
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 Lindblad, Nero R.; Johnson, Gordon E.; and Sharp, James H., to Xerox Corporation. Electrostatic graphic imaging process. 3,900,589, Cl. 427-19.000.
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 Lock, Chuck. Electronic acupuncture device. 3,900,020, Cl. 128-2.10C.
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 Sjoberg, Borje Gustav; Odman, Rolf Ragnar; Belstad, Arne; and Lofgren, Nils Clov Allan, 3,900,293.
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 Long, Lennart Ernst, to United States of America, Transportation. Airport loop detector system. 3,900,829, Cl. 340-38.00L.
 Loomans, Bernard A., to Baker Perkins, Inc. Continuous mixing and/or kneading machine with co-wiping single lead screws. 3,900,187, Cl. 259-192.000.

Lorenzetti, James J.; and Cordea, James N., to Armco Steel Corporation. Cold-drawn, straightened and stress relieved steel wire for prestressed concrete and method for production thereof. 3,900,347, Cl. 148-12.00B.
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 Luther, Hans Werner; Romer, Rudolf; Winkelmann, Jurgen; and Rossmann, Winfried, to Rheinmetall GmbH. Fin-stabilized subcaliber projectile. 3,899,978, Cl. 102-93.000.
 Lyftgot, Dennis L.: *See—*
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 Lyon, Richard K., to Exxon Research and Engineering Company. Method for the reduction of the concentration of NO in combustion effluents using ammonia. 3,900,554, Cl. 423-235.000.
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 Machlett Laboratories, Inc.: *See—*
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 Mackenzie, John D., to University of California, The Regents of the. Method of making glass products. 3,900,303, Cl. 65-18.000.
 MacLeish, William T.; and Milligan, Terry W., to Polaroid Corporation. Photographic element comprising an opaque backcoat. 3,900,323, Cl. 96-84.00R.
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 Maheux, Peter Francis; and Deacon, Brian Matthew, to Northern Electric Company Limited. Electrical connection of flexible printed circuits. 3,900,242, Cl. 339-95.00R.
 Mai, Gerhard; Siepmann, Reiner; and Kummer, Franz, to W. C. Heraeus GmbH. Catalyst for the reduction of nitric oxides. 3,900,428, Cl. 252-462.000.
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 Makishima, Hiroshi; Shinohara, Toshio; Kawahara, Yukio; Nii, Hiroshi; and Ebine, Setsuo, to Dai Nippon Torio Co., Ltd. Decorative article having inorganic coating film having rugged pattern including cracks and process for production thereof. 3,900,630, Cl. 428-155.000.
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 Mansson, Sven E., to Magnetic Analysis Corporation. Eddy current testing apparatus including a rotating head with probe and null circuit means mounted thereon including rotary transformer windings. 3,900,793, Cl. 324-40.000.
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 Marcus, Sanford Morton; and Patterson, Frank Knowles, to du Pont de Nemours, E. I., and Company. Varistor compositions. 3,900,432, Cl. 252-519.000.
 Markley, Lowell D., to Dow Chemical Company, The. Substituted butyl esters of alkyl- and haloalkyl-sulfonic acids. 3,900,509, Cl. 260-456.00R.
 Markofsky, Sheldon B., to W. R. Grace & Co. Process for breaking emulsions. 3,900,423, Cl. 252-344.000.
 Marks, Alvin M. Method and apparatus for forming submicron dipole particles. 3,900,417, Cl. 252-300.000.
 Marriott, Carroll L.; Patzer, Hans E.; Hall, Ronald D.; Caposelli, Charles D.; and Klein, Aaron David, to United States of America, Navy. High strength aluminum interconnections for microelectronics packaging. 3,900,353, Cl. 156-3.000.
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Martin, Hubert. Process for producing die-casting alloys from aluminum scrap. 3,900,313, Cl. 75-68.00R.
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 Masters, George, to Beauty Masters, Ltd. Method of preparing and placing artificial eyelashes. 3,900,038, Cl. 132-5.000.
 Masuda, Noboru; and Takiguchi, Hisashi, to Denki Onkyo Company, Ltd. Galvano-magnetron effect device. 3,900,813, Cl. 338-32.00R.
 Masuda, Noboru, to Denki Onkyo Company, Ltd. Revolution sensing apparatus. 3,900,814, Cl. 338-32.00R.
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 Mathews, Carl Fraser; Nield, Eric; Rose, John Brewster; and Vincent, Peter Inledon, to Imperial Chemical Industries Limited. Graft of acrylonitrile, N-aryl maleimide and alkene unto a diene substrate. 3,900,531, Cl. 260-878.00R.
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 McBride, Ralph J. Support and exciter device. 3,900,023, Cl. 128-36.000.
 McCann, Mary Conlin; Plummer, William T.; and Walworth, Vivian K., to Polaroid Corporation. Camera to microscope adaptor with a special optical element. 3,900,858, Cl. 354-79.000.
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- McCloskey, Albert R., to Rockwell International Corporation. Method of manufacturing spherical bearings. 3,900,294, Cl. 29-149.50B.
- McClung, Charles E.; and Glasgow, David G., to Monsanto Company. Polyurethane interlayer for laminated safety glass. 3,900,446, Cl. 260-75.0NT.
- McCombs, Frank Paul, to Owens-Corning Fiberglas Corporation. Glass fiber reinforced elastomers. 3,900,661, Cl. 428-250.000.
- McCulloch Corporation: See—
- Dilworth, John Lewis, 3,900,276.
- McDevitt, Bernard J., to Sperry Rand Corporation. Print media identification code. 3,899,968, Cl. 101-111.000.
- McDonnell, Tomas Paul. Combination golf caddie car and golf bag. 3,900,209, Cl. 280-36.00C.
- McEvoy, Francis Joseph: See—
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- King, Henry L.; and McGee, John W., 3,900,527.
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- Jensen, Garold K.; and McGeogh, James E., 3,900,872.
- McGonagle, Hugh K. Golf swing training brace. 3,900,199, Cl. 273-189.00A.
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- McIver, George W.; and Buie, James L., to TRW Inc. Asynchronous binary multiplier using non-threshold logic. 3,900,724, Cl. 235-164.000.
- McKay, Russell M., Sr., to Lockheed Missiles & Space Company, Inc. Non-contact measuring gauge. 3,900,738, Cl. 250-560.000.
- McKenna, John F., Jr.: See—
- United States of America, National Aeronautics and Space Administration; Daly, William M.; and McKenna, John F., Jr., 3,900,741.
- McKenna, Lawrence W., Jr., to Monsanto Company. Process of making a pressure sensitive adhesive article. 3,900,610, Cl. 427-207.000.
- McKinley, Suzanne V.: See—
- Mitchell, Albertha B.; McKinley, Suzanne V.; and Rakshys, Joseph W., Jr., 3,900,451.
- McMillan, William J., to Dow Chemical Company, The. Indented sheet. 3,899,805, Cl. 24-213.00B.
- McNaught, John P., to Lever Brothers Company. Randomly interesterified sunflower and tobacco seed oils. 3,900,503, Cl. 260-410.700.
- McNeil Laboratories, Incorporated: See—
- Rasmussen, Chris Royce, 3,900,470.
- McPhee, Charles J., to American Hospital Supply Corporation. Injection site for sterile medical liquid container. 3,900,028, Cl. 128-272.000.
- McPhee, John L., to Aluminum Plumbing Fixture Corporation. Super-safe towel hook. 3,900,180, Cl. 248-288.000.
- Meadar, Arthur L., Jr.; and Runyon, William L., Jr., to Chevron Research Company. Process for coating a surface and the coated surface. 3,900,687, Cl. 428-425.000.
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- Mears, William E., to Sperry Rand Corporation. Synchronous pulse digital filter. 3,900,848, Cl. 343-7.300.
- Meguro, Kanji: See—
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- Meininger, Fritz: See—
- Fuchs, Hermann; and Meininger, Fritz, 3,900,510.
- Meisters, Aivars: See—
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- Melnick, Irving; and Oakes, George W., to Melnick, Irving. Closed surgical evacuator. 3,900,029, Cl. 128-278.000.
- Memorex Corporation: See—
- Tanck, Elinor J.; Hulse, Lauren L.; and Kelly, Paul P., 3,900,414.
- Menendez, Jaime Torroja, to Sener, Tecnica Industrial y Naval, S.A. Ships equipped with pressurized cargo tanks supported on continuous shells. 3,899,988, Cl. 114-74.00A.
- Menzel, Gerhard: See—
- Muller, Karl-Adolf; Gude, Armin; and Menzel, Gerhard, 3,900,607.
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- Mercer, Nelson M., Jr., to Ford Motor Company. Double lever strain multiplier apparatus and method. 3,899,922, Cl. 73-88.50R.
- Merlen, Monty M.; and Nichols, Peter H., to Intec Corporation. Laser scanner flaw detection system. 3,900,265, Cl. 356-200.000.
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- Morawski, Wilhelm; and Raeithel, Heinrich, 3,900,739.
- Metcalfe, Kenneth A.; and Clements, Alvin S., to Commonwealth of Australia, The. Reactive developer for electrophotography. 3,900,413, Cl. 252-62.100.
- Metzger, Georg: See—
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- Meyer, Arnfried. Dewatering apparatus. 3,899,835, Cl. 34-58.000.
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- Michaels, James. Fuel for engines. 3,900,297, Cl. 44-57.000.
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- Michel, Marcel. Binding strip for book leaves. 3,900,642, Cl. 428-40.000.
- Michel, Rudolph Henry: See—
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- Micro Devices Corporation: See—
- Plasko, Emil Robert, 3,900,713.
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- Parke, James G.; and Gerlach, C. Richard, 3,900,165.
- Midland-Ross Corporation: See—
- Durling, Harold, 3,900,230.
- Pavlot, James, 3,900,269.
- Swanson, Kenneth B.; and Huffman, Herman M., 3,899,889.
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- Schulz, Arthur August, 3,900,576.
- Miley, Frank P.: See—
- Foin, Owen F., Jr.; and Miley, Frank P., 3,900,870.
- Milgrom, Jack, to General Tire & Rubber Company, The. Hydroxyl or thiol terminated telomeric ethers. 3,900,518, Cl. 260-573.000.
- Miller, George T., to Hooker Chemicals & Plastics Corporation. Flame retardant cellulosic materials. 3,900,327, Cl. 106-15.0FP.
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- Miller, Jacob I.: See—
- Natarelli, Gerard E., Jr.; Pinto, Frank G.; and Miller, Jacob I., 3,900,535.
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- Miller, Lewis S. Electrostatographic copy paper containing glycidyl quaternary ammonium compounds. 3,900,319, Cl. 96-1.800.
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- MacLeish, William T.; and Milligan, Terry W., 3,900,323.
- Milling, Robert W., to United States of America, Air Force. Two stage gas dynamic laser. 3,900,802, Cl. 331-94.50G.
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- Minahara, Kazumi: See—
- Fujimatsu, Wataru; Sato, Shui; Kojima, Tamotsu; Endo, Takaya; and Minahara, Kazumi, 3,900,483.
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- Minkner, Kurt Vladimirovich: See—
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- Minolta Camera Kabushiki Kaisha: See—
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- Mitchell, Albertha B.; McKinley, Suzanne V.; and Rakshys, Joseph W., Jr., to Dow Chemical Company, The. Method of making sulfhydryl-containing polymers. 3,900,451, Cl. 260-79.5NV.
- MITEC Moderne Industrietechnik GmbH: See—
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- Mitsubishi Rayon Co., Ltd.: See—
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- Miyamatsu, Hiroki: See—
- Suzuki, Tadayuki; Wada, Jin; Miyamatsu, Hiroki; Ueno, Shinji; and Shimizu, Mitsuhiro, 3,900,486.
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- Mobil Oil Corporation: See—
- Andress, Harry J., Jr.; and Ashjian, Henry, 3,900,411.
- Schard, Malcolm P., 3,900,534.
- Mochizuki, Mitsuo. Framing element and its supporting device for laying interior boarding on foundation structure. 3,899,857, Cl. 52-126.000.
- Mockli, Peter: See—
- Zographos, Georgios; and Mockli, Peter, 3,900,318.
- Moeny, Richard C.; and Mueller, Francis B., to Waco Scaffold & Shoring Co. Column roll out support. 3,900,179, Cl. 248-287.000.
- Moderna Butiksinredningar AB: See—
- Johnsson, Berndt-Ola Folke, 3,900,243.
- Moens, Joris, to N.V. Bekeart S.A. Reinforcing wire element and materials reinforced therewith. 3,900,667, Cl. 428-292.000.
- Mole, Thomas; and Meisters, Aivars, to Commonwealth Scientific and Industrial Research Organization. Catalysed reaction of aluminum compounds with nitriles. 3,900,505, Cl. 260-448.00A.
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- Molls, Hans Heinz: See—
- Hildebrand, Dietrich; Kruckenberg, Winfried; Kuhnle, Werner; Molls, Hans Heinz; and Wolf, Karlheinz, 3,900,283.
- Moltgen, Gottfried, to Siemens Aktiengesellschaft. Method and apparatus for generating reactive power. 3,900,792, Cl. 323-102.000.
- Monks, Joseph R.: See—
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- Monsanto Company: See—
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- Chupp, John Paul, 3,900,484.
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- McClung, Charles E.; and Glasgow, David G., 3,900,446.
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- Montecatini Edison S.p.A.: See—
- Valvassori, Alberto; Sartori, Guido; and Turba, Vittorio, 3,900,452.
- Monti, Anthony, to SuCrest Corporation. Direct compression vehicle. 3,900,569, Cl. 424-361.000.
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- Moran, Daniel Bryan: See—
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- Morawski, Wilhelm; and Raeithel, Heinrich, to Messerschmitt-Boelkow-Blohm G.m.b.H. Device for providing a current supply to inductive loads by use of a battery and a d. c. pulse transformer positioned between battery and load. 3,900,739, Cl. 307-41.000.
- Moreschini, Paolo: See—
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- Morgan Adhesives Company: See—
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- Morgan, Burton D., to Morgan Adhesives Company. Scored adhesive laminate. 3,900,645, Cl. 428-41.000.
- Moriguchi, Toshiro; Miwa, Kiyoshi; and Shibuya, Takehiro, to Nippon Electric Glass Company, Limited. ZnO-B₂O₃-SiO₂ Glass coating compositions containing Ta₂O₅ and a semiconductor device coated with the same. 3,900,330, Cl. 106-54.000.
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- Morioka, Yasuaki: See—
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- Moriya, Nobuyoshi, to Mansei Kogyo Kabushiki Kaisha. Electric spark generating device for ignitors. 3,900,768, Cl. 317-96.000.
- Moskvin, Vladimir Dmitrievich: See—
- Tjutjunnikov, Anatoly Borisovich; Tjutjunnikov, Boris Nikanorovich; Marchenko, Alexandr Nikolaevich; Burin, Viktor Leon-tievich; Bolotin, Josef Mironovich; Drozdov, Anatoly Sergeevich; Koval, Leonid Petrovich; Didenko, Zoya Vasilievna; Ljubushkin, Georgy Vasilievich; Budnik, Jury Mikhailovich;
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- Hall, Edward L.; and Philofsky, Elliott M., 3,900,598.
- Lesk, Israel A., 3,900,345.
- Russ, Malcolm J., 3,899,826.
- Mott, Claude M.; and Clark, Richard J., to Hewlett-Packard Company. Time interval phase detection in distance measuring apparatus. 3,900,259, Cl. 356-5.000.
- Mott, Richard C.: See—
- Larsen, Larry D.; Schuck, Lee; Pekarek, Joseph C.; and Mott, Richard C., 3,900,795.
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- Muck, Eduard; Strachota, Jaroslav; and Horak, Josef, to Statni vyz-kumny ustav kozedely. Impregnating compositions for fibrous sheet materials. 3,900,621, Cl. 427-430.000.
- Mueller, Francis B.: See—
- Moeny, Richard C.; and Mueller, Francis B., 3,900,179.
- Mukogawa, Masashi; and Takagaki, Takashi, to Nippon Electric Com-pany Limited. Method of producing semiconductor integrated cir-cuits with improved isolation structure. 3,900,351, Cl. 148-186.000.
- Mulkens, Casper Antonius Henricus, administrator: See—
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- Muller, Karl-Adolf; Gude, Armin; and Menzel, Gerhard, to Chemische Werke Huls Aktiengesellschaft. Polylactam powders suitable for metal coating. 3,900,607, Cl. 427-185.000.
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- Wingler, Frank; and Muller, Richard, 3,900,435.
- Muller, Willi; and Noll, Hans. Method for the automatic guidance of a work tool on the curves of intersection of two pipes or tubes. 3,900,346, Cl. 148-9.600.
- Mulligan, William L.: See—
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- Murrell, Donald K., to Robertshaw Controls Company. Fulcrum pres-sure regulator. 3,900,045, Cl. 137-505.380.
- Muys, Gerard Tuynenburg; Lelieveld, Hubertus Leonardus Maria; and van der Hulst, Robert, to Lever Brothers Company. Sterilization of containers. 3,899,862, Cl. 53-21.0FC.
- Myers, Harold J. Aerosol dispensing valve improvements. 3,900,139, Cl. 222-402.240.
- Nack, Michael R.; and Crawford, Donald C., to FMC Corporation. Feeding mechanism for wrapping machine. 3,900,096, Cl. 198-23.000.
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- Nagazumi, Yasuo, to Nissan Motor Co., Ltd. Collapsible steering col-umn assembly. 3,899,937, Cl. 74-492.000.
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- Newage Engineers Limited: *See—*
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- Newell, Norman M. Entrance door and method of construction. 3,899,860, Cl. 52-313.000.
- Newton, Alwin B., to Borg-Warner Corporation. Rotary compressor. 3,900,277, Cl. 418-184.000.
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- Nii, Hiroshi: *See—*
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- Nippon Gakki Seizo Kabushiki Kaisha: *See—*
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- Takahashi, Koichi; Hitomi, Nobuteru; and Kizu, Taisuke, 3,899,898.
- Nitta, Minoru: *See—*
- Ito, Shunji; Morioka, Yasuaki; Kajinaga, Yoshihiro; Sakurada, Ichio; and Nitta, Minoru, 3,899,821.
- Noll, Hans: *See—*
- Muller, Willi; and Noll, Hans, 3,900,346.
- Noll, Klaus: *See—*
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- Noma Lites Canada Limited: *See—*
- Beck, Henry T.; and Koehler, Rudolph, 3,900,278.
- Nony, Maurice: *See—*
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- Noponen, Veikko H.: *See—*
- Kaasila, Kauko Johannes; Toivanen, Toivo Adrian; Harkki, Seppo Untamo; Neimela, Toivo Isak; Makiipirtti, Simo A.; Malmstrom, Rolf E.; Tuominen, Tapio Kalevi; Aaltonen, Olavi August; and Noponen, Veikko H., 3,900,310.
- Norgate, Peter: *See—*
- Hammond, Vivian Joseph; Norgate, Peter; Onoki, Fumio; Kamiya, Hajime; and Ohno, Kazuaki, 3,900,672.
- Norris, Robert W., Jr. Method of forming traffic markers having short track-free times. 3,900,605, Cl. 427-137.000.
- Norsk Hydro A.S.: *See—*
- Friestad, Isak Andreas, 3,900,164.
- North American Philips Corporation: *See—*
- Berkelhamer, Louis H.; and Schapiro, William H., 3,900,818.
- Northern Electric Company Limited: *See—*
- Maheux, Peter Francis; and Deacon, Brian Matthew, 3,900,242.
- Zaky, Safwat George, 3,900,247.
- Northrop Corporation: *See—*
- Conner, Jack S., 3,900,198.
- Northrup, Francis B.; and Hart, Donald R., to Spanco Yarns, Inc. Method and apparatus for forming helically wrapped yarns. 3,899,867, Cl. 57-18.000.
- Notari, Bruno: *See—*
- Fattore, Vittorio; Moreschini, Paolo; and Notari, Bruno, 3,900,426.
- Novikov, Andrei Porfirievich: *See—*
- Somov, Boris Stepanovich; Mamin, Alexandr Ilich; Novikov, Andrei Porfirievich; Filippov, Vyacheslav Ivanovich; Khirdzhiev, Sergei Grigorievich; Gurevich, Vladimir Zakharovich; Voronov, Nikolai Stefanovich; and Agafonov, Ivan Fedorovich, 3,899,908.
- Nowack, Gerhard P.: *See—*
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- Nozeran, Robert: *See—*
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- N.V. Bekeart S.A.: *See—*
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- N.V. Internationale Octrooi Maatschappij "Octropa": *See—*
- Homstra, Gerard, 3,900,290.
- Nylander, Alfred F. Processing tachydrite ore. 3,900,553, Cl. 423-184.000.
- O.M.I. Corporation of America: *See—*
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- Oachis, Emil: *See—*
- Constantinescu, Petre; Oachis, Emil; Trimbilas, Dorin; and Alexandrescu, Doina, 3,900,301.
- Oakes, George W.: *See—*
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- Odman, Rolf Ragnar: *See—*
- Sjoberg, Borje Gustav; Odman, Rolf Ragnar; Belstad, Arne; and Lofgren, Nils Clov Allan, 3,900,293.
- Offermanns, Heribert: *See—*
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- Office National d'Etudes et de Recherches Aerospatiales (O.N.E.R.A.): *See—*
- Galmiche, Philippe Marie; and Hivert, Andre, 3,900,613.
- Ogier, Paul; and Queyroi, Christian, to Agence Nationale de Valorisation de la Recherche (ANVAR). Sheetmetal rolling machine. 3,899,911, Cl. 72-169.000.
- Oguri, Eizo: *See—*
- Komatani, Taro; Yamada, Kazuo; Oguri, Eizo; and Tokuda, Yasunori, 3,900,462.
- Ohara, Osamu; and Wakabayashi, Nobuyoshi, to Kuraray Co., Ltd. Adhesive composition. 3,900,440, Cl. 260-29.70W.
- Ohm, George D., to B. F. Goodrich Company. The Molded track for a track-laying vehicle. 3,900,231, Cl. 305-35.0EB.
- Ohno, Kazuaki: *See—*
- Hammond, Vivian Joseph; Norgate, Peter; Onoki, Fumio; Kamiya, Hajime; and Ohno, Kazuaki, 3,900,672.
- Ohnawa, Mitsuo, to Sony Corporation. Constant current circuit. 3,900,790, Cl. 323-4.000.
- Ohya, Tokuzi: *See—*
- Shoichiro, Ito; Ohya, Tokuzi; and Nagai, Shoji, 3,900,341.
- Oishi, Yasushi; Hayashi, Jun; and Yoshida, Yoshinobu, to Fuji Photo Film Co., Ltd. Diffusion transfer color photographic material having development inhibitor precursor. 3,900,322, Cl. 96-77.000.
- Okada, Hiroshi: *See—*
- Enei, Hitoshi; Sato, Katsuaki; Anzai, Yasuo; and Okada, Hiroshi, 3,900,368.
- Okamoto, Shigetake, to Agency of Industrial Science & Technology. Method for chemical vapor deposition of fitted surfaces in coupled article. 3,900,612, Cl. 427-232.000.
- Okamoto, Toshio: *See—*
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- Oklejas, Eli, Jr.: *See—*
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- Oklejas, Robert A.; and Oklejas, Eli, Jr. Gas regeneration tesla-type turbine. 3,899,875, Cl. 60-39.51R.
- Oku, Takeshi; and Tanaka, Masaru, to Matsushita Electric Industrial Co., Ltd. Waveform generator. 3,900,745, Cl. 307-260.000.
- Olcott, Eugene L., to Atlantic Research Corporation. Internal components for gas turbines of pyrolytic graphite silicon carbide codeposit. 3,900,668, Cl. 428-297.000.
- Olcott, Eugene L., to Atlantic Research Corporation. Rocket nozzle comprising pyrolytic graphite-silicon carbide microcomposite inserts. 3,900,675, Cl. 428-367.000.
- Olin Corporation: *See—*
- Gay, Walter A.; and Tobin, John H., 3,900,519.
- Ralston, Richard W., Jr., 3,900,373.
- Oliver, Bruce L.; and Heinemeyer, Ben W., to Dow Chemical Company. The Method of enhancing flexure of plastic hinges. 3,900,550, Cl. 264-320.000.
- Oliver, Calvin C.: *See—*
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- Oliver, Haven D.; Burke, Richard K.; Dobson, Herbert, Jr.; and Grant, Leon E., to United States of America, Navy. Dual filter for lubricating oil. 3,900,401, Cl. 210-238.000.
- O'Loughlin, James F.: *See—*
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- Olsen Axle & Equipment Company Inc.: *See—*
- Olsen, Harold L., 3,900,119.
- Olsen Controls, Inc.: *See—*
- Olsen, Zenny, 3,899,956.
- Olsen, Harold L., to Olsen Axle & Equipment Company Inc. Vehicle stabilized for heavy duty use. 3,900,119, Cl. 214-86.00A.
- Olsen, Jan-Erik: *See—*
- Rausing, Hans A.; Olsen, Jan-Erik; and Rausing, Jan Axel Ingemar, 3,900,155.
- Olsen, Zenny, to Olsen Controls, Inc. Linear electrohydraulic pulse drive actuator. 3,899,956, Cl. 91-368.000.
- O'Neill, Gerald J.: *See—*
- Holdsworth, Robert S.; O'Neill, Gerald J.; Simons, Charles W.; and DiBasio, Vincent L., 3,900,568.
- Onikov, Eduard Arshakovich: *See—*
- Zabotin, Alexandr Alexandrovich; Onikov, Eduard Arshakovich; Galperin, Alexandr Lvovich; Loschilin, Evgeny Dmitrievich; Lileev, Valerian Petrovich; German, Roman Anatolievich; Rutkevich, Zinoviy Yakovlevich; and Sakharov, Boris Alexandrovich, 3,900,049.
- Ono, Michakaze; Sahara, Hajime; and Akasaka, Masanori, to Mitsubishi Rayon Co., Ltd. Process for producing fireproof fibers. 3,900,285, Cl. 8-115.500.
- Onoki, Fumio: *See—*
- Hammond, Vivian Joseph; Norgate, Peter; Onoki, Fumio; Kamiya, Hajime; and Ohno, Kazuaki, 3,900,672.
- Orain, Michel, to Societe Anonyme: Glaenger Spicer. Method and device for cold-forming rolling elements. 3,899,912, Cl. 72-344.000.
- O'Rell, Dale H.: *See—*
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- Organisation Europeenne de Recherches Spatiales: *See—*
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- Ortho Pharmaceutical Corporation: *See—*
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- Osaka Gas Company, Ltd.: *See—*
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- Osaka University: *See—*
- Fujisawa, Kazuo, 3,900,759.
- Osakabe, Kuniharu; and Yonai, Fumiaki, to Hitachi, Ltd. Exposure apparatus for forming fluorescent screens of colour picture tubes. 3,900,854, Cl. 354-1.000.
- Ostbo, John David Bertil. Method for manufacturing curved tube sections. 3,899,819, Cl. 29-407.000.
- Osterholtz, Frederick D.: *See—*
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- Otani, Syuichi, to Nissan Motor Co., Ltd. Safety harness arrangement. 3,900,078, Cl. 180-82.00R.
- Otto Hansel GmbH: *See—*
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- Outokumpu Oy: *See—*
- Kaasila, Kauko Johannes; Toivanen, Toivo Adrian; Harkki, Seppo Untamo; Neimela, Toivo Isak; Makiipirtti, Simo A.; Malmstrom, Rolf E.; Tuominen, Tapio Kalevi; Aaltonen, Olavi August; and Noponen, Veikko H., 3,900,310.
- Tuovinen, Frans Heikki; Blomquist, Seppo Ilmari; Heikkila, Risto Markus; Honkasalo, Jorma Bruno; and Kunttu, Kalevi Johan, 3,900,117.
- Overhead Door Corporation: *See—*
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- Owens-Corning Fiberglass Corporation: *See—*
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- Isham, Allan B.; and Shenk, Wilbur, III, 3,900,048.
- Langlois, Roland E.; and Robertson, Cletis L., 3,900,302.
- Marzocchi, Alfred, 3,900,679.
- McCombs, Frank Paul, 3,900,661.
- Rosinski, Klaus D.; and Schroer, John W., 3,900,584.
- Owens-Illinois, Inc.: *See—*
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- Grubb, Everett F.; Hagedorn, Erwin C.; and Monks, Joseph R., 3,900,329.
- Taylor, Lynn J., 3,900,682.
- Ozaki, Nobuo, to Maeda Industries, Ltd. Bicycle free wheel assembly. 3,900,088, Cl. 192-64.000.
- Ozalid Company, Ltd.: *See—*
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- Pacific Car and Foundry Company: *See—*
- Jayne, Laurence I.; and Magnuson, Roland A., 3,899,954.
- Paden, Richard Stephen: *See—*
- Kynaston, David; Tillett, Peter Irving; and Paden, Richard Stephen, 3,900,734.
- Page, Frederick Walter; and Wardle, Peter Charles Darlington. Automatically operated vehicle restraint mechanism. 3,900,092, Cl. 194-9.00T.
- Page, Robert E.: *See—*
- Nelson, John P.; Page, Robert E.; and Hendrickson, Paul S., 3,900,364.
- Pall Corporation: *See—*
- Keedwell, Cyril A., 3,900,027.
- Palmour, Hayne, III; and Huckabee, Marvin L., to Arthur D. Little, Inc. Process for sintering finely divided particulates and resulting ceramic products. 3,900,542, Cl. 264-40.000.
- Paranto, Archie V., to Draft Meter Corporation. Liquid dispensing apparatus. 3,900,136, Cl. 222-70.000.
- Park, Yong S., to Zenith Radio Corporation. Apparatus for making light attenuating filters. 3,899,996, Cl. 118-49.100.
- Parke, James G.; and Gerlach, C. Richard, to Micro-Gen Equipment Corporation. Hand carried spraying apparatus. 3,900,165, Cl. 239-375.000.
- Parker, Delmer G.: *See—*
- Fraser, Lawrence J.; and Parker, Delmer G., 3,900,001.
- Parker, Stephen R., to Westinghouse Electric Corporation. Gas turbine combustor basket cooling. 3,899,882, Cl. 60-39.650.
- Parks-Cramer Company: *See—*
- Lee, Charles D., Jr.; and Mulligan, William L., 3,899,868.
- Parsons, William F.; Blair, Gerald E.; and Maier, Clarence C., to Eastman Kodak Company. Method and apparatus for molding glass lenses. 3,900,328, Cl. 106-39.500.
- Paton, Boris Evgenievich; Gusev, Vladimir Alexeevich; Dudko, Daniil Andreevich; Maximovich, Boleslav Ivanovich; and Asoyants, Grigory Bagradovich. Method of producing anti-skid studs for vehicle tires. 3,900,149, Cl. 228-122.000.
- Patten, Hudson T., III: *See—*
- Lynch, Thomas H.; and Patten, Hudson T., III, 3,900,839.
- Patterson, Frank Knowles: *See—*
- Marcus, Sanford Morton; and Patterson, Frank Knowles, 3,900,432.
- Patzner, Hans E.: *See—*
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- Pauza, William Vito: *See—*
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- Pavlot, James, to Midland-Ross Corporation. Channel joint and joiner therefor. 3,900,269, Cl. 403-292.000.
- Pearce, Derek Roger: *See—*
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- Pedain, Josef: *See—*
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- Peer, Herbert R., to Ferma-Gro Corporation. Nutrient composition for plants and animals. 3,900,572, Cl. 426-41.000.
- Pekarek, Joseph C.: *See—*
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- Penberthy, Harvey Larry. Backpacker's stove. 3,900,281, Cl. 431-344.000.
- Penco Products Inc.: *See—*
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- Penczynski, Peter; Matthaus, Gunther; Massek, Peter; and Liendl, Johann, to Siemens Aktiengesellschaft. High-voltage and coolant feed apparatus for low temperature cooled conductors. 3,900,699, Cl. 174-15.0BH.
- Penn-Plax Plastics, Inc.: *See—*
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- Pennwalt Corporation: *See—*
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- Person, Herman R., to Dale Electronics, Inc. Surge arrestor. 3,900,767, Cl. 317-61.500.
- Pervukhin, Leonid Borisovich: *See—*
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- Pesaro, Mario: *See—*
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- Peter, Richard: *See—*
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- Peterson, Henry O., to Leupold & Stevens, Inc. Piezoelectric traffic counter switch and associated pulse generator circuit. 3,900,830, Cl. 340-38.00R.
- Peterson, Wendell C. Elongated surgical instrument holder. 3,900,109, Cl. 211-60.00T.
- Petro-Tex Chemical Corporation: *See—*
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- Petron, Dennis A.: *See—*
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- Pfizer Inc.: *See—*
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- Philip A. Hunt Chemical Corporation: *See—*
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- Philipp, Adolf H.; Demerson, Christopher A.; and Humber, Leslie G., to Ayerst McKenna and Harrison Ltd. 5-Amino and 5-hydrazinodihydropyrroloisquinoline derivatives. 3,900,477, Cl. 260-288.0CF.
- Phillips Cables Limited: *See—*
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- Phillips Petroleum Company: *See—*
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- Clampitt, Richard L.; and Hessert, James E., 3,900,406.
- Hunt, Harold R.; and Vanderveen, John W., 3,900,547.
- Johnson, Marvin M.; Tabler, Donald C.; and Nowack, Gerhard P., 3,900,526.
- Jurrens, Lawrence D., 3,900,694.
- Marrs, Oren L.; and Mozer, Larry P., 3,900,691.
- Naylor, Floyd E., 3,900,456.
- Rostler, Fritz S., 3,900,692.
- Witt, Donald R., 3,900,457.
- Phillips, Robert E., to Minnesota Mining and Manufacturing Company. Medicament dispenser. 3,900,138, Cl. 222-340.000.
- Philofsky, Elliott M.: *See—*
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- Pinto, Frank G.: *See—*
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- Piron, Jean Gustave Jules. Patterned transfer sheet. 3,900,633, Cl. 428-204.000.
- Pitanis, Nicholas James. Dual purpose sock holder. 3,900,181, Cl. 248-340.000.
- Piunno, Carmen, to Human Circle, Inc., The. Mosquito-bite itch stopper. 3,900,018, Cl. 128-1.00R.
- Plasko, Emil Robert, to Micro Devices Corporation. Thermal limiter construction and electrical switch and system utilizing the same. 3,900,713, Cl. 219-10.55D.
- Platz, Stephan: *See—*
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- Plotnikov, Valerian Valerievich: *See—*
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- Plumat, Emile; and Demoulin, Pierre, to Glaverbel-Mecaniver S.A. Glazing panel with conductive strips. 3,900,634, Cl. 428-208.000.
- Plummer, William T.: *See—*
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- Poddubny, Jury Alexandrovich: *See—*
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- Poignant, Pierre; and Delage, Pierre, to Pechiney Progil. Herbicidal mono and disubstituted amides of phenoxyaliphatic carboxylic acids. 3,900,308, Cl. 71-118.000.
- Polaroid Corporation: *See—*
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- MacLeish, William T.; and Milligan, Terry W., 3,900,323.
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- Pomerantz, Alfred S.; and Andrassy, Imre A., to Pomerantz, Alfred. Anode-cathode spacing in an electrolytic cell. 3,900,798, Cl. 325-396.000.
- Pont-a-Mousson A.G.: *See—*
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- Porret, Daniel: *See—*
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- Post Office, The: *See—*
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- Potter, John. Squeezably actuated general purpose electric switch. 3,900,710, Cl. 200-81.00H.
- Potter, Michael David, to International Business Machines Corporation. Isolated fixed and variable threshold field effect transistor fabrication technique. 3,900,352, Cl. 148-187.000.
- Pouska, George A.: *See—*
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- Merrill, La Vaun S., Jr.; Drayer, Dennis E.; Gogarty, William B.; and Pouska, George A., 3,900,391.
- Powers, Richard T. Trash compactor. 3,899,967, Cl. 100-269.00R.
- Powers, Richard T. Tow bar assembly for water-ski towing device. 3,899,993, Cl. 115-6.100.
- Powers, Robert W., to General Electric Company. Method of forming beta-alumina articles. 3,900,381, Cl. 204-181.000.
- PPG Industries, Inc.: *See—*
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- Franz, Helmut; and Lecocq, David E., 3,900,601.
- Gunby, Leslie, 3,900,384.
- Prahl, Herman. Cylinder lock assembly. 3,899,907, Cl. 70-370.000.
- Preston, Harold M., to General Mills Chemicals, Inc. New method for the preparation of polyamide adduct. 3,900,437, Cl. 260-18.0PN.
- Preston, James N. Gravity simulator and exercising device. 3,900,195, Cl. 272-57.00R.
- Preston, Joseph Ronald: *See—*
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- Prino, Giuseppe: *See—*
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- Privalov, Petr Leonidovich; Makurin, Pavel Semenovich; Plotnikov, Valerian Valerievich; Koryagin, Vladimir Vasilievich; Polpudnikov, Viktor Sergeevich; and Stepanjuk, Georgy Pavlovich. Differential microcalorimeter. 3,899,918, Cl. 73-15.00B.
- Products Research & Chemical Corporation: *See—*
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- Proksch, Frederick D.: *See—*
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- Prost, Kalman J.: *See—*
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- Puddington, Ira E.: *See—*
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- Pugi, Kalev: *See—*
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- Pukhov, Alexandr Leonidovich: *See—*
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- Pulaski, Gregory F.: *See—*
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- Puleo, Salvatore J. Artificial Christmas tree with slanted needles. 3,900,539, Cl. 264-27.000.

- Punt, Vernon E., to Xerox Corporation. Spherical potentiometer with ball contact means. 3,900,817, Cl. 338-157.000.
- Purdy, David L.; and Williams, John F., to Arco Nuclear Company. Method of metals joining. 3,900,152, Cl. 228-221.000.
- Queyroix, Christian: *See—*
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- Quist, Donald G.: *See—*
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- Racky, Werner; Kleiner, Hans-Jerg; and Herwig, Walter, to Hoechst Aktiengesellschaft. Flame resistant thermoplastic polyesters. 3,900,444, Cl. 260-45.75P.
- Radscheit, Kurt; Stache, Ulrich; Fritsch, Werner; and Haede, Werner, to Hoechst Aktiengesellschaft. Process for the manufacture of delta 14-20-keto-21-dialkoxo steroids. 3,900,502, Cl. 260-397.470.
- Raethel, Heinrich: *See—*
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- Raether, Wolfgang: *See—*
Winkelmann, Erhardt; and Raether, Wolfgang, 3,900,482.
- Raines, Kenneth: *See—*
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- Rakshys, Joseph W., Jr.: *See—*
Mitchell, Albertha B.; McKinley, Suzanne V.; and Rakshys, Joseph W., Jr., 3,900,451.
- Ralston, Richard W., Jr., to Olin Corporation. Method of regulating anode-cathode spacing in an electrolytic cell. 3,900,373, Cl. 204-99.000.
- Randle, Raymond Thomas; Williamson, John; and Wilson, David, to Steetley (Mfg.) Limited. Filtration apparatus. 3,900,403, Cl. 210-350.000.
- Randron: *See—*
Wilson, Earl D., 3,900,393.
- Rank Xerox Ltd.: *See—*
Yamamoto, Kazunobu, 3,900,255.
- Rapoport, Joseph, to Hygrade Foods Inc. Preparation of coated hams. 3,900,575, Cl. 426-305.000.
- Raschke, Curt Robert, to Addressograph-Multigraph Corporation. Developing method for plain paper copying. 3,900,852, Cl. 346-74.0ES.
- Rasmussen, Chris Royce, to McNeil Laboratories, Incorporated. Esters of benzothiazine-1,1-dioxides derivatives. 3,900,470, Cl. 260-243.00R.
- Rath, Karl Friedrich. Method and apparatus for planting plants. 3,899,985, Cl. 111-3.000.
- Rau, Arthur: *See—*
Wild, Hermann; and Rau, Arthur, 3,899,845.
- Rausser, Jan Axel Ingemar: *See—*
Rausing, Hans A.; Olsen, Jan-Erik; and Rausser, Jan Axel Ingemar, 3,900,155.
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- Ravera, Giovanni; Siletto, Giorgio; and Bellis, Carlo, to Ing. C. Olivette & C., S.p.A. Electrostatic copying machine and synchronizing control system therefor. 3,900,256, Cl. 355-14.000.
- Raychem Corporation: *See—*
Sovish, Richard C.; Sullivan, Michael B.; and Wetmore, Judson D., 3,899,807.
- Raymond Lee Organization, Inc., The: *See—*
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- Wertman, Charles D., 3,899,853.
- Raytheon Company: *See—*
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- Tsao, Carson K. H., 3,900,878.
- RCA Corporation: *See—*
Feldstein, Nathan, 3,900,599.
- Weimer, Paul Kessler, 3,900,743.
- Wu, Chin Tao, 3,900,717.
- Rea, Donald E., to Jones, Spencer D. Scaffold apparatus. 3,900,080, Cl. 182-36.000.
- Read, Peter John; Latimer, Keith Graham; Reynolds, Terence David Warren; Munson, David, deceased; and by Munson, George, administrator, to Alcan Research and Development Limited. Method of producing a dispersion-strengthened aluminum alloy article. 3,899,820, Cl. 29-420.500.
- RedKen Laboratories: *See—*
Di Salvo, Ronald M.; and Yates, Robert W., 3,900,252.
- Regan, Lance. Adaptor for common pianos. 3,899,952, Cl. 84-236.000.
- Regie Nationale des Usines Renault: *See—*
Froumajou, Armand, 3,899,934.
- Rehmus, Frederick H., to Jones & Laughlin Steel Corporation. Method of reducing H₂S emissions during slag quenching. 3,900,304, Cl. 65-19.000.
- Reliance Electric Company: *See—*
Williams, Roger B., Jr.; Loshbough, Richard C.; and Cherry, Richard A., 3,899,915.
- Rembold, Heinz; Haug, Theobald; Wyler, Sigfried; and Kiefer, Jurg, to Ciba-Geigy Corporation. Storage-stable and thermosetting mixtures. 3,900,449, Cl. 260-78.0UA.
- Rendulic, Francis J.: *See—*
Guthrie, James L.; and Rendulic, Francis J., 3,900,594.
- Renis, Harold E.; and Skaletsky, Louis L., to Upjohn Company. The. 2[2'-Pyrimidinylamino]quinazolines and their preparation. 3,900,476, Cl. 260-256.40Q.
- Renner, Theodor: *See—*
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- Rensmann, Leo: *See—*
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- Research Corporation: *See—*
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- Research Laboratories of Australia Pty. Limited: *See—*
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- Revaz, Leon, to Otto Hansel GmbH. Wrapping apparatus. 3,899,865, Cl. 53-234.000.
- Reynolds, Terence David Warren: *See—*
Read, Peter John; Latimer, Keith Graham; Reynolds, Terence David Warren; Munson, David, deceased; and Munson, George, administrator, 3,899,820.
- Rheinmetall GmbH: *See—*
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- Luther, Hans Werner; Romer, Rudolf; Winkelmann, Jurgen; and Rossmann, Winfried, 3,899,978.
- Rhodes, John Kenneth, to Rolls-Royce (1971) Limited. Shaft couplings. 3,900,270, Cl. 403-317.000.
- Riboulet, Robert; and Charvet, Eugene, to La Cellophane. Composite polyester films and process for producing the same. 3,900,653, Cl. 428-212.000.
- Rice, Dale W.: *See—*
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- Richards Manufacturing Company, Inc.: *See—*
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- Richardson, Donald A., to GTE Sylvania Incorporated. High pressure sodium vapor lamp having low starting voltage. 3,900,753, Cl. 313-198.000.
- Richardson-Merrell Inc.: *See—*
Griser, Johann Martin; and Blohm, Thomas R., 3,900,565.
- Kinsolving, C. Richard, 3,900,558.
- Richter, Ian A., to United States of America, General Counsel-Code GP. The United States of America as represented by the National Aeronautics and Space Administration Office of General Counsel-Code GP. 3,900,705, Cl. 178-6.800.
- Richter, Lewis. Rotary air compressor. 3,900,275, Cl. 417-203.000.
- Richter, Sidney B.; and Krenzer, John, to Velsicol Chemical Corporation. Dithianyl anilids. 3,900,497, Cl. 260-327.00M.
- Ricketts, James M.: *See—*
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- Ricoh Co., Ltd.: *See—*
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- Riker Laboratories, Inc.: *See—*
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- Riley, Kenneth L.; and Sawyer, Willard H., to Exxon Research and Engineering Company. Hydroprocessing catalyst. 3,900,427, Cl. 252-455.00R.
- Ringot, Claude: *See—*
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- Rist's Wires & Cables Limited: *See—*
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- Rittmayer, Gerhard; Renner, Theodor; Grubmuller, Georg; and Falkenberg, Dieter, to Siemens Aktiengesellschaft. Method and device for producing a thermoelectric generator. 3,900,603, Cl. 427-124.000.
- Robba, William A.; and Froberg, Robert W., to Pfizer Inc. Method for making a film of refractory material having bi-directional reinforcing properties. 3,900,540, Cl. 264-29.000.
- Roberson, Cletis L.: *See—*
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- Robert Bosch G.m.b.H.: *See—*
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- Haubner, Georg; Hofer, Walter; and Schmaldienst, Peter, 3,900,016.
- Wahl, Josef; and Schmidt, Peter-Jurgen, 3,900,012.
- Robertshaw Controls Company: *See—*
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- Murrell, Donald K., 3,900,045.
- Robertson, Jeffrey C., to Eastman Kodak Company. Film cartridge. 3,900,169, Cl. 242-194.000.
- Robinson, Edward H. Fingerprinting arrangement. 3,899,995, Cl. 118-31.500.
- Robinson, Eric, to Lambeg Industrial Research Association. Catalyst for oxidation of hydrocarbons and method of making same. 3,900,425, Cl. 252-430.000.
- Robinson, James E., to Kimberly-Clark Corporation. Laminate of tissue and random laid continuous filament web. 3,900,632, Cl. 428-196.000.
- Rockwell International Corporation: *See—*
Maddox, James P., 3,899,815.
- McCloskey, Albert R., 3,900,294.
- Roddy, Joseph T.; and Begley, Russell D., to Emerson Electric Co. Die cast support having no effective draft. 3,900,234, Cl. 308-15.000.

Rode, John E., to Temper Corporation. Arrangement for preloading bearings. 3,900,232, Cl. 308-1.00R.

Rodrigues, Antonio A. Restraining device. 3,900,009, Cl. 119-96.000.

Rogers, Joan H.: See—
Dunbar, Joseph E.; and Rogers, Joan H., 3,900,471.

Rogers, R. Timothy, to Singer Company, The. Data communication system. 3,900,833, Cl. 340-147.00C.

Rohm and Haas Company: See—
Zdanowski, Richard E.; and Larsson, Bjorn E., 3,900,438.

Rohs, Ulrich. Sealing of cylinder head for an internal combustion engine. 3,899,880, Cl. 60-39.610.

Roland Offsetmaschinenfabrik Faber & Schleicher AG: See—
Theisz, Franz; Pollner, Max; and Holl, Roland, 3,900,193.

Rolker, John H.; and Carson, Bradley A., to Bell & Howell Company. Activation method for electroless plating. 3,900,320, Cl. 96-35.100.

Roller, Max F., to J. H. Channon, Inc. Roller curtain. 3,900,063, Cl. 160-310.000.

Roller, Siegfried; and Idler, Gustav, to C. Eugen Maier Metalverarbeitung GmbH. Spool changing device for spinning machines. 3,899,870, Cl. 57-53.000.

Rolls-Royce (1971) Limited: See—
Calder, Peter Henry; Gupta, Prem Chandra; and Lewis, William James, 3,900,177.

Hockley, Bernard Spencer, 3,899,921.

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Romano, Elazar, legal representative: See—
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Romer, Rudolf: See—
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Rongved, Paul I., to Activox, Inc. Process for total sewage treatment. 3,900,394, Cl. 210-7.000.

Rose, Andrew M., to Sperry Rand Corporation. Rotational speed monitor. 3,900,796, Cl. 324-161.000.

Rose, John Brewster: See—
Mathews, Carl Fraser; Nield, Eric; Rose, John Brewster; and Vincent, Peter Ingleton, 3,900,531.

Rosinski, Klaus D.; and Schroer, John W., to Owens-Corning Fiberglass Corporation. Method for analysis of treated glass fibers. 3,900,584, Cl. 427-8.000.

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Luther, Hans Werner; Romer, Rudolf; Winkelmann, Jurgen; and Rossmann, Winfried, 3,899,978.

Rostler, Fritz S., to Phillips Petroleum Company. Methods for modifying asphalts and emulsions useful therefor. 3,900,692, Cl. 428-489.000.

Roth, Herman P. Tub file. 3,900,157, Cl. 229-16.00D.

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Rottermann, Robert; and Fuchser, Fritz, 3,900,108.

Rottermann, Robert; and Fuchser, Fritz, to Rotterman, Robert. Display rack for carpets. 3,900,108, Cl. 211-46.000.

Rousseau, Gilbert James: See—
Stakic, Ratko; Buisson, Marc Francois Bernard; and Rousseau, Gilbert James, 3,899,883.

Roussel UCLAF: See—
Martel, Jacques; and Heymes, Rene, 3,900,468.

Rubino, Andrew M.: See—
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Ruda, Richard E.: See—
Korejwa, Alfred; Layer, Walter J.; and Ruda, Richard E., 3,900,545.

Rueckl, Roger L.: See—
Chao, Hung-Chi; Gross, John H.; Judd, Robert R.; and Rueckl, Roger L., 3,900,309.

Rummel, Werner, to Siemens Aktiengesellschaft. Method and device for the manufacture of catalytic layers for electrodes in electrochemical cells, particularly fuel cells. 3,900,602, Cl. 427-115.000.

Rumpf, Regis Robert; Farley, David Elmer; and Guilbault, Lawrence James, to Calgon Corporation. Water soluble block polymers used as silt control agents. 3,900,338, Cl. 134-22.00R.

Runyon, William L., Jr.: See—
Meador, Arthur L., Jr.; and Runyon, William L., Jr., 3,900,687.

Russ, Malcolm J., to Motorola, Inc. Scannable light emitting diode array and method. 3,899,826, Cl. 29-583.000.

Russell, Edwin T.: See—
Greaser, Sheridan H.; and Russell, Edwin T., 3,900,340.

Russell, Lowell L.; and Campbell, Claude E., to Teledyne McCormick Selph. Pyrotechnic actuated valve. 3,900,211, Cl. 280-150.0AB.

Russo, Andrew, Jr., to General Motors Corporation. Electronic modular package having a printed circuit assembly. 3,900,769, Cl. 317-101.0DH.

Russold, Maximilian; Scheck, Raimund; and Sidan, Heribert, to Steirische Gusstahlwerke Aktiengesellschaft. Spring assembly. 3,900,190, Cl. 267-9.00B.

Rutherford, Robert E., Jr.: See—
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Ruti Machinery Works Ltd.: See—
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Rutkevich, Zinoviy Yakovlevich: See—
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Ryan, Richard A., to Butterworth Manufacturing Company, Inc. Apparatus for uncurling selvage. 3,899,808, Cl. 26-54.000.

Ryle, Bernard Groene: See—
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Rynco Scientific Corporation: See—
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Sack, John J.: See—
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Sackoff, Martin M.; and Pulaski, Gregory F., to United Merchants and Manufacturers, Inc. Heat resistant laminate. 3,900,644, Cl. 428-40.000.

Sahara, Hajime: See—
Ono, Michakaze; Sahara, Hajime; and Akasaka, Masonori, 3,900,285.

St. Cyr, Lewis A.; and Young, Loren H., to Vulcan Materials Company. Prevention of air pollution by using activated alumina solid adsorbent to remove particulates of less than 0.5 microns from flue gases. 3,900,298, Cl. 55-71.000.

Saint-Gobain Industries: See—
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St. John, Daniel S., to Holotron Corporation. Holographic color television record system. 3,900,884, Cl. 358-2.000.

St. Mard, Hubert H.; Cooper, Albert S., Jr.; and Hamalainen, Carl, to United States of America, Agriculture. Flame retardant textiles by use of nitrogenous type resin and antimony oxide. 3,900,666, Cl. 428-290.000.

Sakaguchi, Seiichiro, to Hitachi, Ltd. Emergency cooling apparatus for reactors. 3,900,366, Cl. 176-37.000.

Sakamoto, Kenichi; and Kawamoto, Tamio, to Nissan Motor Co., Ltd. Rod controlled positive lock brake. 3,900,082, Cl. 188-69.000.

Sakharov, Boris Alexandrovich: See—
Zabotin, Alexandr Alexandrovich; Onikov, Eduard Arshakovich; Galperin, Alexandr Lvovich; Loschilin, Evgeny Dmitrievich; Lileev, Valerian Petrovich; German, Roman Anatolievich; Rutkevich, Zinoviy Yakovlevich; and Sakharov, Boris Alexandrovich, 3,900,049.

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Sakurada, Ichio: See—
Ito, Shunji; Morioka, Yasuaki; Kajinaga, Yoshihiro; Sakurada, Ichio; and Nitta, Minoru, 3,899,821.

Salbeck, Gerhard: See—
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Salomon, Georges Pierre Joseph. Safety ski binding. 3,900,206, Cl. 280-11.35E.

Salvo, George P., to International Business Machines Corporation. Interleaved memory control signal handling apparatus using pipelining techniques. 3,900,836, Cl. 340-172.500.

Samour, Carlos M.: See—
Ginger, Roger D.; and Samour, Carlos M., 3,900,474.

Sanchez, George R. Removable converter for a fishing pole with automatic release for fishing line. 3,899,846, Cl. 43-25.000.

Sandvik Aktiebolag: See—
Vogt, Udo Walter; and Waher, Sven G., 3,900,315.

Sano, Kazuya: See—
Komatsu, Noboru; Kamigaito, Osami; Suzuki, Takatoshi; Doi, Haruo; Sano, Kazuya; Yamamoto, Nobuyuki; Kandori, Toshio; and Tsuzuki, Yukikazu, 3,900,429.

Sanyo Electric Company, Ltd.: See—
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Sarem, Amir M., to Union Oil Company of California. Recovery of petroleum by flooding with viscous aqueous solutions of acrylamide-diacetone acrylamide copolymers. 3,900,069, Cl. 166-274.000.

Sargent Industries, Inc.: See—
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Sartori, Guido: See—
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Sartori, Rolland E., to Ateliers Roannais de Constructions Textiles. Apparatus for reciprocating a yarn guide. 3,900,166, Cl. 242-43.000.

Sasada, Juichi, to American Cyanamid Company. Process for reducing pilling tendencies of acrylic fibers and fiber products thereof. 3,900,618, Cl. 427-390.000.

Sasaki, Yosataka: See—
Shimada, Kazushi; Maeda, Toru; Nishizawa, Tamotzu; Narisada, Takehiko; Anzai, Hisao; and Sasaki, Yosataka, 3,900,453.

Sato, Akihiro; Takeda, Saburo; Konotsune, Shiro; Kato, Mitsuru; and Tonoike, Takao, to Chisso Corporation. Method for polymerizing monomers comprising alpha-olefin. 3,900,454, Cl. 260-88.20R.

Sato, Katsuaki: See—
Enel, Hitoshi; Sato, Katsuaki; Anzai, Yasuo; and Okada, Hiroshi, 3,900,368.

Sato, Shui: See—
Fujimatsu, Wataru; Sato, Shui; Kojima, Tamotsu; Endo, Takaya; and Minahara, Kazumi, 3,900,483.

Sato, Tadashi; and Kubo, Shunichi, to Canon Kabushiki Kaisha. Liquid developing device for electrophotography. 3,900,003, Cl. 118-637.000.

Saucy, Gabriel, to Hoffmann-La Roche Inc. 1-(4-Isosazoyl)-7-hydroxy-2-hydroxyimino heptanes. 3,900,491, Cl. 260-307.00H.

Sawyer, Willard H.: See—
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Scardilli, Vincent; and Sessman, Arthur, to Bendix Corporation. The. Message tape for instrument display systems. 3,900,647, Cl. 428-67.000.

Schaefer, Donald L., to General Electric Company. Group III-V compound photoemitters having a high quantum efficiency and long wavelength response. 3,900,865, Cl. 357-30.000.

Schafer, James D.; and Pollman, Frederic W., to Sundstrand Corporation. Pipe coupling. 3,900,223, Cl. 285-4.000.

Schaffer, Edward W. Taping machine. 3,900,362, Cl. 156-577.000.

Schaller, Robert L., to Sundstrand Syracuse, Inc. High speed bar peeler. 3,899,943, Cl. 82-20.000.

Schapira, William H.: See—
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Schard, Malcolm P., to Mobil Oil Corporation. Thermoplastic films based on blends of polypropylene and polybutene. 3,900,534, Cl. 260-897.00A.

Schare, Walter G. Static charge resistant synthetic yarns. 3,900,624, Cl. 428-97.000.

Scheck, Raimund: See—
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Scheets, David F., to United States of America, Navy. FM-CW fuze system. 3,900,875, Cl. 343-7.0PF.

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Scheinberg, Norman R.: See—
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Schiessl, Alois, to Buck K. G., Firma. Demolition charges. 3,899,977, Cl. 102-90.000.

Schimmer, Rigobert: See—
Beerwerth, Wolfgang; Geppert, Albrecht; and Schimmer, Rigobert, 3,900,153.

Schlapfer, Hans; and Kabas, Guglielmo, to Ciba-Geigy Corporation. Benzofurans. 3,900,419, Cl. 252-301.20W.

Schlosser, James A.; and Trumbull, Walter A., to Dow Chemical Company, The. Sheet wrapper. 3,899,913, Cl. 72-383.000.

Schlumberger Technology Corporation: See—
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Davis, Billy W., 3,900,543.

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Schmidt, Donald L.: See—
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Schmidt, John C. Synthetic structure for covering a surface. 3,900,656, Cl. 428-215.000.

Schmidt, Peter-Jurgen: See—
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Schneider, Eckart: See—
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Schneider, William P.: See—
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Schnetger, Jochen: See—
Dietrich, Manfred; Schnetger, Jochen; Haas, Friedrich; Marwede, Gunter; and Appel, Hansgunter, 3,900,532.

Schnoller, Manfred: See—
Dietze, Wolfgang; Schnoller, Manfred; Mladenovich, Tomislav; and Baumgartner, Werner, 3,900,039.

Schoer, Heinz; and Schultze, Werner, to Vereinigte Aluminium-Werke Aktiengesellschaft. Joining process. 3,900,151, Cl. 228-220.000.

Schoffmann, Rudolf, to Allis-Chalmers Corporation. Apparatus for continuous casting a metal strand shaped to provide concave surfaces. 3,900,066, Cl. 164-282.000.

Scholz, William A. Cover for retail produce baskets. 3,900,129, Cl. 220-306.000.

Schonol, Karl: See—
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Schroer, John W.: See—
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Schrom, Eike Karl: See—
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Schuck, Lee: See—
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Schulz, Arthur August, to Miles Laboratories, Inc. Meat emulsion extender process. 3,900,576, Cl. 426-311.000.

Schuman, Mark. Oscillating piston apparatus. 3,899,888, Cl. 60-519.000.

Schumperli, Max: See—
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Schwartzman, Morris: See—
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Schwarz, Gunther, to Glasurit Werke M. Winkelmann GmbH. Process for the production of dimensionally stable, planar materials coated on one side. 3,900,690, Cl. 428-447.000.

Schwarz, Karl, to Vereinigte Österreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft. Sealing assembly in tank. 3,900,127, Cl. 220-216.000.

Schweicher, Wolfgang: See—
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Scott, Lyle B., to Byron Jackson, Inc. Stroke type drill stem tester. 3,900,068, Cl. 166-152.000.

Scott, William G.; Zickgraf, John H.; and Petron, Dennis A., to United States of America, Air Force. Conical unbalanced spiral radar modulator. 3,900,849, Cl. 343-18.00D.

Sebba, Felix. Microgas emulsions and method of forming same. 3,900,420, Cl. 252-307.000.

Sebenik, Roger Frank: See—
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Sedlak, Vaclav: See—
Jurny, Josef; and Sedlak, Vaclav, 3,899,970.

Sedore, James W. Fibrillar locking system. 3,900,650, Cl. 428-86.000.

Seeburger, Thomas A., to Bethlehem Steel Corporation. Furnace seal. 3,900,282, Cl. 432-59.000.

Seegall, Manfred I.: See—
Compton, William A.; Duffy, Thomas E.; and Seegall, Manfred I., 3,899,878.

Seeman, Bronislav, to Schlumberger Technology Corporation. Methods and apparatus for measuring the density of geological formations. 3,900,733, Cl. 250-262.000.

Seeman, Bronislav: See—
Chevalier, Philippe; and Seeman, Bronislav, 3,900,731.

Seidman, Leon Louis. Detachable trough structure. 3,900,044, Cl. 137-360.000.

Seike, Helmut K., to Eltra Corporation. Converter for battery charger. 3,900,784, Cl. 320-6.000.

Seiko Koki Kabushiki Kaisha: See—
Kitai, Kiyoshi, 3,899,871.

Selch, Howard I., to Selch, James I.; Mullane, Joseph J.; and Copeland, T. D., part interest to each. Machine tool construction. 3,899,955, Cl. 90-11.00A.

Selch, James I.: See—
Selch, Howard I., 3,899,955.

Seleniz-Industrie Elektronische Associate S.p.A.: See—
Caroli, Ignazio, 3,900,806.

Semper AB: See—
Turos, Sandor, 3,900,578.

Semper AG: See—
Gluck, Maternus; Eder, Bernhard; and Kriegner, Walter, 3,899,850.

Sener, Tecnica Industrial y Naval, S.A.: See—
Menendez, Jaime Torroja, 3,899,988.

Seng, Florin; Ley, Kurt; and Metzger, Georg, to Bayer Aktiengesellschaft. Antibacterial compositions and methods. 3,900,562, Cl. 424-248.000.

Senour, Donald A.: See—
Lage, David A.; and Senour, Donald A., 3,900,828.

Sentoku, Hideshi: See—
Uchida, Isamu; Watanabe, Kenkichi; and Sentoku, Hideshi, 3,899,864.

Seragnoli, Ariosto, deceased; and by Romano, Elazar, legal representative, to G. D. Societa in Accomandita Semplice di Enzo Seragnoli e Ariosto Seragnoli. Apparatus for the exiting of products, particularly packets of cigarettes and similar, from a wrapping packing line for the said products. 3,899,863, Cl. 53-53.000.

Serizawa, Akio, to Sony Corporation. Tape cassette. 3,900,170, Cl. 242-198.000.

Serizawa, Akio, to Sony Corporation. Tape cassette. 3,900,171, Cl. 242-198.000.

Serizawa, Hiroyuki: See—
Fukai, Masakazu; Fujiwara, Shinji; Serizawa, Hiroyuki; Eguchi, Osamaru; Kuramoto, Yukimasa; and Chikamura, Takao, 3,900,882.

Sermanet, Gerard, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procédes Georges Claude. Coupling device for fluids and its application to the measurement of levels and the storage of liquids. 3,899,930, Cl. 73-299.000.

- Serra, John J.: See—
Casey, Richard C.; Duggan, Robert J.; Grosky, Stephen A.; Jen, Dixon Teh-Chao; Serra, John J.; Whitehead, Donald Shaffer; and Boyce, Thomas E., 3,900,834.
- Sessman, Arthur: See—
Scardilli, Vincent; and Sessman, Arthur, 3,900,647.
- Seufert, Wilhelm, to Werner & Pfeiderer. Screw extruder housing with a wear-resistant lining. 3,900,188, Cl. 259-192.000.
- Seward, Harold H. System for counting pills and the like. 3,900,718, Cl. 235-150.510.
- Shammas, Antoine. Jewelry bag. 3,900,060, Cl. 150-52.00R.
- Sharp, Herbert John: See—
Hart, Frederick Leslie; and Sharp, Herbert John, 3,900,649.
- Sharp, James H.: See—
Lindblad, Nero R.; Johnson, Gordon E.; and Sharp, James H., 3,900,589.
- Sheer, Charles; Korman, Samuel; Angier, Derek J.; and Cahn, Robert P., to Sheer-Korman Associates, Inc. Method and apparatus for projecting materials into an arc discharge. 3,900,762, Cl. 315-111.000.
- Sheer-Korman Associates, Inc.: See—
Sheer, Charles; Korman, Samuel; Angier, Derek J.; and Cahn, Robert P., 3,900,762.
- Sheesley, Wilmer Lee; and Pauza, William Vito, to AMP Incorporated. Multiple switch assembly having independent operators rotatably cumming discrete leaf spring type contact assemblies. 3,900,709, Cl. 200-5.00R.
- Shell Oil Company: See—
de Jong, Lodewikus N. J., 3,900,226.
- Shenk, Wilbur, III: See—
Isham, Allan B.; and Shenk, Wilbur, III, 3,900,048.
- Shepherd, Glen C.: See—
Blanton, Bobby D.; and Shepherd, Glen C., 3,899,895.
- Shibata, Takayuki: See—
Ishikawa, Katsukiyo; and Shibata, Takayuki, 3,900,126.
- Shibuya, Takehiro: See—
Moriguchi, Toshiro; Miwa, Kiyoshi; and Shibuya, Takehiro, 3,900,330.
- Shichman, Daniel: See—
Neville, James J.; Ferrell, Wesley; and Shichman, Daniel, 3,900,062.
- Shimada, Kazushi; Maeda, Toru; Nishizawa, Tamotu; Narisada, Takehiko; Anzai, Hisao; and Sasaki, Yosataka, to Mitsubishi Rayon Co., Ltd. Process for the production of methacrylate polymer molding materials. 3,900,453, Cl. 260-86.10E.
- Shimizu, Mitsuhiro: See—
Suzuki, Tadayuki; Wada, Jin; Miyamatsu, Hiroki; Ueno, Shinji; and Shimizu, Mitsuhiro, 3,900,486.
- Shinohara, Toshio: See—
Makishima, Hiroshi; Shinohara, Toshio; Kawahara, Yukio; Nii, Hiroshi; and Ebine, Setsuo, 3,900,630.
- Shipley Company, Inc.: See—
Christensen, Carl W.; and Isaacson, Calvin M., 3,900,325.
- Shneider, Aaron H. Card pocket supporting means. 3,899,842, Cl. 40-104.180.
- Shockley, Walter I., Jr. Containerized cage system for chickens. 3,900,006, Cl. 119-18.000.
- Shogren, David K.: See—
Hoppner, Werner F.; and Shogren, David K., 3,900,258.
- Shoichiro, Ito; Ohya, Tokuzi; and Nagai, Shoji, to Yuasa Battery Company Limited. Storage battery and process for producing the battery. 3,900,341, Cl. 136-54.000.
- Shutt, Philip R.: See—
Hoft, Donald J.; and Shutt, Philip R., 3,900,799.
- Sidan, Heribert: See—
Russold, Maximilian; Scheck, Raimund; and Sidan, Heribert, 3,900,190.
- Sidcor, Inc.: See—
Clare, Michael A., 3,900,087.
- Siemens Aktiengesellschaft: See—
Albrecht, Cord; and Lamatsch, Hans, 3,900,702.
- Behn, Reinhard; and Hoyer, Gerhard, 3,900,788.
- Bendel, Hermann, 3,900,708.
- Dietze, Wolfgang; Schnoller, Manfred; Mladenovich, Tomislav; and Baumgartner, Werner, 3,900,039.
- Hohne, Karl; and Bogusch, Renate, 3,900,342.
- Kleen, Gerhard; and Herrmann, Albert, 3,900,791.
- Kullmann, Dieter; and Marsing, Helmut, 3,900,809.
- Lauterbach, Richard, 3,900,639.
- Moltgen, Gottfried, 3,900,792.
- Penczynski, Peter; Mattheus, Gunther; Massek, Peter; and Liendl, Johann, 3,900,699.
- Rittmayer, Gerhard; Renner, Theodor; Grubmuller, Georg; and Falkenberg, Dieter, 3,900,603.
- Rummel, Werner, 3,900,602.
- Wagner, Gerhard, 3,900,867.
- Siepermann, Walter: See—
Koch, Friedrich; and Siepermann, Walter, 3,899,965.
- Siepmann, Reiner: See—
Mai, Gerhard; Siepmann, Reiner; and Kummer, Franz, 3,900,428.
- Sigg-Grutter, Trudi: See—
Schenk, Hanspeter; and Sigg-Grutter, Trudi, 3,900,520.
- Signetics Corporation: See—
Knubbe, Keith; Hoft, Werner H.; and Nelson, Gary, 3,900,821.
- Signode Corporation: See—
Tremper, Donald R., 3,899,963.
- Sih, Charles J., to Wisconsin Alumni Research Foundation. 2-(6-Carbomethoxy-cis-2-hexenyl)-4(R)-hydroxy-2-cyclopenten-1-one and method for preparing same. 3,900,512, Cl. 260-468.00K.
- Siletto, Giorgio: See—
Ravera, Giovanni; Siletto, Giorgio; and Bellis, Carlo, 3,900,256.
- Silfvast, William Thomas; and Wood II, Obert Reeves, to Bell Telephone Laboratories, Incorporated. Lasers optically pumped by laser-produced plasma. 3,900,803, Cl. 331-94.50P.
- Sim, James S. Y.; Van Horn, Maurice H.; Cohen, Arthur I.; Gordesky, Stanley E.; and Gordon, Stanley I., to Union Corporation. Sustained release of methantheline. 3,900,559, Cl. 424-22.000.
- Simomura, Kazuhisa: See—
Irie, Sadanao; Tomomoto, Kenichi; Akahori, Toyohiko; and Simomura, Kazuhisa, 3,900,369.
- Simons, Charles W.: See—
Holdsworth, Robert S.; O'Neill, Gerald J.; Simons, Charles W.; and DiBisio, Vincent L., 3,900,568.
- Simpson, Melvyn I.: See—
Kallianos, Andrew G.; Warfield, Albert H.; and Simpson, Melvyn I., 3,900,521.
- Sincock, Thomas F., to Monsanto Company. Preforms for forming pressurized containers. 3,900,120, Cl. 215-1.00C.
- Singer Company, The: See—
Batson, William A., 3,899,852.
- Ferriss, Lincoln S., 3,900,843.
- Lewinter, Sidney W., 3,900,879.
- Rogers, R. Timothy, 3,900,833.
- Sittmann, Brigitte, to Vereinigte Baubeschlagfabriken Grets & Co. GmbH. Ski safety binding. 3,900,205, Cl. 280-11.35K.
- Sjoberg, Borje Gustav; Odman, Rolf Ragnar; Belstad, Arne; and Lofgren, Nils Clov Allan, to Luossavaara-Kiirunavaara AB. Controlling admixture of aqueous liquid to ball rolling of powdery iron ore. 3,900,293, Cl. 23-313.000.
- Skaletzky, Louis L.: See—
Renis, Harold E.; and Skaletzky, Louis L., 3,900,476.
- Skinner, Dennis E.: See—
Davies, John; and Skinner, Dennis E., 3,899,998.
- Skulley, Gerald W.: See—
Houseman, Henry J.; and Skulley, Gerald W., 3,900,831.
- Slimp, Jack B., Jr. Apparatus for indicating wind directions and velocity. 3,899,929, Cl. 73-189.000.
- Sloan Valve Company: See—
Billeter, Henry R., 3,900,086.
- Smiley, Eldridge H.: See—
Storm, Fred K.; and Smiley, Eldridge H., 3,899,829.
- Smith, Charles E.; Hink, Karl M.; Greening, Donald J., deceased; and by Greening, Dorothy, executrix, to Cutler-Hammer, Inc. Motor speed control system with timed speed reference clamp and speed error spill-through circuit. 3,900,781, Cl. 318-271.000.
- Smith, Duane R.; and Anderson, Rodney H., to Caterpillar Tractor Company. Brake control arrangement for skidders. 3,900,227, Cl. 303-7.000.
- Smith, Fenter Willie. Automatic animal food dispenser. 3,900,007, Cl. 119-51.130.
- Smith, Imre Jack. Space filling material and method. 3,900,648, Cl. 428-71.000.
- Smith, Peter S.; and Theurer, Richard B., to Massachusetts Machine Shop Inc. Lamp shade center. 3,900,729, Cl. 240-136.000.
- Smith, Ronald. Skirting boards and fascia covers therefor. 3,899,859, Cl. 52-287.000.
- Smolin, Edwin M.: See—
Barabas, Eugene S.; and Smolin, Edwin M., 3,900,663.
- Snam Progetti S.p.A.: See—
Fattore, Vittorio; Moreschini, Paolo; and Notari, Bruno, 3,900,426.
- Societa Anonyme Poclair: See—
Bourges, Bernard M., 3,900,113.
- Societe Anonyme: Banque pour l'Expansion Industrielle "Banexi": See—
Fusey, Pierre, 3,900,421.
- Societe Anonyme dite: Omnium de Prospective Industrielle S.A.: See—
Lapierre, Philippe D., 3,899,903.
- Societe Anonyme: Glaenger Spicer: See—
Orain, Michel, 3,899,912.
- Societe d'Applications des Machines Motrices: See—
Bricout, Henri, deceased; Bricout, Marie, heir; Bricout, Didier, heir; Bricout, Catherine, heir; and Bricout, Veronique, heir, 3,900,137.
- Societe Nationale des Poudres et Explosifs: See—
Brocart, Alain, 3,899,973.
- Societe Nationale d'Etude et de Construction de Moteurs d'Aviation: See—
Stakic, Ratko; Buisson, Marc Francois Bernard; and Rousseau, Gilbert James, 3,899,883.
- Societe Nationale Industrielle Aerospatiale: See—
Alic, Andre; Carlet, Xavier; Nozeran, Robert; and Gentet, Pierre, 3,900,785.
- Soga, Hiromu; Minamida, Katsuhiko; Kurasawa, Kazuo; and Li, Masatake, to Nippon Steel Corporation; and Hamamatsu TV Co., Ltd. Method of simultaneous multiplex recording of picture and data and of regenerating such record and apparatus therefor. 3,900,887, Cl. 360-18.000.
- Sokal, Alan D.: See—
Sokal, Nathan O.; and Sokal, Alan D., 3,900,823.
- Sokal, Nathan O.; and Sokal, Alan D. Amplifying and processing apparatus for modulated carrier signals. 3,900,823, Cl. 330-149.000.

- Sollman, Kenneth John: See—
Bowen, James Harold; and Sollman, Kenneth John, 3,900,043.
- Somov, Boris Stepanovich; Mamin, Alexandr Ilich; Novikov, Andrei Porfirievich; Filippov, Vyacheslav Ivanovich; Khirdzhiev, Sergei Grigorievich; Gurevich, Vladimir Zakharovich; Voronov, Nikolai Stefanovich; and Agafonov, Ivan Fedorovich. Device for bending pipes with simultaneous upsetting. 3,899,908, Cl. 72-28.000.
- Sonnak Batterier A/S: See—
Bergh, Gunnar; Brass, Kjell; Hessner, Jorgen; and Varberg, Thomas, 3,900,343.
- Sony Corporation: See—
Furuno, Hiroshi, 3,900,801.
- Kamaya, Naoki, 3,900,172.
- Ohsawa, Mitsuo, 3,900,790.
- Serizawa, Akio, 3,900,170.
- Serizawa, Akio, 3,900,171.
- Yamazaki, Hiroshi; and Ando, Tetsuo, 3,900,747.
- Soroka, John, to J & S Aluminum Inc. Hanger. 3,900,110, Cl. 211-113.000.
- Sovish, Richard C.; Sullivan, Michael B.; and Wetmore, Judson D., to Raychem Corporation. Heat recoverable articles and method of making same. 3,899,807, Cl. 24-255.00C.
- Spanco Yarns, Inc.: See—
Northup, Francis B.; and Hart, Donald R., 3,899,867.
- Sparks, Bryan D.: See—
Meadus, Frederick W.; Sparks, Bryan D.; and Puddington, Ira E., 3,900,317.
- Spaulding, Edward C., to International Business Machines Corporation. Paraxylene-silane dielectric films. 3,900,600, Cl. 427-99.000.
- Spehrey, Charles W., to Joy Manufacturing Company. Expanding valves for electrostatic precipitators and the like. 3,900,299, Cl. 55-133.000.
- Speiser, Jeffrey M.; and Whitehouse, Harper John, to United States of America, Navy. Serial-access linear transform. 3,900,721, Cl. 235-156.000.
- Spencer, Andrew R., to Bendix Corporation. The. Porous laminate and method of manufacture. 3,900,629, Cl. 428-136.000.
- Spencer, Kenneth Morgan, to Newage Engineers Limited. Fluid-pressure rotary machines. 3,899,958, Cl. 91-492.000.
- Speno, Martin J.; and Bruno, Anthony T., to Frank Speno Railroad Ballast Cleaning Company, Inc. Ballast cleaner. 3,900,392, Cl. 209-241.000.
- Sperry Rand Corporation: See—
Bock, Joseph J.; and Dunham, William S., 3,900,868.
- Eibner, Jules A., 3,900,890.
- McDevitt, Bernard J., 3,899,968.
- Mears, William E., 3,900,848.
- Rose, Andrew M., 3,900,796.
- Spurrier, Mack W.: See—
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- Squire, William D.: See—
Lamel, Arthur E.; Squire, William D.; and Whitehouse, Harper J., 3,900,827.
- Staab, Norbert A.: See—
Castaneda, Ben; and Staab, Norbert A., 3,899,818.
- Stache, Ulrich: See—
Radscheit, Kurt; Stache, Ulrich; Fritsch, Werner; and Haede, Werner, 3,900,502.
- Stahl-Urban Company: See—
Conner, William R., Jr., 3,899,986.
- Stakic, Ratko; Buisson, Marc Francois Bernard; and Rousseau, Gilbert James, to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation. After burner. 3,899,883, Cl. 60-39.710.
- Stange, Klaus K., to Xerox Corporation. Donor apparatus. 3,900,002, Cl. 118-637.000.
- Stanley, Leonard A.; and Fouche, Glynn E., Jr., to Kendall Company, The. Method of making chemically protected off-the-loom fabrics. 3,899,810, Cl. 28-72.600.
- Statni vyzkumny ustav kozedelný: See—
Muck, Eduard; Strachota, Jaroslav; and Horak, Josef, 3,900,621.
- Stauffer Chemical Company: See—
Henry, Allan L., 3,900,055.
- Kraft, Paul; and Jin, Jung II, 3,900,455.
- Weil, Edward D., 3,900,665.
- Steele, Ernest R., to United States of America, General Counsel-Code GP. Satellite aided vehicle avoidance system. 3,900,847, Cl. 343-6.50R.
- Steetley (Mfg.) Limited: See—
Randle, Raymond Thomas; Williamson, John; and Wilson, David, 3,900,403.
- Steigelman, James O., to W. M. Chace Company. Bilayer metallic article. 3,900,295, Cl. 29-196.300.
- Steirische Gusstahlwerke Aktiengesellschaft: See—
Russold, Maximilian; Scheck, Raimund; and Sidan, Heribert, 3,900,190.
- Stempeck, John W., to Polaroid Corporation. Exposure control system and method. 3,900,855, Cl. 354-29.000.
- Stenlund, Hans, to Gotaverken Angteknik AB. Air supply means for a furnace. 3,900,011, Cl. 122-235.00B.
- Stepanjuk, Georgy Pavlovich: See—
Privalov, Petr Leonidovich; Makurin, Pavel Semenovich; Plotnikov, Valerian Valerievich; Koryagin, Vladimir Vasilievich; Polpudnikov, Viktor Sergeevich; and Stepanjuk, Georgy Pavlovich, 3,899,918.
- Stephens, James B., to Westates Space-Era Products, Inc. Liquid distribution systems. 3,900,135, Cl. 222-52.000.
- Sterling Drug Inc.: See—
Dickinson, William B.; and Vaupotic, Marcia P., 3,900,480.
- Sternbach, Leo Henryk: See—
Ning, Robert Ye-Fong; and Sternbach, Leo Henryk, 3,900,501.
- Stevens, Harold E., to Coaxial Dynamics. Directional coupler for transmission lines. 3,900,805, Cl. 333-10.000.
- Stevens, Robert W.: See—
Coyle, Jan R.; and Stevens, Robert W., 3,900,886.
- Stewart, John Hill: See—
Dyott, Richard Burnaby; and Stewart, John Hill, 3,900,245.
- Stewart, William E., to Linatex Corporation of America. Pretensioned screen panel. 3,900,628, Cl. 428-134.000.
- Stickney, William A.: See—
Hunter, Willard L.; White, Jack C.; and Stickney, William A., 3,900,552.
- Stigler, Edward A., to Christensen, Walter M., a part interest. Fermentation adjunct for yeast leavened bread processes. 3,900,570, Cl. 426-9.000.
- Stinger, Henry Joseph, to du Pont de Nemours, E. I., and Company. Composite polymeric electric heating element. 3,900,654, Cl. 428-214.000.
- Stiteler, Fred Zwald; and Honigmann, Ronald Louis, to Combustion Engineering, Inc. Method and apparatus for reverse circulating nuclear steam generator secondary fluid. 3,900,010, Cl. 122-32.000.
- Stoll, Max: See—
Winter, Max; Gautschi, Fritz; Flament, Ivon; Stoll, Max; and Goldman, Irving M., 3,900,581.
- Winter, Max; Gautschi, Fritz; Flament, Ivon; Stoll, Max; and Goldman, Irving M., 3,900,582.
- Storm, Fred K.; and Smiley, Eldridge H., to Fred Storm Industrial Designs, Inc. Holder and actuator means for surgical instruments. 3,899,829, Cl. 30-228.000.
- Strachota, Jaroslav: See—
Muck, Eduard; Strachota, Jaroslav; and Horak, Josef, 3,900,621.
- Strathdee, Graeme Gilroy, to Atomic Energy of Canada Limited. Anchored homogeneous-type catalysts for H-D exchange. 3,900,557, Cl. 423-580.000.
- Strauss, Edgar, to Ruti Machinery Works Ltd. Reed dent arrangement. 3,900,050, Cl. 139-12.000.
- Strenkowski, John: See—
Gibbon, John; Heacock, Burt; Lipnick, Richard; Strenkowski, John; and Tutino, Matthew, 3,900,846.
- Subsea Equipment Associates Limited: See—
Liautaud, Jean A., 3,899,894.
- Sucrest Corporation: See—
Monti, Anthony, 3,900,569.
- Suga, Shigeru. Long-life carbon electrodes for weather tester and the like. 3,900,756, Cl. 313-354.000.
- Sugaya, Hiroshi; and Hosono, Hiroo, to Matsushita Electric Industrial Co., Ltd. Magnetic video recording and reproducing apparatus. 3,900,892, Cl. 360-85.000.
- Sugiyama, Masatoshi: See—
Tada, Sugihiko; Nishigaki, Yasuo; and Sugiyama, Masatoshi, 3,900,523.
- Sulkowski, Theodore S., to American Home Products Corporation. Tetrahydropyrimidinyl phenyl carbonyl acid addition salts, imidazolyl phenyl carbonyl compounds acid addition salts and related compounds. 3,900,494, Cl. 260-296.00T.
- Sullivan, Michael B.: See—
Sovish, Richard C.; Sullivan, Michael B.; and Wetmore, Judson D., 3,899,807.
- Sullivan, Robert E.: See—
Arvin, John R.; Sullivan, Robert E.; Troth, Dennis L.; and Verdouw, Albert J., 3,899,881.
- Sulzer Brothers Limited: See—
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- Bucher, Robert, 3,900,051.
- Sumi, Hirotaka; Suzuki, Isao; Yokoe, Isamu; and Matsuzaki, Tetsuo, to Toyoda Koki Kaishiki Kaisha. Feed control apparatus for a grinding machine. 3,900,777, Cl. 318-39.000.
- Sun Research and Development Co.: See—
Turner, John O., 3,900,489.
- Sun Spice Co., Ltd.: See—
Masuda, Yoshikazu; and Inagaki, Tatsumi, 3,900,579.
- Sunagawa, Mitsuru: See—
Tsukada, Kazuo; Sunagawa, Mitsuru; and Kanzaki, Yoshiharu, 3,900,876.
- Sundstrand Corporation: See—
Schafer, James D.; and Pollman, Frederic W., 3,900,223.
- Sundstrand Syracuse, Inc.: See—
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- Super 8 Sound, Inc.: See—
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- Susa, Kenzo: See—
Kobayashi, Toshio; Susa, Kenzo; and Taniguchi, Satoshi, 3,900,431.
- Suttner, Thomas John. Sound effect toy game combination. 3,900,196, Cl. 273-1.00R.
- Suzuki, Isao: See—
Sumi, Hirotaka; Suzuki, Isao; Yokoe, Isamu; and Matsuzaki, Tetsuo, 3,900,777.
- Suzuki, Tadayuki; Wada, Jin; Miyamatsu, Hiroki; Ueno, Shinji; and Shimizu, Mitsuhiro, to Tokyo Tanabe Company, Ltd. 3-Methyl-2-phenyl-5-benzothiazoline acetic acid compounds and process for producing the same. 3,900,486, Cl. 260-304.000.

- Suzuki, Takatoshi: *See—*
Komatsu, Noboru; Kamigaito, Osami; Suzuki, Takatoshi; Doi, Haruo; Sano, Kazuya; Yamamoto, Nobuyuki; Kandori, Toshio; and Tsuzuki, Yukikazu, 3,900,429.
- Svarz, Jerry J., to Nalco Chemical Company. Conversion of nitrile to its corresponding amide using improved copper oxide catalyst. 3,900,517, Cl. 260-561.00N.
- Svensson, Lennart: *See—*
Elmgren, Staffan; and Svensson, Lennart, 3,900,189.
- Svischev, Georgy Petrovich: *See—*
Tupolev, Andrei Nikolaevich; Tupolev, Alexei Andreevich; Minkner, Kurt Vladimirovich; Bonin, Alexandr Romanovich; Cheremukhin, Georgy Alexeevich; Bliznjuk, Valentin Ivanovich; Pukhov, Alexandr Leonidovich; Svischev, Georgy Petrovich; Bjushgens, Georgy Sergeevich; Nikolaev, Alexandr Vasilievich; and Mikeladze, Vitaly Georgievich, 3,900,178.
- Swain, Allan L.: *See—*
Tallent, Michael W.; Hendershot, William B.; Swain, Allan L.; and Harrison, Ronnie M., 3,900,885.
- Swanson, Kenneth B., and Huffman, Herman M., to Midland-Ross Corporation. Pedal ratio control for hydraulic booster. 3,899,889, Cl. 60-547.000.
- Swanson, Kenneth B., to Midland-Ross Corporation. Warning device for brake systems and the like. 3,900,840, Cl. 340-242.000.
- Swezy, Montgomery C.: *See—*
Doyle, Robert L.; and Swezy, Montgomery C., 3,899,843.
- Swick, Robert M., to General Motors Corporation. Gas turbine engine control. 3,899,886, Cl. 60-223.000.
- Swiss Aluminum Ltd.: *See—*
Chaudhuri, Kiranendu B., 3,900,371.
- Syracuse University Research Corporation: *See—*
Howells, Paul W., 3,899,960.
- Tabler, Donald C.: *See—*
Johnson, Marvin M.; Tabler, Donald C.; and Nowack, Gerhard P., 3,900,526.
- Tackett, James E., Jr.: *See—*
Kersch, Keith M.; Pouska, George A.; Drayer, Dennis E.; and Tackett, James E., Jr., 3,900,041.
- Tada, Sugihiko; Nishigaki, Yasuo; and Sugiyama, Masatoshi, to Fuji Photo Film Co., Ltd. Method for purifying hydroquinone as well as method for purifying and recovering hydroquinone. 3,900,523, Cl. 260-621.00A.
- Tagaya, Ryosaku: *See—*
Takahashi, Toshio; Tagaya, Ryosaku; and Ehara, Toshiyasu, 3,900,266.
- Taguchi, Naoyoshi. Element for detection of combustible gases and smoke. 3,900,815, Cl. 338-34.000.
- Taguchi, Tatsuya; and Iura, Yukio, to Canon Kabushiki Kaisha. Automatic exposure control device. 3,900,856, Cl. 354-45.000.
- Takacs, John: *See—*
Bucy, Shawn G.; and Takacs, John, 3,900,851.
- Takada, Tadamichi: *See—*
Inoue, Shohei; Kanbe, Masaki; Takada, Tadamichi; Miyazaki, Nobuyuki; and Yokokawa, Masanori, 3,900,424.
- Takagaki, Takashi: *See—*
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- Takahashi, Isao: *See—*
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- Takahashi, Koichi; Hitomi, Nobuteru; and Kizu, Taisuke, to Nissan Motor Co., Ltd. Universal joint. 3,899,898, Cl. 64-21.000.
- Takahashi, Toshio; Tagaya, Ryosaku; and Ehara, Toshiyasu, to Eisai Co., Ltd. Method and apparatus for detecting solid substances contained in liquid. 3,900,266, Cl. 356-208.000.
- Takami, Norihiko; Hattori, Osamu; and Wakabayashi, Manabu, to Hitachi, Ltd. Method of manufacturing pole piece assembly for electromagnetic type pickup. 3,899,827, Cl. 29-603.000.
- Takashima, Kazushige; Nishigaki, Katumi; and Yamashita, Terumasa, to Matsushita Electric Industrial Co., Ltd. Metallized film capacitor. 3,900,775, Cl. 317-258.000.
- Takeda Chemical Industries, Ltd.: *See—*
Komatani, Taro; Yamada, Kazuo; Oguri, Eizo; and Tokuda, Yasunori, 3,900,462.
- Kuwada, Yutaka; Natsugari, Hideaki; and Meguro, Kanji, 3,900,490.
- Takeda, Saburo: *See—*
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- Takeshita, Tsuneichi, to du Pont de Nemours, E. I., and Company. Hydroxyl-terminated chloroprene polymers. 3,900,379, Cl. 204-159.240.
- Takiguchi, Hisashi: *See—*
Masuda, Noboru; and Takiguchi, Hisashi, 3,900,813.
- Takvoryan, Nurhan E.: *See—*
Bard, Allen J.; and Takvoryan, Nurhan E., 3,900,418.
- Tallent, Michael W.; Hendershot, William B.; Swain, Allan L.; and Harrison, Ronnie M., to Consolidated Video Systems. Television signal time base corrector. 3,900,885, Cl. 358-8.000.
- Tanabe, Koji, to Citizen Watch Co., Ltd. Driving circuits for electrical printers. 3,900,095, Cl. 197-1.00R.
- Tanabe, Takashi; and Adachi, Tomio, to Teitin Ltd. Method for producing a magnetic recording material. 3,900,604, Cl. 427-129.000.
- Tanaka, Masaru: *See—*
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- Tanck, Elinor J.; Hulse, Lauren L.; and Kelly, Paul P., to Memorex Corporation. Electrophotographic developer. 3,900,414, Cl. 252-62.10P.
- Tanguy, Pierre J., to Etud S.A. Portable cooking appliance. 3,899,961, Cl. 99-340.000.
- Taniguchi, Satoshi: *See—*
Kobayashi, Toshio; Susa, Kenzo; and Taniguchi, Satoshi, 3,900,431.
- Tanikoshi, Kinzi, to Canon Kabushiki Kaisha; and Canon Seiki Kabushiki Kaisha. Control circuit for electric motors. 3,900,780, Cl. 318-254.000.
- Tanji, Mikiharu; Yamanaka, Yoshimasa; and Takahashi, Isao. Cathode ray tubes for displaying letters and the like. 3,900,764, Cl. 315-21.00R.
- Taplin Business Machines Incorporated: *See—*
Hanchett, Leland J., 3,900,832.
- Taruntaev, Vladimir, to VSI Automation Assembly, Inc. Tool head assembly for imparting rotary rocking motion to a tool. 3,899,909, Cl. 72-112.000.
- Tate, Donald P.: *See—*
Bethany, Lewis R.; Desmonds, Daniel J.; and Tate, Donald P., 3,900,723.
- Taub, Bernard; and Harnish, Daniel F., to Allied Chemical Corporation. Expandable polystyrene beads. 3,900,433, Cl. 260-2.50B.
- Taylor, Allen L., to Minnesota Mining and Manufacturing Company. Printing using pyroelectric film. 3,899,969, Cl. 101-130.000.
- Taylor, Lynn J., to Owens-Illinois, Inc. Preparation of chemically convertible tape. 3,900,682, Cl. 427-386.000.
- Teel, Paul H.: *See—*
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- Teitin Ltd.: *See—*
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- Tektronix Inc.: *See—*
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- White, Robert Gordon, 3,900,853.
- Tele-Vend Systems: *See—*
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- Teledyne, Inc.: *See—*
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- Teledyne McCormick Selph: *See—*
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- Teledyne Mid-America Corporation: *See—*
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- Teller, Aaron J., to Teller Environmental Systems, Inc. Test process and apparatus for treatment of jet engine exhaust. 3,899,923, Cl. 73-116.000.
- Teller Environmental Systems, Inc.: *See—*
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- Temper Corporation: *See—*
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- Tension Structures Co.: *See—*
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- Terajima, Kazuki; Tomita, Shigeru; Matsuda, Yoshindo; and Abe, Keiji, to Director-General of the Agency of Industrial Science and Technology. Heavy metal adsorbents and process for producing same. 3,900,422, Cl. 252-426.000.
- Teraoka, Kohta; and Nakano, Toshio, to Nippon Columbia Kabushiki Kaisha. Method of making crystal. 3,900,363, Cl. 156-612.000.
- Terlecki, Leo: *See—*
Goulsh, Gabriel J.; Terlecki, Leo; and Wright, Alan R., 3,900,236.
- Terry, David R., to American Home Products Corporation. Contoured belt coating method. 3,900,583, Cl. 427-3.000.
- Terry, John Christopher; Lippman, Alfred; Sebenik, Roger Frank; and Harris, Harry Gordon, Jr., to Toth Aluminum Corporation. Reduction of aluminum chloride by manganese. 3,900,312, Cl. 75-68.00B.
- Tetra Pak Development SA: *See—*
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- Texaco Inc.: *See—*
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- Hinnant, Harris O., 3,900,825.
- Texas Instruments Incorporated: *See—*
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- Blanton, Bobby D.; and Shepherd, Glen C., 3,899,895.
- Bryant, Samuel T., 3,899,896.
- Cochran, Michael J.; and Grant, Charles P., Jr., 3,900,722.
- Grenier, Aime J., 3,900,810.
- Texcon Limited: *See—*
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- Thayer, William Stansbury: *See—*
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- Theisz, Franz; Pollner, Max; and Holl, Roland, to Roland Offsetmaschinenfabrik Faber & Schleicher AG. Take-off grippers in printing presses. 3,900,193, Cl. 271-85.000.
- Theurer, Richard B.: *See—*
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- Thoma, Wilhelm; Noll, Klaus; Pedain, Josef; and Koch, Hans Joachim, to Bayer Aktiengesellschaft. Textile substrate having coatings of polycarbonate-polyurea elastomer. 3,900,688, Cl. 428-246.000.
- Thomas, Mary R.: *See—*
Lalk, Robert H.; Schmidt, Donald L.; and Thomas, Mary R., 3,900,619.
- Thomas, Virgil E., Jr.; and Quist, Donald G., to United States of America, Navy. Arbs TV tracker. 3,900,704, Cl. 178-6.800.
- Thomis, Wendi: *See—*
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- Thomson Industries, Inc.: *See—*
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- Thomson, John B., to Thomson Industries, Inc. Linear motion ball bearing assembly and ball conforming shaft. 3,900,233, Cl. 308-6.00C.
- Thorn Lighting Limited: *See—*
Mason, David Robert; Cole, Susan Margaret; Cayless, Maurice Arthur; and Wharmby, David Osborn, 3,900,754.
- Tichenor, Clyde L., to Berkey-Colortran, Inc. Compact follow spot. 3,900,726, Cl. 240-41.35R.
- Tickle, John Edward, to Ferranti Limited. Training simulators for submarine periscopes. 3,900,703, Cl. 178-6.000.
- Tillett, Peter Irving: *See—*
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- Tiner, Robert L.: *See—*
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- Tisdale, Lawrence H.; and Lesensky, Leonard, to Raytheon Company. Arc suppressing coating for metal-dielectric interface surfaces. 3,900,755, Cl. 313-212.000.
- Titus, Donald E.; and Tsao, Sherman H. M., to International Business Machines Corporation. Method and apparatus for generation of multiple uniform fluid filaments. 3,900,162, Cl. 239-102.000.
- Tjuttjunnikov, Anatoly Borisovich; Tjuttjunnikov, Boris Nikanorovich; Marchenko, Alexandr Nikolaevich; Burin, Viktor Leontievich; Bolotin, Josif Mironovich; Drozdov, Anatoly Sergeevich; Koval, Leonid Petrovich; Didenko, Zoya Vasilievna; Ljubushkin, Georgy Vasilievich; Budnik, Yuri Mikhailovich; Moskvina, Vladimir Dmitrievich; and Bolyanovsky, Dmitry Mikhailovich. Column for heat-and-mass exchange between gas and liquid. 3,900,537, Cl. 261-122.000.
- Tjuttjunnikov, Boris Nikanorovich: *See—*
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- Tobin, John H.: *See—*
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- Tognola, Sergio: *See—*
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- Toivanen, Toivo Adrian: *See—*
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- Tokai Metals Co., Ltd.: *See—*
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- Tokuda, Yasunori: *See—*
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- Tokyo Tanabe Company, Ltd.: *See—*
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- Tomita, Shigeru: *See—*
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- Tomomoto, Kenichi: *See—*
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- Tonoike, Takao: *See—*
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- Toray Industries, Inc.: *See—*
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- Torrington Company, The: *See—*
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- Toth Aluminum Corporation: *See—*
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- Toyoda Koki Kabushiki Kaisha: *See—*
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- Transitek Corporation: *See—*
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- Tremper, Donald R., to Signode Corporation. Articulated strap chute and guide means therefor. 3,899,963, Cl. 100-25.000.
- Treptow, Ernest G.: *See—*
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- Tress, Jack E.; and Hunter, Willard L., to United States of America, Interior. Charging an electric furnace. 3,900,696, Cl. 13-33.000.
- Trimbitas, Dorin: *See—*
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- Triumph Werke Nurnberg A.G.: *See—*
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- Troth, Dennis L.: *See—*
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- Trouiller, Jean Claude; and Lafont, Guy, to Schlumberger Technology Corporation. Methods of preventing cycle skipping in processing acoustic well-logging signals. 3,900,824, Cl. 340-15.5AC.
- Trumbull, Walter A.: *See—*
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- TRW Inc.: *See—*
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- Ehrlich, Don E., 3,900,131.
- Kuehn, Donald E.; and Lyon, John Keith, 3,900,132.
- Melver, George W.; and Buie, James L., 3,900,724.
- Tsao, Carson K. H., to Raytheon Company. Mine rescue system. 3,900,878, Cl. 343-112.00R.
- Tsao, Sherman H. M.: *See—*
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- Tsemakhovich, Boris Davydovich: *See—*
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- Tsuiki, Takao; and Hatsukano, Yoshikazu, to Hitachi, Ltd. Key input circuit. 3,900,845, Cl. 340-365.00E.
- Tsujimoto, Kayoshi, to Minolta Camera Kabushiki Kaisha. Flash synchronizing camera with mechanically and electrically timed shutter. 3,900,857, Cl. 354-50.000.
- Tsukada, Kazuo; Sunagawa, Mitsuru; and Kanzaki, Yoshiharu, to Fujitsu Ltd. Automatic omega signal pattern synchronizing system. 3,900,876, Cl. 343-105.00R.
- Tsunashima, Teruyoshi; Kaneko, Teruo; and Ichimura, Takeo, to Nippon Kogaku K.K. Soft-focus optical element. 3,900,249, Cl. 350-188.000.
- Tsuzuki, Yukikazu: *See—*
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- Tuominen, Tapio Kalevi: *See—*
Kaasila, Kauko Johannes; Toivanen, Toivo Adrian; Harkki, Seppo Untamo; Neimela, Toivo Isak; Makiipirtti, Simo A.; Malmstrom, Rolf E.; Tuominen, Tapio Kalevi; Aaltonen, Olavi August; and Noponen, Veikko H., 3,900,310.
- Tuovinen, Frans Heikki; Blomquist, Seppo Ilmari; Heikkila, Risto Markus; Honkasalo, Jorma Bruno; and Kunttu, Kalevi Johan, to Outokumpu Oy. Feeding ring for feeding ore into furnaces. 3,900,117, Cl. 214-18.00R.
- Tupolev, Alexei Andreevich: *See—*
Tupolev, Andrei Nikolaevich; Tupolev, Alexei Andreevich; Minkner, Kurt Vladimirovich; Bonin, Alexandr Romanovich; Cheremukhin, Georgy Alexeevich; Bliznjuk, Valentin Ivanovich; Pukhov, Alexandr Leonidovich; Svischev, Georgy Petrovich; Bjushgens, Georgy Sergeevich; Nikolaev, Alexandr Vasilievich; and Mikeladze, Vitaly Georgievich, 3,900,178.
- Tupolev, Andrei Nikolaevich; Tupolev, Alexei Andreevich; Minkner, Kurt Vladimirovich; Bonin, Alexandr Romanovich; Cheremukhin, Georgy Alexeevich; Bliznjuk, Valentin Ivanovich; Pukhov, Alexandr Leonidovich; Svischev, Georgy Petrovich; Bjushgens, Georgy Sergeevich; Nikolaev, Alexandr Vasilievich; and Mikeladze, Vitaly Georgievich. Supersonic aircraft with a delta wing. 3,900,178, Cl. 244-55.000.
- Turba, Vittorio: *See—*
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- Turlabor AG: *See—*
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- Turner, Charlie B., to General Electric Company. Lighting control device. 3,900,763, Cl. 315-156.000.
- Turner, John O., to Sun Research and Development Co. Preparation of 1,1'-peroxydicyclohexylamine. 3,900,489, Cl. 260-307.00F.
- Turner, Peter H., to Sargent Industries, Inc. Bearing liner. 3,900,408, Cl. 252-12.600.
- Turos, Sandor, to Semper AB. Process for preparing so called crumb for the manufacture of milk chocolate. 3,900,578, Cl. 426-580.000.
- Tutino, Matthew: *See—*
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- Tweeddale, Andrew D.: *See—*
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- Uchida, Isamu; Watanabe, Kenichi; and Sentoku, Hideshi, to Laurel Bank Machine Co., Ltd. Coin wrapping apparatus. 3,899,864, Cl. 53-212.000.
- Uchikoshi, Goji; and Nakamichi, Niro, to Nakamichi Research Inc. Process for detecting and adjusting a vertical orientation of magnetic heads and apparatus therefor. 3,900,888, Cl. 360-76.000.
- Uda, Hiroshi: *See—*
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- Ueno, Shinji: *See—*
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- Ulcickas, Paul W.: *See—*
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- Ulman, Lynn J.; and Green, Raymond G., to Westinghouse Electric Corporation. Digital pulse train tracker. 3,900,850, Cl. 343-7.300.
- Underwood, William George Elphinstone; and Long, Alan Gibson, to Glaxo Laboratories Limited. Certain diazathiabicycloheptane derivatives. 3,900,487, Cl. 260-306.70C.
- Union Carbide Corporation: *See—*
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- Bradley, Howard B., 3,900,660.
- Funderburk, James O., Jr.; and Vicik, Stephen J., 3,900,635.
- Greaser, Sheridan H.; and Russell, Edwin T., 3,900,340.

- Jackson, George Edward, 3,899,900.
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United Aircraft Corporation: See—
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Daly, William M.; and McKenna, John F., Jr. Fault tolerant clock apparatus utilizing a controlled minority of clock elements. 3,900,741, Cl. 307-204.000.
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van Gulick, Norman Martin, to du Pont de Nemours, E. I., and Company. Thermally activated promoters for salt complex curing agents. 3,900,447, Cl. 260-77.5AM.
Van Horn, Maurice H.: See—
Sim, James S. Y.; Van Horn, Maurice H.; Cohen, Arthur I.; Gordesky, Stanley E.; and Gordon, Stanley I., 3,900,559.
Varberg, Thomas: See—
Bergh, Gunnar; Brass, Kjell; Hessner, Jorgen; and Varberg, Thomas, 3,900,343.
Vaupotic, Marcia P.: See—
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VCA Corporation: See—
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VEB Pentacon: See—
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Aust, Gert-Rudiger; Hainy, Siegfried; and Korf, Erich, 3,900,861.
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Vecchiotti, Camillo M., to Amerace Corporation. Hollow, multi-layered, cross-linked plastic structures and process for producing same. 3,900,640, Cl. 428-36.000.
Velsicol Chemical Corporation: See—
Krenzer, John, 3,900,485.
Richter, Sidney B.; and Krenzer, John, 3,900,497.
Verdouw, Albert J.: See—
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Vereinigte Aluminium-Werke Aktiengesellschaft: See—
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Vereinigte Baubeschlagfabriken Grets & Co. GmbH: See—
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Vereinigte Österreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft: See—
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Verkuiljen, Wilhelmus Henricus Cornelis Gerardus: See—
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Vicik, Stephen J.: See—
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Vida, Julius A.; and Hooker, Mary L., to Kendall Company, The. Certain phenobarbital salts. 3,900,475, Cl. 260-256.40C.
Vignozzi, Pietro; and Cerioli, Paolo, to Fabbrica Italiana Magneti Marelli S.p.A. Electronic system to control operator circuits as a function of speed of machine rotating member. 3,900,013, Cl. 123-102.000.
Vincent, Gary A., to Dow Corning Corporation. Electrical devices containing nitroarylsiloxane dielectric fluid. 3,900,416, Cl. 252-63.700.
Vincent, Peter Incledon: See—
Mathews, Carl Fraser; Nield, Eric; Rose, John Brewster; and Vincent, Peter Incledon, 3,900,531.
Vogler, Franziska, heir: See—
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Vogler, Heinrich, heir: See—
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Vogler, Karl, deceased: See—
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Vogler, Nikolaus E., heir: See—
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- Vogt, Udo Walter; and Waher, Sven G., to Sandvik Aktiebolag. Nickel-chromium-iron alloy. 3,900,315, Cl. 75-124.000.
Vogtmann, Theodor: See—
Beck, Wolfgang; Brunner, Friedrich C.; Frash, Peter U.; Ivancic, Blanka; Schwerdt, Friedrich W.; and Vogtmann, Theodor, 3,900,337.
Volker, Herbert W. Dispensing apparatus. 3,900,163, Cl. 239-112.000.
von Bebenburg, Walter; and Offermanns, Heribert, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. 6-Aza-3H-1,4-benzodiazepines. 3,900,466, Cl. 260-239.30B.
Voronov, Nikolai Stefanovich: See—
Somov, Boris Stepanovich; Mamin, Alexandr Ilich; Novikov, Andrei Porfirievich; Filippov, Vyacheslav Ivanovich; Khirdzhiev, Sergei Grigorievich; Gurevich, Vladimir Zakharovich; Voronov, Nikolai Stefanovich; and Agafonov, Ivan Fedorovich, 3,899,908.
Voss, Peter; Niederprum, Hans; and Beyl, Volker, to Bayer Aktiengesellschaft. Perfluoroalkylsulfonic acid aminophenyl esters. 3,900,508, Cl. 260-456.00A.
VSI Automation Assembly, Inc.: See—
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Vulcan Materials Company: See—
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W. C. Heraeus GmbH: See—
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W. M. Chace Company: See—
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W. R. Grace & Co.: See—
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Wagner, Gerhard, to Siemens Aktiengesellschaft. Interrogator-responder system for different interrogator codes. 3,900,867, Cl. 343-6.5LC.
Wagner, William H. Device for holding and protecting intravenous injection needles. 3,900,026, Cl. 128-133.000.
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Wahl, Josef; and Schmidt, Peter-Jürgen, to Robert Bosch G.m.b.H. Fuel-air mixture proportioning control system for internal combustion engines. 3,900,012, Cl. 123-32.0EA.
Wakabayashi, Manabu: See—
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Wakabayashi, Nobuyoshi: See—
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Walch, Allan P.: See—
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Waldeck, Franz: See—
Konz, Wilhelm; Waldeck, Franz; and Jenneweine, Hans-Michael, 3,900,566.
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Walters, Robert Bruce, to General Electric Company. Insulated electrical conductor. 3,900,681, Cl. 428-379.000.
Walters, Russell W., to BMR Security Products Corporation. Locking bar assembly. 3,899,905, Cl. 70-91.000.
Walworth, Vivian K.: See—
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Hoppe, Peter; Drouven, Gustav; Wandel, Martin; Gutschik, Ernst; and Brokmeier, Dieter, 3,900,651.
Ward, Frederick Alfonso; and Harvey, Leslie Augustus. Jumping stand with pivotally mounted horizontal bar. 3,900,194, Cl. 272-1.00B.
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Page, Frederick Walter; and Wardle, Peter Charles Darlington, 3,900,092.
Warfield, Albert H.: See—
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Weaver, Harvey N.: See—
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Wegmann, Jacques; and Peter, Richard, to Ciba-Geigy AG. Dyestuff preparations and processes for the dyeing of synthetic organic material. 3,900,286, Cl. 8-172.000.
Wehr Corporation: See—
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Weick, Walter Werner: See—
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Weigle, Manfred: See—
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Weil, Edward D., to Stauffer Chemical Company. Flame retarding of solid substrates with hydroxyalkylphosphonate carbamates. 3,900,665, Cl. 428-276.000.
Weimer, Paul Kessler, to RCA Corporation. Charge amplifier. 3,900,743, Cl. 307-221.00D.
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Welch, Dennis W.; and Lipsky, Milton H. Therapeutic elastic bandage. 3,900,035, Cl. 128-402.000.
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Weresch, Thomas. Device for cutting bending and corrugating the leads of electric components. 3,900,053, Cl. 140-105.000.
Werges, Darrell L., to Nalco Chemical Company. Process for making acrylamide. 3,900,516, Cl. 260-561.00N.
Werkzeugmaschinenfabrik Oerlikon-Bührle AG: See—
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Werner, Paul: See—
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Westinghouse Electric Corporation: See—
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Kim, He B., 3,900,863.
Parker, Stephen R., 3,899,882.
Ulman, Lynn J.; and Green, Raymond G., 3,900,850.
Weston, George Frederick, to U.S. Philips Corporation. Glow discharge display device with intersecting electrode systems scaled between opposing plates. 3,900,752, Cl. 313-188.000.
Westover, Dwight G.; and Grant, Frederic F., to Bell & Howell Company. Card advancing and function performing methods and apparatus. 3,900,191, Cl. 271-3.000.
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White, Robert Gordon, to Tektronix Inc. Stylus actuator. 3,900,853, Cl. 346-139.00R.
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White-Westinghouse Corporation: See—
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Whitfield, Joseph A., to Caterpillar Tractor Company. Dual filter arrangement. 3,900,400, Cl. 210-238.000.
Widran, Jerrold. Endoscope with uninterrupted flow purging system. 3,900,022, Cl. 128-7.000.
Wiedmann, Siegfried Kurt, to International Business Machines Corporation. Hybrid storage circuit. 3,900,838, Cl. 340-173.00R.

- Wiesler, Mordechai; and McCarron, John C., to Teledyne, Inc. Visual selection and precision isolation system for microelectronic units. 3,900,244, Cl. 350-81.000.
- Wiggins Teape Research & Development Limited: See—
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- Wilbur, Benjamin C.: See—
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- Wilby, Brian Hanson: See—
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- Wild, Hermann; and Rau, Arthur, to J. G. Anschutz GmbH. Recoilless weapon. 3,899,845, Cl. 42-69.00A.
- Wiley, Donald F., to Cosden Oil & Chemical Company. Coextrusion of polystyrene and polysulfones. 3,900,548, Cl. 264-171.000.
- Wilhelm, Frederick C., to Universal Oil Products Company. Hydrocarbon conversion with a multimetallic catalytic composite. 3,900,387, Cl. 208-139.000.
- Wille, Baptist, to Balzers Patent- und Beteiligungs-Aktiengesellschaft. Method for manufacture of a refracting, light permeable oxide layer. 3,900,609, Cl. 427-166.000.
- Williams, Charlton E.: See—
Larkin, Robert S.; Lund, Nean K.; and Williams, Charlton E., 3,900,874.
- Williams, John F.: See—
Purdy, David L.; and Williams, John F., 3,900,152.
- Williams, Roger B., Jr.; Loshbough, Richard C.; and Cherry, Richard A., to Reliance Electric Company. Conveyor scale calibration. 3,899,915, Cl. 73-1.00R.
- Williamson, Douglas H., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Flame tube for a gas turbine combustion equipment. 3,899,876, Cl. 60-39.660.
- Williamson, John: See—
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- Willoughby, Donald A.: See—
Boerger, David H.; and Willoughby, Donald A., 3,899,897.
- Wilson, Billie J.; and Malley, Arthur, to United States of America, Health, Education and Welfare. Lymphocyte stroma adsorbent. 3,900,461, Cl. 260-209.00D.
- Wilson, David: See—
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- Wilson, Earl D., to Randtron. Rubber grommet array for sizing screens. 3,900,393, Cl. 209-399.000.
- Wilson, James N.: See—
Barclay, Francis W.; Frey, J. Richard; Wilson, James N.; and Besant, Robert W., 3,900,365.
- Wilson, John: See—
Corbett, Dennis Thomas; and Wilson, John, 3,900,611.
- Wilson, Walter Alexander: See—
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- Winfrey, Richard C. Rough terrain vehicle utilizing gyroscopic forces (inchworm). 3,900,076, Cl. 180-8.00E.
- Wingate, Sidney, to Transitek Corporation. Electronic range finder. 3,900,261, Cl. 356-5.000.
- Wingler, Frank; and Muller, Richard, to Bayer Aktiengesellschaft. Pulverulent acrylic resin binder mixtures containing triglycidyl isocyanurate and cellulose acetobutyrate. 3,900,435, Cl. 260-17.000.
- Winkelmann, Erhardt; and Raether, Wolfgang, to Hoechst Aktiengesellschaft. 1-(Pyridyl-thioalkyl)-2-alkyl-5-nitro-imidazoles. 3,900,482, Cl. 260-294.80G.
- Winkelmann, Jürgen: See—
Luther, Hans Werner; Romer, Rudolf; Winkelmann, Jürgen; and Rossmann, Winfried, 3,899,978.
- Winter, Max; Gautschi, Fritz; Flament, Ivon; Stoll, Max; and Goldman, Irving M., to Firmenich & Cie. Flavoring agent. 3,900,581, Cl. 426-535.000.
- Winter, Max; Gautschi, Fritz; Flament, Ivon; Stoll, Max; and Goldman, Irving M., to Firmenich & Cie. Flavoring agent. 3,900,582, Cl. 426-535.000.
- Wirtz, Egon; and Werner, Paul, to Keiper, Fritz. Fitting for a seat having a seat element and a tiltable backrest element. 3,900,225, Cl. 297-367.000.
- Wisconsin Alumni Research Foundation: See—
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- Witiak, John D. Remote-control device for spinning tops. 3,899,849, Cl. 46-241.000.
- Witt, Donald R., to Phillips Petroleum Company. Olefin polymerization catalyst. 3,900,457, Cl. 260-94.90D.
- Wittwer, Robert O.; and Harbison, William H., to Anderson Company, The. Windshield wiper blade. 3,899,800, Cl. 15-250.420.
- Woerner, Hans, to Mineral Research & Development Corporation. Cuprammonium acetate complex and method of preparing. 3,900,504, Cl. 260-438.100.
- Wolf, Gerhard Dieter; and Bentz, Francis, to Bayer Aktiengesellschaft. Copolyamides which contain quinazolinone structures. 3,900,448, Cl. 260-78.00R.
- Wolf, Karlheinz: See—
Hildebrand, Dietrich; Kruckenberg, Winfried; Kuhnle, Werner; Molla, Hans Heinz; and Wolf, Karlheinz, 3,900,283.
- Woffelsperger, Robert O., to Young, William E. Internally contained tear-inducing tab for vacuum sealed packages. 3,900,105, Cl. 206-498.000.
- Wolgumuth, Larry G.; and Wilbur, Benjamin C., to Atlantic Richfield Company. Laminated safety glass and/or plastic. 3,900,655, Cl. 428-214.000.
- Wood II, Obert Reeves: See—
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- Woodard, Ollie C.: See—
Michail, Michel S.; Woodard, Ollie C.; and Yourke, Hannon S., 3,900,736.
- Woodell, Rudolph, to du Pont de Nemours, E. I., and Company. Flexible nonwoven sheets for use against splashing liquids. 3,900,631, Cl. 428-195.000.
- Woodman, Gerald A.; Uscher, Joseph; and Jacoby, Henry C., to Lancaster Products Company. Method of forming decorator panels. 3,900,641, Cl. 428-38.000.
- Woodward, Robert Burns, to Ciba-Geigy Corporation. Esters of hydroxymethyl-dioxabicyclononene. 3,900,500, Cl. 260-340.700.
- Woolley, Harold Oakley, Jr.; and Ryle, Bernard Groene, to AMP Incorporated. Registration device for printed circuits. 3,900,257, Cl. 355-29.000.
- Wright, Alan R.: See—
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- Wright, Dexter V.; and Hague, John M., III, to White-Westingshouse Corporation. Transmission with antibacklash means. 3,899,933, Cl. 74-440.000.
- Wright, Robert J., to Research Laboratories of Australia Pty. Limited. Electrostatic duplicating process. 3,900,586, Cl. 427-19.000.
- Wright, Willard E.; and Tweeddale, Andrew D., to Boeing Company, The. Fail-safe control system for hydrofoil craft. 3,899,987, Cl. 114-66.50H.
- Wu, Chin Tao, to RCA Corporation. Apparatus for scanning raised indicia. 3,900,717, Cl. 235-61.11C.
- Wyant, Reece E., to Dresser Industries, Inc. Method and apparatus for aligning a drill bit over a predetermined point. 3,899,833, Cl. 33-228.000.
- Wyeth, John: See—
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- Wyhof, John R., to ICI United States Inc. Dielectric resins. 3,900,693, Cl. 428-511.000.
- Wyller, Eugen; and Buser, Max, to Lovida AG. Case sealed by a cover, a process for the manufacture of a case covered by a foil and equipment for executing the process. 3,900,125, Cl. 215-341.000.
- Wyller, Sigfried: See—
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- Xerox Corporation: See—
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- Dhoble, Prafulla S., 3,900,590.
- Fisher, Donald J., 3,900,588.
- Fraser, Lawrence J.; and Parker, Delmer G., 3,900,001.
- Hoppner, Werner F.; and Shogren, David K., 3,900,258.
- Lenhard, Myron James; and Mammino, Joseph, 3,900,587.
- Lindblad, Nero R.; Johnson, Gordon E.; and Sharp, James H., 3,900,589.
- Maltz, Martin Sidney, 3,900,800.
- Punt, Vernon E., 3,900,817.
- Stange, Klaus K., 3,900,002.
- Yada, Akira; and Hori, Yuji, to Dai-Ichi Kogyo Seiyaku Co. Ltd. Process for preparing alkali carboxymethyl cellulose. 3,900,463, Cl. 260-231.0CM.
- Yamada, Kazuo: See—
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- Yamaguchi, Yasuhiko: See—
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- Yamamoto, Kazunobu, to Rank Xerox Ltd. Paddle-wheel development system. 3,900,255, Cl. 355-3.0DD.
- Yamamoto, Nobuyuki: See—
Komatsu, Noboru; Kamigaito, Osami; Suzuki, Takatoshi; Doi, Haruo; Sano, Kazuya; Yamamoto, Nobuyuki; Kandori, Toshio; and Tsuzuki, Yukikazu, 3,900,429.
- Yamanaka, Yoshimasa: See—
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- Yamane, Tadayuki; and Hirano, Yutaka, to Kuraray Co., Ltd. Method of spinning composite filaments. 3,900,549, Cl. 264-176.00F.
- Yamashita, Terumasa: See—
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- Yamashita, Toshio: See—
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- Kawabata, Hidetsugu; Yamashita, Toshio; Uda, Hiroshi; Yoshida, Manabu; and Kitamura, Saburo, 3,900,716.
- Yamauchi, Satoshi, to Ricoh Co., Ltd. Hybrid arithmetic device. 3,900,719, Cl. 235-150.520.
- Yamazaki, Hiroshi; and Ando, Tetsuo, to Sony Corporation. Digital circuit for amplifying a signal. 3,900,747, Cl. 307-304.000.
- Yates, Robert W.: See—
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- Yen, Steven N.; and Osterholtz, Frederick D., to Union Carbide Corporation. Hydrogels from radiation crosslinked blends of hydrophilic polymers and fillers. 3,900,378, Cl. 204-159.140.

- Yokoe, Isamu: See—
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- Yokokawa, Masanori: See—
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- Yokota, Hiroomi; and Masuda, Taizo, to Ichise, Yoshio. Steel cable anchor and method for withdrawing the same. 3,899,892, Cl. 61-39.000.
- Yonai, Fumiaki: See—
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- Yoshida, Isao: See—
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- Yoshida Kogyo Kabushiki Kaisha: See—
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- Yoshida, Manabu: See—
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- Yoshida, Yoshinobu: See—
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- Yotsugi, Masamitsu. Electric wire insulating cover. 3,900,697, Cl. 174-5.00R.
- Yotsugi, Sanji. Electric wire insulating cover. 3,900,698, Cl. 174-5.00R.
- Young, Loren H.: See—
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- Young, William E.: See—
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- Yourke, Hannon S.: See—
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- Yuan, Edward L., to du Pont de Nemours, E. I., and Company. Bondable adhesive coated polyimide film and laminates. 3,900,662, Cl. 428-252.000.
- Yuasa Battery Company Limited: See—
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- Zabotin, Alexandr Alexandrovich; Onikov, Eduard Arshakovich; Galperin, Alexandr Lvovich; Loschilin, Evgeny Dmitrievich; Lileev, Valerian Petrovich; German, Roman Anatolievich; Rutkevich, Zinoviy Yakovlevich; and Sakharov, Boris Alexandrovich. Apparatus for guiding weft thread carriers in the shed of a loom of a progressive shedding type. 3,900,049, Cl. 139-12.000.
- Zaky, Safwat George, to Northern Electric Company Limited. Optical modulator having compensation for thermal and space charge effects. 3,900,247, Cl. 350-150.000.
- Zanker, Paul, to Saint-Gobain Industries. Window. 3,899,858, Cl. 52-172.000.
- Zannucci, Joseph S.; and Lappin, Gerald R., to Eastman Kodak Company. Titanium dioxide pigmented polymer compositions with improved visible and ultraviolet light stability. 3,900,442, Cl. 260-42.460.
- Zdanowski, Richard E.; and Larsson, Bjorn E., to Rohm and Haas Company. Copolymer-wax composition. 3,900,438, Cl. 260-28.50R.
- Zellweger, Ltd.: See—
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- Zenith Radio Corporation: See—
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- Baranski, Ronald S.; and Baur, Leslie L., 3,899,812.
- Cook, Charles A.; and Hajduk, Thaddeus J., 3,899,994.
- Kaplan, Sam H., 3,900,757.
- Park, Yong S., 3,899,996.
- Zerbst, Helmut; Weyl, Reinhard; and Dietrich, Isolde. Magnetic lens assemblies for corpuscular ray devices which operate under vacuum. 3,900,808, Cl. 335-210.000.
- Zickgraf, John H.: See—
Scott, William G.; Zickgraf, John H.; and Petron, Dennis A., 3,900,849.
- Zographos, Georgeos; and Mockli, Peter, to Ciba-Geigy AG. Use of sublimable disperse dyes in photoelectrophoretic image reproduction. 3,900,318, Cl. 96-1.300.
- Zukriegel, Hans; and Schrom, Eike Karl, to Entzmann, Karl, a part interest. Method for protecting copper surfaces against corrosion. 3,900,348, Cl. 148-6.240.

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- Brebant, Robert, to Chemetron Corp. Apparatus for treating a liquid with a gas, notably for deodorizing edible oil. Re. 28,524, 8-19-75, Cl. 202—175.
 Cement and Concrete Association Terminal House, The: See—Maynard, David P., and Weaver. Re. 28,522.
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 Greene, Janice L., and M. Godfrey, to The Standard Oil Co. Process for hydrolyzing nitriles. Re. 28,525, 8-19-75, Cl. 260—557.
 Hammes, Wilhelm, to Mauser Kommanditgesellschaft. Container construction. Re. 28,521, 8-19-75, Cl. 220—306.
 Hill, Morse, and S. J. Matas, to Republic Steel Corp. High strength alloy steel compositions and process of producing high strength steel including hot-cold working. Re. 28,523, 8-19-75, Cl. 75—123.
 Mahorney, Ardith: See—Mahorney, Kenneth R. Re. 28,520.
 Mahorney, Kenneth R., deceased, by Ardith Mahorney, legal representative, to Ross Operating Valve Co. Safety valve assembly for controlling clutch and brake in power press or the like. Re. 28,520, 8-19-75, Cl. 137—596.
 Matas, Stephen J.: See—Hill, Morse, and Matas. Re. 28,523.
 Mauser Kommanditgesellschaft: See—Hammes, Wilhelm. Re. 28,521.
 Maynard, David P., and J. Weaver, to The Cement and Concrete Association Terminal House. Apparatus for a rigid road which has a textured surface. Re. 28,522, 8-19-75, Cl. 404—93.
 Mishcon, Lester, to The Singer Co. Circular knitting machine with pattern wheels. Re. 28,519, 8-19-75, Cl. 66—50.
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 Ross Operating Valve Co.: See—Mahorney, Kenneth R. Re. 28,520.
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 Stein, William B., to The Warner & Swasey Co. Cutoff tool having improved cutting tip. Re. 28,518, 8-19-75, Cl. 29—95.
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CLASS 16 45 3,899,801	98 3,899,856	112 3,899,909	CLASS 99 340 3,899,961	3,900,017	215 3,900,358
CLASS 21 58 3,900,288	126 3,899,857	169 3,899,911	447 3,899,962	CLASS 128 1R 3,900,018	242 3,900,359
CLASS 23 230B 3,900,290	172 3,899,858	239 3,899,910	CLASS 100 25 3,899,963	2F 3,900,019	272 3,900,360
230R 3,900,289	287 3,899,859	344 3,899,912	89 3,899,964	2.1C 3,900,020	334 3,900,361
253R 3,900,291	313 3,899,860	383 3,899,913	155 3,899,965	4 3,900,021	577 3,900,362
273R 3,900,292	616 3,899,861	410 3,899,914	255 3,899,966	7 3,900,022	612 3,900,363
313 3,900,293	CLASS 53 21FC 3,899,862	CLASS 73 1R 3,899,915	269R 3,899,967	36 3,900,023	CLASS 160 310 3,900,063
CLASS 24 73HR 3,899,802	53 3,899,863	8 3,899,917	CLASS 101 111 3,899,968	91R 3,900,024	CLASS 162 274 3,900,364
204 3,899,803	212 3,899,864	15B 3,899,918	130 3,899,969	92D 3,900,025	CLASS 164 51 3,900,064
205.15R 3,899,804	234 3,899,865	40.5R 3,899,920	230 3,899,970	133 3,900,026	273R 3,900,065
213B 3,899,805	CLASS 55 71 3,900,298	67.2 3,899,921	292 3,899,971	268 3,900,027	282 3,900,066
241PL 3,899,806	133 3,900,299	88.5R 3,899,922	415.1 3,899,972	272 3,900,028	332 3,900,067
255C 3,899,807	184 3,900,300	116 3,899,923	CLASS 102 27R 3,899,973	278 3,900,029	CLASS 166 152 3,900,068
CLASS 26 54 3,899,808	257 3,900,301	126 3,899,924	46 3,899,974	285 3,900,030	274 3,900,069
CLASS 28 64 3,899,809	CLASS 56 13.8 3,899,866	141A 3,899,924	63 3,899,975	287 3,900,031	308 3,900,070
72.12 3,899,811	CLASS 57 18 3,899,867	147 3,899,925	70.2R 3,899,976	290H 3,900,032	CLASS 172 15 3,900,071
72.6 3,899,810	34R 3,899,868	153 3,899,926	90 3,899,977	344 3,900,033	238 3,900,072
CLASS 29 25.19 3,899,812	37 3,899,869	160 3,899,927	93 3,899,978	395 3,900,034	430 3,900,073
95R Re.28.518	53 3,899,870	178R 3,899,928	CLASS 104 148MS 3,899,979	402 3,900,035	CLASS 174 5R 3,900,697
105R 3,899,813	CLASS 58 50R 3,899,871	189 3,899,929	CLASS 105 299 3,899,980	287 3,900,036	15BH 3,900,698
149.5B 3,900,814	125C 3,899,872	299 3,899,930	355 3,899,981	5D 3,900,037	16R 3,900,700
163.5R 3,899,815	CLASS 59 85 3,899,873	CLASS 74 34 3,899,931	CLASS 106 15FP 3,900,327	10 3,900,038	102R 3,900,701
196.3 3,900,295	39.14 3,899,877	243NC 3,899,932	39.5 3,900,328	3 3,900,039	126CP 3,900,702
197 3,900,296	39.28R 3,899,879	440 3,899,933	52 3,900,329	22R 3,900,338	CLASS 175 242 3,900,074
200D 3,899,816	39.34 3,899,874	471XY 3,899,934	54 3,900,330	3 3,900,337	CLASS 176 22 3,900,365
234 3,899,817	39.51R 3,899,875	473R 3,899,935	85 3,900,331	22R 3,900,338	54 3,900,366
243.56 3,899,818	39.61 3,899,880	479 3,899,936	97 3,900,332	127 3,900,040	37 3,900,366
407 3,899,819	39.65 3,899,881	492 3,899,937	109 3,900,333	13 3,900,041	87 3,900,367
420.5 3,899,820	39.66 3,899,882	492 3,899,937	163 3,900,334	38 3,900,042	CLASS 178 6 3,900,703
450 3,899,822	39.71 3,899,883	710.5 3,899,938	213 3,900,335	101.21 3,900,043	6.8 3,900,704
455 3,899,823	39.74R 3,899,884	715 3,899,939	252 3,900,336	360 3,900,044	7.2 3,900,705
458 3,899,824	203 3,899,885	759 3,899,940	CLASS 108 25 3,899,982	505.38 3,900,045	CLASS 179 156R 3,900,707
583 3,899,826	223 3,899,886	781R 3,899,941	CLASS 109 54 3,899,983	596 Re.28.520 3,900,046	170.2 3,900,708
603 3,899,827	347 3,899,887	CLASS 75 .SBA 3,900,309	CLASS 110 18R 3,899,984	CLASS 136 13 3,900,340	CLASS 180 6.3 3,900,075
CLASS 30 151 3,899,828	519 3,899,888	23 3,900,310	CLASS 111 3 3,899,985	54 3,900,341	8E 3,900,076
228 3,899,829	547 3,899,889	60 3,900,311	CLASS 112 214 3,899,986	120FC 3,900,342	9.46 3,900,077
CLASS 32 15 3,899,830	552 3,899,890	68B 3,900,312	CLASS 114 66.5H 3,899,987	134R 3,900,343	121 3,900,079
CLASS 33 141B 3,899,831	CLASS 61 39 3,899,892	68R 3,900,313	74A 3,899,988	CLASS 137 13 3,900,041	CLASS 182 36 3,900,080
174P 3,899,832	45B 3,899,893	109 3,900,314	84 3,899,989	38 3,900,042	73 3,900,081
228 3,899,833	56 3,899,891	123K Re.28.523 3,900,315	230 3,899,990	101.21 3,900,043	CLASS 188 69 3,900,082
352 3,899,834	72.3 3,899,894	124 3,900,315	235F 3,899,991	360 3,900,044	72.2 3,900,083
CLASS 34 58 3,899,835	CLASS 62 155 3,899,895	128A 3,900,316	CLASS 115 6.1 3,899,993	505.38 3,900,045	196D 3,900,085
225 3,899,836	196 3,899,897	211 3,900,317	42 3,899,992	596 Re.28.520 3,900,046	196F 3,900,084
CLASS 35 8B 3,899,837	CLASS 64 21 3,899,898	CLASS 76 89 3,899,942	CLASS 118 6 3,899,994	CLASS 138 33 3,900,047	202 3,900,086
31G 3,899,838	CLASS 65 45B 3,899,893	CLASS 82 20 3,899,943	31.5 3,899,995	144 3,900,048	CLASS 192 .094 3,900,090
38 3,899,839	56 3,899,891	36 3,899,944	49.1 3,899,996	CLASS 139 12 3,900,049	3T 3,900,087
CLASS 40 11 3,899,841	72.3 3,899,894	CLASS 83 38 3,899,945	68 3,899,997	15 3,900,050	64 3,900,088
104.18 3,899,842	CLASS 66 19 3,900,304	75 3,899,946	323 3,899,998	25 3,900,051	85AA 3,900,089
125G 3,899,843	30 3,900,305	113 3,899,947	405 3,900,000	6.24 3,900,348	98 3,900,091
156 3,899,844	33 3,900,306	497 3,899,948	630 3,900,001	9.6 3,900,349	CLASS 194 9T 3,900,092
	CLASS 66 50A Re.28.519	588 3,899,950	637 3,900,002	32 3,900,349	3,900,093
		CLASS 84 1.01 3,899,951	3,900,003		
		236 3,899,952			
		CLASS 89 1.819 3,899,953			
		33F 3,899,954			
		CLASS 90 11A 3,899,955			
		CLASS 91 368 3,899,956			
		490 3,899,957			

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CLASS 195	103.5R	3,900,368	52	CLASS 222	3,900,134	62.1	3,900,412	458	3,900,510	CLASS 305	239	3,900,810
CLASS 197	IR	3,900,094	70	3,900,135	62.51	3,900,415	465.5R	3,900,511	355B	3,900,231	268	3,900,822
127R	3,900,095	309	3,900,136	300	3,900,416	468K	3,900,512	41	3,900,739	CLASS 307	2	3,900,811
159	3,900,098	340	3,900,137	300	3,900,417	500.5H	3,900,514	112	3,900,740	CLASS 338	32R	3,900,812
CLASS 198	23	3,900,096	402.24	3,900,138	301.2R	501.17	3,900,515	204	3,900,741	3,900,814	34	3,900,815
127R	3,900,097	309	3,900,139	301.2W	557R	Re.28,525	3,900,516	211	3,900,742	3,900,816	116	3,900,817
CLASS 200	5R	3,900,709	307	3,900,140	561N	3,900,517	3,900,518	221D	3,900,743	3,900,818	176	3,900,819
81H	3,900,710	109	3,900,141	307	573	3,900,519	3,900,520	235R	3,900,744	3,900,820	304	3,900,821
238	3,900,711	155	3,900,142	307	580	3,900,521	3,900,522	260	3,900,745	3,900,822	176	3,900,823
307	3,900,712	155	3,900,143	307	586R	3,900,523	3,900,524	264	3,900,746	3,900,824	176	3,900,825
CLASS 202	175	Re.28,524	103	3,900,144	621A	3,900,525	3,900,526	304	3,900,747	3,900,826	176	3,900,827
247	3,900,369	107	3,900,145	307	621H	3,900,527	3,900,528	304	3,900,748	3,900,828	176	3,900,829
CLASS 204	38A	3,900,370	107	3,900,146	680E	3,900,529	3,900,530	304	3,900,749	3,900,830	176	3,900,831
67	3,900,371	122	3,900,147	139.1	681.5	3,900,531	3,900,532	304	3,900,750	3,900,832	176	3,900,833
81	3,900,372	185	3,900,148	21	876R	3,900,533	3,900,534	304	3,900,751	3,900,834	176	3,900,835
96	3,900,385	220	3,900,149	192	879A	3,900,535	3,900,536	304	3,900,752	3,900,836	176	3,900,837
99	3,900,373	221	3,900,150	307	945	3,900,537	3,900,538	304	3,900,753	3,900,838	176	3,900,839
129.5	3,900,374	246	3,900,151	307	952	3,900,539	3,900,540	304	3,900,754	3,900,840	176	3,900,841
140	3,900,375	141.5	3,900,152	307	122	3,900,541	3,900,542	304	3,900,755	3,900,842	176	3,900,843
141.5	3,900,376	149	3,900,153	307	122	3,900,543	3,900,544	304	3,900,756	3,900,844	176	3,900,845
149	3,900,377	159.14	3,900,154	307	122	3,900,545	3,900,546	304	3,900,757	3,900,846	176	3,900,847
159.14	3,900,378	159.24	3,900,155	307	122	3,900,547	3,900,548	304	3,900,758	3,900,848	176	3,900,849
163R	3,900,379	163R	3,900,156	307	122	3,900,549	3,900,550	304	3,900,759	3,900,850	176	3,900,851
181	3,900,380	181	3,900,157	307	122	3,900,551	3,900,552	304	3,900,760	3,900,852	176	3,900,853
195M	3,900,381	211	3,900,158	307	122	3,900,553	3,900,554	304	3,900,761	3,900,854	176	3,900,855
211	3,900,382	286	3,900,159	307	122	3,900,555	3,900,556	304	3,900,762	3,900,856	176	3,900,857
286	3,900,384	45.13	3,900,160	307	122	3,900,557	3,900,558	304	3,900,763	3,900,858	176	3,900,859
CLASS 206	320	3,900,100	45.13	3,900,161	307	122	3,900,559	304	3,900,764	3,900,860	176	3,900,861
320	3,900,101	411	3,900,102	307	122	3,900,561	3,900,562	304	3,900,765	3,900,862	176	3,900,863
411	3,900,103	491	3,900,104	307	122	3,900,563	3,900,564	304	3,900,766	3,900,864	176	3,900,865
491	3,900,105	498	3,900,106	307	122	3,900,565	3,900,566	304	3,900,767	3,900,866	176	3,900,867
498	3,900,107	519	3,900,108	307	122	3,900,567	3,900,568	304	3,900,768	3,900,868	176	3,900,869
519	3,900,109	111	3,900,110	307	122	3,900,569	3,900,570	304	3,900,769	3,900,870	176	3,900,871
111	3,900,111	139	3,900,112	307	122	3,900,571	3,900,572	304	3,900,770	3,900,872	176	3,900,873
139	3,900,113	143	3,900,114	307	122	3,900,573	3,900,574	304	3,900,771	3,900,874	176	3,900,875
143	3,900,115	188	3,900,116	307	122	3,900,575	3,900,576	304	3,900,772	3,900,876	176	3,900,877
188	3,900,117	210	3,900,118	307	122	3,900,577	3,900,578	304	3,900,773	3,900,878	176	3,900,879
210	3,900,119	370	3,900,120	307	122	3,900,579	3,900,580	304	3,900,774	3,900,880	176	3,900,881
370	3,900,121	CLASS 209	73	3,900,122	307	122	3,900,581	304	3,900,775	3,900,882	176	3,900,883
73	3,900,123	241	3,900,124	307	122	3,900,583	3,900,584	304	3,900,776	3,900,884	176	3,900,885
241	3,900,125	399	3,900,126	307	122	3,900,585	3,900,586	304	3,900,777	3,900,886	176	3,900,887
399	3,900,127	CLASS 210	7	3,900,128	307	122	3,900,587	304	3,900,778	3,900,888	176	3,900,889
7	3,900,129	80	3,900,130	307	122	3,900,589	3,900,590	304	3,900,779	3,900,890	176	3,900,891
80	3,900,131	94	3,900,132	307	122	3,900,591	3,900,592	304	3,900,780	3,900,892	176	3,900,893
94	3,900,133	128	3,900,134	307	122	3,900,593	3,900,594	304	3,900,781	3,900,894	176	3,900,895
128	3,900,135	196	3,900,136	307	122	3,900,595	3,900,596	304	3,900,782	3,900,896	176	3,900,897
196	3,900,137	236	3,900,138	307	122	3,900,597	3,900,598	304	3,900,783	3,900,898	176	3,900,899
236	3,900,139	238	3,900,140	307	122	3,900,599	3,900,600	304	3,900,784	3,900,900	176	3,900,901
238	3,900,141	321	3,900,142	307	122	3,900,601	3,900,602	304	3,900,785	3,900,902	176	3,900,903
321	3,900,143	350	3,900,144	307	122	3,900,603	3,900,604	304	3,900,786	3,900,904	176	3,900,905
350	3,900,145	CLASS 211	46	3,900,146	307	122	3,900,605	304	3,900,787	3,900,906	176	3,900,907
46	3,900,147	60T	3,900,148	307	122	3,900,607	3,900,608	304	3,900,788	3,900,908	176	3,900,909
60T	3,900,149	113	3,900,150	307	122	3,900,609	3,900,610	304	3,900,789	3,900,910	176	3,900,911
113	3,900,151	148	3,900,152	307	122	3,900,611	3,900,612	304	3,900,790	3,900,912	176	3,900,913
148	3,900,153	177	3,900,154	307	122	3,900,613	3,900,614	304	3,900,791	3,900,914	176	3,900,915
177	3,900,155	CLASS 212	35HC	3,900,156	307	122	3,900,615	304	3,900,792	3,900,916	176	3,900,917
35HC	3,900,157	83	3,900,158	307	122	3,900,617	3,900,618	304	3,900,793	3,900,918	176	3,900,919
83	3,900,159	CLASS 214	10	3,900,160	307	122	3,900,619	304	3,900,794	3,900,920	176	3,900,921
10	3,900,161	10.5R	3,900,162	307	122	3,900,621	3,900,622	304	3,900,795	3,900,922	176	3,900,923
10.5R	3,900,163	18R	3,900,164	307	122	3,900,623	3,900,624	304	3,900,796	3,900,924	176	3,900,925
18R	3,900,165	84	3,900,166	307	122	3,900,625	3,900,626	304	3,900,797	3,900,926	176	3,900,927
84	3,900,167	86A	3,900,168	307	122	3,900,627	3,900,628	304	3,900,798	3,900,928	176	3,900,929
86A	3,900,169	CLASS 215	10.5SD	3,900,170	307	122	3,900,629	304	3,900,799	3,900,930	176	3,900,931
10.5SD	3,900,171	12R	3,900,172	307	122	3,900,631	3,900,632	304	3,900,800	3,900,932	176	3,900,933
12R	3,900,173	31	3,900,174	307	122	3,900,633	3,900,634	304	3,900,801	3,900,934	176	3,900,935
31	3,900,175	216	3,900,176	307	122	3,900,635	3,900,636	304	3,900,802	3,900,936	176	3,900,937
216	3,900,177	291	3,900,178	307	122	3,900,637	3,900,638	304	3,900,803	3,900,938	176	3,900,939
291	3,900,179	341	3,900,180	307	122	3,900,639	3,900,640	304	3,900,804	3,900,940	176	3,900,941
341	3,900,181	CLASS 219	10.5SD	3,900,182	307	122	3,900,641	304	3,900,805	3,900,942	176	3,900,943
10.5SD	3,900,183	229	3,900,184	307	122	3,900,643	3,900,644	304	3,900,806	3,900,944	176	3,900,945
229	3,900,185	75	3,900,186	307	122	3,900,645	3,900,646	304	3,900,807	3,900,946	176	3,900,947
75	3,900,187	CLASS 220	216	3,900,188	307	122	3,900,647	304	3,900,808	3,900,948	176	3,900,949
216	3,900,189	269	3,900,189	307	122	3,900,649	3,900,650	304	3,900,809	3,900,950	176	3,900,951
269	3,900,190	306	3,900,191	307	122	3,900,651	3,900,652	304	3,900,810	3,900,952	176	3,900,953
306	3,900,192	378	3,900,193	307	122	3,900,653	3,900,654	304	3,900,811	3,900,954	176	3,900,955
378	3,900,194	CLASS 221	169	3,900,195	307	122	3,900,655	304	3,900,812	3,900,956	176	3,900,957
169	3,900,196	251	3,900,196	307	122	3,900,657	3,900,658	304	3,900,813	3,900,958	176	3,900,959
251	3,900,197	280	3,900,198	307	122	3,900,659	3,900,660	304	3,900,814	3,900,960	176	3,900,961
280	3,900,199	CLASS 222	52R	3,900,199	307	122	3,900,661	304	3,900,815	3,900,962	176	3,900,963
52R	3,900,200	62.1P	3,900,200	307	122	3,900,663	3,900,664	304	3,900,816	3,900,964	176	3,900,965
62.1P	3,900,201	456R	3,900,201	307	122	3,900,665	3,900,666	304	3,900,817	3,900,966	176	3,900,967</

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PATENTS

2 : 3,900,057	3,900,139	3,900,870	13 : 3,900,025	3,900,818	3,900,261
3,900,074	3,900,143	3,900,875	15 : 3,900,638	3,900,820	3,900,274
4 : 3,899,826	3,900,144	3,900,885	16 : 3,899,913	3,900,862	3,900,274
3,899,885	3,900,145	3,900,886		3,900,862	3,900,323
3,899,991	3,900,157	3,900,895	17 : Re.28,520	3,899,800	3,900,325
3,900,026	3,900,180	3,900,041		3,899,877	3,900,359
3,900,195	3,900,191	3,899,812		3,899,879	3,900,375
3,900,273	3,900,194	3,900,098		3,899,881	3,900,451
3,900,345	3,900,198	3,900,380		3,899,886	3,900,475
3,900,543	3,900,199	3,900,391		3,900,056	3,900,500
3,900,597	3,900,211	3,899,891		3,900,080	3,900,518
3,900,598	3,900,211	3,900,894		3,900,220	3,900,528
3,900,633	3,900,213	3,899,872		3,900,536	3,900,529
3,900,837	3,900,221	3,899,956		3,900,238	3,900,568
3,900,868	3,900,224	3,899,942		3,900,275	3,900,610
6 : 3,899,797	3,900,239	3,899,963		3,900,398	3,900,650
3,899,801	3,900,252	3,899,994		3,900,572	3,900,656
3,899,807	3,900,263	3,900,022		3,899,966	3,900,718
3,899,815	3,900,276	3,900,034		3,900,024	3,900,729
3,899,823	3,900,282	3,900,042		3,900,848	3,900,741
3,899,829	3,900,288	3,900,294		3,899,896	3,900,744
3,899,832	3,900,289	3,900,349		3,900,181	3,900,750
3,899,843	3,900,292	3,900,519		3,900,192	3,900,753
3,899,844	3,900,303	3,900,624		3,900,490	3,900,755
3,899,846	3,900,320	3,900,628		3,899,891	3,900,799
3,899,860	3,900,334	3,900,681		3,899,920	3,900,810
3,899,874	3,900,393	3,900,751		3,900,312	3,900,812
3,899,878	3,900,405	3,900,760		3,900,415	3,900,819
3,899,904	3,900,408	3,900,804		3,900,427	3,900,823
3,899,906	3,900,414	3,900,834		3,900,666	3,900,828
3,899,916	3,900,439	3,900,287		3,899,869	3,900,829
3,899,919	3,900,533	3,900,354		3,900,401	3,900,832
3,899,932	3,900,553	3,900,379		3,899,834	3,900,835
3,899,935	3,900,571	3,900,432		3,899,849	3,900,855
3,899,951	3,900,592	3,900,447		3,899,945	3,900,858
3,899,989	3,900,641	3,900,676		3,900,006	3,900,860
3,899,995	3,900,687	3,900,683		3,900,044	3,900,878
3,900,007	3,900,692	3,900,693		3,900,204	3,899,838
3,900,009	3,900,704	3,900,700		3,900,353	3,899,854
3,900,020	3,900,721	3,900,884		3,900,423	3,899,875
3,900,028	3,900,724	3,900,081		3,900,514	3,899,889
3,900,045	3,900,726	3,900,637		3,900,535	3,899,897
3,900,068	3,900,728	3,899,847		3,900,594	3,899,909
3,900,069	3,900,732	3,899,972		3,900,596	3,899,917
3,900,073	3,900,738	3,899,979		3,900,573	3,899,922
3,900,076	3,900,782	3,900,008		3,900,574	3,899,944
3,900,093	3,900,794	3,900,052		3,900,635	3,900,075
3,900,129	3,900,796	3,900,086		3,900,707	3,900,089
3,900,134	3,900,821	3,900,196		3,900,748	3,900,142
3,900,135	3,900,827	3,900,212		3,900,757	3,900,183
3,900,138	3,900,839	3,900,580		3,900,765	
	3,900,849	3,900,705		3,900,795	

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

PI 45

3,900,210	3,900,491	3,900,305	3,900,033	3,900,036	3,900,373
3,900,222	3,900,495	3,900,316	3,900,048	3,900,461	3,900,442
3,900,230	3,900,501	3,900,327	3,900,061	3,900,552	48 : 3,899,831
3,900,284	3,900,503	3,900,328	3,900,087	3,900,605	3,899,833
3,900,296	3,900,511	3,900,344	3,900,101	3,900,696	3,899,866
3,900,395	3,900,534	3,900,378	3,900,110	3,900,711	3,899,895
3,900,397	3,900,539	3,900,381	3,900,128	3,900,830	3,899,893
3,900,410	3,900,554	3,900,382	3,900,131	3,900,853	3,900,923
3,900,416	3,900,556	3,900,392	3,900,132	3,900,392	42 : 3,899,808
3,900,434	3,900,563	3,900,394	3,900,158	3,899,873	3,900,030
3,900,471	3,900,577	3,900,404	3,900,231	3,899,882	3,900,071
3,900,476	3,900,599	3,900,417	3,900,236	3,899,905	3,900,136
3,900,492	3,900,614	3,900,433	3,900,280	3,899,933	3,900,146
3,900,509	3,900,620	3,900,445	3,900,298	3,899,947	3,900,165
3,900,513	3,900,640	3,900,455	3,900,302	3,899,968	3,900,418
3,900,530	3,900,647	3,900,480	3,900,306	3,899,980	3,900,524
3,900,550	3,900,655	3,900,540	3,900,329	3,900,000	3,900,525
3,900,616	3,900,663	3,900,559	3,900,332	3,900,055	3,900,548
3,900,619	3,900,685	3,900,569	3,900,340	3,900,065	3,900,615
3,900,629	3,900,706	3,900,587	3,900,347	3,900,100	3,900,625
3,900,682	3,900,710	3,900,588	3,900,360	3,900,123	3,900,722
3,900,786	3,900,717	3,900,589	3,900,374	3,900,152	3,900,825
3,900,840	3,900,737	3,900,590	3,900,409	3,900,184	3,900,826
27 : 3,899,856	3,900,742	3,900,593	3,900,446	3,900,446	50 : 3,900,140
3,899,950	3,900,743	3,900,600	3,900,506	3,900,269	3,900,299
3,899,969	3,900,762	3,900,617	3,900,545	3,900,277	3,900,352
3,899,982	3,900,772	3,900,644	3,900,558	3,900,295	
3,900,150	3,900,803	3,900,646	3,900,565	3,900,304	51 : 3,899,929
3,900,362	3,900,811	3,900,664	3,900,576	3,900,309	3,900,029
3,900,437	3,900,833	3,900,665	3,900,584	3,900,338	3,900,107
3,900,481	3,900,842	3,900,736	3,900,622	3,900,356	3,900,313
3,900,591	3,900,843	3,900,746	3,900,626	3,900,357	3,900,631
3,900,723	3,900,846	3,900,783	3,900,645	3,900,384	3,900,668
3,900,844	3,900,864	3,900,797	3,900,661	3,900,389	3,900,675
29 : 3,899,981	3,900,874	3,900,798	3,900,673	3,900,407	3,900,859
3,900,234	3,900,879	3,900,800	3,900,674	3,900,438	3,900,869
3,900,484	3,899,818	3,900,817	3,900,677	3,900,441	3,900,871
31 : 3,900,058	3,900,109	3,900,836	3,900,713	3,900,470	3,900,872
3,900,214	3,900,214	3,900,865	3,900,714	3,900,489	53 : 3,899,855
3,900,680	Re.28,519	3,900,810	3,900,769	3,900,494	3,899,888
3,900,767	3,899,816	3,899,817	3,900,784	3,900,522	3,899,954
3,900,038	3,899,839	3,899,822	3,900,802	3,900,544	3,899,964
32 : 3,900,064	3,899,848	3,899,836	3,900,805	3,900,546	3,899,987
33 : 3,900,112	3,899,907	3,899,867	3,900,822	3,900,583	3,900,116
3,900,761	3,899,923	3,899,868	3,900,841	3,900,601	3,900,281
34 : 3,899,803	3,899,943	3,900,156	3,900,851	3,900,606	3,900,319
3,899,893	3,899,960	3,900,504	3,900,852	3,900,654	
3,899,962	3,900,001	3,900,521	3,899,926	3,900,662	54 : 3,899,900
3,900,043	3,900,002	3,900,527	3,900,070	3,900,670	3,900,185
3,900,059	3,900,004	3,900,542	3,900,167	3,900,686	3,900,383
3,900,062	3,900,019	3,900,542	3,900,176	3,900,689	3,900,660
3,900,105	3,900,060	3,900,763	3,900,372	3,900,709	
3,900,111	3,900,106	39 : Re.28,518	3,900,372	3,900,749	55 : 3,899,941
3,900,133	3,900,162	Re.28,523	3,900,406	3,900,749	3,900,031
3,900,154	3,900,169	Re.28,525	3,900,430	3,900,831	3,900,096
3,900,186	3,900,182	3,899,830	3,900,456	3,900,863	3,900,163
3,900,314	3,900,219	3,899,884	3,900,457	3,900,866	3,900,364
3,900,411	3,900,232	3,899,915	3,900,526	3,900,890	3,900,512
3,900,412	3,900,233	3,899,925	3,900,547	3,900,935	3,900,632
3,900,469	3,900,250	3,899,955	3,900,691	3,900,679	3,900,770
3,900,472	3,900,258	3,899,967	3,900,694	3,899,852	3,900,781
3,900,478	3,900,271	3,899,993	3,900,778	3,899,901	
	3,900,297	3,900,018	41 : 3,899,799	47 : 3,899,986	56 : 3,900,094

DESIGN PATENTS

1 : 236,360	236,356	236,316	236,357	236,329	41 : 236,381
4 : 236,299	236,367	236,304	236,374	236,330	42 : 236,349
6 : 236,292	236,368	236,305	236,375	236,337	43 : 236,361
236,298	236,373	236,382	236,383	236,345	48 : 236,343
236,312	236,376	236,383	236,346	236,354	236,362
236,313	236,388	236,384	236,341	236,355	236,369
236,314	236,390	236,389	236,359	236,378	236,370
236,323	8 : 236,308	19 : 236,296	36 : 236,297	236,379	236,372
236,331	9 : 236,315		236,306	236,386	49 : 236,364
236,334	236,324		236,317	236,387	236,365
236,336	236,327		236,318	236,326	53 : 236,321
236,339	236,358		236,322	236,335	236,332
236,342	236,349		236,325	236,344	236,333
236,347	236,319		236,351	236,380	55 : 236,338
236,350	236,293		236,352		

PLANT PATENTS

6 : 3,766	3,767	3,768	48 : 3,765		
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Vol. 937 Number 4

OFFICIAL GAZETTE

of the
UNITED STATES PATENT AND TRADEMARK OFFICE



PATENTS

August 26, 1975

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OFFICIAL GAZETTE of the
UNITED STATES PATENT and TRADEMARK OFFICE

August 26, 1975

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,906,875, E. T. Molinaro, STATION SAMPLING RADIO, filed Apr. 17, 1975, D.C. Minn. (St. Paul), Doc. C-2-75-122, *Edward T. Molinaro and Anthony P. Catanzaro v. E. F. Johnson Company*.

3,103,666, A. R. Bone, TAG ATTACHING APPARATUS, filed May 25, 1971, D.C., S.D.N.Y., Doc. 71-C-2333, *Dennison Manufacturing Company v. Ben Clements & Sons, Inc.* Filed stipulation and order of dismissal with prejudice, Apr. 15, 1975.

3,113,115, Ziegler, Brell, Martin and Holzkamp, POLYMERIZATION CATALYST; 3,231,515, same, CATALYSTS; 3,257,332, same, POLYMERIZATION OF ETHYLENE; 3,392,162, same, POLYMERIZATION OF ETHYLENICALLY UNSATURATED HYDROCARBONS, filed May 2, 1974, D.C. Del. (Wilmington), Doc. 74-87, *Eastman Kodak Company v. Studiengesellschaft Kohle mbH, as trustees for the Max-Planck-Institut für Kohlenforschung*. The Court considering Texas a preferable forum, the Delaware action serving no useful purpose, and a stay being a useless exercise in judicial gymnastics, the Court dismisses this action, Apr. 24, 1975.

3,114,340, K. Hedegaard, SEWING MACHINE DRIVING ARRANGEMENTS; 3,233,562, same, DRIVING ARRANGEMENTS, filed Dec. 10, 1974, D.C., M.D. Tenn. (Nashville), Doc. 74-406-NA-CV, *Industrien A/S v. Electromecanica Mazzini Motori Di Sangiorgi M. & C. S.A.S.*

3,231,515. (See 3,113,115.)

3,253,292, A. M. Herschensohn, HAIR BRUSHES, filed Nov. 4, 1974, D.C., C.D. Calif. (Los Angeles), Doc. CV-74-3196 AAH, *Arthur M. Herschensohn, Corona Hair Net Corporation and The Bobby Company v. Paris Associates, Inc.* Filed consent judgment and order thereon that plaintiff's patent is valid, that defendants have infringed said patent, that defendants be enjoined and restrained from further violations, use, etc., of said patents, entered Jan. 15, 1975.

3,253,562. (See 3,114,340.)

3,254,510, B. G. Lesley, WARP KNIT PILE FABRICS; 3,277,673, same, METHOD FOR PREPARING KNIT FABRICS; 3,532,154, same, KNIT FABRIC, filed Mar. 26, 1975, D.C., S.D.N.Y., Doc. 75-C-1518, *Liberty Fabrics of New York, Inc. and Gordonsville Industries, Inc. v. Deering Milliken, Inc. and Deering Milliken Research Corporation*. Same, filed Mar. 26, 1975, D.C., S.D.N.Y., Doc. 75-C-1519, *Charbert Inc. and Charbert Fabrics Corp. v. Deering Milliken Corp. and Deering Milliken Research Corp.*

3,257,332. (See 3,113,115.)

3,277,673. (See 3,254,510.)

3,324,954, W. J. Westendorf, LOADER DEVICE AND METHOD OF MOUNTING SAME ON TRACTOR, filed May 8, 1975, D.C. Colo. (Denver), Doc. 75-F-498, *Walter J. Westendorf v. Ellis and Capp Equipment Co.*

3,379,000, Webber and Wilson, METAL FILAMENTS SUITABLE FOR TEXTILES; 3,505,038, Luksch and Sundberg, METAL FIBRIL COMPOSITS; 3,678,675, W. G. Klein, ANTI-STATIC FABRIC; 3,705,021, Sundberg and Luksch, REINFORCED METAL FIBRIL MATS AND METHODS OF MAKING SAME; 3,759,706, same, METHOD OF MAKING METAL FIBRIL MATS AND REINFORCED METAL FIBRIL MATS, filed May 14, 1974, D.C. Ga. (Atlanta), Doc. C74-934A, *Brunswick Corporation v. N. W. Bekaert and Bekaert Steel Wire Corporation*. Order by Court that the action be dismissed without prejudice, Mar. 3, 1975.

3,379,612, DeStevens and Werner, PHARMACEUTICAL COMPOSITIONS OF 6-CHLORO-7-SULFAMYL-3,4-DIHYDRO-2H-[1,2,4]-BENZOTHIADIAZINE 1,1-DIOXIDE AND AN INDOLE ALKALOID OF THE APOCYNACEAE FAMILY, filed Aug. 9, 1974, D.C.N.J. (Newark), Doc. 74-1225, *Ciba-Geigy Corporation v. Merck & Co., Inc.* Stipulation and order of dismissal of action, Apr. 30, 1975.

3,392,162. (See 3,113,115.)

3,417,450, R. M. Zell, METHOD FOR MAKING A PLUMBING VALVE BODY, filed Mar. 21, 1974, D.C., E.D. Mich. (Detroit), Doc. 74-71314, *Brass Craft Manufacturing Company v. Rockwell International Corp. Building Components Division*. Stipulation for dismissal, complaint, insofar as it alleges a cause of action for infringement and defendant's counterclaim are hereby dismissed without prejudice and insofar as the complaint alleges a cause of action for unfair competition, it is hereby dismissed with prejudice, June 8, 1975.

3,505,038. (See 3,379,000.)

3,537,114, F. J. Mis, BED FRAME ASSEMBLY, filed May 9, 1975, D.C., C.D. Calif. (Los Angeles), Doc. No. 75-1601, *Harris-Hub Company, Inc. v. Interlake, Inc.*

3,552,154. (See 3,254,510.)

3,620,367, O. G. Stembel, CASSETTE STORAGE CONTAINER, filed Feb. 19, 1975, D.C., S.D.N.Y., Doc. 75-C-0820, *Reliance Folding Carton Corp. v. A. Dudley Olsen and Associates*. Same, filed Mar. 5, 1975, D.C., N.D. Ill. (Chicago), Doc. 75c0715, *Dudley A. Olsen and Oren G. Stembel v. Industrial Audio/Film Services, Inc.* Same, filed May 5, 1975, D.C., N.D. Ill. (Chicago), Doc. 75c1426, *Dudley A. Olsen and Oren G. Stembel v. George Pickard et al.*

3,621,961, K. Stumpf, UNIVERSAL ROLLER ASSEMBLY, filed Aug. 26, 1974, D.C., C.D. Calif. (Los Angeles), Doc. CV 74-2481-Fw, *Karl Stumpf v. Wheel Wright, Inc.* Filed final judgment by consent and order thereon permanently enjoining defendants from further use, etc. of plaintiff's patent, entered Feb. 26, 1975.

3,624,851, I. J. Barber, PROGRAMMED CAR WASHING APPARATUS, filed May 7, 1975, D.C., C.D. Calif. (Los Angeles), Doc. 75-1556-EC, *The Allen Group, Inc. v. A & G Car Wash Equipment Company, Inc. et al.*

3,636,784, G. H. Sanstrom, BELT-PULLEY TRANSMISSION, filed May 6, 1975, D.C.N.J. (Newark), Doc. 75-751, *Thomas Zarrello et al. v. Peter Van Vlaanderen et al.*

3,669,499, Sempronius and Kolk, CHAIR, filed May 2, 1975, D.C., N.D. Ill. (Chicago), Doc. 75c1414, *Steelcase, Inc. v. Emeco Industries, Inc. and Al Treiber*.

3,678,675. (See 3,379,000.)

3,705,021. (See 3,379,000.)

3,724,720, K. W. Bullivant, DIGITAL MASS FLOW CONTROL SYSTEM, filed May 7, 1975, D.C.N.J. (Camden), Doc. 74-1019, *Merrick Scale Mfg. Co. v. K-Tron Corporation*. Stipulation of dismissal with prejudice, May 7, 1975.

3,757,194, Weber and Pugh, CORDLESS POWER TOOL HAVING REMOVABLE BATTERY PACK, filed Oct. 3, 1973, D.C., N.D. Ga. (Atlanta), Doc. CA 19090, *The Black & Decker Manufacturing Company v. Disston, Inc.* Order and judgment filed and entered denying defendant's motion to transfer and granting plaintiff's voluntary dismissal without prejudice and dismissing the case for improper venue, Apr. 18, 1974. Same, filed Apr. 22, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c1102, *The Black & Decker Manufacturing Company v. Disston, Inc.* Same, filed Apr. 23, 1975, D.C., W.D. Pa. (Pittsburgh), Doc. 74-387, *Disston Inc. v. The Black & Decker Manufacturing Co.* Plaintiff's claim and defendant's counterclaim are each dismissed without prejudice, Apr. 23, 1975.

3,759,708. (See 3,379,000.)

3,760,424, D. Leinoff, COMPOSITE FUR PELT AND METHOD OF MAKING SAME AND FUR COAT, filed Apr. 29, 1975, D.C., S.D.N.Y., Doc. 75-C-2034, *David Leinoff v. Kirschner Rosenbaum & Berber Corp., etc. et ano.*

3,800,891, White and Wisler, HARDFACING COMPOSITIONS AND GAGE HARDFACING ON ROLLING CUTTER ROCK BITS, filed May 9, 1975, D.C., N.D. Tex. (Fort Worth), Doc. 4-75-128, *Hughes Tool Company v. Dresser Industries, Inc.*

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3,857,631, D. M. Morgenstern, ELECTRIC ADJUSTING MEANS FOR AZIMUTH AND ELEVATION ADJUSTMENT, filed May 6, 1975, D.C., N.D. Ohio (Cleveland), Doc. C75-398, *Tenna Corporation v. BMW, BMW of North America and Jaguar-Cleveland Motors*.

3,858,855, G. L. Hazen, FOOD PROCESSING VAT, filed May 8, 1975, D.C., E.D. Wis. (Milwaukee), Doc. 75-257, *Dec International, Inc. v. Stoeckling Brothers Company*.

D. 214,083, I. J. Allgood, Jr., INDUSTRIAL VACUUM CLEANING UNIT, filed Apr. 30, 1975, D.C., W.D. Ill. (Fort

Smith), Doc. F-75-32-C, *National Systems, Inc. and Ira J. Allgood, Jr. v. Citation Investment Corp.*

Erratum

Under Patent Suits in the OFFICIAL GAZETTE of April 2, 1974, Volume 921, Page 4, the paragraph beginning with 3,652,825 should be deleted.

Certificates of Correction for the Week of Aug. 26, 1975

Re. 28,341	3,847,673	3,873,210	3,884,627
3,533,155	3,848,235	3,873,977	3,884,639
3,542,680	3,850,572	3,874,208	3,884,938
3,615,391	3,850,759	3,874,507	3,884,993
3,636,025	3,852,047	3,874,853	3,885,072
3,644,369	3,853,754	3,875,017	3,885,076
3,668,341	3,853,807	3,875,089	3,885,105
3,721,644	3,854,952	3,875,310	3,885,139
3,725,395	3,856,877	3,875,387	3,885,167
3,730,578	3,856,991	3,875,694	3,885,602
3,732,549	3,858,672	3,875,908	3,885,610
3,737,557	3,859,713	3,875,929	3,885,958
3,750,345	3,859,984	3,877,782	3,885,960
3,755,420	3,860,259	3,877,971	3,886,074
3,758,037	3,860,662	3,878,065	3,886,284
3,763,923	3,862,940	3,878,232	3,886,353
3,770,156	3,863,761	3,878,975	3,886,567
3,784,455	3,864,108	3,879,124	3,886,751
3,785,122	3,864,298	3,879,183	3,887,071
3,797,255	3,864,340	3,879,370	3,887,081
3,805,683	3,864,632	3,879,692	3,887,544
3,806,678	3,865,611	3,879,748	3,887,686
3,807,470	3,866,027	3,880,171	3,887,708
3,807,553	3,866,072	3,880,302	3,887,729
3,808,177	3,866,173	3,880,372	3,887,736
3,809,463	3,866,826	3,880,689	3,887,765
3,809,787	3,867,511	3,880,808	3,888,294
3,812,444	3,867,647	3,880,810	3,888,665
3,812,644	3,869,082	3,880,882	3,888,889
3,820,310	3,869,177	3,880,926	3,889,097
3,823,414	3,869,197	3,881,117	3,889,237
3,828,233	3,869,443	3,881,158	3,889,384
3,829,457	3,869,815	3,881,476	3,889,580
3,830,255	3,870,718	3,881,525	3,889,713
3,831,012	3,870,934	3,881,907	3,889,715
3,832,014	3,871,369	3,881,949	3,889,765
3,832,135	3,871,458	3,882,346	3,890,490
3,834,039	3,871,754	3,882,541	3,890,528
3,838,218	3,871,837	3,882,636	3,890,681
3,838,595	3,871,928	3,882,696	3,891,013
3,842,340	3,872,140	3,883,447	3,891,104
3,843,724	3,872,178	3,883,583	3,891,788
3,845,026	3,872,679	3,883,632	3,891,887
3,846,614	3,872,969	3,884,405	

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF AUGUST 2, 1975

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	11-21-74
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director..... Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	10-18-74
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director..... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	12-17-74
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director..... Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	10-23-74
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director.... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	11-7-74
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director.... Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	12-4-74
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director..... Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	7-3-74
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director..... Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	11-1-74
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director.. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	1-9-75
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-2-74
DESIGNS, GROUP 290—C. D. QUARFORTH, Director..... Industrial Arts; Household, Personal and Fine Arts.	5-30-74
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—D. J. STOCKING, Director..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	1-2-75
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director..... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	1-2-75
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—G. M. FORLENZA, Director.. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	1-6-75
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gear- ing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	11-6-74
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director..... Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	1-22-75

Expiration of patents: The patents within the range of numbers indicated below expire during August 1975, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,845,625 to 2,849,713 inclusive
Plant Patents..... Numbers 1,740 to 1,745 inclusive

REISSUE PATENTS

GRANTED AUGUST 26, 1975

ERRATA

For
CLASS

228-130.....

See
PATENT NO.
28,526

REISSUES

AUGUST 26, 1975

Matter enclosed in heavy brackets **[]** appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

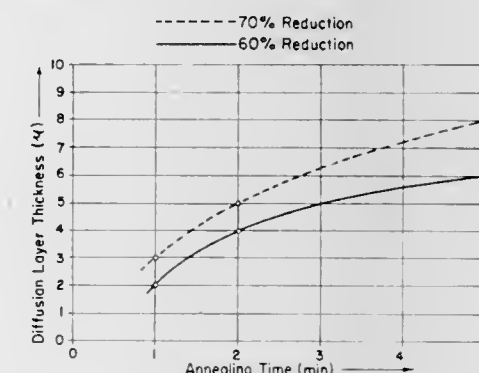
Re. 28,526 METHOD FOR PRODUCING COPPER-CLAD ALUMINUM WIRE

Gerhard Ziemek, Hannover, Germany, assignor to Kabel und Metallwerke Gutehoffnungshuette AG, Hannover, Germany
Original No. 3,800,405, dated Apr. 2, 1974, Ser. No. 192,188, Oct. 26, 1971. Application for reissue June 5, 1974, Ser. No. 476,548

Claims priority, application Germany, Oct. 26, 1970, 2052462; Oct. 26, 1970, 2052466

Int. Cl. B21d 39/04

U.S. Cl. 228—130



I. A process for the continuous production of copper-clad aluminum wire, comprising:

forming a copper strip into a tube around an aluminum core wire, said tube have a diameter larger than the diameter of the core wire whereby there is a clearance between the tube and core wire welding the tube formed around the core wire; reducing the cross-sectional area of the tube to about the diameter of the core wire to remove the clearance between the tube and core wire; and then reducing the cross-sectional area of the tube and core wire by straight drawing, said reduction in cross-sectional area of the tube and core wire being at least 50 percent to produce a cold weld between the tube and core wire.

Re. 28,527 WATCH CASE

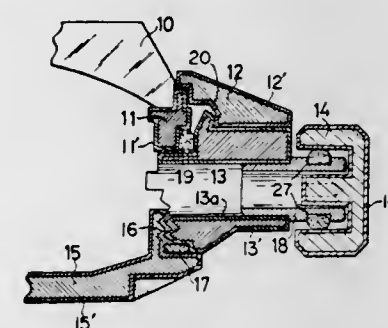
Hachiro Kushida, Tokorozawa, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Original No. 3,726,082, dated Apr. 10, 1973, Ser. No. 105,865, Jan. 12, 1971. Application for reissue Apr. 9, 1974, Ser. No. 459,433

Claims priority, application Japan, Jan. 13, 1970, 45-3641

Int. Cl. G04b 37/00

U.S. Cl. 58—88 G



I. A watch case comprising a plurality of detachable members including a supporting ring member, a middle member, and a bezel member; each of said members being comprised on a base material selected from a group consisting of an aluminum and aluminum alloys and a skin layer chemically formed

thereon comprised of a fine crystalline $\gamma\text{-Al}_2\text{O}_3\cdot\text{H}_2\text{O}$; said bezel member and said middle member being formed with an overlapping beveled interconnection sufficiently large to accommodate the higher coefficient of elasticity of the material of said members to prevent unintentional separation.

Re. 28,528 PATTERNING MECHANISM FOR CIRCULAR KNITTING MACHINES

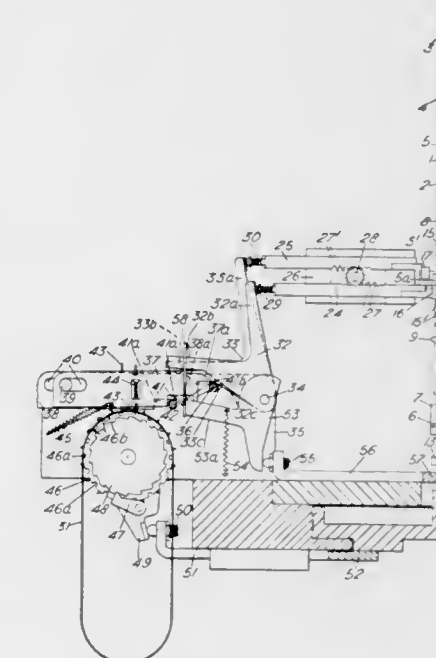
Ernest L. Farmer, Leicester, England

Original No. 3,315,494, dated Apr. 25, 1967, Ser. No. 423,982, Jan. 7, 1965. Application for reissue Jan. 21, 1974, Ser. No. 435,038

Int. Cl. D04B 9/00

U.S. Cl. 66—50 B

18 Claims



I. In a circular knitting machine, in combination; a cylindrical rotary bed having formed therein a circular series of axial grooves; individually movable elements mounted in said grooves, said elements being furnished with control butts and, in addition to being movable lengthwise, having the portions thereof provided with the butts capable of radial movements selectively towards and away from the axis of said cylindrical bed; cam means for acting on said control butts to move the elements lengthwise, the butts being presented to or caused to miss the cam means depending on the selective radial movements of the butted portions of the elements; pressers arranged in the same grooves as and in front of the elements to be controlled, there being one presser to each element and the stem of each presser being furnished with a single patterning butt; a stack of co-adjacent rotary discs which are fixed so far as any movements thereof towards and away from the pressers are concerned, said discs having thereon prearranged peripheral formations for action on the patterning butts for the purpose of pressing the pressers and hence also the corresponding elements to be controlled radially inwards into their grooves; [and] variable presser moving means for sequentially shifting the pressers longitudinally upwards and downwards at a height selection station to dispose their single patterning butts opposite to the peripheries of predetermined discs, and means for locking said pressers against longitudinal movement except at a height selection station, said locking means comprising a series of height locating butts on each of said pressers and a rigid locking ring which extends circumferentially of said cylindrical rotary bed and is engageable by height locating butts of said pressers, said height locating butts engage-

ing said locking ring except at a height selection station to lock said pressers against longitudinal movement and being disengaged from said locking ring at a height selection station to permit longitudinal movement of said pressers by said presser moving means.

Re. 28,529

HEARTBEAT MONITOR WITH AUDIO AND VISUAL OUTPUTS

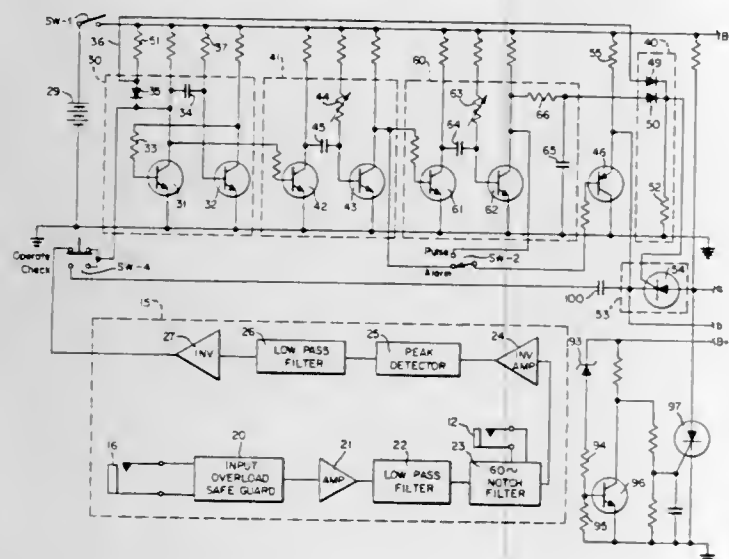
Harry J. Edenhofer, Southampton, Pa., assignor to Survival Technology, Inc., Bethesda, Md.

Original No. 3,613,670, dated Oct. 19, 1971, Ser. No. 798,676, Feb. 12, 1969. Application for reissue Oct. 16, 1973, Ser. No. 406,890

Int. Cl. A61b 5/04

U.S. Cl. 128-2.06 F

4 Claims



4. In a cardiac monitor;

trigger means for receiving electrical signals developed as a function of the beat of a human heart and to convert the signals into trigger pulses, there being a trigger pulse for each detected heartbeat,

timing detection means connected for successive actuation by said trigger pulses and including means for effectively measuring the time interval between successive trigger pulses up to a predetermined time interval and for producing an output signal indicative of the rate of said trigger pulses and hence of said human heartbeat,

output means connected to receive said output signal and to produce a corresponding humanly sensible output indication of said human heartbeat, and

testing means for applying said output signal to the timing means in place of said trigger pulses whereby said timing means produces said output signal at a frequency corresponding to said predetermined period thus permitting the calibration of said predetermined time interval to be checked by observing said humanly sensible output.

Re. 28,530
DISPLAY CARTON

Joseph R. D'Alessio, Lunenburg, Mass., assignor to Federal Paper Board Company, Inc., Montvale, N.J.

Original No. 3,680,687, dated Aug. 1, 1972, Ser. No. 41,806, June 1, 1970. Application for reissue Aug. 13, 1973, Ser. No. 387,886

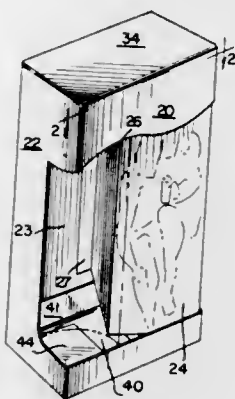
Int. Cl. B65d 5/50, 5/48

U.S. Cl. 206-45.14

19 Claims

16. A collapsible carton formed of a one piece blank of bendable sheet material which is cut and creased to provide, when set up on end, a tubular body having a back wall, adjoining side walls hinged thereto, a front wall hinged to forward edges of the side walls and having an opening therein which is formed by cutting out a substantial area intermediate the top and bottom edges thereof, top and bottom end closure flaps hinged to the sides and one of said back or front walls, and a

shadow forming panel hingedly connected at a side of said front wall opening on a hinge line which substantially coincides with the hinge line of the connection of the front wall and said one side wall, said shadow forming panel being disposed in a plane extending diagonally inwardly of said opening and in the direction of the back wall and the opposite side wall, at least a portion of the inner margin of said shadow forming panel being reversely folded so as to extend in the direction of said one side wall and said back wall where it is disposed in a vertical plane extending from its hinged connection with said shadow forming panel diagonally between the front and back walls and a panel hinged to said reversely folded portion for securing the terminus of said reversely folded portion so that it is disposed in a fixed



position relative to the inside face of the back wall with said panel overlying a portion of the inside face of said back wall intermediate the side edges thereof so as to provide space for positioning therein an article, which space extends between said reversely folded panel portion and said opposite side wall and providing also a single shadow panel surface of substantial width extending diagonally and in a vertical plane from said line of reverse fold to the hinge connection of said shadow panel with said one side wall for receiving display material or the like, said shadow panel having the inner vertical edge thereof, which is hingedly connected to said reversely folded marginal portion, disposed so as to define one side of the front opening into said space and serving to restrain the article against sidewise movement when it is positioned in said space.

Re. 28,531

QUICK DRYING ROAD MARKING COMPOSITION AND METHOD

Edward R. de Vries, Lebanon, N.J., assignor to Prismo Universal Corporation, Rockville, Md.

Original No. 3,474,057, dated Oct. 21, 1969, Ser. No. 606,023, Dec. 30, 1966. Continuation-in-part of Ser. No. 262,233, March 1, 1963, abandoned, which is a continuation-in-part of Ser. No. 231,283, Oct. 17, 1962, abandoned. Application for reissue June 28, 1974, Ser. No. 484,315

Int. Cl. C09D 3/64, 3/66

U.S. Cl. 260-22 CB

11 Claims

1. A traffic line paint capable of being sprayed when heated comprising by weight

Resin binder	Percent
Pigments	12-22
Low boiling solvents	50-69.4
Higher boiling solvents	7-23
Pigment volume concentration	5-20
Solids content	46-62
	70-85

said resin binder being selected from the group consisting of short and medium oil length glycerol or other polyfunctional alcohol phthalic alkyds having a polyfunctional alcohol phthalate resin content of 40-58% and an oil content of 60-42%, said low boiling solvents having a high solvency for the resin binder and a boiling range below the temperature at which the paint is sprayed, and said higher boiling solvents having a boiling range between 200-400° F.

Re. 28,532

5-FLUORO-3-PYRIDINEMETHANOL, ESTERS THEREOF AND THERAPEUTICALLY ACCEPTABLE SALTS THEREOF

Lars Anders Fritz Carlsson, Bromma; Åke John Erik Helgstrand, Enhorna; Berndt Olof Harald Sjöberg, and Nils Erik Stjernstrom, both of Sodertälje, all of Sweden, assignors to Akitebolaget Astra, Sodertälje, Sweden

Original No. 3,637,714, dated Jan. 25, 1972, Ser. No. 689,751, Nov. 15, 1967. Application for reissue Apr. 16, 1973, Ser. No. 351,271

Claims priority, application Sweden, Nov. 16, 1966, 15717/66; and United Kingdom, Mar. 23, 1967, 13687/67; United Kingdom, Apr. 26, 1967, 19174/67.

Int. Cl. C07 31/36

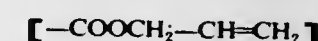
U.S. Cl. 260-294.8 R

2 Claims

1. A compound of the structural formula



and therapeutically acceptable salts thereof, wherein R is selected from the class consisting of $-\text{CH}_2\text{OH}$; $[-\text{COOCH}_3]$; $-\text{COOC}_2\text{H}_5$; $[-\text{COOC}_4\text{H}_9]$; $-\text{COOC}_6\text{H}_{13}$; $-\text{COOC}_{11}\text{H}_{23}$;



$-\text{CH}_2\text{OCOCH}_3$; $-\text{CH}_2\text{OCOC}(\text{CH}_3)_3$; $[-\text{CH}_2\text{OCOCH}_2-\text{CH}_2-\text{CH}_2-]$; $-\text{CH}_2\text{OCOCH}_2-\text{CH}=\text{CH}_2$; and $-\text{CH}_2\text{OCO}(\text{CH}_2)_6\text{CH}_3$.

Re. 28,533

SYNTHETIC POLYAMIDES OF A DIMERIC FATTY ACID, A LOWER ALIPHATIC CARBOXYLIC ACID, ETHYLENE DIAMINE, AND A CO-DIAMINE

Manfred Drawert, Werne an der Lippe, and Eugen Griebisch, Unna, both of Germany, assignors to Schering Aktiengesellschaft, Berlin & Bergkamen, Germany

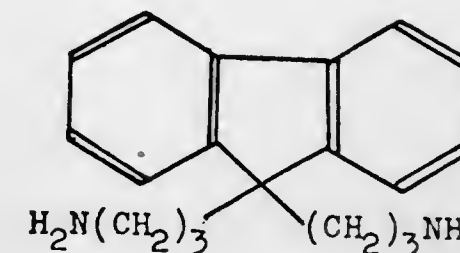
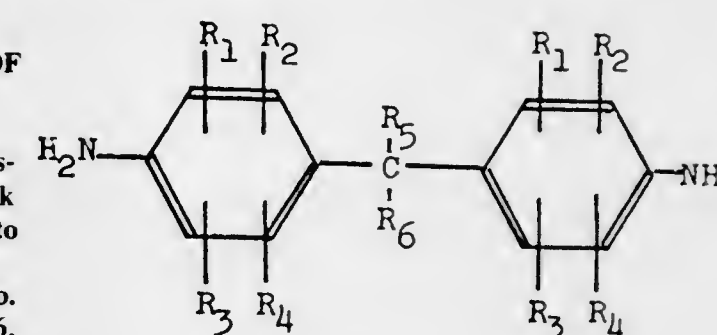
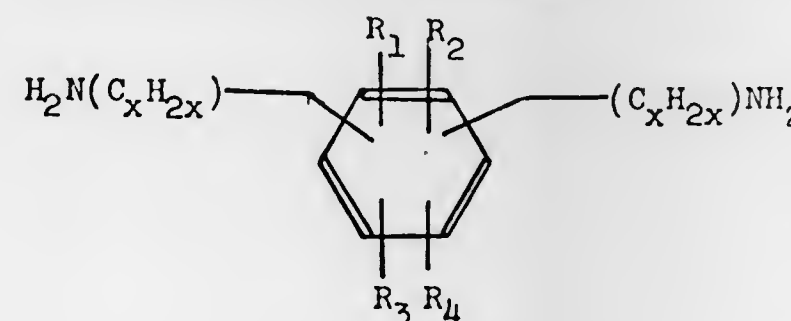
Original No. 3,622,604, dated Nov. 23, 1971, Ser. No. 815,279, Apr. 9, 1969. Continuation-in-part of Ser. No. 527,107, Feb. 14, 1966, abandoned, which is a continuation-in-part of Ser. No. 495,319, Oct. 12, 1965, abandoned. Application for reissue Oct. 29, 1973, Ser. No. 410,309

Int. Cl. C09f 7/00

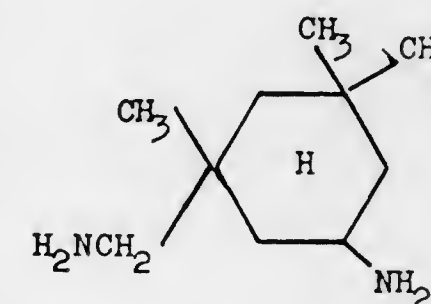
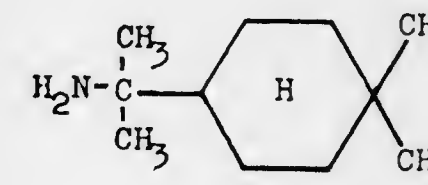
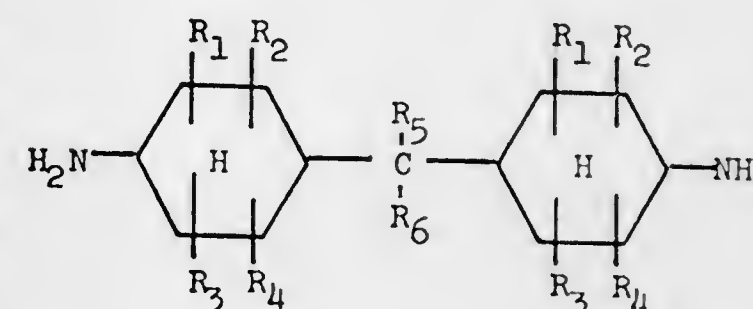
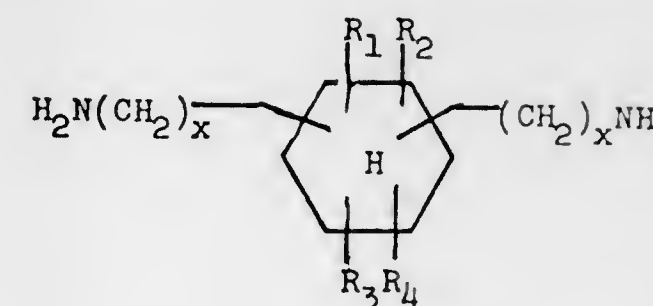
Claims priority, application Germany, Oct. 15, 1964, Sch 35965, Feb. 19, 1965, Sch 36567, Mar. 26, 1965, Sch 36782 U.S. Cl. 260-404.5

11 Claims

12. A synthetic polyamide prepared by cocondensing, at a temperature between about 180°C. and about 250°C., substantially equivalent amounts of an acid component consisting essentially of (1) a dimeric fatty acid prepared by polymerizing a monobasic acid of an aliphatic hydrocarbon having eight to 24 carbon atoms and (2) a monobasic straight chain alkanic acid having two to five carbon atoms, and of an amine component consisting essentially of ethylene diamine and a co-diamine selected from the group consisting of (1) a straight chain alkylene diamine having six to 12 carbon atoms; (2) an aromatic diamine having one of the following formulas:



(3) a cycloaliphatic diamine having one of the following formulas:



wherein x in said formulas is zero or a small whole number from 1 to 3 inclusive, and wherein R1 - R6 are hydrogen and up to two of said radicals R1 - R6 may be methyl; and (4) an ether diamine of the formula

$\text{H}_2\text{N}-(\text{CH}_2)_n-\text{O}-(\text{RO})_x-(\text{CH}_2)_n-\text{NH}_2$ wherein n is an integer from 3 to 5 inclusive, x is zero or an integer from 1 to 5 inclusive, and R is an unsubstituted alkylene

radical having 1 to 12 carbon atoms or such a radical having a methyl substituent thereon, the equivalence ratio between said dimeric fatty acid and said monobasic acid being between 0.8:0.2 and 0.7:0.3, and the equivalence ratio between said ethylene diamine and said codiamine being between 0.8:0.2 and 0.5:0.5.

Re. 28,534

STRESS ORIENTED CORRUGATIONS

Christian Arne, Chicago, Ill., assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.

Original No. 3,706,627, dated Dec. 19, 1972, Ser. No. 150,568, June 7, 1971. Application for reissue Apr. 23, 1973, Ser. No. 353,217

Claims priority, application Germany, Oct. 15, 1964, Sch 35965, Feb. 19, 1965, Sch 36567, Mar. 26, 1965 Sch 36782

Int. Cl.² B32B 1/00, 3/28

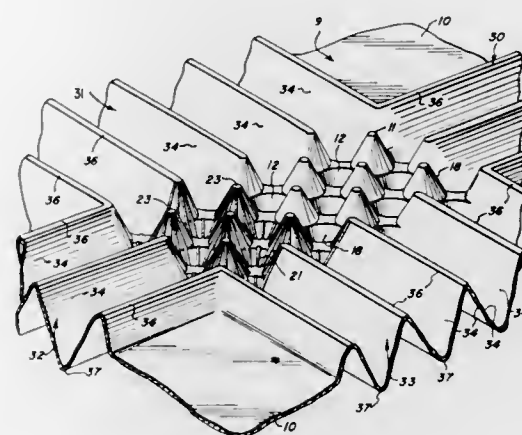
U.S. Cl. 428—180

11 Claims

1. A plate comprising:

a center section consisting of a plurality of hollow conical elements alternatively extending from and depending from a common datum plane, the side walls of said hollow conical elements being corrugated;

the adjacent extending and depending conical elements having common side walls and forming points of tangency at the datum plane; and



at least one, one-way corrugation section extending outwardly from said center section to the edge of said plate.

PLANT PATENTS

GRANTED AUGUST 26, 1975

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,769

VARIETY OF WHITE ASH TREE
Willet N. Wandell, Rte. 3, Myra Station Road,
Urbana, Ill. 61801

Filed June 27, 1974, Ser. No. 483,875
Int. Cl. A01h 5/12

U.S. Cl. Plt.—51

1 Claim

1. A new and distinct variety of white ash substantially as described and illustrated herein, characterized particularly by the unique combination of dense, broad, growing habit, dark green leaves of smaller size with small diameter petioles creating a drooping or pendulant character of the leaflets, and which leaflets turn to an attractive purple color in the autumn of the year, and with flowers exhibiting male characteristics.

3,770

VARIETY OF LINDEN TREE
Willet N. Wandell, Rte. 3, Myra Station Road,
Urbana, Ill. 61801

Filed June 27, 1974, Ser. No. 483,876
Int. Cl. A01h 5/12

U.S. Cl. Plt.—51

1 Claim

1. A new and distinct variety of linden tree substantially as herein shown and described, characterized particularly by the unique combination of vigorous upright growing habit with dense, heavy, compact foliage, attaining a compact form without pruning or trimming, and having foliage dark green above and lighter green below, which foliage is maintained in excellent condition throughout the growing season and which turns to a bright yellow in the fall.

3,771

HACKBERRY TREE
Willet N. Wandell, Rte. 3, Myra Station Road,
Urbana, Ill. 61801

Filed June 27, 1974, Ser. No. 483,886
Int. Cl. A01h 5/12

U.S. Cl. Plt.—51

1 Claim

1. A new and distinct variety of hackberry substantially as described and illustrated herein, characterized particularly by low spreading habit of growth, heavy dark green leaves of increased glossy character, and reproduction from buds of whips which show few superfluous side branches.

3,772

BEGONIA PLANT
James C. Mikkelsen, Ashtabula, Ohio, assignor to
Mikkelsens Inc., Ashtabula, Ohio
Filed July 10, 1974, Ser. No. 487,398
Int. Cl. A01h 5/00

U.S. Cl. Plt.—68

1 Claim

1. A new and distinct cultivar of begonia plant characterized particularly by its distinctive rose pink flower color; its ruffled edged tepals which are consistently so shaped regardless of the time of flowering; its tendency to be procumbent thereby providing additional flexibility to the stems for use in hanging baskets and by its inconsistent propagation by leaf cuttings thereby necessitating propagation by stem cuttings.

3,773

AZALEA PLANT
Joseph Nowalk, R.D. 3, Box 404A, Amwell Road,
Somerset, N.J. 08873

Filed Sept. 16, 1974, Ser. No. 506,607
Int. Cl. A01h 5/00

U.S. Cl. Plt.—56

1 Claim

1. A new and distinct variety of azalea plant, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a vigorous and compact habit of growth, attractive light olive green foliage which is slightly lighter in color than the foliage of the parent variety "Crimson Hinodegiri," abundant flowers which entirely cover the plant when it is in full bloom, a very attractive hose-in-hose flower form and deep rose pink flower color, an unusual habit of the terminal leaves in remaining vertical and completely enclosing the flower buds and initially giving the impression that the plant bears no flower buds at all, until about 2 weeks before coming into bloom, when the terminal leaves fold down to a horizontal position to expose the flowers, very good hardiness, with the ability to withstand temperatures as low as -20° F. without injury, excellent suitability for Easter season greenhouse forcing and even in very hot weather without wilting, and very good resistance to fungus, lace bugs, chlorosis and other diseases without the need for spraying.

3,774

ROSE PLANT
Robert G. Jelly, Richmond, Ind., assignor to
E. G. Hill, Inc., Richmond, Ind.
Filed Sept. 25, 1974, Ser. No. 509,276
Int. Cl. A01h 5/00

U.S. Cl. Plt.—26

1 Claim

1. A new and distinct variety of rose plant substantially as herein shown and described, characterized by its continuous production of fine shell pink blossoms on strong stems which have an improved opening form and vase life.

3,775

ARALIA PLANT
Joseph W. Hoak, 17040 SW. 90th Ave.,
Miami, Fla. 33157
Filed Apr. 8, 1974, Ser. No. 459,110
Int. Cl. A01h 5/00

U.S. Cl. Plt.—88

1 Claim

1. A new distinct variety of *Polyscias balfouriana mini-folia* substantially as herein shown and described, characterized particularly as to novelty by having basically forest green leaves displaying light to dark yellow coloration beginning at marginal outer edge portions thereof and extending inwardly in irregularly formed patches constituting between approximately 25 to 50% of leaf area, and further being distinguished by having distinctive irregular marginal edges of the leaves as compared with the relatively smooth edges of the parent plant.

PATENTS

GRANTED AUGUST 26, 1975

ERRATA

For	See
CLASS	PATENT NO.
004-213.....	3,900,908
023-273.....	3,900,955
037-008.....	3,900,977
073-064.2.....	3,901,062
198-025.....	3,901,166
308-015.....	3,901,557
355-071.....	3,901,598
250-565.....	3,901,812
250-209.....	3,901,813
250-492.....	3,901,814
250-343.....	3,901,820
250-543.....	3,902,071

PATENTS

GRANTED AUGUST 26, 1975

GENERAL AND MECHANICAL

3,900,896

NECK BRACE FOR ATHLETES

Eugene J. Ackerman, 4819 S. Packard Ave., Cudahy, Wis. 53110

Filed Nov. 25, 1974, Ser. No. 526,721

Int. Cl.² A41D 13/00

U.S. Cl. 2-2

3,900,898

ATHLETIC SHIELD

Eugene J. Ackerman, 4819 S. Packard Ave., Cudahy, Wis. 53110

Filed Sept. 23, 1974, Ser. No. 508,533

Int. Cl.² A41D 13/00

5 Claims U.S. Cl. 2-22

5 Claims



1. A neck brace for an athlete wearing a protective helmet and shoulder pads, comprising a rigid vertical member having its upper end fixed to the helmet and its lower end pivotally and extensibly supported by the shoulder pad to turn on a substantially vertical axis near the back of the neck of the athlete.

3,900,897

ATTACHING MEANS FOR A FACEMASK

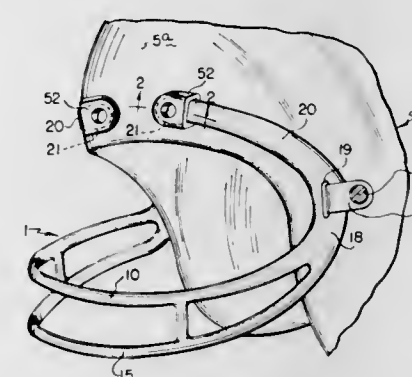
Fred R. Dunning, 3800 Oakes Rd., Brecksville, Ohio 44141

Filed Mar. 13, 1974, Ser. No. 450,861

Int. Cl.² A42B 3/00

U.S. Cl. 2-9

6 Claims



1. Attaching means for resiliently attaching a football facemask to the front of a helmet wherein the facemask is formed with at least one bar adapted to extend across the front of the helmet adapted to provide protection to the face of the wearer and side attaching portions on the ends of said bar disposed along the side surfaces of said helmet and an arm connectable with said bar and disposed along the forehead part of the helmet and wherein said arm terminates in at least one free end, said attaching means comprising: strap means connectable with said side attaching portions of said facemask and said helmet, a hollow boot member generally box-like in configuration to define a chamber therein securely fastened to the forehead part of said helmet, opening means formed in said boot member to provide access to said chamber, said chamber being of such contour as to freely accept therein the free end of said arm, and said free end being otherwise free to move relative to said helmet.



1. An athletic shield constituting a brace adapted to extend vertically from the foot to the thigh along the outside of the leg of an athlete, comprising a lower segment, means to secure said lower segment rigidly to the shoe of the athlete, a central segment, means adjustably securing said central segment to said lower segment to accommodate different length legs of athletes, an upper segment, a pivotal knee joint between said upper segment and said central segment adapted to be disposed axially in line with the knee joint of the athlete, the upper end of said upper section being free for telescoping confinement in a pocket of the trousers of the athlete, and said brace being substantially free of leg constricting attachments which might interfere with the circulation of blood in the leg of the athlete.

3,900,899

METHOD FOR PRODUCING PANTY HOSE

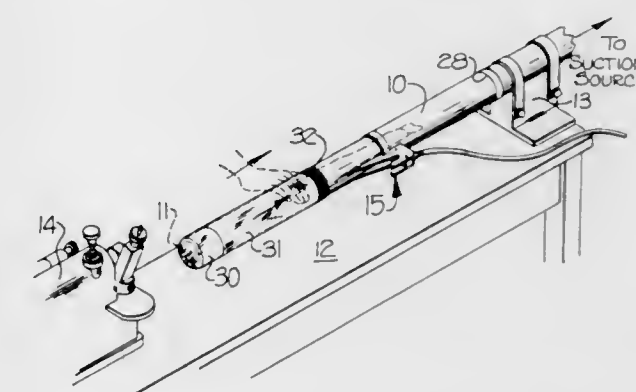
Bill E. Bailey, Henderson, N.C., assignor to Americal Corporation, Henderson, N.C.

Filed Aug. 30, 1974, Ser. No. 502,163

Int. Cl.² A41B 9/04

U.S. Cl. 2-224 R

2 Claims



1. A method of producing panty hose which comprises the steps of
a. knitting a pair of seamless tubular blanks in right-side-out condition with one end of each blank being adapted to form the toe end and the other end being adapted to form one-half the panty portion,

- b. positioning the toe end of the first of said blanks adjacent the open end of a tubular form so that the toe end and a substantial length of said first blank is drawn into said tubular form by suction currents therein,
- c. drawing the panty forming end of said first blank up and over said tubular form to evert said first blank while engaging the panty forming end of said first blank with a heated wire slitter fixed on the outside of said tubular form to longitudinally slit said first blank a predetermined distance from the end thereof as the panty forming end of said first blank is drawn up the outside of said tubular form to a predetermined location,
- d. sewing the toe end of said first blank to close the same,
- e. turning said first blank back to right-side-out condition while removing the same from said tubular form,
- f. repeating steps (b) through (e) with a second tubular blank, and
- g. seaming together the corresponding edges of the slits in the panty forming ends of said first and second blanks to join the two blanks together and form the panty portion of the panty hose.

3,900,900

DEVICE FOR DETACHABLY CONNECTING AN IMPLEMENT TO A SHAFT OF AN ARM PROSTHESIS AND JOINT COMPRISING SAID DEVICE

Eduard Horvath, Vienna, Austria, assignor to Otto Bock Orthopädische Industrie KG, Duderstadt, Germany

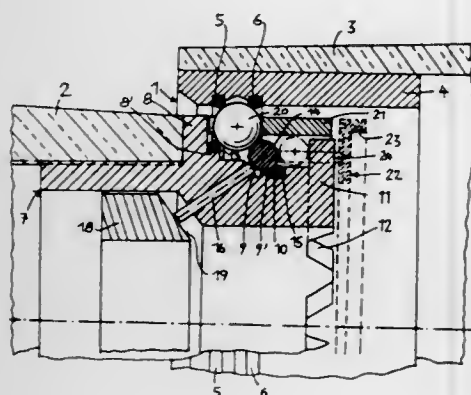
Filed Mar. 12, 1974, Ser. No. 450,453

Claims priority, application Austria, Mar. 16, 1973, 2388/73

Int. Cl. A61F 1/06, 1/04

U.S. Cl. 3—12.4

14 Claims



1. A separable joint for rotatably connecting a first member to a second member in an arm prosthesis assembly, said joint comprising:

- a sleeve mounted on one of said members;
- a seat mounted on the other of said members and receivable in said sleeve, said sleeve being formed with an internal annular raceway opening in the direction of said seat;
- a cage surrounding said seat within said sleeve and provided with a plurality of roller elements radially shiftable in said cage into and out of engagement with said raceway and rolling therein while being axially retained by said sleeve when radially received in said raceway;
- a camming ring axially shiftable on said seat toward and away from said elements and biasing said elements into said raceway in one axial position of said ring and permitting said elements to radially withdraw from said raceway in another axial position of said ring; and
- a shifting mechanism on said seat for axial displacing said ring from one of said positions into another of said positions.

3,900,901

LENGTH ADJUSTABLE COSMETIC LEG COVERING

Denis Ronald William May, Roehampton, London, England, assignor to J. E. Hanger & Company Limited, London, England

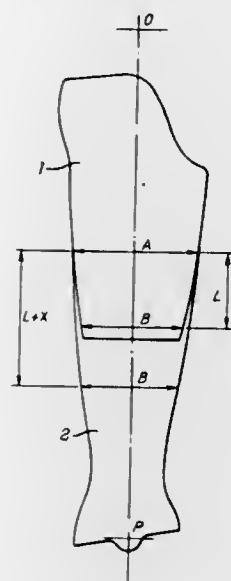
Filed Sept. 5, 1973, Ser. No. 394,454

Claims priority, application United Kingdom, Sept. 6, 1972, 41383/72

Int. Cl. A61F 1/08

U.S. Cl. 3—21

4 Claims



1. A cosmetic covering for an artificial leg shin member comprising two parts, an upper part molded from compliant plastics material whose interior is shaped to slide over and locate against external surfaces of the member, and a lower part in the form of a thin generally tubular laminated shell, the outer surface of the said upper part having an increasing taper over a given length at its lower end, and the inner surface of the said lower part having a lesser increasing taper over a longer given length at its upper end such that the entire upper periphery of said lower part engages with and is forcefitted over the compliant upper part whereby the total length of the inter-fitted parts may be adjusted and shortened from its maximum by removal of a length of material from the upper end of the lower part before force-fitting.

3,900,902

BATH SEAT

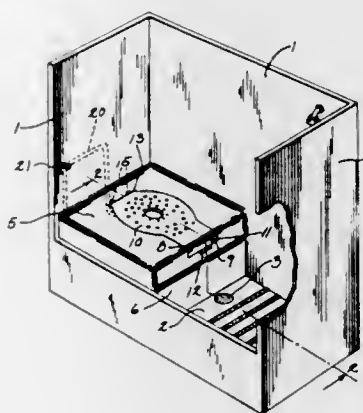
Louis Jarosinski, Rt. 1, Kaukauna, Wis. 54130

Filed June 13, 1974, Ser. No. 478,853

Int. Cl. A47k 3/22, 11/08

U.S. Cl. 4—7

3 Claims



1. A bath seat adapted to be incorporated in a shower or tub bath construction, and comprising a generally horizontal sitz bath seat having a central opening therein and a slot extending forwardly from said opening, a front skirt extending downwardly from said seat portion to the floor of the bath with a central slot registering with said first named slot and extending downwardly to provide an overflow at its lower edge, a dis-

placeable perforate seat portion generally covering the opening in said seat and having a forwardly extending closure member for the slots in said seat and said skirt and with the lower edge of said closure member spaced from the lower edge of said skirt slot to provide said overflow, a pan beneath said seat portion and generally sealed therewith to provide a bowl and spray chamber below the seat with said skirt constituting the front wall of the bowl, a spray head in said spray chamber, and stopper controlled separate drain openings for said spray chamber and the bath connected to a common drain.

3,900,903

VALVE MECHANISM AND FLUSHING SYSTEM INCORPORATING THE SAME

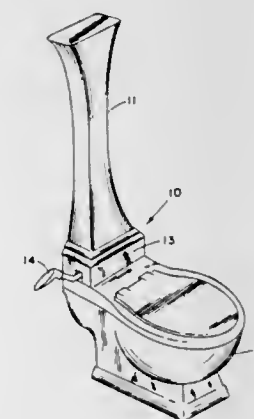
Costa Caris, East Walpole; Michel Marc, Watertown, and William P. Hidden, Wenham, all of Mass., assignors to Conceptual Engineering Associates, Foxboro, Mass.

Filed July 31, 1973, Ser. No. 384,285

Int. Cl. E03d 1/36

U.S. Cl. 4—41

10 Claims



1. A flushing system comprising: a block member; a conduit extending heightwise through said block member; a seat portion formed in the block member at the top of the conduit extending outwardly of the conduit; a valve body movable heightwise in said conduit; a sealing member, affixed to the top of the valve body, having a larger diameter than the top of the conduit, the contacting of the sealing member with the seat portion defining the lowermost position of the valve body in the conduit; an orifice located below and in communication with said conduit; a water inlet line; an outlet chamber; an inlet valve, movable between open and closed positions, interposed between said inlet line and said outlet chamber; a tank joined to and extending upwardly of the block member and encompassing the inlet valve and the outlet chamber; a first passage means communicating between the outlet chamber and the orifice; a second passage means communicating between the outlet chamber and the interior of the tank; first actuating means so constructed as to raise the valve body upwardly of said lowermost position and to move said inlet valve from a closed position to an open position, whereby water in the tank may be discharged through said conduit and the valve body may thereafter lower under gravitational force to said lowermost position and whereby water may flow through said first passage means into said orifice and may flow through second passage means into the tank to cause the water level in the tank to rise; and second actuating means actuatable in response to the rise of the water level in the tank to a preset level to enable the inlet valve to move from said open position to said closed position.

3,900,904

FLUSHING APPARATUS

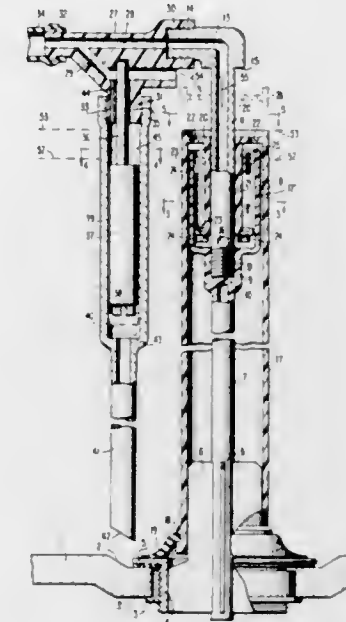
James W. Braswell, 218 Hooker Rd., Wilmington, N.C. 28401

Filed June 24, 1974, Ser. No. 482,764

Int. Cl. E03d 1/36

U.S. Cl. 4—41

18 Claims



1. A flushing apparatus for use with a flush tank having a bottom discharge opening comprising a fixed upright member anchored with respect to the discharge opening and extending thereabove and having a cup-like top portion, a vertical pipe coupled with said upright member and extending through the cup-like top portion and above the same, a fitting means coupled to said vertical pipe and having a first passageway in communication with the bore of said pipe and a second passageway leading from the first passageway and opening exteriorly of said pipe, a filling valve means coupled with said fitting means and delivering refill water to the first passageway when open, a main vertical sleeve telescoped movably over the fixed upright member and said vertical pipe, an interior sleeve part on said main vertical sleeve and telescoped over said vertical pipe and projecting into said cup-like top portion, a piston element on said interior sleeve part and engaged movably in the bore of the cup-like top portion, said cup-like top portion having a side wall opening near the top thereof and said vertical pipe having a lateral port near the bottom of the cup-like portion, a flushing valve element on the lower end of the main vertical sleeve, a tubular member coupled to the fitting means and depending therefrom and terminating near the bottom of a tank utilizing said apparatus and having a float chamber, a float body within the float chamber movably, a valve element secured to the float body and extending thereabove and projecting into a guidance and seating opening of said fitting means and adapted in a raised position to close said second passageway and in a lowered position to open the second passageway, and there being a narrow orifice interconnecting said float chamber and second passageway external to said guidance and seat opening.

3,900,905

BED AND LOUNGE

Clarence R. Johnson, Duluth, and Jay T. Kidder, Minneapolis, both of Minn., assignors to The Tilt-A-Bed Corporation, Minneapolis, Minn.

Division of Ser. No. 355,940, April 30, 1973, Pat. No. 3,841,702, which is a division of Ser. No. 212,079, Dec. 27, 1971, Pat. No. 3,729,753. This application July 22, 1974, Ser. No. 490,768

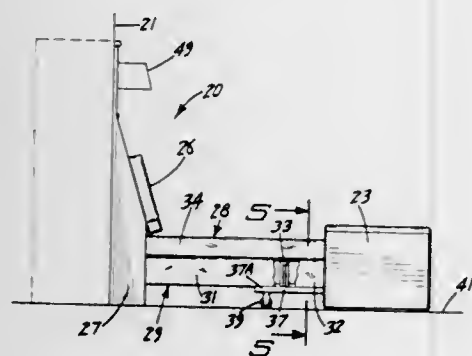
Int. Cl. A47C 13/18

U.S. Cl. 5—2 R

11 Claims

1. In a combination bed and lounge having mattress means selectively movable to a bed position and a seat position wherein: said mattress means has a first section and a second

section, each section having a rigid base having sides and ends, upright edge members secured to the sides and ends of the base forming a cavity, resilient means located in said cavity, means located over said cavity to cover the resilient means, means pivotally connecting the first section to the second section, said means pivotally connecting the first section to the second section comprising a first hinge connected to adjacent edge members on one side of the base and a second hinge connected to adjacent edge members on the other side of the



base, each hinge having a first member secured to one edge member, a second member secured to the adjacent edge member, and pivot means pivotally connecting the first and second members to each other, said pivot means being located between the adjacent sides of the first section and second section, elongated beam means secured to the base of the second section, said beam means having an end section extended below the base of the first section to support a portion of the first section, and wheel means operatively connected to the beam means to movably support the second section.

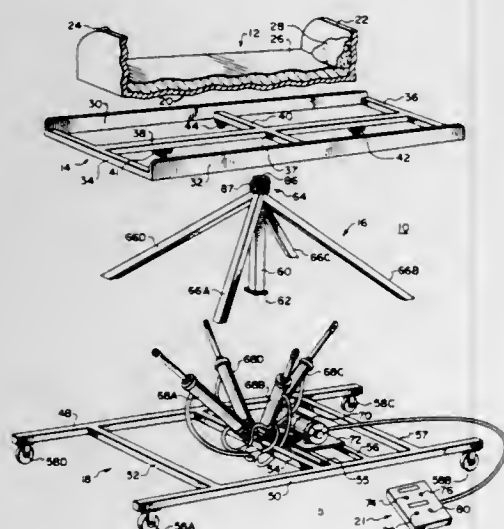
3,900,906 ADJUSTABLE BED

Owen W. Berthelsen, Lincoln, Nebr., assignor to Century Mfg. Co., Aurora, Nebr.

Filed Apr. 18, 1974, Ser. No. 461,959
Int. Cl.² A61G 7/10

U.S. Cl. 5-62

14 Claims



1. An adjustable patient support apparatus, comprising: a base support; said base support including a support member; a movable frame adapted to support said patient in an adjustable position having a first axis of rotation and a second axis of rotation;

said first and second axes crossing substantially at a point of intersection; means for moving at least portions of said movable frame with respect to said support member; said means for moving said movable frame including means for selectively pivoting said movable frame about the first axis of rotation and about the second axis of rotation without substantially changing the elevation of said point of intersection with respect to said support member, whereby said movable frame is pivoted in either or both of two directions; said means for moving said movable frame including first movable means for pivoting said movable frame about the first axis and second movable means for pivoting said movable frame about the second axis; said first movable means including a first base mounted stationary with respect to said support member and a first driven arm connected to one point on one of said axes a first distance from said point of intersection; said second movable means including a second base mounted stationary with respect to said support member and a second driven arm connected to the other of said axes at a second point a second distance from said point of intersection.

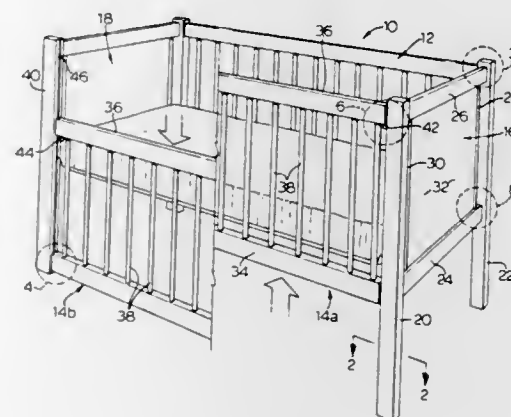
3,900,907 BABY CRIB

Anton J. Mulder, Downsview, Canada, assignor to Mariton Limited, Toronto, Canada

Filed June 24, 1974, Ser. No. 482,220
Int. Cl.² E03D 11/10

U.S. Cl. 5-100

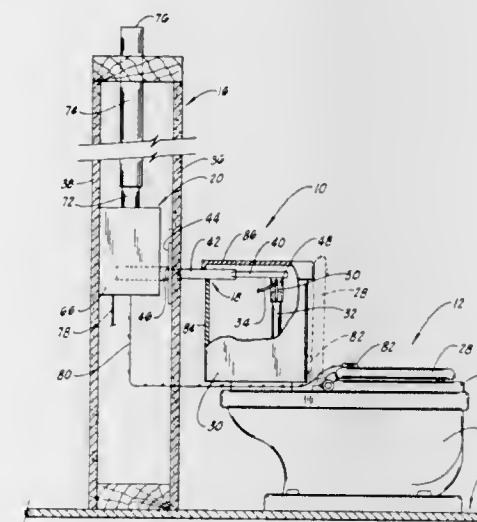
9 Claims



1. In an improved baby-crib construction comprising two crib-sides and two crib-ends, at least one of said crib-sides being movable in a vertical direction relative to said crib-ends; each crib-end having two parallel spaced-apart uprights and two parallel spaced-apart cross-members disposed horizontally between and secured to said uprights; each crib-side having two parallel spaced-apart cross-members, each end of said crib-side cross-member being adjacent a respective upright of a crib-end; and means being provided for engaging each end of the cross-members of at least one of said crib-sides with the respective uprights of said crib-ends which is adapted to permit said crib-side to move relative to said crib-ends; the improvement comprising each said uprights and said cross-members of said crib-ends and crib-sides having a uniform lateral cross-section and consisting of a hollow, substantially rectangular extrusion having opposing side and end walls and four smoothly rounded corners and at least one partition extending longitudinally of and being spaced within said hollow extrusion to define a plurality of longitudinally extending channels within said extrusion.

3,900,908 WATER CLOSET EVACUATION MEANS Galen L. Stump, 915 N. Wheeler, McPherson, Kans. 67460 Filed Dec. 12, 1973, Ser. No. 426,644 Int. Cl.² A47K 3/22; E03D 9/04, 9/05 U.S. Cl. 4-213

1 Claim



1. In a conventional water closet mounted in a wall of a building and having a bowl with a lid hingedly mounted thereon, a flush tank, and a water overflow and bowl filler conduit uprightly mounted in said flush tank, said overflow and filler conduit having an inlet and an outlet communicably connected with said bowl of said water closet, that improvement of a ventilator in combination therewith, comprising:

a. mounting plate means on the inside of said wall, a conduit means extending through said mounting means and said wall and having an inlet and an outlet, said conduit means having an inlet portion mountable over the upper end portion of said overflow and bowl filler conduit, an air moving means having an inlet and an outlet and mounted in said wall and in operative relation to said conduit means, said inlet of said air moving means connected in gaseous fluid communication to said conduit means outlet and said air moving means outlet discharging through said wall of said building, a control means for said air moving means operatably mountable on said lid, said conventional water closet has a bowl filler conduit from a water source entering said overflow conduit at said inlet thereof, said conduit means inlet end portion has an aperture therethrough to receive said bowl filler conduit, said conduit means has a telescopic portion therein between said inlet end portion and said air moving means, said building has an attic portion, said air moving means outlet is connected in gaseous fluid communication with said attic, said conduit means has a first conduit portion including said inlet end portion, and a second conduit portion including said telescopic portion, said first conduit portion has an inlet portion and an outlet portion, said first conduit inlet portion mounted on said water overflow and bowl filler conduit inlet in overlying relation, said second conduit portion has an inlet portion and an outlet portion, said second conduit inlet portion communicably connected with said first conduit outlet portion and said second conduit outlet portion communicably connected with said air moving means inlet, said air moving means has a blower means having an inlet and an outlet, said blower means being mounted in said wall and having a discharge conduit communicably connected to said blower means outlet and said discharge conduit having an outlet discharging into said attic, said control means has a switch means mounted on said lid, said switch means being electrically connected to a source of electrical power and to said blower means, said switch means in use being closable to activate said blower means when said lid is in said raised position, said switch has a mercury circuit connecting element therein movable to a

closed condition when said lid is in said raised position and movable to an opened condition when said lid is in a lowered position, said first conduit inlet end portion has a generally cylindrical sleeve-like portion engagable over said water overflow conduit upper end portion, said aperture is an elongated slot lengthwise in said sleeve-like portion open at one end of said sleeve-like portion, said blower means has a squirrel cage fan means powered by an electric motor, said first conduit portion outlet end portion has a generally rectangularly shaped cross-section, said second conduit portion has a generally rectangularly shaped cross-section, said second conduit has a mounted conduit member on its said outlet end portion mountable on said wall and a telescopic member slidably connected between said mounted conduit member and said first conduit portion outlet portion, said ventilator being constructed and adapted when mounted on said water closet to operate when said lid is raised, thereby actuating said air moving means, and thereby removing gas from said toilet bowl, passing same through said overflow and filler conduit, said conduit means, said air moving means, and discharging same through said wall of said building.

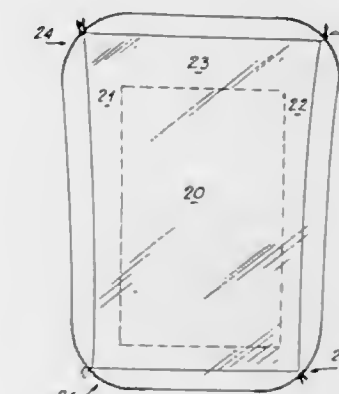
3,900,909 COVER SHEET FOR FITTING VARIOUS SHAPED MATTRESSES

Albert Monier, and Lisette nee Alperovith Monier, both of 33 rue Duret, 75116 Paris, France

Filed Mar. 26, 1973, Ser. No. 344,716
Int. Cl.² A47G 9/00

U.S. Cl. 5-334 C

2 Claims



1. A flat cover sheet for fitting mattresses of various widths, heights, and lengths, comprising: a textile fabric having a substantially trapezoidal shape of such size that said fabric may extend over the sides and inwardly of the bottom edges of a mattress to be covered by said fabric, said trapezoidal shape permitting the wide end of said cover sheet to cover a bolster or the like, a hem extending around each corner of said cover sheet forming an elongated pocket; said elongated pocket having a centrally located opening; and a pair of tapes extending through said opening, one tape having an end secured at one end of said elongated pocket and the other tape having an end secured at the other end of said elongated pocket whereby, as the free ends of the two tapes are drawn up the cover sheet is conformed to the corner of said mattress.

3,900,910 WATER PILLOW

Yuuchi Nakata, 5-49, 2 chome, Higashikaigan-Minami, Chigasaki, Kanagawa, Japan

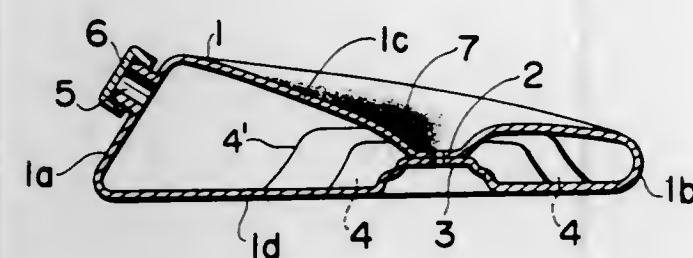
Filed Mar. 20, 1973, Ser. No. 343,073

Claims priority, application Japan, Apr. 26, 1972, 47-48680

Int. Cl. A47g 9/00; A47c 7/02

U.S. Cl. 5-341

5 Claims



1. A water pillow comprising:
 - a flexible waterproof hollow enclosure in the form of a pillow,
 - the upper surface of the enclosure having a concavity therein substantially centrally thereof, for receiving the head of a user,
 - the lower wall of the enclosure being provided with a plurality of upwardly projecting hollow flexible ridges about the concavity terminating short of the top wall of the enclosure, said ridges being compressible in response to pressure applied to the water by a user's head to provide space for receiving the volume of water displaced by such pressure, said enclosure being provided with an inlet for the water.

3,900,911

HAND CLEANER OF ROTARY BRUSH TYPE

Jyoji Hayashi, 5-36-304, Soshigaya 2-chome, Setagaya-ku, Tokyo, Japan

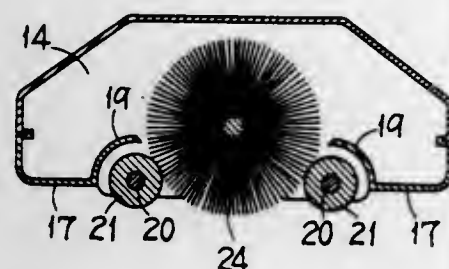
Filed May 9, 1973, Ser. No. 358,692

Claims priority, application Japan, May 19, 1972, 47-49205

Int. Cl. A47L 11/33

U.S. Cl. 15-41 R

5 Claims



1. A hand-held belt driven, rotary brush cleaner for cleaning a wide variety of surfaces comprising:
 - a. a cleaner body;
 - b. a rotary brush mounted in said cleaner body, said rotary brush extending beyond the bottom surface of said cleaner body;
 - c. two pressing rollers mounted in said cleaner body, said pressing rollers extending beyond said bottom surface of said cleaner body, each said pressing roller having a frictional contact with said rotary brush;
 - d. driving wheels mounted in said cleaner body, said driving wheels connected to said pressing rollers and to said rotary brush by a belt such that rotation of said pressing rollers in one direction causes said rotary brush to rotate in the opposite direction;
 - e. protected edges disposed in said cleaner body over each said pressing roller, said protective edges substantially preventing material once inside the cleaner body from spilling out of said body.

3,900,912 PIPELINE PARAFFIN SCRAPER

Manfred Lenz, Wankendorf; Paul Reynolds, Ascheberg, and Willi Westen, Schillsdorf Post Bokhorst, all of Germany, assignors to Deutsche Texaco Aktiengesellschaft, Hamburg, Germany

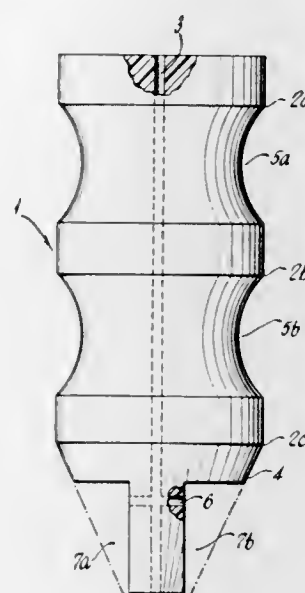
Filed July 13, 1973, Ser. No. 379,044

Claims priority, application Germany, July 29, 1972, 2237346

Int. Cl. B08B 9/04

U.S. Cl. 15-104.06 R

2 Claims



1. A pipeline paraffin scraper, comprising in combination a solid generally cylindrical body of plastic material, said body having a pair of arcuate annular recesses spaced axially apart and from the ends of said body leaving maximum diameter smooth surface areas therebetween, a frusto conical front end on said body having a pair of parallel walled recesses therein, said parallel walls being parallel to and symmetrically located relative to the axis of said body, said parallel walled recesses extending diametrically to the outside surface of said front end and forming transverse flat walls near the base of said frusto conical front end, an axially located small-diameter passage extending through said body including said front end for permitting a jet of pipeline fluid to precede the scraper as it moves through the pipeline, and a transverse small-diameter passage interconnecting said parallel walled recesses and communicating with said axial passage and having the openings thereof at said parallel walls located near said base of said front end.

3,900,913

CORE MOUNTING ASSEMBLY FOR ROTARY BROOMS

Arthur E. Drumm, Rt. 1, Marysville, Ohio 43040

Filed Apr. 1, 1974, Ser. No. 456,596

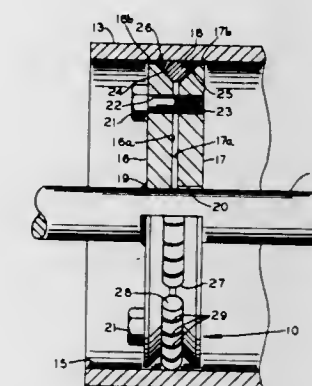
Int. Cl. A46B 13/02

U.S. Cl. 15-179

5 Claims

1. A core mounting assembly comprising
 - a drive shaft, a pair of circular plates positioned on said drive shaft for revolution therewith in a plane transverse to the axis of rotation, said plates disposed axially spaced to each other and relatively axially movable with one said plate adapted to be drivingly mounted in supported relationship on a drive shaft, said plate being fixed to said shaft axially and the other plate being slidable axially of the shaft, at least one of said plates having a circumferential edge surface inclined inwardly toward a side surface thereof disposed adjacent a side surface of the other plate whereby said inclined circumferential edge surface cooperatively define an outwardly opening groove with the other of said plates,

fastening means mechanically coupling said plates in a predetermined axially-spaced relationship and selectively operable to axially displace said plates towards each other, said fastening means comprising fastening members radially outwardly of said shaft and extending between said plates to which they are operatively connected, and a split ring disposed in said groove formed by said plates and extending substantially around said plates, said ring being expansible radially outward in response to relative displacement of said plates toward each other to frictionally



engage the inner surface of a circumscribing circular member and being formed from a resilient metal material so that its ends can be spread apart to be positioned in said groove and normally constricting to an internal diameter less than the external diameter of said plates so it will engage said inclined edge surface of the plate and to an external diameter less than the external diameter of said plates so it will be positioned fully within said groove when said plates are in said axially spaced relationship but will expand radially outwardly of said groove into engagement with said circular member upon displacement of said plates axially towards each other.

3,900,914

ROTARY BRUSH CORE ASSEMBLY

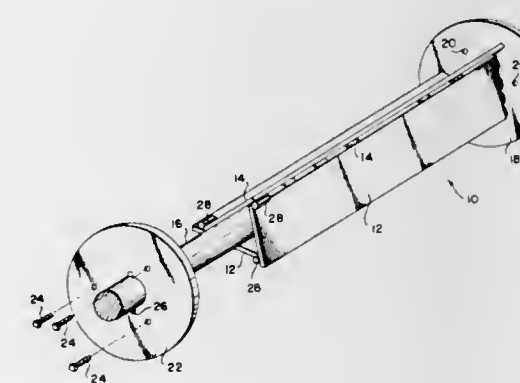
Susan H. Lewand, Colonia, N.J., assignor to Danline Manufacturing Company, Kenilworth, N.J.

Filed Feb. 7, 1974, Ser. No. 440,369

Int. Cl. A46b 7/10

U.S. Cl. 15-181

6 Claims



1. In a rotatably driven brush assembly comprising a central supporting shaft, a brush core slidably mounted on the supporting shaft, and a brush circumferentially encompassing the core and carrying radially extending brush filaments, an improved brush core comprising a plurality of flat plates forming a regular polygon tangentially circumscribing said supporting shaft, each plate coplanarly extended at an apex of the polygon to the inside surface of said brush.

3,900,915 ROTARY COILED BROOM

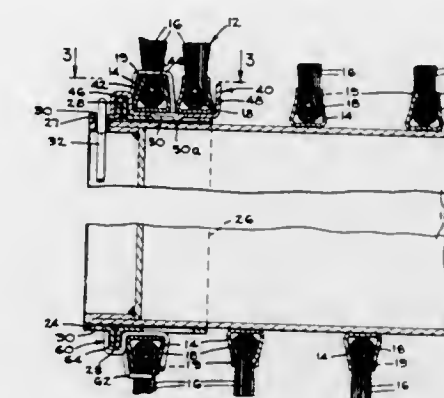
Richard B. Rosseau, Claremont, Calif., assignor to FMC Corporation, San Jose, Calif.

Filed July 23, 1974, Ser. No. 491,021

Int. Cl. A46b 7/10

U.S. Cl. 15-182

21 Claims



1. A rotary broom comprising a generally cylindrical core, a helical brush strip wound about said core, a ring member secured to one end of said core, said ring member having a series of stops spaced circumferentially thereabout, and automatic tightening means provided at the end of said brush strip adjacent to said ring member for engagement with said stops on said ring member, said tightening means and said stops being configured and oriented so as to permit endless relative rotary movement therebetween in one direction and to prevent relative rotary movement in the opposite direction when said tightening means is in engagement with one of said stops.

3,900,916

DOUBLE LATCH CONNECTOR

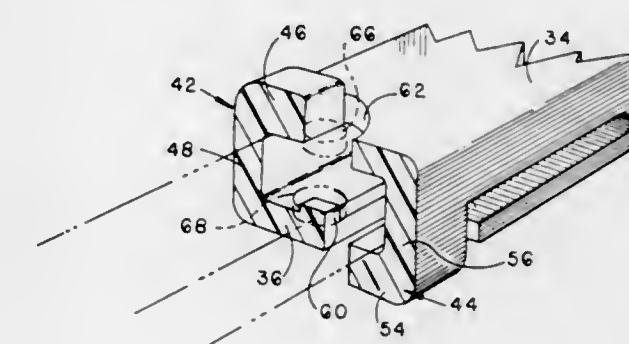
Leo J. Wubbe, Beverly Shores, Ind., assignor to The Anderson Company, Gary, Ind.

Filed Sept. 23, 1974, Ser. No. 508,429

Int. Cl. B60S 1/40

U.S. Cl. 15-250.32

9 Claims



1. A connector for a windshield wiper blade, an elongate housing having a body portion pivotally connected to said wiper blade, said housing having a longitudinal opening extending inward from the end opposite said body portion, said housing having an upper half and a lower half, an actuator member connected to the outer end portion of said lower half, a second actuator member connected to the outer end portion of said upper half, said actuator members projecting in opposite directions and being adapted to be urged toward each other to enlarge the opening between said upper and lower halves, a lug formed on the upper surface of said lower half and projecting into said longitudinal opening in said housing, and an opening formed in said upper half in alignment with said lug.

3,900,917

CONNECTING DEVICE FOR OSCILLATING ARMS OF WINDSHIELD WIPER BLADE ASSEMBLIES

Jacques Baut, 213 boulevard du Souverain, 1160 Brussels, Belgium, and Paul Journée, Chateau de Reilly, 60 Reilly (par Chaumont-en-Vexin), France

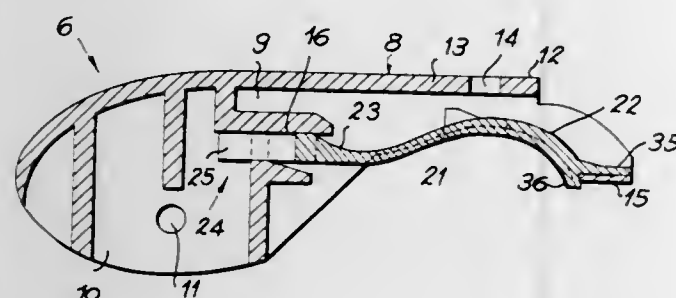
Filed Mar. 20, 1973, Ser. No. 343,157

Claims priority, application France, Oct. 31, 1972, 72.38532

Int. Cl. B60s 1/40

U.S. Cl. 15—250.32

2 Claims



1. A connector for connecting a windshield wiper assembly to a wiper arm, said connector comprising:
 - a first relatively rigid member defining a passage for receiving an end of a wiper arm and having a first wall;
 - a second resilient member defining a wall of said passage opposite said first wall and being arched towards said first wall to press a wiper arm thereagainst;
 - said second member further being provided at one end with resilient latch means holding said one end to said first member, said resilient latch means comprising a pair of resilient prongs extending from said one end of said second member each prong having a lateral projection thereon, a socket in said first member having abutments therein engaging said projections to prevent withdrawal of said prongs from said socket.

3,900,918

MOTOR-DRIVEN MACHINE FOR TENDERIZING PIECES OF FOOD SUCH AS PIECES OF MEAT

Fernand Michel Allinquant, and Jacques Gabriel Allinquant, both of 53, Avenue Le Notre, 92-Sceaux, France

Continuation of Ser. No. 172,396, Aug. 17, 1971, abandoned.

This application Sept. 6, 1973, Ser. No. 394,764

Claims priority, application France, Aug. 18, 1970, 70.30345

Int. Cl.² A22C 9/00

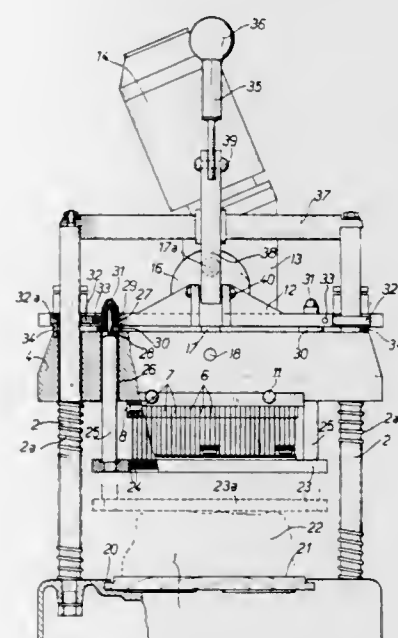
U.S. Cl. 17—25

6 Claims

1. A food tenderizing machine comprising in combination:
 - A. a stationary gallows-shaped rigid framework (1) which comprises:
 1. a generally horizontal platform designed to support a piece of food;
 2. a first pair of upright guides (2,2) rooted in said platform and projecting upwards therefrom to form a first vertical guidance plane;
 3. a second pair of upright guides (3,3) rooted in said platform and projecting upwards therefrom to form a second vertical guidance plane horizontally spaced from said first guidance plane; and
 4. a generally horizontal overtopping spindle (37) bridging said first pair of guides (2,2) and fast therewith;
 - B. a vertically movable structure guided by said first and second pairs of upright guides (2,2,3,3), which comprises:
 1. a generally horizontal upper plate (12) positioned beneath said spindle (37) and riding on both said first and second pairs of upright guides (2,2,3,3);
 2. a generally horizontal lower frame (23) positioned below said upper plate (12) and depending in vertically

spaced relationship therefrom for bodily movement therewith,

3. a motor (14) supported by said upper plate (12) for bodily movement therewith, and
4. jammable guide means (32) cooperating with one pair of said upright guides for free guidance of said structure upon descent thereof and movable to jamming position to preclude ascent of said structure on said upright guides until said guide means is returned to non-jamming condition;
- C. a vertically movable assembly guided by said first pair of upright guides (2,2) which comprises:
 1. a generally horizontal intermediate crossbeam (4) positioned between said upper plate (12) and lower frame (23) and riding on said first pair of upright guides (2,2), and



2. a set (5) of food tenderizing blades (6) secured to the underside of said crossbeam (4) and projecting downwardly therefrom towards the food supporting platform of said framework (1), said set of blades being encompassed by said lower frame (23), whereby said blades (6) are movable between an upwardly retracted position relative to said lower frame (23) when said intermediate crossbeam (4) is adjacent to said upper plate (12) and a downwardly protruding position relative to said lower frame (23) when said intermediate crossbeam (4) is remote from said upper plate (12);

- D. separate and distinct springs (2a,3a) associated respectively with said first and second pairs of upright guides (2,3) and bearing respectively against said vertically movable structure (B) and said assembly (C) for biasing the same upwards;

- E. a variable spacer mechanism (16,17) under the control of said motor (14), interconnecting said upper plate (12) and intermediate crossbeam (4) in varying vertically spaced relationship with respect to each other, said spacer mechanism being adapted, when actuated by said motor, to reciprocate vertically said intermediate crossbeam relative to said upper plate, and, when at rest, to set said intermediate crossbeam in adjacency to said upper plate; and

- F. control means (35) bearing against said overtopping spindle (37) of said stationary framework (1) for forcibly lowering both said vertically movable structure and assembly against the biasing action thereon of said springs (2a,3a).

3,900,919

CUBER-PERFORATOR FOR FOOD PATTIES

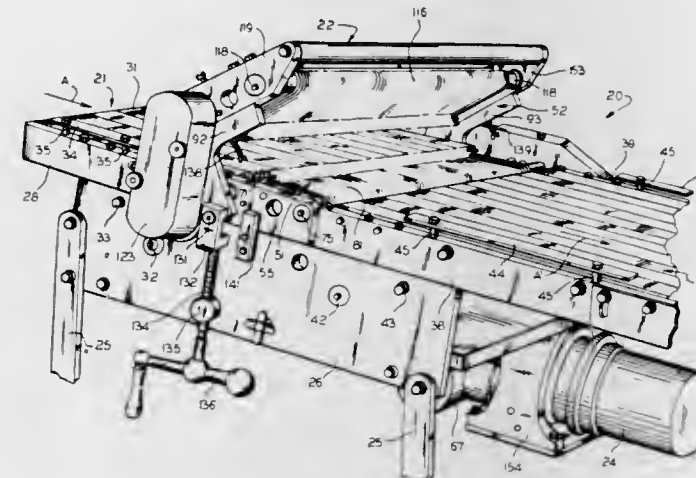
Henry N. Lekan, Chicago, and Louis R. Richards, Mokena, both of Ill., assignors to Formax, Inc., Mokena, Ill.

Filed Sept. 6, 1973, Ser. No. 394,791

Int. Cl. A22c 9/00

U.S. Cl. 17—26

11 Claims



1. A cuber-perforator for hamburger patties, pressed steaks, and similar food products comprising:
 - input conveyor means for conveying food patties along a given path projecting into a cubing station;
 - a first knife assembly for perforating patties, said knife assembly being positioned adjacent one side of the path at the cubing station, and including a plurality of multi-tooth rotary disc knives extending in closely-spaced array across the path;
 - a second knife assembly for perforating patties, said second knife assembly being positioned adjacent the opposite side of the path at the cubing station, and including a corresponding plurality of matching multi-tooth rotary disc knives extending across the path and aligned approximately co-planar knife-for-knife and in registry tooth-for-tooth with the knives of the first assembly, so that the patties passing therethrough will be penetrated by the teeth of each knife assembly;
 - stripper means for said first knife assembly, comprising a plurality of stripper belts interleaved with the rotary knives of said first assembly and extending along the path outwardly of the cubing station, for stripping patties and food particles from the knives and for conveying the food patties through said first knife assembly;
 - and drive means, connected to both knife assemblies and to the stripper belts, for rotating the knives of both assemblies at a given peripheral speed to cut multiple perforations in each patty passing through the cubing station, and for driving the stripper belts at a speed approximately equal to the peripheral knife speed to strip the patties from the knives and to preclude tearing of the patties.

3,900,920

METHOD AND APPARATUS FOR REMOVING TEXTILE FIBER FROM A COMPACTED BALE

Marcus G. Whitehurst, Gastonia, N.C., assignor to Piedmont American Corporation, Gastonia, N.C.

Filed Oct. 24, 1973, Ser. No. 409,056

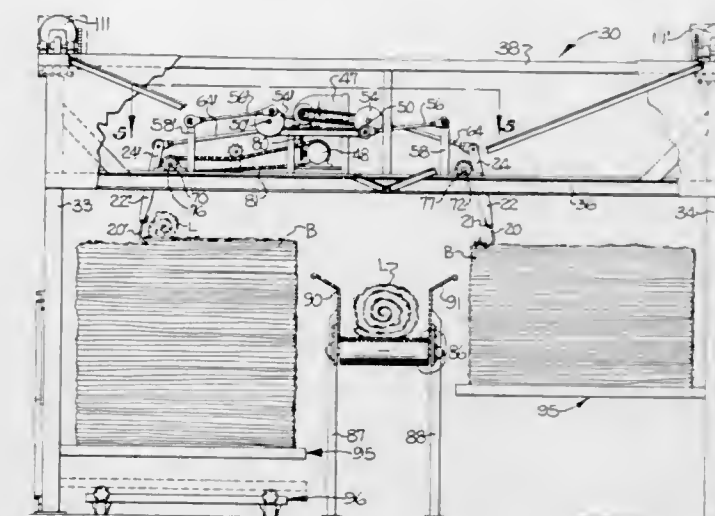
Int. Cl. D01g 7/06

U.S. Cl. 19—81

15 Claims

1. A method of removing textile fiber from a compacted bale comprising the steps of raking across a face of a bale while loosening a layer of fibers of the bale with repeated,

relatively quick short strokes and while stripping the layer from the bale and rolling the layer into a convoluted wound



package, and then repeating the steps of raking while loosening while stripping until the bale is substantially depleted.

3,900,921

PROCESS FOR MAKING STAPLE FIBER WEBS BY AIR-AYDOWN

Dimitri P. Zafiroglu, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

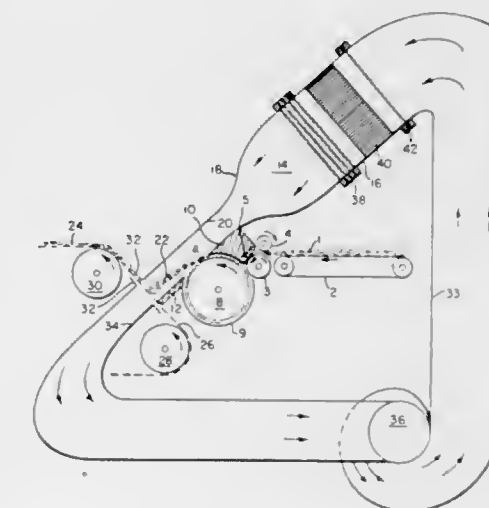
Continuation-in-part of Ser. No. 322,757, Jan. 11, 1973, Pat. No. 3,797,074, which is a continuation-in-part of Ser. Nos. 241,924, April 7, 1972, abandoned, and Ser. No. 135,735, April 20, 1971, abandoned, said Ser. No. 241,924, is a

continuation-in-part of Ser. No. 135,734, April 20, 1971, abandoned. This application Feb. 13, 1974, Ser. No. 442,160

Int. Cl.² D01G 25/00

U.S. Cl. 19—156.3

3 Claims



1. In a process wherein a batt of staple fibers is contacted in a transfer zone with the toothed surface of a disperser-roll revolving to disperse the fibers in air from which the fibers are subsequently deposited on a moving screen; an improved high-capacity fiber-dispersion process for providing good fiber dispersion with low fiber breakage or nepping, wherein the improvement comprises feeding a loose fiber batt weighing from 40 to about 150 ounces per square yard into said transfer zone at a rate greater than 3 pounds per inch of disperser-roll width per hour, compressing the batt at the entrance of the transfer zone to a maximum density within the range of about 5 to 20 pounds per cubic foot, guiding the batt along a path in a substantially radial direction toward a disperser-roll revolving at a surface speed of about 10,000 to about 20,000 feet per minute, and confining the batt to reach the toothed surface of the disperser-roll at a density of about 2 to about 5 pounds per cubic foot.

3,900,922
CABLE TIES

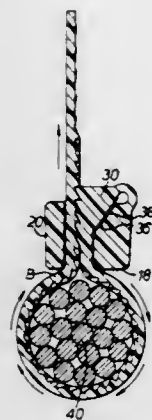
Matthew McCormick, Manchester, England, assignor to Bowthorpe Hellermann Limited, Sussex, England
Filed Aug. 30, 1974, Ser. No. 502,012

Claims priority, application United Kingdom, Aug. 31, 1973, 41190/73

Int. Cl.² B65D 63/00

U.S. Cl. 24—16 PB

2 Claims



1. A one-piece tie of plastics material comprising a flexible elongate strap, a head at one end of the strap formed with an aperture extending therethrough for receiving the other end of the strap, an inclined surface formed within said aperture on an end wall of said head which is adjacent a junction of said strap and said head, said inclined surface being adjacent one end of said aperture and inclining away from an opposite end wall of said head towards said one end of said aperture, a series of transverse ratchet serrations formed on said strap on one side thereof, a wedge portion formed on the side of said strap which faces said other end of said aperture and disposed between said head and the portion of said strap having said series of serrations, said wedge portion being arranged so that threading said other end of the strap through said aperture from said one end thereof places said wedge portion in said aperture with a portion of the surface of the side of said strap opposite said wedge portion resting upon said inclined surface and with an opposite surface of the wedge portion facing said opposite end wall of the head, there being provided at least one transverse tooth profiled complementarily to the serrations and arranged to enable the strap to be looped subsequently and passed back through said aperture from said other end thereof with the strap serrations running past said tooth, whereafter engagement between said tooth and serrations prevents the strap being drawn over said tooth in the opposite direction and any tension applied to said strap in said opposite direction serves to draw the wedge portion in said opposite direction over the inclined surface to more firmly grip the strap against said opposite end wall of the head, and a transverse abutment formed on each said inclined surface in said aperture and said portion of the surface of said side of said strap opposite said wedge portion to engage to limit slippage of the wedge portion over said inclined surface as increasing tension is applied to said strap in said opposite direction.

3,900,923

COMBINATION STRAP AND BUCKLE

Reet W. Thomas, St. Louis, Mo., assignor to Steven Manufacturing Company, Hermann, Mo.

Filed May 8, 1974, Ser. No. 468,069

Int. Cl.² B65D 63/00; A44B 19/00

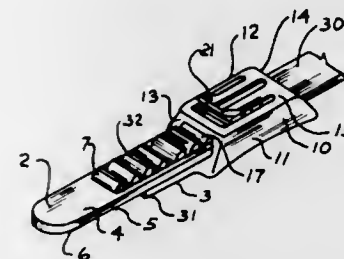
U.S. Cl. 24—16 PB

6 Claims

1. A securing means, comprising:

a first strap portion, said first strap portion having a buckle structure terminating one end of it, said buckle structure including means for defining a channel through said structure, said channel defining means being characterized by a first pair of oppositely opposed, longitudinally extending side walls, a second pair of oppositely opposed,

axially extending side walls, and an upper wall, said side walls and said upper wall defining a chamber therebetween, said axially extending walls having respective openings in them, the openings in said axially extending walls and said chamber being arranged so as to define a channel through said buckle structure, latch means integrally formed with said buckle structure along said upper wall, said latch means including a longitudinally extending part having a first end and a second end, said longitudinally extending part being attached to said upper wall at said first end, the second end of said latch means including a part extending outwardly from the longitudinal axis of said buckle structure, and a part extending along the longitudinal axis of said buckle structure, a rib member extending between said first and said second ends of said latch means, and a receptacle part integrally formed with said latch means, said receptacle part including a pair of spaced, protruding parts, each of said protruding parts having a canted wall and a generally vertical wall



extending outwardly from said latch means, said latch means being resiliently mounted to said buckle so as to permit movement of said receptacle part between a first position where said receptacle part extends within said channel, and a second position where said receptacle part is removed from said channel; and

a second strap portion, said second strap portion including a terminating end having a first surface area, a second surface area, a material thickness therebetween, and a plurality of spaced serrations integrally formed near said terminating end of said second strap portion along one of said first surface area, said second surface area, and said material thickness, said serrations including an arcuate wall and a generally vertical wall extending outwardly from said second strap portion, the canted wall of said receptacle part and the arcuate wall of individual ones of said serrations being designed to meet and permit passage of said second strap portion through said channel along a first direction of movement.

3,900,924

ADJUSTABLE ORAL EXAMINATION ASSISTANCE DEVICE

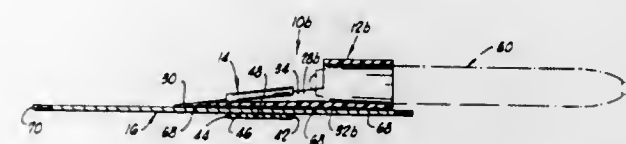
Steven D. Meltzner, 10216 Finley, Oklahoma City, Okla. 73120

Filed Sept. 16, 1974, Ser. No. 506,512

Int. Cl.² A44B 21/00; A61B 1/06

U.S. Cl. 24—81 CL

6 Claims



1. Apparatus for connecting an elongated flashlight having a longitudinal axis and a generally circular cross-section to an elongated tongue blade having a longitudinal axis and a substantially rectangular cross-section to form an oral examination assistance instrument, said apparatus comprising:

a first clip member and a first end portion and a second end portion and including:

flashlight engaging means formed on the first end portion thereof for connecting the first end portion of said first clip member to one end of the elongated flashlight; and an elongated tongue blade engaging member having a generally U-shaped cross-section comprising a base portion and a pair of upwardly extending side portions and extending from said flashlight engaging means to the second end portion of said first clip member, said base portion being aligned substantially parallel to and offset downwardly from the longitudinal axis of the flashlight connected thereto and having a substantially lower tongue blade engaging surface formed thereon lying in a plane substantially parallel to and downwardly offset from the longitudinal axis of the flashlight, said upwardly extending side portions each including a straight inclined ramp surface formed on the upper edge thereof extending from said flashlight engaging means and converging downwardly toward the substantially planar tongue blade engaging surface; and a second clip member, mutually engageable with said first clip member, having a first end portion and a second end portion and having a generally U-shaped cross-section including a base portion and a pair of upwardly extending side portions, said base portion having substantially planar tongue blade engaging surface means formed on the upper side thereof for engaging an elongated tongue blade to secure said blade against the substantially planar lower tongue blade engaging surface of said first clip member, said side portions being spaced apart a distance sufficient to slidably receive the upwardly extending side portions of said first clip member therebetween and each including inwardly extending inclined straight ramp surface means formed thereon for mutually engaging a respective one of said straight inclined ramp surfaces formed on said first clip member to rigidly secure an elongated tongue blade between the substantially planar lower tongue blade engaging surface of said first clip member and the substantially planar tongue blade engaging surface means of said second clip member through mutual wedging action between said straight inclined ramp surfaces and said inwardly extending inclined straight ramp surface means.

3,900,925

BUTTON ATTACHER

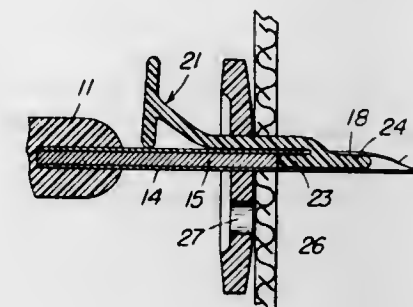
Gerard A. La Torraca, 1085 Wake Forest Dr., Toms River, N.J. 08735

Filed Oct. 23, 1973, Ser. No. 408,282

Int. Cl.² A44B 1/18

U.S. Cl. 24—90

16 Claims



1. A button attaching device for use with a fastener, said device comprising a gripping means with a cylindrical needle extending from the front end thereof, the forward portion of said needle provided with a limited longitudinal slot, said needle tapering from the forward end of said slot providing a fastener entrance thereto and terminating in

a point, wherein said fastener abuts the wall of said cylindrical needle at the rear end of said slot to limit its entry therein.

3,900,926

SEPARABLE SLIDE FASTENER

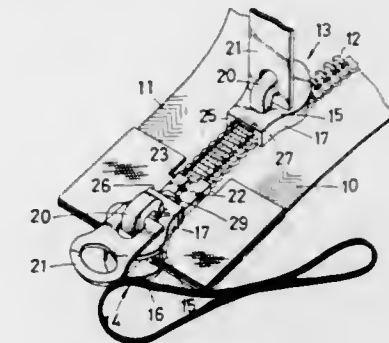
Kihel Takahashi, Uozu, and Yosataka Higuchi, Kami-Ichima-chi, both of Japan, assignors to Yoshida Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 17, 1974, Ser. No. 461,735

Claims priority, application Japan, Apr. 20, 1973, 48-48146
Int. Cl. A44b 19/00, 19/26

U.S. Cl. 24—205 R

3 Claims



1. In a separable slide fastener of the class including a pair of stringers having longitudinal rows of interlocking fastener elements on their opposed edges respectively, a pair of sliders arranged reversely with respect to each other on said rows of fastener elements for longitudinal movement therealong to engage and disengage the same, each of said sliders having a body consisting of a pair of spaced-apart and interconnected wings adapted to define a generally Y-shaped guide channel therethrough, a top member arranged on one end of one of said stringers for retaining said sliders on said one stringer when the other stringer is completely separated therefrom, and a pin member arranged on the corresponding end of said other stringer for insertion through the guide channels of both of said sliders, the improvement comprising a pair of recesses formed at that end of one of said sliders disposed opposite to the other slider, said recesses being formed in the respective wings of said one slider so as to be invisible at least through the outside surfaces of said wings, and a pair of tongues formed at the corresponding end of the other slider and adapted to be neatly received in said recesses respectively for aligning said sliders when said pin member is to be inserted into or removed out of their guide channels.

3,900,927

SEPARABLE FASTENER

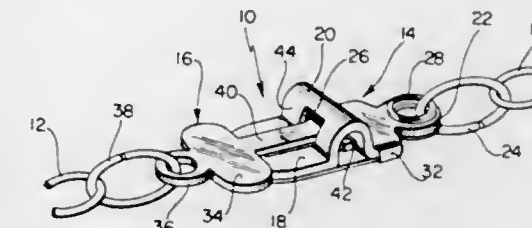
Albert D'Angelo, 178 Old County Rd., Esmond, R.I. 02917, and Jack E. Smith, Greenville Post Office, Gloucester, R.I. 02828

Filed Oct. 15, 1974, Ser. No. 515,102

Int. Cl.² A44B 17/00

U.S. Cl. 24—201 BN

9 Claims



1. A separable fastener adapted to releasably interconnect spaced ends of a flexible chain or the like, comprising a first, elongate body member having means at one end thereof for receiving one end of said flexible chain, a laterally extending undulation in said body member adjacent said one end, there being a central cutout extending from substantially the top of said undulation and then along said body member toward the

other end thereof, a leaf spring secured to the underside of said body member adjacent said one end and extending substantially beyond said undulation, said fastener further comprising a second elongate flat member, means at one end thereof for receiving another end of a flexible chain, said second member having adjacent its other end a flat shank the width of which is slightly less than the width of said cutout, and a laterally extending bar at the end of said shank with the length of said bar being greater than the width of said cutout but less than the length of same, whereby said second member may be releasably connected with said first member by twisting said shank and bar so that the bar extends lengthwise of said cutout whereby it may be forced through said cutout against the action of said spring, and then manipulating said bar so that it lies laterally within said undulation with said shank extending outwardly through said cutout and overlying said other end of said first member.

3,900,928

CONCEALED SLIDE FASTENER

Ikuo Takamatsu, Uozu, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Tokyo, Japan

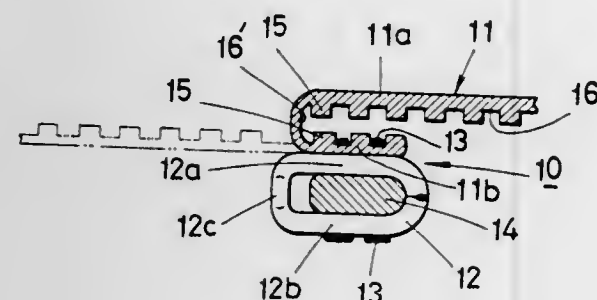
Filed Nov. 22, 1974, Ser. No. 526,243

Claims priority, application Japan, Nov. 27, 1973, 48-136937

Int. Cl. A44b 19/12, 19/34

U.S. Cl. 24-205.1 C

1 Claim



1. A concealed slide fastener comprising a pair of stringer tapes formed of a warp-knit structure and carrying rows of fastener elements along their respective longitudinal edges, each of said stringer tapes having on one surface a multiplicity of longitudinally extending alternate wales and interwale grooves, a particular one of said interwale grooves located immediately adjacent the coupling heads of the fastener elements being greater in width than the rest of interwale grooves and serving as a longitudinal axis of fold along which the stringer tape is folded on itself.

3,900,929

SLIDE FASTENER STRINGER

Ikuo Takamatsu, Uozu, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 15, 1974, Ser. No. 515,052

Claims priority, application Japan, Oct. 17, 1973, 48-120598

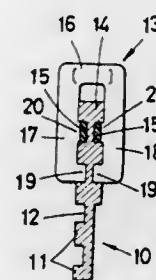
Int. Cl. A44B 19/40

U.S. Cl. 24-205.16 R

5 Claims

1. A slide fastener stringer comprising, in combination, a stringer tape made of a warp-knitted fabric and having transversely alternating wales and interwale grooves at least on one surface thereof, a series of discrete fastener elements arranged along one longitudinal edge portion of said stringer tape and each having a coupling head and a pair of legs extending rearwardly from said coupling head, at least one leg of each fastener element having an inwardly directed projection which is received in the respective interwale grooves on one surface of said stringer tape, and at least one element connector

adapted to carry said fastener elements at predetermined spacings, said element connector extending along one of said



3,900,930

SLIDING CLASP FASTENER

Akira Hasegawa, Kurobe; Yoshiharu Yamaguchi, Namerikawa, and Yoshio Matsuda, Nyuzen, all of Japan, assignors to Yoshida Kogyo Kabushiki Kaisha, Tokyo, Japan

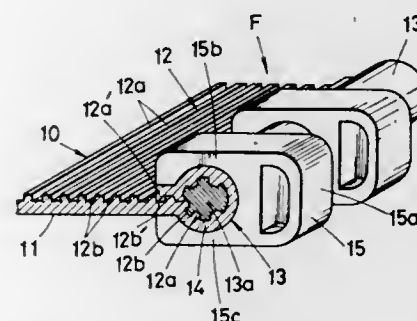
Filed Dec. 27, 1974, Ser. No. 536,830

Claims priority, application Japan, Dec. 29, 1973, 49-4184

Int. Cl. A44B 19/02

U.S. Cl. 24-205.16 R

3 Claims



1. A sliding clasp fastener comprising a pair of carrier tapes, each of said tapes having a flat face at one side and a waled face at the reverse side including a multiplicity of longitudinally extending alternate wales and grooves, a series of discrete fastener elements mounted on said tape, and a filler cord extending along one longitudinal edge of each of said tapes, said cord being wrapped around by the fabric of the tape with the peripheral surface of said cord intimately engaged with said waled face of the tape to form a bulged tape edge adapted for attachment of said fastener elements to the tape, said wales being urged radially towards and biting into said cord, and part of the material of said cord being urged towards and filling said grooves.

3,900,931

RELEASABLE PANEL FASTENING DEVICE

Maurice Lavoillotte, 44 Chemin de Caldana, 06400 Cannes, France

Filed May 20, 1974, Ser. No. 471,620

Claims priority, application France, Sept. 18, 1973, 73.33364

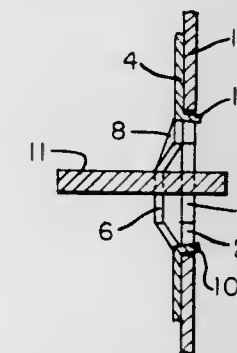
Int. Cl. A44B 17/00; F16B 19/00

U.S. Cl. 24-221 R

3 Claims

1. A device for fastening together first and second flat plates both of which define an elongated slot through the thickness of the plate, said slots being of generally the same size and shape, each of said slots having a circular middle portion and two diametrically opposed elongated portions of a width and length for receiving the fastening portion of a flat rectangle-shaped key including an elongated handle portion and a short fastening portion having indents which extend inward of each

other from opposing edges of the longer sides of said rectangle in the vicinity of one of the shorter sides of said rectangle, the diameter of said circular middle portions being less than the width of said fastening portion and greater than the distance between said indents, one of said plates being wholly flat whilst the area including the circular middle portion of the slot of the other plate is raised to form a blister having opposite



entry ramps, whereby the key may be inserted into said elongated slots after said first and second plates have been placed one on the other with their respective slots in alignment when the width of the key is placed in the elongated portions of the slots, and the key may fasten the plates together when it is turned from the position it assumed when it was inserted as aforesaid, with each indent following one of said opposite entry ramps up to the uppermost portion of said blister.

3,900,932

HOSE CLAMP

Kurt Allert, Brestenbergstr. 48, 7239 Seedorf, Germany

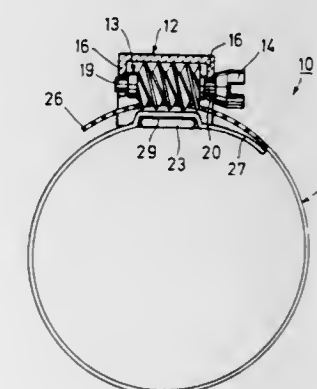
Filed Apr. 30, 1974, Ser. No. 465,505

Claims priority, application Germany, Apr. 30, 1973, 2321814

Int. Cl. B65D 63/00

U.S. Cl. 24-274 R

7 Claims



1. A hose clamp comprising, in combination:
a. a strap having an end portion thereof formed to define a single, inwardly open transverse channel having interior sides; and
b. a tightening mechanism including:
i. a housing for parts of said mechanism, said housing having an arched middle portion and outwardly directed shoulders which are angled downwardly,
ii. said parts including two base members in engagement with said single, transverse channel in a form-fitting positive tensile manner, said base members being embodied as two angled tops of said housing and having free ends positioned in said single, transverse channel from opposite ends thereof, said two base members being respectively connected to respective lower ends of said shoulder and said housing being free of any fixed connection to said strap,
iii. a worm gear carried within said housing and secured against axial displacement therein, said housing having inwardly directed flanges, at its two faces, which serve for axial and radial mounting of said worm gear, threads of said worm gear engaging ribs in said straps,

said flanges forming apertures for said worm gear, said apertures being open toward said strap and the distance between the bottom of said transverse channel of said strap and said threads of said worm gear being smaller than the thickness of said strap, and
iv. an opening with a narrowing toward its free end of one of said base members and a projection from the said free end of the other of said base members, said projection being inserted into said opening.

3,900,933

CLAMP DEVICE

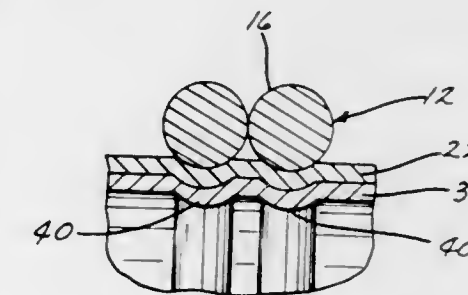
Milton C. Engman, and Stanley J. Siberell, both of Des Moines, Iowa, assignors to Emco Industries, Inc., Des Moines, Iowa

Filed Nov. 8, 1973, Ser. No. 413,924

Int. Cl. B65D 63/00

U.S. Cl. 24-277

7 Claims



1. The combination of a clamp device and two telescopically mounted tube elements, comprising
a first tube element having at least one open end,
a second tube element telescopically mounted in close fitting relationship within the open end of said first tube element,
a preformed bolt clamp of unitary and substantially rigid material having a center portion and opposite end portions, said center portion extending completely around the outer surface of said first tube element with said end portions extending outwardly from said first tube element in substantially the same direction,
a saddle element embracing a part of the center portion of said bolt clamp, and having openings therein to receive the end portions of said bolt clamp, said saddle element being of stiff and rigid material,
fastening and tightening means on the end portions of said bolt clamp and being tightened to draw said saddle element into tight, intimate and continuous engagement with the adjacent part of the center portion of said bolt clamp, and to draw the center portion of said bolt clamp into tight, intimate and continuous engagement with the outer surface of said first tube element,
said saddle element having a configuration such that it is spaced from the outer surface of said tube element so that said saddle element bears only against the said adjacent part of the center portion of said bolt clamp,
said bolt clamp having a circular cross-section for its entire length.

3,900,934

STRAP AND BUCKLE COMBINATION

Walter Luft, Forest Hills, N.Y., and Salvatore Bello, Cliffside Park, N.J., assignors to Jacoby-Bender, Inc., Woodside, N.Y.

Filed May 31, 1974, Ser. No. 475,152

Int. Cl. A43C 11/00; A44C 5/18

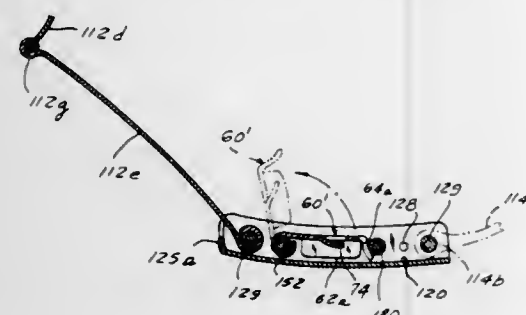
U.S. Cl. 24-265 WS

5 Claims

1. In a strap and buckle combination for fastening a device about a limb of a wearer comprising
A. strap means adapted to engage a device for movement therewith, said strap means including a pair of strap portions movable relative to one another;
B. buckle means secured to at least one of said strap portions for releasably engaging said strap portions together

in at least one fixed relationship about a limb, said buckle means having a limb-facing surface and a pair of longitudinal flanges adjacent the sides thereof extending towards the limb and defining registering pairs of apertures;

C. a cover member having a secured end pivotally mounted on said buckle means, a free end having at least one resilient transverse lip extending away from the limb and towards said buckle means, and an intermediate surface between said secured and free ends, said cover member being pivotable between a closed position wherein said cover member cooperates with said buckle means to form a functionally closed compartment therebetween and between said limb-facing surface and said limb for maintaining an article therein, and an open position permitting



the article to be inserted into and removed from said compartment; and

D. a plurality of pins extending transversely across said limb-facing surface and having ends received in a respective one of said registering pairs of apertures, a first of said pins securing said one strap portion to said buckle means, and a second of said pins passing through said secured end of said cover member to pivotally mount said cover member on said buckle means;

the improvement comprising a third of said pins disposed between said first and second of said pins and adapted for engagement by said resilient lip when said cover member is in said closed position to releasably maintain said cover member in said closed position.

3,900,935

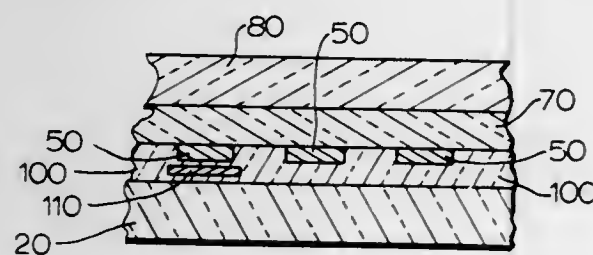
METHOD OF MAKING THE SEAL IN A PANEL DEVICE HAVING A SEAL ENCLOSING AN ELECTRODE ARRAY
Bernard Caras, Princeton, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Filed Sept. 16, 1974, Ser. No. 506,227

Int. Cl. H01J 9/18

U.S. Cl. 29-25.13

6 Claims



1. Method of hermetically sealing a flat panel comprising at least two plates having an array of electrodes between them comprising

spreading a layer of sealing material covering said plates and the electrodes associated therewith in the area where the hermetic seal is to be formed, mechanically agitating said electrodes up and down to permit sealing material to flow under them, applying a shearing force to said sealing material to cause it to wet said electrodes and said plate, and heating said sealing material to form the desired hermetic seal.

3,900,936
CEMENTED FERROCHROME MATERIAL
Franklin J. Hill, Janesville, Wis., assignor to The Parker Pen Company, Janesville, Wis.

Continuation of Ser. No. 302,418, Oct. 31, 1972, abandoned, which is a continuation-in-part of Ser. No. 107,804, Jan. 19, 1971, Pat. No. 3,708,283, which is a continuation-in-part of Ser. No. 14,527, Feb. 26, 1970, abandoned. This application May 28, 1974, Ser. No. 473,817

Int. Cl. B22F 1/00

U.S. Cl. 29-182

22 Claims

1. A cemented ferrochrome material comprising a composite mass of from 25% to 95% by weight of finely divided ferrochrome particles adhered by from 5% to 75% by weight of a metallic binder having a melting point below that of said ferrochrome.

13. A material as claimed in claim 12 in which 90% of said ferrochrome particles are of a size less than 325 mesh.

3,900,937

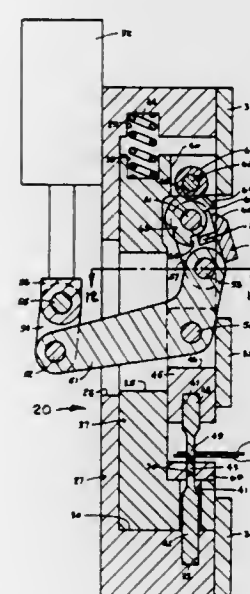
SPOT CLINCH MEANS AND METHOD
Louis C. Schleicher, 20,031 Edmunton, St. Clair Shores, Mich. 48080

Filed Aug. 5, 1974, Ser. No. 494,982

Int. Cl. B23p 19/00

U.S. Cl. 29-200 B

6 Claims



1. Spot clinch tool for forming a spot clinch joint by lancing and swaging two or more materials together using one complete stroke of a power source in a single station, said power source having a power stroke and a retract stroke, said tool utilizing an anvil, die and punch means for moving one of said punch and anvil while maintaining the other stationary during said complete stroke of said power source, means for moving one of said punch and anvil toward the other during a first part of said power stroke, means for piercing said materials with said punch and die to lance them during a second part of said power stroke, means for holding the die in a first position spaced from the anvil during both said first and second parts of said power stroke, means for moving the die to a second position in respect to said anvil during a third part of said power stroke, means for swaging the lanced portions of said materials with said punch and anvil during a fourth and final part of said power stroke, means for maintaining the die and the anvil in said second position during said fourth and final part of said power stroke and during a first part of said retract stroke, and means for moving said die relative to said anvil from said second position to said first position during a second and final part of said retract stroke.

5. Spot clinch method for forming a spot clinch joint by lancing and swaging two or more materials together using one complete stroke of a power source in a single station, said power source having a power stroke and a retract stroke, said

method utilizing an anvil, die and punch, said method comprising moving one of said punch and anvil while maintaining the other stationary during said complete stroke of said power source, moving said one of said punch and anvil toward the other during a first part of said power stroke, lancing said materials by piercing them with said punch and die during a second part of said power stroke, holding the die in a first position spaced from the anvil during both said first and second parts of said power stroke, moving the die to a second position in respect to said anvil during a third part of said power stroke, swaging the lanced portion of said materials during a fourth and final part of said power stroke, maintaining the die and the anvil in said second position during said fourth and final part of said power stroke and during a first part of said retract stroke, and moving said die relative to said anvil from said second position to said first position during a second and final part of said retract stroke.

3,900,938

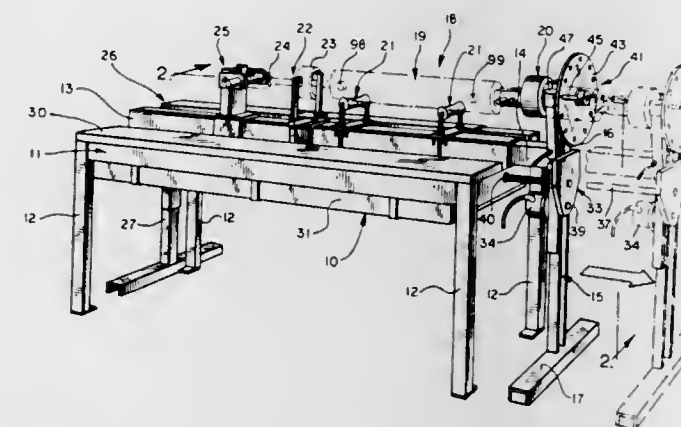
HYDRAULIC CYLINDER SERVICE MACHINE
Oscar C. Blomgren, Sr., and Oscar C. Blomgren, both of Lake Bluff, Ill., assignors to Tuxco Corporation, North Chicago, Ill.

Filed Oct. 21, 1974, Ser. No. 516,375

Int. Cl. B23P 19/04

U.S. Cl. 29-240

13 Claims



1. A hydraulic cylinder service machine for servicing a hydraulic cylinder wherein the cylinder includes a hollow cylindrical housing closed at one end and open at the other end, a piston slidably received in the housing, a rod connected to said piston at one end by a piston retaining nut and having an external mounting member on the other end and extending through the open end of the housing, and a cap having a central aperture therethrough threaded to the open end of the housing retaining said piston therein and having an aperture through which the rod is guided, said machine comprising a frame having a substantially rectangular form and support means, a tubular post means attached in horizontal position to said frame, first means selectively connected to or slidable relative said post means for receiving and retaining said cylinder housing, second means coaxing with said post means for receiving and retaining said housing cap, means for preventing rotation of one of the first or second means, and hydraulic means for causing rotation of the other of said first or second means for removing said cap from said housing or replacing the cap on the housing.

3,900,939

METHOD OF PLUGGING STEAM GENERATOR TUBES
John Stuart Greacen, West Hartford, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Oct. 31, 1973, Ser. No. 411,562

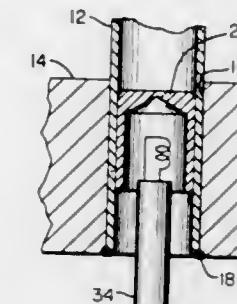
Int. Cl. B22d 19/10; B23p 7/00, 11/02

U.S. Cl. 29-401

5 Claims

1. A method of retaining a hollow cylindrical body within the interior of a tube comprising the steps of:
a. forming a hollow, cylindrical body of a material containing about 53 percent to 57 percent nickel and the balance

being predominantly titanium and having an external diameter greater than the internal diameter of the tube to receive the same;
b. heating said body to a temperature of about 900°F while restraining the same to prevent expansion of its physical dimensions;
c. cooling said body to a temperature below the minimum limit of the transition range of temperatures for said material;



d. reducing the external diameter of said cooled body by a cold deforming operation for a clearance fit with respect to the internal diameter of said tube;
e. inserting said cooled body in said tube; and
f. heating said body to a temperature above the maximum limit of said transition range of temperatures for said material to cause expansion of said body into engagement with said tube.

3,900,940

METHOD OF IMPREGNATING A SINTERED POROUS METAL ARTICLE TO MAKE THE ARTICLE LIQUID-TIGHT

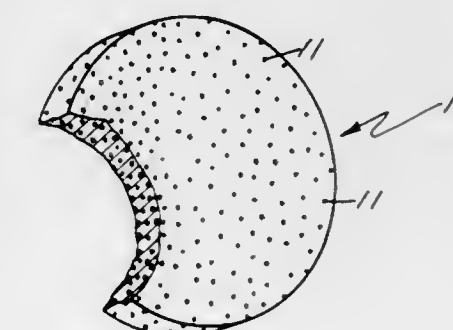
Peter T. E. Gebhard, Jr., Barrington, R.I., assignor to Impco, Inc., Providence, R.I.

Filed Mar. 20, 1974, Ser. No. 452,741

Int. Cl. B22f 7/00

U.S. Cl. 29-420

3 Claims



1. In the method of sealing a sintered metal article to make the article liquid-tight under pressure comprising compacting powdered metal to the configuration of body desired and sintering the body to approximately 75-94 percent of theoretical density with some voids therein, subjecting the body to a partial vacuum to draw gases from the voids therein, immersing the body in a liquid organic polymerizable impregnant and applying pressure to said impregnant to force it into the voids in the body, removing the body from the liquid impregnant and curing the impregnated body by immersion in a hot liquid bath which is inert to the article and to the impregnant and capable of transmitting heat and pressure to the impregnated article, said curing bath being kept at a temperature of 265°-285°F. with an added pressure of from 10 to 100 pounds per square inch for such period of time until said impregnant polymerizes and becomes solid whereby to prevent its gasing and forming voids in the solid impregnant.

3,900,941

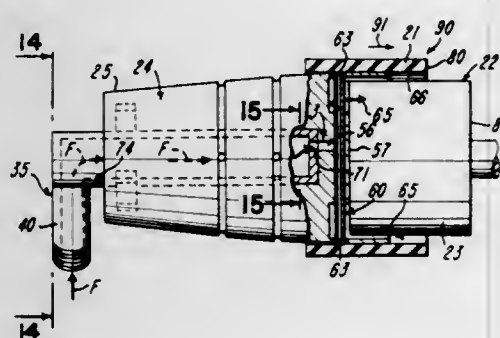
APPARATUS FOR AND METHOD OF INSTALLING AN EXPANDIBLE SLEEVE

Vernon D. Browning, Waynesville, and Mayo B. Tell, Asheville, both of N.C., assignors to Dayco Corporation, Dayton, Ohio

Filed Feb. 8, 1974, Ser. No. 440,923
Int. Cl.² B23P 11/02

U.S. Cl. 29—450

17 Claims



1. An apparatus for installing an expandible sleeve on an associated cylindrical support comprising, a tapered mandrel having small and large diameter ends and a longitudinal axis and having fluid passage means therein at a plurality of locations along said axis, and means for selectively introducing fluid under pressure to the passage means at each of said locations, said tapered mandrel having a tubular extension extending from its large diameter end, said tubular extension being adapted to receive said associated cylindrical support therewithin, said tapered mandrel being adapted to receive an end portion of said sleeve concentrically around said small diameter end whereupon said means for selectively introducing said fluid is operated to introduce fluid under pressure to a first of said locations causing partial expansion of said sleeve and allowing axial sliding movement of said sleeve to a next one of said locations whereupon said means for selectively introducing fluid is again operated to introduce fluid under pressure to said next location thereby causing further expansion of said sleeve and again allowing axial sliding movement of said sleeve toward said large diameter end.

12. A method of installing an expandible resilient sleeve on an associated cylindrical support comprising the steps of, placing said sleeve concentrically around a small diameter end portion of a tapered mandrel having small and large diameter ends and having a longitudinal axis and also having fluid passage means therein at a plurality of locations along said axis, selectively introducing fluid under pressure to the passage means at a first of said locations causing partial expansion of said sleeve, axially sliding said sleeve along said mandrel toward said large diameter end to another one of said locations, selectively introducing fluid under pressure to the passage means at said other location again causing partial expansion of said sleeve, and again axially sliding said sleeve along said mandrel over said large diameter end and concentrically around said cylindrical support.

3,900,942

METHOD OF FORMING A ROTARY MOTOR OR PUMP
Glenn C. Ainsworth, 4526 Brookwood N.E., Albuquerque, N. Mex. 87109

Filed Dec. 11, 1973, Ser. No. 423,875

Int. Cl. B23p 15/00; F01c 1/00; F04c 1/00

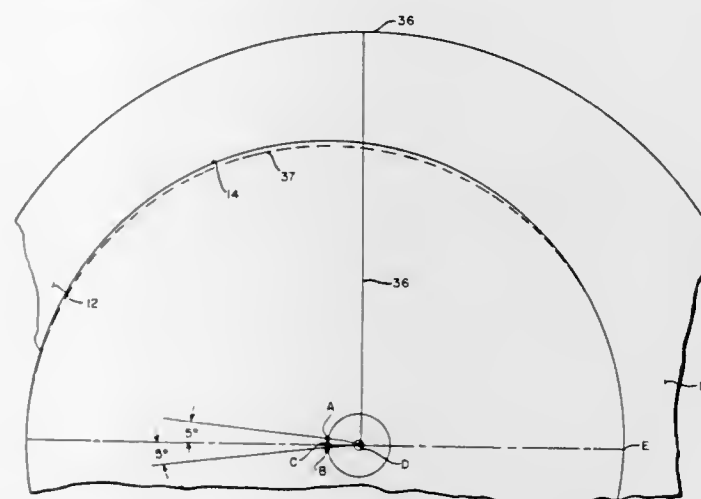
U.S. Cl. 29—156.4 R

1 Claim

1. A method for forming an elliptically shaped cavity in a housing having an axis at a preselected point therein so that all diameters of said cavity passing through said axis of the housing are substantially the same length, comprising the steps of:

- cutting a predetermined outside diameter of said housing utilizing said preselected point in said housing as the axis thereof,

- moving slightly off said axis of said housing and defining a new point,
- using said new point as the center thereof, forming a cavity within said housing having a diameter less than said housing diameter,



- defining at least one other point by moving said new center point no more than 5° to either side of a line drawn between said new center point and said axis of said housing at the same distance from said axis of said housing as said new center point, and
- forming said elliptical cavity from said original cavity by utilizing said other point as the center thereof.

3,900,943

SILICON SEMICONDUCTOR DEVICE ARRAY AND METHOD OF MAKING SAME

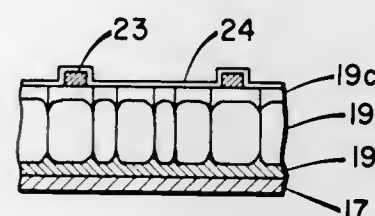
Erhard Sirtl, Munich, Germany, and Cedric G. Currin, Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed June 7, 1973, Ser. No. 367,913

Int. Cl. B01j 17/00

U.S. Cl. 29—572

16 Claims



1. A method of making large area silicon semiconductor devices having p-n junctions, said method comprising: providing a sheet of silicon of one conductivity type, said sheet having a layer of columnar silicon monocrystals defined by generally vertical grain boundaries extending at least half the thickness of said sheet from one surface thereof, said sheet having an electrically conductive volume in ohmic contact with the other surface of the monocrystalline material defined by said layer;

diffusing a dopant of the opposite conductivity type into said one surface of said sheet in sufficient depth to cause the dopant to diffuse into said surface and along portions of said vertical grain boundaries creating a volume of said opposite conductivity along said surface and along portions of said grain boundaries thereby creating both planar and vertical p-n junctions between diffused and undiffused volumes of said sheet, and

applying an electrode pattern interconnecting areas of like conductivity type to form a semiconductor device array by a method which comprises

masking the surface of said silicon sheet in a predetermined pattern, and
applying metallic conduction material to the open spaces in said mask;

said method of forming said sheet comprising the steps of vapor depositing a layer of polycrystalline silicon on a substrate sheet, converting said polycrystalline silicon to a low electrical resistivity by doping heavily with a dopant of known conductivity type, and then
vapor depositing high resistivity semiconductor silicon of said known conductivity type in dense columnar form to form said sheet having vertical grain boundaries.

- mixing a combination comprising solvent, organic semiconductor, and gel agent;
- forming a film of said mixture upon a conductive surface;
- evaporating that portion of said solvent in excess of that required to form a gel, thereby to gel said film; and
- pressing a transparent electrode having a conductive surface against the exposed surface of said film.

3,900,944

METHOD OF CONTACTING AND CONNECTING SEMICONDUCTOR DEVICES IN INTEGRATED CIRCUITS

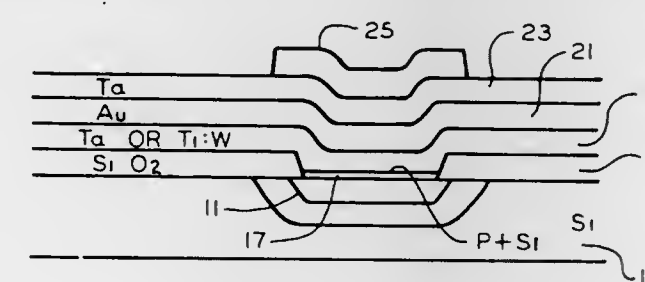
Clyde R. Fuller, Plano, and Alan R. Reinberg, Dallas, both of Tex., assignors to Texas Instruments, Incorporated, Dallas, Tex.

Filed Dec. 19, 1973, Ser. No. 426,384

Int. Cl.² H01L 21/283, 21/308, 21/312

U.S. Cl. 29—578

6 Claims



1. The method of forming an interconnection pattern on an integrated circuit slice comprising the steps of:

- depositing a barrier layer of one of the group consisting of Ti:W and Ta over said slice;
- depositing over said barrier layer a conducting layer;
- depositing over said conducting layer a masking layer of Ta;
- developing an interconnect pattern of photoresist material atop said masking layer of Ta;
- RF plasma etching said masking Ta layer in a CF₄ plasma;
- removing said photo-resist material;
- sputter etching the exposed portions of said conductor layer using said etched Ta layer as a mask, under conditions which cause an oxide layer to form on said mask; and
- etching to remove the exposed portions of said barrier layer.

3,900,945

ORGANIC SEMICONDUCTOR SOLAR CELL

Robert E. Kay, Newport Beach, and Earle R. Walwick, Irvine, both of Calif., assignors to Philco-Ford Corporation, Blue Bell, Pa.

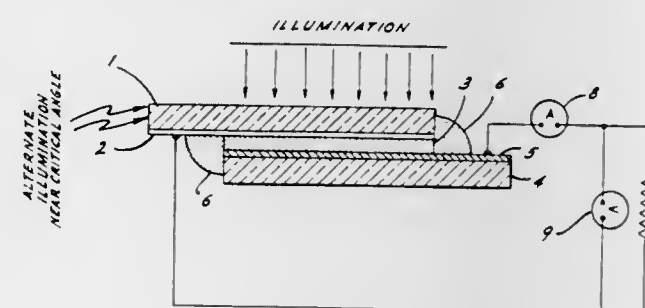
Division of Ser. No. 320,099, Jan. 2, 1973, Pat. No. 3,844,843.

This application Jan. 25, 1974, Ser. No. 436,481

Int. Cl.² B01J 17/00

U.S. Cl. 29—572

4 Claims



1. The process for fabricating a photovoltaic cell comprising the steps of:

**3,900,946
METHOD FOR MAKING ARC EXTINGUISHING CHAMBER**

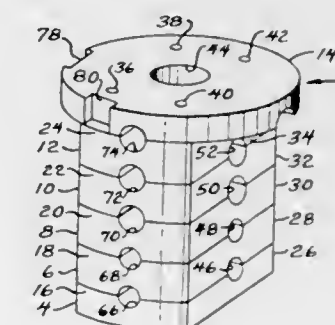
Melbourne G. Jawelak, McMurray, Pa., assignor to McGraw-Edison Company, Elgin, Ill.

Filed Oct. 25, 1973, Ser. No. 409,650

Int. Cl.² H01H 33/68

U.S. Cl. 29—592

1 Claim



1. A method for making an arc extinguishing chamber for a bulk oil circuit breaker wherein a stack of blocks are first secured in a unitary assembly to form a solid block, and thereafter a through hole for receiving the circuit breaker contacts, holes intersecting said through hole to provide passages for entrance of oil into said through hole, and holes intersecting said through hole for exhausting arced products from said through hole are drilled in said solid block.

3,900,947

METHOD FOR THE MANUFACTURE OF A TUBULAR CONDUCTOR USEFUL FOR SUPERCONDUCTING CABLES

Heinrich Diepers, Erlangen-Bruck, and Horst Müsebeck, Erlangen, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

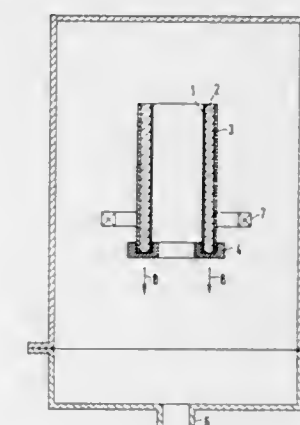
Filed Feb. 26, 1974, Ser. No. 446,092

Claims priority, application Germany, Mar. 9, 1973, 2311875

Int. Cl. H01v 11/14

U.S. Cl. 29—599

14 Claims



1. The method for the manufacture of a tubular conductor consisting of a niobium layer and a copper layer, which conductor is particularly suitable for superconducting cables, comprising the steps of:

- placing a tube of electrolytic copper and a niobium tube one inside the other;

- b. providing a support tube on the side of the copper tube away from the niobium tube;
- c. melting a layer of said electrolytic copper onto one side of said niobium tube by melting the copper in a narrow zone which is moved from the lower to the upper end of the tube while maintaining the axis of the tube vertical in a vacuum with a residual gas pressure of no more than 10^{-4} Torr; and
- d. drawing the tube so formed, using drawing aids, in a plurality of cold-drawing passes to reduce the outside diameter and wall thickness of the tube to form a longer tube.

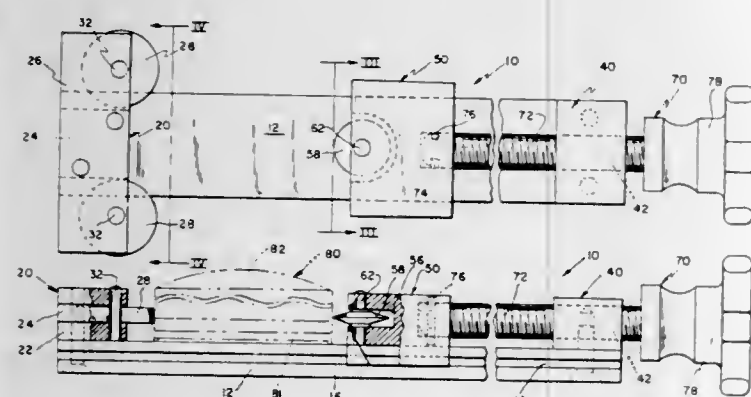
3,900,948

CUTTER FOR OIL FILTER AND LIKE CASINGS
James A. Kammeraad, Holland, Mich., assignor to K-Line Industries, Inc., Holland, Mich.

Filed Oct. 29, 1973, Ser. No. 410,818
Int. Cl.² B67B 7/32, 7/34

U.S. Cl. 30-17

7 Claims



1. A cutter particularly adapted for opening oil filter and like casings, said cutter comprising:

- an elongated member having a casing-receiving bed along the length thereof and two sides, said bed being adapted to support the base of filter or like casings when the same are opened;
- a guideway extending along either side of said member;
- a roller support platform affixed to one extremity of said member, said roller support platform having at least two spaced rollers rotatably mounted thereon for rotation about axes generally perpendicular to said bed, at least portions of the periphery of said rollers overhanging and being spaced from the plane of said bed;
- a thrust block affixed to the other extremity of said member;
- a cutter block slideably mounted on said member between said roller support platform and said thrust block, said cutter block having a width exceeding the width of said member and including a depending arm on either side thereof, said depending arms including means for slideably engaging said guideways whereby said cutter block is slideable toward and away from said roller support platform along at least portions of said bed;
- a rotatable cutting member supported by said cutting block and slideable therewith, said cutting member being rotatable about an axis generally perpendicular to said bed such that one of said depending arms, engaging means and guideways is positioned to either side of said cutting member axis, said cutting member having at least a portion of its periphery overhanging and spaced from said bed; and
- means interconnecting said cutter block and thrust block for controlling the sliding movement of said cutter block.

3,900,949

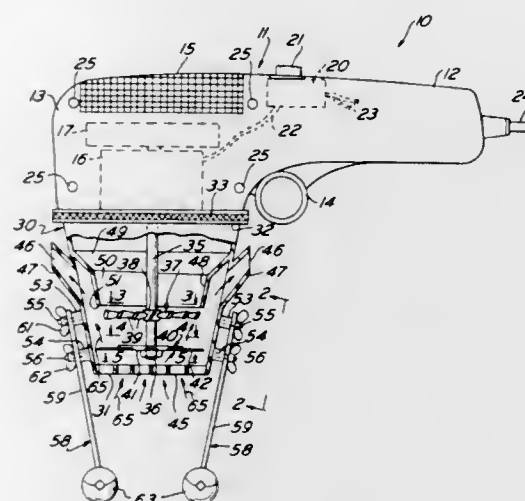
HAIR CUTTING APPARATUS

Robert S. Anzalone, 9915 Second Ave., Stone Harbor, N.J. 08247

Filed July 5, 1974, Ser. No. 485,771
Int. Cl.² B26B 19/20, 19/44

U.S. Cl. 30-133

6 Claims



1. A hair cutting apparatus comprising a manually portable housing, a motor in said housing, a hollow extension on said housing extending generally axially of said motor and terminating in an open end, a rotary motor shaft extending from said motor spacedly within said extension and terminating short of said open end, outlet means on said extension communicating between the interior and exterior thereof and spaced inwardly from said open end, air movement means in said extension carried by said shaft intermediate said open end and said outlet means for directing air inwardly through the former and outwardly through the latter, so that a subject's growing hair is drawn away from the subject toward and into said open end, a cutter in said extension carried by said shaft intermediate said air movement means and open end, for severing growing hair and removing the severed hair through said outlet means, said air mover means comprising a plurality of fan blades extending radially from said shaft, said fan blades being spaced inwardly from said cutter and imparting angular movement to directed air for centrifugally displacing hair cuttings radially outwardly toward said outlet means, and a baffle in said extension for directing centrifugally displaced hair cuttings to said outlet means, said baffle comprising an internal skirt in said extension having an inner edge spaced from the inner surface of said extension, said fan blades terminating proximate to said inner skirt edge.

3,900,950

KNIFE WITH REMOVABLE BLADE

Walter W. Collins, 273 E. Paces Ferry Rd., Atlanta, Ga. 30305
Filed Mar. 18, 1974, Ser. No. 451,956

Int. Cl. B26b 5/00

U.S. Cl. 30-337

8 Claims

1. A knife comprising a handle defining a slot along its length and a tang opening at one of its ends intersecting said slot, a lever lock fabricated from resilient material and of a length approximately the same as the length of the slot of said handle pivotally connected at one of its ends in the slot of said handle adjacent said tang opening and arranged to pivot about its pivoted end into and out of said slot, said lever lock including a cam lock protrusion adjacent its pivoted end extending into said slot, a blade including a tang insertable into said tang opening of said handle, said tang defining a cam lock recess of a size and shape corresponding to the size and shape of the cam lock protrusion of said lever lock to receive the cam lock with a friction fit when the tang is fully inserted in said tang opening and said lever lock is pivoted toward said slot, said cam lock protrusion being constructed and arranged to be-

come seated in said cam lock recess as the lever lock is pivoted toward said slot but before said lever lock is fully received in said slot and to urge said tang further into said tang opening of said handle as said lever lock is moved further toward said slot, and said lever lock being bendable to move

chromium	20-23%
iron	17-20%
molybdenum	8-10%
nickel	45-59%

3,900,952

ELECTRICAL MOTOR, PARTICULARLY FOR DRIVING DENTAL HANDPIECES AND ANGULAR PIECES

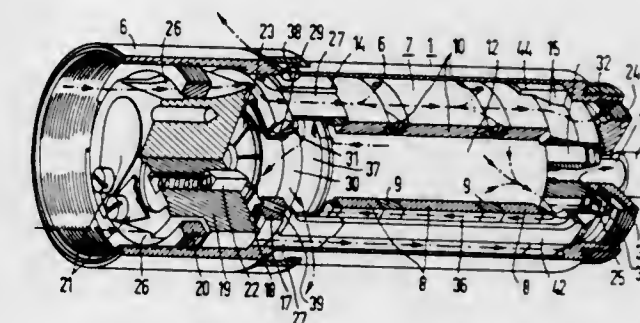
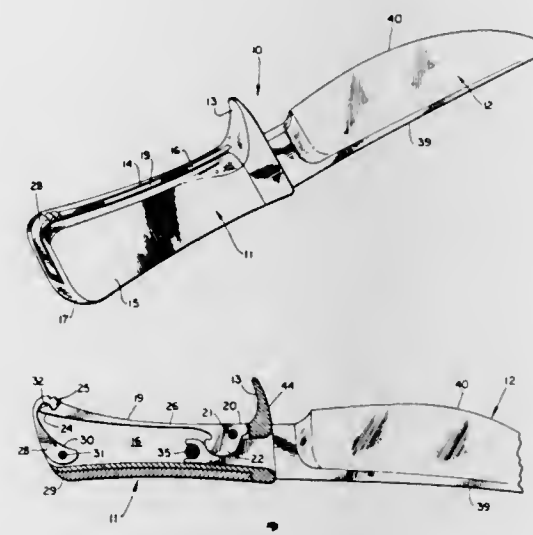
Hermann Landgraf, Wilmshausen, and Eugen Hohmann, Hap-penheim, both of Germany, assignors to Siemens Aktien-gesellschaft, Munich, Germany

Filed Nov. 19, 1973, Ser. No. 417,414

Claims priority, application Germany, Nov. 22, 1972, 2257301

Int. Cl.² A61C 1/10; H02K 23/04; F16C 7/04
U.S. Cl. 32-27

5 Claims



further into said slot after said cam lock protrusion is seated in said cam lock recess, and a latch carried by said handle for maintaining said lever lock bent within the slot of said handle, whereby the cam lock protrusion is biased toward its seated position in the cam lock recess.

1. An electric motor for driving dental hand-pieces, comprising a permanent magnet stator arranged in a substantially cylindrical housing, and a rotor body carrying a rotor shaft and mounted in a compressed air bearing, wherein said permanent magnet stator is formed by several annular discs of permanent magnetic non ductile material and intermediate rings of material softer than that of said discs and arranged therebetween, said intermediate rings having conduits for supplying compressed air to said compressed air bearing arranged in radial direction, and wherein the air gap of said air bearing lies predominantly in the magnetic air gap between said rotor body and said stator, the compressed air for the formation of said bearing being conducted into said air gap through said radially arranged conduits.

3,900,951

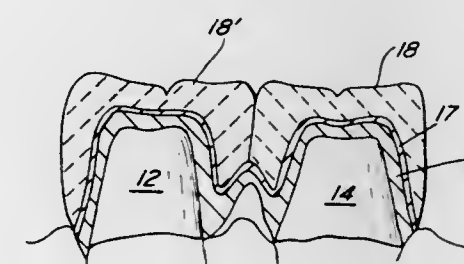
PORCELAIN COVERED DENTAL BRIDGE, CROWN AND THE LIKE

David M. Bentman, 315 S. 16th St., Philadelphia, Pa. 19102
Filed June 27, 1974, Ser. No. 483,755

Int. Cl.² A61C 13/22

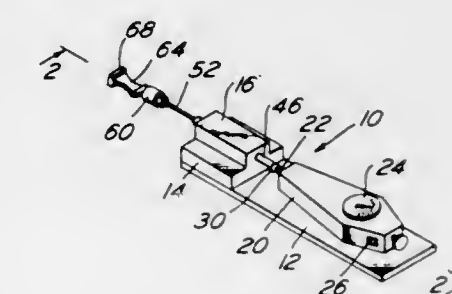
U.S. Cl. 32-5

6 Claims



1. A dental bridge, crown and the like comprising a glazed dental porcelain coating fired onto a nontoxic metal alloy substrate having about the same coefficient of heat expansion, said coating including a translucent porcelain over an opaque porcelain, and said substrate having a tensile strength of 72-80,000 psi, yield strength of 30-42,000 psi, elongation of 22-23%, and hardness of about 200-225 on the Vickers scale, said alloy having the following major ingredients:

2. A measurement device for measuring the maximum strength of the lips which, in turn, influences the position of the incisor teeth in a patient's mouth comprising a support, a gauge for measuring linear strains mounted on said support, said gauge having a dial including a pointer, a rod means operatively connected to said pointer, said rod means having at least a portion thereof slidably positioned in a guide means mounted on said support, and a mouthpiece connected to said



3,900,953

ORTHODONTIC MEASURING METHOD AND APPARATUS

Aaron L. Posen, 2000 Bathurst St., Toronto 349, Ontario, Canada

Filed Aug. 16, 1974, Ser. No. 497,955

Int. Cl. A61c 3/00

U.S. Cl. 32-40 R

7 Claims

rod means, said rod means comprising at least two rod portions connected to each other by a universal joint, said rod means comprising a first rod portion operatively connected to said pointer, a second rod portion connected to said first rod portion by a universal joint, and a third rod portion connected to said second rod portion by a universal joint, said mouth-piece being connected to said rod portion.

3,900,954

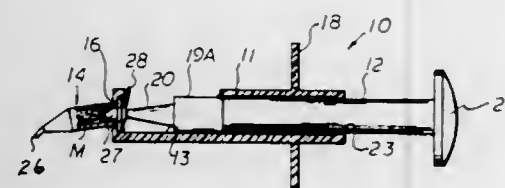
DENTAL FILLING GUN AND NOZZLE TIP THEREFOR
William B. Dragan, R.F.D. No. 1, Burr St., Fairfield, Conn. 06430

Filed July 10, 1974, Ser. No. 487,230

Int. Cl.² A61C 5/04

U.S. Cl. 32—60

10 Claims



1. A dental gun for effecting the flow technique of placing a predetermined quantity of a flowable filling material in a tooth cavity for restorative dentistry having a barrel housing formed with an end wall with an aperture therein, a plunger reciprocally mounted within said barrel housing for movement between a projected and retracted position relative to said barrel housing, and a nozzle means adapted for containing a supply of a dental filling material detachably connected to said end wall in communication with the aperture formed in said end wall, the improvement comprising of:

- said nozzle means having a tubular body portion to define a reservoir for accommodating a supply of filling material, one end of said body portion being opened,
- a discharge tip connected to the other end of said body portion
- a piston adapted to be slideably disposed in the body of said nozzle means to confine the supply of filling material between said discharge tip and said piston in the loaded position of said nozzle means,
- a flexible connector integrally connecting said piston to said body portion, and
- said flexible connector being sufficiently long so as to extend the length of said defined reservoir internally thereof when said piston is displaced to eject the filling material from said discharge tip.

3,900,955

APPARATUS FOR RECOVERING SULFURIC ACID AND FERROUS SULFATE CRYSTALS FROM SPENT PICKLE SOLUTION

Joseph C. Peterson, 1920 Franklin Blvd., Carmel, Ind. 46032

Filed Oct. 15, 1973, Ser. No. 406,571

Int. Cl.² B01D 9/02; C01G 49/14

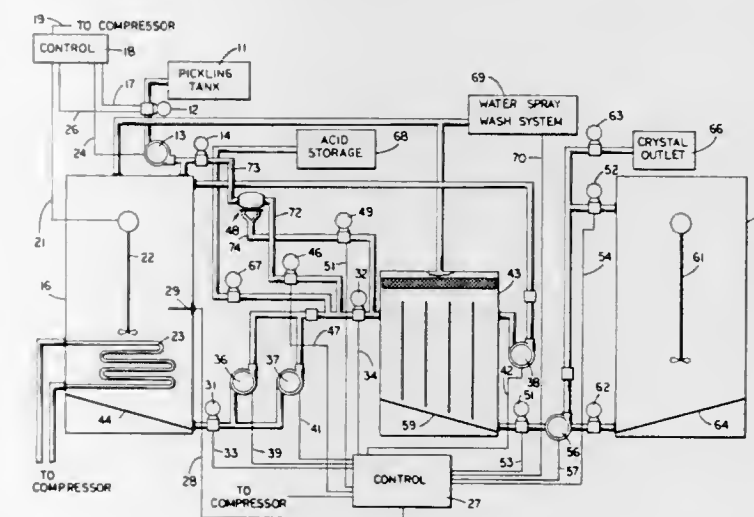
U.S. Cl. 23—273 R

1 Claim

1. Apparatus for recovering sulfuric acid and ferrous sulfate crystals from a spent aqueous sulfuric acid pickling solution comprising:

- a first container initially containing the spent aqueous sulfuric acid pickling solution, the bottom of said first container being inclined and having its lowest end adjacent one side of said container; an inlet conduit including a pump connecting the upper end of said first container with a pickling tank for delivering pickling solution from the tank to said first container;
- a refrigerant coil in the lower portion of said first container for actively cooling the solution in said first to about 30°F.;
- propeller means located just above said refrigerant coil in said first container for agitating the solution therein;

- a second container, the bottom of said second container being inclined and having its lowest end adjacent one side of said container;
- a plurality of vertical baffles in said second container disposed transverse to the slope of said bottom and extending from the upper portion of said second container to within close proximity of said bottom; filter means disposed horizontally across the upper portion of said second container;
- a third container having an inclined bottom having its lowest end adjacent one side of the container; propeller agitating means in said third container;



crystal strainer means having an inlet for crystal slurry on one side and coaxially aligned therewith a filtered liquid outlet on the opposite side; a vertically aligned perforated cylindrical filter basket disposed between said inlet and outlet such that slurry introduced through said inlet passes into the top of said basket, the crystals are filtered from the slurry and the liquid passes radially outwardly through the perforations and out through said outlet; said basket being divided into two sections by a vertical baffle extending transversely of the axis of said inlet and outlet; a semi-circular disc disposed over the top of said basket and mounted for rotation such that upon rotation alternately covers one and then the other of the top openings of said basket;

pressure sensing means for sensing the pressure drop between the inlet and outlet of said strainer and comparing it to a predetermined value and in response thereto rotating said semi-circular disc to the other top opening of the basket;

- two adjacent bottom outlets for crystals in the bottom of said strainer, one connected to each of the bottoms of the sections of the basket; two conduit means each connecting one of the two adjacent bottom outlets of the strainer to a further conduit section which in turn connects with the upper portion of the second container adjacent the side connected with the upper end of the inclined bottom; a valved outlet conduit including a pump in the lowest end of the first container; conduit means including a valve connecting said valved outlet conduit with the inlet end of said strainer for delivering slurry from the first container to the strainer; a further valved conduit connecting said valved outlet conduit with the upper end of said second container in the side connected with the upper end of its inclined bottom; a still further valved conduit connecting said valved outlet conduit with an acid storage tank;
- conduit means connecting the liquid outlet of said strainer with the inlet conduit for pickle solution to said first container downstream of the pump therein; conduit means including a pump and valve in series connecting an outlet at the lowest end of the second container and the upper portion of the third container; conduit means including a valve connecting an outlet in the lowest end of the third container and the last mentioned pump; conduit means including a valve connecting the conduit means

downstream of the last named pump with a crystal outlet; conduit means including a pump connecting the upper portion of the second container adjacent the side connected with the lowest portion of the inclined bottom therein with the top portion of the first container; and temperature sensing means in the middle portion of said first container above said refrigerant coil for sensing the temperature therein and controlling circulation of solution in the first container through the crystal strainer.

3,900,956

APPARATUS FOR DRAWING COMPOSITE PICTORIAL PATTERNS

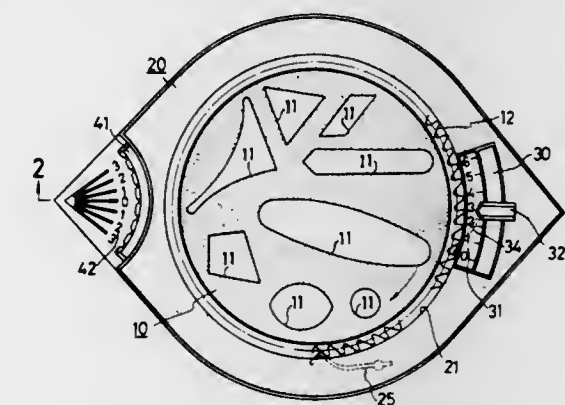
Hideto Furuoka; Nobuyuki Osa, and Shikichi Nakata, all of Tokyo, Japan, assignors to Gakken Co., Ltd., Tokyo, Japan
Filed Mar. 19, 1973, Ser. No. 342,718

Claims priority, application Japan, Apr. 15, 1972, 47-44440; Apr. 15, 1972, 47-44441

Int. Cl. B44d 3/30

U.S. Cl. 33—174 B

6 Claims



1. An apparatus for drawing composite pictorial patterns comprising, in combination:

- a disc perforated with at least one prototype aperture the periphery of which defines a particular configuration and is used as a guide for a writing implement to form an individual pattern;
- a plurality of ratchet teeth formed on the periphery of said disc;
- a substantially flat frame having a circular opening adapted to rotatably receive said disc;
- a ratchet mechanism supported by said frame for turning said disc relative to said frame by means of said ratchet teeth;
- said ratchet mechanism comprises a ratchet resiliently engaged with said ratchet teeth at one end thereof and connected to a knob at the other end thereof,
- said knob being slidably mounted on said frame for causing said ratchet to turn said disc relative to said frame in a predetermined direction, and
- a pawl affixed to said frame at one end thereof and resiliently engaged with said ratchet teeth at the other end thereof for preventing any undesired rotation of said disc relative to said frame; and
- wherein said knob is connected to said ratchet through a slot formed in said frame so as to be slidable along said slot, said slot comprising an arcuate opening whose center of curvature is the axis of said disc.

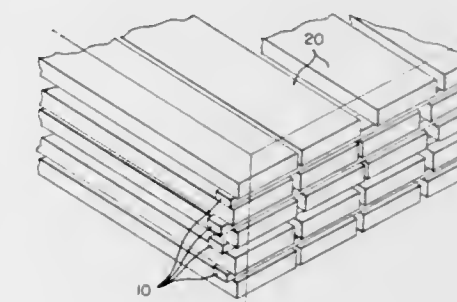
3,900,957
METHOD AND SYSTEM FOR DRYING WOOD EMPLOYING PAPER-REINFORCED, THERMOSETTING RESIN LAMINATE AND METHOD OF MAKING SUCH
Kenneth J. Denton, Vancouver, Wash., and John C. Groot, Gladstone, Oreg., assignors to Simpson Timber Company, Seattle, Wash.

Filed Nov. 23, 1973, Ser. No. 418,459

Int. Cl.² F26B 3/02, 7/00

U.S. Cl. 34—13.8

2 Claims



1. An improved method of kiln-drying wood comprising: providing a wood drying kiln, separating courses of wood stacked in the kiln with kiln sticks of a dimensionally stable, paper-reinforced, thermosetting phenolic resin laminate which is resistant to deterioration under kiln conditions, has high resin content, a high modulus of elasticity and upure and a thickness ranging from 1/4 to 1 inch, and forcing controlled, heated air through the kiln to dry the wood therein, the kiln stickers increasing the drying efficiency and resulting in more uniformly dried wood.

3,900,958

METHOD AND APPARATUS FOR CONTINUOUSLY DRYING A DRIPPING WET, GRANULAR OR LUMPY MATERIAL

Wilhelm Bongert, Bochum, and Horst Kuhn, Recklinghausen, both of Germany, assignors to Klockner-Humboldt-Deutz Aktiengesellschaft, Germany

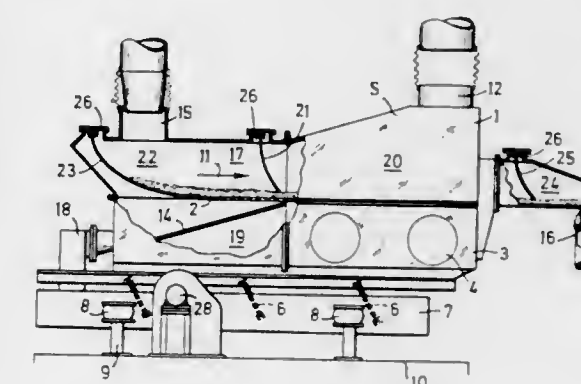
Filed Sept. 27, 1973, Ser. No. 401,137

Claims priority, application Germany, Sept. 30, 1972, 2248051

Int. Cl. F26b 9/00

U.S. Cl. 34—164

5 Claims



1. An apparatus for the continuous drying of dripping wet granular material, comprising an enclosure having a vibrating conveyor trough with a perforated bottom, said enclosure having means for charging the material to be dried onto one end of the conveyor trough and means for discharging dried material from the other end of the trough, means disposed in the enclosure beneath said one end of the conveyor trough for collecting liquid dripping through the perforated bottom of the trough, said collecting means including a liquid discharge opening, and means for creating a flow of hot gases through

a portion of the conveyor troughs to form a drying zone to dry material thereon, said means for creating including a gas distribution device having at least one hot gas inlet on one side of the trough and a hot gas outlet on the opposite side, said collecting means isolating the dripping liquid from the flow of hot gases, said means for discharging material comprising a discharge chamber having a material discharge opening, said discharge chamber being in connection with the drying zone by an opening having means for isolating the flow of hot gases from the discharge chamber, said means for isolating including an adjustable and flexible apron extending transversely across the direction of a flow of the material into the discharge chamber, said apron contacting the surface of the flow of material.

3,900,959

COMBINED INFRA-RED AND AIR FLOW DRYING FOR PHOTOGRAPHIC FILM

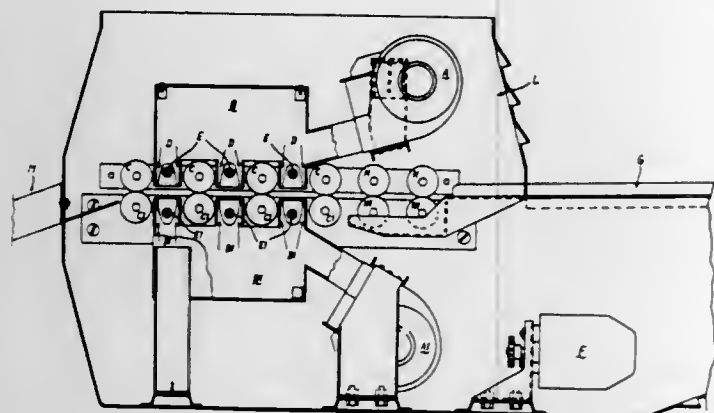
Enzo Breschi, and Mario Williner, both of Savona, Italy, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 7, 1973, Ser. No. 358,031

Int. Cl. F26b 3/00, 13/10

U.S. Cl. 34—155

5 Claims



1. Apparatus for the drying of photographic film impregnated with water, said apparatus comprising a drying chamber provided with an inlet and outlet, at least one pair of nip rollers at least partially within said drying chamber for conveying film, said apparatus further characterized by

- at least two infra-red radiation sources on each side of the conveying plane of the film turned towards the conveying plane at a distance of from 1 to 3 cm., said at least two radiation sources having said at least one pair of nip rollers positioned between them,
- shields between all of said infra-red radiation sources and all of said nip rollers which prevent them from heating said nip rollers,
- means for supplying air at the surfaces of the film at a temperature of from 15° to 35°C, said sources directed towards the said conveying plane and placed on both sides of said plane, and
- paths within said chamber for conveying air away from said chamber after said air has been directed towards said conveying plane.

3,900,960

TRAINING AID FOR LEARNING NUMBERS

Walter P. Hollywood, 1679 Casa Grande, Pasadena, Calif. 91104

Filed Sept. 30, 1974, Ser. No. 510,776

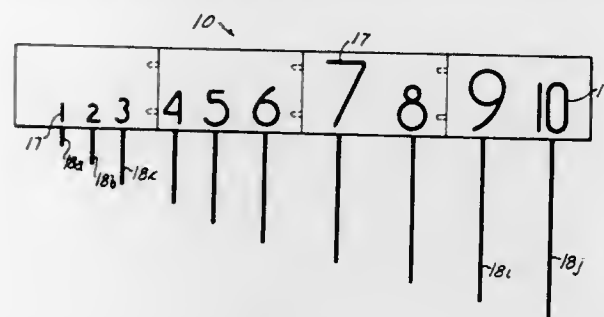
Int. Cl. G09b 19/02, 1/06

U.S. Cl. 35—32

6 Claims

1. A training aid comprising base means containing groove means formed in the shapes of a plurality of numbers, a first of which is the number one, the linear length of a second of said numbers being as many times the linear length of the

number one as said second number is a multiple of the number one, and a plurality of flexible modules of equal length, the



length of each module being equal to said linear length of the number one.

3,900,961

TEST SCORING APPARATUS

Michael Sokolski, Newport Beach, Calif., and Thomas J. Poole, Norwood, Mass., assignors to Scan-Tron Corporation, Los Angeles, Calif.

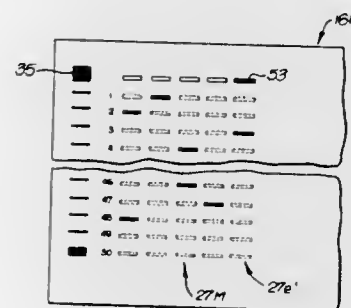
Division of Ser. No. 250,313, May 4, 1972, Pat. No. 3,800,439.

This application Jan. 7, 1974, Ser. No. 431,399

Int. Cl. G09b 3/06

U.S. Cl. 35—48 A

8 Claims



1. A test sheet for use with a scoring apparatus of the type wherein answers are sensed concurrently with detection of an answer control mark, comprising:

a sheet of material having an elongate rectangular shape with first and second generally straight longitudinal edges,

only a single control mark column, parallel to said first longitudinal edge and containing in the following order a start of test mark of first length, a plurality of answer control marks each of a second length different from said first length, each answer control mark being row aligned with a corresponding answer row perpendicular to said first edge, and a page termination mark having a third length different from both said first and second lengths, said first, second and third lengths being measured in a direction parallel to said first longitudinal edge, said start of test mark being longer than said page termination mark, said page termination mark being longer than each answer control mark, and

at least one answer column parallel to said control mark column but spaced therefrom, each answer row containing an answer receiving space aligned in each answer column.

3,900,962

GROUND FERTILIZER DEVICE

See Fong Chan, 47-09 Newtown Rd., Astoria, N.Y. 11103

Filed Sept. 6, 1974, Ser. No. 503,798

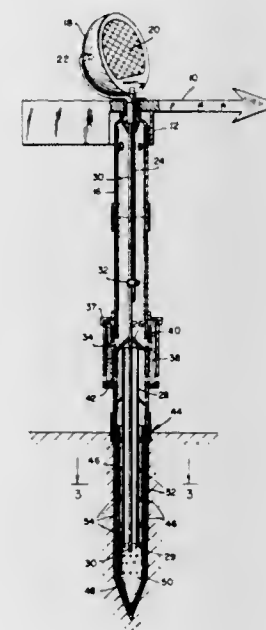
Int. Cl. A01g 29/00

U.S. Cl. 47—48.5

7 Claims

1. A ground fertilizing device comprising an apertured pipe adapted to be vertically inserted into the ground, an air and rain water collector rotatably mounted on the upper end of

said pipe, a weather vane being fixedly mounted on said collector, and air and water distributing means in fluid communi-



cation with and extending from said collector into said pipe interior and adapted to distribute air and water to said pipe apertures.

3,900,963

METHOD AND MEANS OF PREGERMINATING GRASS SEEDS

George Tukacs, New Milford, Conn., assignor to Pre-Germ Seeding Corporation, Bergen, N.Y.

Continuation-in-part of Ser. No. 288,418, Sept. 12, 1972,

abandoned. This application Apr. 5, 1974, Ser. No. 458,239

Int. Cl. A01b 79/00

U.S. Cl. 47—58

10 Claims

1. The method of producing bulk quantities of randomly oriented pregerminated grass seed plantlets which are readily separable from each other for broadcast by scattering onto a lawn bed or the like, comprising

mixing together a quantity of grass seed, water, and humus in predetermined ratios to form a moist, bulk mixture in which the grass seeds are disposed randomly and uniformly throughout the mixture,

sealing the moist, bulk mixture in a waterproof, air-tight container of any desired configuration, and in such manner that the mixture fills part only of said container, and maintaining the container sealed and in a temperature ambient above 65°F for a period of from approximately three to fifteen days, depending on the type of grass seed employed, thereby to effect germination of the grass seeds into randomly oriented, readily separable plantlets disposed throughout the mixture in the sealed container.

3,900,964

SLIDING CLOSURE ASSEMBLY

Reuben J. Krein, 2319 N. Shore Dr., Clear Lake, Iowa 50428

Filed Jan. 2, 1974, Ser. No. 430,231

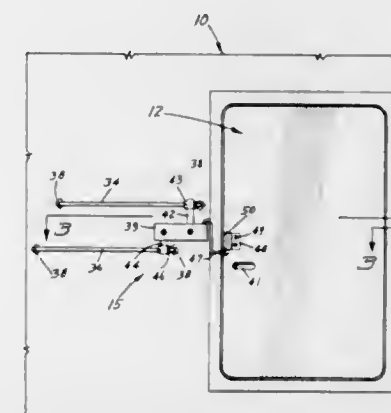
Int. Cl. E05D 15/10

U.S. Cl. 49—214

13 Claims

1. A swingable sliding closure means for closing an opening in a structure comprising: door means movable to a first position to close the opening in the structure and selectively movable from the first position to a second position to permit access through the opening in the structure, means supporting said door means on both sides of said door means for movement of the door means between said first position and said second position, said means supporting said door means including rod means extended across said opening, said rod means including a first broad S-curved rod extended trans-

versely adjacent the top of the opening and mounted on the structure and a second broad S-curved rod located generally parallel to the first rod and extended transversely adjacent the bottom of the opening and mounted on the structure, first guide means slidably mounted on said first rod, second guide means slidably mounted on said second rod, means including pivot means connecting the first and second guide means to one side of the door means to support said one side of the door means, said pivot means having axes generally normal to the axes of the first and second rods whereby the door means can swing toward and away from the first and second rods and move in the direction of the first and second rods, means supporting said door means also including slide means located adjacent said door means allowing lateral movement of the



door means, rail means mounted on the structure at a vertical location approximately midway between the first and second rods and extended generally parallel to the first and second rods, said rail means including a first horizontal rail and a second horizontal rail extended generally parallel to the first rail, said slide means including a body located between the first and second rails, arm means movably connecting the body to the first and second rails, and link means attached to the other side of the door means to connect the door means with the body to support the other side of the door means and allow the door means to swing away from the rod means whereby the door means can be moved along the first and second rods, said link means including a reverse curved member having an upright end pivotally mounted on the other side of the door means and a downwardly directed end pivotally mounted to the body.

3,900,965

SEQUENTIAL DUAL WINDOW OPERATING MECHANISM

Thomas M. Mummert, Toledo, Ohio, assignor to Dura Corporation, Southfield, Mich.

Filed Feb. 7, 1974, Ser. No. 440,321

Int. Cl. E05F 15/08

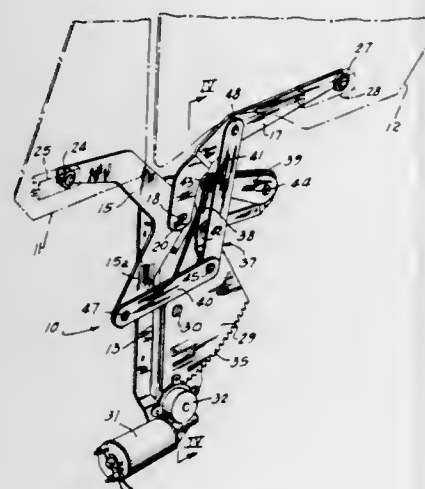
U.S. Cl. 49—103

13 Claims

1. In mechanism for sequentially lowering and raising dual window panels of a vehicle comprising vent and main visibility section window panels:

- a support;
- a pair of window controlling arms movably mounted on said support;
- one of said arms having means for coupling it in raising and lowering relation with the other of said window panels;
- a member having a pivot oscillatably coupling the member to said support for movement in opposite directions;
- a set of links controlling said arms and translating shifting movements of said member into window panel lowering and raising movements of said arms, and comprising:
 - a first relatively short control link having an intermediate pivot connecting it to said member;
 - a second relatively short control link having a pivot at one end coupling it with said support and having a pivot at

its opposite end pivotally coupling it with one end of said first control link;
a pair of driving links longer than said control links and having a common pivot connecting them at one end of their ends to one another and to the opposite end of said first control link;
one of said driving links having a pivot coupling its opposite end to one of said arms; and



the other of said driving links having a pivot connecting its opposite end to the other of said arms;
said set of links being effective when said member moves in one direction to move said arms sequentially downwardly to lower the window panels sequentially; and
said set of links being effective when said member moves in the opposite direction to move said arms sequentially upwardly to raise said window panels sequentially.

3,900,966

HORIZONTALLY-PIVOTABLE DOUBLE-GLAZED WINDOW

Esteban Duran Suarez, Marceliano Santamaria No. 6, Madrid, Spain

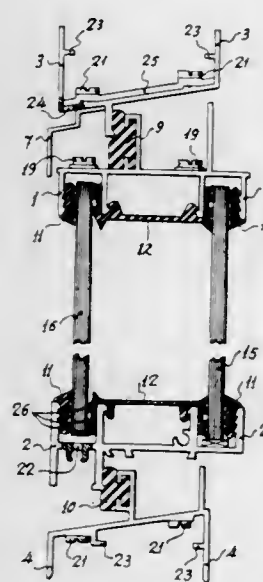
Filed Dec. 28, 1973, Ser. No. 429,359

Claims priority, application Spain, Dec. 29, 1972, 187,275

Int. Cl. E06b 3/40

U.S. Cl. 49—390

7 Claims



1. A sash for a double-glazed window, said sash comprising:
an upper horizontal cross-piece;
a lower horizontal cross-piece;
a pair of vertical pieces joined at their ends to the ends of said horizontal cross pieces to form the sides of the sash, each of said pieces having four integral parallel spaced apart flanges on their inner surface forming a front groove and a rear groove to receive the edges of two

panes, said two grooves being spaced from each other to form a central U-channel in said sash between an adjacent flange of each of said grooves;

a resilient inverted U-shaped cover gasket spanning said central U channel in said sash, each side of said U-shaped gasket extending within a respective one of said front and rear grooves against said adjacent flange;
retaining means on said U-shaped cover gasket cooperating with mating retaining means on said adjacent flanges to hold said U-shaped cover gasket in place;
a pair of separate resilient wedge shaped gaskets, each of said wedge shaped gaskets extending within a respective one of said grooves against the flange facing said adjacent flange; and
retaining means on each of said wedge shaped gaskets cooperating with retaining means on each respective flange, whereby two panes can be held in said grooves by said cover and wedge shaped gaskets in a single sash.

3,900,967

ADJUSTABLE SILL AND THRESHOLD ASSEMBLY

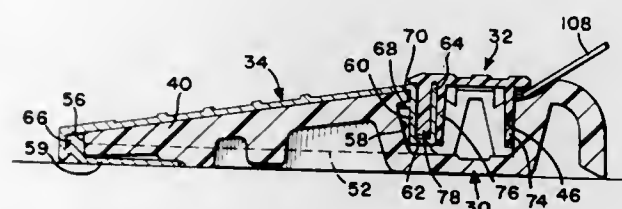
William Michael Bursk, Middletown, and David H. Pease, Jr., Cincinnati, both of Ohio, assignors to Pease Company, Fairfield, Ohio

Filed July 26, 1974, Ser. No. 492,068

Int. Cl. E06B 1/70

U.S. Cl. 49—468

16 Claims



1. An adjustable sill and threshold assembly comprising:
a. a stationary sill,
b. means defining a threshold groove extending longitudinally of said sill,
c. a movable threshold mounted on said sill over said groove, and
d. actuating means received in said groove beneath said threshold for adjusting said threshold vertically with respect to said stationary sill upon movement of said actuating means longitudinally of said groove.

3,900,968

MOBILE CLEANING AND POLISHING DEVICE

Genshichi Shigyo, 353 Minami Tanakamachi, Nerima-ku, Tokyo, Japan

Continuation-in-part of Ser. No. 285,634, Sept. 1, 1972,

abandoned. This application Oct. 30, 1974, Ser. No. 519,185

Claims priority, application Japan, Dec. 10, 1971, 46-99906

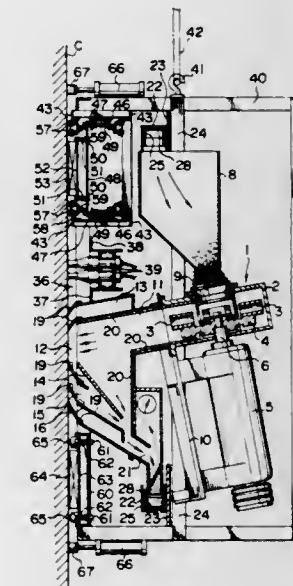
Int. Cl. B24c 3/06

U.S. Cl. 51—5 R

27 Claims

1. A mobile cleaning and polishing apparatus comprising, a mobile main frame movable into a working position wherein same confronts and is spaced-apart from the surface of a structure to be cleaned, abrasive cleaning means mounted on said main frame including means defining an outlet for impelling abrasive particles through said outlet opening against a section of the surface to be cleaned to effect abrasive cleaning of the surface, collecting means mounted on said frame assembly and including means defining a collecting passage surrounding said outlet opening for collecting the abrasive particles scattered off the surface along with the removed scale and other waste particles, positioning means coacting with said main frame for positioning and maintaining said main frame in said working position during operation of both said abrasive cleaning means and said collecting means, said positioning means comprising magnetic field generating means connected

to said main frame for generating during use of the apparatus of magnetic field coacting with the structure to be cleaned when same is composed of magnetic material to develop a magnetic force of attraction therebetween having sufficient strength to maintain said main frame in its working position



during operation of said cleaning and collecting means, and a motive power for effecting movement of said main frame along the surface to be cleaned while maintaining same in confronting spaced-apart relationship therefrom by said magnetic field generating means during operation of said abrasive cleaning and collecting means.

3,900,969

PORTABLE APPARATUS FOR BLAST CLEANING

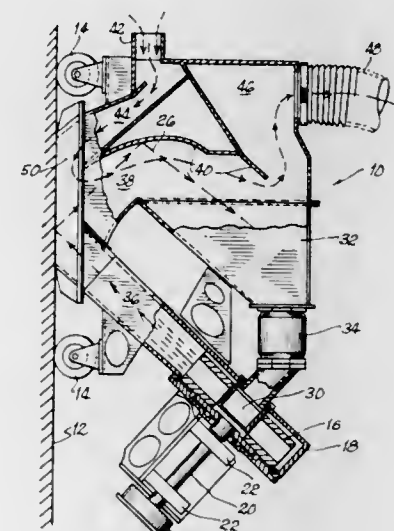
Philip H. Diehn, Mishawaka, Ind., assignor to Wheelabrator-Frye Inc., Mishawaka, Ind.

Filed Feb. 19, 1974, Ser. No. 443,389

Int. Cl. B24c 3/06, 5/06, 9/00

U.S. Cl. 51—9 M

10 Claims



1. A portable apparatus for blast cleaning a non-horizontal surface comprising:
means for upwardly projecting particulate material onto said surface with sufficient energy to rebound therefrom;
a gravity feed hopper supplying said projecting means with said particulate material; and
channel means disposed above said first means receiving the rebounded particulate material for directing it back to said hopper for reuse.

3,900,970

CUTTER BIT GRINDER

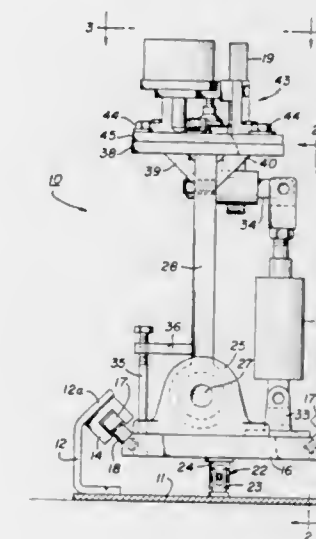
Phillip A. Sollami, 438 Sherman St., Downers Grove, Ill. 60515

Filed Sept. 17, 1973, Ser. No. 398,064

Int. Cl. B24b 3/36

U.S. Cl. 51—98 BS

7 Claims



6. In combination,
a grinding wheel mounted for rotation about a first horizontal axis,
said wheel having a generally cylindrical grinding edge and circular sides,
a fixture for holding a work piece to be ground,
support means for supporting said fixture in a grinding position opposite said grinding edge of said wheel and in a loading position below said grinding position and off to one side of said wheel,
trunnion means mounting said support means for arcuate movement about a second axis disposed below said wheel and extending horizontally,
power operated means for angularly moving said support means about said second axis to move said fixture between said grinding and loading positions, and
means for moving said support and said trunnion means in a horizontal linear direction toward and away from said wheel.

3,900,971

MACHINE FOR PRODUCING SURFACES OF OPTICAL LENSES, FOR EXAMPLE TORIC SURFACES

Erhard Brueck, Heuchelheim, Germany, assignor to Wilhelm Loh Kommanditgesellschaft, Wetzlar, Germany

Filed Oct. 1, 1973, Ser. No. 402,320

Claims priority, application Germany, Oct. 26, 1972, 2252498

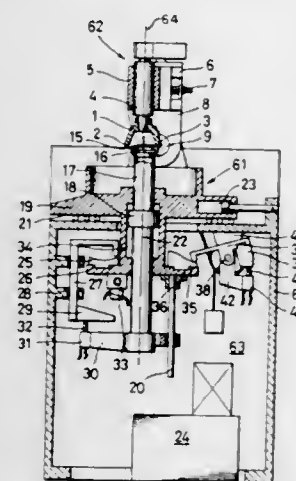
Int. Cl. B24b 17/00, 17/10, 9/14

U.S. Cl. 51—100

11 Claims

1. A grinding and polishing machine, comprising:
a frame;
guide means mounted on said frame;
first holder means comprising carriage means mounted on said guide means and adapted to move along a first path relative to said frame and quill means mounted on said carriage means for movement along a second path and in a direction perpendicular to the direction of said first path of movement of said carriage means, said first and second paths of movement defining a theoretical plane;
second holder means mounted on said frame for pivotal movement about a fixed pivot axis thereon;
cup-shaped tool means mounted on one of said quill means and said second holder means, said cup-shaped tool having a rim thereon;
workpiece holding means mounted on the other of said quill means and said second holder and adapted to hold a

workpiece so that it will engage said rim of said cup-shaped tool means in response to a movement of said carriage means along said first path; and



control means for controlling the movement of said quill means and said second holder means and, consequently, said workpiece holding means and said cup-shaped tool in response to said movement of said carriage means along said first path.

3,900,972

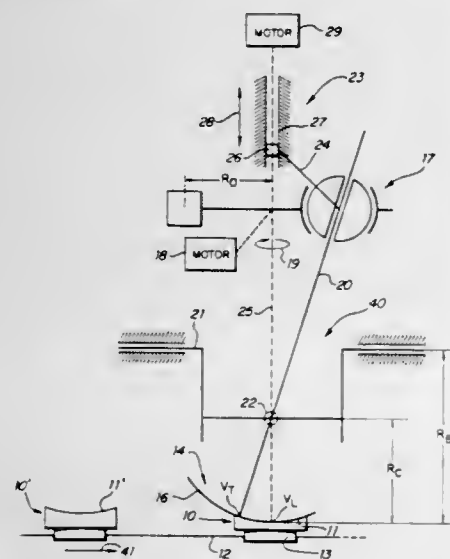
APPARATUS FOR POLISHING TOROIDAL SURFACES
Wiktor J. Rupp, Lowell, Mass., assignor to Itek Corporation, Lexington, Mass.

Filed Sept. 11, 1974, Ser. No. 504,470

Int. Cl.² B24B 13/02

U.S. Cl. 51—119

14 Claims



1. Apparatus for polishing toroidal surfaces comprising:

a. a first member and a second member, one of said members comprising a lapping tool having a toroidal lapping surface and the other of said members comprising means for carrying a workpiece having a toroidal workpiece surface to be polished, the toroidal surfaces of both said lapping tool and said workpiece having a curvature of a first radius in the direction of a first principal meridian thereof and a curvature of a second radius different from said first radius in the direction of a second principal meridian thereof perpendicular to said first principal meridian;

b. means for supporting said first member for pivotal movement in first and second curved paths, said first curved path being parallel to said first principal meridian of the toroidal surface thereof and having a radius equal to said first radius, and said second curved path being parallel to said second principal meridian of the toroidal surface thereof and having a radius equal to said second radius; c. drive means for driving said first member in a non-rotating orbital manner, said support means causing the

toroidal surface of said first member to define and always move in a fixed toroidal surface in space, said fixed toroidal surface in space having the same radial dimensions as the toroidal surfaces of said first and second members; and

d. means for positioning the toroidal surface of said second member on said fixed toroidal surface in space such that during the movement of said first member thereon said workpiece surface will be polished by said lapping tool.

3,900,973

ABRADING MACHINE

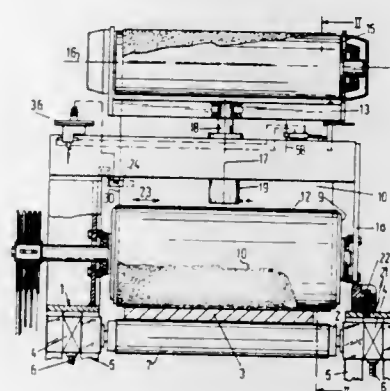
Jacob Arie van der Linden, Wuustwezel, Belgium, assignor to Maschinenfabrik A. van der Linden, Goes, Netherlands
Filed Dec. 18, 1973, Ser. No. 425,928

Claims priority, application Netherlands, Dec. 18, 1972, 7217234

Int. Cl. B24b 21/00, 21/18

U.S. Cl. 51—135 BT

5 Claims



1. An abrading machine for abrading work pieces comprising at least one frame, a guide table connected with said frame for guiding the work pieces to be abraded, a pressing member having an endless abrading belt associated therewith, said pressing member urging said belt against the work pieces, an auxiliary frame disposed adjacent the pressing member, a reversing roller rotatably journaled in said auxiliary frame and pivotable relative to said frame about a pivotal axis transverse of the rotary axis of the reversing roller a pneumatic motor for performing an oscillatory movement about the pivotal axis, said pneumatic motor coupling the reversing roller to said auxiliary frame a pneumatic sensor for detecting the presence or absence of the edge of the abrading belt, said pneumatic sensor including a sensor-actuated regulating device for controlling the pneumatic motor, said pneumatic motor having at least one motor chamber which communicates through the sensor-actuated regulating device with a compressed-air source and with an air exhaust, characterized in that the sensor-actuated regulating device is provided with a choke and a sensor activated flap, the motor chamber of the pneumatic motor communicating with the compressed-air source through said choke and with said air exhaust which is alternately closed and opened by said sensor-activated flap of the regulating device.

3,900,974

PORTABLE SURFACE-TREATING MACHINE WITH IMPROVED PLATEN-MOUNTING CONSTRUCTION

Elmer C. Klebe, Jr., Easley, and Timothy J. Looper, Pickens, both of S.C., assignors to The Singer Company, New York, N.Y.

Filed Feb. 14, 1974, Ser. No. 442,518

Int. Cl.² B24B 23/04

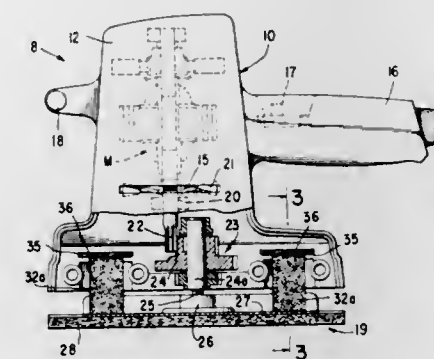
U.S. Cl. 51—170 MT

2 Claims

1. In an electrically-driven portable surface-treating machine in which the motor and means driven thereby for oscillating a platen are mounted within a longitudinally divided clam shell housing and said platen is connected to said housing

by being secured to a plurality of resilient posts connected to said housing, the improvement which comprises:

- transversely extending recesses formed in the opposite ends of the housing,
- a plurality of resilient posts each of which is provided at one end thereof with a flange dimensioned to fit within said recesses to secure said one end of the post therein,
- said posts being provided at the other end thereof with a locking element cooperable with a locking element associated with the other of said platen and housing to secure said other ends of said posts thereto,
- an oscillatable platen connected to an end of each of said resilient posts,



- said posts being positioned between said housing and platen in pairs with a first post of each pair secured to said platen and housing on one side of the longitudinal division in said housing and the second post of each pair secured to said platen and housing on the other side of the longitudinal division in said housing, and
- each of said posts is located in a corner of said housing with the flange of each post in each said pair of posts extending towards the flange of the other posts in the pair a predetermined distance beyond the columnar body of the post such that the contiguous end faces of the flanges of each of said first and second posts are in abutting relationship, and the lengths of the abutting flanges are sufficiently great to stress the terminal portion of each such flange in the region of the abutting end faces upon assembly of the divided halves of the housing.

3,900,975

CRYOGENIC GRINDING OF COPPER

John Bernard Lightstone, White Plains, N.Y., and Richard Benedict Mazzarella, Indianapolis, Ind., assignors to Union Carbide Corporation, New York, N.Y.

Filed May 20, 1974, Ser. No. 471,478

Int. Cl. B24b 1/00, 55/02

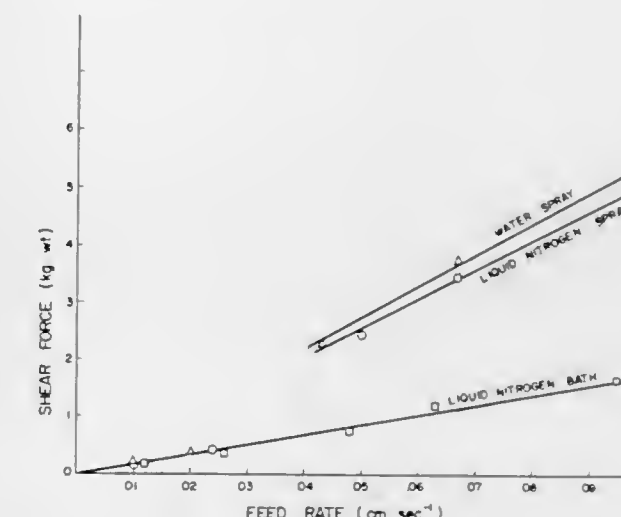
U.S. Cl. 51—322

3 Claims

1. A process for abrasively grinding copper comprising the steps of:

- cooling the intended copper workpiece to a cryogenic temperature such that substantially the entire workpiece is at said cryogenic temperature, and

- abrasively grinding said copper workpiece while at said cryogenic temperature thereby minimizing the tendency



of the copper chips removed during abrasion to weld to the grinding surface.

3,900,976

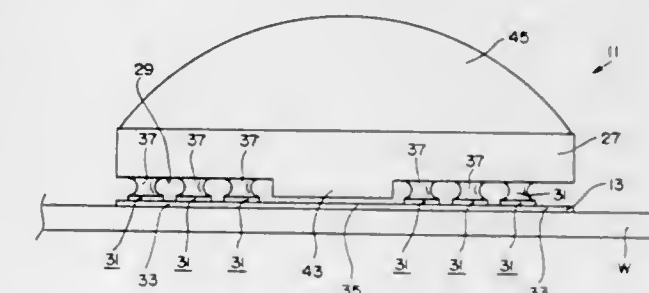
DEVICE FOR SUPPORTING A COATED ABRASIVE
William H. Kitts, Jr., 3761 Earl's Ct., Memphis, Tenn. 38118

Filed Jan. 24, 1974, Ser. No. 436,072

Int. Cl.² B24D 9/10

U.S. Cl. 51—362

1 Claim



1. The combination with a flexible sheet of a coated abrasive having an obverse side covered with an abrasive and a reverse side treated with a sealant to close the pores thereof, said coated abrasive including first and second portions, of a device for releasably supporting said flexible sheet of coated abrasive while performing abrading work therewith, said device comprising a main body member having a substantially planar surface, a plurality of outwardly projecting miniature suction cups fixedly attached to said substantially planar surface for engaging and gripping said first portion of said coated abrasive and for releasably gripping the non-porous reverse side of said sheet of coated abrasive and for firmly supporting said sheet of coated abrasive while engaging the obverse side thereof against a work piece as said device is moved about to perform abrading work therewith, a plurality of resilient leg members for respectively supporting said miniature suction cups, the inner ends of said leg members being fixedly attached to said substantially planar surface of said main body member with said suction cups respectively being fixedly attached to the outer ends thereof, and said resilient leg members being individually compressible to shorter lengths as pressure is applied to urge said device towards the work piece whereby the entire area of said first portion of said coated abrasive is urged against the work piece with substantially equal pressure irrespective of minor irregularities within limits that may exist on the surface of the work piece, and a protuberant member for contiguously engaging and selectively urging said second portion of said coated abrasive firmly against the work piece, said protuberant member being fixedly attached to said substantially planar surface of said main body member and projecting a predetermined distance outwardly

therefrom, said resilient leg members having predetermined uniform lengths thereto when being slightly compressed to normally urge said first portion of said coated abrasive to effectively engage the work piece with ever increasing vigor as the pressure being applied to said device is increased.

3,900,977

AUTOMATIC ADJUSTMENT OF SCRAPER ELEVATOR USING CONTROL LINK COUPLED TO DRAFT FRAME

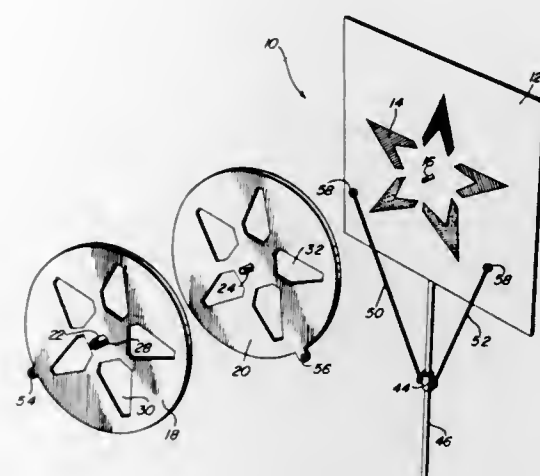
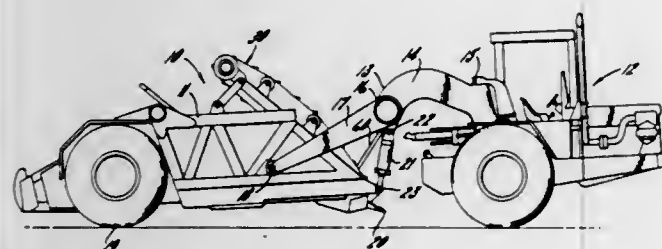
John H. Hyler, Peoria, Ill., assignor to Westinghouse Air Brake Company, Pittsburgh, Pa.

Filed Sept. 23, 1974, Ser. No. 508,360

Int. Cl. B60P 1/36

U.S. Cl. 37-8

21 Claims



mined intervals the display on said plate, and means for oscillating said disks in opposite directions.

3,900,979

PLATE HOLDER, PARTICULARLY A LICENSE PLATE HOLDER

Herbert Eggenschwiler, Rugangstrasse 1034, Murten, 3280 Switzerland

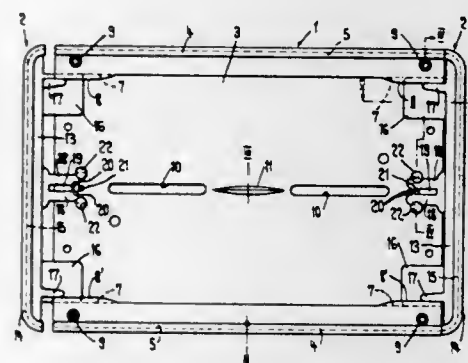
Continuation of Ser. No. 285,446, Aug. 31, 1972, abandoned.

This application Mar. 20, 1974, Ser. No. 453,081

Int. Cl. G09f 7/00

U.S. Cl. 40-209

6 Claims



1. In an elevating type scraper for earthmoving purposes, the combination comprising an open-fronted bowl having a frame, ground wheels at the rear of the frame for supporting the bowl, a scraper blade at the front of the bowl, a tractor supported draft frame, a pair of draft members pivotally secured at their rear ends to the sides of the bowl and extending forwardly and upwardly having rigid connections at their front ends to the draft frame, means including a bowl-supporting actuator interposed between the draft frame and the front end of the bowl and having control means for determining the degree of tilt of the bowl about its supporting wheels and hence the depth of cut of the blade, a driven endless elevator positioned at the front end of the bowl having its lower end in proximity to the blade and inclined upwardly and rearwardly for conveying loosened soil from the blade into the bowl, the elevator being mounted on the frame of the bowl for upward and downward swinging movement with respect to the ground, elevator support means including a control link of reference length coupled to the draft frame, a lever of the first class fulcrumed on the control link, the first end of the lever being coupled to the lower end of the bowl-supporting actuator, the second end of the lever being coupled to the elevator so that when the blade is at a reference cutting level the elevator is in sweeping relation with the ground, so that when the bowl-supporting actuator is contracted to raise the cutting level of the blade the elevator is lowered with respect to the bowl and so that when the bowl-supporting actuator is elongated to lower the cutting level of the blade the elevator is raised with respect to the bowl, thereby to maintain the elevator in sweeping relation with the ground at all levels of cut.

3,900,978

ADVERTISING SIGN

Robert Bryan Sloan, Austin, Tex., assignor to Kenneth Ehrbridge, Abilene and Lee Roy Stacy, Mills, both of, Tex., part interest to each

Filed Jan. 28, 1974, Ser. No. 437,183

Int. Cl. G09f 11/04

U.S. Cl. 40-30

18 Claims

1. An advertising device comprising a plate having a display thereon, a pair of disks having openings therein mounted in front of said plate for relative oscillation in opposite directions about a common axis through predetermined arcs, said disks

1. An assembly including an automobile license plate and a holder therefor, said holder comprising a middle section having a back wall portion between two frame portions each having an internal groove adapted to receive the rim of the license plate, and two end sections each comprising a back wall portion and a frame portion having an internal groove adapted to receive the rim of the license plate, said middle and end sections having the same cross-sectional configuration, terminating in abutting ends, and having the grooves extending about the circumference of the holder, said middle section and said end sections having cooperatively engageable fixing means for joining said respective sections such that said frame portions form a butt joint, and said fixing means being disengaged by pulling said middle section and end sections apart and being disposed respectively between said internal grooves and said back walls such that said fixing means are adapted to be hidden behind said license plate when placed within said internal groove.

3,900,980

PICTURE FRAME

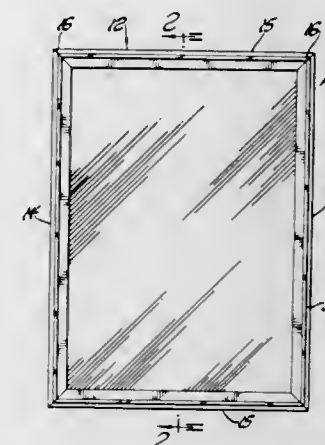
Marshall R. Chambers, 927 Spring St., Apt. No. 8, Troy, Mich. 49770

Continuation-in-part of Ser. No. 333,244, Feb. 16, 1973, abandoned. This application Sept. 4, 1973, Ser. No. 393,912

Int. Cl. G09f 1/12

U.S. Cl. 40-152.1

9 Claims



1. A frame assembly for mounting a planar member comprising: a peripheral wall including a plurality of interconnected wall sections, each of said wall sections having at least one longitudinal channel, and connecting members for interconnecting said wall sections adapted for location within said channels; said connecting members including a pair of angularly related leg members having a generally planar surface, and integral protrusion means protruding from said planar surfaces for frictionally engaging the sides of said channels, said protrusion means including pointed tab members extending out of said planar surface and pointing toward the juncture between said leg members and depressed areas extending out of said planar surface of said leg members in a direction opposite to at least one of said tab members, said depressed areas and said tab members simultaneously urging one another into anchoring engagement with the sides of said channels.

3,900,981

ANIMAL IDENTIFICATION TAIL TAG

Harley E. Nichols, Hardwick, Vt., assignor to C. H. Dana Company, Inc., Hyde Park, Vt.

Filed Aug. 6, 1973, Ser. No. 385,996

Int. Cl. G09f 3/00

U.S. Cl. 40-300

2 Claims



1. A flexible animal identification tail tag for secure attachment to the hair in the animal's tail and for retention of the tag on the tail despite a whip-like action of the tail comprising a substantially planar identification panel having a symbol display area and a hair engaging and retaining area, a clamping

member having a clamping surface in confronting relationship with the hair engaging and retaining area, said panel being provided with an aperture of sufficient size to permit the ready passage therethrough of a weft of hair for retentive confinement between the panel and the clamping member, fastening means for drawing the clamping member toward the panel to effect cooperative retention and tight clamping and anchoring of a portion of the tail hair of the animal between the hair engaging and retaining area of the panel and the clamping surface without applying undue pressure to the sensitive skin area of the animal's tail and a pair of flexible arms extending integrally from the panel in opposite directions to fully and loosely encircle the animal's tail without applying pressure thereto, said clamping and anchoring being sufficient to retain the tag on the tail despite rapid swishing of the tail by the animal.

3,900,982

QUICK OPENING BUCKET

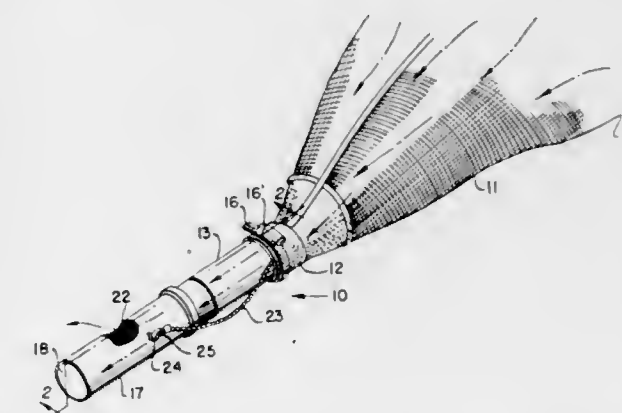
William F. Gale, River Rd., Wapwallopen, Pa. 18660

Filed June 20, 1974, Ser. No. 481,360

Int. Cl. A01K 75/00

U.S. Cl. 43-7

9 Claims



1. A quick opening device for collecting small aquatic organisms comprising a funnel shaped net having a large end and a reduced end, a shape retaining tubular bucket holder having open ends, one end of said bucket holder being fitted within the reduced end of said net with the other end extending outwardly from said net, means clamping the reduced end of said net to the one end of said bucket holder, a collecting bucket having a tubular body, a closed bottom end and an open and opposite said bottom end, said open end of said bucket being separately and frictionally connected with respect to the outwardly extending end of said bucket holder, whereby the bucket may be readily removed from bucket holder by twisting and pulling apart longitudinally.

3,900,983

RAT REMOVING

Charles Petrosky, 1118 N. Jefferson St., Arlington, Va. 22205

Filed Apr. 19, 1974, Ser. No. 462,501

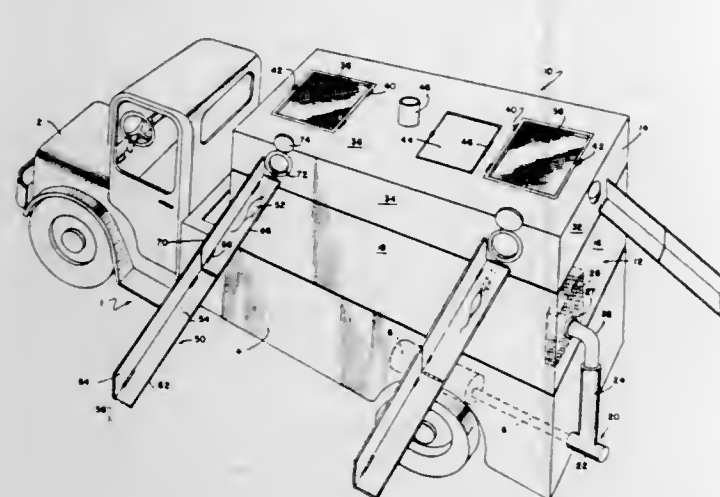
Int. Cl. A01m 23/08

U.S. Cl. 43-58

10 Claims

1. Vermin trapping apparatus comprising a large container configured for mounting on a large haulage-type road vehicle, the container having side walls, a bottom wall connected to the side walls and having an upper portion with a top wall joined to the side walls in completion of the container, the support means connected to the bottom wall for supporting the container on a support vehicle, emptying means connected to the container for emptying contents of the container, plural openings in the upper portion of the container for providing ingress into the container, doors connected to the upper portion adjacent the plural openings for selectively closing the plural openings and ramp means connected to the upper portion adjacent the openings and extending downward and outward to ground level whereby rodents climb the ramp

means and enter the container through the openings, and wherein, at least some of said interlocking elements of said model structure may be hauled away and emptied by a model structure forming a lower portion of said model structure.



roadway vehicle when rodents have been collected in the container.

3,900,984

ENDLESS LOOP MANIPULATABLE TO VARIOUS POSITIONS

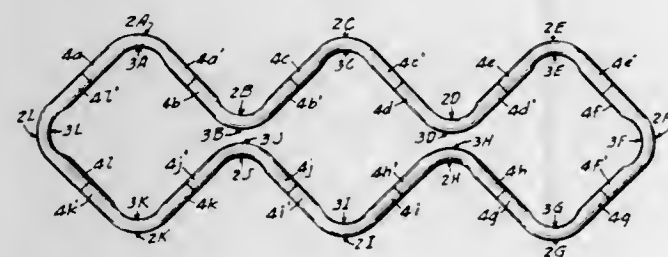
Herbert J. Garelick, St. Paul Park, Minn., assignor to Garelick Mfg. Co., St. Paul, Minn.

Filed May 23, 1974, Ser. No. 472,637

Int. Cl. A63H 33/00

U.S. Cl. 46-1 R

3 Claims



1. A toy comprising a plurality of hollow, tubular segments; each of said segments being formed with an angle to provide an elbow and arranged in abutting end-to-end juxtaposition; means at the ends of abutting segments forming a surface around which said abutting segments may be rotated with respect to each other; and an endless loop of elastic material strung under tension through the entire structure, said toy being adapted to be manipulated into a variety of different positions.

3,900,985

MODEL IN BOTTLE HOBBY KIT

Lazaro Yoen, 222 Lenox Rd., Apt. 5-E, Brooklyn, N.Y. 11226

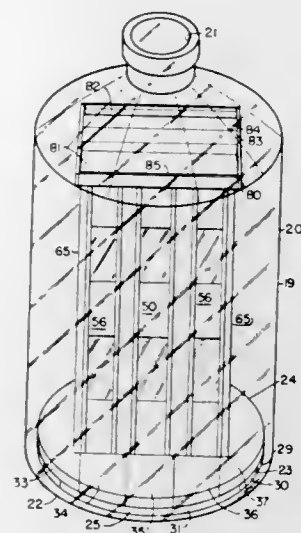
Filed Jan. 3, 1975, Ser. No. 538,422

Int. Cl. A63H 33/08

U.S. Cl. 46-16

8 Claims

7. A hobby kit comprising, in combination, a bottle having a relatively narrow neck and a surface, and interlocking elements to form a model structure passing through said neck of said bottle so that a model structure may be assembled



ture to be jammed on said surface of said bottle so that an assembled model structure is fixed thereby within said bottle.

3,900,986

WHISTLING FLYING SAUCER TOY

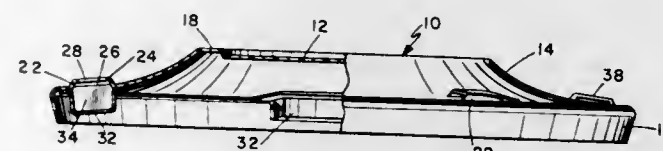
Noel M. Torres, 1853 Ridgewood Ave., San Diego, Calif. 92139

Filed Feb. 22, 1974, Ser. No. 441,032

Int. Cl. A63h 27/00

U.S. Cl. 46-74 D

1 Claim



1. A hand-tossed flying saucer toy comprising: a body portion having top and bottom sides, said top side including an upper circular central portion substantially defining a plane, a lower circular boundary and an annular collar integral with the periphery of the central portion and sloping downwardly away from said plane to said boundary; a downwardly extending rim circumscribing and integral with said boundary; at least one air-activated whistle element positioned substantially at the periphery of said collar; said whistle element comprising an upwardly raised portion in said body portion having a slot at one side thereof adjacent the surrounding body portion for the admission of air, and having at a position angularly displaced on said raised portion from said first-mentioned slot with reference to said body portion a second slot having an edge thereof remote from said first slot which is beveled to define a reed to engage air admitted through said first slot; an elongated trough sealed on the side of said body portion remote from said raised portion; said trough, together with the body portion, defining a substantially enclosed resonant chamber communicating with said two slots; and said trough including a forward shoulder having an upper surface substantially flush with that of said collar and adjacent said first mentioned slot to define a continuous channel adjacent said first mentioned slot to direct a sweeping flow of air toward said reed in use.

3,900,987

AMUSEMENT DEVICE

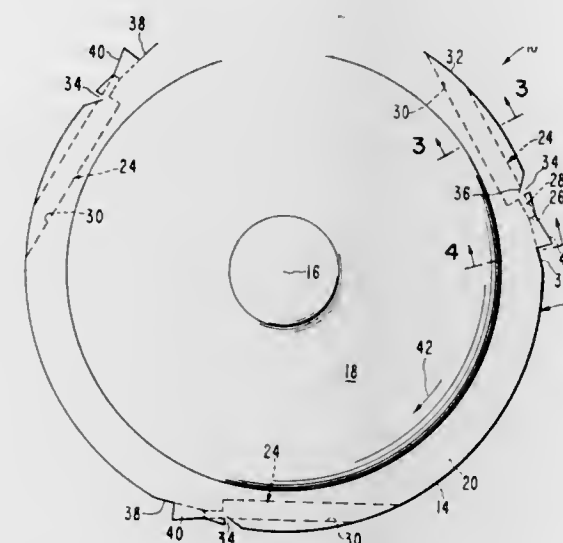
Leslie W. Holt, 820 14th Ave., Menlo Park, Calif. 94025

Filed Oct. 20, 1972, Ser. No. 291,143

Int. Cl. A63h 27/00

U.S. Cl. 46-74 D

1 Claim



1. An amusement device to be sailed through the air with a spinning motion comprising: a hollow, circular, dome-shaped body provided with an open bottom, a central axis, and an outer periphery, said body adapted to be thrown with a spinning action through the air so that the body spins about said central axis and sails through the air; a number of elongated whistles mounted on said body at said outer periphery at symmetrically and circumferentially spaced locations thereon, each whistle having an air passage extending at least partially through the body and circumferentially of said outer periphery, and a vent extending inwardly from said outer periphery to said passage and communicating therewith, there being an inclined vane adjacent to each vent and extending into the corresponding passage, each whistle having an air inlet opening at least partially facing the direction of spin of the body, and an air scoop surrounding each air inlet opening, respectively, and projecting outwardly therefrom, whereby air will enter each air inlet opening as the body spins about said central axis and sails through the air to thereby cause a sound to be emitted by each whistle as a function of the spinning action thereof.

3,900,988

RETRACTABLE LANDING GEAR

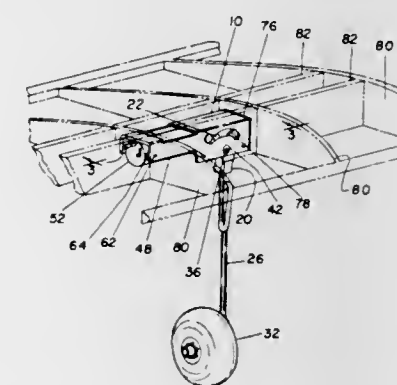
Romano Garaballo, 2030 73rd St., Brooklyn, N.Y. 11204

Filed July 1, 1974, Ser. No. 484,432

Int. Cl. A63h 27/02

U.S. Cl. 46-76

20 Claims



1. In a retractable landing system, apparatus comprising control path means having first and second portions merging intermediate their ends at a point from which said first and second portions diverge from a straight line angularly relative to each other,

follower means adapted to move relative to and along said first and second portions and the merger point of said control path means, and fluid actuator means for moving said follower means relative to said control path means to thereby drive a part of the landing apparatus between an extended and retracted position.

3,900,989

BALLOON CLAMP

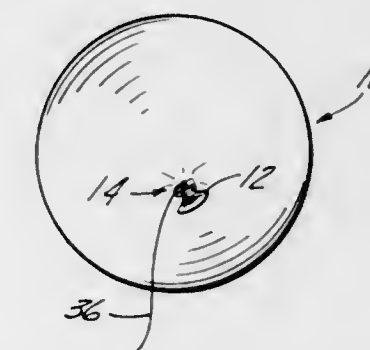
Marvin L. Weisenthal, 2169 Eastman, West Bloomfield Hills, Mich. 48033

Filed Nov. 29, 1973, Ser. No. 420,264

Int. Cl. A63h 3/06

U.S. Cl. 46-88

9 Claims



1. In a closure member for sealingly closing an inflated balloon about the neck thereof, the improvement comprising: a freely rotatable first leg; a freely rotatable second leg adapted to be disposed in overlying relationship over the first leg when in closed relationship; the legs being adapted to receive the neck of the object balloon transversely therebetween; flexible hinge means interconnecting the first and second legs, means for clamping the first and second legs together, the means for clamping exerting sufficient compression on the two legs to prevent the passage of fluid therepast, and sealing means provided on the interior surfaces of the legs and which enshrouds the neck of the balloon, the sealing means comprising an elongated channel formed in one of the legs and extending substantially along the length thereof and a projection formed on the other of the legs and extending substantially along the length thereof, the projection being sealingly press fit into the channel to thereby sealingly close the neck of the inflated balloon.

3,900,990

FLIPPER FOOT PULL TOY

Ronald J. Campanelli, Blackwood, N.J., assignor to The Quaker Oats Company, Chicago, Ill.

Filed Jan. 16, 1974, Ser. No. 433,695

Int. Cl. A63h 11/10

U.S. Cl. 46-103

3 Claims



1. A flipper foot pull toy comprising:

- a. a toy figure having a pull cord for pulling said toy figure along over a support surface;
- b. a pair of generally cylindrical and approximately smooth surfaced inner supports on opposite ends of a shaft extending through said toy figure;
- c. an outer housing fitted loosely over each of said inner supports and having a generally smooth inside surface;
- d. said outer housing being oblong with rounded ends, the radius of the inside of said rounded ends being slightly more than the radius of the outside of said inner support, and the inside width of said outer housing being slightly more than the diameter of the outside of said inner support;
- e. said outer housing having an inner portion formed of plastic material with an oblong slot through which said shaft extends and an outer portion formed of plastic material and joined to said inner portion to enclose said inner supports;
- f. means for placing a portion of the weight of said toy on said inner support to establish a first frictional engagement between said inner support and said outer housing and a second frictional engagement between said outer housing and said support surface so that as said toy is pulled, said inner support moves along the inside of said outer housing to one of said rounded ends, and by cooperation of said first and second frictional engagements, rotates said outer housing 180° as said inner support moves relative to said one rounded end to flip said outer housing ahead of the direction of motion of said inner support, and then said inner support moves along the inside of said outer housing toward said other rounded end; and
- g. said inner supports being freely slidable within said outer housings to facilitate cornering and to allow variation in the phase relationship of said flipper feet during movement of said toy.

3,900,991

VENTRILOQUIST DOLL

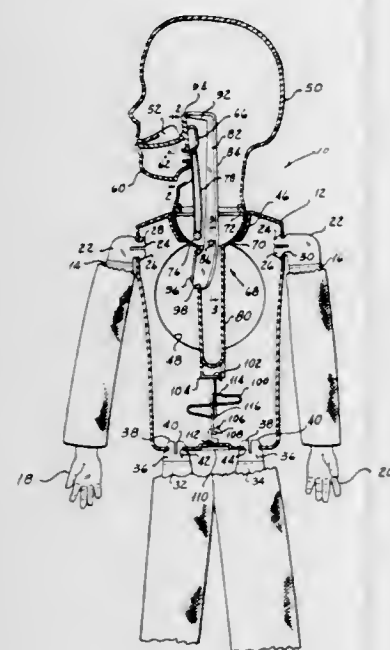
Witold W. Kosicki, Columbia, and Charles M. Hollingsworth, West Columbia, both of S.C., assignors to Horsman Dolls Inc., Columbia, S.C.

Filed Nov. 9, 1973, Ser. No. 414,210

Int. Cl. A63h 13/00

U.S. Cl. 46—116

16 Claims



1. A doll assembly including in combination a torso having a vertical axis, means forming a generally hemispherical socket at the upper end of said torso, said socket opening outwardly and having an opening in the bottom thereof, a head, a generally hemispherical head support carried by said head and adapted to be received in said socket over said

opening, a handle extending downwardly into said body from the portion of said head support over said opening, the relative dimensions of said handle and said opening being such as to permit limited tilting movement of said head with respect to said axis as well as rotary movement of said head around said axis, and resilient means connected between said handle and said torso for urging said head to an erect position with reference to said axis, said torso formed with an opening permitting access to said handle for manipulation of said head.

3,900,992

DOLL HAVING LIMBS WITH HEMISPHERICAL PORTIONS PIVOTALLY JOINED TO ITS BODY

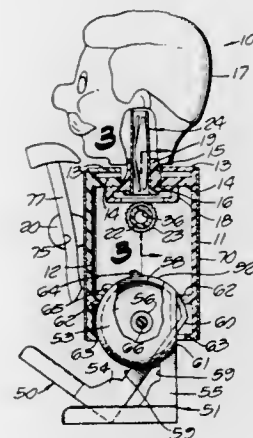
Reuben B. Klammer, 245 S. Barrington, Los Angeles, Calif. 90049

Division of Ser. No. 136,045, April 21, 1971, abandoned. This application Aug. 26, 1974, Ser. No. 500,510

Int. Cl. A63h 3/20, 3/46

U.S. Cl. 46—161

6 Claims



1. A figure having at least one pair of movable limbs comprising a hollow body, and a pair of limbs, said body and limbs including coating means for holding said limbs pivotally attached to said body, said means including an opening at one end of said body, an inner section in said body capable of holding a spherical member an upper hemispherical portion on each said limb, the hemispherical portions of said limbs being of substantially equal size to enable them to be fitted together to form at least a major part of a sphere, said sphere mating with said inner section and being held thereby with a portion of each limb extending through said opening whereby one limb may be moved with respect to the other limb and each limb may be moved with respect to said hollow body.

3,900,993

GAME CALL DEVICE

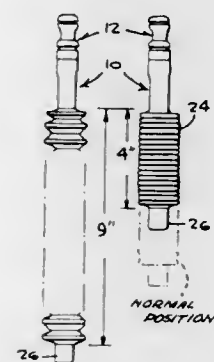
Paul D. Betters, 60 Main St., Oakfield, N.Y. 14125

Filed Aug. 3, 1973, Ser. No. 385,231

Int. Cl. A63h 5/00

U.S. Cl. 46—180

2 Claims



1. An animal call comprising an air actuated, sound producing assembly having an air inlet port, and a closed, variable

volume chamber communicating with said air inlet port, said variable volume chamber including a first end section fitted onto said sound producing assembly in an airtight relation, a second closed end section and an intermediate bellows section means having an equilibrium condition disposed generally midway intermediate its fully extended and fully retracted conditions and having sufficient weight distribution for actuating the sound producing assembly when the operator holds the assembly between his fingers with the intermediate bellows section means extending downwardly without said variable volume chamber contacting anything and rapidly moves the sound producing assembly up and down along the axis of the bellows means to extend and compress the bellows means thereby forcing air in alternate directions through the sound producing assembly.

3,900,994

PREFABRICATED BUILDINGS MADE-UP OF A PLURALITY OF BOX-SHAPED SECTIONS

Cornelis Van der Lely, Zug, Switzerland

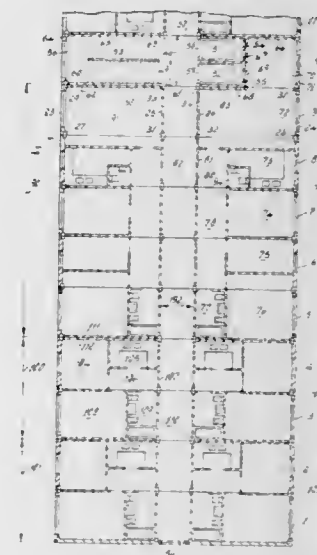
Filed Nov. 21, 1973, Ser. No. 418,103

Claims priority, application Netherlands, Nov. 24, 1972, 7215927

Int. Cl. E04B 1/348

U.S. Cl. 52—236

57 Claims



38. A prefabricated multistory building comprising a plurality of elongated box-shaped sections, each of said sections enclosing part of the space of the building, two of said sections abutting on a shorter end of each and together extending through the entire width of the building with their outboard shorter ends defining in part opposite sides of the building, one of said abutting sections comprising a portion of a passage of the building, said passage extending in the direction of width through said one section.

3,900,995

ADJUSTABLE SUBSTRUCTURE FOR INSTALLING SHEET ROOF

Kurt Ehrenberg, Munchner Strasse 14, 6051 Dietzenbach, Germany

Continuation of Ser. No. 200,970, Nov. 22, 1971, abandoned.

This application Aug. 29, 1973, Ser. No. 392,491

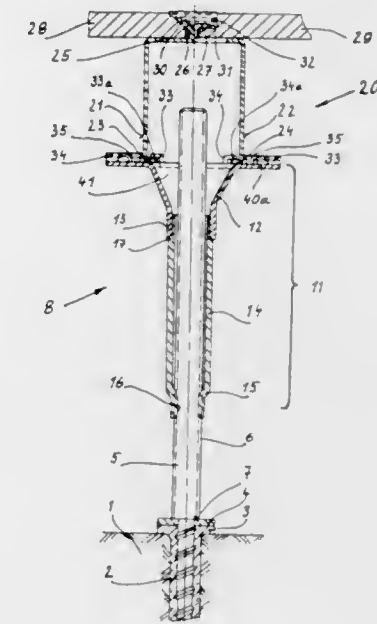
Int. Cl. E04d 15/00

U.S. Cl. 52—126

16 Claims

1. In apparatus for mounting exterior roofing sheets above a sub-roof including a plurality of generally horizontally-extending downwardly-facing channel members each adapted to support abutting edges of a respective pair of roofing sheets and a plurality of vertically-extending bolts with the lower end

of each of said bolts being embedded in said sub-roof and an upper portion of each of said bolts being externally threaded, the combination of: a plurality of support bracket means each mounted atop a respective one of said bolts and each supporting one of said channel members at a respective place along the length of said one of said channel members, each of said support bracket means comprising an integral assembly having an upper generally horizontal upper sheet portion connected to the downwardly-extending sides of a respective one of said channel members, a generally-conical intermediate



portion, and a tubular lower portion adjustably mounted atop a respective one of said bolts at a desired elevation, each of said support brackets means comprising a first piece of metal sheet formed to provide part of said horizontal upper sheet portion, part of said conical intermediate portion, and part of said tubular lower portion, and a second piece of metal sheet formed to provide part of said horizontal upper sheet portion, part of said conical intermediate portion, and part of said tubular lower portion, said first and second pieces of metal sheet being fixedly attached to each other.

3,900,996

HOLLOW WALL STRUCTURE

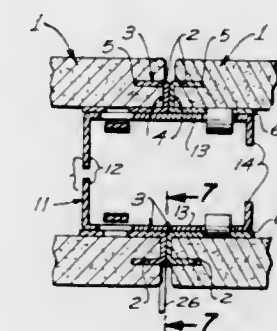
Dale Yohe, P.O. Box 54132, Los Angeles, Calif. 90054

Continuation-in-part of Ser. No. 364,053, May 25, 1973, abandoned. This application Apr. 18, 1974, Ser. No. 461,919

Int. Cl. E04B 2/78

U.S. Cl. 52—241

8 Claims



1. A partition wall structure comprising a plurality of panel members having longitudinal slits in the edges of their side margins and mounting means therefor, said mounting means comprising:

- a. an upwardly open bottom channel member;
- b. inner and outer top channel members, forming a spaced pair of channels receiving the upper margins of panel members;

- c. a plurality of vertically disposed wall studs, their extremities fitted in the bottom channel member and the inner top channel member;
- d. each wall stud including opposed vertically extending mounting sides, each mounting side having a vertically spaced series of clip element receiving slots opening toward said panels;
- e. a plurality of elongated channel-shaped retainer strips each including a channel margin having a first flange slidably fitting an edge slit of a panel member, a web overlying the edge of the panel member inwardly of the slit, and a second flange confronting the margin of the panel member at its inner side facing said mounting sides of said studs;
- f. the second flange of each retainer strip including a series of clip elements spaced in correspondence to the wall stud slots, and engaged with corresponding end margins of the series of wall stud slots whereby upon sliding movement of the retainer strip relative to both the wall stud and the panel member said clip elements may be engaged with or disengaged from the margins of said slots.

3,900,997

ACCESSIBLE TILE WITH HOLD-DOWN FEATURE

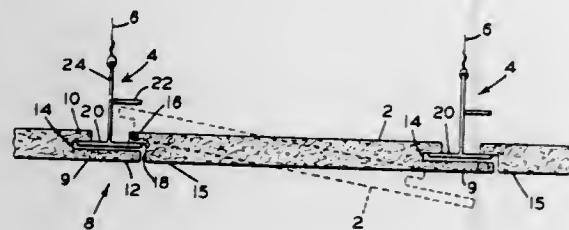
James C. Ollinger, Lancaster, and Henry J. Roux, Willow Street, both of Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

Filed Dec. 31, 1969, Ser. No. 889,544

Int. Cl. E04b 5/52

U.S. Cl. 52-496

2 Claims



1. A ceiling system comprising a plurality of inverted T-shaped grid members each with a horizontal flange and a centrally located vertical rib, a plurality of ceiling panels supported from the grid members, each said ceiling panel having at least two opposite differently shaped edges which complement the edges of adjacent ceiling panels to form a ship-lap joint wherein two adjacent ceiling panels have differently shaped edges which complement each other and are supported from a grid member, each ceiling panel has one-half of a ship-lap joint on at least two opposite sides, one side of the panel has the portion of the ship-lap joint configuration which contains a kerf and an extended section which overlies the flange of the grid member supporting the panel and part of the complementary portion of the ship-lap joint which is on the adjacent panel, and said adjacent panel having the complementary section of the ship-lap joint configuration which is meant to be overlaid by the extended section of an adjacent ceiling panel, said complementary section configuration being just a short extension from the edge of the panel, said extension rests on the grid member to hold the panel in place on the grid member and the edge of the ceiling panel rests against the side of the flange of the grid member to prevent sideward movement of the panel, the first-mentioned side of the ceiling panel has the kerf placed on a flange of a grid member so that that side is not capable of up and down movement relative to the flange member but may be moved only sideward off the flange member, the other opposite side of the panel is capable of movement upward relative to the flange of an adjacent grid member, after limited upward movement of that side of the panel only then is the panel capable of sideward movement since the upward movement moves the edge of the ceiling panel away from the flange to permit sideward movement, means on the grid member for limiting upward movement of

the panel having the movable portion of the ship-lap joint above the top of the upper part of the grid member so that the limited upward movement alone of the panel is not sufficient to dislodge the kerf of the opposite edge of the ceiling panel from the flange of an adjacent grid member, said means for limiting upward movement is a tab bent out from the vertical rib of the grid member and the tab limits upward movement of that side of the panel which is capable of limited upward movement.

3,900,998

EXPANSION ANCHORS

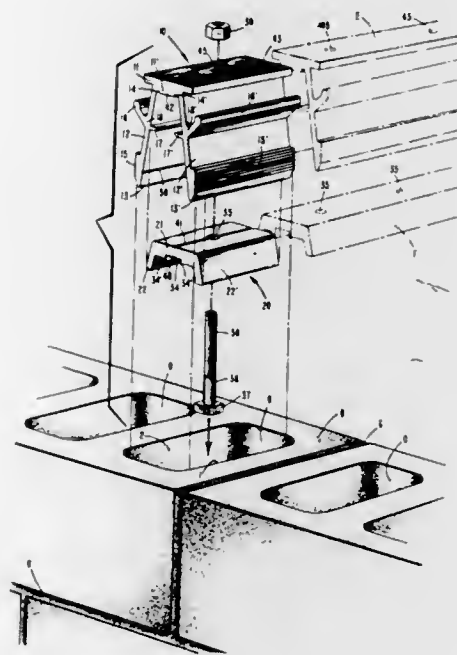
Richard A. Hubbard, Severna Park, Md., assignor to W-T Industries, Inc., Baltimore, Md.

Filed Dec. 20, 1973, Ser. No. 426,652

Int. Cl. E04B 1/38; F16B 13/04

U.S. Cl. 52-698

12 Claims



1. An expansible anchor comprised of a pair of cooperating nested segments severed from continuous extrusions, for mounting within a structural unit having an opening therein with widely spaced substantially parallel walls, said anchor comprising

- a. an outer member of solid symmetrical cross-section relative to the longitudinal axis of the extrusion, having a medial bridging element with laterally yielding arms extending transversely from the outer edges of said bridging element and diverging angularly therefrom in widely spaced planes and terminating in substantially parallel external gripping surfaces,
- b. an inner wedge member having a medial bridge substantially parallel to, and at a substantial displacement from said first-mentioned bridging element, with laterally diverging legs extending outwardly from the outer edges of said bridge in the same angular directions as said arms and in close adjacency to the internal surfaces of the latter remote from said bridging element, and
- c. threaded means extending between said innerwedge member and bridging element to control the relative movement therebetween in a direction perpendicular to said longitudinal axis of the extrusion, thereby to impart transverse movement to said laterally yieldable arms in consequence of the diverging contours of the outer surfaces of the legs of said inner wedge member and corresponding diverging internal surfaces of said yieldable arms to force said external gripping surfaces of the latter into tightly binding engagement with the parallel walls of said opening.

3,900,999

RUBBER COMPOUNDING

John E. Callan, Trenton, N.J., assignor to Cities Service Oil Company, Tulsa, Okla.

Filed Oct. 29, 1971, Ser. No. 193,990

Int. Cl. E04f 13/08; B29b 1/04; B32b 3/14

U.S. Cl. 52-744

17 Claims

1. A two-component polymeric tape which comprises as a first component a polymer selected from the group consisting of polyisobutylenes, ethylene-propylene copolymers, ethylene-vinyl acetate copolymers and blends thereof, said polymer having a rubber vulcanizing agent incorporated therein and being substantially noncrosslinkable by said vulcanizing agent, and as a second component a rubber vulcanizable by said vulcanizing agent contained in said polymer, each of the components being in the form of substantially elongated pieces, the two component pieces being joined together along the lengths thereof, said polymer being fusible with said rubber upon milling said tape.

2. The rubber tape of claim 1 wherein the rubber of said second component is selected from the group consisting of butyl rubbers, EPDM rubbers, polysulfide rubbers, polyurethane rubbers, silicone rubbers, thermoplastic acrylic rubbers, and compatible blends thereof.

10. Method of producing a vulcanizable polymer composition which comprises milling a two-component tape as defined in Claim 1 and thus blending said components thereof.

13. In a process for sealing a structural joint by filling the joint with a rubber sealing tape which vulcanizes in situ upon exposure to the conditions of use, the method which comprises milling the two-component rubber tape defined in claim 1 and thus blending the first and second components of said rubber tape with each other, extruding the resulting blend as a sealant tape, and applying said sealant tape to the structural joint to be sealed.

17. The method of producing a two component tape which comprises:

- a. incorporating a rubber vulcanizing agent into a polymer that is substantially noncrosslinkable by said agent, said polymer being selected from the group consisting of polyisobutylenes, ethylene-propylene copolymers, ethylene-vinyl acetate copolymers, and blends thereof,
- b. forming the mixture of step (a) into an elongated piece, and
- c. joining the elongated piece from step (b) to an elongated piece of vulcanizable rubber curable by said vulcanizing agent, the union of the pieces being along the lengths thereof.

3,901,000

METHOD FOR SEALING BLISTER PACKAGES FOR EASY OPENING

Leo Peters, 750 Plymouth Rd. S.E., Grand Rapids, Mich. 49506

Division of Ser. No. 236,463, March 20, 1972, Pat. No. 3,835,224. This application Mar. 20, 1974, Ser. No. 452,913

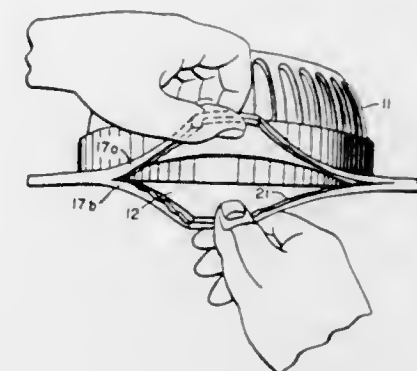
Int. Cl. B65B 5/04, 25/06

U.S. Cl. 53-14

2 Claims

1. A method for packaging items in a blister-type two-part package providing a product enclosure, said two parts including mating, matching, peripherally contiguous, multiple-cornered, straight edge portions extending outwardly from said enclosure, comprising superposing the two parts with an item to be packaged therebetween and aligning said straight edge portions in unsealed relationship whereby a hairline opening is provided between the edge portions, bonding said edge portions together around the entire periphery of the package with an adhesive-coated tearable tape over around and under the edge portions in a continuous manner whereby a skip-seal is provided between the superposed edge portions, cutting off at least one of the corners of said taped edge portions to provide an easy-starting tear point for severing said tape and

separating said edge portions and said parts, said tape-sealed edge portions acting as positive predictable guidelines along



which said tape will shear when said two parts are pulled apart.

3,901,001

METHOD OF PACKAGING HOSIERY ARTICLES

John W. Glaze, Jr., Charlotte, N.C., assignor to Intech Corporation, Charlotte, N.C.

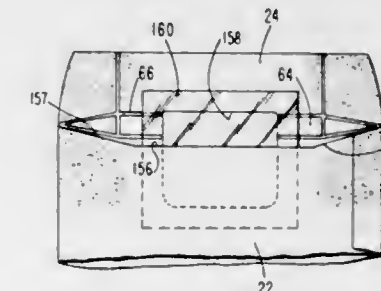
Continuation-in-part of Ser. No. 199,105, Nov. 16, 1971, Pat. No. 3,814,235. This application Sept. 25, 1973, Ser. No.

400,497

Int. Cl. B65B 5/00, 63/04

U.S. Cl. 53-21 FW

8 Claims



1. A method of packaging hosiery articles or the like in a package having a pair of opposed panels and a closure flap attached to one of said panels and foldable over the top edge of the other of said panels and downwardly along the outside of said other panel, comprising the steps of:

- placing said hosiery article almost entirely inside said package except for a final portion of said hosiery article extending beyond said top edge of said other panel,
- folding said final portion of said hosiery article outwardly over said top edge of said other panel and downwardly along the outside of said other panel,
- folding said closure flap downwardly along the outside of said other panel over said final portion of said hosiery article to grip said final portion between said closure flap and said other panel to prevent movement of said final portion, and
- fastening said closure flap to said other panel at least at one point so positioned as to maintain gripping pressure upon said final portion of said hosiery article between the inner surface of said closure flap and the outer surface of said other panel.

3,901,002

FEED ADVANCE DRIVE MECHANISM ESPECIALLY FOR A PACKAGING MACHINE

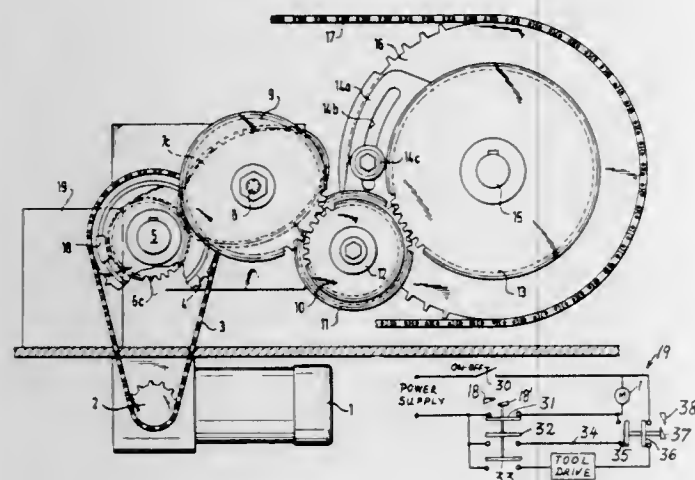
Arthur Vetter, Groenenbach, Germany, assignor to Multivac Sepp Haggenmueller KG, Wolfertschwenden, Germany
Filed Mar. 20, 1974, Ser. No. 452,748

Claims priority, application Germany, Mar. 23, 1973, 2314462

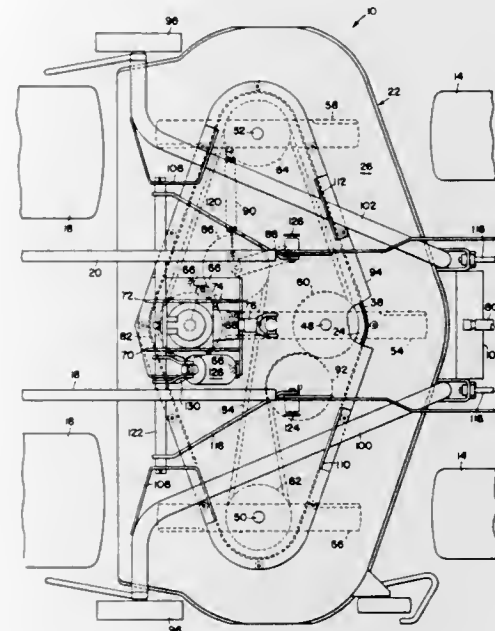
Int. Cl.² B65B 41/12, 41/14

U.S. Cl. 53-389

9 Claims



connected; and said detachable section being interconnected with the remainder of the top solely through fastener means



including noise and vibration dampener means interposed between said detachable section and the remainder of the top.

3,901,004

ROTARY MOWERS

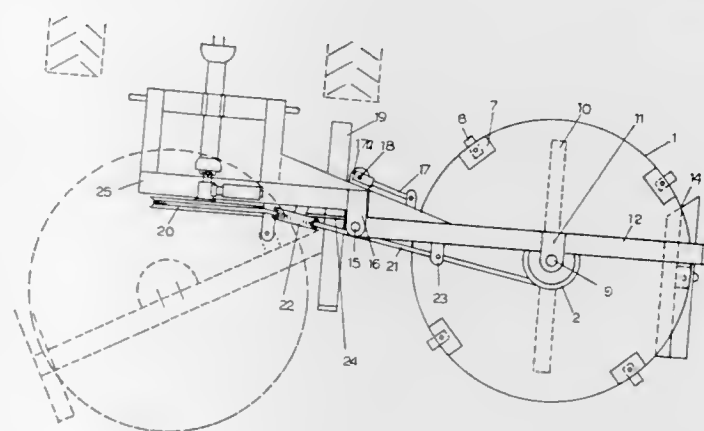
Stephen John Barnes, 35 Haydon St., Palmerston North, New Zealand

Continuation-in-part of Ser. No. 265,698, June 23, 1972, abandoned. This application Nov. 29, 1973, Ser. No. 419,976

Int. Cl.² A01D 35/12

U.S. Cl. 56-17.3

3 Claims



1. In a web feed advance drive mechanism for a packing machine for forming packages from a pair of webs of packing material drawn from respective supply rolls, said packing machine being of the type having working tools for forming and sealing said webs, wherein the feed advance drive includes a drive motor, an output shaft, and means driving said output shaft by said motor; the improvement comprising wheeled drive means coupled to said drive motor and to said output shaft for operating said output shaft with a non-uniform rotational speed, first control means operatively responsive to said wheeled drive means for switching said drive motor off, and further control means responsive to a working tool in said packing machine for re-energizing said drive motor, said first control means for switching said motor off comprising means responsive to said wheeled drive means for switching said motor off at the instant of the greatest rotational speed ratio of said wheeled drive means.

3,901,003

ROTARY MOWER DECK STRUCTURE INCLUDING A SOUND- AND VIBRATION-ISOLATED BLADE HOUSING SECTION

Leon Paul Erdman, Beaverdam, Wis., assignor to Deere & Company, Moline, Ill.

Filed Dec. 10, 1973, Ser. No. 423,058

Int. Cl.² A01D 35/26

U.S. Cl. 56-12.6

6 Claims

1. In a rotary mower of the type including a mower blade housing having a top supporting at least one rotatably mounted blade and drive means for said blade and having lift and draft linkage means connected thereto and adapted to be connected to a mobile vehicle, the improvement comprising: said housing top including a detachable section to which said blade, drive means and lift and draft linkage means are solely

1. An agricultural rotary mower comprising:

- a primary frame,
- mounting means in said primary frame to engage the three point linkage assembly of a tractor,
- a rotor supporting beam supported from and extending to one side of said primary frame,
- a vertically fixed spindle dependent from said rotor supporting beam,
- a ground engaging skid at the end of said fixed spindle,
- a single blade transporting rotor comprising a frusto-conical shell rotatably mounted upon said spindle, an inner strengthening disc towards the base of said frusto-conical shell, a vertical central spindle receiving tube extending between the top of the shell and the disc, and bearing journals in said tube,
- a plurality of cutting blades attached to said rotor to project beyond the periphery thereof,
- a pulley driveably connected to the top of said blade supporting rotor,

- a pulley mounted in the primary frame,
- a belt drive between the pulley in the primary frame and the pulley in the top of the blade transporting rotor, and
- a drive shaft having one end operatively connected to the pulley on the primary frame and the other end engageable upon a power take-off of a tractor.

3,901,005

FRUIT HARVESTER

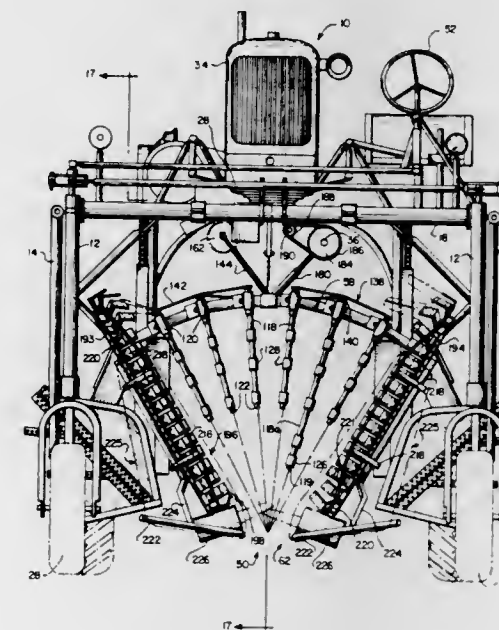
Roger Phillip Rohrbach, Raleigh, N.C., and Miroslav Rajnoch, Prague, Czechoslovakia, assignors to Research Corporation, New York, N.Y.

Division of Ser. No. 191,194, Oct. 21, 1971, Pat. No. 3,793,814. This application Aug. 8, 1973, Ser. No. 386,502

Int. Cl. A01g 19/00

U.S. Cl. 56-330

17 Claims



17. A harvester for harvesting fruit from a plant structure, such as a bush or tree, comprising a mobile frame adapted to move along a row of plant structures, means carried by said frame for generating a vibratory wave pattern over the plant structures to dislodge mature fruit therefrom, means carried by said frame for catching the falling fruit and conveying it up from the plant structures and a storage means carried by the frame and into which the fruit is deposited by the conveying means,

wherein said wave generating means includes flapper means carried by the frame unit and extending in a laterally spaced serial arrangement longitudinally of the frame unit and the tractor, and

wherein said flapper means includes a front vertical series of oscillatory actuation shafts and a rear vertical series of fixed arms carried by the frame unit and longitudinal flexible elements connected between the shafts and the arms with the elements having front ends attached to and excited by the oscillatory movements of the shafts and having rear ends fixedly held by the arms.

3,901,006

VINE COMBING MACHINE

William L. Lewis, S. Cemetery Rd., R.D. No. 4; Mark T. Lewis, R.D. No. 2 Mallick Rd., and Earl C. Clark, all of North East, Pa., assignors to said William L. Lewis and said Mark T. Lewis by said Earl C. Clark

Filed Aug. 13, 1973, Ser. No. 387,684

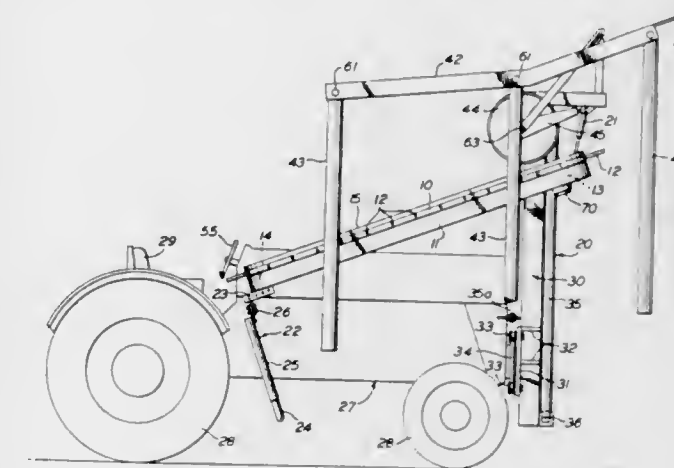
Int. Cl.² A01D 46/00

U.S. Cl. 56-330

22 Claims

1. A machine for combing vines, said machine comprising an endless belt,

belt frame means supporting said endless belt for movement along said vines in a path, fingers supported on said belt and extending outwardly therefrom, said fingers being adapted to penetrate said vines, said belt being supported to move in said path at an acute angle to said vines whereby said fingers entering said vine



have no forward motion but move relative to said vines, giving a combing action to said vines and trellis engaging means on said belt frame means, hydraulic pressure means connected to said trellis engaging means and valve means connected to said hydraulic pressure means and to said belt frame means for connecting fluid under pressure to said hydraulic pressure means whereby the angle of said belt frame means relative to said trellis is controlled.

3,901,007

HAY ROLL FORMING MACHINE

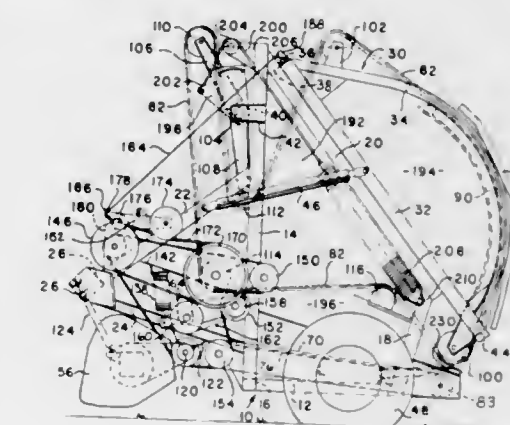
Allison W. Blanshine, Lititz, and Jack W. Crane, New Holland, both of Pa., assignors to Sperry Rand Corporation, New Holland, Pa.

Continuation-in-part of Ser. No. 353,941, April 24, 1973, abandoned. This application June 12, 1974, Ser. No. 478,500

Int. Cl.² A01D 39/00

U.S. Cl. 56-341

18 Claims



1. A machine for forming a roll of crop material, comprising in combination:

- a mobile frame adapted to travel across a field;
- material delivery means supported by said frame;
- endless flexible members supported by said frame and mounted above said delivery means;
- means extending transversely between and interconnecting said endless flexible members;
- said delivery means together with said flexible members and said transverse means interconnecting said members defining a roll forming region extending between opposite sides of said frame;
- means to drive at least a portion of said delivery means in a predetermined direction to deliver crop material from the field to said roll forming region and also drive said

flexible members for movement in a direction opposite to that of said portion of said delivery means; and
g. said transverse means which interconnect said flexible members also extending transversely across said delivery means for engagement with the upper surface portions of said crop material being delivered to said region and in cooperation with said delivery means for applying pressure to said crop material to effect positive rotating movement of said material and form it into a roll.

3,901,008

CROP GATHERING APPARATUS

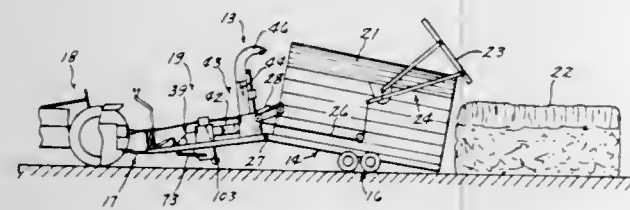
Howard W. Taylor, 1108 Summer St., and Richard C. Pedersen, 1503 Broad St., both of Grinnell, Iowa 50112

Filed Nov. 5, 1973, Ser. No. 412,735

Int. Cl.² A01D 87/10

U.S. Cl. 56—344

14 Claims



1. A crop gathering machine comprising:
frame means;
crop gathering means pivotally mounted on said frame means and adjustable between vertically spaced positions, said gathering means having a rotatable unit extended transversely to the normal direction of travel of the machine and operable to pick up and throw the crop rearwardly thereof relative to the said normal direction, said rotatable unit including a plurality of flails rotatably connected to a shaft of said unit, a housing extending around said rotatable unit and having an opening at the bottom and at the rear thereof;
crop receiving means including a receiving means housing connected in direct communication to the rear opening of said gathering means housing for transferring the gathered crop rearwardly and co-axially of the said normal direction of travel, said crop receiving means consisting of an enclosed chamber substantially free of obstructions to the passage of gathered crops, said enclosed chamber extending substantially horizontally and rearwardly of said gathering means and in line with the center of said gathering means, said enclosed chamber converging in transverse width as it extends rearwardly;
crop blowing means connected in direct communication with said receiving means to the rear thereof, said blowing means including a vertically disposed chamber having an inlet and an outlet and having a fan rotatably mounted therein for rotation about a horizontal axis co-axial of the said normal direction of travel, said chamber of said crop receiving means being in direct communication with the inlet of the crop blowing means chamber.

3,901,009

MACHINE FOR FORMING A COMPACT STACK OF CROP MATERIAL

Lee D. Butler, Kingsburg; Edward J. Wynn, and David L. Darnall, both of Fresno, all of Calif., assignors to Sperry Rand Corporation, New Holland, Pa.

Filed Apr. 5, 1974, Ser. No. 458,265

Int. Cl.² A01D 87/12

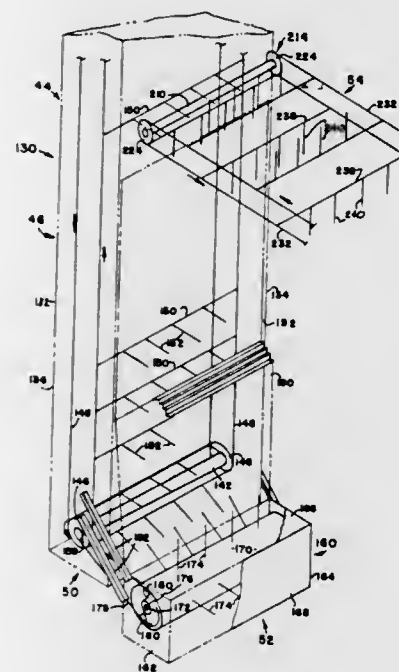
U.S. Cl. 56—344

7 Claims

1. In a machine for forming a stack of crop material, such as a compact stack of hay or the like, the combination comprising:
a mobile chassis adapted to move across a field;

means mounted upon said chassis for forming crop material into a stack, such as a compact stack of said crop material;

means mounted upon said chassis adjacent said stack forming means for conveying said crop material to a location above said stack forming means for discharge to said stack forming means of said location, said conveying means having a lower end located adjacent the field and one side facing toward the direction of movement of said chassis across the field; and



pickup means mounted to said lower end of said conveying means so as to suspend adjacent an opposite side thereof from said one side at a position adjacent the field for lifting and moving said crop material directly upwardly from the field to said lower end of said conveying means, said conveying means at its lower end lifting said crop material from said pickup means and continuing the upward movement of said crop material to above said stack forming means and therefrom to said discharge location also above said stack forming means.

3,901,010
SELF-CLEANING RAKE

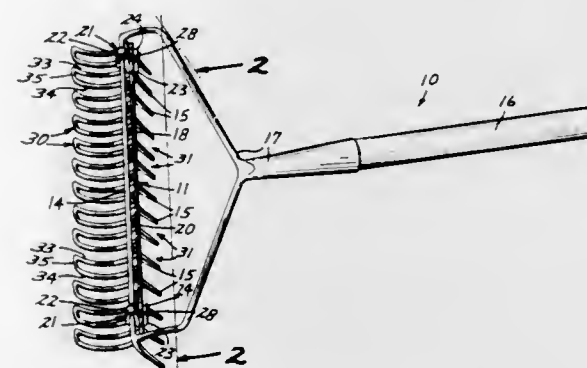
Toivo W. Pajunen, Laurentian Hgts., Star Rt., Virginia, Minn. 55792

Filed Feb. 8, 1974, Ser. No. 440,783

Int. Cl.² A01D 7/10

U.S. Cl. 56—400.08

4 Claims



1. A cleaning attachment for hand rakes of the type including a rigid header bar having a plurality of downwardly depending generally rigid teeth spaced longitudinally thereof, a handle which extends generally perpendicular from a rearward side of the header bar and teeth and a bracket attaching

the handle to the header bar, said cleaning attachment comprising:

- a. an elongated shaft;
- b. bracket means for rotatably mounting said elongated shaft in close proximity to the header bar so as to have an axis of rotation disposed to extend generally parallel to the header bar along the rearward side of the header bar;
- c. a plurality of spaced cleaning tines, each formed in a generally semicircular shape, mounted on said elongated shaft for free swinging pendulum like movements therewith through spaces between the depending teeth of the header bar;
- d. said tines each comprising a pair of arms depending from said elongated shaft and projecting forwardly between and in close proximity to a pair of the depending teeth, each arm having a free end, and a connecting portion connecting each said pair of arms at their free ends; and
- e. said cleaning tines each being shaped and mounted such that the particular portion of each cleaning tine which is adjacent a depending tooth during a particular increment of the range of swinging movement of said cleaning tine between the depending teeth is substantially perpendicular to the depending teeth over the entire range of swinging movements between the teeth.

3,901,011

FALSE TWISTING APPARATUS

Friedrich Schuster, Hammelburg, Germany, assignor to Kugelfischer Georg Schafer & Co., Schweinfurt, Germany

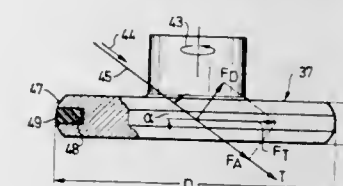
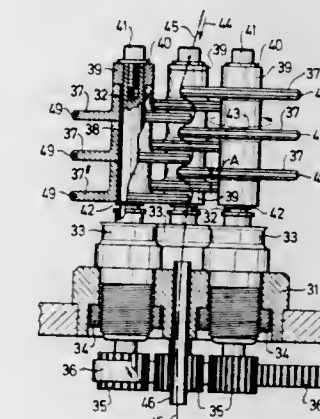
Filed Feb. 11, 1974, Ser. No. 441,209

Claims priority, application Germany, Feb. 12, 1973, 2306853; Nov. 30, 1973, 2359788; Jan. 4, 1974, 2400239

Int. Cl.² D01H 7/92; D02G 1/00

U.S. Cl. 57—77.4

20 Claims



1. A rotary twisting member for imparting a twisting force to threads in contact with the twisting member when it rotates, comprising:

flange means extending in the plane of rotation of said twisting member;
an annular thread contacting surface having a plurality of annular segments peripherally disposed on said flange means including:
an annular segment formed from material having a relatively high coefficient of friction, adapted to impart twisting forces to thread in contact with said segment;
an annular segment formed from material having a relatively low coefficient of friction adapted for guiding a thread in contact with said segment.

3,901,012
METHOD OF AND DEVICE FOR PROCESSING FIBROUS MATERIAL

Vaclav Safar, Liberec, Czechoslovakia, assignor to ELITEX, Zavody textilního strojírenství, generalni reditelství, Liberec, Czechoslovakia

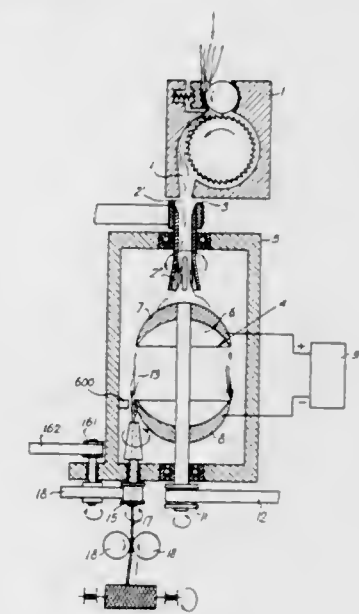
Filed June 5, 1974, Ser. No. 476,471

Claims priority, application Czechoslovakia, June 7, 1973, 4100-73

Int. Cl. D01h 1/12

U.S. Cl. 57—58.89

23 Claims



15. Apparatus for processing fibers to yarn by cooperation of an electric field comprising means for opening the fibers, means for retaining and parallelizing the opened fibers on a doubling means by the action of an electrostatic field, and means for continuously withdrawing the parallelized fibers from the doubling means, means for rotating the free end of a yarn, said last named means including a twisting means acting upon the yarn to be formed beyond the zone at which the parallelized fibers from the doubling means are connected to the rotating end of yarn.

3,901,013

DEVICE FOR NON-RING SPINNING OF FIBERS

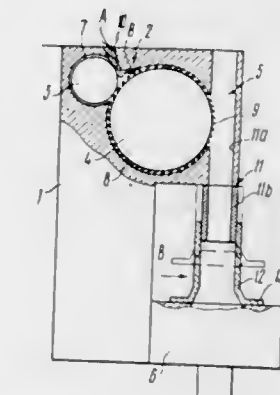
Alexandr Alexeevich Sharychenkov, Ternovka, ulitsa Experimentalnaya 1, kv. 67, Penza, U.S.S.R.

Filed June 4, 1974, Ser. No. 476,226

Int. Cl. D01h 1/12

U.S. Cl. 57—58.95

2 Claims



1. A device for non-ring spinning of fibers, comprising: a housing; a feeder built into said housing and designed to feed fibrous materials and separate same into individual fibers; a twisting mechanism fixed in said housing beneath said feeder; a channel for transporting said separated fibers to said twisting mechanism and connecting said feeder with said twisting mechanism; said channel being defined by two telescopically related cylinders, one of said cylinders being an inner cylinder

rigidly coupled with the housing, the other cylinder being an outer cylinder having one end thereof adjoining said twisting mechanism, the other end of said outer cylinder freely enveloping the inner cylinder, and the outer cylinder being adapted to displace along the inner cylinder, in case of a thread breakage or for rethreading, thereby providing a free space which affords access into said twisting mechanism.

3,901,014

METHOD FOR CRIMPING CELLULOSIC FIBERS AND CRIMPED CELLULOSIC FIBERS OBTAINED THEREBY
Takashi Hiroi; Michio Ichikawa, both of Osaka, and Megumu Fukutani, Hirakata, all of Japan, assignors to Kanebo, Ltd., Tokyo, Japan

Filed July 17, 1973, Ser. No. 380,028

Claims priority, application Japan, July 19, 1972, 47-72963; May 4, 1973, 48-50014

Int. Cl. D02g 3/40

U.S. Cl. 57—153

6 Claims

1. A method for manufacturing crimped yarns consisting substantially of cellulosic fibers and having durable crimps and excellent crimp-recovery characteristics in wet and dry states which comprises, in the listed order, the steps of:

- imparting distortion to the yarn by knitting,
- subjecting the knitted yarn to a resin finishing treatment for imparting wet crease resistance in a wet state with a compound selected from the group consisting of monomethylol aminostyrene and monomethylol acrylamide in a concentration of about 0.5 to 25% by weight together with a catalyst in an amount of about 20 to 50% by weight based on the weight of the resin,
- drying the resin-treated yarn at a temperature of from 50° to 100°C,
- heat-treating the dried yarn at a temperature of from 130° to 150° for 1 to 15 minutes,
- subjecting the yarn to a caustic alkali treatment with an aqueous solution of an alkali hydroxide in a concentration of 200 to 350 g/liter at a temperature of not higher than 50°C,
- washing the yarn with water to remove the alkali hydroxide adhered to the yarn,
- drying the yarn, and
- deknitting.

3,901,015

METHOD FOR CUTTING CONTINUOUS YARNS

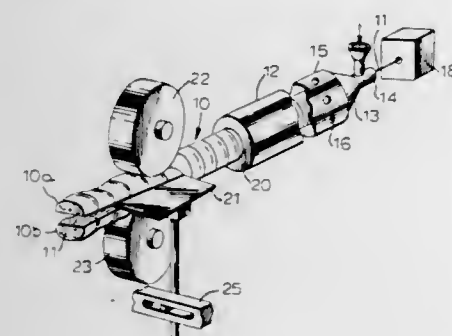
Silvio Sangalli, Caluire, and Roger Vidal, Champagne, both of France, assignors to Rhone-Poulenc-Textile, Paris, France
Filed Jan. 28, 1974, Ser. No. 436,911

Claims priority, application France, Feb. 8, 1973, 73.05069

Int. Cl. D01g 1/04, 1/10

U.S. Cl. 57—157 R

14 Claims



1. A method of cutting continuous multifilament yarns comprising the steps of:

- compacting at least one strand of multifilament yarn into a flexible piling in which the strand is curled in a random fashion, and
- cutting the strand after the strand has been compacted into the piling to form a plurality of separate strands of different lengths for use in further processing.

3,901,016

METHOD OF MAKING ELECTRIC CONDUCTOR

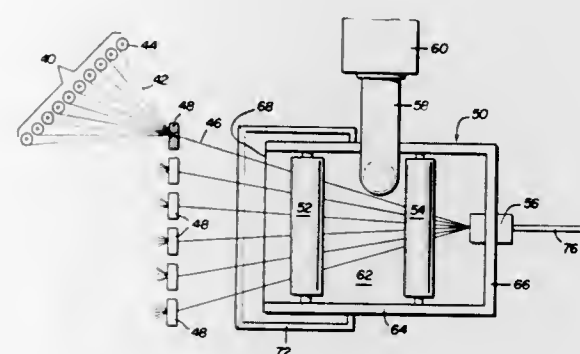
Raymond E. Hurley, Heath, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed June 17, 1974, Ser. No. 480,196

Int. Cl. D02g 3/02, 3/18

U.S. Cl. 57—162

5 Claims



1. In a method of making a conductive roving having a plurality of conductive glass filaments, including curing a liquid dispersion of conductive particles on a bundle of glass filaments, under tension and flattening the bundle into a ribbon, the improvement comprising drawing the flattened ribbon through a rotating non-circular orifice, said orifice having at least one dimension less than the width of the ribbon, applying a false twist to the ribbon and making the ribbon generally cylindrical.

3,901,017

CALENDAR ARRANGEMENT FOR A TIMEPIECE

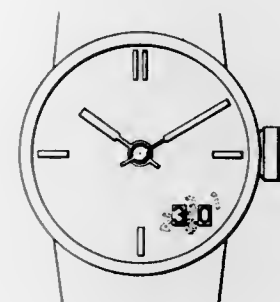
Bruno Erni, Bienne, and Pierre-Andre Beguin, Nods, both of Switzerland, assignors to Societe Suisse Pour l'Industrie Horlogere Management Services S.A., Bienne, Switzerland
Filed Sept. 12, 1974, Ser. No. 505,379

Claims priority, application United Kingdom, Sept. 24, 1973, 44582/73

Int. Cl. G04b 19/24, 19/06

U.S. Cl. 58—5

8 Claims



1. Calendar arrangement in a timepiece comprising, in combination, a single calendar disc having digits arranged around its periphery and a viewing window arranged to mask all digits other than those corresponding to a given date, characterized in that the digits are interlaced and the viewing window is formed from two separated portions, such portions being located in a position away from a principal diametral axis of the timepiece.

3,901,018

TIMEPIECE

Raoul-Henri Erard, La Chaux-de-Fonds, Switzerland, assignor to Ebauches S.A., Neuchatel, Switzerland

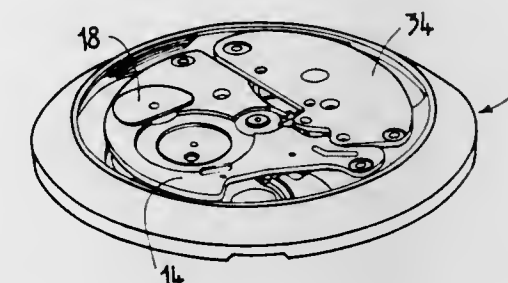
Filed May 8, 1974, Ser. No. 467,881

Claims priority, application Switzerland, May 10, 1973, 6783/73

Int. Cl. G04b 33/00, 37/00

U.S. Cl. 58—59

2 Claims U.S. Cl. 58—74



1. A timepiece including in combination a casing forming a part of the movement frame with the casing bottom forming the main part of the movement frame, the casing bottom including a relief formed therein and adapted to the relief of the elements of the movement, said frame including first and second aligned bearing surfaces extending in a plane parallel to the plane of said casing bottom at a predetermined distance therefrom, a bridge secured to and extending between said first and second bearing surfaces, said bridge carrying at least a part of the gearing of the movement with said casing bottom supporting said gearing movement, said bridge maintaining the gearing in position between said casing bottom and said bridge, a removable self-contained regulating module including a base plate, said base plate extending between and secured to said bearing surfaces with the remaining module portions extending into said relief, said bridge base plate of said regulating module and casing forming a rigid movement frame when assembled.

3,901,019

WATCH MOVEMENT

Hans Kocher, Buren A; Werner Haenzi, Safnern; Erwin Muff, Biel, and Claude-Andre Gygaz, Evilard, all of Switzerland, assignors to Societe Suisse pour l'Industrie Horlogere Management Services S.A., Bienne, Switzerland

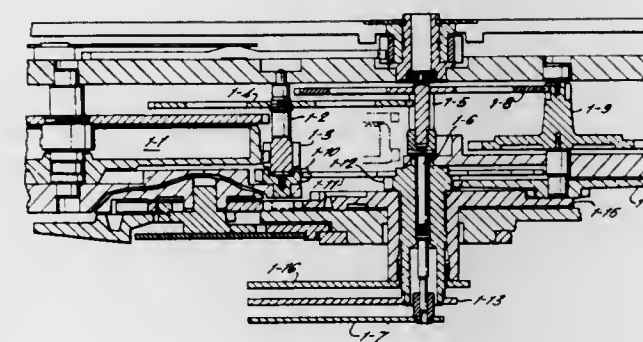
Filed June 28, 1974, Ser. No. 484,260

Claims priority, application United Kingdom, July 12, 1973, 33297/73

Int. Cl. G04b 33/00, 5/02

U.S. Cl. 58—59

5 Claims



1. A watch movement comprising a barrel holding a main-spring, a third wheel and a center seconds wheel, wherein the barrel directly drives the third wheel which in turn directly drives the center seconds wheel thereby eliminating the use of a center wheel.

3,901,020

CHRONOGRAPH WATCH

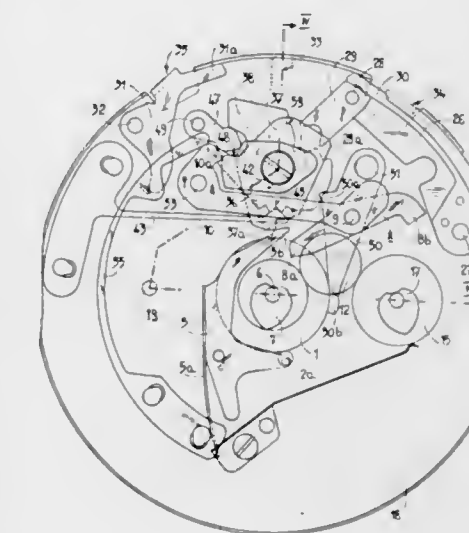
Edmond Capt, Le Sentier, and Donald Rochat, Les Bioux, both of Switzerland, assignors to Valjoux S.A., Vaud, Switzerland

Filed Apr. 4, 1974, Ser. No. 457,988

Claims priority, application Switzerland, Apr. 6, 1973, 5002/73

Int. Cl. G04F 7/04

4 Claims



1. A chronograph watch including a frame, at least one permanently frictionally driven counter, a control mechanism to control the counter, a brake operable on the counter to stop or release the same, and a hammer operable on the counter to set the same to zero, said watch comprising, a hammer-lever in said mechanism, a second lever rotatable about an axis in said mechanism to effect the starting or stopping operation of said mechanism and a third lever rotatable about an axis in said mechanism to effect the resetting to zero operation of said mechanism, one of said second or third levers being operable to effect oscillating movement of said hammer-lever, and a movable member carrying the axis of rotation of the hammer-lever, whereby oscillating movement of said hammer-lever around its axis controls a portion of the operation of said counter and movement of said movable member controls another portion of the operation of said counter.

3,901,021

AUTOMATIC WINDING WATCH

Hidetaka Tutiya, Akishima, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

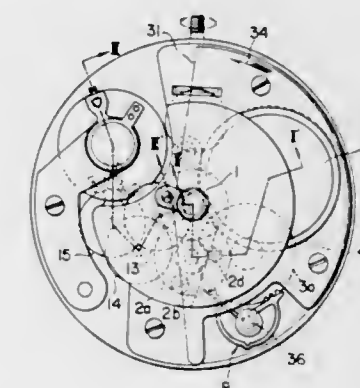
Filed June 20, 1974, Ser. No. 481,544

Claims priority, application Japan, June 25, 1973, 48-75370; July 9, 1973, 48-77313

Int. Cl. G04b 5/02

U.S. Cl. 58—82 A

3 Claims



1. In an automatic winding mechanical watch movement, wherein an automatic winding eccentric weight is pivotally mounted at the center of said movement and pivotal movement of said weight is transmitted therethrough, under reduction, through a weight pinion rigidly connected with said

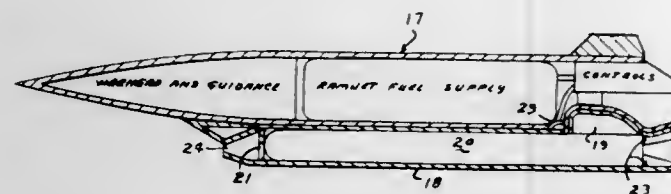
3,901,028

RAMJET WITH INTEGRATED ROCKET BOOST MOTOR
John L. Leingang, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation-in-part of Ser. No. 288,816, Sept. 13, 1972, abandoned. This application May 21, 1974, Ser. No. 471,930
Int. Cl. F02k 7/10, 9/04

U.S. Cl. 60-225

3 Claims



1. A combination rocket-ramjet booster, comprising: a missile housing inclosing a payload; at least one dump type ramjet combustor attached to the aft end of said missile housing and having a portion extending into the aft portion of the missile body to form a sudden expansion region; an elongated inlet diffuser duct attached to and extending forward of said combustor over one half the length of the missile housing for supplying ram air to said combustor; means, within said housing for supplying ramjet fuel to said combustor; means for igniting said ramjet fuel in said combustor; a rocket boost motor positioned within said combustor and the inlet diffuser duct; break away means responsive to ram air, in the diffuser inlet, for converting the inlet diffuser duct for ramjet operation after rocket motor burnout.

3,901,029

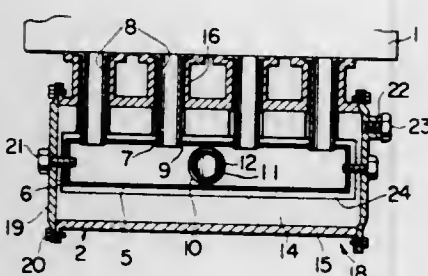
MANIFOLD REACTOR

Katsumi Kondo, Fumiyoshi Noda, and Yuji Watanabe, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Dec. 19, 1973, Ser. No. 426,123
Claims priority, application Japan, Feb. 13, 1973, 48-17076
Int. Cl. F01N 3/00; B29C 1/08

U.S. Cl. 60-282

1 Claim



1. Method of manufacturing the apparatus for purifying exhaust gases from an internal combustion engine comprising covering to a pre-determined thickness the exterior of a combustion cylinder as well as its inlet conduits and its outlet conduit with an easily combustible material, disposing an outer casing coaxially to and at a pre-determined spacing from said combustion cylinder, pouring heat-insulating material in the form of sludge into the space between said casing and cylinder, and burning away and removing said easily combustible materials remaining between said heat-insulating material and said combustion cylinder after said heat-insulating material has been hardened.

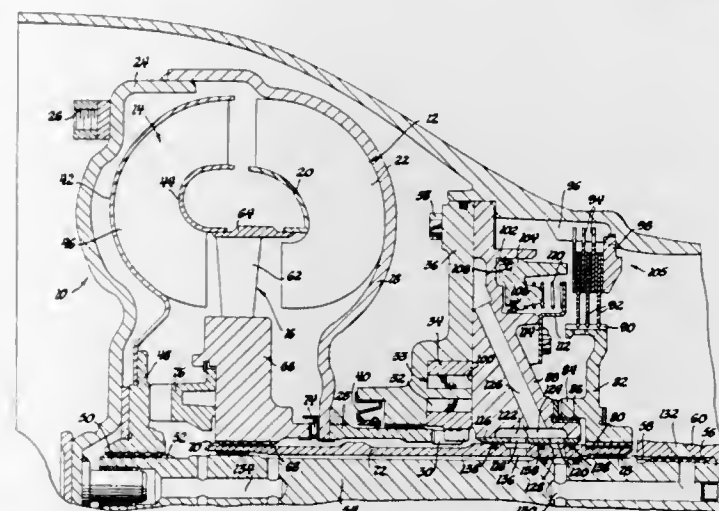
3,901,030

TORQUE CONVERTER WITH A CONTROLLED STATOR FOR LIMITING THE TORQUE RATIO
Quinby E. Wonn, Plymouth, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed June 5, 1974, Ser. No. 476,692
Int. Cl. F16D 33/00

U.S. Cl. 60-341

4 Claims



1. A torque converter comprising; an engine driven impeller; a turbine in fluid drive relation with said impeller; turbine shaft means drivingly connected to said turbine for delivering torque from said converter; stator means disposed in the fluid path between said turbine and said impeller for redirecting the fluid from said turbine to said impeller and brake means operatively connected with said stator for controlling the rotary speed of said stator, to permit rotation thereof in the direction opposite to said impeller at a controlled rate for limiting the torque delivery of said turbine and for controlling the torque absorption capacity of said torque converter when said turbine is driving said impeller.

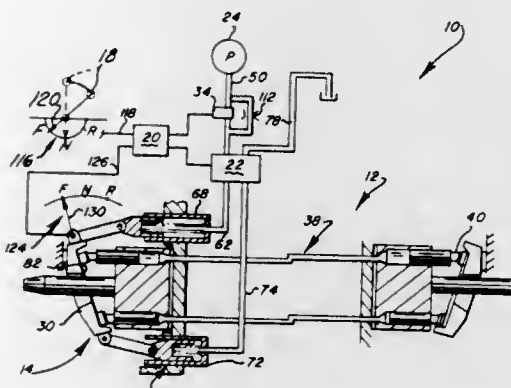
3,901,031

HYDROSTATIC TRANSMISSION CONTROL SYSTEM
Kenneth K. Knapp, and Charles R. Cornell, both of Battle Creek, Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Feb. 28, 1974, Ser. No. 446,658
Int. Cl. F16H 39/46

U.S. Cl. 60-395

19 Claims



1. An apparatus comprising a hydrostatic transmission, said hydrostatic transmission including a pump unit connected in fluid communication with a motor unit, first actuator means for varying the displacement of one of said units, first means for providing a first electrical signal indicative of the displacement of said one unit, second means for providing a second electrical signal indicative of a selected displacement of said one unit, means for providing a first electrical output signal which indicates whether the displacement of said one unit differs from the selected displacement and whether the magnitude of this difference is more than a predetermined amount.

control means for effecting operation of said first actuator means at a high rate when said first electrical output signal indicates that the displacement of said one unit differs from the selected displacement by at least said predetermined amount and for effecting operation of said first actuator means at a low rate which is slower than said high rate when said first electrical output signal indicates that the displacement of said one unit differs from the selected displacement by an amount which is less than said predetermined amount, second actuator means for varying the displacement of the other of said units, third means for providing a third electrical signal indicative of the displacement of said other unit, said second means including means for providing an electrical signal indicative of a selected displacement of said other unit, and means connected with said second and third means for providing a second electrical output signal which indicates whether the displacement of said other unit differs from the selected displacement and whether the magnitude of this difference is more or less than a second predetermined amount, said control means including means for effecting operation of said second actuator means at a high rate when said second electrical output signal indicates that the displacement of said other unit differs from the selected displacement by at least said second predetermined amount and for effecting operation of said second actuator means at a low rate which is slower than said high rate of operation of said second actuator means when said second electrical output signal indicates that the displacement of said other unit differs from the selected displacement by an amount which is less than said second predetermined amount.

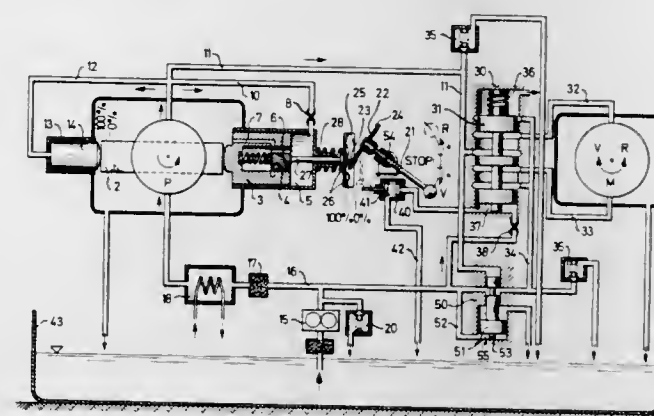
3,901,032

REVERSIBLE HYDROSTATIC TRANSMISSION
Anton Steiger, Illnau, and Peter Rutz, Winterthur, both of Switzerland, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

Filed May 1, 1974, Ser. No. 465,743
Claims priority, application Switzerland, May 17, 1973, 7032/73

Int. Cl. F16H 39/46; F15B 15/18
U.S. Cl. 60-460

7 Claims



1. A reversible hydrostatic transmission comprising a uni-directional pump having a variable delivery rate and a delivery line; a feeder pump for supplying a flow of hydrostatic medium to said uni-directional pump; a hydrostatic motor connected to said delivery line, said motor having connections for selectively driving said motor in one of two opposite directions; a discharge line connected to one of said connections of said motor to discharge a flow of medium therefrom; and a restrictor means in said discharge line for preventing the pressure of the medium in said delivery line from falling below a preset limiting value, said restrictor means including a valve having a spool therein, said spool having one end face in communication with the flow of medium from said feeder pump and a second end face in communication with the flow of medium in said delivery line to

maintain a preset pressure ratio between said flows; and a reversing means in said delivery line for reversing said connections to reverse said motor.

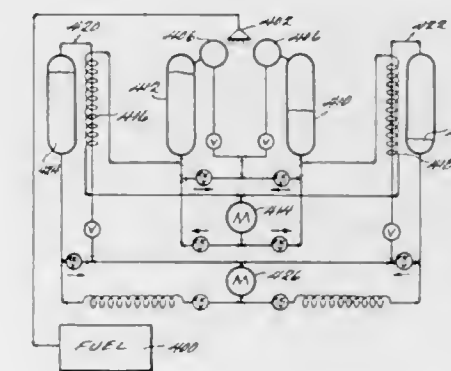
3,901,033

VAPOR PRESSURIZED HYDROSTATIC DRIVE
Roy E. McAlister, 5285 N. Red Rock Dr., Phoenix, Ariz. 85108
Division of Ser. No. 229,764, Feb. 28, 1972, Pat. No. 3,830,065, which is a division of Ser. No. 58,934, July 28, 1970, Pat. No. 3,648,458. This application July 9, 1974, Ser. No. 486,909

Int. Cl. F01k 23/02

U.S. Cl. 60-516

1 Claim



1. An energy conversion system comprising: first means for containing a first working fluid, second means for containing said first working fluid, first motor means operatively communicating with said first working fluid in said first and second containing means for receiving said first working fluid so that said first working fluid flows into and out of at least a portion of said first motor means so as to generate a mechanical motion, first means for transmitting said first working fluid from said first containing means to said first motor means, second means for transmitting said first working fluid from said second containing means to said first motor means, third means for transmitting said first working fluid from said motor means to said first containing means, fourth means for transmitting said first working fluid from said motor means to said second containing means, means for alternately supplying a given fluid in a vapor phase to said first containing means at a pressure such that said working fluid is forced from said first containing means, through said first transmitting means, into and out of said portion of said motor means through said third transmitting means and into said second containing means and to said second containing means at a pressure such that said first working fluid is forced from second means, through said second transmitting means, into and out of said portion of said motor means, through said fourth transmitting means and into said first means, third means for containing a second working fluid different from the working fluid in said first and second containing means, fourth means for containing said second working fluid, means for receiving said given fluid in a liquid phase and for heating said given fluid in said liquid phase to convert it to said given fluid in said vapor phase, second motor means operatively communicating with said second working fluid in said third and fourth containing means for receiving said second working fluid so that said second working fluid flows into and out of at least a portion of said second motor means so as to generate a mechanical motion, fifth means for transmitting said second working fluid from said third containing means to said second motor means, sixth means for transmitting said second working fluid from said fourth containing means to said second motor means,

seventh means for transmitting said second working fluid from said second motor means to said third containing means,
 eighth means for transmitting said second working fluid from said second motor means to said fourth containing means,
 first heat exchanger means associated with said first and said seventh transmitting means for transmitting heat from the fluid in said first transmitting means to the fluid in said seventh transmitting means, and
 second heat exchanger means associated with said second and eighth transmitting means for transmitting heat from fluid in said second transmitting means to the fluid in said eighth transmitting means.

3,901,034

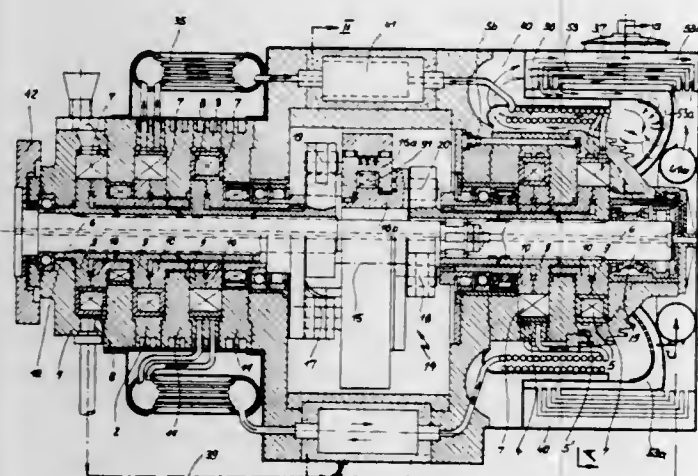
ROTARY PISTON ENGINE

Friedrich Munzinger, 46 Hohenrandstrasse, 7000 Stuttgart 80, Germany
 Continuation-in-part of Ser. No. 173,073, Aug. 19, 1971, abandoned. This application Dec. 6, 1973, Ser. No. 422,593
 Claims priority, application Germany, Aug. 20, 1970, 2041289

Int. Cl. F03g 7/06; F02g 1/04; F01c 1/00

U.S. Cl. 60-519

25 Claims



1. A rotary piston engine having a plurality of sets of annular members forming cylinders and annular segment pistons moving on the insides of said cylinders, the said segment pistons having first and second disc type hubs bearing against one another and constituting with their circumferential surfaces the inner walls of the corresponding cylinders, a central hollow shaft and a core shaft extending coaxially through the said central hollow shaft, the first of said hubs being connected with said central hollow shaft and the second of said hubs being connected with said core shaft, a common shaft, a transmission connecting said central hollow and core shafts to said common shaft, said common shaft being eccentrically mounted with respect to said axis of the central hollow and core shafts, the said engine having sets of annular cylinders with segment pistons cooperating therewithin, there being at least one set on each side of the transmission, the sets on one side of the transmission forming an expansion part while the set on the other side of the transmission forms a compression part, a cooler, a regenerator and a heater, means connecting said cooler, said regenerator and said heater between the two parts to form a closed circuit therebetween, said transmission comprising double-crank connectors connecting said common shaft to said central hollow and core shafts, respectively, in such relation that the pistons and cylinders of the sets on opposite sides of the transmission are out of phase with each other.

3,901,035 HYDRAULIC PRESSURE GENERATING APPARATUS FOR USE IN AN EMERGENCY

Tetsuo Haraikawa, Funabashi, Japan, assignor to Tokico Ltd., Kawasaki, Japan

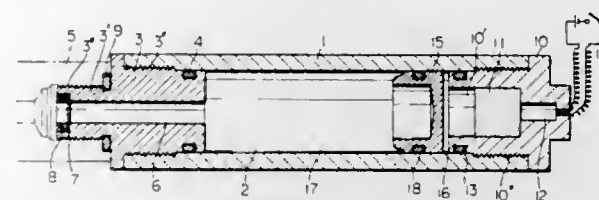
Filed Oct. 15, 1973, Ser. No. 406,613

Claims priority, application Japan, Oct. 20, 1972, 47-104992; Oct. 20, 1972, 47-104994

Int. Cl. F01b 19/00, 29/08

U.S. Cl. 60-636

4 Claims



1. A hydraulic pressure generating apparatus for use in an emergency comprising:
 a hollow cylindrical body;
 a first plug secured to one end of the body and closing said one end;
 an end fitting extending outwardly from the first plug for releasably coupling the end fitting with an external piping;
 a cup shaped second plug sealingly and detachably connected to the other end of said body and closing said other end of said body;
 a self-combustible material disposed in the second plug; ignition means in said second plug for firing the self-combustible material from outside of the cylinder;
 a piston freely slidably and sealingly fitted in the body between said plugs for defining a fluid chamber between the piston and the first plug and a gas chamber between the piston and the second plug and normally disposed adjacent to the second plug and being unconnected therewith, a portion of the piston having strength less than the remaining portion thereof, the strength being sufficient for preventing the breakage of the body until abnormally high pressure is created in the gas chamber, whereby when said self-combustible material is fired said free piston is moved toward the first plug by gas pressure created by expansion of the self-combustible material and fluid contained in the fluid chamber is compressed and flows into the external piping.

3,901,036 TWO FLUID SOLAR BOILER

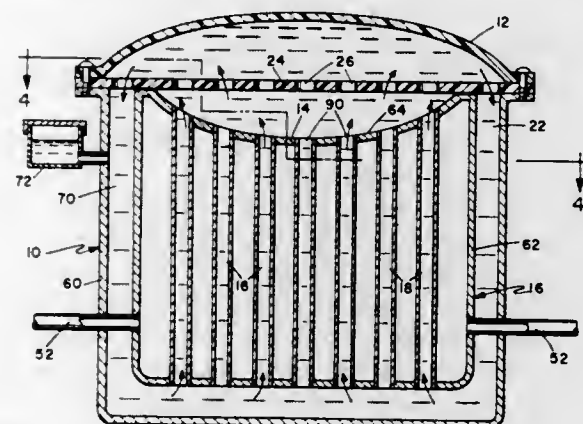
William A. Martin, 804 Via Bella Maria, San Marcos, Calif. 92069

Filed Nov. 16, 1973, Ser. No. 416,417

Int. Cl. F03g 7/02

U.S. Cl. 60-641

6 Claims



1. A boiler for producing a source of high pressure fluid from solar energy for use in association with a closed cycle fluid pressure motor, comprising:

a chamber with a primary heat exchange fluid, energy admission means for passing solar energy into said chamber,
 absorber means within said chamber and in combination with said primary heat exchange fluid for converting said solar energy into heat energy,
 heat exchanger means within said chamber for transferring heat from said primary heat exchange fluid to a secondary heat exchange fluid,
 said primary heat exchange fluid comprises substantially solar energy-transparent oil,
 whereby said secondary heat exchange fluid develops sufficient pressure to operate said fluid pressure motor.

3,901,037

DRIVING UNIT FOR DISPLACING THE RETENTION BARRIER OF A WATER-SLOPE SYSTEM FOR INLAND NAVIGATION

Jean Aubert, 8, rue La Boetie, Paris 8eme, Seine, France

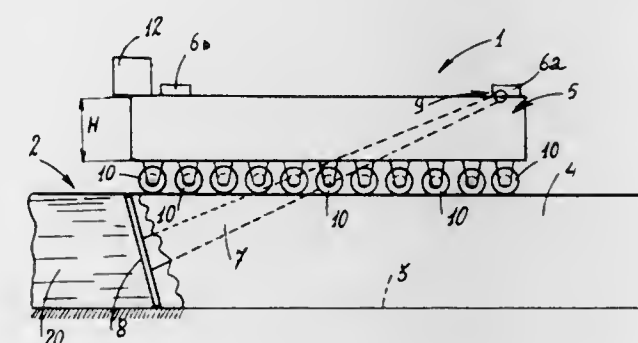
Filed May 17, 1974, Ser. No. 470,729

Claims priority, application France, June 1, 1973, 73.20060

Int. Cl. E02C 3/00; B62D 21/14

U.S. Cl. 61-9

3 Claims



1. In a driving unit for displacing a retention barrier in the channel of a water-slope system for inland navigation and comprising twin vehicles each mounted on carrying wheels and displaceable along the two side walls of the channel, a bridging structure extending across and over the channel and interconnecting said vehicles, and structural pushing means pivotally connected between said retention barrier and said bridging structure for pushing said barrier and allowing its vertical motion relative to the channel; the improvement wherein said bridging structure comprises at least two spaced transverse beams each rigidly attached near one longitudinal end of each vehicle, said structural pushing means comprising a single rigid push-bar extending substantially along the axis of the channel, said push-bar having its forward end rigidly connected with the barrier and its rear end connected for pivotal movement about a single axis with the middle of the rearmost transverse beam of the bridging structure, at least some of the carrying wheels of each vehicle being also driving wheels.

3,901,038

METHOD FOR JOINING SUBMERGED STRUCTURES

Kaare Ritter Olsen, 80 Selkirk Crescent, Hudson, Quebec, Canada

Division of Ser. No. 261,654, June 12, 1972, abandoned. This application June 24, 1974, Ser. No. 482,514

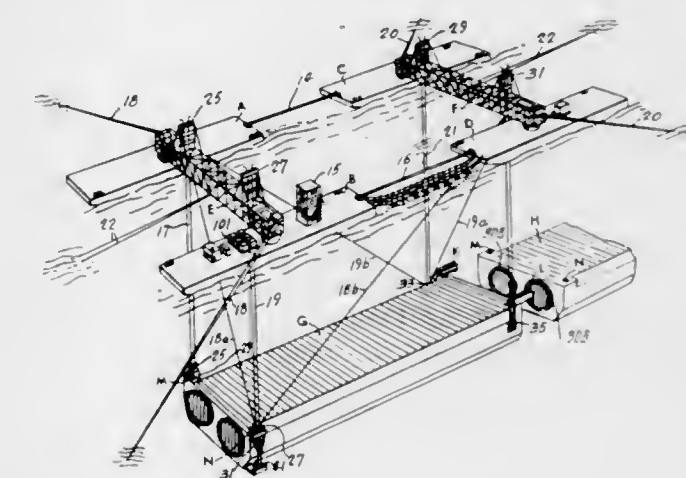
Int. Cl. E02d 25/00; E01g 3/00; F16b 3/00

U.S. Cl. 61-43

4 Claims

1. A method of sinking an element under water and connecting the element to another element which is already placed under water, said elements comprising:
 at least one locating and engaging means projecting from one end of one of said elements;
 at least one mating locating and engaging means mounted on one end of the other of said elements;

the elements being adapted to be coupled at the one end thereof;
 one of said locating and engaging means comprises a pair of inwardly sloping side walls and an inwardly sloping inward wall;
 the other one of said locating and engaging means comprising a trough arrangement having a pair of inwardly sloping side walls and an inwardly sloping outward wall;
 said walls of said one locating and engaging means forming a horn means actable within said trough arrangement to cam the one locating and engaging means into register in said trough means in both lateral and axial directions;
 said mechanism further comprising a horn supporting structure for projectingly supporting said horn means at one end of said second element;
 said horn means extending from said supporting structure in the direction of said trough arrangement;
 and a cavity in the top surface of the other element for mounting said trough arrangement at one end of said first element;



lowering the element to be placed from a floating-sinking complex;
 moving the complex with the elements suspended therefrom so that the element to be placed is brought into proximity with the already placed elements;
 disposing the elements relative to one another such that the horn of the one element extends into the trough of the other element;
 releasing the element to be coupled from support from the complex whereby the camming means is automatically brought into register by the action of gravity upon the element to be coupled;
 subsequently applying pressure between the camming means of the respective elements to draw their ends together; and
 making an opening in the bulkhead of the already placed elements to allow hydraulic pressure to squeeze the elements together.

3,901,039

APERTURED SLEEVE-SHAPED MEMBERS FOR USE IN CARRYING OUT ROOF-BOLTING BY MEANS OF BOLTS FASTENED IN BORE HOLES

Alfred Ingevald Lundkvist, Krokusvagen 12, 29150 Kristianstad, Sweden

Filed Mar. 4, 1974, Ser. No. 448,043

Claims priority, application Sweden, Mar. 9, 1973, 7303376

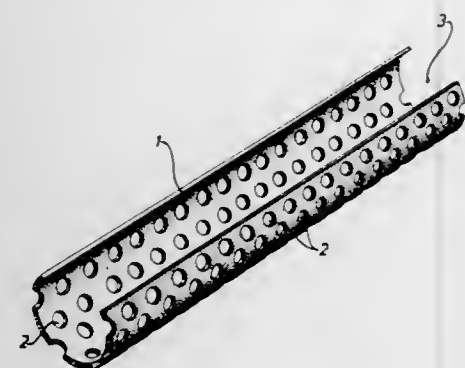
Int. Cl. E21D 20/02

U.S. Cl. 61-45 B

3 Claims

1. In a roof bolt emplaced in a bore-hole, comprising a sleeve-shaped member disposed in the bore-hole and having a plurality of apertures therethrough, a bolt extending lengthwise the interior of said sleeve-shaped member, and a quantity of cement mortar surrounding the bolt and extending through said apertures and filling the space between said sleeve-shaped member and the side walls of the bore-hole; the improvement in which the sleeve-shaped member consists of a relatively

rigid by resilient material, the circumferential surface of said member being interrupted by a longitudinal and relatively wide slit which allows the introduction of the cement mortar into the interior of said member and which under the influence of a radial pressure on said member on both sides of the



said slit allows a variation of the diameter of the member while maintaining a desired, substantially circular cross-section and an adaptation thereof to bore holes of different sizes, and fixing means surrounding the sleeve-shaped member and maintaining said member compressed to a smaller diameter than when said member is uncompressed.

3,901,040

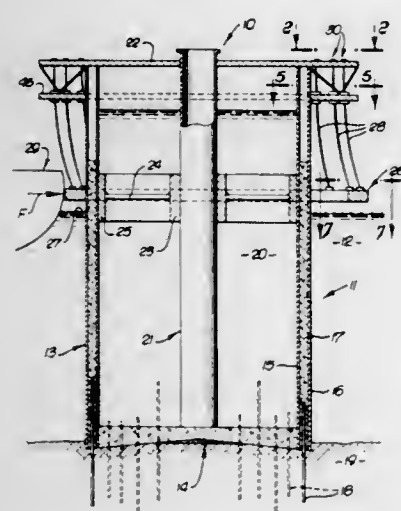
COLLISION BUMPER FOR OFFSHORE STRUCTURES
William A. Sandberg, 325 S. Orange Grove, Pasadena, Calif. 91105

Filed Oct. 7, 1974, Ser. No. 512,440

Int. Cl.² E02B 3/20

U.S. Cl. 61-46

13 Claims



1. In an offshore installation including support structure standing upright in water, the combination comprising
 - a. bumper means extending sidewardly of and about said structure in spaced relation thereto,
 - b. upright flexure beam means suspending said bumper means, said flexure beam means including a series of beam flexures spaced about said structure and tapering downwardly toward the bumper means,
 - c. first support means suspending the upper extents of said beam flexures,
 - d. lateral support means blocking lateral displacement of the beam flexures below the level of the first support means and above the bumper means while allowing bending of the beam flexures both above and below the second support means,
 - e. said first and lateral support means carried by said structure.

3,901,041
METHOD OF GROUTING A PILE IN A HOLE INVOLVING THE OPTIMIZED VIBRATION OF THE GROUTING MATERIAL

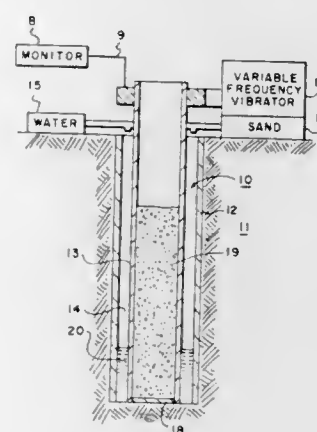
Reece E. Wyant, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 396,934, Sept. 13, 1973, Pat. No. 3,839,874. This application Mar. 28, 1974, Ser. No. 455,691

Int. Cl.² E02D 5/00, 3/02

U.S. Cl. 61-53.52

12 Claims



1. A method of grouting a pile in a hole, comprising:
 - placing a pile of a given diameter in a hole;
 - metering a predetermined amount of water into said hole within the annulus external to said pile;
 - placing sand in said water to form a sand and water mixture within the annulus external to said pile after said water is in place in the bottom of said hole;
 - vibrating said sand and water mixture, said mixture having enough water to remain fluidized during said vibration; and
 - varying the frequency of said vibration to reinforce the amplitude of said vibration.

3,901,042

REINFORCED CONCRETE PILE AND A METHOD OF MANUFACTURING SUCH A PILE

Lorentz Wahman, Goteborg, Sweden, assignor to Roy Asserback, Marbella, Spain

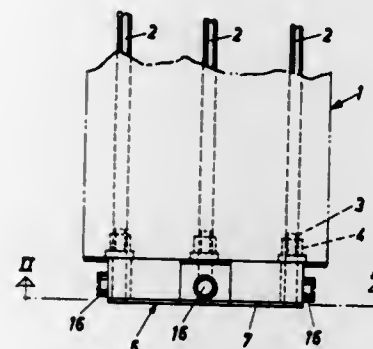
Filed May 21, 1974, Ser. No. 471,899

Claims priority, application Sweden, May 21, 1973, 7370922

Int. Cl. E02d 5/30, 5/34, 5/52

U.S. Cl. 61-56

6 Claims



1. In a reinforced concrete pile having an internal reinforcing structure including axially running bars and a collar at least at one of its ends, to which said axially running are attached, the improvement
 - that the collar is provided with threaded bores corresponding to the number of axial reinforcing bars within the pile, that the reinforcing bars are externally threaded at those ends to be turned towards a collar, and

that an externally threaded connector is fitted in each bore, said connector having an axial, internally threaded bore for the reception of the said externally threaded end of a reinforcing bar, as well as with a fitting for a tool for rotating the connector.

3,901,043

APPARATUS FOR LAYING A PIPELINE ON THE SEA-BOTTOM FROM A FLOATING VESSEL

Antonio Silvestri, San Donato Milanese, and Guglielmo Garagatagli, Milan, both of Italy, assignors to Saipem S.p.A., Milan, Italy

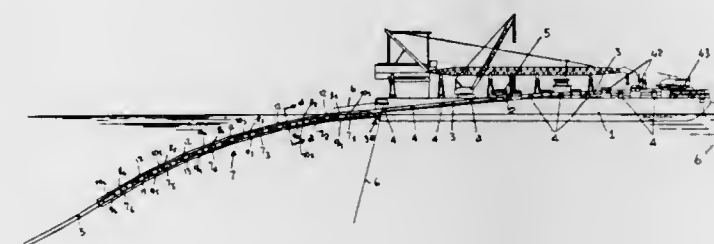
Filed Oct. 31, 1973, Ser. No. 411,417

Claims priority, application Italy, Nov. 21, 1972, 31897/72

Int. Cl.² B63B 35/04; F16L 1/00; B25J 3/00

U.S. Cl. 61-72.3

5 Claims



1. A floating vessel,
 - a track on said vessel for discharging pipeline which slopes down from the bow to the stern of the vessel in an adjustable curvature and which includes a series of interconnected mechanisms having rollers thereon arranged in the form of a "V" for slidably supporting the pipeline,
 - a tensioning mechanism on said discharging track for imparting a tension force to the pipeline,
 - a mechanism on the bow of the vessel for coupling and lifting pipe to be welded to the pipeline on said discharging track, and
 - an articulated, self-settling stinger pivotally connected to the stern of the vessel and said discharging track wherein said stinger includes a plurality of ramp segments each of which has two longitudinal and tubular upper pontoons and two longitudinal and tubular lower pontoons with water-tight compartments, said pontoons being interconnected and displaced at the corners of a square by regularly and longitudinally spaced tubular, vertical frame elements and by correspondingly spaced tubular, horizontal frame elements so that the cross-section of the structure of each ramp segment is in the form of a "U" and wherein
 - said first ramp segment is pivotally joined to said discharge track and includes two slidably supporting pipeline mechanisms thereon which are adjustable as to height and which have sliding rollers with horizontally pivoted axes for receiving the pipeline from said discharging track,
 - said other ramp segments include fixed supporting mechanisms thereon having sliding rollers arranged in the form of a "V,"
 - said ramp segments, including the first said ramp segment, being pivotally connected to each other at the ends of adjacent upper pontoons by hinges secured thereto which allow rotation of said ramp segments in a vertical plane, stop means axially protruding from adjacent lower pontoons of said ramp segments which have active surfaces that are downwardly sloped relative to the vertical plane to limit downward vertical rotation of said ramps, and stop plates between said lower pontoons of said ramp segments having egg shaped holes in the ends thereof, each of which engages a pin fixed to said stop means to prevent upward vertical rotation of said ramps.

3,901,044

PREPARATION OF SOLID CARBON DIOXIDE

Laszlo Vahl, Charlotte de Bourbonstraat 22, Delft, Netherlands

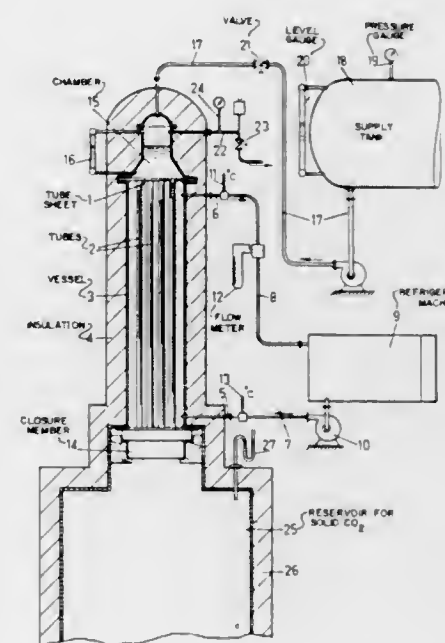
Continuation of Ser. No. 135,060, April 19, 1971, abandoned. This application Apr. 24, 1974, Ser. No. 463,550

Claims priority, application Netherlands, Apr. 17, 1970, 7005727

Int. Cl. F25j 1/00

U.S. Cl. 62-10

8 Claims



1. A process of making solid carbon dioxide which comprises the steps of:
 - a. feeding, so as to partially fill a space with a batch of liquid carbon dioxide at a pressure in substantial excess of the triple point pressure of carbon dioxide;
 - b. sealing off said partially filled space to form a confined space partially filled with liquid carbon dioxide at a pressure between the triple point pressure of carbon dioxide and the feed pressure of step (a); said confined space consisting substantially of a first region in the form of a plurality of vertical elongate tubes; said first region having a sufficient volume to contain the entire said batch of carbon dioxide when said batch of carbon dioxide is solidified; said confined space further consisting of a second region which surmounts said first region; said second region being in the form of a reservoir; said second region having a volume no less than 40% of the volume of said first region;
 - c. cooling said first region alone, by indirect heat exchange with a refrigerant, to maintain said first region at a temperature between the triple point temperature of carbon dioxide and the sublimation temperature of carbon dioxide at atmospheric pressure, so as to produce solid carbon dioxide in said first region;
 - d. reducing the pressure within said confined space substantially to atmospheric pressure, while continuing said cooling step (c), and;
 - e. discharging, solidified carbon dioxide from said first region.

3,901,045

EXPANDABLE RING HAVING SEGMENT WITH SPRING-ENGAGED CROSSED ARMS

Gabriel Ballester, 2346 Ponce de Leon Blvd., Coral Gables, Fla. 33306

Continuation-in-part of Ser. No. 393,317, Aug. 31, 1973, abandoned. This application Mar. 25, 1974, Ser. No. 454,300

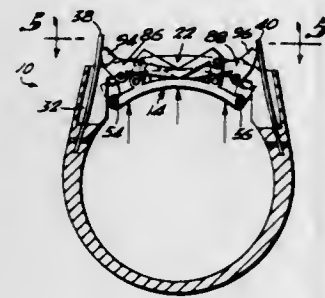
Int. Cl. A44c 9/02

U.S. Cl. 63-15.65

10 Claims

1. An expandable finger ring comprising:

- a. a major, generally U-shaped ring segment having, a bottom portion, and a pair of upwardly extending legs as continuations of the respective opposed sides of said bottom portion and each of said legs having distal end zones in confronting relation,
- b. a minor ring segment between the legs and movable between a normal inwardly retracted position and an expanded position on movement respectively toward and away from said bottom portion and between said legs,
- c. pivotal linkage means pivotally connecting said minor ring segment and said major ring segment,
- d. spring means fixed relative to said side legs and extending into engagement with said pivotal linkage means, and normally urging said minor ring segments in said retracted position, said pivotal linkage being yieldable on



movement of said minor ring segment away from said bottom portion to flex said spring means to store energy therein when said minor ring segment is out of said normal position and moved toward said expanded position, e. said pivotal linkage means comprising a pair of crossed arms, each of said arms having an upper end and a lower end, pivot means connecting each of the lower ends to said minor ring segment adjacent one of said legs and inwardly of the distal end zones of said one of said legs and pivotally connecting the upper ends of the distal end zone of said major ring segment adjacent the respective opposite distal end zones of the other of said legs, each said arm including an upwardly and outwardly extending portion relative to said minor ring segment and each of said arms including a portion in engagement with said spring means.

3,901,046

WEIGHT BALANCING ASSEMBLY

Dionys Hofmann, Darmstadt, Germany, assignor to Gebr. Hofmann KG, Darmstadt, Germany

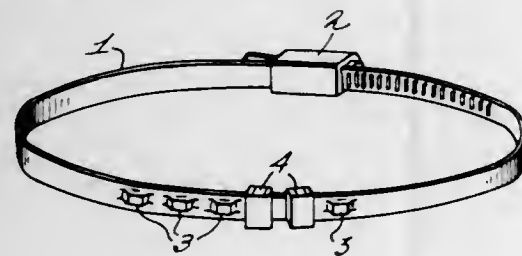
Filed Mar. 12, 1974, Ser. No. 450,376

Claims priority, application Germany, Apr. 17, 1973, 2319486

Int. Cl. F16c 3/00

U.S. Cl. 64-1 V

6 Claims



1. A balancing weight assembly for balancing an elongate rotary body, comprising a clip having a clamping head and recesses on the side of the body for holding balancing weight members, and a set of balancing weight members, one or more of which can in use be fitted on the clip for balancing, the balancing weight members of the set being graduated in weight and the heaviest balancing weight member of the set

substantially corresponding to the weight of the clamping head.

3,901,047

RESILIENT COUPLING

Hubert Pletsch, Birkenau-Ni, and Klaus Kurr, Weinheim, both of Germany, assignors to Carl Freudenberg, Weinheim an der Bergstrasse, Germany

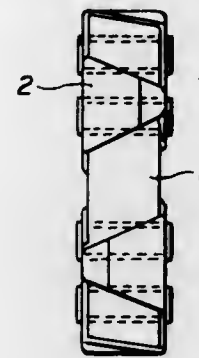
Filed July 6, 1973, Ser. No. 376,992

Claims priority, application Germany, July 13, 1972, 2234437

Int. Cl. F16d 3/17

U.S. Cl. 64-11

11 Claims



1. A coupling for joining a drive shaft to a driven shaft comprising an annular resilient member composed of an elastomeric material and a plurality of rigid tapering connecting elements, said connecting elements being mounted on said annular member, said rigid connecting elements positioned on the periphery of said annular member such that the direction of taper alternates on said periphery of said annular member from one connecting element to another, said connecting element being axially and radially tapered.

3,901,048

UNIVERSAL JOINT YOKE

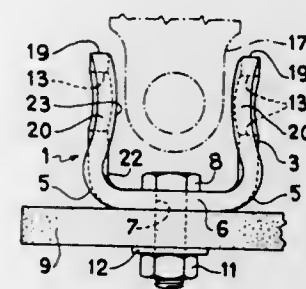
Alfred Pitner, Paris, France, assignor to Nadella S.A., France, a part interest

Filed May 10, 1973, Ser. No. 358,925

Int. Cl. F16d 3/26

U.S. Cl. 64-17 R

7 Claims



1. In a universal joint yoke comprising a bent sheet metal blank comprising two ear portions which have a part defining two bores for mounting bearings for two trunnions of a universal joint cross member, and a base portion interconnecting the two ear portions which extend at an angle to the base portion; the following features: the shape of the bent sheet metal blank is such that the blank before being bent has substantially the general shape of a diamond having a small diagonal and a large diagonal, the two bores being substantially aligned on the large diagonal, said base portion defines at least one aperture on each side of said large diagonal for fixing the yoke to a part of torque-transmitting means and in the region of the bores each ear portion has a concave substantially part cylindrical shaped portion substantially perpendicular to the base portion.

3,901,049

UNIVERSAL JOINT

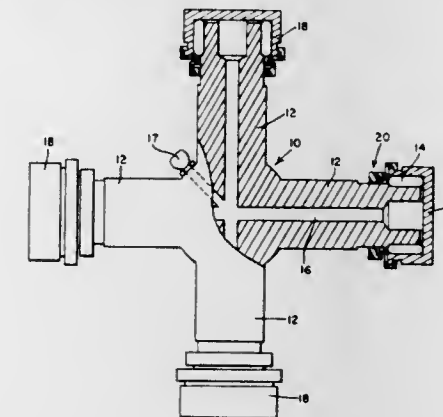
Saul Herscovici, Waterloo, Iowa, assignor to Deere & Company, Moline, Ill.

Filed May 13, 1974, Ser. No. 469,053

Int. Cl. F16d 3/26

U.S. Cl. 64-17 A

6 Claims



1. A universal joint comprising: a journal cross having a plurality of trunnions; bearing means surrounding each of the trunnions; lubrication means associated with the journal cross for conducting lubricant to each of the bearing means; a bearing cup on each of the bearing means; and an annular seal of yieldable elastomeric material for each bearing cup including normally contracted, extendable and contractable annular boot means extending between the bearing cup and the trunnion, annular seal lip means at the outer end of the boot means sealingly engaging the cup, and annular seal lip means at the inner end of the boot means slidingly and sealingly engaging the trunnion; said annular seal being so constructed and arranged that upon lubricant being conducted to the bearing means, the lip means will not yield under lubricant pressure until after complete extension of the boot means, then upon rotation of the universal joint at a predetermined speed, the pressure caused by centrifugal force acting on the seal causes the lip means to yield, the lubricant in the boot means to escape and the boot means to contract.

3,901,050

AUTOMATIC KNITTING MACHINE

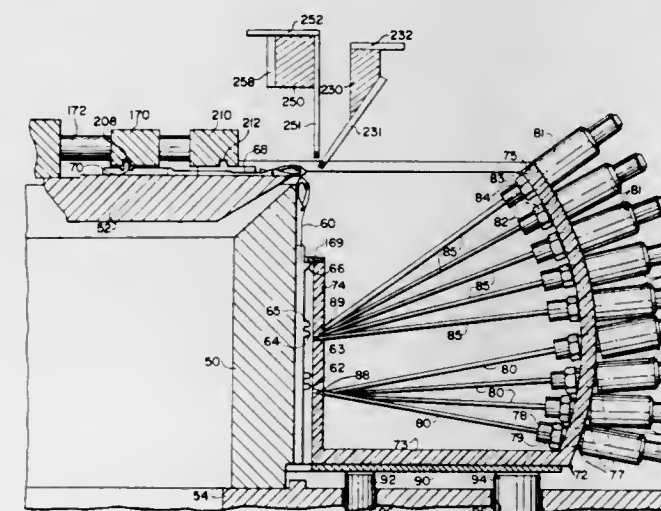
Paul E. Schur, New York, N.Y.; Peter E. Gallotello, Danbury, Conn. and Joseph F. Keuler, Long Island City, N.Y., assignors to Rome Knitting Mills, Inc., New York, N.Y.

Filed Apr. 2, 1973, Ser. No. 347,076

Int. Cl. D04B 25/02, 27/08, 35/20

U.S. Cl. 66-5

34 Claims



27. In a circular knitting machine including a plurality of knitting needles slidably mounted on a cylindrical needle support for movement parallel to the axis of the cylindrical support, actuator means for selectively operating the knitting needles, comprising:

a frame surrounding the cylindrical support; a plurality of actuators mounted on said frame in alignment with corresponding needles on the cylindrical support, each of said actuators being movable from a retracted position to an extended position to engage its corresponding needle;

control means including a plurality of solenoids mounted on said frame for selectively operating said actuators to move said actuators into extended positions and engagement with desired knitting needles to be operated; and means for reciprocating the frame in a direction parallel to the axis of the cylindrical support to slide the needles on the cylindrical support engaged by the actuators in extended positions.

3,901,051

CORD KNITTING DEVICE

Thomas Sydney Fletcher, Ilkeston, England, assignor to Fletcher Brothers (Engineers) Limited, Ilkeston, England

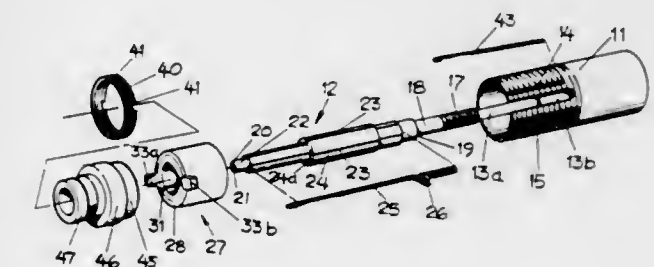
Filed Jan. 17, 1974, Ser. No. 434,059

Claims priority, application United Kingdom, Jan. 27, 1973, 3073/73

Int. Cl. D04B 15/32

U.S. Cl. 66-55

4 Claims



1. A cord knitting device comprising:

a. a shaft having a passage therethrough for delivering knitted cord and defining a plurality of parallel slideways around said shaft for receiving a corresponding plurality of latch needles;

b. hollow cylindrical cam means relatively rotatable with respect to said shaft and serving to reciprocate the needles in the slideways to effect knitting of cord, said cam means including first and second hollow cylindrical members fixedly mounted within a first cylindrical casing to define a slot between said members, said cam means being mounted coaxially around said shaft with portions of said needles riding in said slot, said first casing defining a plurality of radial outward projections;

c. a second hollow cylindrical casing housing said cam means, said second casing also being coaxial around said shaft, having its outer surface threaded at at least one end, and having longitudinal slots in said one end to receive said projections for guided linear movement of said cam means longitudinally parallel to the slideways of said shaft and to said second housing;

d. biasing means urging said cam means toward said one end of said second casing with said projections within said slots in said second casing;

e. an annular collar having threading on its inner surface to cooperate with said threading on the outer surface of said second casing to adjust the position of the cam means within said slots in said second casing.

3,901,052

THREAD DELIVERY DEVICE FOR TEXTILE MACHINES
Kurt Arne Gunnar Jacobsson, Ulricehamn, Sweden, assignor to Aktiebolaget IRO, Ulricehamn, Sweden

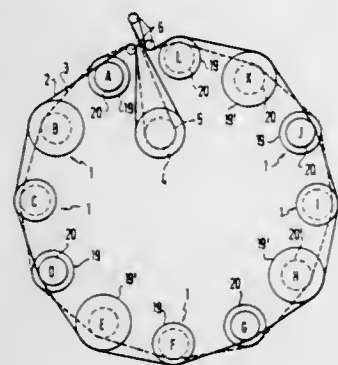
Filed Apr. 22, 1974, Ser. No. 462,628

Claims priority, application Sweden, Apr. 30, 1973, 7306043

Int. Cl.² D04B 15/48

U.S. Cl. 66—125 R

8 Claims



1. A thread delivery device for textile machines, particularly knitting machines, comprising a shaft, a component interconnected to said shaft so as to be rotated thereby, at least two belt pulleys coaxially mounted on said shaft, and two driving belts travelling at different speeds, one of the pulleys always being non-rotatably connected to the shaft and the other pulley freely rotatably mounted on the shaft, the improvement wherein the one pulley is always nonrotatably connected to the shaft and serves only as a driving pulley (19 or 119), while the other pulley is mounted on the shaft be a ball bearing and is thereby always a freely rotating pulley, the two pulleys being freely axially removed from the shaft and interchangeably mounted thereon, and the driving pulley being replaceable by one of a plurality of interchangeable driving pulleys of variable diameter.

3,901,053

HIGH TEMPERATURE STEAMING DEVICE

Klaus Meisen; Kurt Alders, both of Krefeld; Wolfgang Teetz, Kerken-Stenden, and Gunter Schiffer, Krefeld, all of Germany, assignors to Kleinewefers Industrie-Compagnie GmbH, Krefeld, Germany

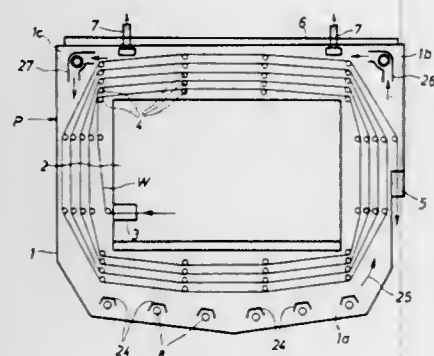
Filed Apr. 12, 1973, Ser. No. 350,463

Claims priority, application Germany, Apr. 13, 1972, 2217836

Int. Cl. D06c 1/06

U.S. Cl. 68—5 D

4 Claims



1. A high temperature steaming device for steaming webs of textile goods, which includes: a steaming chamber having an upper section and a lower section, means arranged in said steaming chamber for receiving a web of textile goods to be steamed while defining a path for the web of textile goods to be steamed in said chamber and passing said web of textile goods through said chamber, and steam distributing pipe means including a steam inlet at one end receiving steam and

including longitudinally therein heating coils for superheating said steam passed directly therealong and including an outlet for the superheated steam to release said steam internally thereof into said chamber, said pipe means being located within said lower section of said steaming chamber and extending to release said superheated steam in a direction substantially transverse to the respective adjacent section of said path.

3,901,054

APPARATUS FOR CONTINUOUS TREATMENT OF WEBS WITH HOT LIQUIDS

Christian August Meier-Windhorst, 2101 Lindhorst, über Hamburg-Harburg, Germany

Division of Ser. No. 313,362, Dec. 8, 1972, Pat. No. 3,849,068.

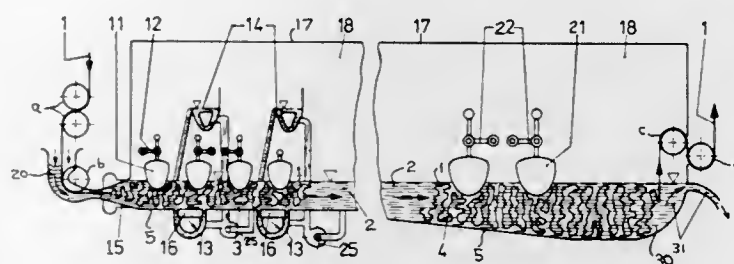
This application Nov. 12, 1973, Ser. No. 415,265

Claims priority, application Germany, Dec. 8, 1971, 2160799

Int. Cl. B05c 3/172, 3/176

U.S. Cl. 68—15

6 Claims



1. An apparatus for the continuous treatment of a light- to medium-weight laterally moving textile web in a hot treating liquid in which the liquid and the web travel in the same direction and at the same speed during the treatment with the web floating in the liquid, and the ratio of weight of liquid to web is between about 10:1 and 50:1, and the web after its introduction moves at a speed greatly diminished from the speed of its introduction, said apparatus comprising: an elongated channel for receiving and transmitting treating liquid and web, having a receiving end and a discharge end, and being provided at its receiving end with a funnel-shaped inlet portion to receive treating liquid and web and closely surround the web, and having a substantially uniform cross-section between said receiving end and a portion preceding the discharge end which portion has a progressively and uniformly increasing cross-section. means for introducing treating liquid into said channel; means for introducing said web into said channel in crimped form located in front of said funnel-shaped inlet portion; mechanical or hydrodynamic impeller means for causing a change in shape of the surface of said web located between the receiving and discharge ends of said channel; and means for removing treated web and for removing used treating liquid from said apparatus.

3,901,055

APPARATUS FOR TREATING TEXTILES

Leslie D. Broadbent, Surbiton, England, assignor to Neil and Spencer Limited, England

Filed Apr. 19, 1974, Ser. No. 462,525

Claims priority, application United Kingdom, Apr. 25, 1973, 19612/73

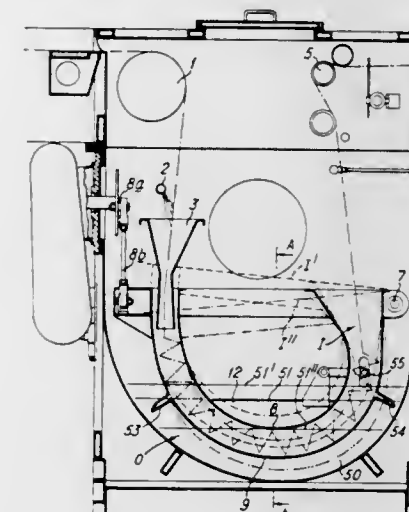
Int. Cl. B05c 3/134

U.S. Cl. 68—152

5 Claims

1. Apparatus for treating fabric with liquid in open width comprising a duct having an upper bounding wall and a lower bounding wall shaped so that the duct, considered in parallel vertical planes of section, has substantially the shape of an upright U, with the limbs terminating in an upwardly-open inlet and an upwardly-open outlet respectively, the bounding walls having numerous small openings through them at least over the central part of the U, the duct also having side walls, and there being dividing walls extending upwards from the

upper bounding wall over the central part of the U, in planes substantially parallel to the side walls, the apparatus also



comprising a vessel enclosing with clearance at least the lower part of the duct, and means for imparting to the duct a motion such that the central part of the U rises and falls repeatedly.

3,901,056

WEATHERVANE LOCK

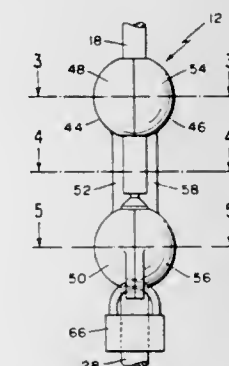
John T. Coolidge, 63 Green St., Milton, Mass. 02186

Filed May 22, 1974, Ser. No. 472,103

Int. Cl.² E05B 73/00

U.S. Cl. 70—19

3 Claims



1. A lock mechanism for a weathervane of the type wherein a vertical support shaft is adapted to be attached to a suitable structure, a rotatable shaft is mounted on said support shaft and a vane is attached to said rotatable shaft, comprising:

- a flange rigidly attached to the rotatable shaft, said flange extending around the periphery of said rotatable shaft,
- a flange housing member including a pair of housing member halves and hinge means for connecting the housing member halves,
- one said housing member half rigidly affixed to said support shaft,
- said housing member halves each including a hemispherical shell which is adapted to enclose a portion of the flange and a web extending downwardly from the shell across the junction of said shafts to inhibit separation of said vane from said support shaft.

3,901,057

PADLOCK

Clifford L. Coley, Sr., Rt. 2, Box 439, Byhalia, Miss. 38611

Filed May 1, 1974, Ser. No. 465,888

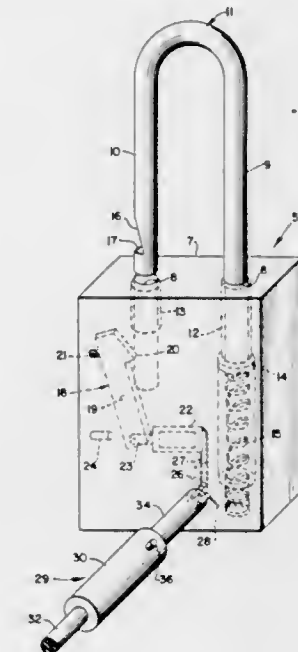
Int. Cl.² E05B 47/00, 47/04, 51/00, 67/38

U.S. Cl. 70—20

4 Claims

1. A lock including a part movable between a locked and an unlocked position, a detent engaging and normally retaining said part in a locked position, a solenoid connected to said detent for moving the detent out of engagement with said part

when the solenoid is energized, said solenoid being capable of being energized only by a voltage of a particular value, an electrical conductor connecting said solenoid to an electric current source, means interposed in said conductor for changing the voltage of the current to the particular voltage capable of energizing the solenoid, said conductor having connector



means at each end constituting parts of an unlocking device which is normally detached from the lock, and said lock having means electrically connected to the solenoid to receive one of said connector means, said other connector means being adapted to be removably connected to the current source.

3,901,058

HIGH SECURITY LOCK AND HASP

Walter E. Best, c/o Best Lock Corporation P.O. Box 103, Indianapolis, Ind. 46206

Continuation-in-part of Ser. No. 309,761, Nov. 27, 1972, Pat.

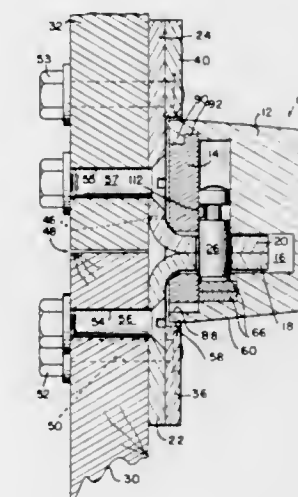
No. 3,820,360. This application Apr. 1, 1974, Ser. No.

456,557

Int. Cl.² E05B 67/36

U.S. Cl. 70—32

11 Claims



1. A lock for locking a hasp eye and keeper eye projecting in adjacent parallel relation from the face of door structure and having aligned transverse shackle-receiving apertures, comprising:

- a housing having rear openings and a rear closure for such housing, said housing and closure together forming a rearward-open cavity to receive the projecting hasp and keeper eyes,

said housing having a transverse trough-shaped slideway formed in its rear face in intersecting relation with said cavity and rearwardly open to receive a bolt therein, a bolt retained in said slideway by said closure and movable between a locking position across said cavity to lock the eyes therein and a retracted release position, a core chamber formed in said housing for the reception, from the rear, of an actuating lock core having a rotatable key plug, a key opening formed at the front of said chamber to admit a key to said plug, and actuating means connecting the bolt for actuation by said key plug and mounted for assembly from the rear of the housing and enclosure by said closure, and retaining means for securing the closure in place.

3,901,059

SHAPE-ROLLING MILL FOR WORKING METALLIC SECTION MATERIAL

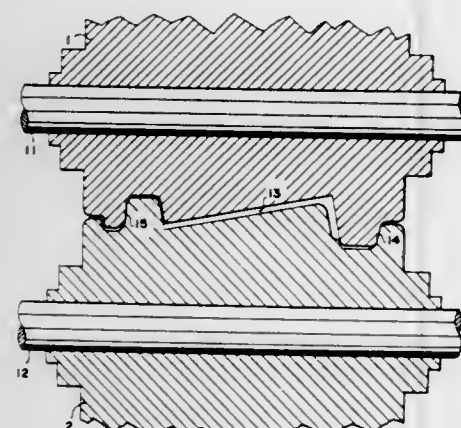
Koe Nakajima; Kazuo Watanabe; Shyuichi Hamauzu, and Hideki Tokita, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Oct. 7, 1974, Ser. No. 512,407

Claims priority, application Japan, Oct. 8, 1973, 48-113628 Int. Cl. B21b 37/02

U.S. Cl. 72—8

4 Claims



1. A shape-rolling mill for metallic section material wherein a metal work is rolled into a predetermined cross-sectional shape through a contoured roll pass which is defined between a number of oppositely disposed rolls, said mill comprising a first fluid pressure mechanism for adjusting the mill rigidity in the transverse direction parallel to the roll axes, and pressure control means for controlling the fluid pressure in said first fluid pressure mechanism for maintaining said transverse rigidity in a suitable ratio with respect to the vertical rigidity of the mill.

3,901,060

FORMING UNIT FOR MACHINES FOR MANUFACTURING WELDED PIPES

Remo Corradini, Guastalla, Italy, assignor to O. M. E. Officine Meccaniche Emiliane S.p.A., Guastalla (Reggio Emilia), Italy

Filed Aug. 12, 1974, Ser. No. 497,117

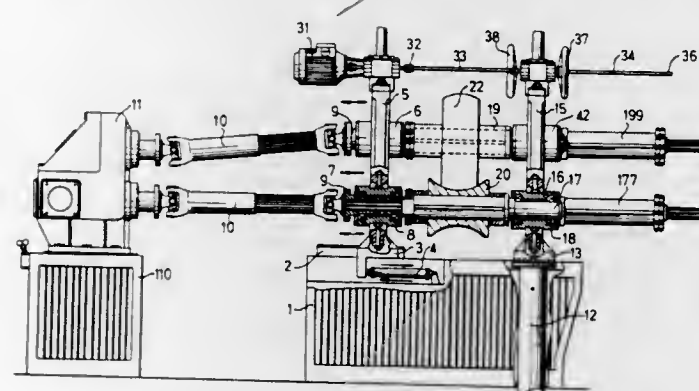
Claims priority, application Italy, Mar. 8, 1974, 42504/74 Int. Cl. B21d 5/14

U.S. Cl. 72—179

5 Claims

1. In a unit for rolling strips into pipes, said unit comprising opposed male and female forming rollers, normally parallel shaft means removably carrying said rollers, a pair of uprights at opposite ends of said forming rollers in which said shaft means are rotatably mounted during rolling of said strip, and drive means connected to drive said shaft means, the connection between at least one of said shaft means and said drive means comprising a universal joint, the improvement according to which:

said drive means comprises a pair of telescopic members, a first upright nearest said drive means is movable longitudinally of said shaft means from a position supporting one end of each shaft means to a position clear of said shaft means while said drive members telescope, each of said shaft means projects from opposite sides of the other



upright for a distance sufficient to enable it to support a forming roller, and said other upright is mounted to rotate about its vertical axis between a first position in which the shaft means projecting from one side of said other upright extend toward said first upright and a second position in which the shaft means projecting from the other side of said other upright extend toward said first upright.

3,901,061

DIE AND PUNCH SETS

Ralph Leonard Joseph Lawson, Birmingham, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

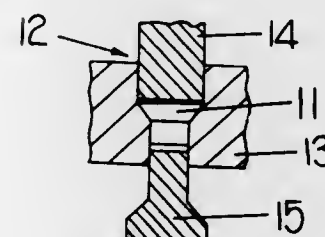
Division of Ser. No. 246,548, April 24, 1972, Pat. No.

3,807,212. This application Jan. 22, 1974, Ser. No. 435,471 Claims priority, application United Kingdom, Apr. 27, 1971, 11509/71

Int. Cl. B21C 23/00

U.S. Cl. 72—253

8 Claims



1. A method of extruding a metal billet comprising the steps of producing at least one of the extrusion tools defined by a punch and a hollow die with an operative surface formed from hot pressed silicon nitride and, without effecting a prior lubrication treatment to the metal billet, positioning the billet in the hollow die and causing the punch to enter the die to extrude metal from the billet.

3,901,062

VAPOR PRESSURE MEASURING APPARATUS

Charles R. Lynch, Arthur; Charles W. Harrison, Nederland; Charles L. Kimantas, Groves, and William D. White, Nederland, all of Tex., assignors to Texaco Inc., New York, N.Y.

Filed June 28, 1974, Ser. No. 484,003

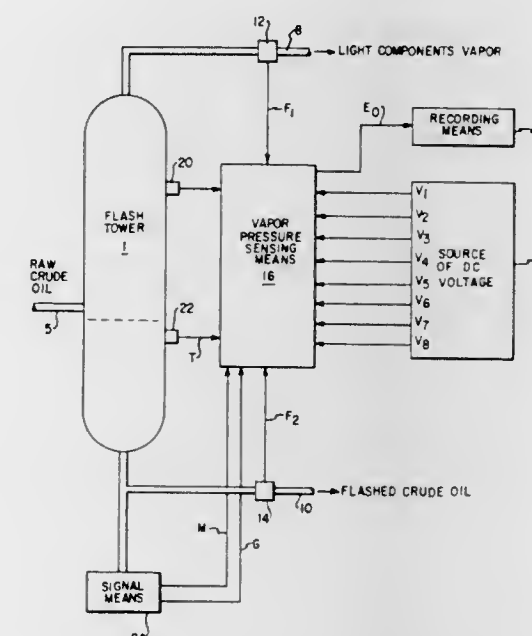
Int. Cl. G01n 7/16

U.S. Cl. 73—64.2

9 Claims

1. Apparatus for providing an output signal corresponding to the vapor pressure of a feed fluid entering a process vessel which yields a vapor and a processed liquid, comprising means for sampling the processed liquid and providing signals corresponding to the molecular weight M and the specific gravity

G of the processed liquid, means for sensing the flow rates F_1 and F_2 of the vapor and the processed liquid and providing signals corresponding thereto, means for sensing the pressure P of vapor in the vessel and providing a corresponding signal, means for sensing the temperature T of liquid in the vessel,



and means connected to sampling means and to all the sensing means for providing the output signal corresponding to the vapor pressure of the feed fluid in accordance with the F_1 , F_2 , P, T, M and G signals from the sampling means and the sensing means.

3,901,063

PLUGS FOR USE IN TUBE-DRAWING

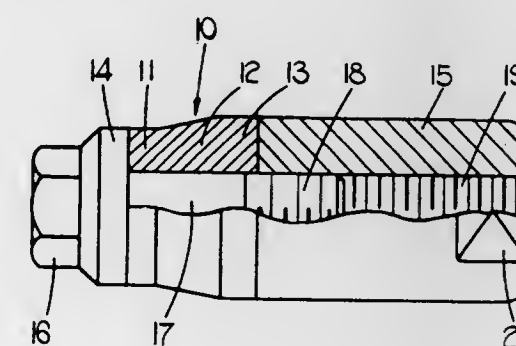
Vivek Baburao Nileswhar, Four Oaks, Sutton Coldfield, England, assignor to S.T.D. Services Limited, Birmingham, England

Filed Oct. 17, 1973, Ser. No. 407,318

Int. Cl. B21c 1/24

U.S. Cl. 72—283

5 Claims



1. A mandrel having a plug for use in tube-drawing comprising a plug formed of a ceramic material and means on said mandrel for applying to the plug an axially-directed compressive stress equal to the tensile stress that will be applied to the plug in use to counteract the tensile stress generated against the plug during tube-drawing.

3,901,064

APPARATUS FOR BENDING MATERIAL IN THE EDGEWISE PLANE

James J. Jacobson, 410 E. 6th St., New York, N.Y. 10009

Filed Dec. 19, 1974, Ser. No. 534,447

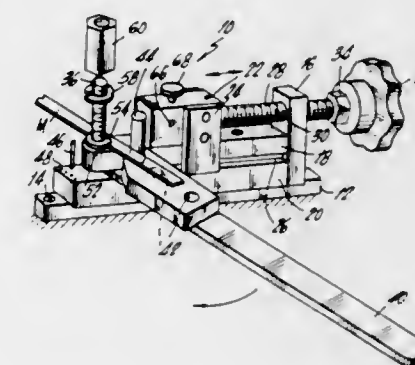
Int. Cl. B21D 11/00

U.S. Cl. 72—388

12 Claims

1. A bender apparatus for bending material in the edgewise plane comprising a base, an edge bending radius pin assembly affixed to said base, clamping means mounted on said base and movable toward said radius pin assembly for clamping

material and away from said radius pin assembly to a clearance position, a forming lever rotatably mounted on said base and having means for engaging said material when said material is clamped between said radius pin assembly and said clamping means to bend said material to a desired configuration about said radius pin assembly, said radius pin assembly



including a pin of a radius complementary to the radius to be formed on the material, and plane guiding means retaining the material in the edgewise plane, said plane guiding means including a plane guiding plate coaxially positioned about said pin and clamping means engaged with said pin resiliently clamping said pin guiding plate on said pin clamping said material against said base.

3,901,065

MULTIPLE APERTURE DIE

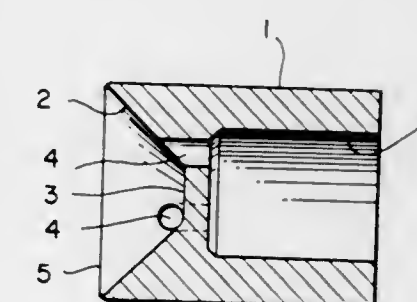
Glenn Lewis Schmehl, Morrisville, Pa., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Nov. 13, 1974, Ser. No. 523,402

Int. Cl. B21C 3/06

U.S. Cl. 72—468

4 Claims



1. A die comprising:

- a die body having an entrance end and an exit end;
- a flared mouth formed in the die body, said flared mouth converging rearwardly from the entrance end of the die, the rearward end of the flared mouth being closed;
- a plurality of die apertures extending through said die body, said die apertures being radially equispaced around a circle intermediate the entrance end of the die body and the apex of the flared mouth, the said circle lying in a plane perpendicular to the longitudinal axis of the die body so that the inlet ends of the die apertures are spaced the same distance rearwardly of the entrance end of the die body, the inlet ends of said die apertures communicating with the flared mouth of said die body.

3,901,066

DIES FOR MAKING SELF-LOCKING SCREWS

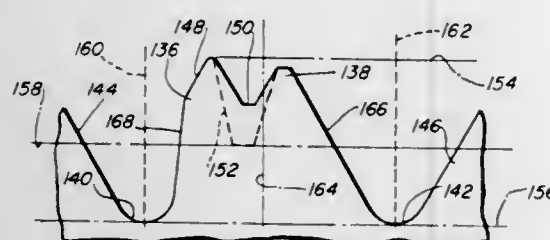
Roger W. Orlowski, Holden, Mass., assignor to Litton Industrial Products, Inc., Holden, Mass.

Continuation-in-part of Ser. No. 284,006, Aug. 28, 1972, Pat. No. 3,850,215, which is a continuation-in-part of Ser. No. 200,933, Nov. 22, 1971, Pat. No. 3,789,644. This application May 20, 1974, Ser. No. 471,456

Int. Cl.² B21H 3/06

U.S. Cl. 72-469

10 Claims



1. A thread rolling die comprising:
a thread rolling die body;
means including a series of ridges and grooves on one surface of said die body for forming threads on a workpiece;
and
at least some of said grooves being provided with subordinate rib means substantially coextensive with the full longitudinal extent of said grooves for forming resilient bendable locking ribs on at least some of said threads.

3,901,067

SEMICONDUCTOR GAS DETECTOR AND METHOD THEREFOR

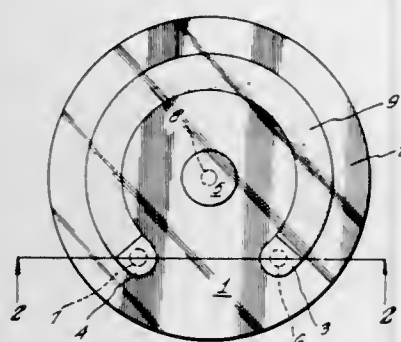
William W. Boardman, Jr., Whittier, Calif., and Robert H. Johnson, El Toro, Calif., assignors to General Monitors, Inc., Costa Mesa, Calif.

Filed June 21, 1973, Ser. No. 372,098

Int. Cl. G01n 27/04

U.S. Cl. 73-23

10 Claims



1. An article comprising a thin film semiconductor coated on an inert, refractory substrate, said film being principally comprised of stannic oxide doped with a dopant selected from the group consisting of zinc, cadmium, aluminum, gallium, indium, tellurium, arsenic, antimony, bismuth or palladium, and diminishing in resistivity with increased atmospheric concentration of hydrogen sulfide when placed about 130°C in an air atmosphere containing at least about 1 ppm hydrogen sulfide.

3,901,068

DEVICE FOR DETERMINING THE COLLOIDAL STABILITY OF A LIQUID

Manfred Moll, 13ter, rue de Houdemont, 54500 Vandoeuvre; Claude Kreel, 53 Vertpre, 54420 Saulxures-les-Nancy, and Lucien Chapon, 18, rue de Lacretelle, 54000 Nancy, all of France

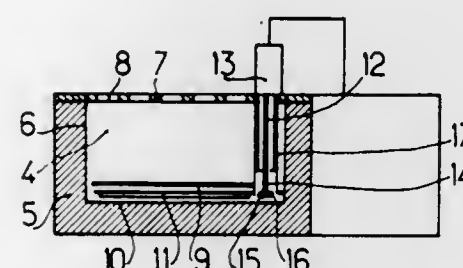
Filed Aug. 3, 1973, Ser. No. 385,242

Claims priority, application France, Mar. 12, 1973, 73,09798

Int. Cl. G01n 33/14

U.S. Cl. 73-53

5 Claims



1. A device for determining the colloidal stability of a fermented liquid such as beer, comprising a refrigerating bath containing a chilling liquid for imparting a precisely controlled temperature to said fermented liquid and means for measuring the turbidity of the fermented liquid by the "cold alcohol" method at said controlled temperature, said refrigerating bath comprising a tank clad in thermal insulating material and containing said chilling liquid, a removable grating provided at the upper part of said tank, said grating having holes of identical diameters to receive bottles and arranged at equidistant centres, whereby a plurality of bottles, filled with the liquid to be tested, occupy predetermined positions when placed in the tank according to the arrangement of the holes of the grating, thereby producing identical circulating passages for the chilling liquid between the bottles so as to cool the bottles uniformly, a double bottom disposed at a certain distance from the bottom of the tank, the double bottom serving as a support for the bottles received in said holes in said grating, the position of the double bottom relative to the level of the chilling liquid in the tank being predetermined so that the level of the chilling liquid is in the same horizontal plane as the level of the volume of liquid to be tested contained in the bottles immersed vertically in said chilling liquid and held in place by the grating, a motor-driven stirrer mounted in the refrigerating bath for circulating the chilling liquid in the tank, a refrigerating assembly, and a plate evaporator disposed in the tank between the bottom of said tank and the double bottom, and connected to said refrigerating assembly.

3,901,069

VISCOSIMETER

Leonard A. van Gastel, Nieuw Loosdrecht, Netherlands, assignor to Stichting Instituut Voor Grafische Techniek Tno, Amsterdam-O, Netherlands

Filed July 29, 1974, Ser. No. 492,922

Claims priority, application Netherlands, July 31, 1973, 7310556

Int. Cl. G01n 11/00

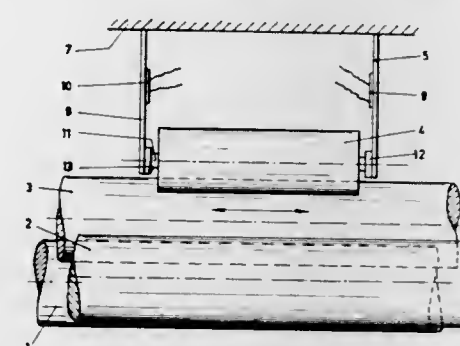
U.S. Cl. 73-58

7 Claims

1. A device for determining the viscosity of a liquid substance, comprising in combination

- a. a distributing roller being, during operation, at least indirectly in contact with the liquid for providing a liquid film on said distributing roller;
b. means for axially reciprocating said distributing roller;
c. a cylindrical measuring roller;
d. support means for freely rotatably holding said measuring roller in contact with the reciprocating distributing roller; and

- e. sensor means at least indirectly in contact with said measuring roller for measuring the axial forces generated in



said measuring roller by the sliding contact with said reciprocating distributing roller.

3,901,070

MEASURING DEVICE

Geoffrey Graeme Duffy, Auckland, New Zealand, assignor to The University of Auckland, Auckland, New Zealand

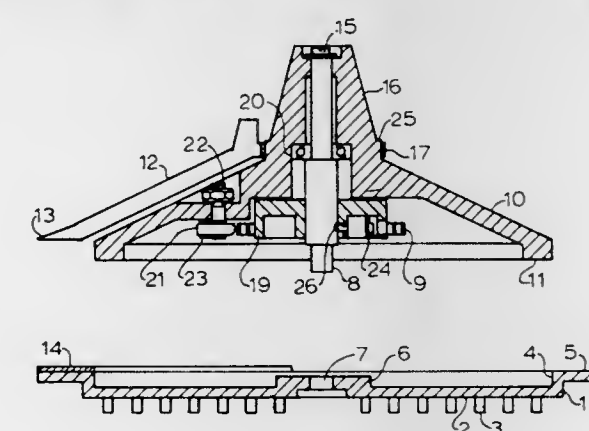
Filed June 12, 1974, Ser. No. 478,693

Claims priority, application Australia, June 14, 1973, 171062

Int. Cl.² G01N 11/14

U.S. Cl. 73-59

8 Claims



1. A device for measuring the viscosity of a substance comprising a base member, a plurality of pins provided in and projecting from an outer surface of said base member, said base member being provided with a substantially central upwardly directed boss portion, an aperture provided in said boss portion, a head member being provided with, and rotatably mounted about, a downwardly depending substantially central shaft member, said shaft member being inserted within said aperture in said boss portion so as to rotatably locate said head member relative to said base member, a spring being provided and mounted between said base member and head member, said spring biasing the head member against rotation relative to said base member, indicating means being provided and associated with said head member so as to move with said head member, a scale being provided on said base member, the arrangement being such that upon torque being applied to the said head member to rotate it, with said pins of said base member projecting into a substance, a value of torque, substantially proportional to the viscosity of the substance is reached at which the base member beings to rotate at the same speed as the head member, said value of torque being indicated by the position of the indicating means relative to the scale on said base member.

3,901,071

ULTRASONIC THICKNESS GAUGE

Earl N. Hansen, Melrose, Mass., assignor to LFE Corporation, Waltham, Mass.

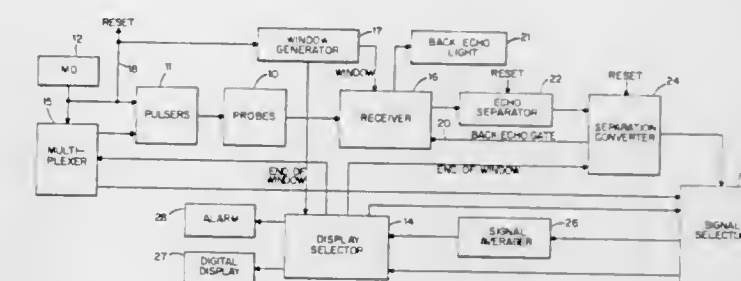
Filed Sept. 25, 1973, Ser. No. 400,524

Int. Cl. G01b 17/02

U.S. Cl. 73-67.8 S

6. An ultrasonic thickness gauge comprising:

- a. a plurality of ultrasonic probes;
b. means to pulse said probes;
c. a single automatic gain controlled receiver for amplifying echoes received by all of said probes;
d. means to detect the time intervals between received echoes from the respective probes;



- e. means to convert said time intervals into respective analog voltages;
f. means to average said respective analog voltages; and,
g. multiplexing means for sequencing the pulsing of said probes and simultaneously coupling the output of said means to convert to sequential inputs of said means to average.

3,901,072

METHOD OF TESTING DAMPING PROPERTIES OF LIQUID DAMPER

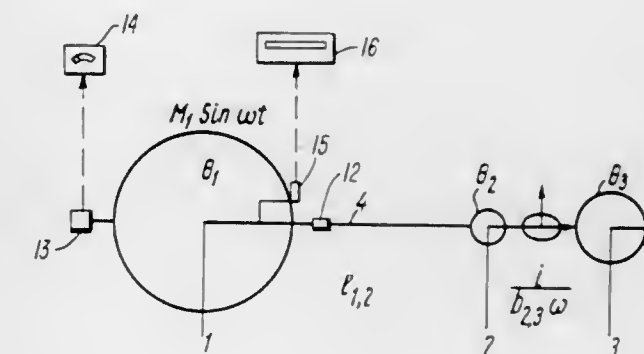
Jury Arsenievich Vasiliev, ulitsa Babushkina 22, kv. 28; Mikhail Petrovich Orfani, ulitsa Kobozeva 83, kv. 14; Evgeny Vasilievich Markelov, ulitsa Shevchenko, 29, kv. 18; Jury Ivanovich Ivashkin, ulitsa Baumana, 16, kv. 95; Alexandr Petrovich Dyakov, ulitsa Krasnoflotsev, 49, kv. 57, and Vladimir Ivanovich Kljukin, ulitsa Pionerov, 10, kv. 12, all of Sverdlovsk, U.S.S.R.

Filed May 2, 1973, Ser. No. 356,597

Int. Cl. G01h 1/10

U.S. Cl. 73-70.1

1 Claim



1. A method of testing the damping properties of a liquid damper consisting of determining the frequency of maximum vibrations on the basis of predetermined results; rotating a torsional vibrations machine with a damper at the said frequency of maximum vibrations; measuring the amplitude of maximum vibrations of an element of the said torsional vibrations machine, and making a comparison between the measured amplitude and the permissible limits of variations in amplitude.

3,901,073

APPARATUS FOR CARRYING OUT ULTRASONIC INSPECTION OF PRESSURE VESSELS

Kenneth Henry Dent, Northwich, and Frank Geoffrey Greenhalgh, Culcheth, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

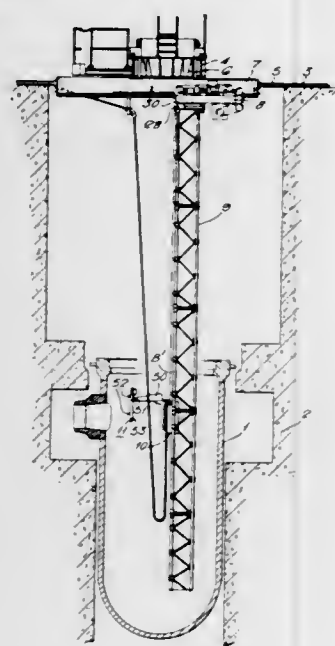
Filed Dec. 11, 1973, Ser. No. 423,786

Claims priority, application United Kingdom, Dec. 18, 1972, 58345/72

Int. Cl. G01n 29/04

U.S. Cl. 73—71.5 US

5 Claims



1. Apparatus for moving an ultrasonic scanning mechanism over the interior surface of a pressure vessel, the apparatus comprising:

- a bridge for spanning the mouth of a pressure vessel,
 - a slewing ring on the bridge,
 - a beam carried by the slewing ring,
 - a mast carriage linearly movable along the beam,
 - a mast supported from the mast carriage, and
 - a scanner carriage movable along the mast for carrying ultrasonic scanning mechanisms,
- wherein the mast depends at a pivotable joint from the mast carriage

3,901,074

TECHNIQUE FOR MEASURING THE COMPLEX ELASTIC (YOUNG'S) MODULUS UTILIZING LASER INTERFEROMETRY

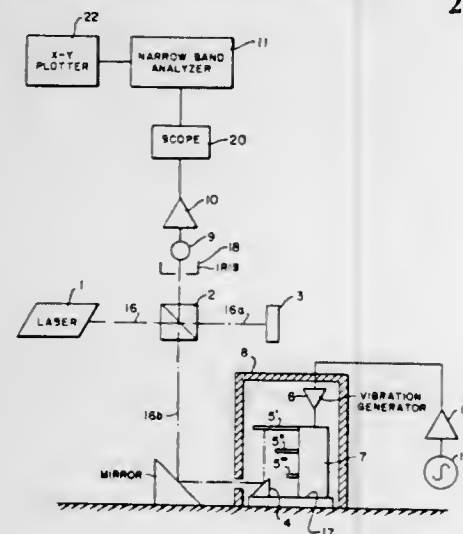
Bruce E. Douglas, Edgewater, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 11, 1974, Ser. No. 441,536

Int. Cl. G01N 3/32; G01M 7/00

U.S. Cl. 73—92

2 Claims



1. A method for measuring the dynamic complex elastic modulus of a viscoelastic material comprising the steps of:

fixedly mounting a prismatic rod of the material of length L at one of its ends;

maintaining the rod at a predetermined temperature;

introducing a sinusoidal longitudinal stress wave of a selected number of frequencies within a predetermined range of frequencies into the rod;

measuring the deflection, U_L , of the rod at its free end, at a point midway its length $U_{L/2}$, and at a point one quarter of the length of the rod from its fixed end, $U_{L/4}$, for each of the selected frequencies;

A. for frequencies below the last maximum in $|R_4|$ determine the complex elastic modulus, E^* for the given frequency f according to the following relationship

$$E^* = \left[\frac{-2f^2 L^2 \rho}{(1 + d^2)^{1/2}} \left\{ \frac{\sin^2 (1/2 \arctan d)}{[\cosh^{-1}(A' + A'')]^2} \right\} \right] (1 + id)$$

where:

$$d = 2 \left\{ \frac{\cos^{-1}(A' - A'') + n\pi}{\cosh^{-1}(A' + A'')} - \frac{\cosh^{-1}(A' + A'')}{\cos^{-1}(A' - A'') + n\pi} \right\}^{-1}$$

$$A' = \frac{1}{4|R_4|^2}$$

$$A'' = \frac{1}{4} \left[\frac{2}{|R_2|^2} + 8 - \frac{1}{R_4} \right]^{1/2}$$

$$|R_2| = \frac{U_{L/2}}{U_L}$$

$$|R_4| = \frac{U_{L/4}}{U_{L/2}}$$

ρ = mass density of the rod

f = the frequency in Hertz; and

n = an integer determined at the given frequency, f , such that the absolute value of n equals the number of peaks in $|R_2|$ for the $|R_2|$ spectrum below frequency f and the sign of n is opposite the sign of the slope of $|R_2|$ for values of f up to the last maximum in $|R_4|$;

(B) for frequencies above the last maximum in $|R_4|$ determine the complex elastic modulus E^* according to the following relationship:

$$E^* = \frac{C^2 \rho}{(1 + d^2)^{1/2}} (1 + id)$$

where:

$$d = \tan \left\{ 2 \arcsin \left(\frac{-c}{\pi f L} \ln |R_2| \right) \right\};$$

c = the velocity of the longitudinal wave at frequency f .

3,901,075

ACOUSTIC VELOCIMETER FOR OCEAN BOTTOM CORING APPARATUS

Lloyd D. Hampton, Austin, and Donald J. Shirley, Leander, both of Tex., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 10, 1974, Ser. No. 432,384

Int. Cl. E21B 49/02

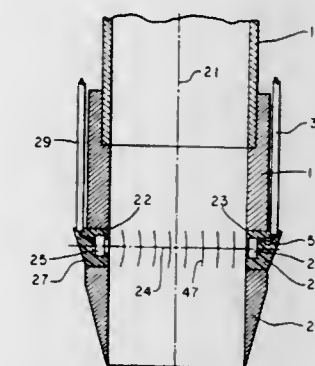
U.S. Cl. 73—170 A

10 Claims

1. An improved acoustic velocimeter coring head apparatus for collecting bottom sediment samples from bodies of water, comprising:

- a. first and second apertures in a coring head spaced from each other; said coring head adapted to be carried by a coring device;
- b. a sound generator in said first aperture;
- c. a sound receiver in said second aperture;

d. first electrical circuitry connected to said generator to cause said generator to produce sound pulses, and;



e. second electrical circuitry connected to said sound receiver to measure the received sound pulses.

3,901,076

TROLLING DRAG METER

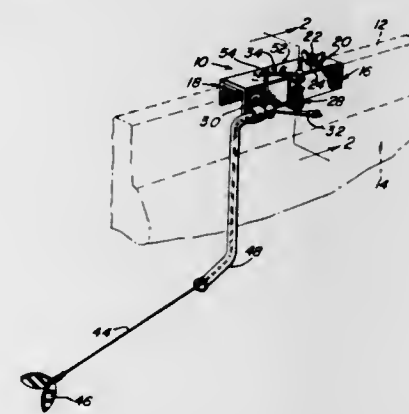
Robert E. Grayson, Rt. 2 South, Great Falls, Mont. 59401

Filed Jan. 24, 1974, Ser. No. 436,380

Int. Cl. G01C 21/00

U.S. Cl. 73—184

8 Claims



1. A trolling drag meter, comprising, in combination:

- a. frame means for mounting on a boat;
- b. pointer means mounted on the frame means for pivotal movement with respect to the frame means;
- c. means for biasing the pointer means toward a one direction of pivotal movement; and
- d. drag means connected to the pointer means for arrangement in water on which a boat associated with the frame means is riding for indicating the drag means through the water as a function of the pivotal movement of the pointer means in the direction opposite to the one direction of pivotal movement, the frame means including a pair of angle brackets, each of the brackets having a pair of legs, and one leg of a one of the brackets being provided with a slot extending longitudinally toward the other leg of the bracket, the leg provided with the slot being arranged abutting a leg of the other bracket, fastener means associated with the slot for adjustably connecting together the angle brackets in an arrangement forming a channel, and means for removably locking the channel on a boat wall, the frame means being provided with means cooperating with the pointer for indicating the drag on a lure.

3,901,077

ULTRASONIC FLOWMETER

Kenneth McCarty, and John Patrick Woodcock, both of Penarth, England, assignors to National Research Development Corporation, London, England

Filed July 9, 1974, Ser. No. 486,917

Claims priority, application United Kingdom, May 4, 1974, 9624/74.

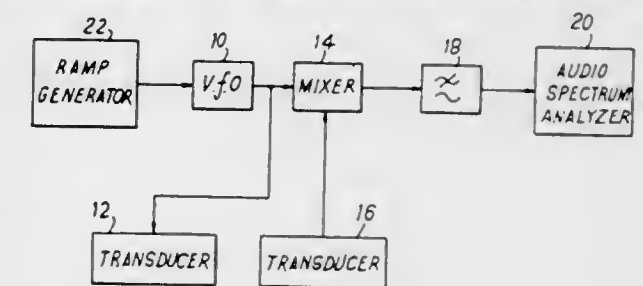
Int. Cl. G01F 1/66

U.S. Cl. 73—194 A

8 Claims

1. An ultrasonic flowmeter comprising a transmitting transducer, a variable frequency oscillator having its output con-

nected to the input of the transmitting transducer, a receiving transducer arranged to receive reflections and scattering of signals from the transmitting transducer, an audio spectrum analyzer, difference signal means responsive to the receiving transducer for supplying to said audio spectrum analyzer difference signals of frequency equal to the difference be-



tween the frequency of the signal transmitted by the transmitting transducer and the reflected and scattered signals received by the receiving transducer, and control means for generating a control signal for the variable frequency oscillator, such control signal comprising periods of linearly varying level.

3,901,078

ULTRASONIC SYSTEM FOR FLUID FLOW MEASUREMENT

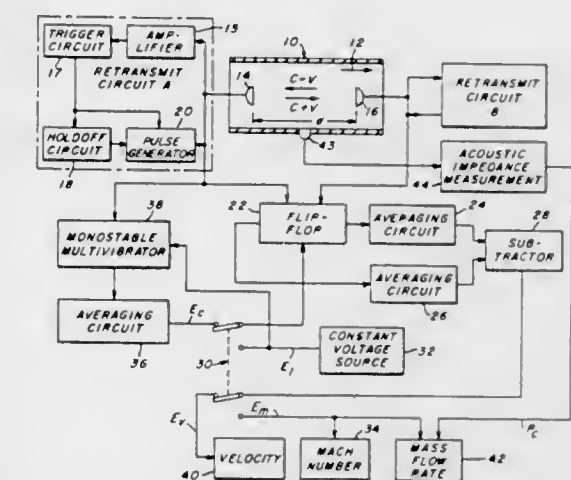
James L. McShane, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 7, 1973, Ser. No. 395,317

Int. Cl. G01F 1/66

U.S. Cl. 73—194 A

15 Claims



1. In an ultrasonic flowmeter, the combination of at least one pair of transducer means located in acoustic contact with a fluid stream, facing each other and spaced in the path of travel of said fluid stream:

first means coupled to a first one of said transducer means located downstream relative to the second one of said transducer means for triggering said first transducer means to transmit an ultrasonic signal upstream in response to a downstream ultrasonic signal received from said second transducer means by said first transducer means.

second means coupled to said second transducer means for triggering said second transducer means to transmit an ultrasonic signal downstream in response to an upstream ultrasonic signal received from said first transducer means by said second transducer means.

means responsive alternately to said first and second triggering means for deriving a signal representation of a first time interval between the transmission of said upstream ultrasonic signal by said first transducer means and the reception thereof by said second transducer means and of a second time interval between the transmission of said downstream ultrasonic signal by said second transducer means and the reception thereof by said first transducer means; and

means responsive to said signal representation deriving means for generating a signal representative of the velocity of said fluid stream.

3,901,079

TWO-MODE CAPACITIVE LIQUID LEVEL SENSING SYSTEM

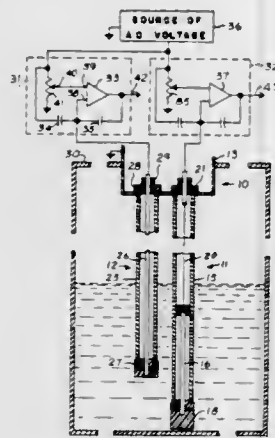
Ronald F. Vogel, Bettendorf, Iowa, assignor to Agridustrial Electronics, Inc., Bettendorf, Iowa

Filed June 18, 1974, Ser. No. 480,527

Int. Cl.² G01F 23/26

U.S. Cl. 73—304 C

12 Claims



1. A capacitive probe assembly having first and second elongated capacitive portions adapted to be inserted vertically in a container, said first and second capacitive portions having first and second capacitive electrodes respectively, the length of each of said capacitive electrodes being predetermined to define the effective length of said respective capacitive portion, each of the capacitive portions being the type that change capacitance and provide a respective output as a function of the change in proportional amount of said respective capacitive electrode that is surrounded by liquid in which it is inserted, said second capacitive electrode extending downwardly from a first level to a lower second level, said first and second levels defining a range through which levels are to be measured, said first capacitive electrode extending downwardly from a level intermediate said first and second levels in an overlapping relation to the lower portion of said second capacitive electrode and continuing far enough below said second level at which said second capacitive electrode is terminated to provide significant detectable change in capacitance of said first capacitive portion due to filling the space below said second level with liquid,

capacitive measuring means connected to said second capacitive portion to provide a reading of level of liquid at any level within said range of levels, and

compensating circuit means connected to both said first and second capacitive portions and to said capacitive measuring means, said compensating circuit means operative in response to receiving said outputs from both said first and second capacitive portions to compensate said reading for changes in permittivity of liquid into which said capacitive portions are inserted.

3,901,080

TEMPERATURE MEASURING DEVICE

William Dwight Hilborn, P.O. Box 15252, Houston, Tex. 77019

Continuation of Ser. No. 259,176, June 2, 1972, abandoned.

This application Apr. 5, 1974, Ser. No. 458,345

Int. Cl.² G01K 7/04

U.S. Cl. 73—343 R

1 Claim

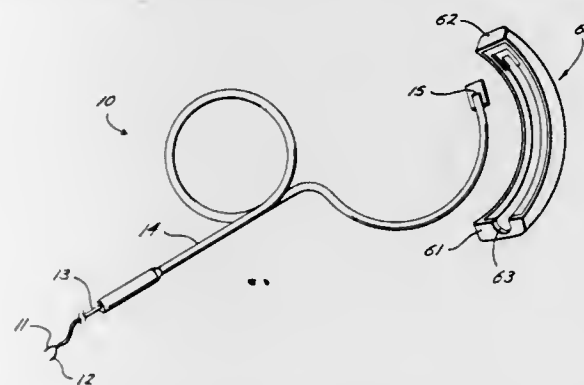
1. In a thermocouple assembly adapted to be positioned adjacent a conduit in order to make temperature measurements at the surface of said conduit, the combination of:

a thermocouple junction having a pair of electrical leads therefrom positioned within an insulated cable, said cable being inserted within a hollow deformable jacket with

said junction positioned adjacent one end of said jacket, said jacket being so curved as to be correlative in configuration to and adapted to be positioned around at least a portion of said conduit;

a concave thermocouple junction positioning member having a slotted portion, said slot extending in a direction perpendicular to the axis of said conduit when said jacket is positioned therearound, said slotted portion receiving said thermocouple junction containing one end of said jacket therewithin, said positioning member's concavity being correlative with the convex outer surface of said conduit; and

an insulated shield of arcuate configuration correlative to that of and positionable circumferentially around at least a portion of said conduit, said shield having first and second ends, said first end forming a solid wall, said second end forming a solid wall but for an approximately



semi-annular cutaway of a size adapted to clampingly press said jacket against said conduit, said shield being substantially filled with insulating material but for a circumferentially extending semi-annular cutaway portion, to accommodate said jacket, extending from said second wall cutaway to near said first wall, said circumferentially extending cutaway terminating in a further cutaway portion of said insulating material, said further cutaway portion being of approximately the size and configuration of said positioning member, said thermocouple junction containing jacket and said positioning member being positioned within said semi-annular cutaway and said further cutaway portion respectively whereby said thermocouple junction received by said positioning member is held in close proximity to the outer surface of said conduit.

3,901,081

SOOT BLOWER WITH GAS TEMPERATURE OR HEAT FLOW DETECTING MEANS

Eugene F. Adiutori, Cincinnati, Ohio, assignor to Diamond Power Specialty Corporation, Lancaster, Ohio

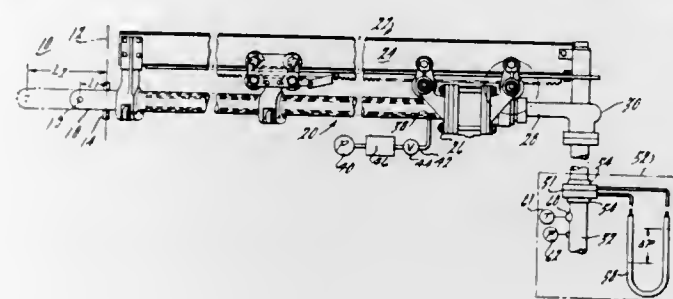
Division of Ser. No. 360,362, May 14, 1973, Pat. No.

3,827,102. This application Apr. 4, 1974, Ser. No. 457,815

Int. Cl. G01k 11/00

U.S. Cl. 73—357

8 Claims



1. Apparatus for detecting thermodynamic conditions in a combustion region comprising:

a feed tube having one end adapted to be connected to a source of pressurized fluid;

a lance tube connected to the opposite end of said feed tube, means supporting said lance tube for movement relative to an opposite end of said feed tube, said lance

tube having an end portion selectively locatable in said combustion region;
nozzle means located on said end portion of said lance tube for restricting the flow of said pressurized fluid; and
detecting means responsive to a pressure condition at said nozzle means for detecting thermodynamic conditions in said combustion region.

3,901,082

FLUID PRESSURE SENSING SYSTEM AND DIFFERENTIAL PRESSURE UNIT THEREFOR

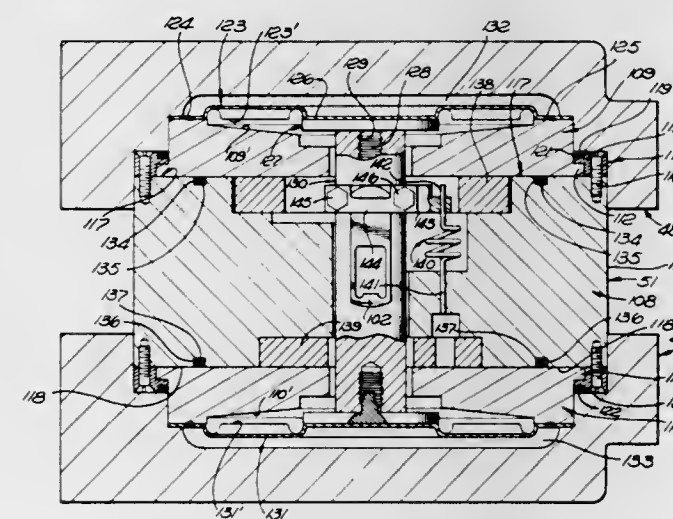
La Verne Dean Lyon, Claremont, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Oct. 1, 1973, Ser. No. 402,035

Int. Cl.² G01L 7/08

U.S. Cl. 73—407 R

17 Claims



1. A differential pressure unit comprising: a rigid body having first and second annular surfaces, said body having a centrally disposed hole therethrough located about said axis; first and second circular and generally planar stiff diaphragms but more flexible than said body, said first and second diaphragms having annular portions fixed relative to said body first and second annular surfaces, respectively, said first and second diaphragms having central portions of first and second diameters, respectively, said diaphragm central portions being spaced apart a first predetermined distance when said diaphragms are unstressed; a post rigid relative to said diaphragms and movably axially in said hole and having first and second opposite ends rigidly fixed relative to the central portions of said first and second diaphragms, respectively, to keep said diaphragm central portions spaced apart a constant second predetermined distance independent of any deflection of either one of said diaphragms, said first and second predetermined distances being different from each other; input means to supply first and second fluids under pressure outside said body to one side of said first and second diaphragms, respectively, the other sides of said diaphragms facing each other; and output means connected between said post and said body for producing an output in accordance with the difference between the pressures of said first and second fluids, respectively.

3,901,083

LIQUID MANOMETER

Lindsay A. Wallace, Minneapolis, Minn., assignor to Tescom Corporation, Minneapolis, Minn.

Filed Oct. 9, 1973, Ser. No. 404,382

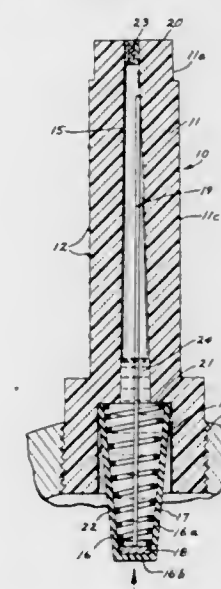
Int. Cl.² G01L 7/08

U.S. Cl. 73—409

3 Claims

1. A pressure indicator comprising an elongated, transparent housing from a first end portion, a second end portion and an axially elongated bore extending through the housing and having a first end portion and a second end portion opening through said housing first end portion and second end portion respectively, said bore first end portion having a first bore part and a second bore part opening to the first bore part axially

remote from the bore second end portion, said second bore part being of a substantially smaller diameter than the bore first bore part to provide an annular shoulder, a pressure sensing resilient gland having a liquid chamber, said gland being hermetically secured to the housing first end portion to have said chamber in liquid communication with the first end portion of said bore, and having an end wall on the opposite side of the chamber from said bore, a tubular portion extending axially between said end wall and the housing and into abutting relationship with said shoulder, and an inner peripheral wall that in part defines said chamber, said tubular portion being generally frusto-conical and having a major base



end abutting against said shoulder and a minor base end of a substantially smaller diameter than the diameter of the first bore part, an indicating liquid in said chamber, a gas permeable plug mounted by the housing second end portion in the bore second end portion to extend across the bore, spring means for resiliently urging the gland to a condition having a predetermined chamber capacity at a given pressure condition, said spring means comprising a coil spring having one end abutting against said shoulder and outer peripheral wall, and a rigid disk in the chamber in abutting relationship to said end wall, said coil spring having an opposite end abutting against said disk.

3,901,084

VACUUM-OPERATED SAMPLER AND DISTRIBUTOR

FOR MULTIPLE SAMPLING OPERATION

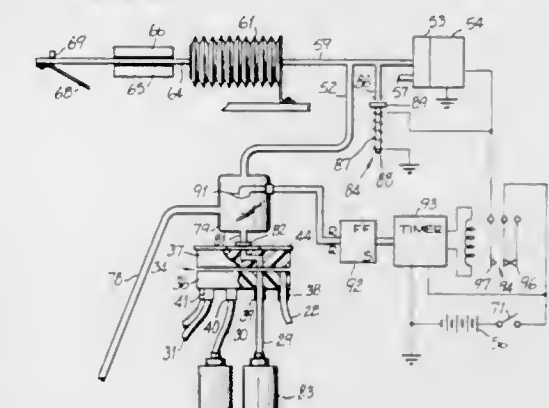
Harrison D. Brailsford, 670 Milton Rd., Rye, N.Y. 10580

Filed July 19, 1974, Ser. No. 490,057

Int. Cl. G01n 1/14

U.S. Cl. 73—421 B

13 Claims



1. Sampling apparatus comprising:
A, a plurality of sample receptacles;

B, a distributor comprising:

1. a first member comprising a plurality of connectors, each connected to a corresponding one of said receptacles,

2. a second member comprising a transfer port;

C, a vacuum pump and system to draw fluid samples into said apparatus;

D. a closed chamber connected to said pump to be evacuated thereby and comprising a movable portion and means to connect said movable portion to one of said members of said distributor to move said one of said members to align said transfer port with each of said connectors sequentially to cause said samples to enter each of said receptacles sequentially; and
E. a valve connected to said chamber to control the evacuation of said chamber.

3,901,085

PIPETTE OR SIMILAR APPARATUS FOR MEASURING DETERMINED VOLUMES OF LIQUID

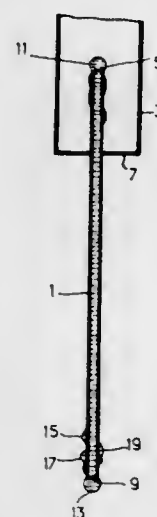
Jean Marie Faure, 28, Blvd. Aristide Briand, 91600 Savigny sur Orge, France

Filed Nov. 29, 1973, Ser. No. 420,163

Claims priority, application France, Nov. 30, 1972, 72.42579

Int. Cl.² B01L 3/02

U.S. Cl. 73—425.4 P



1. Apparatus for the measure of determined volumes of liquid by the overflow method, said apparatus comprising a receptacle, a conduit sealingly secured in said receptacle and including first and second conduit portions assembled in end-to-end sealed relation and having respective open ends, said first conduit portion extending into said receptacle and being constituted of a material which is wettable by the liquid to be measured, said second conduit portion extending outside said receptacle and being constituted of a material which is non-wettable by said liquid.

3,901,086

ACCELEROMETERS

William Edward Griffiths, Middleton, and Peter Stanley Levis, Bramhall, both of England, assignors to Ferranti, Limited, Hollinwood, England

Filed June 26, 1974, Ser. No. 483,416

Claims priority, application United Kingdom, June 30, 1973, 31259/73

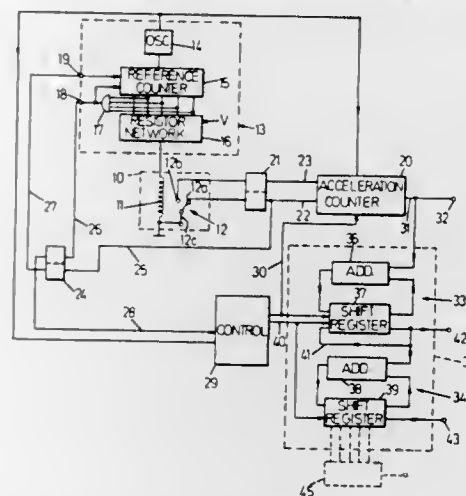
Int. Cl. G01p 15/08; G01c 21/16

U.S. Cl. 73—490

12 Claims

1. A force-balance accelerometer comprising an inertial mass arranged to be acted upon and displaced by an acceleration force, an electromagnetic coil responsive to a current flow therein to exert a restoring force on the mass in opposition to the acceleration force, switching means operable to maintain a first state while the acceleration force is greater than the restoring force and operable to maintain a second state while the restoring force is greater than the acceleration force, coil energising means responsive to entry of the switching means to the first state to apply to the coil a reference signal in the form of a current, the magnitude of which varies within a reference time period, and in accordance with a predetermined law, from a datum value to a predetermined reference value, thereafter returning to the datum value, and output means responsive to entry of the switching means to

the second state in any reference time period to provide an output signal representative of the magnitude of the reference



8 Claims

signal, with respect to the datum value, at which the restoring force equals the acceleration force and indicative of the magnitude of the acceleration force in that reference time period.

3,901,087

SAMPLING APPARATUS

Hannes Fabritius, Rajakyla, Finland, assignor to Ulmaelektra Oy, Helsinki, Finland

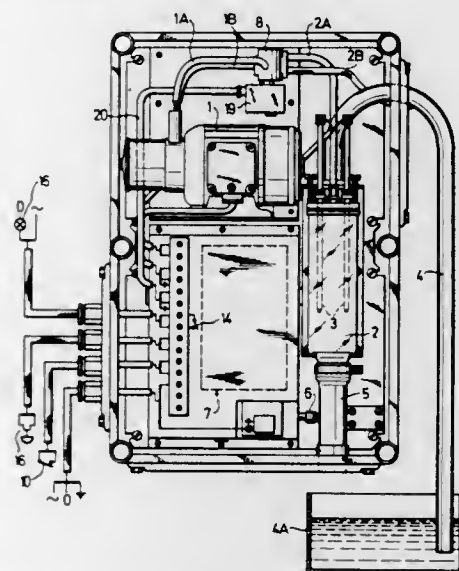
Filed Jan. 18, 1974, Ser. No. 434,424

Claims priority, application Finland, Nov. 29, 1972, 3384/72; Sweden, June 26, 1973, 089468/73; Norway, Nov. 28, 1973, 4523/73; Denmark, Nov. 29, 1973, 6451/73

Int. Cl. G01n 1/14

U.S. Cl. 73—421 B

4 Claims



1. Sampling apparatus for collecting liquid samples of predetermined size from a source of liquid comprising: a sample measuring container, passage means through which liquid is drawn from said source into said container, a vacuum pump having a pressure port and a vacuum port, detecting means connected to said container for detecting when a liquid sample of predetermined size has been drawn into said container, a drain valve for discharging said liquid sample from said container, multi-position control valve means for connecting either of said ports to said container, and control means for controlling said pump, said drain valve and said control valve means to connect said pressure port to said container for a first predetermined time interval after said pump is started and said drain valve is closed to pressurize said container and flush said passage means and to connect said vacuum port to said container after said first predetermined time interval to vacuumize said container and draw a sample of predetermined size into said container, said control means including a guard circuit, including timing means responsive to a failure of said detecting means to detect the presence of a liquid sample of predetermined size in said container within another time interval after said control valve means connects said vacuum port to said container, said guard circuit being operable to stop said pump and open said drain valve.

3,901,088

METHOD OF AN APPARATUS FOR TESTING WHETHER A SOLDER CONNECTION CAN BE MADE THROUGH AN APERTURE IN A CIRCUIT BOARD

John Midgley, Pudsey, England, assignor to Lucas Aerospace Limited, Birmingham, England

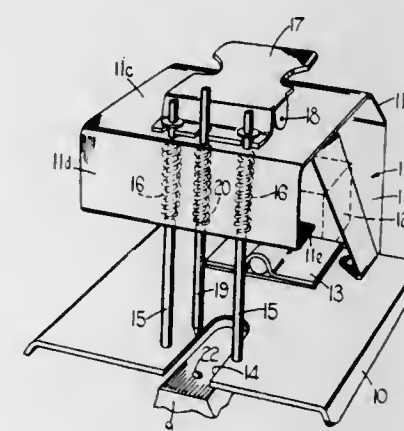
Filed June 13, 1973, Ser. No. 369,550

Claims priority, application United Kingdom, June 13, 1972, 27536/72

Int. Cl.² G01N 33/00

U.S. Cl. 73—432

2 Claims



1. Apparatus for testing whether a solder connection can be made within or through an aperture in a circuit board, the wall of said aperture being coated with a solderable metal, said apparatus comprising a heating block, a platform disposed above said heating block and movable in a vertical direction, said platform having an aperture which is vertically aligned with said heating block, clamping means for clamping a circuit board to said platform, said clamping means comprising at least two pins and means resiliently urging said pins towards the upper surface of said platform in a direction perpendicular thereto, and alignment means coaxing with the aperture for vertically aligning said aperture in the circuit board with solder located on said heating block, the arrangement being such that in use a circuit board can be clamped by said clamping means to said platform, vertically aligned with solder on said heating block by said alignment means and subsequently lowered together with said platform until the lower surface of said circuit board contacts said solder.

3,901,089

HYDROMETER ASSEMBLY

Stanley J. Brym, Torrington, Conn., assignor to Baldwin-Gegenheimer Corporation, Stamford, Conn.

Filed Jan. 16, 1974, Ser. No. 433,905

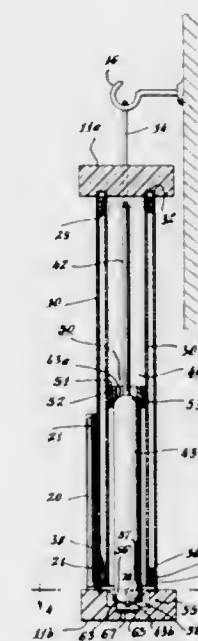
Int. Cl.² G01N 9/14

U.S. Cl. 73—441

10 Claims

1. A hydrometer assembly comprising
A. an outer tube having a closure at its lower end which is nevertheless sufficiently permeable to permit liquid under pneumatic pressure to pass through the closure into the tube;
B. an inner tube slidably inserted within the upper part of the outer tube and so limited in length as to be substantially wholly enclosed by the outer tube when the two tubes are in their most fully telescoped condition, the inner tube having
1. an impervious closure at its upper end and
2. a transparent lateral wall portion;
C. an elongated hydrometer float within the inner tube which is of such transverse dimension in relation to the transverse dimension of the inner tube as normally to be freely movable within the inner tube; and
D. clamping means within the inner tube and operative when the two tubes are in their most fully telescoped condition to fixedly secure the hydrometer float between itself and cooperating clamping means associated with

the outer tube, but operative when the two tubes are in their most extended condition to free the hydrometer float for axial motion within the tubes;
E. the two tubes having their respective transverse dimensions so related that when the tubes are in their most



extended condition, liquid drawn into them through the said permeable closure during the act of extension will, in the presence of the hydrometer float, find its upper level at a region corresponding to the then location of the transparent wall portion of the inner tube.

3,901,090

METHOD AND APPARATUS FOR DETECTING MALASSEMBLED NUCLEAR FUEL RODS

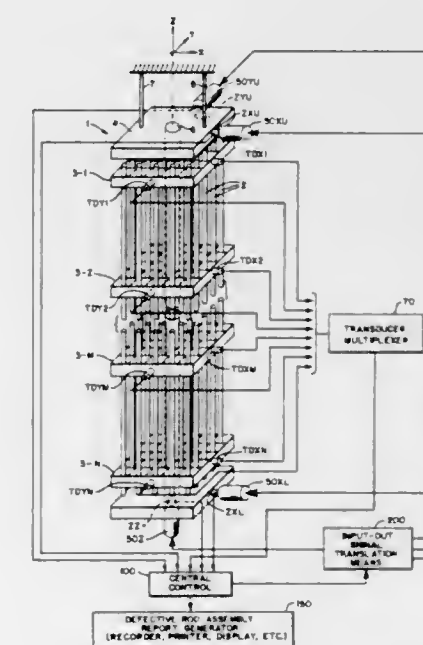
John G. Akey, 630 Garden City Dr., Pittsburgh, Pa. 15146, and William J. Wachter, 3157 Bel Air Dr., Pittsburgh, Pa. 15227

Filed Feb. 15, 1972, Ser. No. 226,483

Int. Cl. G01h 13/00

U.S. Cl. 73—67.2

10 Claims



1. The method of detecting loose, malpositioned or broken fuel rods or loose particles in a nuclear fuel assembly comprising the steps: vibrating the assembly in phase with a constant input over a frequency range in the order of 1 to 120 Hz to cover the lowest bundle frequency of the assembly to the highest first mode frequency of a single rod correctly sup-

ported; detecting the amplitude and phase response along an axis of each of the grids of the assembly; performing a total frequency spectrum analysis of the signal response at each grid axis; comparing the amplitude and phase responses of adjacent grid vibrations along an axis to detect unusual differences characteristic of a loose rod; detecting in said total frequency spectrum analysis the presence of frequencies other than the excitation frequencies including frequencies characteristic of "impacts" or "pinging" due to rods impacting against fingers or of loose particles; and repeating all of the above steps with the excitation being applied out of phase.

3,901,091

SAFETY STEERING WHEEL FOR VEHICLES

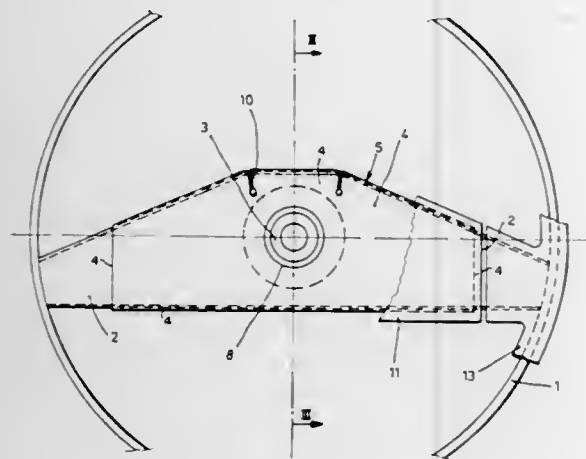
Josef Wenninger, Vorsfelde, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany
Filed Oct. 9, 1973, Ser. No. 404,350

Claims priority, application Germany, Oct. 21, 1972, 2251791

Int. Cl.² B62D 1/04

U.S. Cl. 74—552

4 Claims



1. Safety steering wheel for vehicles of the type having a deformation member which absorbs energy during impact of a passenger, said safety steering wheel comprising:

- a steering rim;
- a steering hub;
- spokes interconnecting said rim to said hub; and
- a sheet metal deformation member integrally connected to said spokes and extending over said spokes and said hub, the lateral edges of said sheet metal deformation member being connected with said spokes.

3,901,092

FOUR-WHEEL DRIVE VEHICLE WITH DRIVE TRANSFER GEAR ASSEMBLY

Rowland C. Romick, Wayne, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Oct. 5, 1972, Ser. No. 296,360

Int. Cl. F16h 1/44

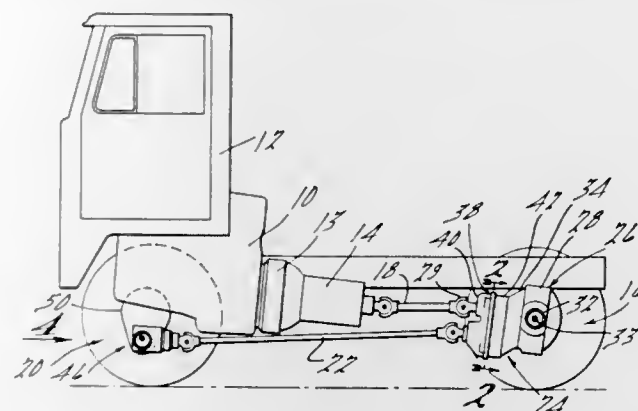
U.S. Cl. 74—711

19 Claims

1. A drive transfer gear assembly for a motor vehicle comprising:

- A. an input shaft;
- B. a torque proportioning planetary gear set comprising a planet gear driven by said input shaft, an output ring gear, and an output sun gear;
- C. first and second output shafts;
- D. first drive means connecting said ring gear to said first output shaft; and

E. second drive means connecting said sun gear to said second output shaft, and including means for limiting the



torque delivered to said second output shaft by said sun gear to a predetermined level.

3,901,093

AXIAL PISTON MACHINE

Maurice G. Brille, 27 rue Parmentier, Nanterre, France

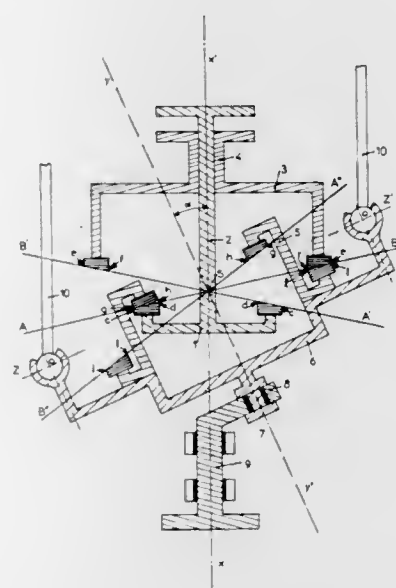
Filed July 24, 1973, Ser. No. 382,221

Claims priority, application France, July 25, 1972, 72.27465; June 6, 1973, 73.21387

Int. Cl. F16b 23/00; F02b 75/26

U.S. Cl. 74—60

21 Claims



1. A volumetric machine of the so-called barrel or axial piston type, including pistons which rest on an oblique pivoting swash-plate, characterized in that the pivoting swash-plate drives the crank of a driving or driven shaft, the pivoting of said swash-plate being defined by a two-nappe frustum of cone integral with the swash-plate and rolling, without sliding, on a stationary two-nappe frustum of cone angularly integral with the frame of the machine, the two two-nappe frustums of cone having as their common generatrix the bisectrix of the obtuse angle defined by the axis of the machine and the axis of the swash-plate.

3,901,094

COMPENSATOR DEVICE FOR WHEEL ALIGNING APPARATUS

Marvin H. Humbert, 2300 Meadowlane, NE, Cedar Rapids, Iowa 52402

Filed Sept. 21, 1973, Ser. No. 399,634

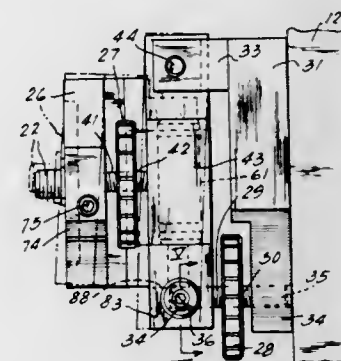
Int. Cl. F16h 27/02

U.S. Cl. 74—89.15

8 Claims

1. A compensator device for adjusting the angular relationship between a pair of members in two planes mutually per-

pendicular to each other comprising a first plate attachable to one of said members and having an extension on one side which extends outwardly from said one of said members, a second plate pivotally attached on a first axis to said extension of said first plate along one edge thereof, a first thumbwheel with oppositely threaded shafts extending from opposite sides thereof threadably received through first and second plates



adjacent second edges thereof, a third plate formed with an extension which is pivotally attached on a second axis to said second plate along a third edge with said second axis being perpendicular to said first axis, a second thumbwheel with oppositely threaded shafts extending from opposite sides thereof threadably received through said second and third plates adjacent fourth edges thereof, and said third plate attachable to the other one of said pair of members.

3,901,095

BICYCLE GEAR SHIFT

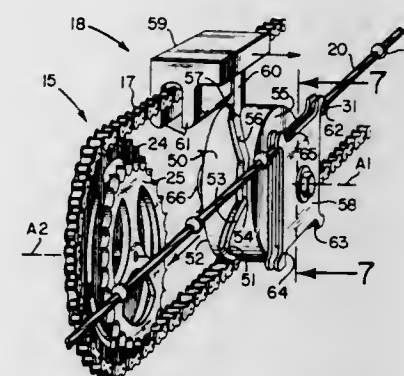
Joseph W. Wechsler, 925 Enchanted Way, Pacific Palisades, Calif. 90272

Filed June 17, 1974, Ser. No. 479,990

Int. Cl.² F16H 9/00; B62K 21/12; B62M 9/00, 1/02

U.S. Cl. 74—217 B

13 Claims



1. A bicycle gear shift including, in combination;

- a. a first gear;
- b. a gear cluster including at least two gears of different numbers of teeth in coaxial side-by-side relationship;
- c. a bicycle chain passing over said first gear and one of said gears in said gear cluster;
- d. derailleur means; and,
- e. actuating means for actuating said derailleur means to shift the chain from said one of the gears in said cluster to the next adjacent gear when said actuating means is positively moved in one direction and to shift the chain from said next adjacent gear back to said one gear when said actuating means is positively moved in an opposite direction, said derailleur means including a cam means; a carriage including a cam follower engaging said cam means, movement of said cam means relative to said cam follower causing a transverse movement of said carriage, said carriage supporting guide means for said chain to thereby effect shifting of the chain from a position in alignment with one gear to a position in alignment with a next adjacent gear, reverse movement of said cam means retracting said cam follower to cause a transverse movement of said carriage in an opposite direction to thereby effect shifting of the chain from a position in alignment

with said next adjacent gear to a position in alignment with said one gear, said cam means being connected to said actuating means for movement thereby.

3,901,096

AUTOMOBILE OVERDRIVE

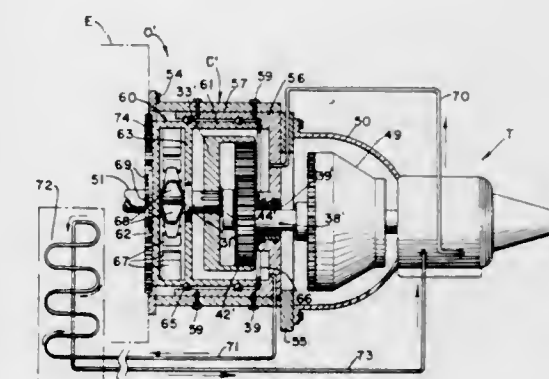
Willis F. Woody, P.O. Box 513, Lithia Springs, Ga. 30057

Filed May 6, 1974, Ser. No. 467,126

Int. Cl.² F16H 1/06; B60K 17/00

U.S. Cl. 74—413

6 Claims



1. An automobile overdrive for an automobile having an engine, a transmission and a rear axle, said overdrive comprising a casing fixedly connected to the automobile between the transmission and rear axle, said casing having opposite end walls and an opening through each end wall, an internal gear rotatably supported in the casing, a first shaft connected with the internal gear and extended outwardly through the opening in one end wall of the casing and journaled in a bearing means in said opening and connected to the transmission to be driven thereby, a spur gear rotatably supported in the casing in mesh with the internal gear, a second shaft connected with the spur gear and extended outwardly through the opening in the other end wall of the casing in offset parallel relationship to said first shaft and journaled in bearing means in said opening, a spacer block connected with adjacent ends of said first and second shafts inside said casing to maintain said shafts in spaced apart, parallel relationship, and said second shaft connected with the rear axle so that a higher gear ratio is obtained at all times than can be obtained with only the transmission, to thus increase the economy of operation and to reduce both wear on the engine and the amount of pollutants discharged to atmosphere by the engine.

3,901,097

CONTROL MECHANISM

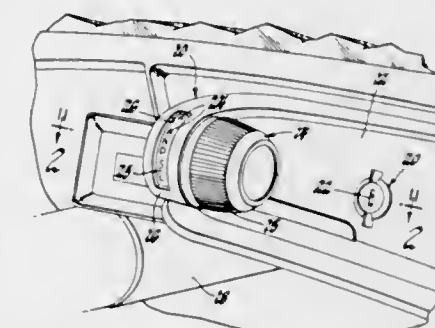
Richard D. Williams, Fairport, and Fred G. Michaels, Pittsford, both of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 25, 1974, Ser. No. 454,244

Int. Cl. G05g 5/10; E05b 65/12

U.S. Cl. 74—475

7 Claims



1. A control mechanism for use with a vehicular transmission, said control mechanism comprising a bracket member, first and second sprockets rotatably mounted on said bracket member, a control knob operatively connected to one of said sprockets and manually rotatable into a plurality of predetermined

mined circumferential positions corresponding to predetermined transmission shift ratios, drive means operatively connected between said first and second sprockets, a cam plate mounted for rotation with said second sprocket, a latch plate mounted adjacent said cam plate for rotation independent of said cam plate, lost-motion means interconnecting said latch plate and said cam plate, a plurality of camming steps formed on a portion of said cam plate, a plurality of latching steps formed on an adjacent portion of said latch plate corresponding to said shift ratios, actuating means operatively connected between said latch plate and said transmission for selectively establishing said shift ratios, a latch member pivotally mounted adjacent said camming and latching steps, spring means operatively connected to said latch member for urging said latch member into contact with any adjacent latching step, the combination of initial movement of said camming steps on said cam plate and the lost motion resulting from relative movement of said cam and latch plates via said lost-motion means serving to unlatch said latch member from said adjacent latching step of said latch plate upon initial rotary movement of said control knob, with continued rotary movement of said control knob causing said latch plate to rotate until said latch member becomes selectively seated in another of said latching steps of said latch plate corresponding to a selected one of said shift ratios.

3,901,098

ANGLE DRIVE UNIT

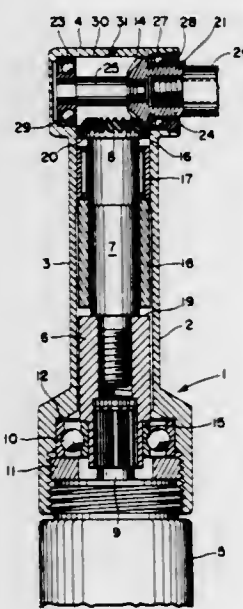
Danny R. Jenkins, Bryan, Ohio, assignor to Dotco, Inc., Hicksville, Ohio

Filed Dec. 17, 1973, Ser. No. 424,953

Int. Cl. F16n 7/18; F16h 1/14

U.S. Cl. 74-417

4 Claims



1. An angle drive unit comprising an elongated tubular housing of length several times its diameter and having a tubular angle head at one end of substantially the same diameter as said housing and having a radially enlarged portion at the other end adapted to be detachably secured to a power drive unit; said housing and angle head having intersecting bores of substantially the same diameter; an elongated drive shaft assembly in said housing adapted to be detachably coupled to a drive shaft of said power drive unit and having a bevel gear of substantially the same diameter as said housing bore extending into said angle head bore with its pitch cone vertex coinciding with the intersection of the axes of said bores; said assembly being journaled in said housing by a ball bearing which has its respective outer and inner races engaged with shoulders in said enlarged portion and on said assembly, and by a drawn cup needle bearing pressed in said housing bore adjacent to said bevel gear but having axial clearance therewith; said assembly having a shaft portion providing a bearing surface extending from said bevel gear through said

needle bearing in direct engagement with the needles of said needle bearing; a tool driving spindle assembly journaled in said angle head by ball bearings on said spindle assembly disposed in said angle head bore in straddling relation to said bevel gear on said drive shaft assembly; said spindle assembly having a bevel gear thereon disposed between said spindle assembly ball bearings and of substantially the same diameter as said angle head bore and having the teeth thereof in mesh with the teeth of the bevel gear on said drive shaft assembly; said axial clearance between said needle bearing and the bevel gear on said drive shaft assembly being of magnitude to permit axial withdrawal of said drive shaft assembly, upon disengagement of the outer race of said housing ball bearing from said shoulder in said enlarged portion, so that the teeth of said bevel gear on said drive shaft assembly clear the angle head bore for insertion and withdrawal of said tool driving spindle assembly into and from said angle head.

3,901,099

OPERATING CONTROL INTERCHANGER FOR TWO STATIONS

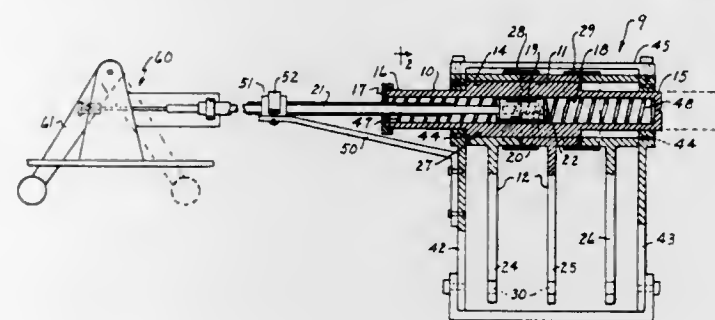
Bernard J. Delaney, 80 Jackson St., Keyport, N.J. 07735

Filed Sept. 28, 1973, Ser. No. 401,695

Int. Cl. B62d 1/16

U.S. Cl. 74-495

2 Claims



1. A two station mechanically engaged interchanger comprising a reciprocable central body slidably positioned through a central bore of three aligned control arms and of a length to engage the central arm bore and one of the aligned control arms, said arms retained in juxtaposition on a central axis between two triangular frames and aligned by a pair of sleeve bearings, a central bore through said reciprocable body, but said bore closed on one end, a push-pull cable with a piston affixed at its end, and said piston mounted within said central bore and a spring mounted either side of said piston and said central bore provided with a stop at either end for said springs to abut, said reciprocable central body provided with a middle section that is many sided along its outer periphery and of a length to fit through two similar shaped bores of two of said arms and biased to move either side of center by said piston of said push-pull cable to engage the central arm and the adjacent arm on the side it is biased to move to when the many sided body portion of the central body aligns with the similar shaped bore of the arm that is biased toward, said push-pull cable connected to a steering station selector that is positioned away from the two station interchanger.

3,901,100

ADJUSTING DEVICE FOR THE RECLINING SEAT OF AUTOMOTIVE VEHICLES

Teiji Iida; Masahide Hisayama, both of Toyota, and Hisashi Ogawa, Kumana, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed July 11, 1973, Ser. No. 378,128

Claims priority, application Japan, July 14, 1972, 47-70470

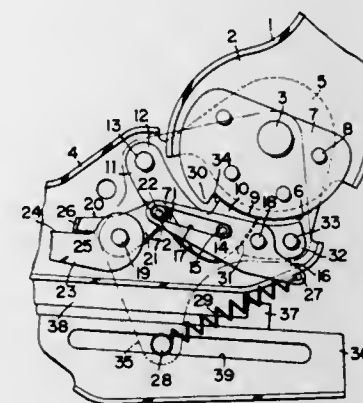
Int. Cl. G05G 5/06; B60N 1/02

U.S. Cl. 74-530

6 Claims

1. An adjusting device for the reclining seat of automotive vehicles comprising:

a lower bracket slidably mounted on a lower seat track member secured to the vehicle frame,
an upper bracket pivotally mounted on a pin extending from said lower bracket, said upper bracket being spring biased such that it tends to become upright;
a ratchet member on said upper bracket, said ratchet member having a sector-shaped downwardly facing ratchet tooth portion and a radially raised shoulder portion adjacent one end of said ratchet tooth portion;
an engagement piece pivotally connected to said lower bracket, a portion of said engagement piece comprising: a toothed portion to be meshed with said ratchet tooth portion,



a forward stop face adapted to abut said shoulder portion of said ratchet member when said upper bracket is biased forward by an impact force beyond the capacity of the ratchet teeth to hold, and
a rear face;
control means for selectively moving the toothed portion of said engagement piece into meshing engagement with the ratchet tooth portion of said ratchet member on said upper bracket whereby said upper bracket can be adjusted in inclination relative to said lower bracket; and
a block on said lower bracket, said block having a front face whereby when an impact force is excessively great so that the portion of said engaging piece is separated from the remainder, the portion is clamped between the shoulder portion of the ratchet member and the front face of the block.

3,901,101

TORSIONAL VIBRATION DAMPERS

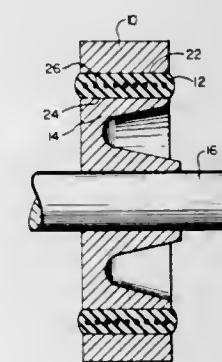
Sanford A. McGavern, Indianapolis, Ind., assignor to Wallace-Murray Corporation, New York, N.Y.

Filed May 15, 1974, Ser. No. 470,321

Int. Cl. F16f 15/12

U.S. Cl. 74-574

9 Claims



1. A rotary torsional vibration damper of the type including an outer annular inertia member resiliently coupled to an inner annular hub through an intermediate elastomer member, the hub adapted to be attached to a rotary shaft subject to torsional vibrations, the inertia member adapted to normally execute limited angular oscillations with respect to the

hub, the improvement comprising a fabric reinforcement within and bonded to said elastomer.

3,901,102

AXLE RETAINING DIFFERENTIAL MECHANISM

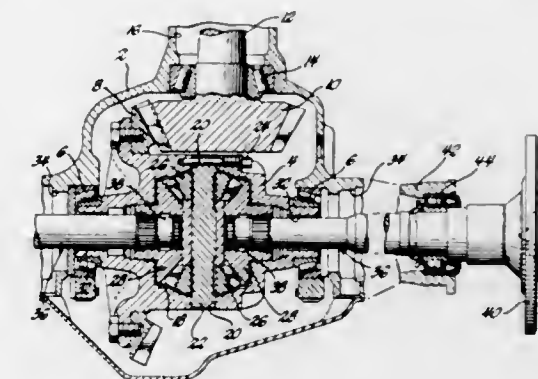
Richard C. Manwaring, Okemos, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 5, 1973, Ser. No. 404,103

Int. Cl. F16H 1/38, 1/42; B25G 3/28; F16B 7/00

U.S. Cl. 74-710

2 Claims



2. In a differential driving mechanism including a casing adapted to be rotatably driven and a differential gear assembly within said casing, the improvement comprising:

a pair of side gears included in said differential gear assembly, said side gears being adapted to be rotatably driven with said casing through said differential gear assembly but further being rotatable in opposite directions with respect to each other within said casing, each of said side gears having an axial opening therethrough, each of said openings having an axially inner splined portion, an axially outer splined portion and a separating portion therebetween;
a pair of rotatable output members having inner ends received in said openings and adapted to normally be rotatably driven by said side gears, said inner end of each said output member having an axially inner splined portion adapted for engagement with said side gear axially inner splined portion, an axially outer splined portion adapted for engagement with said side gear axially outer splined portion and a separating portion therebetween, said output member separating portion having diameter smaller and axial width greater than the inner diameter and axial width, respectively, of said side gear outer axial splined portion, said side gear separating portion having diameter and axial width greater than the outer diameter and axial width, respectively, of said output member inner axial splined portion, said output member inner axial splined portion having an outer diameter greater than the inner diameter of said side gear outer axial splined portion, whereby, should either of said output members be withdrawn from engagement with its corresponding side gear while being driven thereby, said output member and side gear will rotate freely with respect to each other with said output member inner axial splined portion contained within said output member separating portion and being prevented from further withdrawal by said side gear outer axial splined portion.

3,901,103

DIFFERENTIAL GEAR MECHANISM

Gibson O. Hufstader, Utica, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 28, 1974, Ser. No. 455,569

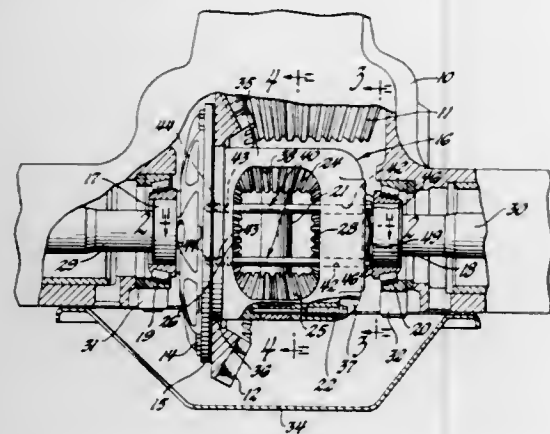
Int. Cl. F16H 1/40, 57/02

U.S. Cl. 74-713

3 Claims

1. A differential gear mechanism comprising a housing, a drive pinion rotatably supported in said housing, a one-piece rotary case rotatably supported in said housing, said rotary

case having a pair of axially spaced radially extending end walls and a cylindrical wall extending between said end walls, one of said end walls having a flange, a ring gear secured to said flange and meshing with said drive pinion, a pair of side gears rotatably supported in said case, a differential gear rotatably supported in said case and meshing with both said side gears, a permanent opening in said cylindrical wall normally large enough to permit installation of all internal parts including said side gears and differential gear in said case, at

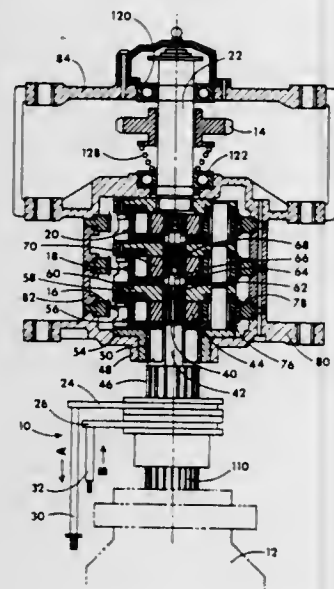


least one strengthening bolt extending axially of said case and spanning said installation opening, said bolt received in an axially extending hole in the other of said end walls and having a threaded end engaging a tapped hole in said one end wall and a bolt head at the other end engaging the outer side of said other end wall whereby after the internal parts are installed in said differential case through said installation opening and said bolt is then torqued a predetermined amount there is provided added bending stiffness by said bolt to offset the affect of said opening.

3,901,104
TRANSMISSION FOR CONCRETE MIXERS
Royal W. Sims, 6500 Holladay Blvd., Salt Lake City, Utah 84121

Filed June 7, 1973, Ser. No. 367,707
Int. Cl. F16h 57/10, 3/08; B28c 5/18
U.S. Cl. 74-769

9 Claims



1. An improved transmission for concrete mixers comprising a shifter mechanism having two independently movable and relatively laterally displaceable first and second drive members, said first drive member being selectively movably into engagement with a sun gear of the first of three intermittently engageable planetary gear assemblies, said second and third planetary gear assemblies being connected serially together and to a preselected portion of said first planetary gear system to effect a drivable connection between a prime mover and a mixing bowl, said second independently movable drive

member being selectively engageable with a second portion of said first planetary gear assembly when said first drive member is disengaged to provide a second drive connection effecting a different speed between said prime mover and bowl and consisting of a gear member which forms a direct drive with a different portion of said first planetary gear assembly than said first drive and bypassing the sun and planetary gear portion of said first planetary assembly but utilizing the interfaced second and third planetary gear assemblies.

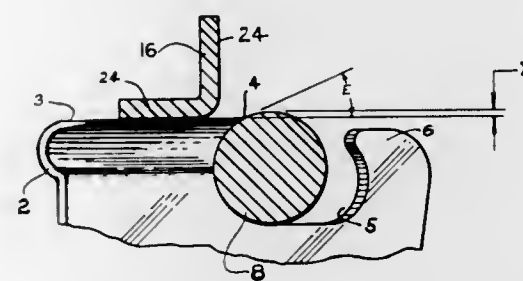
7. A process for transmitting rotational energy to a mixing bowl at one of two preselected speeds comprising the steps of selectively engaging independently movable and relatively displaceable first and second drive gear members of a first stage planetary gear system, coupling said first stage with a combination of in-series second and third stage planetary gears and connecting the output of said third stage to a bowl for effectively driving said bowl at a predetermined speed.

3,901,105
HOLDER FOR CHAIN-SAW SHARPENING FILES
Lloyd M. Ayer, Hamden, Conn., assignor to High Precision Incorporated, Hamden, Conn.

Filed Oct. 18, 1974, Ser. No. 516,125
Int. Cl. B23D 63/12, 71/04

U.S. Cl. 76-36

3 Claims



1. In a chain-saw sharpener having a file-holder for locating the file adjacent its ends at a fixed distance from an elongated guide-bar disposed parallel to the file, said guide-bar having outwardly facing gauging-surfaces disposed at an angle to each other that is symmetrical with the file, the improvement in means for positioning said file relative to said guide-bar at each end comprising

a pair of angularly disposed positioning-surfaces facing away from said guide-bar to form an included angle centered with respect to said gauging-surfaces and having its apex coinciding with the apex of the angle between said gauging-surfaces, said included angle substantially satisfying the equation

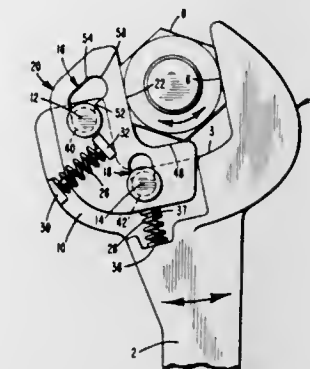
$$\sin A = \frac{R \sin B}{R - x}$$

wherein A is an angle equal to one-half said included angle, B is an angle equal to one-half the internal angle between said gauging-surfaces, R is the radius of said file and x is a predetermined linear distance that the periphery of the file should project beyond the plane of each of said gauging-surfaces in order to sharpen the cutting edge of a chain-saw cutter at a predetermined angle when one of said gauging-surfaces engages the top-plate of the cutter as it is being sharpened, and clamping means for rigidly urging said file against said positioning-surfaces.

3,901,106
OPEN-END RATCHET WRENCH
Burnice J. Causey, Rt. No. 2, Box 114-A, Shallotte, N.C. 28459
Filed Mar. 9, 1973, Ser. No. 339,578
Int. Cl. B25b 13/28

U.S. Cl. 81-111

4 Claims

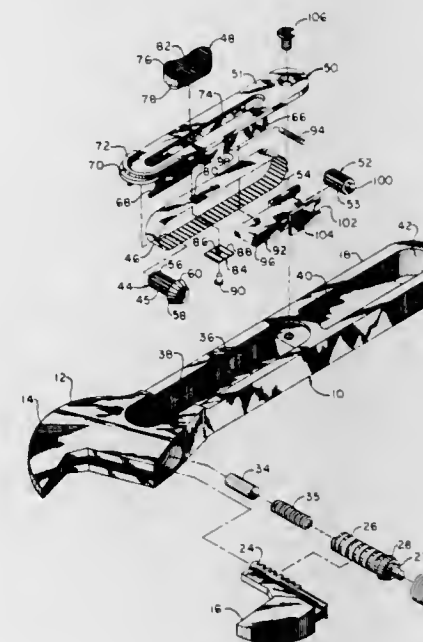


1. A ratchet wrench comprising a handle having a jaw and a jaw support portion integral therewith, a jaw piece movable between working and ratcheting positions having an elongated pivot slot engaging a pivot pin integral with said jaw support portion and a guide slot engaging a guide pin integral with said jaw support portion, and spring means connected between said jaw support portion and said movable jaw piece for urging said pivot to a rest position in said pivot slot and said guide pin to a locked position in said guide slot for locking said jaw and said jaw piece in a fixed working relationship, said guide slot being substantially L-shaped and comprising base and stem portions separated by a shoulder, said spring means normally urging said guide pin to a position in said base portion below said shoulder whereby said pin is locked below said shoulder and said jaw piece is fixed relative to said handle jaw in a working position.

3,901,107
TAPE DRIVE ACTUATED OPEN END ADJUSTABLE WRENCH
Kenneth F. Halls, Denver, Colo., assignor to A. H. Brickley, Denver, Colo., a part interest
Filed Apr. 10, 1974, Ser. No. 459,533
Int. Cl. B25b 13/16

U.S. Cl. 81-170

19 Claims



1. An adjustable jaw wrench comprising:
a. a body constructed as an integral handle, head and stationary jaw.

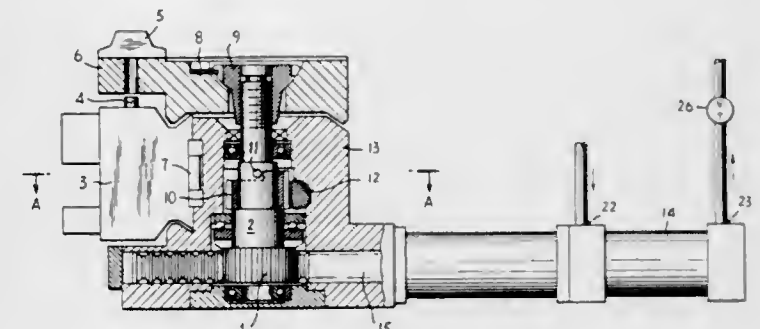
b. a movable jaw reciprocally mounted in said head in mating alignment with said fixed jaw;
c. rotatable driving means for said movable jaw mounted in said body in driving connection with said movable jaw for moving said movable jaw forward and backward;
d. a rotatable power transmission element separate from said rotatable driving means mounted in said body in driving connection with said rotatable driving means; and
e. a drive belt or chain extending into said handle drivingly connected to said rotatable power transmission element.

3,901,108
ONE-SEAT HOLDER FOR CHANGEABLE TOOL UNITS
Ivan Assenov Slavinski, 1, Balchik St.; Eduard Todorov Bur-gudjiev, 28, Schmid St.; Dmitri Dmitrievich Vukolov, 73, Complex Mladost, and Todor Dimitrov Angelov, 9, Sheinovo St., all of Sofia, Bulgaria, assignors to DSO "ZMM", Sofia, Bulgaria

Filed Apr. 8, 1974, Ser. No. 458,880
Claims priority, application Bulgaria, Apr. 9, 1973, 23237
Int. Cl. B23b 29/00

U.S. Cl. 82-36 R

8 Claims



1. In the combination of one-seat holder and a changeable tool unit supported thereby, the tool holder having opposite aligned similar dove tailed seats thereof, the holder having opposed aligned jaws matingly received within said seats on the tool unit, and means for selectively clampingly pulling said jaws together to secure the tool unit on the holder and for moving the jaws apart to release the tool unit from the holder, the clamping effort exerted by the jaws upon the tool unit extending in two directions substantially at right angles to each other and located in a first plane, the improvement which comprises a rib on the tool unit which extends longitudinally along said first plane and in a direction at right angles to such plane into a recess in the body of the holder, said recess having a shoulder which closely confronts the lateral surface of the rib on the tool unit when the tool unit is introduced into the holder, the means for clampingly drawing the two jaws together comprising a first reciprocable hydraulic motor, a shaft journaled in the tool holder for rotation about and reciprocation along its axis, the shaft having an eccentric head which selectively functions to press the lateral surface of the rib on the tool unit against the shoulder of the groove in the tool holder when the shaft is turned into one of its terminal angular positions, means for retracting the shaft axially out of the alignment with the rib on the tool unit when the shaft is turned in the opposite direction, a second reciprocable hydraulic motor for rotating said shaft, and mechanical means drivingly connecting and synchronizing the shaft with the means for drawing the opposed jaws together, said last-named means being so constructed and arranged that the eccentric head on the shaft clamps the rib on the tool unit against the confronting shoulder of the groove in the holder upon the clamping of the tool unit in the holder to secure the tool unit on one rectangular coordinate, and thereafter the opposed jaws are brought together to clamp the tool unit along a second and third coordinate disposed substantially at right angle with

respect to each other in a plane which is disposed substantially normal to said first coordinate.

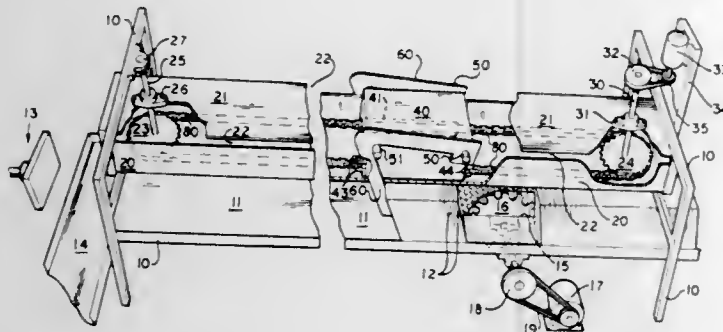
3,901,109

SAFETY END OF RUN FEEDER

Harold L. Mullinax, Sr., Morrow, Ga., assignor to Owens-Illinois, Inc., Toledo, Ohio
Division of Ser. No. 370,333, June 15, 1973. This application
June 13, 1974, Ser. No. 478,954
Int. Cl. B26d 3/14

U.S. Cl. 83—5

1 Claim



1. The method of advancing a complete column of similar sheet-like articles, arranged on their edges in face-to-face relationship, to and through a table-mounted slotter station comprising the steps of:

- engaging the last article in said column upstream from said slotter station by a pair of spaced-apart downwardly directed members;
- pulling said members in unison toward said slotter station;
- continuing the pulling movement of said members to the extent that all of said articles are moved through said slotter station; and returning said members to their initial position preparatory to repeating the cycle on the next end-of-run of a supply of articles.

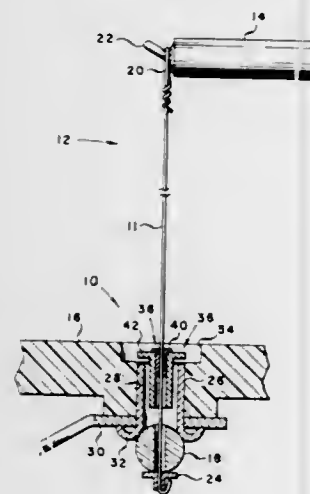
3,901,110

HOT WIRE CUTTING DEVICE

Frank P. Priestly, 17159 Stare Ave., Northridge, Calif. 91324
Filed Dec. 28, 1973, Ser. No. 429,041
Int. Cl. B26f 3/12

U.S. Cl. 83—171

10 Claims



1. In a hot wire cutter having a taut, suspended wire for cutting material upon heating thereof; said wire extending through a table top recess and through a table top opening in which a conductor element is disposed, the improvement comprising, contact means secured to said wire and disposed within the table top opening, and means disposed in the recess for shielding the table top opening against introduction of waste from the cut material, whereby a continuous heating of the wire is achieved

upon deflection of the wire to cause engagement between said conductor element and contact means.

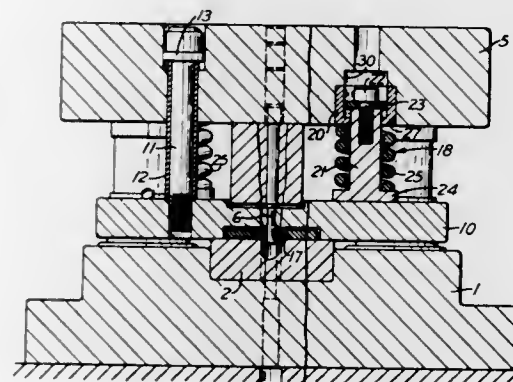
3,901,111

STRIPPER PLATE SPRING UNIT

John Calisto Vecchi, Natrona Heights, Pa., assignor to Oberg Manufacturing Co., Inc., Freeport, Pa.
Filed Apr. 25, 1974, Ser. No. 464,243
Int. Cl. B26D 7/06

U.S. Cl. 83—140

5 Claims



1. A stripper plate preloaded spring unit for a press, comprising a cup-like cap having a side wall extending upwardly from a bottom wall provided with a central opening there-through, a vertical stem below the cap and having an upper end slidably disposed in said opening, stem-supporting means inside said cap secured to the upper end of said stem and extending laterally therefrom over the surrounding bottom wall of the cap, spring-supporting means secured to the lower end of the stem and extending laterally therefrom beneath said cap and adapted to seat against a stripper plate, said stem holding said stem-supporting means and spring supporting means a fixed distance apart, and a coil spring encircling said stem and compressed between the bottom of said cap and the top of said spring-supporting means, whereby the spring normally presses the stem-supporting means tightly against the top of the underlying bottom wall of the cap.

3,901,112

APPARATUS FOR SEVERING MOVING WEBS

Gerhard Voswinkel, Aachen, Germany, assignor to Firma H. Krantz, Aachen, Germany
Continuation-in-part of Ser. No. 260,206, June 6, 1972, abandoned. This application Jan. 17, 1974, Ser. No. 434,019
Claims priority, application Germany, June 14, 1971, 2129409

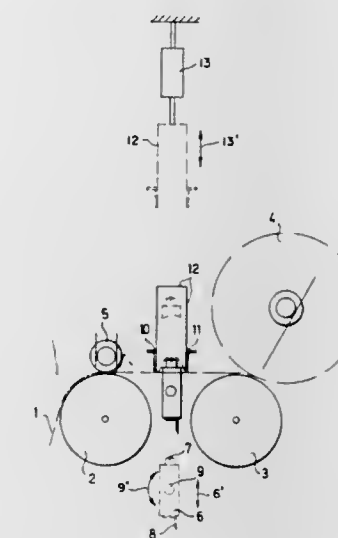
Int. Cl. B23D 15/02

U.S. Cl. 83—171

11 Claims

1. An apparatus for severing a moving web substantially across its width, comprising elongated severing means, a common journal shaft extending longitudinally of the web for journaling said severing means to extend across one surface of said moving web, web support rail means tiltably supported on said common journal shaft to extend across the surface of said web opposite said one surface and opposed to said severing means, first hydraulic drive means for pivoting said support rail means to a position adjacent said web, second hydraulic means responsive to the movement of said support rail means to said position for pivoting said severing means adjacent to and through said web for severing said web, said support rail means comprising a housing having a pair of spaced longitudinal edges, and first and second support rails on said spaced longitudinal edges of said housing, said severing means being journaled to said common journal shaft intermediate said first and second support rail means so that said first and second support rails contact the web along a line located upstream and downstream respectively of said severing means relative to the direction of movement of said web, said housing form-

ing a safety cover for said severing means, along the entire length of said severing means when the latter gradually moves



with its entire length into said housing during the severing operation.

3,901,113

DEVICE TO CUT HOLES WITHIN THE WAVE TROUGHS OF A CORRUGATED TUBE, ESPECIALLY FOR DRAINAGE

Heinrich Oltmanns, 2901 Jeddoloh 1, and Klaus Volckmann, Dresdener Strasse 5b, 2903 Bad Zwischenahn, both of Germany

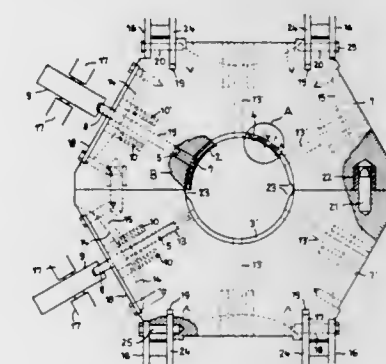
Filed Apr. 11, 1973, Ser. No. 349,998

Claims priority, application Germany, Apr. 11, 1972, 7213449

Int. Cl. B26f 1/06; B26d 5/22

U.S. Cl. 83—326

20 Claims



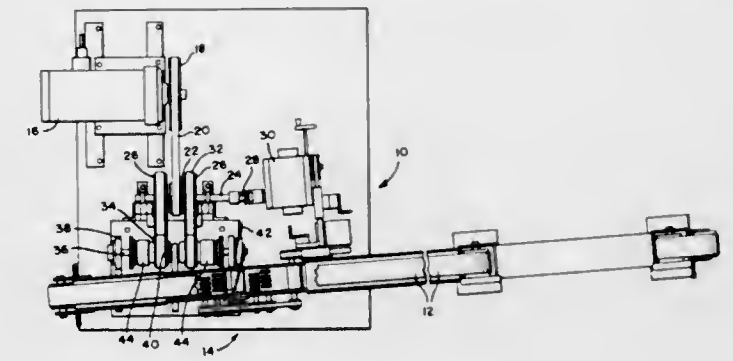
1. A device for cutting holes within the wave troughs of a corrugated tube for drainage purposes, said device comprising a feeding means for said tube to feed the tube in its longitudinal direction, a plurality of individual cutting tools extending radially of the tube, means for supporting said cutting tools including a plurality of gripping jaws substantially totally enclosing said tube and means defining a tooth gear for meshing with said corrugated tube, each said jaw carrying a plurality of spaced radially extending cutting tools, each said jaw having a surface for contacting the other jaw with said contacting surface having means associated therewith for interlocking and aligning the jaws, and cam means coupled to said cutting tools and operable to control said cutting tools.

3,901,114

SAW ASSEMBLY

Kenneth C. Cage, Marysville, Wash., assignor to The Black Clawson Company, Middletown, Ohio
Filed Oct. 11, 1973, Ser. No. 405,466
Int. Cl. B26d 1/56; B23d 25/02, 45/18
U.S. Cl. 83—340

4 Claims



1. A saw assembly comprising:

- means for conveying material to be sawed past a sawing station,
- saw means at said sawing station, including a rotary saw blade extending helically about the axis of rotation thereof with the leading and trailing portions of said rotary blade offset longitudinally of said axis of rotation and the radius of said rotary blade increasing spirally from a smallest dimension adjacent said leading portion thereof to a greatest dimension adjacent said trailing portion thereof,
- means for driving said rotary blade at a speed related to the helix angle thereof and the speed of said conveying means such that the active cutting section of said blade moves across material being conveyed past said sawing station to form a cut substantially normal to the direction of movement of said conveying means during the cutting stroke of said blade,
- anvil means extending horizontally beneath material being sawed at said sawing station for supporting the material on opposite sides of said active cutting section of said blade during a cutting stroke thereof,
- said anvil means including a movable anvil member having an edge extending in spaced relationship to a fixed anvil edge, and
- means pivotally mounting said movable anvil member for movement in a horizontal plane about an axis extending perpendicularly to said direction of movement of said conveying means.

3,901,115

FEED AND GUIDE APPARATUS FOR ANGLE END CUTTING

Vito M. Vizziello, Hamden, Conn., and Charles A. Boutellier, Darrington, Mass., assignors to New England Log Homes, Inc., New Haven, Conn.

Continuation of Ser. No. 358,679, May 9, 1973, abandoned.

This application June 28, 1974, Ser. No. 483,989

Int. Cl. B27b 5/18

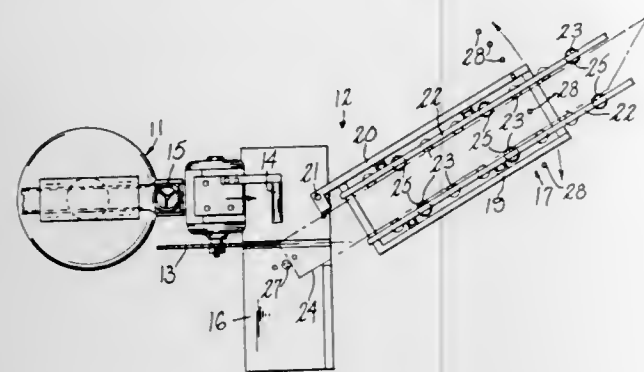
U.S. Cl. 83—449

5 Claims

1. Apparatus for use with a vertically positioned radial saw for angle end cutting of an elongated building construction workpiece or the like, comprising:

- a worktable having a slot to receive the cutter head of said radial saw, and
- a bed assembly for cradling and guiding said workpiece to said cutter head, said bed assembly including a supporting frame and legs therefor, the frame being pivotally connected at one end to said worktable for generally horizontally pivoting of said bed assembly about said worktable at predetermined angles thereto, and substantially verti-

cally and parallelly disposed guide means mounted on said supporting frame for guiding said workpieces to a



position adjacent said slot at said predetermined angle to the cutter head.

3,901,116

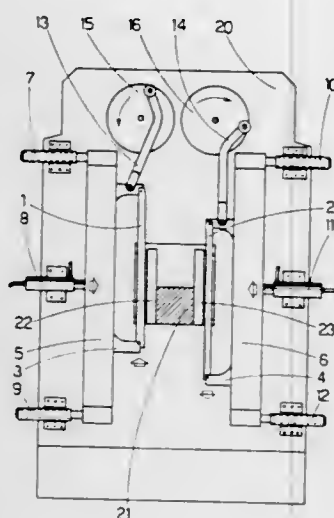
TWO BLADED SAW TO CUT BARS WHEREIN THE BLADES MOVE IN OPPOSITE DIRECTIONS

Ernesto Broccardo, Via G. Marconi; Giovanni Grasselli, Via Maglio 44; Elvio Rizzato, Via G. Marconi; Antonio Grasselli, Via Maglio 44, all of Santorso (Vicenza), and Adriano Serman, Via Ponte Timonchio 1, Schio (Vicenza), all of Italy
Filed Dec. 10, 1973, Ser. No. 423,467

Claims priority, application Italy, Dec. 13, 1972, 85663/72
Int. Cl.² B23D 49/02

U.S. Cl. 83—751

8 Claims



1. A two-bladed saw to cut metallic bars which comprises two frames, two parallel blades mounted thereon, guide means for advancing the blades from opposite directions towards the bar to be cut, means for controlling the movement of said guide means, means for supporting the bar to be cut, said guide means being capable of an alternating motion transverse to the axle of the blades and imparting alternating motion to the blades, means for synchronizing the advance motion of said blades, whereby when each blade effects a useful work run, the other is on the idle return run.

3,901,117

SABER SAW AND BLADE THEREFOR

Simon J. Hoffman, 13115 E. Jefferson St., Detroit, Mich. 48215

Continuation of Ser. No. 88,090, Nov. 9, 1970, which is a division of Ser. No. 690,265, Dec. 13, 1967. This application Aug. 16, 1973, Ser. No. 389,604

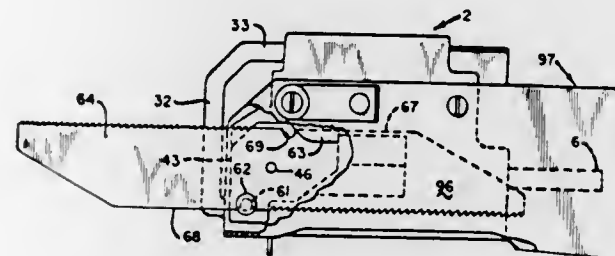
Int. Cl. B27b 33/02

U.S. Cl. 83—835

2 Claims

1. A saber saw blade for a drive mechanism having a reciprocal platen provided with a fixed lug and a spring biased pin spaced from the lug and offset relative thereto in one direction

of reciprocation of the platen, said blade comprising: an elongated metallic strip having a body portion adapted to be coupled with the platen and a working portion integral with the body portion and extending away therefrom, said body portion having a pair of opposed side edges and an aperture therethrough, the aperture being disposed generally midway between the side edges of the body portion, said working portion having a side margin coextensive with a first of the



3,901,118

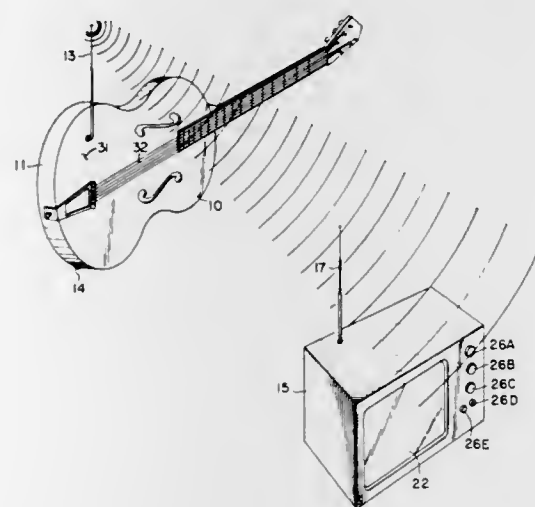
CORDLESS ELECTRICAL GUITAR AND AMPLIFIER SYSTEM

Alexander T. Ford, Brooklyn, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed June 21, 1974, Ser. No. 481,686

Int. Cl.² G10H 3/00

U.S. Cl. 84—1.16

1 Claim



1. An electrical guitar equipped with a radio transmitter system which transmits the sounds of the guitar to a remote radio and amplifier unit comprising

a guitar fitted with a transducer connected to an amplifier of a radio transmitter located within the guitar, with the output of the radio transmitter led to an antenna mounted to the face of the guitar and oriented to extend parallel to said guitar face in a direction away from and generally perpendicular to the strings of the guitar.

3,901,119

NECK TRUSS STRUCTURE FOR STRINGED MUSICAL INSTRUMENTS

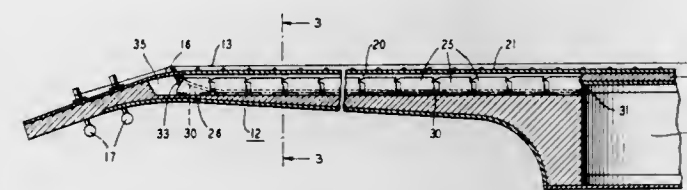
Roger H. Siminoff, 37 Raynor Rd., Morristown, N.J. 07960

Filed Dec. 10, 1974, Ser. No. 531,233

Int. Cl.² G10D 3/00

U.S. Cl. 84—293

9 Claims



1. A stringed musical instrument comprising a neck having a finger board thereon and strings adjacent said finger board and neck truss means within said neck, said neck truss means including a plurality of link elements serially positioned along the length of said neck and within said neck, a truss rod extending through said serially positioned links away from said finger board, and adjusting means on said rod for determining the curvature of said serially positioned links in said neck.

3,901,120

ELECTRONIC TUNING DEVICE FOR MUSICAL INSTRUMENTS

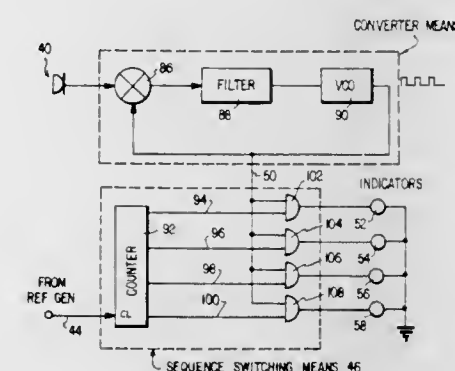
John S. Youngquist, 899 Niagara Blvd., Fort Erie, Ontario, Canada

Filed Oct. 11, 1973, Ser. No. 405,542

Int. Cl.² G10G 7/02

U.S. Cl. 84—454

17 Claims



15. An electronic device for tuning musical instruments comprising, in combination: transducer means for producing an electrical signal representing the frequency content of a tone produced by a musical instrument; converter means connected to said electrical signal for producing a first pulse train output whose pulse repetition frequency represents a component of said frequency content;

reference generator means for producing a second pulse train output whose pulse repetition frequency represents the correct tone to be produced by the musical instrument and which is related by a multiplication factor m to the pulse repetition frequency of the pulse train output first mentioned when said first mentioned pulse train output corresponds to the correct tone, m being greater than one; at least three visual indicator devices arranged in an array; switching means connected to said second pulse train output for producing sequential enabling signals corresponding sequentially to said visual indicator devices, said switching means having at least three output terminals at which said enabling signals sequentially appear; and coincidence means associating each said output terminal with a different one of said indicating devices and connected to said first pulse train output for energizing said indicator

devices in consonance with coincidence of said enabling signals and the pulses of said first pulse train output.

3,901,121

LIGHT EMITTING DEVICE

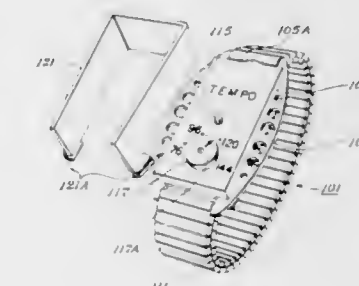
Carl J. Kleiner, 2302 Beach, Cisco, Tex. 76437

Continuation-in-part of Ser. No. 222,849, Feb. 2, 1972, abandoned. This application June 14, 1972, Ser. No. 262,667

Int. Cl. G10g 7/00; F21l 1/00; G08b 5/36

U.S. Cl. 84—484

7 Claims



1. A light emitting device adapted to be worn or carried by a person, comprising: a thin frame comprising an intermediate plate means sandwiched between a front plate and a rear plate, said intermediate plate means having a carrying zone formed therein, electrical components including a free-running multivibrator and a source of DC voltage for actuating said multivibrator located in said carrying zone, a light emitting diode to be periodically actuated by said multivibrator, said light emitting diode being connected in the circuit of said multivibrator and to one stage thereof, said light emitting diode being positioned to be visible from the front of said device, an on-off switch connected to the circuit of said multivibrator and extending through said frame to the exterior thereof for controlling the flow of electrical energy from said source to said multivibrator and hence to said light emitting diode, at least one of said front or rear plates being adapted to be removed for replacing components within said frame.

3,901,122

VARIABLE EXPANSION COMPRESSION NUT AND BOLT ASSEMBLY

Rudolph J. Novotny, North Palm Beach, Fla., assignor to United Aircraft Corporation, Hartford, Conn.

Filed Oct. 3, 1973, Ser. No. 403,241

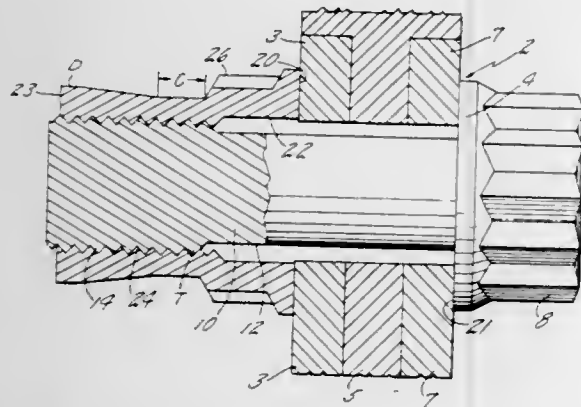
Int. Cl.² F16B 29/00, 37/00

U.S. Cl. 85—32 T

11 Claims

1. A variable expansion compression nut having inner and outer surfaces with first and second ends, the first end of the nut including a rigid washer portion providing a washer face for engaging a member to be held while the second end provides a rigid hoop, said outer surface being contoured to place a reduced diameter therearound having a substantially cylindrical thin wall section between the first and second ends, the thin wall section being of less outer diameter than either of said first and second ends and being the thinnest wall section

between the first and second ends, said inner surface having a threaded portion extending inwardly from the end providing a rigid hoop, said inner surface having an unthreaded portion extending inwardly from the washer face of the other end, said thin wall section having at least a length of substantially two threads of the threaded portion of said inner surface, said



threaded portion and said unthreaded portion meeting at a point on the inner surface of said nut with the first inner thread of said threaded portion being located so that it is radially aligned with and will be engaged within the reduced diameter of the thin wall section whereby the nut is deflected outwardly in the thin wall section upon loading of the threads of the threaded portion.

3,901,123

CARTRIDGE FEED AND ORIENTATION SYSTEM FOR RAPID FIRE WEAPON

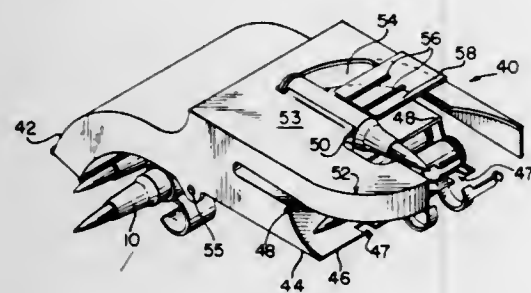
Laurence I. Jayne, Renton, and Roland A. Magnuson, Seattle, both of Wash., assignors to Pacific Car and Foundry Company, Bellevue, Wash.

Continuation of Ser. No. 185,139, Sept. 30, 1971, abandoned. This application July 9, 1973, Ser. No. 377,323

Int. Cl. F41d 9/02

U.S. Cl. 89—33 C

4 Claims



1. An ammunition feed system for an automatic weapon operated solely by firing of the weapon, the feed system designed to feed link belt ammunition from a remote supply to the rear of the weapon with the axes of the cartridges engaging by hole link belt perpendicular to the direction in which the cartridge enters the breech port of the weapon, comprising:

a detachable, ready round holder mounted adjacent the feed end of the breech port of the automatic weapon receiving the link belt ammunition from a remote supply with the longitudinal axes of the cartridges held by the link belt perpendicular to the longitudinal axis of the breech port and barrel of the weapon, the ready round holder including: (1) a first portion to receive a sequence of linked together cartridges, (2) a second portion adjacent the first portion receiving single cartridges, one at a time, as they are stripped from the link belt, and (3) a fixed pivot adjacent the first and second portions, means moving the leading cartridge held in the ready round holder from the first portion to the second portion without substantial rotation about its longitudinal axis,

means stripping the lead cartridge from the link belt during movement from the first portion to the second portion, and

means actuated by recoil of the weapon contacting the cartridge and rotating it about the fixed pivot to a position substantially parallel with the breech port of the weapon for movement into the breech.

3,901,124

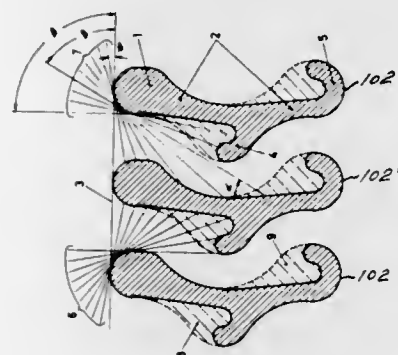
TANK GRATING

Helmut Hausenblas, Kassel-Kirchdittmold, Germany, assignor to Rhein Stahl Henschel Aktiengesellschaft, Kassel, Germany
Continuation-in-part of Ser. No. 196,154, Nov. 5, 1971, abandoned. This application July 25, 1973, Ser. No. 382,349
Claims priority, application Germany, Nov. 26, 1970, 2058169

Int. Cl. F41h 7/04

U.S. Cl. 89—36 H

3 Claims



1. A grating for protecting openings in the sides and ends of armored vehicles, which includes a plurality of rib members arranged in parallel, spaced relation to each other and perpendicular to the grating surface, said rib members being thickest at the head edges adjacent said surface of said grating and substantially as thick as the spacing between said head edges portions, each of said rib members having a protrusion hook-shaped in cross section on one surface at its central intermediate portion and a second protrusion hooked-shaped in cross section on the other surface at the edge opposite said head edge portion, each of said protrusions forming a channel opening toward said head edge portion, said other surface being curved from said head edge portion to said intermediate portion and then inclined from said intermediate portion away from said one surface to said hook-shaped protrusion at the opposite edge, said one surface being inclined from said head edge portion in the same direction as said other surface to said intermediate protrusion, said intermediate protrusion of each of said rib members extending to a transverse plane passing through the surface of the head edge portion of an adjoining rib member, said intermediate protrusion being substantially equal in thickness to the thickness of said intermediate portion of said rib member, said head portion, intermediate portion and protrusions being of a thickness at every point of impact of missiles as to provide resistance to penetration at the maximum angle of impact according to a curve of the maximum thickness for resistance to penetration at the maximum angle of impact of a missile at that point.

3,901,125

HANDGUN APPARATUS

Clarence A. Raville, P.O. Box 377, Thousand Oaks, Calif. 91360

Filed Mar. 21, 1973, Ser. No. 343,560

Int. Cl. F41d 3/06

U.S. Cl. 89—163

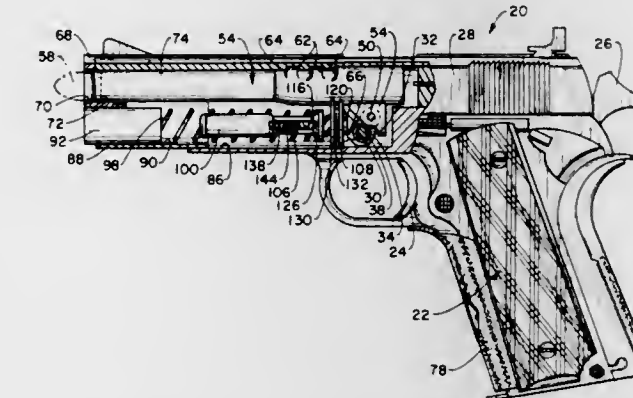
8 Claims

1. A recoil energy absorption apparatus for use in a handgun comprising:

a cylinder;

a first piston assembly, said first piston assembly mounted within said cylinder forming a closed chamber, a gas located within said cylinder, due to said closed chamber as said first piston assembly moves into said cylinder the gas compresses increasing energy absorption;

a recoil spring having a pair of ends;



a second piston assembly, said second piston assembly in direct contact with one of said pair of ends of said recoil spring, the other of said ends of said recoil spring being fixedly positioned to move with said first piston assembly; and

said first piston assembly including a pair of spaced apart members, a non-metallic resilient energy absorption material located between said members, whereby said resilient material being adapted to absorb a portion of the recoil energy.

3,901,126

AUTOMATIC SMALL ARM

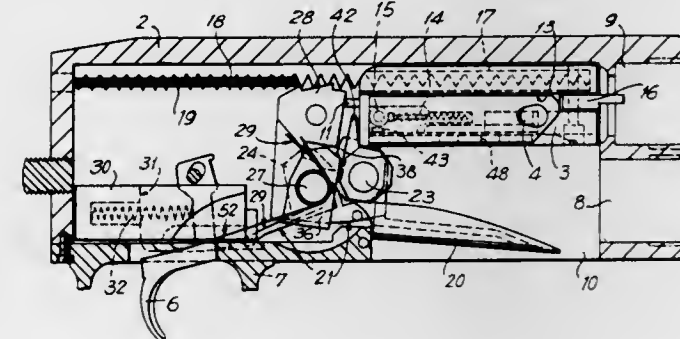
Rene Jean Georges Bretton, 26, rue Alexander-Pourcel, Saint-Etienne, France

Continuation of Ser. No. 236,718, March 21, 1972, abandoned. This application Apr. 1, 1974, Ser. No. 457,141
Claims priority, application France, Mar. 25, 1971, 71.11421

Int. Cl. F41D 3/04

U.S. Cl. 89—182

5 Claims



1. A firearm having an automatic ammunition feed and comprising a casing with a barrel in prolongation of the case, a displaceable breech block in said case, an inertia block freely slidable in said case, means for locking said breech block in an operative position for firing of the firearm and for releasing the breech block, after firing, for movement to a retracted position for feed of a fresh cartridge to the barrel, said means comprising a lock bolt mounted in said case adjacent the inertia block for movement between a first and a second position, and an intermediate lock member mounted in said case to engage said breech block and in turn be engaged by said lock bolt, when the latter is in said first position, to lock the breech block in said operative position, said inertia block acting on said lock bolt, by the action of recoil forces upon firing, to cause the lock bolt to move to said second position and release the intermediate lock member to enable the breech block to move to its retracted position; and a spring-loaded percussion hammer pivotably mounted in said

case for movement independently of said lock bolt for firing a cartridge.

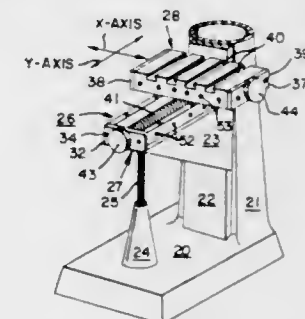
3,901,127

MECHANISM FOR POSITIONING A WORK PIECE
Edward P. Stone, 4362 Whittle Ave., Oakland, Calif. 94602
Filed Nov. 19, 1973, Ser. No. 417,422

Int. Cl. B23d 7/08

U.S. Cl. 90—58 R

10 Claims



1. Work table mechanism for a power tool assembly comprising: a base and work table each providing an axis of reciprocation therealong; said work table being supported by said base and oriented with respect to said base such that said axes of reciprocation are disposed at essentially right angles; said base and work table being provided with oppositely facing tracks respectively disposed along said axes and said tracks being in abutting relationship with each other; a connecting block substantially completely disposed within said tracks and interlockingly engaging the same, said block being movable relative to said base along the axis thereof; and lead screw means interconnecting said block with said base and work table to effect selective displacements of the latter along said axes and thereby position a work piece fixedly related to said work table at any location along a rectangular coordinate system defined by said axes.

3,901,128

FLUID POWERED CONTROL SYSTEM AND FAIL-SAFE VALVING SYSTEM FOR A FLUID POWERED SYSTEM
Emery C. Swogger, Arlington, Tex., assignor to LTV Aerospace Corporation, Dallas, Tex.

Continuation-in-part of Ser. No. 391,173, Aug. 24, 1973. This application Nov. 30, 1973, Ser. No. 420,488

Int. Cl. F15b 9/03, 9/09

U.S. Cl. 91—31

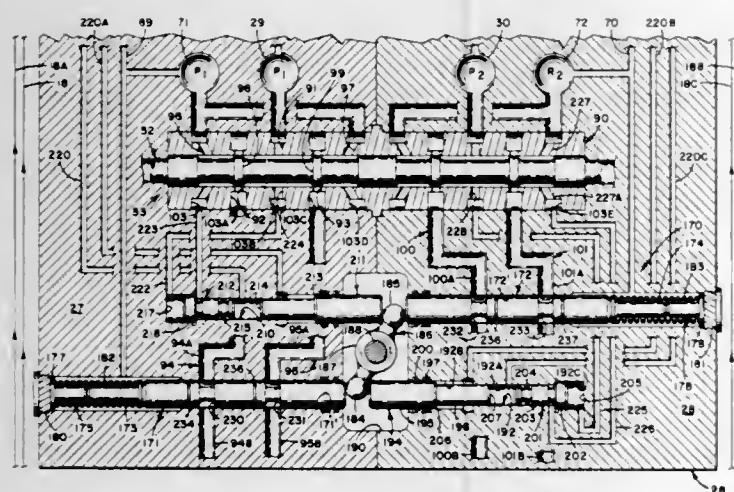
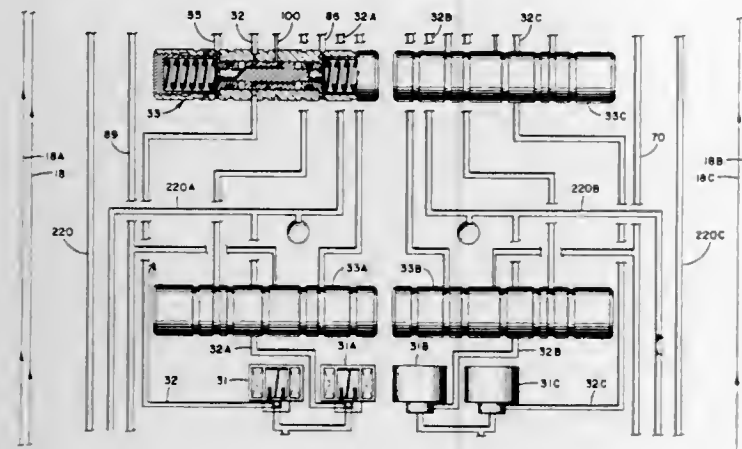
24 Claims

1. A fluid powered servo control system responsive to a plurality of redundant, command input signals and comprising:

a source of fluid under pressure;
a plurality of conduits communicating with the source of fluid under pressure;
a plurality of fluid amplifiers each operative in response to a respective command signal, each having a fluid inlet connected to a respective one of the conduits and first and second fluid outlets, and each comprising means receiving fluid from the source of fluid under pressure and ejecting fluid proportionally through the two outlets in response to a respective command signal to cause a differential pressure output signal across the outlets, the fluid outlets of each fluid amplifier being fluidly isolated from the outlets of the other fluid amplifiers;
a housing;
a movable summing structure slideably mounted within the housing and comprising means summing the output signals of the fluid amplifiers, the movable summing structure having a plurality of pairs of piston face areas, each pair being fluidly associated with a respective fluid amplifier, each piston face area comprising means for receiving fluid pressure from a respective one of the fluid amplifier outlets;

a plurality of differential pressure monitoring means, each monitoring means being connected to a respective one of the conduits in series between the source of fluid under pressure and the corresponding fluid amplifier and comprising a means for shutting off fluid to the respective fluid amplifier upon the occurrence of a differential pressure, between the outlets of the respective fluid amplifier, which exceeds a predetermined level;

a flow control valve having a movable valve element, the summing structure being operatively connected to the movable valve element, the flow control valve being fluidly connected to, and receiving fluid under pressure from, the source of fluid under pressure;



a fluid powered actuator drivingly connected to a movable load, the flow control valve being fluidly operatively connected to the actuator;

a fail-safe valving system fluidly connected in series between the flow control valve and the actuator and comprising means for restricting any fluid flow between the flow control valve and the actuator upon concurrent operation of all the monitoring means shutting off fluid flow to all the fluid amplifiers, and for shutting off fluid flow between the flow control valve and the actuator upon the occurrence of a failure of the source of fluid under pressure whereby fluid under pressure is not supplied to the flow control valve.

3,901,129

FLUID PRESSURE OPERATED RECIPROCATING MOTORS

Phillip Butterworth, Cockermouth, England, assignor to Butterworth Hydraulic Developments Limited, London, England

Filed Apr. 27, 1973, Ser. No. 355,006

Claims priority, application United Kingdom, May 1, 1972, 20155/72

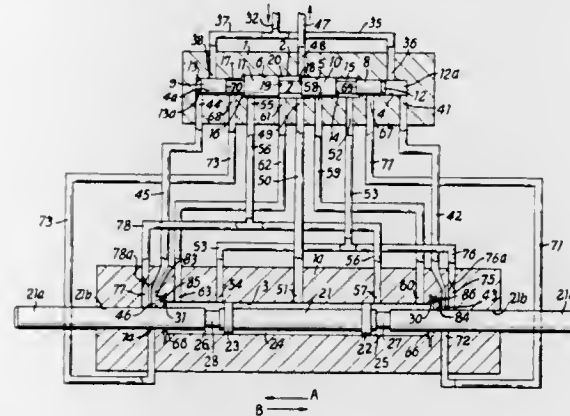
Int. Cl. F011 25/04

U.S. Cl. 91—299

14 Claims

1. A fluid pressure operated motor for producing reciprocating motion including a spool axially slidable in a spool cylinder, the spool defining with the spool cylinder a pair of spool working chambers and a piston axially slidable in a

piston cylinder, the piston defining with the piston cylinder a pair of piston chambers in which each of the pair of spool working chambers is respectively in communication with one of the pair of piston chambers by way of a non-return valve which opens communication between its associated spool working chamber and piston chamber when fluid pressure in the spool working chamber exceeds that in the associated piston chamber and closes communication between its associated spool working chamber and piston chamber when fluid pressure in the piston chamber exceeds that in the associated spool working chamber; each piston chamber has an exhaust port which is so located that, during axial movement of the piston, the one of such exhaust ports, through which the contracting piston chamber is exhausting is closed by the piston towards its end of stroke; and wherein valve means is provided



which is responsive to axial movement of the piston, said valve means being adapted to open communication between the contracting piston chamber and the spool working chamber associated therewith so that fluid displaced from the contracting piston chamber acts at least partly to reverse the spool when the said exhaust port associated with the contracting piston chamber is closed, and subsequently to close communication between the contracting piston chamber and the spool working chamber associated therewith prior to the piston reaching its end of stroke so that, with the non-return valve associated with the contracting piston chamber closed and the said valve means closed, the fluid in said piston chamber is trapped to provide a dashpot arrangement for arresting the piston at its end of stroke.

3,901,130

VALVE ARRANGEMENT FOR THE WORKING CYLINDER OF A PNEUMATICALLY OPERATED STAPLER

Wilfried Lange, Altenhagen, Germany, assignor to Bukama GmbH Hannover, Hemmingen-Westerfeld, Germany

Filed Oct. 25, 1973, Ser. No. 409,564

Claims priority, application Germany, Oct. 27, 1972, 2252735

Int. Cl. F15B 11/08, 13/042

U.S. Cl. 91—461

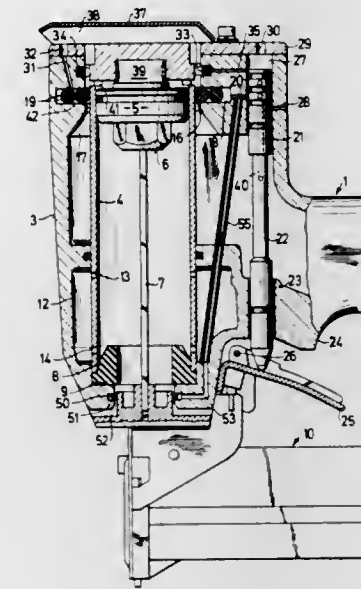
3 Claims

1. A valve arrangement for the working cylinder of a pneumatically operated tool, comprising:

- a tool housing;
- a working cylinder mounted in said tool housing;
- a piston reciprocable in said working cylinder;
- a channel formed in said housing through which compressed air is passed to said cylinder;
- at least one annular valve chamber formed in said housing operatively adjacent said channel;
- at least one elastic, radially deformable ring arranged in said channel, said at least one ring having outer rims which constitute control pressure areas,
- an auxiliary valve means for operatively controlling said control pressure areas;
- said at least one ring having inner rims constituting closing members for said air channel,
- said housing being formed with an outlet opening communicating with the interior of said working cylinder and

formed with an annular groove underneath said working cylinder, said annular groove communicating with said outlet opening;

an additional elastic, radially deformable ring mounted underneath said working cylinder in said annular groove of said tool housing;



said additional elastic ring having an outer rim constituting a control pressure surface and an inner rim serving as a closing means for said outlet opening;

a second channel formed in said housing and communicating with said annular groove; and

means for communicating a means containing a controlled pressure medium into said second channel, said outer rim of said additional elastic ring communicating via said second channel with said controlled pressure medium.

3,901,131

ANTI-EMISSIONS COMPRESSION PISTON RING

Herbert F. Prasse, St. Louis, Mo., assignor to Ramsey Corporation, St. Louis, Mo.

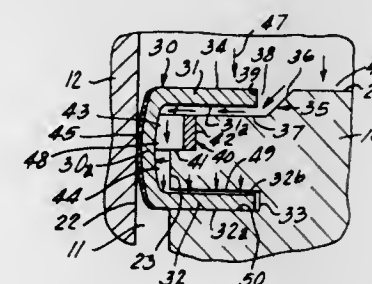
Continuation-in-part of Ser. Nos. 815,653, April 14, 1969, abandoned, and Ser. No. 183,201, Sept. 23, 1971, abandoned.

This application May 21, 1973, Ser. No. 362,002

Int. Cl. F16j 1/00, 9/06, 9/08

U.S. Cl. 92—182

12 Claims



1. The internal combustion engine piston and piston ring combination comprising:

- a piston having a head;
- said piston having a circumferential ring groove with top and bottom radial wall surfaces adjacently axially spaced from said head;
- an emissions control ring having axially spaced radially inwardly directed upper and lower legs interconnected by a radially outer peripheral web section;
- said web section being adapted to ride against the wall of a cylinder in which the piston is received reciprocally;
- said ring being positioned around the outer periphery of the piston at said head with said lower leg extending into said groove;

said upper leg overlying said head in axial clearance relation defining a space between an underside surface of said upper leg and a radially extending upwardly facing surface area of the piston head underlying said underside surface and extending radially inwardly beyond the inner edge of said upper leg;

the surface of said head radially inwardly about said underlying surface area of the head extending generally radially inwardly as an extension from said surface area and away from said underside surface of said upper leg;

said lower ring leg and said groove being of differential axial width so that said lower leg has a limited range of axial permissible movement in said groove, the range of permissible movement of the lower leg being less than the axial width of the clearance space between said upper leg and said underlying piston head area, whereby the ring is permitted to have a limited range of reciprocating movement relative to the piston head, with consequent enlargement of said clearance in one phase of a firing cycle involving the piston in the cylinder;

and a metal expansion spring acting in said space between said web and said piston and having its upper edge substantially aligned with said underlying surface area to thrust the emissions control ring against the wall of a cylinder within which the piston is received, said ring being substantially narrower than said web to avoid frictional interference with reciprocable movements of the control ring;

whereby during firing cycles involving said piston in a cylinder, gases and vapors may move freely into and out of said clearance past the inner edge of said upper leg, and on moving out of said clearance past said inner edge of said upper leg the vapors and gases are directed toward the center over said piston head in a combustion zone in the cylinder and positively away from the cylinder wall engaged by the ring.

3,901,132

PISTON FOR USE WITH ROTARY PISTON ROD

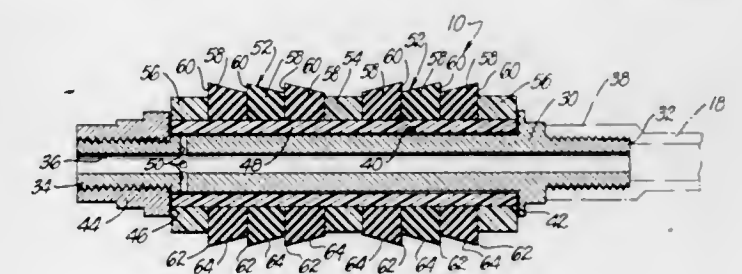
Marlyse Jeanne Baldwin Jai, 3155 French Rd., Apt. 223, Beaumont, Tex. 77704

Filed Nov. 17, 1972, Ser. No. 307,417

Int. Cl. F16j 1/02, 1/08, 1/24

U.S. Cl. 92—182

3 Claims



1. A piston for use with a rotary piston rod which comprises: an elongated center member, said center member having a cylindrical surface intermediate its ends,

attaching means formed on one of the ends of said center member for connecting said center member to a piston rod,

flange means secured to both of the ends of said center member, said flange means being located at the extremities of said cylindrical surface,

a cylindrical sleeve of a low friction material located around said cylindrical surface between said flange means, the length of said sleeve being less than the distance between said flange means, the internal diameter of said sleeve being sufficiently large so that said sleeve is free to rotate on said cylindrical surface,

two elastomeric sealing means for sealing against fluid pressure exerted on said piston, each of said sealing means being located on said sleeve so as to extend around said

sleeve and fitting closely up against the exterior of said sleeve,
each of said sealing means having a series of ring shaped flat surfaces located perpendicular to the axis of said cylindrical surface and extending outwardly from said sleeve and having a sloping, conical wall leading away from the edge of each of said flat surfaces,
said flat surfaces on one of said sealing means facing one end of said elongated member and the flat surfaces on the other of said sealing means facing the other end of said elongated member,
the edges of said flat surfaces being capable of fitting against the interior of a cylinder so as to form a seal therewith, said sealing means being capable of deforming when pressure is applied to said flat surfaces so as to tend to push said edges of said surfaces into sealing contact with the interior of a cylinder with which said piston is used, passage means for conveying fluid from one of the ends of said piston to between said sleeve and said cylindrical surface so that as fluid is applied to said piston to move said piston in a cylinder the applied fluid will serve to lubricate the area between said sleeve and said surface so as to facilitate rotation between said sleeve and said surface.

3,901,133

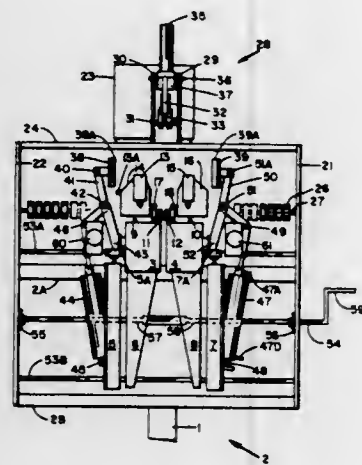
MACHINE FOR FORMING TRAYS

Miles L. Hall, Clarksville, Ind.; Lloyd M. Farley, Milford, Ohio; Huston E. Myers, Agency, Mo., and Charles F. Hagedorn, Cincinnati, Ohio, assignors to The Mead Corporation, Dayton, Ohio

Filed Jan. 18, 1974, Ser. No. 434,682
Int. Cl.² B31B 3/60

U.S. Cl. 93—41

8 Claims



1. A machine for securing a pair of carton flaps to each other in face contacting relation, said machine comprising a mandrel arranged to receive one of the carton flaps in flat face contacting relation, adhesive applicator means movable generally parallel relative to said one carton flap and arranged to make an application of adhesive to said one carton flap, flap holding means mounted on and movable in coordination with movement of said adhesive applicator means for holding said one carton flap in substantially fixed face contacting relation relative to said mandrel, flap folding means arranged to impart swinging movement to said other flap so as to position said other flap in face contacting relation to the surface of said one flap to which adhesive has been applied by said adhesive applicator means, and separate motive means for imparting operating movement to said adhesive applicator means and to said flap folding means, operation of said flap folding means and of said adhesive applicator means being coordinated so that said flaps are secured together in face contacting relation immediately following an application of adhesive to said one flap.

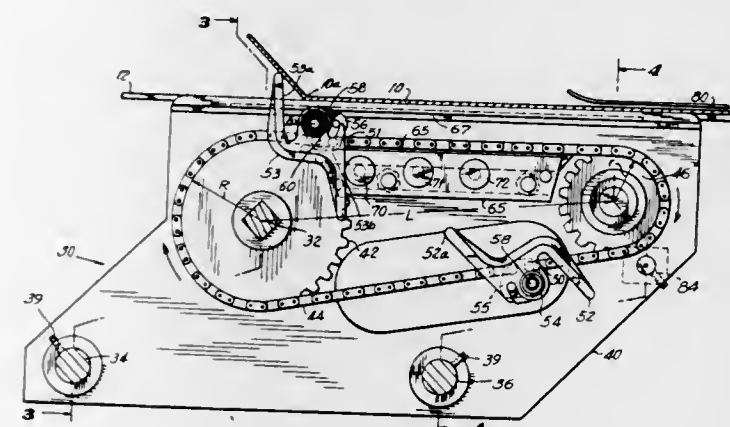
3,901,134 SELF-SYNCHRONIZED TRAILING EDGE FOLDER ASSEMBLY ACCESSORY FOR FOLDER-GLUER

Harry S. Reizenstein, 23-20 Bell Blvd., Bayside, N.Y. 11360, and George W. Tanges, 131 Old Rte. 304, New York, N.Y. 10956

Filed June 28, 1974, Ser. No. 484,160
Int. Cl. B31b 1/54

U.S. Cl. 93—49 AC

13 Claims



1. A trailing edge folding accessory apparatus for use in combination with a box blank folding machine having support means for continuously advancing along a horizontal path in said folding machine, a box blank at a predetermined speed and in a predetermined direction; primary drive means for said support means; and folding means for folding the lateral edges of a moving blank along a fold-like parallel to the direction of travel, the accessory apparatus being adapted for folding the trailing edge of the box blank forwardly along a line perpendicular to the direction of travel, the accessory apparatus comprising:

an endless operating loop having a substantially straight upper stretch extending substantially parallel to but beneath said path and being adapted to be intermittently operatively connected to the primary drive means;

means for supporting said operating loop in a plane normal to said predetermined path but extending in the same direction;

first sensing and signal control means, including a first portion designed and adapted to be sensitive to the location of a box blank along the said path relative to the location of the operating loop and a second portion for causing the operative connection to be made between the operating loop and the primary drive means so as to initiate motion of the endless operating loop when a box blank is in a predetermined location along the said path; at least one folding finger, pivotally connected to the endless operating loop, and comprising a folding surface and biasing means for biasing the folding finger towards a rest position;

camming means for causing the pivotal rotation of the folding finger when the folding surface is in a position adjacent the path of a box blank so as to pivot the folding surface in the direction of travel of a box blank as the folding finger moves along the straight upper section of the endless operating loop and for releasing the finger when the box blank has been folded to a predetermined position, thus permitting the folding finger to be biased back towards its rest position; and

second sensing and signal control means adapted to be sensitive to the completion of the folding operation by the folding finger and to interrupt the connection between the primary drive means and the operating loop so as to halt the motion of the operating loop without interrupting the continued movement of a box blank along its predetermined path.

3,901,135

DEVICE FOR DISTRIBUTING VENTILATING AIR

Allan Elvir Nilsson, Tomelilla, and Hans Gösta Johansson, Alta, both of Sweden, assignors to Ar-Ventilation AB, Stockholm, Sweden

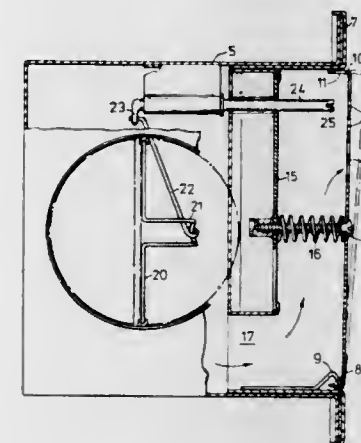
Filed Jan. 8, 1974, Ser. No. 431,727

Claims priority, application Sweden, Jan. 16, 1973, 7300573

Int. Cl.² F24F 13/00; E06B 7/02

U.S. Cl. 98—40 V

2 Claims



1. An air distributing device for distributing air flowing into a room having an inner wall from a duct outlet in said inner wall and discharging air into the room, said air from the duct being discharged into the room through said device at least a portion of which is disposed in said duct outlet, said device comprising a box-like housing having air inlet means and air outlet means for feeding air into the room, said outlet means having primary and secondary air openings in a grille element which is movably fitted in a front wall of said housing and which determines two flow directions into the room, one said direction being upward and the other said direction being substantially horizontally in the room, an upper edge of said grille element comprising a perforated flange extending into the housing toward the rear portion of the device and containing said secondary openings, and means mounting the grille element for adjustable movement into different positions in the housing front wall in such a manner that the flange openings are exposed to a greater or lesser extent, the air thereby passing through the grille element not only mainly at right angles to the plane of said element but also upward through said flange, the grille element being attached or joined to the housing front wall along the lower edge of said element and being maintained adjustably in position by a setscrew, and an intermediate wall inside the housing upstream of the grille element and downstream of air inlet means having the form of an air intake stub, a lower portion of the intermediate wall together with the inside of the housing defining a flow passage through which the air must pass on its way to the grille element, said intake stub having a 'hrottle for regulating the air flow through the device, which throttle by means of a link is connected to a crank joined to an inner end of an adjustment screw accessible through the grille element primary openings.

3,901,136

DISPLAY OVEN

Robert Gary Wilson, 10 Chisolm Trl., Greenville, S.C. 29607; Raymond W. Rogers, and Anthony George Willien, both of Greenville, S.C., assignors to said Robert G. Wilson by said Raymond W. Rogers and Anthony George Willien

Filed Jan. 28, 1974, Ser. No. 437,341

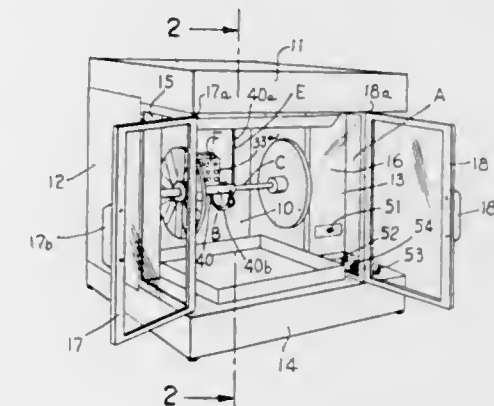
Int. Cl. A47j 37/04

U.S. Cl. 99—352

4 Claims

1. A display oven for cooking edibles on spits, skewers and the like comprising:
a housing including insulated rear, top and side walls carried by a base;

glass extensions projecting forwardly from said side walls between said top and said base;
glass closure means across free ends of said glass extensions projecting from said walls;
a horizontal rotatable edible carrier assembly mounted for rotation between said insulated side walls;
a portion of said edible carrier assembly extending between said glass extensions projecting from said walls;



electrical heating means carried in said housing adjacent said insulated walls remote from said glass extensions forming a high heat zone in said housing and a lower heat zone within said glass extensions; and
a motor for rotating said edible carrier assembly moving edibles alternately from a direct exposure to said heating means in said high heat zone to said lower heat zone remote from said heating means;
whereby the edibles are displayed within said glass extensions while cooking, and uniform heating and browning without burning of the edibles is facilitated.

3,901,137

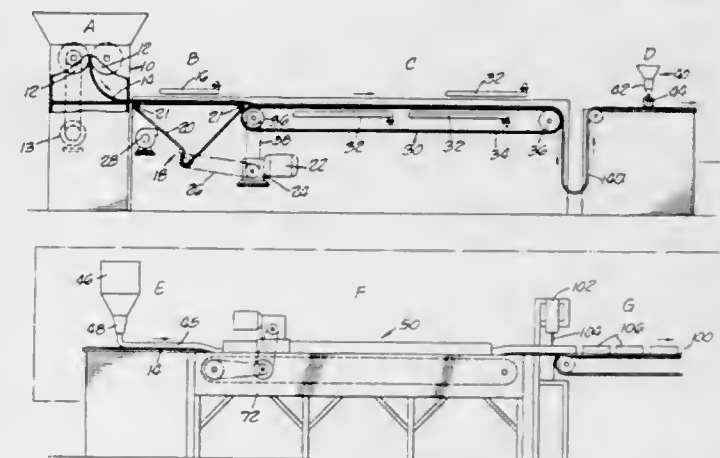
AUTOMATIC ENCHILADA MACHINE

James A. Jimenez, 6252 N. Hart, Temple City, Calif. 91780
Division of Ser. No. 304,626, Nov. 8, 1972, abandoned. This application July 26, 1974, Ser. No. 492,066

Int. Cl.² A21C 9/08, 11/00; B29C 3/02

U.S. Cl. 99—353

6 Claims



1. An apparatus for automatically preparing a food product having a cooked or partially cooked outer layer of food material in sheet form which is folded so as to encapsulate a filler food material, comprising:

- means for heating the first side of the sheet material while simultaneously cooling the opposite or second side of the sheet material, said means including a first heating means;
- a second heating means for simultaneously heating both the first and second sides of the sheet material;
- deposition means for depositing a filler food material on the sheet material; and
- forming means for folding a first portion of the sheet material around the filler food material so as to partially enclose the filler material.

3,901,138

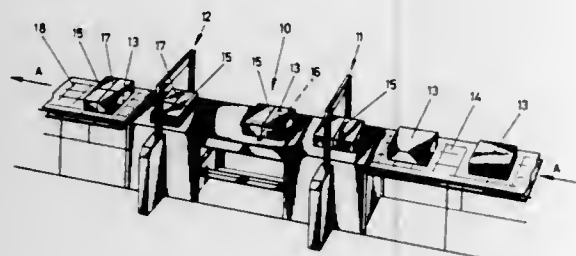
TURN TABLE DEVICE

Pieter Arnoldus V. D. Bilt, Duinweg 24, Bosch En Duin, Netherlands

Division of Ser. No. 286,681, Sept. 6, 1972, Pat. No. 3,799,320. This application Dec. 21, 1973, Ser. No. 427,264
Int. Cl.² B65B 13/06

U.S. Cl. 100—4

4 Claims



1. Apparatus for strapping objects in two directions, comprising a pair of strapping machines, and a turntable device between said machines, said turntable device comprising a frame, a work table at the top of said frame, conveying means defining the top plane of said work table and adapted to convey an object from adjacent one said machine towards the other said machine, said work table further comprising a vertically movable cross stepwise rotatable about a vertical axis, said cross in its lower retracted position having its wings below the said top plane and in its upper operative position above said top plane, drive means for the stepwise rotation of said cross, said drive means being controlled by a switch having an actuating lever extending above said top plane, said drive means comprising a friction disc rotatably mounted in the frame about a vertical axis and adapted to be continuously driven, a vertical shaft concentric with said disc, the upper end of said shaft carrying the cross, while the lower end carries a second friction disc having radially extending wings, means for moving said shaft upwardly to bring the second friction disc into engagement with the first friction disc and for moving said shaft downwardly to disengage the said friction discs, and a further switch which in the raised position of the shaft can be actuated by a said wing and when actuated controls the means for moving said shaft to move downwardly.

3,901,139

AUTOMATIC WASTE COMPACTOR

Dario J. Moriconi, Bloomfield Hills, Mich., assignor to McClain Industries Inc., Utica, Mich.

Filed Oct. 24, 1973, Ser. No. 409,248

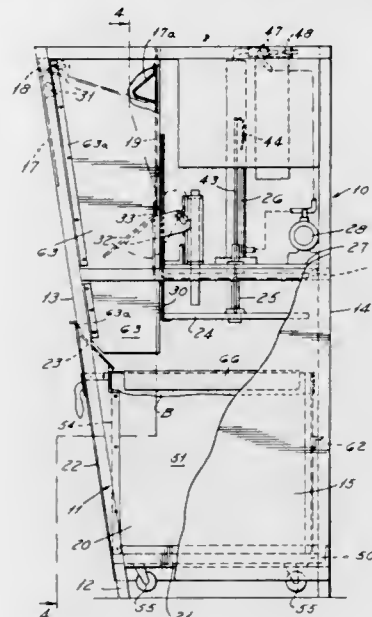
Int. Cl.² B30B 15/18

U.S. Cl. 100—48

22 Claims

1. In a waste compactor, the combination comprising a frame, a support on said frame for a disposable container, a compactor member, means for moving said compactor member toward and away from said support to compact waste in the disposable container on said support, means defining an access opening to said container on said support, an access member obstructing said path and movable out of said path to permit access and deposition of waste to said container,

and means responsive to successive movement of said access member out of the obstructing position to initiate



operation of said means for moving the compactor member toward said support.

3,901,140

BACON PRESS WITH SLAB EJECTOR

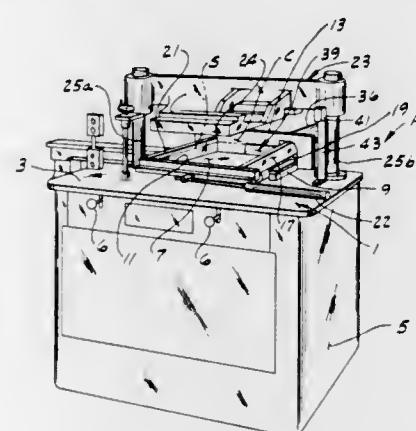
Daniel Dohm, Jr., University City, Mo., assignor to Cashin Systems Corporation, Long Island, City N.Y.

Filed Nov. 14, 1973, Ser. No. 415,820

Int. Cl.² B30B 15/16, 15/32

U.S. Cl. 100—53

8 Claims



1. In a press having a fixed bed, controls for operating the press located at one end thereof constituting the forward end of the press and thus defining an operator's station where an operator stands to operate the press, a plurality of platens defining a chamber in which a slab of bacon or the like may be molded, means for moving at least one of the platens relative to the others for heightwise, lateral and endwise compression of the slab, one of said platens constituting a rear platen being fixed relative to said bed, another of said platens constituting a front platen adjacent said operating station being movable between a compressing position in which it closes the front of the compressing chamber and a retracted position in which it is clear of the front of the chamber to permit a slab in the chamber to be ejected endwise therefrom, and another of said platens constituting a bottom platen being movable fore and aft relative to said bed below said rear platen, said bottom platen carrying said front platen when the latter is in its compressing position for endwise compression of the slab between said fixed rear platen and said movable front platen; means for at least partially ejecting a slab from the front of the chamber, said ejecting means comprising a fluid power unit secured to the back face of said fixed rear platen and immovable relative to said fixed bed, a piston rod extending through said rear platen, and a pusher carried by said rod, said fixed

rear platen having an opening therein for reception of said pusher, the latter being movable between a retracted position in which it is received within said opening in said rear platen and forms a part thereof with its face flush with the face of said rear platen for engagement with the slab and for endwise compression of the slab and a forward ejecting position in which at least the forward end of the molded slab extends out of the chamber.

3,901,141

CAN CRUSHER

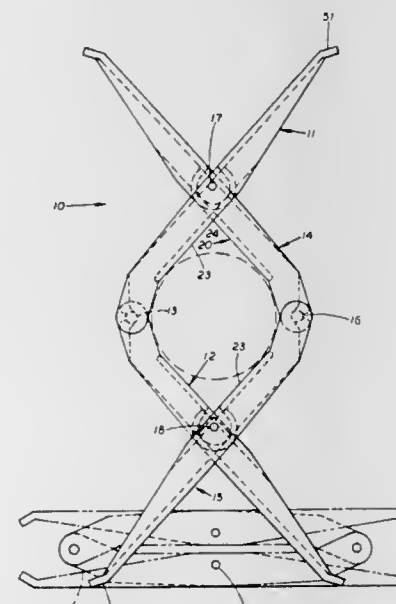
Carl E. Bochmann, Brecksville, Ohio, assignor to Burton D. Morgan, Hudson, Ohio

Filed Aug. 28, 1974, Ser. No. 501,179

Int. Cl. B30b 7/00

U.S. Cl. 100—236

10 Claims



1. A manually operated can crusher device or the like comprising two pairs of pivotally engaged lever arms, and two hinge fulcrums individually engaging corresponding individual arms of the two pairs of arms to secure them together in criss-cross relation and form a central pressure chamber from portions of said lever arms which are movable to a superimposed substantially flat position to crush any article in said chamber.

3,901,142

DOOR CONTROL MECHANISM FOR STACK-FORMING IMPLEMENT

William Robert Wood, Ankeny, Iowa, assignor to Deere & Company, Moline, Ill.

Filed June 20, 1973, Ser. No. 371,734

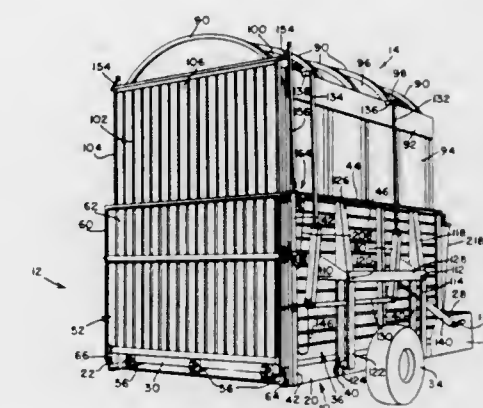
Int. Cl. B30b 5/00, 15/32; A01d 43/06

U.S. Cl. 100—255

29 Claims

1. A stack-forming implement comprising: an upwardly opening crop-receiving body having an open end through which a completed stack can pass; a door mounted on the body and movable into and out of closing relationship with the open end thereof; a downwardly opening roof for the body mounted thereon for vertical reciprocable movement to compress crop material in the body from time to time and having an open end through which a completed stack can pass; a door mounted on the roof and movable into and out of closing relationship with the open end thereof; a control member connected to the roof door for controlling movement thereof between its opened and closed positions, said control member normally being movable vertically, with the roof; a catch mounted on the body and movable between first and second positions, said catch in the latter position only being operative

to engage the control member as the roof is raised so that continued upward movement of the roof causes the roof door to move from its closed to its opened position; said body door being operative to control the position of the catch so that



3,901,143

EMBOSSING PRESS

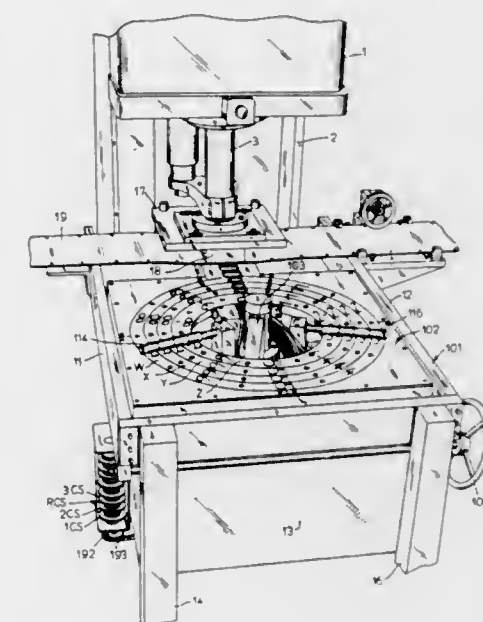
Donald R. Alexander, Conway, Ark., and Carl W. Johnson, Neenah, Wis., assignors to Donald R. Alexander, Conway, Ark.

Filed Apr. 17, 1974, Ser. No. 461,646

Int. Cl.² B44B 5/00

U.S. Cl. 101—18

4 Claims



1. An embossing press comprising a frame, a ram reciprocally mounted on said frame for back and forth movement between a non-embossing and an embossing position; an assembly of embossing rings mounted on said frame in cooperative relation to said ram and for relative rotation on a common axis; an indexing arm pivoted on said frame coaxially with said ring assembly; oscillating means for alternately effecting forward and reverse strokes of said indexing arm on its pivot axis; selectively engageable and disengageable torque transmitting means operatively interposed between said indexing arm and said embossing rings; and operatively interrelated control means for said torque transmitting means and for said ram responsive to said forward and reverse strokes of said indexing arm whereby said rings are rotated step by step in predetermined order upon successive forward strokes of said indexing arm and left in indexed positions during said reverse strokes of said indexing arm, and whereby said ram is held in said position.

non-embossing position during said forward strokes of said indexing arm and reciprocated between said non-embossing and embossing positions during said reverse strokes of said indexing arm.

3,901,144

PRINTING MACHINE

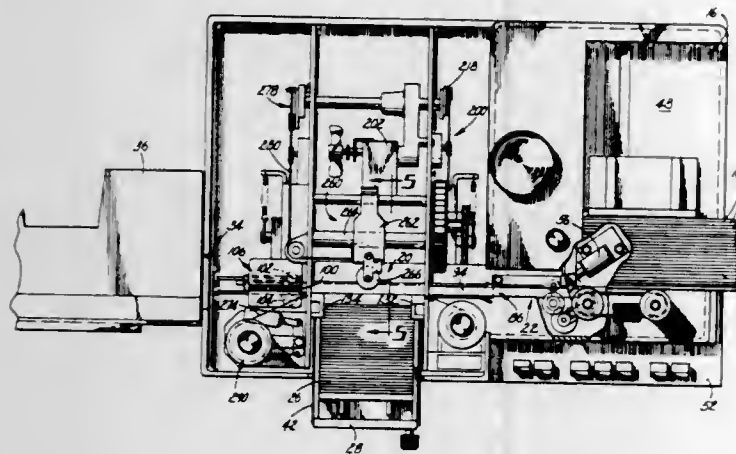
Fritz A. Deutsch, Euclid, Ohio, assignor to Addressograph Multigraph Corporation, Cleveland, Ohio

Filed Jan. 26, 1973, Ser. No. 327,052

Int. Cl.² B41L 45/02

U.S. Cl. 101—56

5 Claims



1. A printing apparatus for printing on the faces of planar articles formed of sheet material with planar printing plates, said printing apparatus comprising a printing station, article storage means for storing a plurality of the planar articles in an on-edge orientation, article means for receiving articles which have been printed at said printing station, article feed means for transporting planar articles from said article storage means to said printing station along an article feed path and for continuing movement of articles from said printing station along the article feed path to said article receiving means with the articles in an on-edge orientation, said article feed means including drive means for engaging at a lowermost edge portion of a planar article at said article storage means and for moving the planar article to and from said printing station with the side surface of the planar article in an upright position, holder means disposed beneath said printing station for releasably holding a removable storage container in which a series of printing plates are disposed with each printing plate in a determinate ordinal position in the series of printing plates, an inspection station disposed above said holder means, plate feed means for moving printing plates along a plate feed path extending from said storage container to said inspection station, from said inspection station to said printing station, and from said printing station back to said storage container, said plate feed means including means for engaging a printing plate in the storage container, for removing the printing plate from the storage container, for moving the printing plate upwardly along the path to said inspection and printing stations, and for returning the printing plate downwardly to its determinate ordinal position in the series of printing plates in the storage container, and printing for effecting a transmittal of data from a printing plate to the side surface of a planar article with the planar article in an on-edge orientation at said printing station.

3,901,145

PIVOTED ACTUATOR ARM ASSEMBLY

Egon S. Babler, Northbrook, Ill., assignor to Teletype Corporation, Skokie, Ill.

Continuation-in-part of Ser. No. 292,003, Sept. 18, 1972, Pat. No. 3,805,695. This application Feb. 11, 1974, Ser. No. 441,191

Int. Cl.² B41J 9/36

U.S. Cl. 101—93.48

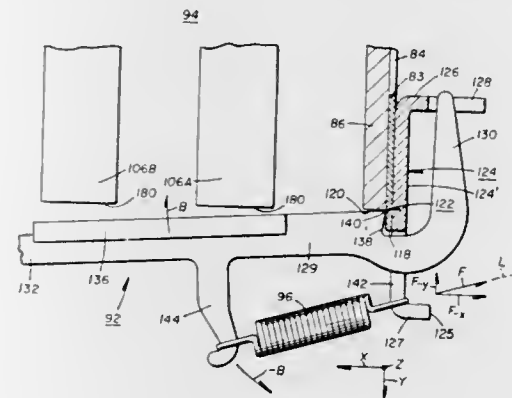
17 Claims

1. In combination with a machine of the type having a support frame and a plurality of identical, elongated actuator

arms pivotably mounted in the frame for movement between first and second positions for operating a plurality of controlled mechanisms, an improved mounting assembly for the arms characterized by:

the frame comprising a chassis having a horizontal wall; a positioning member for the arms secured to the chassis in a vertical position, the positioning member comprising a positioning plate assembly including a vertical chassis plate fixed to one end of the horizontal wall and depending vertically therefrom, the lower edge of the chassis plate being flat and horizontal, and a vertical wear plate fixed to the outer surface of the chassis plate and extending a short distance downwardly therefrom so as to provide a depending overhang, the juncture at the lower edge of the chassis plate and the overhang portion of the wear plate defining a sharp crotch at approximately a 90° angle, the crotch extending along a line defining the axis of pivoting for the arms, the positioning plate assembly being elongated in the direction of the crotch so that all of the arms are pivotably mounted in the crotch in a parallel row at spaced intervals along the length of a single positioning member;

the arms comprising a plurality of electromagnet armatures having magnetic portions along the length thereof, each



arm having a portion along one surface formed at an acute angle defining a knife edge;

means for mounting the arms in the frame so that each arm is freely pivotable in the crotch between the first and second positions, the mounting means including a plurality of individual biasing means, one for each arm, for urging the knife edge of each arm into the crotch so that each arm is individually pivotable in the crotch;

a plurality of individual electromagnets, one associated with each armature, for individually pivoting the corresponding armatures from the first to the second positions, the electromagnets being mounted in the frame in a row facing the magnetic portions of the corresponding armatures;

an outer end of each arm including a curved portion tapering downwardly away from the knife edge, thence outwardly beneath the wear plate, and then upwardly generally parallel to the wear plate; and

the mounting means including a guide bracket secured to the outer surface of the wear plate and having upper and lower guide slots therein, in which the outer portions of the arms are received for locating the arms in the slots and containing the pivoting movement of the arms to predetermined vertical planes.

3,901,146

SQUEEGEE MOUNT FOR INDEPENDENT PRESSURE AND ANGLE ADJUSTMENTS

Gerard Stierlein, Mulhouse-Bourzwiller, France, assignor to Societe Alsacienne de Constructions Mecaniques de Mulhouse, Mulhouse, France

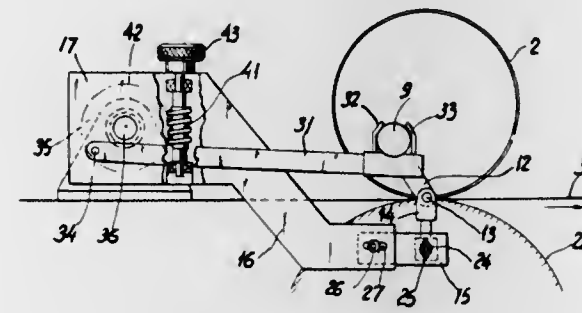
Filed Feb. 7, 1972, Ser. No. 223,856

Claims priority, application France, Feb. 15, 1971, 71.04957

Int. Cl. B41f 15/42

U.S. Cl. 101—119

3 Claims



1. A device for adjustably supporting a flexible squeegee within a rotating horizontal cylindrical screen of a sheet material printing machine, said screen engaging the material to be printed along a nip, said squeegee having a securing edge and a free operative edge, said device comprising: a supporting bar extending axially through said cylindrical screen and longer than the axial length of said screen, said supporting bar having end portions, said securing edge of said squeegee being secured to said supporting bar, fixed support means, two links located at either end of said screen, the end portions of said supporting bar being respectively rigidly secured to one end of one of said links, the other end of each of said links being pivotally mounted to said fixed support means on an axis which is in alignment with said nip, supporting bar adjusting means connected to said fixed support means for adjusting the angular position of said two links relative to the radial plane containing said nip, said operative edge of said squeegee always being located substantially along said nip, and means for biasing said squeegee to cause said operative edge of said squeegee to press the inner surface of said screen at said nip with a predetermined pressure.

3,901,147

CYLINDERS FOR LITHOGRAPHIC PRINTING MACHINES

Norman Holland, Hemel Hempstead, England, assignor to Addressograph Multigraph Corporation, Cleveland, Ohio

Continuation of Ser. No. 143,203, May 13, 1971, abandoned.

This application June 18, 1973, Ser. No. 370,890

Int. Cl.² B41L 35/02; B41N 07/04

U.S. Cl. 101—141

4 Claims

1. A lithographic printing machine comprising a master cylinder for receiving a master whose image areas attract oleaginous ink and a moisture system, including a repellent fountain, a fountain roll, and a repellent train including one or more rolls for taking aqueous repellent solution from the fountain and applying it to the surface of a master on said master cylinder, in which at least one of said cylinder, fountain roll and fountain train rolls has a surface of an alloy of tin and nickel in equi-atomic ratio.

3,901,148

MACHINE FOR PRINTING LABELS

Thomas Henry Clark, 43 Stella Hall Dr., Blaydon-on-Tyne, England

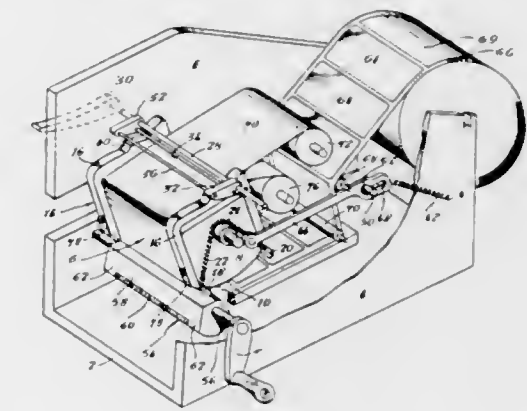
Filed Oct. 1, 1973, Ser. No. 402,242

Claims priority, application United Kingdom, Oct. 5, 1972, 46005/72

Int. Cl. B41f 13/04, 27/06, 31/16

U.S. Cl. 101—228

3 Claims



1. A printing machine for reproducing information embossed on a flexible printing plate, the machine comprising a pivotally mounted printing head including a printing block on which is formed on arcuate support surface having a leading and a trailing edge and holding means for releasably securing the printing plate on, to conform with, said arcuate support surface, said holding means including a saddle member mounted on the printing block and carrying a pair of lip members extending one along said leading edge and one along said trailing edge, the saddle member being movable relative to the block between a rest position in which the lip members are resiliently biased into engagement with the support surface and a displaced position in which the lip members are spaced from the support surface whereby the printing plate can be inserted and removed from between the support surface and the lip members, the machine further comprising a segmented impression cylinder the transverse section through which includes an increased-diameter printing portion having an arcuate extent corresponding substantially with that of the support surface, a printing ribbon passing between the head and the impression cylinder, and a plurality of labels, rotation of the impression cylinder causing the increased diameter portion thereof to traverse the arcuate extent of the support surface and thereby feed the labels consecutively between said impression cylinder and the pivoting head and imprint on said labels, by means of said ribbon, the information on the printing plate, spacer means between the head and the impression cylinder ensuring that only the outwardly-projecting embossed portion of the printing plate is reproduced.

3,901,149

DEVICE FOR DETERMINING THE TACKINESS OF INKS, PARTICULARLY PRINTING INKS

Dieter Schulte-Kulmann, Munster, Germany, assignor to Roland Offsetmaschinenfabrik Faber & Schleicher AG, Germany

Filed Dec. 9, 1974, Ser. No. 531,047

Claims priority, application Germany, Dec. 7, 1973, 2360986

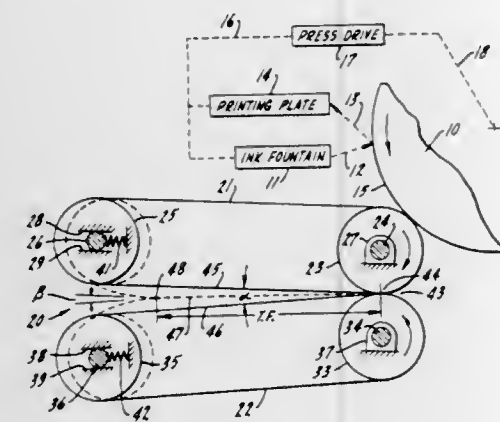
Int. Cl.² B41F 31/00

U.S. Cl. 101—349

8 Claims

1. In a device for continuously monitoring the tackiness of inks in an operating printing press, the combination comprising an inking system having means for feeding of ink from a source to a printing plate, a pair of belts each having parallel first and second supporting pulleys defining adjacent and remote runs of the belts, the first pulleys being mounted closely adjacent one another and the second pulleys being mounted in slightly spaced relation to provide local contact

between the belts at the first pulleys plus a small angle of nominal divergence between the adjacent runs, means for driving the belts so that the adjacent runs move at the same speed in the direction of the divergence and for transferring ink from the inking system to the belts in the region of the first



pulleys so that the adjacent runs of the belts tend to cling together, and resilient means for establishing predetermined tension in the belts so that the length of cling as measured from the region of local contact constitutes an accurate measure of the degree of tackiness of the ink.

3,901,150

INK FOUNTAIN AND SUPPLY SYSTEM FOR A PRINTING PRESS

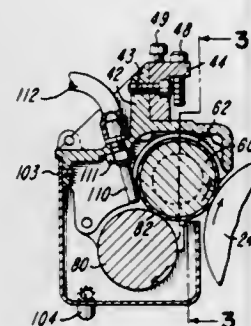
Raymond L. Kirby, Jr., Vandalia, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Filed Oct. 31, 1973, Ser. No. 411,283

Int. Cl. B41f 31/08, 31/02

U.S. Cl. 101—351

18 Claims



1. In a printing press including a housing having generally parallel spaced sidewalls supporting a rotary horizontal print cylinder, an improved system for precisely applying ink to a printing plate mounted on said print cylinder, comprising a generally horizontally disposed support member, a set of spaced brackets depending from said support member, a horizontal ink applying roll supported by a set of bearings retained by said brackets and positioned to engage the printing plate on said print cylinder, a horizontal ink distributing roll positioned to form a nip with said ink applying roll, means for supplying ink to said ink distributing roll, a set of plates mounted on said brackets and supporting said ink distributing roll, first adjustment means on said support member for moving said plates and said ink distributing roll relative to said ink applying roll for precisely controlling the transfer of ink from said ink distributing roll to said ink applying roll, said support member including means forming a cover for said ink applying and distributing rolls, a container connected to said support member and extending under said ink applying and distributing rolls, said support member, said brackets and plates, said ink applying and distributing rolls and said container forming an ink applying unit positioned between said sidewalls of said housing, and second adjustment means for moving said ink applying unit generally vertically between said sidewalls for

precisely controlling the transfer of ink from said ink applying roll to the printing plate.

3,901,151

PROCESS FOR PREPARING WATERLESS LITHOGRAPHIC MASTERS

Richard G. Crystal, Dallas, Tex., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 27, 1973, Ser. No. 428,964

Int. Cl. B41C 1/10; C08J 5/24

U.S. Cl. 101—463

12 Claims

1. A process for preparing a printing master comprising:
 - a. providing a suitable substrate,
 - b. coating said substrate with an elevated temperature or low temperature curable silicone,
 - c. depositing on said curable silicone a second curable silicone which can be preferentially cured at a lower temperature without curing the first silicone and which second silicone contains, in addition to its own catalyst, an amount of high temperature curing catalyst sufficient to contact and cure the underlying silicone,
 - d. preferentially curing the surface silicone, at least on its surface to render it nontacky, but not the underlying silicone,
 - e. depositing a particulate image pattern on the cured silicone said pattern comprising a material which selectively inactivates said high temperature curing catalyst and combines with said catalyst to degrade the cured silicone below said image pattern at elevated temperature,
 - f. curing the underlying silicone in the nonimaged areas to an elastomeric ink releasable condition as well as the surface layer to the extent that it was not previously rendered ink releasing, and
 - g. removing the particulate image pattern to reveal an ink accepting silicone having a rough topography.

3,901,152

FLARE ARTICLE

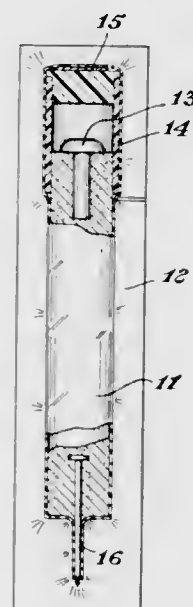
Claude P. Alexander, Ann Arbor, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 199,448, Nov. 17, 1971, abandoned. This application Dec. 6, 1973, Ser. No. 422,379

Int. Cl. C06D 1/10

U.S. Cl. 102—37.8

4 Claims



- b. a tight fitting outer layer of nonflammable plastic shrink film adhering to the surface of the grain to form the outermost portion of said flare and
- c. at least two spaced apart strips of said film extending from the article along the longitudinal axis of said cylindrical grain, said film and pyrotechnic composition having burning characteristics such that no burning down the sides of the grain and substantially no chimney effect occur upon burning of said flare grain.

3,901,153

WRAPPED LAMINATED FELTED MONOLITHIC COMBUSTIBLE CARTRIDGE CASE

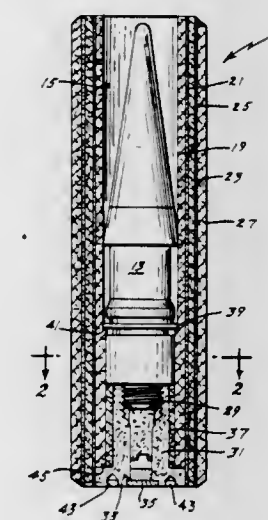
Robert I. Brabets, Lombard, and Seymour Levine, Chicago, both of Ill., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation-in-part of Ser. No. 295,077, Oct. 4, 1972, abandoned. This application Mar. 1, 1974, Ser. No. 447,423

Int. Cl. F42B 5/02

U.S. Cl. 102—38

5 Claims



1. A wrapped laminated felted monolithic combustible cartridge case for a fully telescoped round of ammunition comprising, in combination:

- a laminated propellant charge of substantially cylindrical configuration with an axial bore therethrough and having a plurality of concentric layers,
- the first of said concentric layers being an inner layer comprising a series of laminations of sheet combustible material having an inside diameter substantially equal to the outside diameter of the projectile in said telescoped round and wrapped to a predetermined thickness,
- a first deterrent film on the outer surface of said first concentric layer,
- the second of said layers being a midlayer immediately adjacent the outer surface of said first deterrent film, said midlayer comprising a series of laminations of sheet combustible material wrapped to a predetermined thickness,
- a second deterrent film on the outer surface of said second concentric layer, and
- the third of said layers being an outer layer immediately adjacent the outer surface of said second deterrent film, said outer layer comprising a series of laminations of sheet combustible material wrapped to a thickness equal to the outside diameter of said cartridge case,
- said first and second deterrent films operating to moderate the flame penetration to each of the next adjacent layers of combustible material,
- thereby effectively controlling the rate of gas generation to provide increased muzzle velocity without substantially increasing the peak pressure.

3,901,154

FUZING SYSTEM

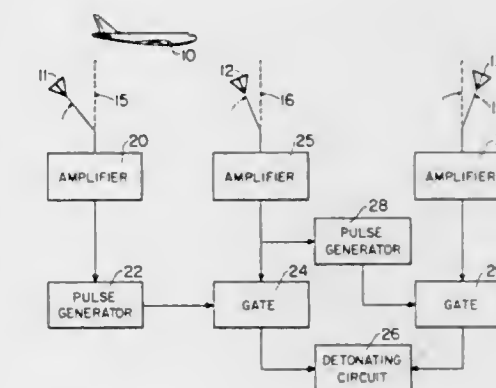
Daniel D. Holmes, Riverside, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 27, 1961, Ser. No. 92,102

Int. Cl. F42C 13/02

U.S. Cl. 102—70.2 P

1 Claim



1. A three channel infrared passive fuzing system providing controlled detonation position relative to a target for wide variations in relative velocity of a missile to a target and effective for head-on, side and tail approaches, comprising first, second and third channels each having means at different respective angles for receiving and detecting infrared radiation from a target, a first pulse generating means being connected to said first channel and being responsive to a signal caused by first channel detection of infrared radiation from a target for producing a first voltage pulse of a specific time duration; a first gate means being connected to said first pulse generating means, to said second channel and to a detonating means and being operable to be opened by said first voltage pulse for the specific time duration thereof, said first gate means being operable to pass a signal caused by second channel detection of infrared radiation from said target for actuating said detonating means when said second channel signal occurs during the specific time duration of said first voltage pulse, said second channel also being connected to a second pulse generating means for producing a second voltage pulse of a specific time duration; a second gate means being connected to said second pulse generating means, to said third channel and to said detonating means, and operable to be opened by said second voltage pulse for the time duration thereof, said second gate means being operable to pass a signal caused by third channel detection of infrared radiation from said target for actuating said detonating means when said third channel signal occurs during the specific time duration of said second voltage pulse, said third channel signal being used to actuate said detonating means only when said signal caused by second channel detection of infrared radiation from said target does not occur while said first gate means is open for passing the second channel signal to actuate said detonating means, wherein said fuzing system can be detonated for head-on approaches by said second channel detection signal and for tail approaches by said third channel detection signal.

3,901,155

SELF-SEALING IGNITION DEVICE

Paul Huber, Jettenberg, Germany, assignor to Firma Buck K.G., Bad Uberkingen, Germany

Filed Jan. 2, 1974, Ser. No. 429,735

Claims priority, application Germany, Jan. 5, 1973, 2300464

Int. Cl. F42C 15/00

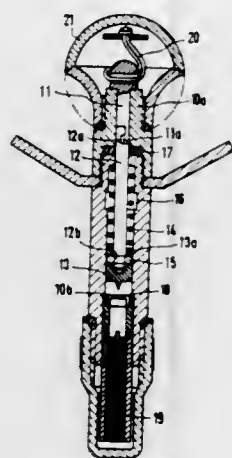
U.S. Cl. 102—70 R

9 Claims

1. In a firing pin ignitor suitable for release by a pullcord, said ignitor including a housing having a bore, a percussion-sensitive charge in said housing, and activating means for activating said charge while maintaining a moisture seal be-

fore and after activation of said charge; said activating means comprising:

- sealing means operable to seal said bore against moisture;
- spring means in said housing;
- a firing pin slidably disposed in said bore of said housing, said firing pin including:
- an outer part outwardly removable from said housing,
- an inner part including a portion arranged to displace said spring means in an energy-storing manner during outward movement of said firing pin to impart inward biasing force to said inner part, and



- a middle part;
- said middle part being releasably coupled to said inner part by first connecting means arranged to release said inner part for movement toward said charge after said spring means has been displaced during outward movement of said firing pin;
- said middle part being releasably coupled to said outer part by second connecting means arranged to release said middle part from said outer part subsequent to said release of said inner part and while said middle part and said sealing means are in sealing relationship relative to said bore, so that said middle part seals said bore subsequent to activation of said percussion-sensitive charge by said inner part.

3,901,156

SAFETY AND ARMING DEVICE FOR FUSES

Tore Rognmo, and Tore Schou, both of Kongsberg, Norway, assignors to A/S Kongsberg Vapenfabrik, Kongsberg, Norway

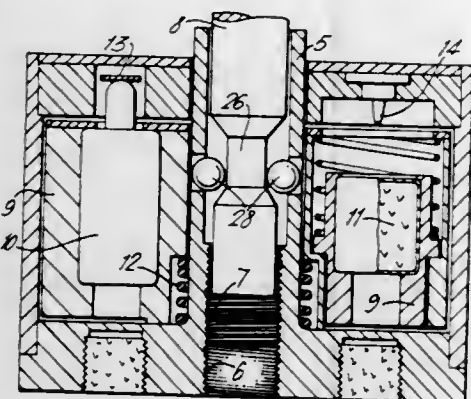
Filed Jan. 10, 1974, Ser. No. 432,155

Claims priority, application Norway, Jan. 10, 1973, 98/73

Int. Cl.² F42C 15/26

U.S. Cl. 102—70.2

4 Claims



1. In a safety and arming device for a fuse in a launchable missile which includes a housing, a turbine wheel driven by ram air, a rotatable drive shaft coupled to said turbine wheel, a rotatable countershaft releasably coupled to said drive shaft at one end thereof and axially displaceable from said drive shaft as a result of rotation thereof, a shutter disposed within

said housing and rotatable about the longitudinal axis of said countershaft, and a spring which rotatably urges said shutter from a safety position to an arming position, the improvement which comprises: first means for retaining said shutter in said safety position which is responsive to acceleration of said missile for releasing said shutter; second means for retaining said shutter in said safety position which is responsive to the axial displacement of said countershaft for releasing said shutter, said countershaft having the other end thereof threadably coupled to said housing; and means positioned between said first and second retaining means for preventing the axial displacement of said countershaft until after said first retaining means has released said shutter; said countershaft having a peripheral groove formed thereabout which is firstly engageable by said preventing means and then, after said axial displacement, by said second retaining means.

3,901,157

LINE THROWING EQUIPMENT

Leonard Taylor, Surrey, England, assignor to Schermuly Limited, Surrey, England

Continuation of Ser. No. 194,863, Nov. 2, 1971, abandoned.

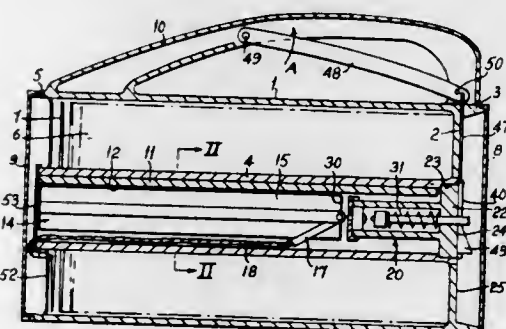
This application Aug. 31, 1973, Ser. No. 393,680

Claims priority, application United Kingdom, Nov. 11, 1970, 53605/70

Int. Cl. F42b 13/56

U.S. Cl. 102—89

13 Claims



1. Line-throwing equipment, comprising an elongate housing; a rocket discharge tube mounted in said housing with its axis substantially parallel to the axis of said housing and defining a radial gap between said tube and said housing, said discharge tube having an open front end and a closed rear end and including at least three elongate interior guide rails extending in a direction substantially parallel to the axis of said discharge tube, said guide rails being fixed relative to said discharge tube and each of said guide rails having a guiding surface located on a different generatrix of an imaginary cylindrical surface having an axis substantially parallel to that of said discharge tube, said guiding surfaces being located at spaced intervals about said imaginary surface; an unarmed percussion igniter mechanism mounted in said discharge tube at said closed rear end thereof, said igniter mechanism including means for arming the same; a rocket interiorly of said discharge tube accommodated within the confines of said guiding surfaces for guidance by the latter, said rocket having an end portion adjacent said igniter mechanism for ignition by the latter; a line in said radial gap; and connecting means for connecting an end of said line to said rocket in the region of said end portion thereof, said connecting means being accommodated at least in part between two of said guide rails and having a pivotable stirrup forwardly disposed while said rocket is within said tube and a connecting member attached to a forward end of said stirrup so that the heat of ignition will not affect the connection between said connecting member and said stirrup, whereby ignition of said rocket by said igniter mechanism results in the expulsion of said rocket and in the symmetrical escape of the developing hot gases through said open front end, so that the possibility of injury to a user as a result of contact with the escaping hot gases is at least minimized and, due to the symmetrical escape of such gases, inter-

ference by said gases with the flight accuracy of the rocket is prevented.

3,901,158

HYPODERMIC PROJECTILE

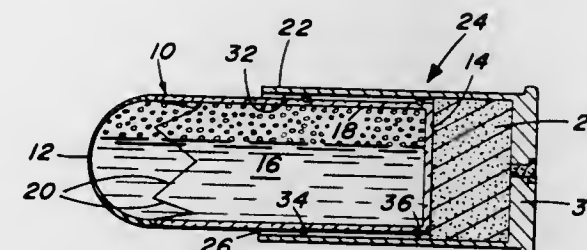
Thomas E. Ferb, 144 Sunrise Ter., State College, Pa. 16801

Filed May 13, 1969, Ser. No. 824,136

Int. Cl. F42b 5/12, 11/30

U.S. Cl. 102—92

5 Claims



1. A hypodermic projectile adapted to inject a liquid drug into an animal or human target upon impact therewith comprising:

- a hollow body having a readily shatterable front wall, and a rear wall;
- a side wall which is less readily shatterable than said shatterable front wall, said side wall joining said front and rear walls;
- a drug-holding area between said walls adapted to hold a dosage of liquid drugs, the drug being injected into the target upon impact; and
- wherein said drug-holding area contains a dosage of an incapacitating drug and a quantity of suitable means for forcing said drug against the target when the front end shatters on impact with the target.

3,901,159

TAMPING TOOL HEAD

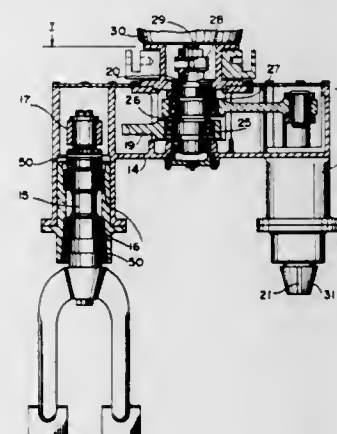
Helmuth Von Beckmann, Columbia, S.C., assignor to Cannon Inc., Phillipsburg, N.J.

Filed Mar. 21, 1974, Ser. No. 453,521

Int. Cl.² E01B 27/00

U.S. Cl. 104—12

6 Claims



1. A tamping tool head for mounting to an end of a tamping tool drive shaft having a conically and downwardly tapering end which tool head comprises a pair of fork arms connected to a center attachment portion, said center attachment portion being formed integrally with said pair of fork arms, a hole having a conically downwardly tapering surface in said center attachment portion and adapted to receive the tapering end of said drive shaft, and locking means for locking said attachment portion to said tapering end, wherein the tapering surface of said hole is shaped to bear against the tapering surface of the end of said drive shaft when said head is mounted to said end.

3,901,160

SHORT HEADWAY SWITCHING SYSTEM

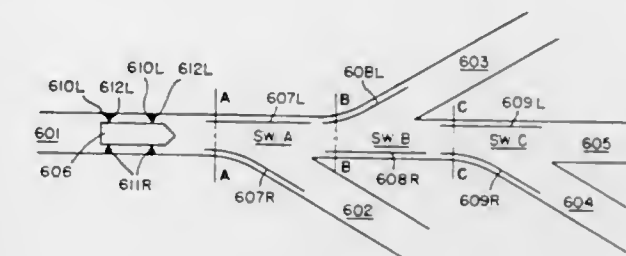
John H. Auer, Jr., Fairport, N.Y., assignor to General Signal Corporation, Rochester, N.Y.

Filed Aug. 5, 1974, Ser. No. 494,433

Int. Cl.² E01B 25/06

U.S. Cl. 104—130

17 Claims



1. A vehicle guidance system comprising:
 - a. a vehicle guideway having a diverge point from which vehicles may emerge to be guided along a first or second selected route;
 - b. individual vehicles travelling along said guideway;
 - c. first selectively adjustable vehicle switching means for guiding a first selected one of said vehicles through said diverge point to emerge on a first predetermined one of said selected routes;
 - d. second selectively adjustable vehicle switching means for guiding a second selected one of said vehicles through said diverge point to emerge on a second predetermined one of said selected routes which may, or may not, correspond with said first predetermined one of said selected routes; and
 - e. cooperating means between said first and second selectively adjustable vehicle switching means and said first and second one of said plurality of vehicles and said diverge point for causing said first and second vehicle switching means to influence only the route of said first and second vehicles, respectively, through the diverge point, and independent of the sequence of passage of said first and second vehicles through said diverge point.

3,901,161

TRANSPORT SYSTEMS EQUIPPED WITH A RACK-AND-ION-TYPE PROPELLING MECHANISM

Jean Henri Bertin, Neuilly-sur-Seine, France, assignor to Bertin & Cie, 78-Plaisir, France

Division of Ser. No. 336,950, March 1, 1973, Pat. No.

3,854,418. This application Sept. 11, 1974, Ser. No. 505,074

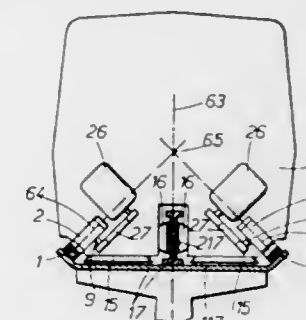
Claims priority, application France, Mar. 3, 1972,

72.07481; Sept. 21, 1972, 72.33405

Int. Cl. B61b 13/08

U.S. Cl. 105—29 R

1 Claim



1. In a transport system comprising a track, a machine supported and/or guided therealong, and a mechanism for propelling said machine along said track, which mechanism includes at least one rack extending longitudinally of the track and at least one pinion carried by said machine and meshing therewith, the improvement wherein the rotation plane of said pinion is inclined to the longitudinal vertical centerplane of the machine at an angle such that the line of intersection of

said rotation plane and said longitudinal centerplane lies close to the roll axis of the machine.

3,901,162

SYSTEMS COMPRISING A COGWHEEL AND A LONGITUDINAL REACTION MEMBER COOPERATING WITH THE COGS THEREON

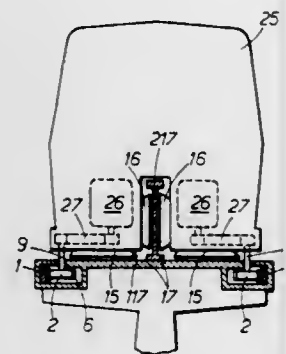
Jean Henri Bertin, Neuilly-sur-Seine, France, assignor to Bertin & Cie, Plaisir, France

Division of Ser. No. 336,950, March 1, 1973, Pat. No. 3,854,418. This application Sept. 11, 1974, Ser. No. 505,075 Claims priority, application France, Mar. 3, 1972, 72.07481; Sept. 21, 1972, 72.33405

Int. Cl. B61b 13/08

U.S. Cl. 105—29 R

6 Claims



1. In a system comprising a cogwheel and a longitudinal reaction member cooperating with the cogs thereon, of the kind in which said reaction member is supported on a rigid longitudinal base through the agency of an elastic longitudinal member having two opposite faces of which one is in contact with said rigid base and the other in contact with said reaction member, the improvement wherein that said reaction member is a rack formed by cogs of substantially trapezoidal profile matching that of the cogs on said cogwheel and each extending from a root carried on said elastic member.

3,901,163

SNUBBED TRUCK BOLSTER

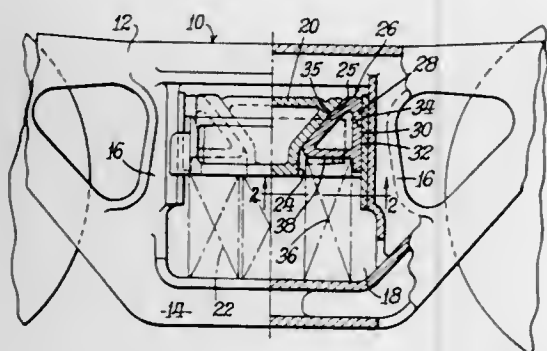
Otto Walter Neumann, Chicago, Ill., assignor to Amsted Industries Incorporated, Chicago, Ill.

Filed June 4, 1973, Ser. No. 366,431

Int. Cl. B61f 5/12, 5/50; F16d 69/04

U.S. Cl. 105—197 DB

2 Claims



1. In a railway car truck: a side frame having a column partly defining a bolster opening; a bolster resiliently supported in said opening; a friction surface on said column; a wedge surface on said bolster sloping toward said friction surface; a friction shoe having a wedge surface resiliently urged into complementary engagement with said bolster wedge surface; a friction wall on said shoe having a friction face engaged with the column friction surface; said wall having lateral projections defining stop surfaces facing the bolster; and guide surfaces on the bolster parallel to and in closely spaced relationship with said stop surfaces so that

horizontal and rocking movement of the bolster relative to the side frame are minimized; said shoe stop surfaces and said bolster guide surfaces tapering upwardly toward the column friction surface.

3,901,164

MODULAR DISPLAY STRUCTURE

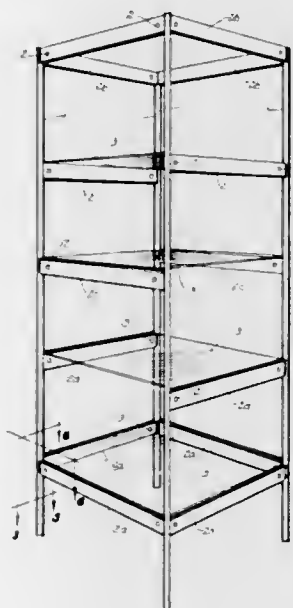
Michael L. Urti, Cincinnati, Ohio, assignor to Gibson Greeting Cards, Inc., Cincinnati, Ohio

Filed July 16, 1973, Ser. No. 379,215

Int. Cl. A47B 57/26

U.S. Cl. 108—106

3 Claims



1. A modular display structure comprising a plurality of shelves each adapted to be supported by sets of horizontal braces positioned at any desired horizontal level relative to a plurality of vertical corner posts defining the corners of the display structure, said corner posts each comprising an elongated member having a plurality of outwardly directed, angularly related equal width flanges extending throughout the full length thereof at equally spaced apart angles, a beaded enlargement extending along the outer edge of each said flange through its full length, the width of the flanges being greater than the width of the beaded enlargements, said horizontal braces each comprising an opposing pair of mating brace members having inner surfaces lying in face-to-face relation, mating vertically disposed channels spaced inwardly from the opposite end edges of the inner surfaces of said brace members positioned to engage about opposite sides of the beaded enlargement of a flange engaged therebetween, the portions of the inner surfaces of the brace members lying outwardly beyond said channels being of a width substantially equal to the width of said flange and adapted to enter into face-to-face engagement with the opposite sides of said flange when the channels engage the beaded enlargement, and threaded clamping means interconnecting said opposing brace members immediately inwardly of said mating channels, said threaded clamping means, when loosened, permitting said opposing brace members to be spaced apart by a distance such that a corner post flange may be freely engaged between the ends of opposing brace members and acting, when tightened, to draw the ends of the opposing brace members into clamping engagement with the opposite sides of the flange and with the mating channels in engagement with the beaded enlargement, said brace members having their outer end edges mitered at mating angles, whereby a plurality of horizontal braces may be secured to adjoining flanges of a corner post at the same horizontal level.

3,901,165

HANGING SHELF WITH LEVELLING MEANS

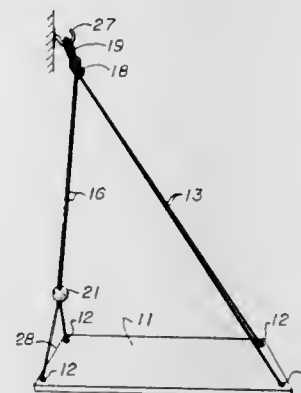
Jill Schlesinger, 591 Vermont St., San Francisco, Calif. 94107

Filed May 1, 1974, Ser. No. 465,911

Int. Cl. A47B 5/00

U.S. Cl. 108—149

4 Claims



1. In a shelf combination, a platform, at least three cords, the lower ends of said cords attached to said platform at widely spaced-apart positions on said platform to suspend said platform, means joining together the upper ends of each of said cords and having a loop for attachment to a hook or other suspension, and a slider manually slidable along only two of said cords between an upper location and a lower location to adjust the effective lengths of said two said cords to adjust the angle of said platform to the horizontal when said shelf is suspended by said loop, said slider comprising a bead formed with a bore, said two cords extending through said bore, the friction between said two cords and said bore holding said bead in a position of adjustment, said platform being formed with holes at said spaced positions, the lower ends of said cords passing through said holes, and fastened below said platform, said attachment of said cords to said platform being independent of said slider.

3,901,166

TRANSFER WHEEL FOR TRANSFERRING ARTICLES IN A PACKAGING DEVICE

Armand Morandl, and Jacques Berga, both of Renens, Switzerland, assignors to SAPAL Societe Anonyme des Pileuses Automatiques, Ecublens, Switzerland

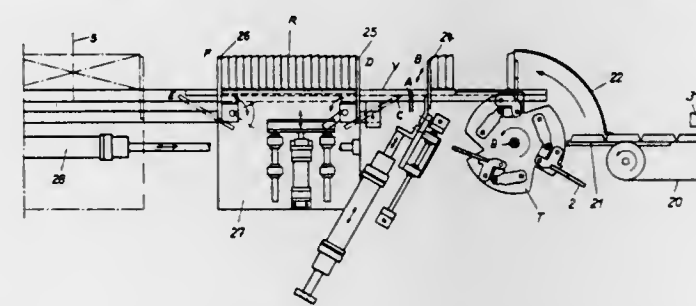
Filed Dec. 28, 1973, Ser. No. 429,663

Claims priority, application Switzerland, May 8, 1973, 6250/73

Int. Cl. B65G 47/00

U.S. Cl. 198—25

1 Claim



1. In a packaging device, a continuously rotatable transfer assembly, comprising a disc, a shaft mounting said disc for rotation, a plurality of pallets disposed about the periphery of said disc for pivotal movement about axes parallel to the axis of rotation of the shaft, toggles, said pallets being mounted on first pivots fixed on the disc towards the periphery thereof, each pallet being also pivotally connected to an arm of one of said toggles, the other arm of which is pivotally mounted on a second pivot fixed to the disc and parallel to the axis of said first shaft, each toggle being at its point of articulation pivotally connected about a second shaft carrying a cam follower

fixed thereto, and a fixed cam in the path of said cam follower, the contour of said cam being such that during rotation of the disc, the toggle pivots and controls the inclination of the pallets relative to the disc during rotation thereof to a protruding position for individually taking up flat articles delivered edgewise at a first angular location and for individually transferring the articles facewise along a fixed direction perpendicular to the faces of the articles to a grouping device at a second angular location, the pallets accompanying the articles over a certain distance along said fixed direction up to said second angular location and to retract into the disc during part of each revolution from the second angular location towards the first angular location.

3,901,167

WATERPROOF, AIRTIGHT CLOSURE

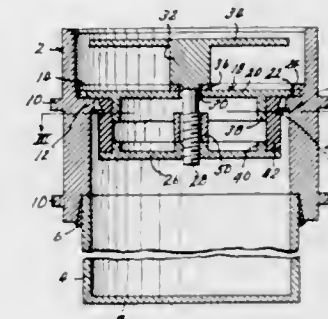
Dale C. Reese, R.R. No. 3, Box 160DF, Salina, Kans. 67401

Filed June 6, 1974, Ser. No. 476,912

Int. Cl. E05G 1/026

U.S. Cl. 109—64

4 Claims



1. A closure assembly comprising:

- a tubular body member serving as a door frame and having an internal peripheral flange, said flange being provided with inner and outer surfaces parallel to the plane of the door,
- a closure door engageable in said body member and including a compressible collar member extending about the periphery of said door, said collar normally being insertable through said body member flange to a position in which it is disposed within and extends inwardly beyond said body member flange, and
- compressing means carried by said door and operable to compress said collar in a direction normal to the door plane, whereby said collar is bulged outwardly in a direction parallel to the door plane to engage said body member and its flange, said collar having a groove formed peripherally in the outer surface thereof operable to engage said body member flange as said collar is bulged outwardly, said collar groove providing a shoulder of said collar parallel to the door plane facing outwardly relative to said door, said groove being otherwise so configured and positioned that as said collar is bulged outwardly parallel to the door plane by compressive force exerted thereon normally to the door plane, the engagement of said shoulder thereof with said inner surface of said body flange is the sole initial engagement between said collar and body member.

3,901,168

INCINERATOR SYSTEM

Ray F. Hemrich, P.O. Box 610, Altaville, Calif. 95221

Filed July 5, 1974, Ser. No. 486,049

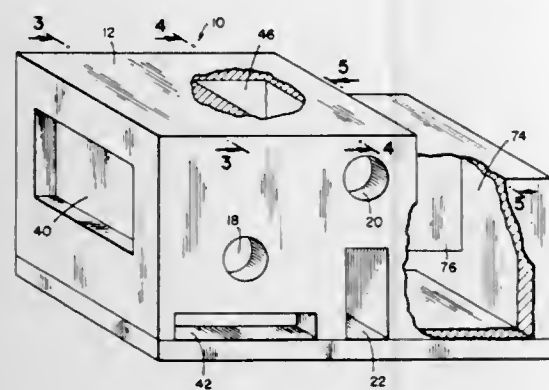
Int. Cl. F23G 5/00

U.S. Cl. 110—8 R

14 Claims

1. An afterburner adapted to receive the exhaust material of an incinerator, said afterburner comprising a walled passageway constructed of rhyolite material having less than about one percent by weight of iron oxides adapted to be traversed by the exhaust material of the incinerator before it

reaches the atmosphere, said passageway having a constricted venturi section adapted to expand and accelerate the exhaust

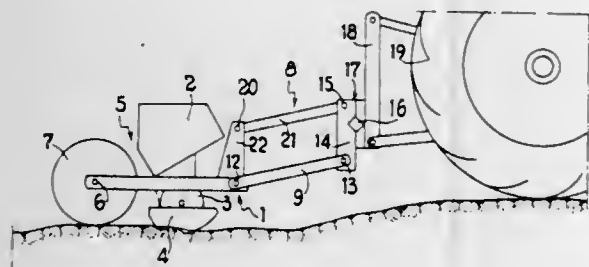


material so that said material is more fully combusted and particulate matter therein is minimized.

3,901,169 SOWING MACHINE, IN PARTICULAR FOR CORN OR BEET SEEDS

Edmond André Henri Ribouleau, 79 Largeasse, France
Filed Jan. 22, 1974, Ser. No. 435,523
Claims priority, application France, Jan. 22, 1973, 73.02075

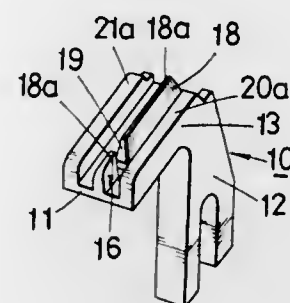
Int. Cl.² A01C 5/00
U.S. Cl. 111-52 10 Claims



1. A sowing machine comprising a chassis, at least one first support wheel carried by the chassis at the rear of the chassis, a seed distributor carried by the chassis, a support for fixing to the rear of a tractor, a connecting device for interconnecting the chassis and support and comprising a lower link and an upper arm which have first end portions pivoted to the chassis by two spaced apart pivots and second end portions pivoted to the support by two spaced apart pivots, the chassis having a front end part, at least one auxiliary support wheel, means for detachably mounting the auxiliary support wheel on said front end part, the upper arm of the connecting device comprising two elements which are relatively slidably interengaged, releasable means for interlocking the two interengaged elements so as to constitute an upper link of fixed length which forms, together with the lower link and said four pivots on the chassis and support, an articulated parallelogram system, said releasable means being capable of allowing said interengaged elements to slide with respect to each other and rendering the upper arm completely inoperative when the releasable means are released so that the chassis is no longer constrained to maintain a constant angle relative to said support and the auxiliary wheel, when mounted in said front part of the chassis, constantly bears on the ground and determines, in cooperation with said first support wheel, the angle of the chassis relative to the ground, the connection between said chassis and said support as concerns the drawing of said chassis by said support being ensured exclusively by said lower link.

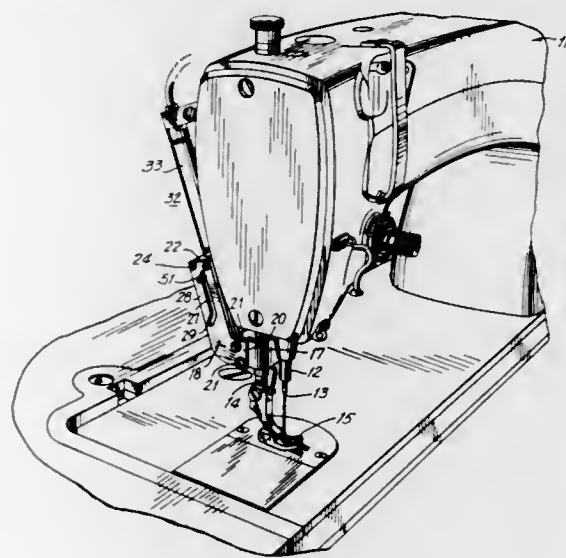
3,901,170
PRESSER FOOT
Ikuo Takamatsu, Uozu, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 22, 1974, Ser. No. 526,247
Claims priority, application Japan, Nov. 27, 1973, 48-136938[U]

Int. Cl.² D05B 29/00
U.S. Cl. 112-235 3 Claims



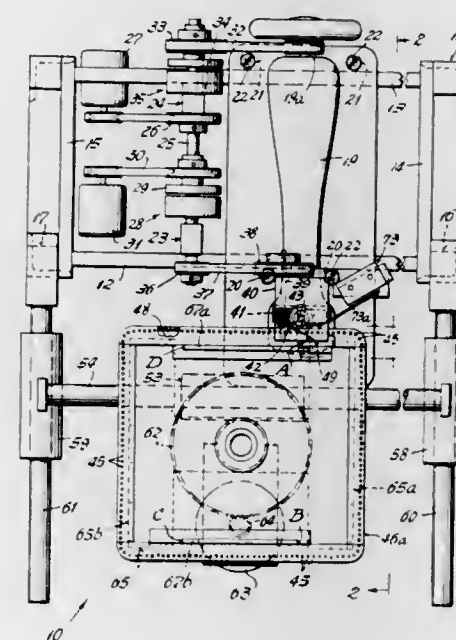
1. A presser foot for sewing a concealed slide fastener into a garment or the like, the fastener having two rows of interlocking fastener elements carried on respective carrier tapes of a warp-knitted structure, said presser foot comprising a foot having a sole portion disposed for guiding engagement with the web portion of the carrier tape and a partition having an opening for receiving a sewing machine needle, said partition having its bottom end located outwardly beyond the level of said sole portion and disposed for guiding engagement with an interval groove closest the coupling heads of the fastener elements.

3,901,171
THREAD WIPER
Salvatore Rosa, Hackensack, N.J., assignor to Clinton Industries, Inc., Hackensack, N.J.
Filed Aug. 5, 1974, Ser. No. 494,519
Int. Cl.² D05B 65/00
U.S. Cl. 112-252 6 Claims



1. In a sewing machine including a needle reciprocable along a path between a raised and a lowered position, a thread wiping mechanism comprising a picker member including a hook element having a rearwardly directed opening and actuating means disposed rearwardly and above said needle path and supporting said picker member for successively lowering said picker member toward said needle path, rocking said picker member to advance and retract said hook member across said needle path and then retracting and raising said picker member above the path of the lower end of said needle.

3,901,172
AUTOMATIC GUIDING APPARATUS FOR SEWING MACHINE
Ernest M. Junkins, 121 Wheeler Rd., Monroe, Conn. 06468
Division of Ser. No. 850,950, Aug. 18, 1969, Pat. No. 3,683,831. This application Aug. 14, 1972, Ser. No. 280,107
Int. Cl. D05b 21/00
U.S. Cl. 112-262 6 Claims

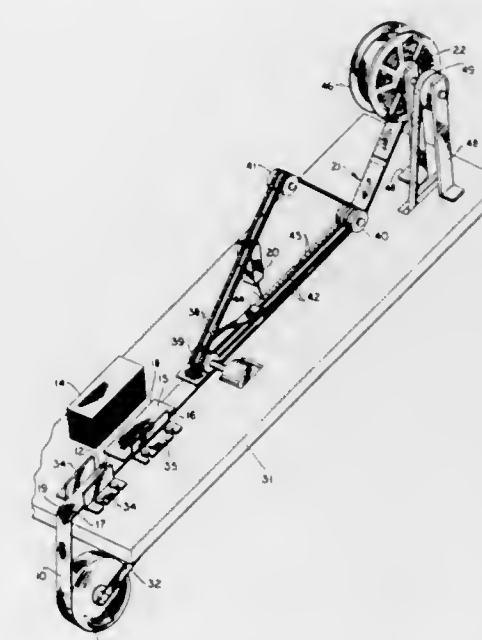


1. The method of feeding at least a pair of plies of cloth past a reciprocating sewing machine needle to form a line of stitching having a predetermined contoured path to unite the plies, said plies being mechanically moved by moving means, comprising the steps of holding the two plies in the position at which they are to be sewn at least adjacent the needle, moving the two plies by said moving means in unison along the predetermined path with the movement at the needle being along the normal feed path to the needle and operating the feed dogs of the sewing machine to feed the cloth along the normal feed path to the needle and creating slippage between the feed dogs and cloth by moving said moving means at a rate which is less than the rate at which the feed dogs are operated, whereby the stitches formed have a stitch length determined by the rate of the cloth moving means.

3,901,173
METHOD OF FABRICATING SHIRT CUFFS
Gordon H. Ellington; William O. Mitchell, and Don E. Estapa, all of Vidalia, Ga., assignors to Oxford Industries, Inc., Atlanta, Ga.
Continuation-in-part of Ser. No. 485,722, July 3, 1974. This application Nov. 6, 1974, Ser. No. 521,297
Int. Cl.² D05F 1/00
U.S. Cl. 112-262 6 Claims

1. A process of forming shirt cuffs or the like comprising moving a continuous web of lining material or the like along a path through a sewing machine at a first work station, placing panels of cuff material on the web of lining material spaced along the length of the web of lining material with an edge portion of the panels of cuff material overlying an edge of the lining material before the web of lining material is moved through the sewing machine and moving the panels of cuff material with the continuous web of lining material toward the sewing machine, folding the overlying edge portion of each of the panels of cuff material about the edge of the web of lining material as the web of lining material and panels of cuff material move toward the sewing machine, sewing through the folds of the panels of cuff material and the web of lining material to form a connected series of partially completed cuff assemblies, accumulating a supply of the connected series of partially completed cuff assemblies from the sewing machine, transferring the accumulated supply of the connected series of

partially completed cuff assemblies to a second work station, moving the connected series of partially completed cuff assemblies along its length from its accumulated supply to a fabric cutter, stopping the movement of the connected series of partially completed cuff assemblies in response to the movement of a leading panel of cuff material moving past a predetermined position and cutting the lining material behind the leading panel to separate the leading partially completed



3,901,174
DUCT-MAKING MACHINE
Rod M. Priest, 1033 W. Amity Rd., Boise, Idaho 83705
Filed Feb. 28, 1974, Ser. No. 446,876
Int. Cl. B21d 39/02
U.S. Cl. 113-54 6 Claims



1. A machine for forming duct from sheet stock, comprising; from its feed to its discharge, and first from means forming a top sheet and then means forming a bottom sheet wherein said top sheet is sufficiently wide to form the top and side walls of a duct and wherein said bottom sheet is sufficiently wide to form the bottom wall thereof; top sheet feed and rigidizing rolls including a male roll having a die ring which projects at each terminal end of said roll, and a pair of die rings distally from each of the terminal ends of said male roll forming a crease in said top sheet demarcating said top wall and said side walls of said duct, and female roll suitably mounted and driven superimposed fashion in said male roll and having at each of its terminal ends a concave die wheel each of which is in registry and mates with said projecting die ring at each of the terminal ends of said male roll, and wherein the body of said female roll is operable to receive said die

rings disposed distally from the terminal ends of said male roll;

flange rolls suitably mounted and driven in superimposed fashion and including flanging male and female die wheels mounted at the terminal end of said flange roll in registry with the die rings and wheels mounted at the terminal ends of said top sheet and rigidizing rolls, and idling means for engaging said top sheet for feeding thereof;

a flange guide having means to guide and bend said side walls substantially perpendicular to the top wall demarcated by said top feed and rigidizing rolls;

a bottom sheet feed and rigidizing roll being suitably mounted and driven having a male roll superimposed over a female roll;

staking rollers including a pair of superimposed rollers journaled at each side of said machine in registry with said flanges mating to crimp said flanges about the terminal edges of said bottom sheet, and having gear-like punches disposed about the circumferential faces of one of said superimposed rollers and a complementary roller provided with a multiplicity of recesses for receiving said punches thus forming a detented seam at said flanges; and flange guide rollers being mounted with their circumferential faces disposed parallelly at the intended dimension of the lower edges of said side walls, and having a groove in their circumferential stages for collating said flanges about the terminal edges of said bottom sheet.

3,901,175

HANK-LOADING DEVICE

George Norman Wheatley, 18 Gardens Ct., Parkstone Rd., Poole, Dorset, England (BH 15 2NX)

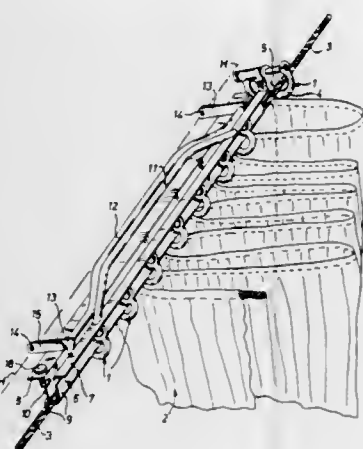
Filed Jan. 3, 1973, Ser. No. 320,767

Claims priority, application United Kingdom, Jan. 8, 1972, 032039/72

Int. Cl. B63h 9/04

U.S. Cl. 114—102

8 Claims



1. A hank-loading device for use in fitting spring-loaded sail hanks or clips to a stay, comprising:

- a channel-section magazine member adapted to fit over the stay, the magazine member having parallel outer surfaces on which sail hanks or clips may be assembled;
- a handle for gripping the magazine member, said handle having a hinged part;
- releasable retaining means connected to said hinged part for retaining the magazine member on the stay, and
- longitudinal guide means on at least one of said outer surfaces, said guide means retaining the hanks or clips on the magazine member and permitting longitudinal sliding movement of the hanks or clips along the magazine member, said retaining means being brought into a retaining position when the hinged handle part is gripped to hold the magazine member on a stay located in the channel of said magazine member.

3,901,176
HYDRAULIC JET PROPULSION APPARATUS SUITABLE FOR WATERBORNE VESSELS

Albert Leslie Copp, and George Lancaster Ronson, both of Cheltenham, England, assignors to Dowty Hydraulic Units Limited, Cheltenham, England

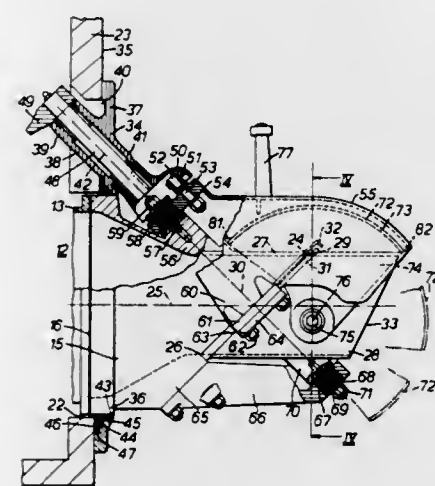
Filed Dec. 10, 1973, Ser. No. 423,588

Claims priority, application United Kingdom, Dec. 14, 1972, 57809/72; Dec. 14, 1972, 57810/72

Int. Cl. B63H 11/10

U.S. Cl. 115—12 R

5 Claims



1. An hydraulic jet propulsion apparatus, suitable for propelling waterborne vessels, including an intake duct, a pump for drawing in water through the intake duct, a discharge duct through which water pumped by said pump passes, a steering duct, support means for said steering duct, whereby that duct is positioned adjacent to and downstream of said discharge duct and water received by the steering duct from the discharge duct discharges to the exterior of the apparatus as a propulsive jet, the end portion of the discharge duct remote from said pump and the end portion of the steering duct adjacent to the discharge duct being both of annular form of substantially the same diameter and spaced the one from the other by means defining a predetermined annular clearance, and said steering duct being capable of rotational movement with respect to the discharge duct about an axis disposed obliquely to and intersecting the longitudinal axis of the discharge duct, thereby to change the direction of the propulsive jet for steering purposes, and drive means including a shaft whose axis is coincident with said obliquely-disposed axis, said shaft being adapted to drive said steering duct, for effecting said rotational movement thereof, about the coincident axis, by way of a slotted drive fitting and associated pin, which pin is offset from but parallel to said coincident axis, and said support means and said drive means being disposed wholly externally of the discharge duct and of the steering duct.

3,901,177

MARINE PROPULSION APPARATUS

Claude Worthington Scott, Throble Nest Farm, Summerbridge, near Harrogate, England

Filed Aug. 20, 1973, Ser. No. 390,120

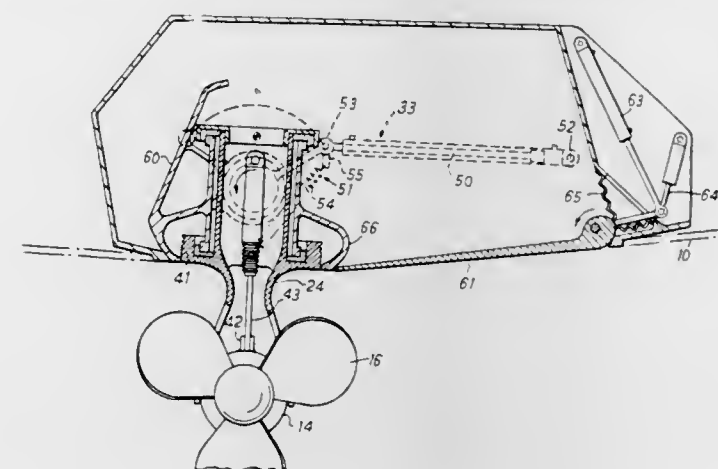
Int. Cl. B63b 5/06

U.S. Cl. 115—41 R

12 Claims

1. A marine propulsion apparatus comprising an apertured casing adapted for attachment to the hull of a boat, a propulsion unit, mounting means within said casing mounting the propulsion unit for movement through the aperture of the casing between a parked position within said casing and an operative position below the hull, the propulsion unit comprising a propeller, a drive shaft attached to the propeller, a sealed housing and a hydraulic motor within said housing, said motor being coupled to said propeller through said drive shaft, and said mounting means including a leg carrying said propulsion unit, the leg being mounted on a pivot to swing the propulsion

unit laterally of the hull between the operative and parked positions, the drive shaft of the propulsion unit lying generally



parallel to the pivot axis of said leg when the propulsion unit is in the parked position.

3,901,178

FLUID OPERATED SIGNAL APPARATUS

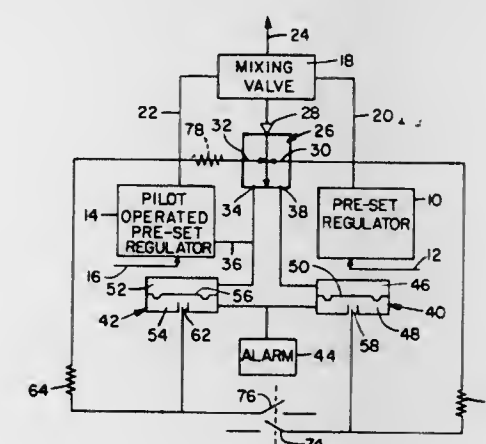
Thomas W. Bermel, Horseheads, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Sept. 14, 1973, Ser. No. 397,270

Int. Cl. G01L 19/12

U.S. Cl. 116—70

11 Claims



1. A fluid operated apparatus comprising a first pressure regulated source of a first fluid, a second pressure regulated source of a second fluid, a proportional fluid amplifier embodying a power stream nozzle, a first control nozzle connected to said first pressure regulated source, a second control nozzle connected to said second pressure regulated source, and first and second outlets for providing at least one fluid stream in response to fluid flow through one or both of said first and second control nozzles, a source of fluid connected to said power stream nozzle, a first fluid operated means connected to said second of said outlets of said proportional fluid amplifier, said first fluid operated means being responsive to said first pressure regulated source, a second fluid operated means connected to said first of said outlets of said proportional fluid amplifier, said second fluid operated means being responsive to said second pressure regulated source, one of said first and second fluid operated means providing a fluid stream in response to a change in pressure in said first or second pressure regulated sources, and means connected to said first and second fluid operated means for providing a signal in response to said fluid stream.

3,901,179

FIRE ALARM

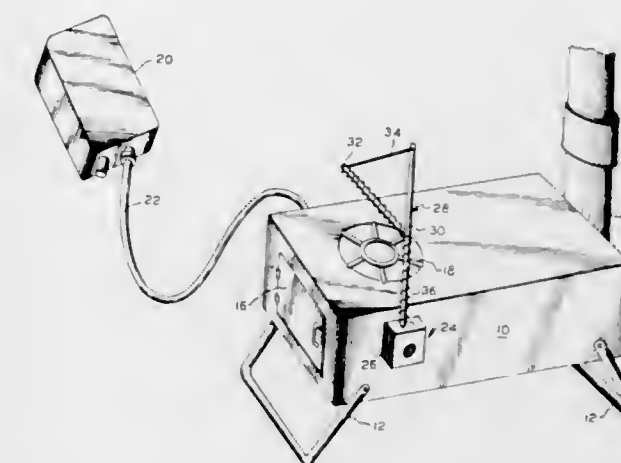
Byron G. Dunn, 6831 Orchid Ln., Dallas, Tex. 75230

Filed May 23, 1973, Ser. No. 363,261

Int. Cl. G08b 17/02

U.S. Cl. 116—104

8 Claims



1. An alarm system for detecting a fire above an object, comprising; a body member enclosing an audible, gas-operated alarm means and alarm actuating means, including, a source of gas under pressure and release means for releasing said gas under pressure, operably associated with said alarm means to actuate said alarm means; a wire-type sensor means, substantially resistant to ignition by flameless heat alone and ignitable substantially instantaneously when struck by a flame, operatively coupled to said actuating means and extending through and to the outside of said body member to operate said actuating means and actuate said alarm means when said sensor is struck by a flame and burns and means for attaching said body member in the area to be protected to expose said sensor to a flame occurring in said area to be protected.

3,901,180

APPARATUS FOR TRANSFER AND COATING OF BOTTLES

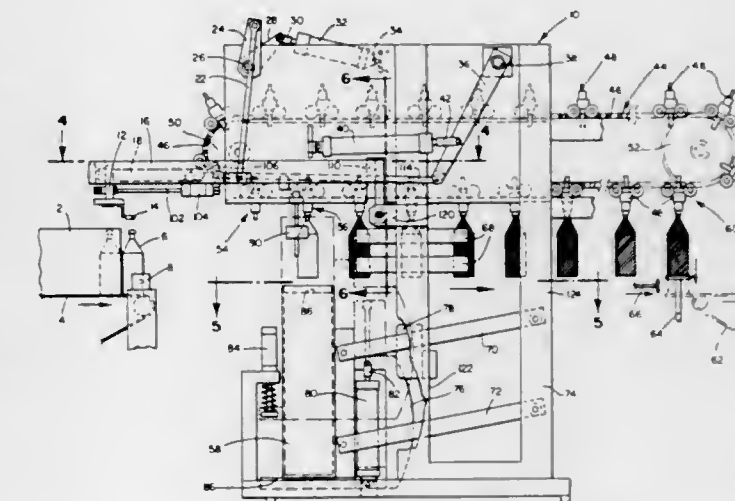
Fred E. Allen, Vineland; Joseph C. Flynn, Bridgeton; Walter Panas; Joseph S. Bonino, both of Millville, and William Colgan, Cape May, all of N.J., assignors to Wheaton Industries, Inc., Millville, N.J.

Filed Jan. 16, 1974, Ser. No. 433,768

Int. Cl. B05C 11/14

U.S. Cl. 118—2

19 Claims



1. Apparatus for applying a thermoplastic coating to glass bottles and adapted to received hot bottles, from a horizontal endless-belt table conveyor, said apparatus consisting of: a sensing means for indicating the presence of bottles at a pick-up position on said horizontal endless-belt table conveyor and for providing an output signal in response thereto,

- b. pick-up means responsive to said signal for picking up said bottles and transporting them to a downwardly extended first set of chucks mounted on an endless overhead conveyor at a first position thereof,
- c. said first set of chucks and said overhead conveyor being adapted to receive said bottles at said first position on said conveyor, from said pick-up means, to grip said bottles upon the receipt thereof and to transport said bottles in a horizontal path from said first conveyor position.
- d. said first set of chucks being part of an array on said overhead conveyor, said array consisting of a plurality of identical sets of chucks, said sets being positioned at fixed intervals along said conveyor,
- e. overhead conveyor drive means for moving said overhead conveyor a distance along its length corresponding to said fixed intervals between sets of chucks thereon, further including conveyor actuation means for initiating said drive means following placement of said bottles on said first set of chucks,
- f. an open top tank adapted to receive a bed of fluid bed coating powder and means for fluidizing a bed of powder contained therein, said tank being positioned directly below a second set of chucks, adjacent said first set of chucks on said overhead conveyor in the direction of movement of said overhead conveyor, said tank being sufficiently large to encompass the projected area of said second set of chucks,
- g. means for raising said tank following said overhead conveyor movement and for stopping said upward movement at a point wherein the surface of a fluidized powder bed in said tank is at a predetermined vertical position relative to said second set of chucks, holding said tank in said raised position for a period of time, and then lowering said tank to its starting position, and
- h. resetting means for thereafter permitting said sensing means to indicate the presence of further bottles at said pick-up position and to provide an output signal responsive thereto.

3,901,181

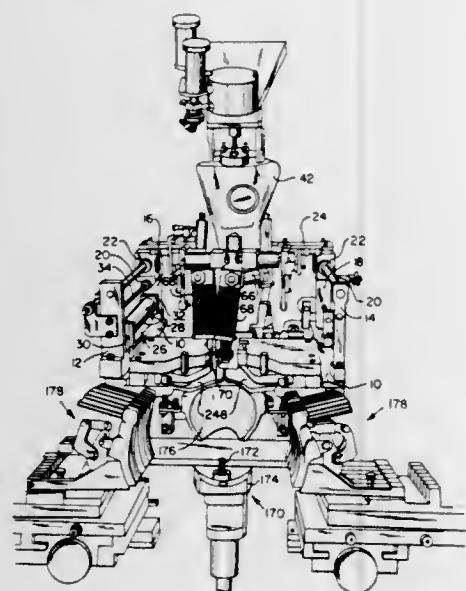
CEMENT APPLYING MECHANISM

Walter Vornberger, Tewksbury, Mass., assignor to International Shoe Machine Corporation, Nashua, N.H.

Filed Aug. 23, 1974, Ser. No. 499,822

Int. Cl.² B05C 11/10, 5/02

U.S. Cl. 118—7



1. A cement applying mechanism comprising: a nozzle mounted for movement in a rearward direction in a cement applying stroke between an initial location and a final location and mounted for swinging movement about an upright axis;

cement flow directing means in said nozzle, through which cement may be extruded from said nozzle, extending radially from said axis; means for moving the nozzle through said cement applying stroke; means so constraining the nozzle that said cement flow directing means is directed laterally of said rearward direction and outwardly from said axis during movement of the nozzle in said cement applying stroke from said initial location to an intermediate location between said initial and final locations; and means operative when the nozzle has reached said intermediate location to so swing the nozzle rearwardly and inwardly about said axis that said cement flow directing means is directed generally rearwardly from said axis when the nozzle has arrived at said final location.

3,901,182

SILICON SOURCE FEED PROCESS

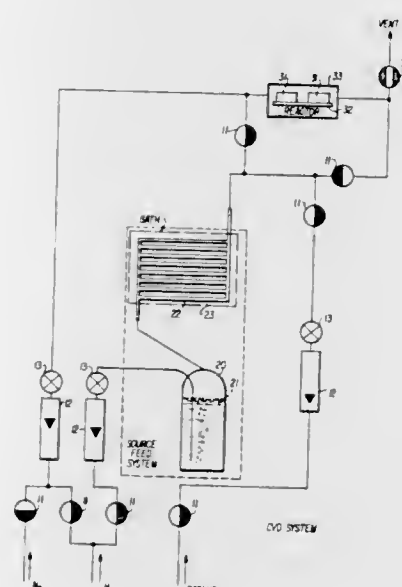
Ping-Wang Chiang, Melbourne Beach, Fla., assignor to Harris Corporation, Cleveland, Ohio

Filed May 18, 1972, Ser. No. 254,748

Int. Cl. C23c 13/08

U.S. Cl. 118—49

15 Claims



1. A chemical vapor deposition feed system for deposition of material from a vapor onto a substrate, said system comprising,
 - a liquid source of the material to be deposited,
 - means for passing a carrier gas through said liquid source to evaporate liquid therefrom,
 - conduit means for receiving the vapor-carrying gas stream issuing from said liquid source, and
 - heat exchange means connected to said conduit means downstream of said liquid source for condensing a portion of the vapor in the gas stream and returning the condensed vapor to said liquid source, to maintain the effluent vapor-carrying gas stream from said heat exchange means at a substantially constant temperature whereby the vapor concentration of source material in said gas stream remains substantially constant throughout deposition of said material onto a substrate.

3,901,183

WAFER TREATMENT APPARATUS

Andrew B. Wittkower, Rockport, Mass., assignor to Extrion Corporation, Gloucester, Mass.

Continuation-in-part of Ser. No. 369,153, June 12, 1973, abandoned. This application Nov. 18, 1974, Ser. No. 524,979

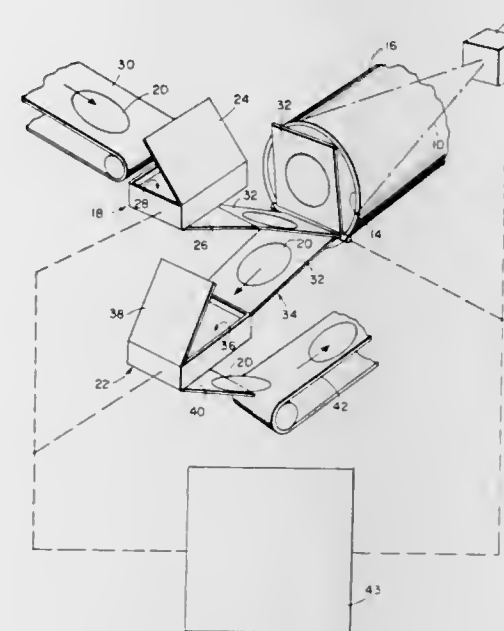
Int. Cl.² C23C 13/08

U.S. Cl. 118—49.1

31 Claims

22. In apparatus for processing discrete wafer-form items in a protected environment, including a vacuum chamber, means

for producing a treatment beam in said chamber, positioning means for disposing a said item for exposure to said beam, delivery means for delivering said item to said positioning means, and receiver means for receiving said item from said positioning means after said exposure thereof to said beam, the improvement wherein said positioning means comprise a wafer holder having structure defining the plane of a said item disposed thereon, means for swinging said holder to predeter-



mined orientations with respect to a substantially horizontal axis which is positioned below said delivery means and above said receiver means, said plane in a first holder orientation being upwardly sloped with respect to said horizontal axis and disposed to receive said item by sliding guided gravity movement from said delivery means, said plane in a second holder orientation being downwardly sloped with respect to said horizontal axis and disposed to deliver said item to said receiver means by a sliding guided gravity movement.

3,901,184

PNEUMATIC POWDER FLOW DIVERTING DEVICE

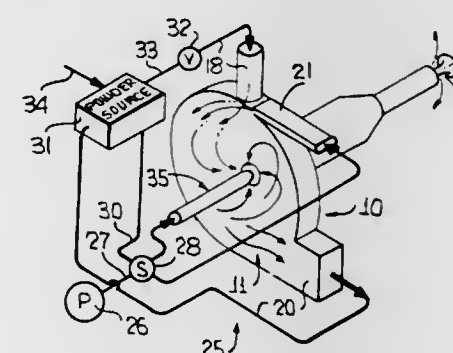
Robert D. Payne, Countryside, and James G. Buck, Western Springs, both of Ill., assignors to Continental Can Company, Inc., New York, N.Y.

Filed July 23, 1974, Ser. No. 491,031

Int. Cl.² B05B 5/02

U.S. Cl. 118—629

17 Claims



1. A pneumatic flow switching device comprising a generally cylindrical chamber, means delivering a fluidized admixture of powder and air into said chamber, means for exhausting the powder-air admixture from said chamber, first means contiguous said delivering means for pneumatically directing said powder-air admixture from said delivering means toward said exhausting means, and second means for pneumatically traversing said powder-air admixture during its movement between said delivering and exhausting means for directing said powder-air admixture primarily axially from said chamber.

3,901,185

COATING METHOD WITH PRECURE AND APPARATUS THEREFOR

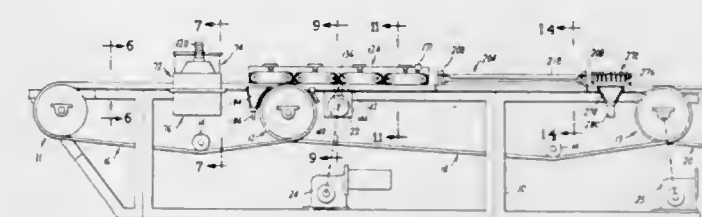
William C. Goodridge, West Haven; Donald J. Gillette; William P. English, both of Bridgeport, and G. Mark Minckler, Guilford, all of Conn., assignors to Electrostatic Equipment Corporation, New Haven, Conn.

Division of Ser. No. 256,499, May 24, 1972, Pat. No. 3,865,610. This application Feb. 14, 1974, Ser. No. 442,437

Int. Cl.² B05B 5/02

U.S. Cl. 118—630

14 Claims



1. In an apparatus for producing a unified, adherent coating of heat-fusible resinous material upon only a portion of a workpiece having proximate first and second zones in heat-conductive contact with one another, the combination comprising:

- a. a chassis;
- b. means on said chassis for producing a cloud of electrostatically charged solid particles of resinous material;
- c. a precuring unit on said chassis including means for heating the first zone of the workpiece to be coated and means for simultaneously cooling the second zone thereof; and
- d. means for carrying the workpiece along a travel path through said cloud-producing means and said precuring unit,

said heating and cooling means being so disposed as to enable heating of the first zone of the workpiece to a relatively high temperature above ambient while the second zone thereof is simultaneously maintained at a relatively low temperature substantially below said relatively high temperature, so that the workpiece may be exposed to the charged particles from said cloud-producing means with the workpiece charged effectively opposite to the particles to cause a layer thereof to deposit upon the workpiece, said heating means causing at least partial fusion and coherence of the particles at the first zone and said cooling means substantially preventing fusion and coherence of particles at the second zone thereof, removal of the particles from the second zone thereby being facilitated.

3,901,186

TRANSFER ROLLER ASSEMBLY

Daniel S. Hoffman, Rochester; John Maksymiak, Penfield, and Frank S. Sanza, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed July 2, 1973, Ser. No. 376,086

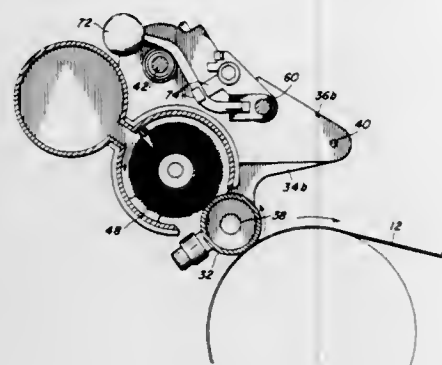
Int. Cl.² G03G 15/16

U.S. Cl. 118—637

2 Claims

1. Apparatus comprising:
 - a. means defining a surface adapted to support a developed electrostatic image, the surface being mounted for movement around a closed path;
 - b. a transfer roller assembly having a transfer roller in contact with the surface, wherein the ratio of (i) the distance from the surface at the point of contact to the center of curvature of the surface at that point to (ii) the radial dimension of the roller, is not less than 3;
 - c. means for mounting the transfer roller so that it may move in a direction which is at least generally perpendicular to a tangent at the point of contact between the surface and the roller;

- d. means for feeding a support sheet between the surface and the roller; and
e. means for biasing the roller against the support sheet with a minimal force which is sufficient only to keep the roller



in contact with the support sheet and the support sheet in contact with the surface during movement of the support sheet between the surface and the rollers during operation of the apparatus so that transfer can be effected solely by an electrical bias applied to the transfer roller.

3,901,187

DEVELOPER RETONING APPARATUS

Frederick W. Hudson, West Henrietta, N.Y., assignor to Xerox Corporation, Stamford, Conn.

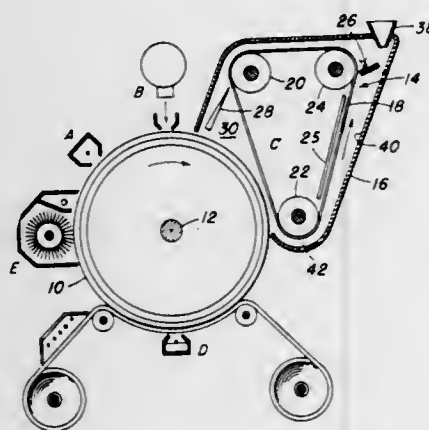
Continuation of Ser. No. 189,313, Oct. 14, 1971, abandoned.

This application Sept. 21, 1973, Ser. No. 397,020

Int. Cl.² G03G 13/06; B05B 54/02

U.S. Cl. 118—637

4 Claims



1. A development system for developing latent electrostatic images carried by a photoconductively coated surface, said system comprising the combination of
a sump for storing a supply of developer including ferromagnetic carrier particles having toner particles triboelectrically attracted thereto;
an endless member rotatable in a predetermined direction through said sump and past said surface for presenting developer to said surface;
means for magnetically entraining developer on said endless member;
scraper means located between said sump and said surface, said scraper means having at least two transversely offset scraping portions extending toward said endless member for scraping developer from respective transverse sections of said endless member, one of said scraping portions being closer to said endless member than the other, whereby one of said sections of said endless member presents a thicker layer of developer to said surface than the other; and
means between said scraper means and said sump for returning developer scraped from said endless member to said sump, the last mentioned means including means for adding toner to the developer being returned to said sump.

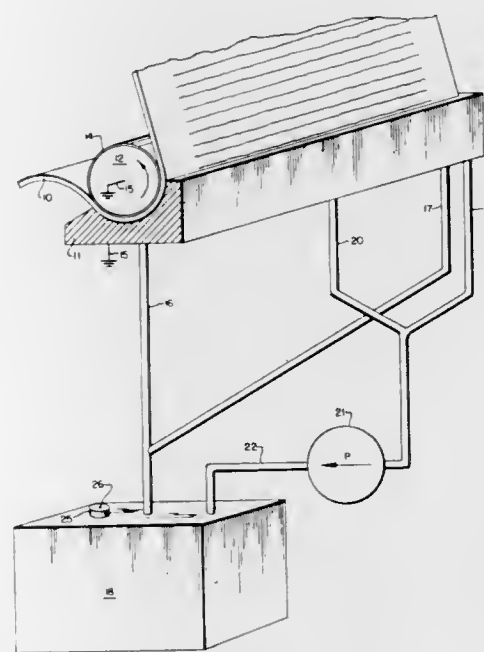
3,901,188
ELECTROSTATIC LIQUID DEVELOPING APPARATUS
Dietmar C. H. Eberlein, 10 Butternut Dr., New City, N.Y. 10956

Filed Jan. 23, 1974, Ser. No. 435,875

Int. Cl.² G03G 15/10; B05B 1/30

U.S. Cl. 118—637

10 Claims



1. Developing apparatus for liquid development of electrostatic images comprising:

- (a) A developing head having a cylindrically curved surface and a transverse channel in said surface for carrying developer fluid;
- (b) a drive roller conforming to said cylindrically curved surface, said roller having an outer resilient frictional layer for driving an electrostatic image carrying web in sealing contact against said channel; and, (c) means to draw developing liquid continuously through said channel.)
- (c) a reservoir of developer liquid and means to connect said reservoir to said transverse channel; and,
- (d) suction means connected to said transverse channel for drawing developer liquid from said reservoir through said means to connect and along said transverse channel.

3,901,189

MAGNETIC BRUSH DEVELOPING APPARATUS

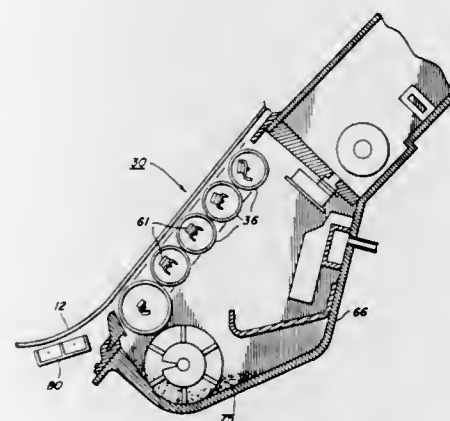
Lawrence J. Fraser, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 28, 1974, Ser. No. 437,122

Int. Cl.² G03G 15/08

U.S. Cl. 118—637

5 Claims



1. In a xerographic development apparatus for developing

the latent electrostatic images formed on a uniformly charged photoconductive member, the combination of:

developing means for developing said latent electrostatic images on said photoconductive member, said developing means including a developer mix comprised of uncoated conductive carrier and ink particles, and at least one magnetic developing brush, said brush being free of electrical bias to permit use of said uncoated conductive carrier, and

means to suppress image background while avoiding biasing of said magnetic brush, said suppressing means comprising a charge producing device upstream of said magnetic developing brush adapted to expose said photoconductive member to a charge opposite in polarity to the charge on said photoconductive member before development whereby to reduce image background charge levels.

3,901,190

SYSTEMS FOR GROWING CONCENTRATED POPULATIONS OF SHELLFISH

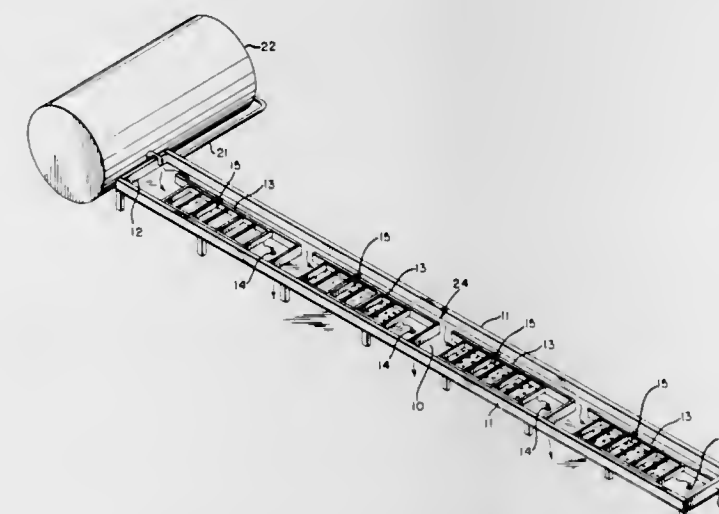
John L. Wiegardt, Jr., Box 2, Nahcotta, Wash. 98637

Filed Sept. 17, 1973, Ser. No. 398,088

Int. Cl. A01k 61/00

U.S. Cl. 119—4

5 Claims



1. A system for artificially growing concentrated populations of shellfish, comprising:

- a downwardly inclined, elongated flume having a bottom wall and upended sidewalls,
- means for introducing a controlled flow of nutrient-containing water to the head of the flume, the water flowing by gravity to the lower end thereof, and
- a series of trays holding concentrated populations of shellfish positioned within the flume in the flowing water stream and adjacent one another, each of the trays including 1. a foraminous bottom wall, upended sidewalls and front and rear walls, 2. legs extending downwardly from the bottom wall spacing the bottom wall of each tray from the bottom wall of the flume, and 3. baffle means transverse to the flow of water within the flume to force the flowing stream of water up through the foraminous bottom wall of each of the trays to continually feed the concentrated populations of shellfish resting thereon and remove the detritus thereof.

3,901,191

LIQUID SUPPLEMENT FEEDER

Thomas E. Smith, Irvine, Calif., assignor to Cargill, Incorporated, Minneapolis, Minn.

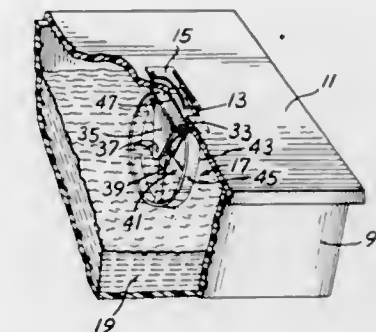
Filed Mar. 29, 1974, Ser. No. 456,353

Int. Cl.² A01K 5/00

U.S. Cl. 119—51 R

3 Claims

1. A liquid supplement feeder of the self-feeding type for animals, comprising a container for the liquid supplement, a cover on the container, the cover having an opening there-



3,901,192

BIRD FEEDER

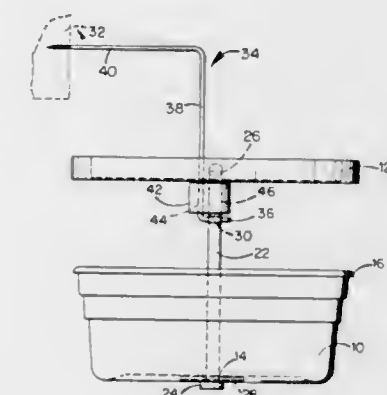
John F. Adams, 55 Lee Rd., Chestnut Hill, Mass. 02167

Filed Apr. 9, 1974, Ser. No. 459,347

Int. Cl. A01b 5/00

U.S. Cl. 119—51 R

9 Claims



1. A bird feeder comprising:

- a cup-like hollow seed container having an open top and a substantially centered bottom hole;
- a vertical central shaft inserted upwardly through the bottom hole in said seed container, said central shaft having support means associated therewith for cooperating with the bottom of said seed container to resist downward axial movement and axial tipping of said seed container relative to said central shaft;
- said central shaft having a substantially horizontal hole formed transversely therethrough, the hole being located above the lower end of said shaft;
- a bent rod-like mounting element having a substantially horizontal free end inserted through said horizontal shaft hole, said rod-like mounting element further having a substantially vertical middle portion positioned substantially parallel to said central shaft, said rod-like mounting element further having means associated with its other end for engaging a fixed support from which the bird feeder is suspendably mounted;
- locking means for retaining said rod-like mounting element free end in said shaft hole and for retaining said rod-like mounting element middle portion in substantially parallel alignment with said central shaft; and
- a lid having a vertical hole through which said other end of said rod-like mounting element is inserted, said lid

being positioned in a substantially horizontal attitude and being spaced above said top of said seed container.

3,901,193

FEED GRAIN DISTRIBUTION SYSTEM

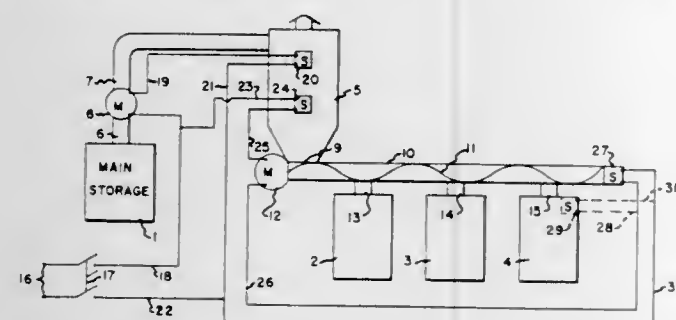
George Gehlbach, R.R. 3, Box 61, Lincoln, Ill. 62656

Filed June 17, 1974, Ser. No. 480,147

Int. Cl.² A01K 5/02

U.S. Cl. 119—52 AF

9 Claims



1. A feed grain distribution system comprising:
 - a. means for storing a main supply of feed grain,
 - b. a plurality of separate feed grain storage units,
 - c. an intermediate feed grain distribution unit,
 - d. means to move feed grain from said grain storing means to said distribution unit,
 - e. means to move feed grain from said distribution unit to said separate grain storage units,
 - f. means responsive to a predetermined level of feed grain in said distribution unit to actuate said means to move feed grain to said separate grain storage units,
 - g. means responsive to a predetermined higher level of feed grain in said distribution unit to inactivate said first named grain moving means, and
 - h. means responsive to the filling of the last of separate grain storage units to inactivate said second named feed grain moving means.

3,901,194

APPARATUS FOR MIXING AND DISPENSING FEED TO ANIMALS

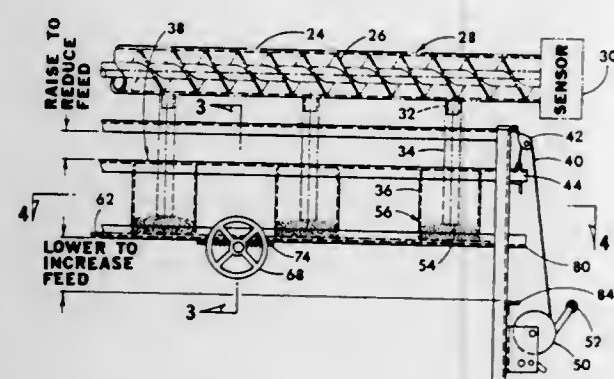
Jack G. Meyer, R.R. No. 3, Bluffton, Ind. 46714, and Norman L. Haines, Rt. 2, Berne, Ind. 46711

Filed Mar. 14, 1974, Ser. No. 451,184

Int. Cl. A01k 5/00

U.S. Cl. 119—53

5 Claims



1. In a hog feeding apparatus, a plurality of in-row stalls wherein said hogs are held in caged position at least on three sides and forming a unitary reinforced structure, a vertically raisable and lowerable door associated one with each of said stalls and adapted to provide ingress and egress for animals to said stalls, a manually operated winch having a force transmitting connection to a respective one of said doors, whereby such doors are selectively raised and lowered to receive an animal one in each of said stalls, metering means for receiving an adjusted amount of feed and associated one with each of said stalls, and controllable discharge means for effecting a

discharge of the predetermined amount of feed in measured quantity to a respective one of said stalls while said hogs are held one within an associated stall.

3,901,195

LIVESTOCK DUSTING BAG

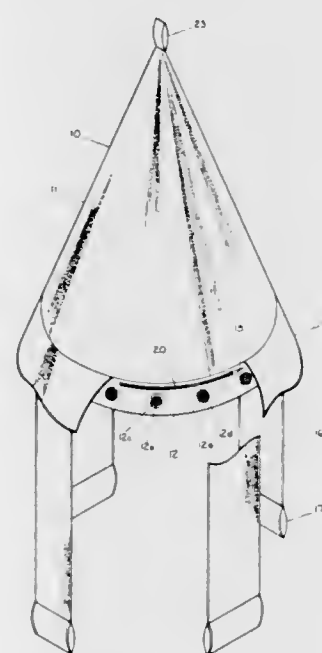
Scott Stewart, c/o Scott Designs, 1800 Commercial Ave., Madison, Wis. 53704

Filed Apr. 24, 1974, Ser. No. 463,571

Int. Cl.² A01K 29/00

U.S. Cl. 119—159

9 Claims



9. A cattle dusting bag comprising:
 - a. a waterproof hood portion for receiving dusting powder;
 - b. a strip of flexible mesh material attached to said hood portion and through which the dusting powder will pass on being agitated;
 - c. a strip of durable flexible material attached to said hood portion over said strip of flexible mesh material and having a series of spaced dispensing openings therein; and
 - d. shape-retaining grommets encircling said dispensing openings and attached to said durable material.

3,901,196

REACTOR INSTALLATION

Heinrich Dörner, Erlangen, and Eberhard Michel, Nurnberg, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

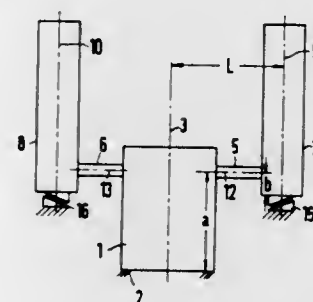
Filed May 21, 1974, Ser. No. 471,894

Claims priority, application Germany, May 30, 1973, 2327759; Jan. 14, 1974, 2401610

Int. Cl. F22b 37/24

U.S. Cl. 122—510

8 Claims



1. A reactor installation comprising a vertical reactor pressure vessel having a bottom fixed against downward movement and an upper portion, a vertical steam generator horizontally offset from said vessel and having a lower portion substantially at the level of the vessel's said upper portion and

a bottom, a support for the generator's said bottom, and a substantially straight and horizontal coolant pipe having a first end fixed to the vessel's said upper portion and a second end fixed to the generator's said lower portion; wherein the improvement comprises said support comprising a fixedly positioned cam surface which inclines upwardly away from said vessel, and a cam follower for said cam surface and which is fixed to the generator's said bottom.

3,901,197

METHOD AND DEVICE FOR REFORMING THE QUALITY OF FUEL OIL IN AN INTERNAL COMBUSTION ENGINE

Masaaki Noguchi, Nagoya, and Masaharu Sumiyoshi, Toyota, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

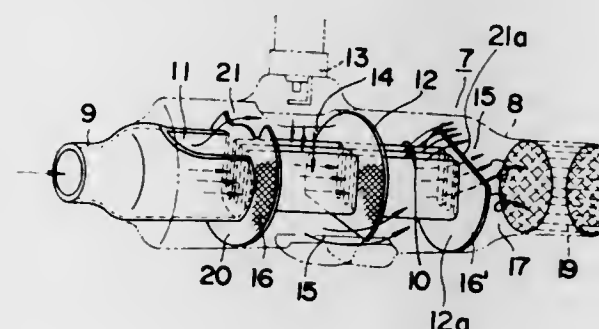
Filed May 1, 1974, Ser. No. 466,028

Claims priority, application Japan, May 4, 1973, 48-50156

Int. Cl.² F02B 43/08

U.S. Cl. 123—3

8 Claims



1. A method for supplying combustible material to an internal combustion engine comprising the steps of:
 - feeding a first portion of fuel and a first portion of air to a fuel reformer;
 - diverting a part of said first portion of fuel and said first portion of air into a separate path within said fuel reformer;
 - burning at least a portion of said part of said first portion of fuel to form combustion products and utilizing the heat of said burning to heat up and vaporize the remaining part of said first portion of fuel and to reform said first portion of fuel into a mixture including decomposition and oxidation products; and
 - introducing said mixture including decomposition and oxidation products as well as a second portion of fuel which has not been reformed and a second portion of air into a combustion chamber of the engine.

3,901,198

FUEL INJECTION TYPE ROTARY PISTON ENGINE

Kenichi Yamamoto, Hiroshima, Japan, assignor to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Apr. 24, 1974, Ser. No. 463,830

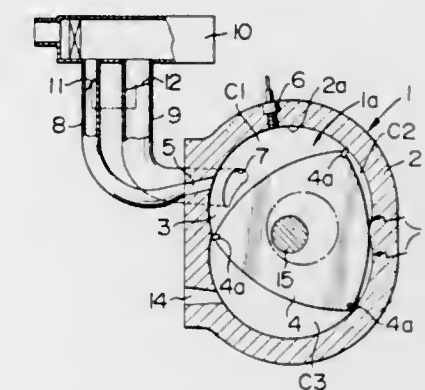
Claims priority, application Japan, Apr. 30, 1973, 48-51262

Int. Cl.² F02B 53/10

U.S. Cl. 123—8.09

6 Claims

1. A rotary piston type internal combustion engine comprising a casing including a rotor housing having a trochoidal inner peripheral wall and a pair of side housings secured to the opposite sides of said rotor housing to define a rotor chamber therein, a substantially polygonal rotor rotatably mounted in said rotor chamber and having apices slidably contacting the trochoidal inner peripheral wall of the rotor housing so as to define working chambers between the casing and the rotor, means for rotating the rotor so as to effect volumetric changes of each working chamber through intake, compression, combustion and exhaust strokes, first air intake port means formed in at least one of said side housings so as to open into the working chamber which is in the intake stroke, first air intake



passage means communicating with said first air intake port means and having first throttle valve means positioned therein, second air intake port means formed in said rotor housing so as to open into the working chamber which is in the intake stroke, second air intake passage means communicating with said second air intake port means and having second throttle valve means positioned therein, means for closing said first throttle valve means in said first air intake passage means during light load operation of the engine while keeping the second throttle valve of said second air intake passage means open, and fuel injection means for injecting fuel into the working chamber which is in the intake stroke.

3,901,199

AUTOMATIC COMPRESSION RELIEF MECHANISM

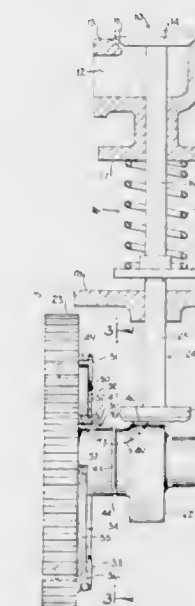
Arnold E. Smith, Greendale, Wis., assignor to Briggs & Stratton Corporation, Wauwatosa, Wis.

Filed June 10, 1974, Ser. No. 478,176

Int. Cl. F01L 13/08

U.S. Cl. 123—182

4 Claims



1. In an internal combustion engine having a valve which controls flow of gas through a port communicable with the engine combustion chamber and which is biased towards a seated position, a part connected with said valve and against which a cam element is cyclically engageable to unseat the valve, and a camshaft rotatable in timed relation to the engine cycle, automatic compression relief means for causing the valve to be unseated during a predetermined portion of each engine cycle at engine cranking speeds and to occupy its seated position during said engine cycle portion at engine running speeds, said automatic compression relief means being characterized by:
 - A. the camshaft having a radially outwardly opening cavity with flat, parallel side surfaces that extend axially of the camshaft and with a concave bottom surface curved as a cylinder segment about an axis transverse to that of the camshaft, one end portion of said cavity being near said part;

- B. a flyweight carried by the camshaft for rotation therewith and for movement relative thereto between defined limits in directions transverse to the camshaft axis, said flyweight being biased towards one of its said limits and being centrifugally movable towards the other one, said flyweight having, near the other end of said cavity, a camming surface which is at one distance from the camshaft axis when the flyweight is at its said one limit and is at a greater distance from the camshaft axis when the flyweight is at its said other limit; and
- C. an arcuate cam member received in said cavity and having surfaces mating with and slidably engaging said surfaces of the cavity, so that the cam member is guided for slidably rocking motion that alternately projects and retracts its opposite end portions relative to the camshaft, said cam member further having
1. its end portion adjacent to the first mentioned end of the cavity formed to provide, when projected, a cam element cooperable with said part, and
 2. its other end portion cooperable with said camming surface on the flyweight whereby movement of the flyweight to its said one limit causes the first mentioned end portion of the cam member to be projected and movement of the flyweight to its other limit allows that end portion of the cam member to be retracted.

3,901,200

ENGINE WITH IMPROVED COOLING SYSTEM

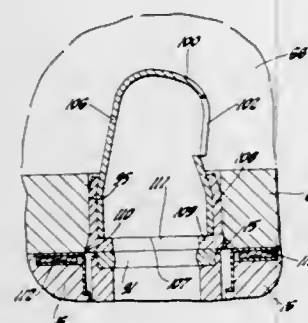
Karl Zaruba, Detroit, and Douglas L. Graham, Farmington Hills, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed June 5, 1974, Ser. No. 476,580

Int. Cl.² F01P 3/02

U.S. Cl. 123—41.73

3 Claims



1. An internal combustion engine comprising
 - a cylinder block having a top wall and a plurality of longitudinally aligned closely spaced cylinders opening through said top wall, said block defining a coolant jacket surrounding said cylinders and having a plurality of coolant openings through said top wall and connecting with said coolant jacket, said coolant openings being counterbored from the surface of said top wall to receive seal rings,
 - a resilient seal ring in the counterbore of each of said coolant openings,
 - a cylinder head having lower and side walls and defining an internal coolant jacket, said cylinder head being mounted with said lower wall sealingly opposing the top wall of said block so as to close the ends of said cylinders, said head having coolant openings through the lower wall and connecting the head coolant jacket with the block coolant openings to permit the passage of coolant from said block coolant jacket to said head coolant jacket,
 - a plurality of flow director nozzles, each nozzle comprising a cup-shaped member having at least one nozzle opening in the side thereof and an open end with a radially inwardly extending flange on the open end, said flow director nozzles being secured one in each of said head coolant openings such that said nozzle opening is within said coolant jacket and arranged to direct water flow internally along said lower wall and the end of said radial flange is flush with said lower wall, said flange end engag-

ing the resilient seal ring of its respective coolant opening to seal the interface against loss of coolant therethrough.

3,901,201

ELECTRONIC SPARK TIMING CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

Norio Mizuguchi, Yokosuka, and Hiroshige Ozawa, Yokohama, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

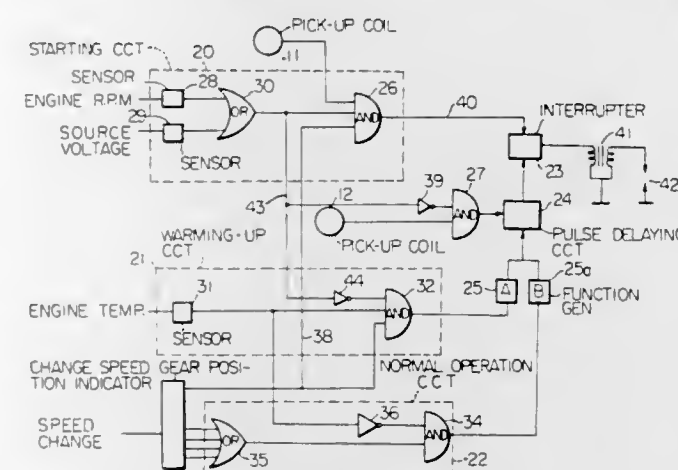
Filed Dec. 26, 1973, Ser. No. 427,902

Claims priority, application Japan, Dec. 26, 1972, 47-48719

Int. Cl. F02p 5/00

U.S. Cl. 123—117 R

2 Claims



1. A system for controlling the ignition timing of an internal combustion engine in response to the characteristics of an engine, comprising, in combination:
 - a. means for sensing the speed of the engine and producing a signal when said speed is below a predetermined speed;
 - b. means for sensing the characteristics of said engine;
 - c. function generating means operable by said characteristic sensing means for relating the speed of said engine to the timing of ignition for obtaining reduced emission when said engine is driven under predetermined characteristic;
 - d. a direct-current power supply for supplying said function generating means with a direct-current potential;
 - e. means for sensing the voltage level of said direct-current power supply and producing a signal when said voltage is below a predetermined level;
 - f. first means for generating pulses in response to the speed of said engine at a reference timing relative to the zero angle position of the crankshaft of said engine;
 - g. second means for generating pulses in response to the speed of said engine at an advanced timing relative to said reference timing;
 - h. means for delaying the timing of the reference timing pulses in accordance with the output of said function generating means; and
 - i. means for interconnecting said engine-speed sensing means, said voltage sensing means, said first and second pulse generating means and said function generating means for enabling said second pulse generating means when one of said engine speed sensing means and said voltage sensing means produces a signal while inhibiting said first pulse generating means and said function generating means.

3,901,202

VACUUM BIAS REGULATOR ASSEMBLY

Thomas J. Hollis, Jr., Fairport, and Ernst L. Ranft, Webster, both of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed May 25, 1973, Ser. No. 364,141

Int. Cl. F02m 25/06

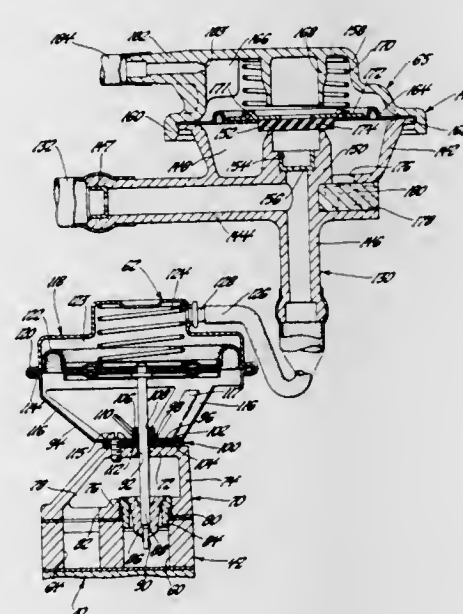
U.S. Cl. 123—119 A

1 Claim

1. A vacuum regulating system for controlling a vacuum signal to a vacuum operated exhaust gas recirculation valve comprising: means including a throttle bore slot and a throttle

valve movable across the slot to define a first throttle responsive variable vacuum source, means including the intake manifold of an internal combustion engine to define a second variable vacuum source, a pressure regulator housing having a first vacuum conduit thereon connected to the throttle bore slot, said regulator housing including a second vacuum conduit directly intersecting said first conduit for directly communicating said first variable vacuum source to the vacuum operated exhaust gas recirculation valve, said housing including a base forming a first compartment having an upstanding valve seat therein including a bore therethrough directly in communication with said second vacuum conduit, a cover member having a circumferential flange thereon attached to said base, a flexible diaphragm interposed between said cover member and said base for defining a second compartment with said cover and for separating said first compartment from said second compartment, said base including an opening therein for communicating said first compartment with atmo-

sphere, a spring located within said second compartment for biasing said diaphragm towards said seat, an integral valve portion centrally of said diaphragm located within said first compartment in overlying relationship to said seat for sealing said seat, means including a third vacuum conduit connected to said cover member for communicating said second compartment with said second variable vacuum source, said diaphragm being responsive to an engine intake manifold vacuum that exceeds a predetermined vacuum level to position said integral valve portion open with respect to said seat thereby to directly communicate said second vacuum conduit with atmosphere to reduce the vacuum signal from said first variable vacuum source to the vacuum operated exhaust gas control valve.



sphere, a spring located within said second compartment for biasing said diaphragm towards said seat, an integral valve portion centrally of said diaphragm located within said first compartment in overlying relationship to said seat for sealing said seat, means including a third vacuum conduit connected to said cover member for communicating said second compartment with said second variable vacuum source, said diaphragm being responsive to an engine intake manifold vacuum that exceeds a predetermined vacuum level to position said integral valve portion open with respect to said seat thereby to directly communicate said second vacuum conduit with atmosphere to reduce the vacuum signal from said first variable vacuum source to the vacuum operated exhaust gas control valve.

3,901,203

EXHAUST GAS RECIRCULATION SYSTEM WITH HIGH RATE VALVE

Donald J. Pozniak, Sterling Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed July 23, 1973, Ser. No. 381,754

Int. Cl.² F02M 25/06

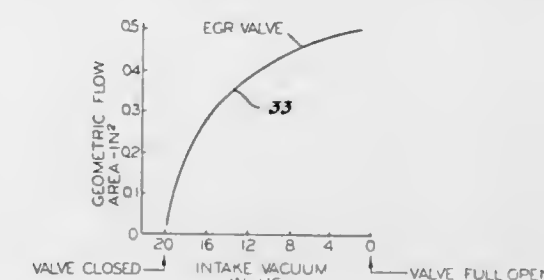
U.S. Cl. 123—119 A

3 Claims

1. An exhaust gas recirculation system for an internal combustion engine having a carburetor for air fuel supply at one end of an engine induction passage with an unrestricted segment, a throttle valve in said induction passage at the other end thereof for controlling air-fuel flow therethrough to an intake manifold in communication with combustion cham-

bers, and an exhaust passage for exhaust gas flow from the engine comprising:

an exhaust gas recirculation line connected between the exhaust passage and a point in the unrestricted segment of the induction passage upstream of said throttle valve and downstream of the carburetor, valve means for controlling exhaust gas recirculation through said recirculation line in accordance with changes in intake manifold pressure, said valve means including means responsive to intake manifold pressure



for selectively opening and closing said valve means throughout a throttle position range from idle to wide open throttle, said valve means including a variable geometry flow path therethrough scheduled to open so as to produce a ratio of exhaust gas recirculation to inlet air flow which continually increases as engine load increases thereby to maximize the exhaust gas recirculation to a point slightly less than will produce misfire in the combustion chambers because of charge dilution of the air fuel charge by recirculation of exhaust gas from the exhaust passage to the induction passage.

3,901,204

SYSTEM FOR SUPPLYING FUEL TO INTERNAL COMBUSTION ENGINES

Eric Jaulmes, Paris, France, assignor to Ateliers de la Motobecane, Pantin, France

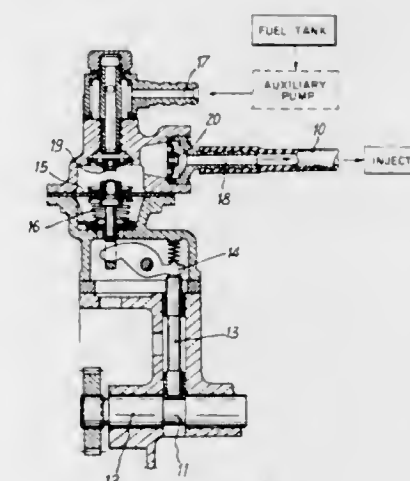
No Drawing. Filed Dec. 5, 1973, Ser. No. 421,870

Claims priority, application France, Dec. 27, 1972, 72.46291

Int. Cl.² F02M 39/00

U.S. Cl. 123—139 A

5 Claims



1. A system for supplying fuel to internal combustion engines by medium pressure injection, comprising:

a fuel tank;
a fuel injector;
a diaphragm-type fuel pump means for supplying fuel from said tank to said injector, said fuel pump means having an inlet, an outlet, a diaphragm and a spring return means; linkage means for driving said fuel pump at a speed proportional to that of the engine;

means for causing fuel from said fuel tank to enter the intake of said fuel pump means at a predetermined pressure; and
line means for directly connecting the output of said fuel pump means to said injector without interposition of any pressure regulating means;
wherein the effective diaphragm area in said fuel pump means is at most 400 square millimeters and the force exercised by said spring return means is at least 3 kg, whereby the fuel pump means output pressure will remain substantially constant as the fuel pump means output flow varies from a substantially nil value up to a predetermined maximum value.

3,901,205

STABILIZED AND TRANSISTORIZED IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Heinrich-Josef Brungsberg, Ludenscheid, Germany, assignor to Brown, Boveri & Cie. A.G., Mannheim, Germany

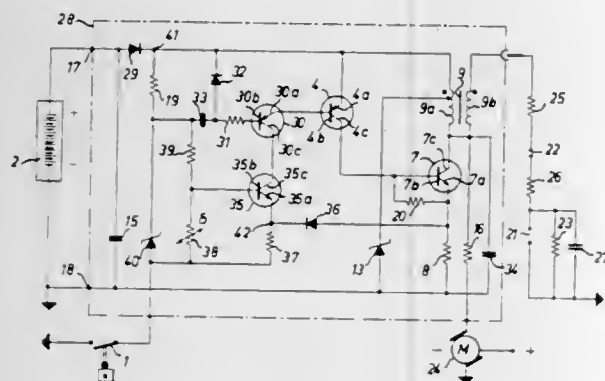
Filed June 3, 1974, Ser. No. 480,543

Claims priority, application Germany, June 12, 1973, 2329917

Int. Cl. F02p 1/00

U.S. Cl. 123-148 E

4 Claims



1. An ignition system for internal combustion engines to be energized by a d-c power supply comprising

- a pair of d-c power supply terminals (17,18)
- a first voltage divider circuit connected to said d-c supply terminals (17,18) and including a series arrangement of a first resistor (19), a Zener diode (40) and an interrupter (1);
- a second voltage divider circuit connected across said Zener diode (40) and including a series arrangement of a second resistor (39) having a substantially fixed ohmic value and of a third resistor (38) having an ohmic value that changes substantially with changing temperatures;
- a first transistor (30) and a second transistor (35) connected to said second voltage divider circuit with the bases (30b,35b) thereof, the collector (30c) of said first transistor (30) and the collector (35c) of said second transistor (35) being interconnected, and said third resistor (38) being arranged in the base emitter current path (35b,35a) of said second transistor (35);
- a third transistor (4) under the control of said first transistor (30);
- an ignition coil (9) having a primary winding (9a) energized from said d-c power supply terminals (17,18) and a secondary winding (9b);
- a fourth transistor (7) and a feedback resistor (8) both arranged in series with said primary winding (9a) of said ignition coil (9), said fourth transistor (7) being under the control of said third transistor (4) and controlling the current flow through said primary winding (9a) of said ignition coil (9); and
- a diode (36) applying the potential prevailing across said feedback resistor (8) to the emitter (35a) of said second transistor (35).

3,901,206 TUNNEL-FRAME FOR COMBUSTION ENGINES

Jacob Hermanus Kuoper, Appingedam, Netherlands, assignor to N.V. Appingedammer Bronsmotorenfabriek, Appingedam, Netherlands

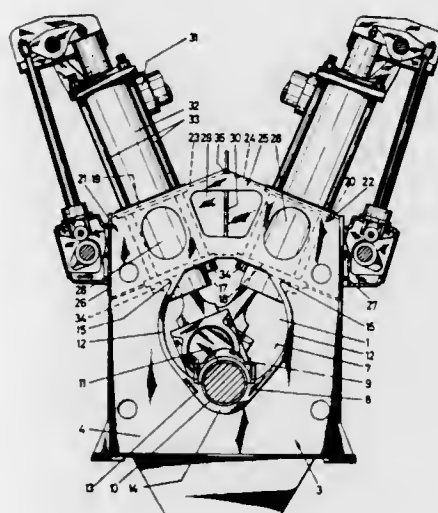
Filed Oct. 11, 1973, Ser. No. 405,670

Claims priority, application Netherlands, Oct. 13, 1972, 7213895

Int. Cl. F02f 7/00

U.S. Cl. 123-195 R

6 Claims



1. In a tunnel-frame for a multicylinder internal combustion engine the improvement which comprises a plurality of cross walls, means defining in each cross wall a tunnel opening and a reinforced edge portion about said opening, a bearing housing fitted in each cross wall and disposed to receive a crankshaft of an engine, the size of the tunnel opening being sufficient for said crankshaft to be brought into and out from the frame along an axial path, said bearing housing including a non-removable portion that is integral with said reinforced edge portion, and a removable portion, the bore of said bearing housing being located at said reinforced edge portion and at a predetermined distance from the cylinders of the engine.

3,901,207

CARBURETOR CONTROL SAFETY

Jacques Remaud, Billancourt, France, assignor to Regie Nationale des Usines Renault, Billancourt and Automobiles Peugeot, Paris, both of, France

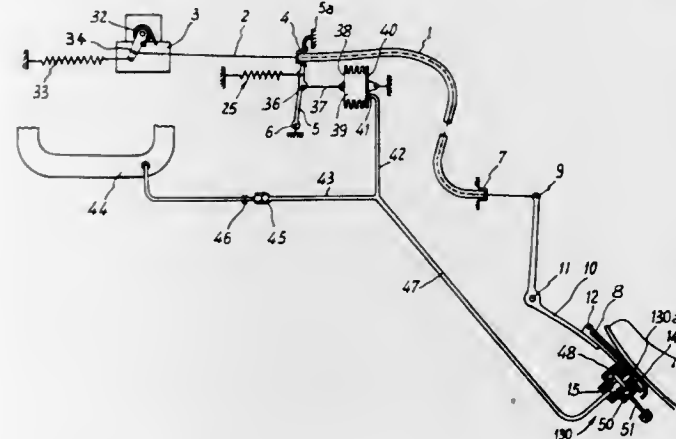
Filed May 18, 1973, Ser. No. 361,806

Claims priority, application France, June 1, 1972, 72.19777

Int. Cl. F02b 77/00

U.S. Cl. 123-198 DB

10 Claims



1. In a vehicle having an internal combustion engine, an accelerator pedal, a carburetor having a throttle valve, and means for controlling the throttle valve of the carburetor, a safety device for the control linkage of the carburetor comprising:

means for biasing said means for controlling the throttle valve of the carburetor to an engine idling position, a lever pivotable about an axis, said lever having a first arm, a fixed stop and a movable stop, a sheath, one end portion of said sheath being attached to said movable stop and the other end portion of said sheath being attached to said fixed stop, a control cable movable in said sheath, one end portion of said cable being connected to said first arm and the other end portion of said cable being connected to said means for controlling the throttle valve of the carburetor, means for sensing the jamming of said cable in said sheath and the jamming of the pivotable movement of said lever when no pressure is exerted on the accelerator pedal, a releasable retaining member for releasably holding said movable stop against movement toward the carburetor, the holding action of said retaining member being releasable automatically by said means for sensing when it senses the jamming of the cable in the sheath or the jamming of the pivotable movement of said lever when no pressure is exerted on the accelerator pedal and, means for biasing said movable stop toward the carburetor against the holding action of said retaining member so that when said sensing means senses the jamming of said cable in said sheath or the jamming of the pivotable movement of said lever when no pressure is exerted on the accelerator pedal said releasable retaining member releases its holding action on said movable stop and said means for biasing said movable stop toward the carburetor moves said movable stop theretoward and said means for biasing said means for controlling the throttle valve of the carburetor to an engine idling position moves said controlling means to its engine idling position.

3,901,208

MANUAL TARGET THROWING DEVICE

Jean-Michel Laporte, and Jean-Claude Laporte, both of Pont de la Braque, 06600 Antibes, France

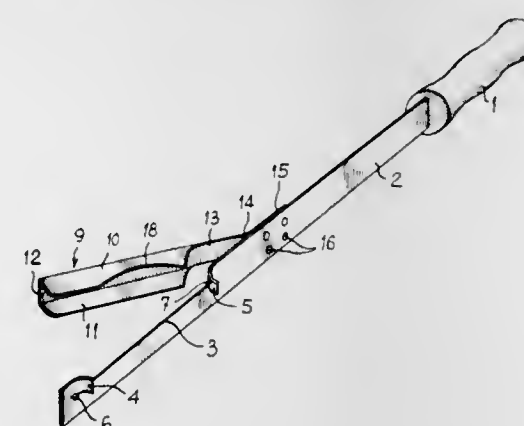
Filed June 26, 1974, Ser. No. 483,426

Claims priority, application France, July 9, 1973, 73.25087

Int. Cl. F41B 3/04

U.S. Cl. 124-5

10 Claims



1. Apparatus for assisting in the manual throwing of generally disc-shaped objects comprising:

- a handle;
- a resilient blade directly connected at a first end to said handle, said blade having a free end, said blade having a thickness which is substantially less than its width, said blade being provided with an elongated notch cut out of the upper edge thereof and extending inwardly from said upper edge, said notch terminating adjacent said free end; supporting means mechanically coupled to said blade and cooperating with the edge of said blade in said notch for supporting an object to be thrown, said supporting means being rigidly attached to said blade to permit flexing of said supporting means with respect to said blade, said supporting means extending outwardly from said blade intermediate said handle and said free end, said support-

ing means including a generally U-shaped object receiving channel which opens toward said blade; and a first retaining stop affixed to said blade at the end of said notch disposed away from said handle.

3,901,209

WRIST BRACED SLINGSHOT

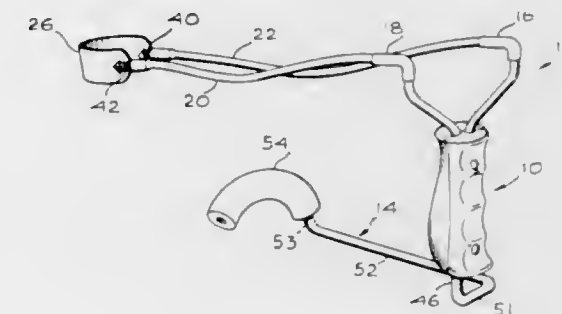
Robert Woolsey, Irvine, and Wallace C. Kerr, La Habra, both of Calif., assignors to L & R Industries, Torrance, Calif.

Filed Jan. 30, 1974, Ser. No. 437,868

Int. Cl. F41b 7/00

U.S. Cl. 124-20 R

5 Claims



1. A slingshot comprising a yolk having a hand grip, flexible members having a missile pouch connected to the yolk, wrist brace means for resisting twisting of the hand grip, said means being frictionally detachably mountable in the hand grip and having an end portion extending rearwardly from the hand grip and having a part engageable on a user's wrist, said hand grip having a frictional retention securement means for providing the detachable securement of the wrist brace, and the frictional retention securement means permitting a plurality of frictionally retained adjustable positions of the hand grip with respect to the wrist brace, and at least one of the plurality of adjusted positions of the hand grip permitting the latter to rotate relative to the wrist brace, and the part of the wrist brace engageable with a user's body steadies and stabilizes the slingshot when in use.

3,901,210

ARCHERY BOW HAVING LIMBS WITH MULTIPLE REVERSIBLE CURVATURES

William R. Stewart, Rt. 1, Box 1, Harrah, Wash. 98933

Filed Dec. 14, 1973, Ser. No. 424,901

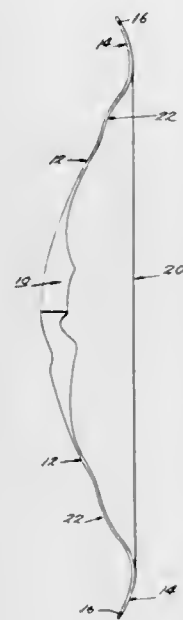
Int. Cl. F41b 5/00

U.S. Cl. 124-24 R

1 Claim

1. An archery bow having a central handle portion and a pair of limbs projecting respectively in opposite directions from the ends of the handle portion, said limbs terminating in tips which are adapted to receive a string extending between the tips on one side of the bow, each of said limbs having a curved portion as it projects from the handle and having first and second reversals of curvature within a segment which occupies less than half the length of the limb and which is located substantially equidistant from the end of the handle

and the tip, each of said limbs further including a third reversal of curvature leading to said tip, said third reversal being



directed away from said one side of the bow and being positioned adjacent said second reversal.

3,901,211

BOW STRING RELEASING DEVICE

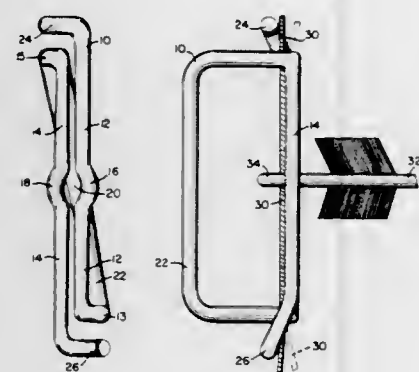
Galen D. Kees, Rt. 2, Box 17, Durand, Wis.

Filed Apr. 22, 1974, Ser. No. 462,737

Int. Cl. F41b 5/00

U.S. Cl. 124—35 A

6 Claims



1. An arrow releasing device for drawing and releasing a bowstring and arrow comprising a unitary length of rod formed in the general shape of a loop;

A. portions of said loop adjacent both ends thereof being in adjacent parallel alignment with each other and being spaced apart a short generally uniform distance,

B. except at the center of said portions at which point the rod portions are separated a greater distance to form an arrow nock positioning point,

C. said parallel portions of the rod being connected to the loop at opposite ends by a short segment of the rod which lies in a plane substantially normal to the parallel portion and is bent away therefrom,

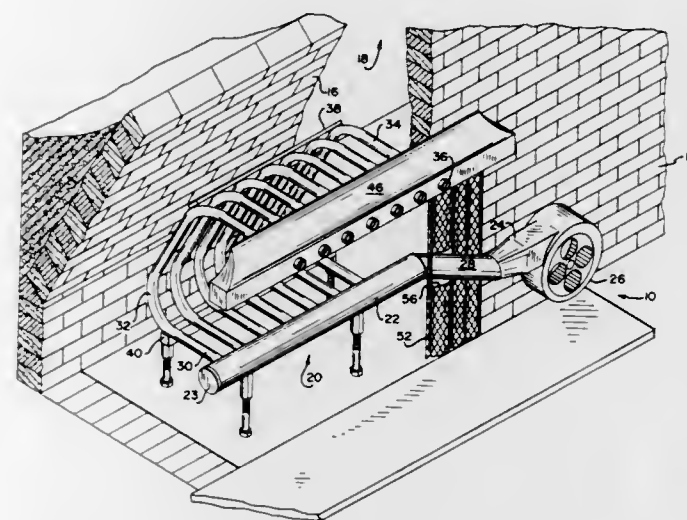
D. the free ends of the parallel portions being turned inwardly across the space between the parallel portions a short distance,

E. the opposite side of said loop from said parallel portions being integrally attached to said short segments and providing means for grasping said device during use.

3,901,212
FIREPLACE HEAT EXTRACTOR
James S. Stites, 615 Hunter Ln., Santa Rosa, Calif. 95404
Filed Aug. 2, 1974, Ser. No. 494,027
Int. Cl. F24B 7/00

U.S. Cl. 126—121

4 Claims



1. A fireplace heat extractor comprising: a tubular, generally horizontal header adapted to be positioned within and across the lower portion of a fireplace opening; an air inlet tubular section connected at one end of said header and disposed to extend outward of a fireplace opening; a blower connected to said inlet tubular section; the other end of said header being imperforate; an array of tubular air ducts opening from said header and extending downwardly and rearwardly therefrom to form a receptacle for fireplace fuel and then upwardly, terminating in forwardly extending top portions adapted to be directed outwardly of said fireplace opening across the upper portion thereof; outlet openings in the ends of said top portions; a horizontal curtain rod carried on at least one of said air duct top portions and extending below the array thereof adapted to span said fireplace opening; extensible legs supporting said header and air duct array for adjusting the elevation and level of said curtain rod; means for adjusting the position of said curtain rod fore and aft of said duct top portion; a fire curtain carried on said curtain rod; and an opening in said curtain through which said air inlet tubular section extends.

3,901,213

CATALYTIC HEATER CONTROL

Benny J. Charboneau, Cass City, Mich., assignor to Walbro Corporation, Cass City, Mich.

Filed Aug. 2, 1974, Ser. No. 494,207

Int. Cl. F24H 1/38

U.S. Cl. 126—350 A

16 Claims

1. In combination with a catalytic converter of the type in which a hydrocarbon fuel is flamelessly oxidized in the presence of a catalytic material for preheating liquid coolant of an internal combustion engine, a fuel pump to provide said hydrocarbon fuel to said converter, said fuel pump including activating means responsive to the application of electrical

power to supply said fuel to said converter, and oscillator circuit means responsive to connection to a source of electric

said variable resistance and the resistance at the electrode means forming a voltage divider, the connection between said voltage divider connected to said transistor through said base resistor and, speaker means connected to receive the output of said variable frequency means to produce an audible signal representation of the frequency of the signal produced by said variable frequency means.

3,901,215

METHOD OF TESTING THE SENSES AND COGNITION OF SUBJECTS

Erwin Roy John, 3135 Netherland Ave., Riverdale, N.Y. 10463

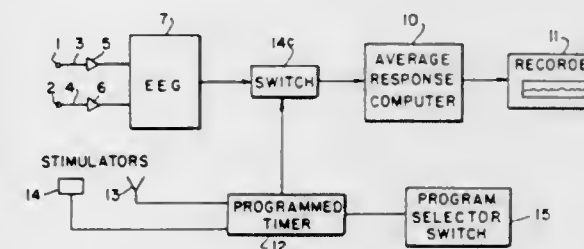
Continuation-in-part of Ser. No. 173,604, Aug. 20, 1971, Pat.

No. 3,780,724, which is a continuation-in-part of Ser. No. 877,948, Nov. 19, 1969, abandoned. This application Oct. 3, 1973, Ser. No. 403,155

Int. Cl. A61b 5/04

U.S. Cl. 128—2.1 B

8 Claims



power to cyclically apply electric power to said activating means to cycle said fuel pump.

3,901,214

HUMAN RESISTIVITY SENSING DEVICE

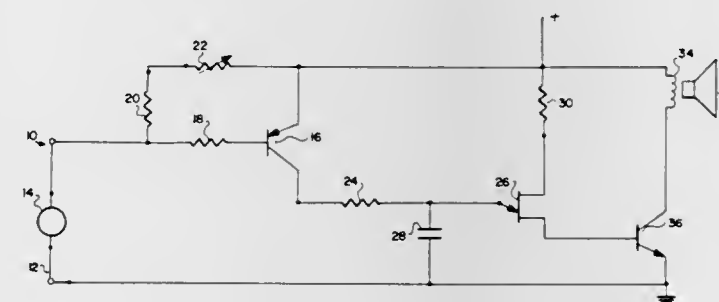
James L. Taaffe, Philadelphia, Pa., assignor to Phillip Brozman, New York, N.Y.

Filed Mar. 26, 1973, Ser. No. 344,650

Int. Cl. A61b 5/05

U.S. Cl. 128—2.1 Z

2 Claims



1. Electrical circuit means capable of being connected to the human body and producing a changing signal in response to changes in the surface resistivity of the human skin comprising electrode means adapted to be placed on the skin, variable frequency means comprising a unijunction transistor having an emitter and a pair of base terminals, biasing means connected between said electrode means and said variable frequency means, said emitter being connected to said biasing means,

said biasing means comprising a transistor and a variable resistance controlling the amount of current produced by said transistor,

said transistor having a base resistor connected thereto, said electrode means being connected through said base resistor to the input of said transistor to control the amount of current produced thereby,

a collector resistor connected to the collector of said transistor, a capacitor connected through said collector resistor to receive said current of said transistor to be charged thereby, said capacitor connected to said emitter of said unijunction transistor to cause said unijunction transistor to be triggered into conduction,

3,901,216
METHOD FOR MEASURING ENDODONTIC WORKING LENGTHS

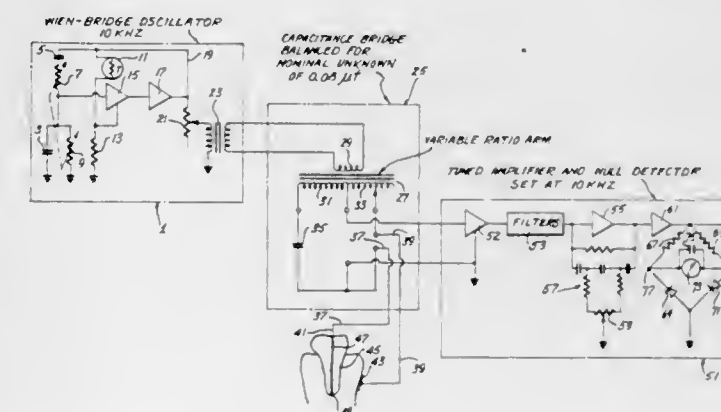
Milton R. Felger, 892 Chestnut Tree Dr., Rt. 9, Annapolis, Md. 21401

Filed Dec. 20, 1973, Ser. No. 426,476

Int. Cl. A61B 5/05

U.S. Cl. 128—2.1 Z

5 Claims



1. A method of measuring the depth of a root canal in a tooth comprising:

- forming an opening in the tooth crown,
- placing an electrode on mucosa adjacent the submerged tooth root,
- inserting a probe electrode through said opening into the root canal,
- connecting an oscillator to a capacitance bridge circuit and connecting said electrodes as one arm of said bridge circuit,
- measuring the capacitance across said electrodes,
- continuing of further insert said probe electrode,
- determining the point wherein the capacitance approximately doubles to locate the apical foramen,
- removing said probe electrode and measuring its depth of penetration at the point the capacitance approximately doubles.

3,901,217

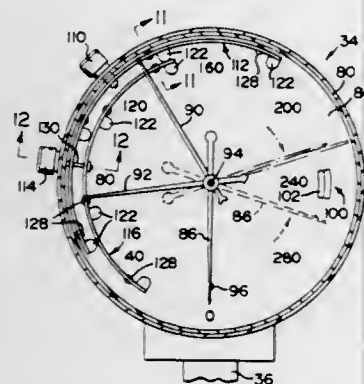
SPHYGMOMANOMETER AND GAUGE THEREFOR

Thomas W. Clark, 611 Westwinds Dr., Palm Harbor, Fla. 33563

Continuation-in-part of Ser. No. 331,289, Feb. 9, 1973, abandoned. This application Jan. 24, 1974, Ser. No. 436,096 Int. Cl. A61b 5/02

U.S. Cl. 128-2.05 G

17 Claims



1. A sphygmomanometer assembly of the type primarily designed to be self-operating by the user, said assembly comprising: pressure gauge means comprising an indicia-bearing dial, indicator means rotatably connected to said dial and disposed to sweep over a predetermined portion of said dial, said indicator means including at least one pressure indicator and at least one recorder indicator, braking means movably connected to said dial and disposed to extend outwardly from the face of said dial into path interrupting engagement with said one recorder indicator, indicator drive means interconnecting said one pressure indicator with a source of fluid pressure, said gauge further comprising indicator moving means comprising a positioning means fixedly connected to said one pressure indicator for movement therewith, said positioning means disposed in interruptive engagement with said one recorder indicator, said one recorder indicator being rotatably connected to said gauge in movable relation to said dial, whereby movement of said pressure indicator and engagement of said positioning means with said one recorder indicator causes movement of said one recorder indicator along with said pressure indicator.

3,901,218

DISPOSABLE ELECTRODE

Martin Buchalter, 26, Maplewood Dr., Parsippany, N.J. 07054 Filed Oct. 26, 1973, Ser. No. 409,884

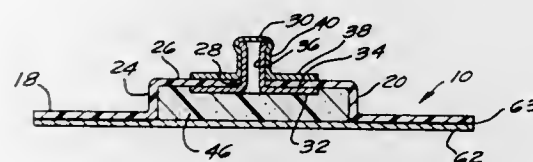
Int. Cl. A61B 5/04

U.S. Cl. 128-2.06 E

9 Claims

1. A disposable medical electrode comprising a disk of hard semi-rigid material having a recessed embossment formed centrally thereof and opening towards the side of the disk to be secured to a patient and a flat peripheral flange completely surrounding the embossment for securing the disk to the

patient, a metallic electrical contact mounted on said disk centrally of said recessed embossment and having portions thereof located on opposite sides of said embossment, and an absorbent pad positioned in and substantially filling said recessed embossment, said pad being in electrical contact with said metallic electrical contact and having absorbed therein an electrically conductive gel; said flat peripheral flange having a flat outer surface surrounding said recess on said one side of the disk, said flat surface having an adhesive coating thereon; and a carrier sheet formed of a plastic sheet material having



a release coating thereon engaged and releasably secured to the entire flat surface of said peripheral flange on said one side of the disk, covering the recess and pad therein and sealing said recess about the entire periphery thereof on said one side of the disk whereby the pad and gel in the recess are protected and sealed therein with a vapor barrier on all sides thereof formed by said disk and carrier sheet to prevent evaporation of gel in the recess prior to use of the disk, said adhesive coating on the flat surface of said peripheral flange serving to adhere the disk to the patient when in use.

3,901,219

BLOOD COLLECTING CONTAINER AND METHOD

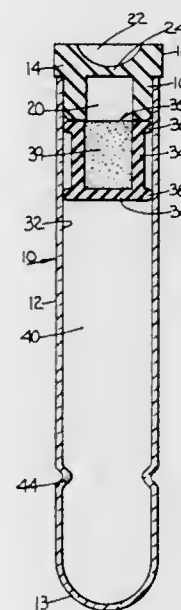
Donald A. Kay, Sharon, Mass., assignor to Becton, Dickinson and Company, East Rutherford, N.J.

Filed July 25, 1974, Ser. No. 491,820

Int. Cl. A61B 5/14

U.S. Cl. 128-2 F

4 Claims



1. Apparatus for the collection of an accurate measure of blood which comprises:

- a gas-proof tubular container having one open end and one closed end;
- a gas-proof, elastomeric, self-sealing closure sealing said open end;
- an elastomeric barrier-piston formed of an elastomeric material and which forms a sliding-seal with the interior side walls of said container;
- means for preventing said piston from traversing the entire length of said container;
- provided that at least one of said closure and said piston has a recess in the surface thereof which is proximal to the other of said closure and said piston, said recess providing

only the minimum space required to allow the needle room to penetrate the stopper and receive an initial flow of blood; and
said apparatus having a partial vacuum in all chambers within said container.

3,901,220

ENDOSCOPES

Takeo Koyasu, Sagamihara and Mituhiro Tokuhara, both of Kanagawa, Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

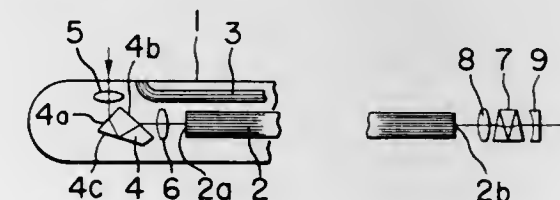
Filed June 29, 1973, Ser. No. 375,071

Claims priority, application Japan, July 24, 1972, 47-73946

Int. Cl. A61B 1/06

U.S. Cl. 128-6

11 Claims



11. An endoscope for inspecting an object, comprising a bundle of optical fibers defining a longitudinal direction and having a distal end and a proximal end, a sheath surrounding the bundle, first light transmitting means within the sheath beyond the distal end of the bundle for transmitting light from a direction transverse to the longitudinal direction of the bundle into the sheath from the object, light control means in the path of light through said light transmitting means for bending the light transversely into the longitudinal direction of the bundle and simultaneously causing color dispersion of the light onto the distal end of the bundle, said light control means being located within the sheath beyond the distal end of the bundle, and reconstituting means beyond the proximal end of the bundle for reconstituting the image appearing at the proximal end of the bundle.

3,901,221

PRESSURE CYCLE FOR STIMULATING BLOOD CIRCULATION IN THE LIMBS

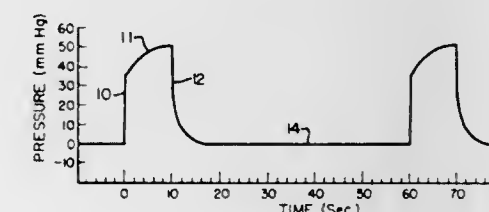
James E. Nicholson, Quincy, and Charles S. Lipson, Newton, both of Mass., assignors to Clinical Technology International, Inc., Canton, Mass.

Filed Apr. 8, 1974, Ser. No. 459,130

Int. Cl. A61H 1/00

U.S. Cl. 128-24 R

6 Claims



1. A method of overcoming circulatory stasis in mammalian limbs comprising:

- Applying to a limb portion fluid pressure of at least 30 mm of mercury over a time interval of between 9 and 15 seconds with a rise time reaching 30 mm of mercury within 3 seconds;
- keeping the applied pressure below 1 mm of mercury over a time interval of 30 to 60 seconds; and
- cyclically repeating the above steps.

3,901,222

CHIROPRACTIC ADJUSTING DEVICE

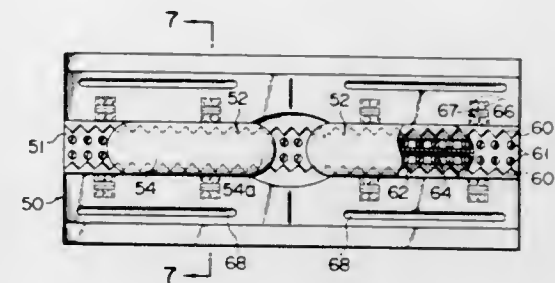
Toshiyuki Muramatsu, 7-24, Takouma, Shimoda, Japan Filed Aug. 9, 1974, Ser. No. 496,264

Claims priority, application Japan, Aug. 16, 1973, 48-91322

Int. Cl. A61F 5/00

U.S. Cl. 128-69

8 Claims



1. A chiropractic adjusting device comprising a bedplate, a pair of elongated pressing members each provided with an apex section for supporting a patient's back, said apex section presenting a substantially semi-circular configuration in its cross-sectional plane vertical to the longitudinal axis of the pressing member and having at one terminal portion a curved surface for pressing an effective point of the patient's back, and connection means for retaining said pressing member on said bedplate in a manner that they are in alignment with each other and their curved surfaces are faced to each other at an interval and for adjusting said interval.

3,901,223

KNEE JOINTS FOR LEG IRONS

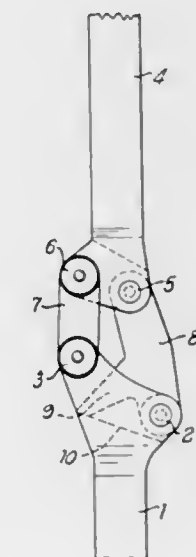
Denis Ronald William May, London, England, assignor to J. E. Hanger & Company, Limited, London, England Filed May 28, 1974, Ser. No. 474,063

Claims priority, application United Kingdom, May 31, 1973, 25977/73

Int. Cl. A61F 3/00, 5/00

U.S. Cl. 128-80 F

2 Claims



1. A knee joint for a leg iron comprising a shin iron having a head carrying a forward pivot and a rearward pivot, a thigh iron having a base carrying a forward pivot and a rearward pivot, a swinging link between the rearward pivots and a longer swinging link between the forward pivots, a single fixed abutment on said shin iron, and means rearwardly extending from said longer link for cooperative engagement with said single fixed abutment at full extension and at full flexion of the joint so as to limit the degree of movement of said joint in both directions.

3,901,224

THERMAL CONTROL OF BODY FUNCTIONS

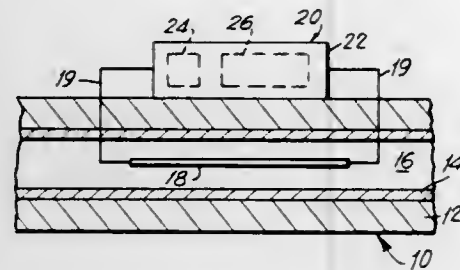
Louis Bucalo, Holbrook, N.Y., assignor to Investors in Ventures, Inc., New York, N.Y.

Filed Aug. 27, 1973, Ser. No. 391,886

Int. Cl. A61f 13/00

U.S. Cl. 128—82.1

18 Claims



1. In a method for controlling a body function, the steps of introducing a thermally conductive element in its entirety into the interior of a cavity of the body of a living being where a body fluid flows at least periodically, to which access can be had only by a medical procedure, and where a function will change with a temperature change, without providing any substantial obstruction to the flow of body fluid in the cavity and while providing for the cavity a size and shape which is substantially the same after said thermally conductive element is introduced into said cavity as before said element was introduced into said cavity, and controlling the temperature of the thermally conductive element so as to control the function.

9. A device for thermally controlling a body function, comprising a temperature-regulating implant to be situated in its entirety in the interior of a body cavity to which access can only be had by a medical procedure and in which a body fluid flows at least periodically, said implant having a size and configuration which will not obstruct the flow of fluid through the body cavity to any substantial extent and which is capable of being received in said body cavity without substantially changing the size and shape thereof, and means cooperating with said implant for operating the latter to control temperature.

3,901,225

INFLATABLE SPLINT

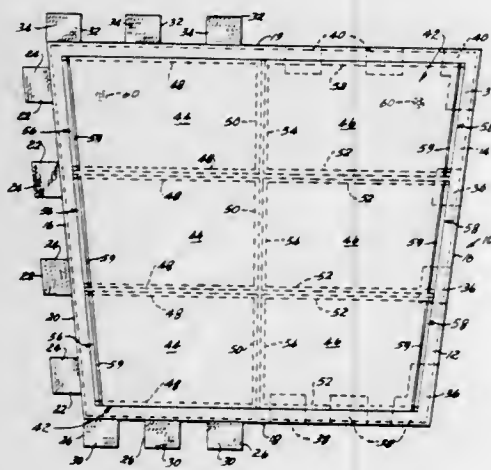
Jerry W. Sconce, 906 E. Northridge St., Glendora, Calif. 91740

Filed Jan. 2, 1974, Ser. No. 430,243

Int. Cl. A61f 5/04

U.S. Cl. 128—89 R

7 Claims



1. An inflatable therapeutic splint comprising an inflatable bladder having inner and outer walls made of a fluid-impervious, flexible, foldable material and sealed around the peripheral edges thereof to form a hollow interior for receiving and holding therein a supply of

inflation fluid under pressure, the bladder having a pair of opposed longitudinal edges extending along the length of the bladder, the bladder being foldable on itself centrally of the longitudinal edges for substantial registration of the longitudinal edges, the bladder when so folded being elongated in a direction along the longitudinal edges,

a plurality of pockets secured to the inner wall of the bladder, the pockets having respective openings thereinto for permitting separate thermal treatment media such as cold or hot compresses, ice packs, or the like to be removably inserted in selected ones of the pockets, the pockets being arranged on the bladder in at least three rows spaced apart along the elongate extent of the bladder with each row extending transversely of the elongate extent of the bladder,

cooperating fastening means secured to the opposite longitudinal edges of the bladder and extending along the length thereof for releasably attaching the opposite longitudinal edges of the bladder when folded to each other to hold the bladder around an extremity of a user with the elongate extent of the bladder aligned with the length of the extremity so that the three rows of pockets are disposed in series along the length of the extremity, and fluid inlet means opening through the outer wall of the bladder for admitting inflation fluid under pressure to the interior of the bladder to inflate it when folded around a user's extremity to substantially immobilize the extremity and to force the three rows of pockets into thermal pressure contact with the extremity.

3,901,226

PROTECTIVE GUARD FOR A HYPODERMIC NEEDLE

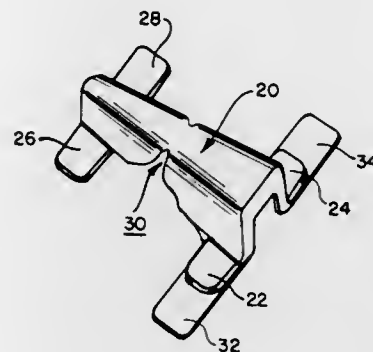
Anthony Scardenzan, 1535 W. 130th St., Gardena, Calif. 90249

Filed Mar. 29, 1974, Ser. No. 456,019

Int. Cl. A61M 5/00

U.S. Cl. 128—133

2 Claims



1. A universal guard for a hypodermic needle, and the like, constructed to fit different parts of the body of a patient into which the needle may be inserted, and which is adapted to be taped to the body and to be bent to a variety of configurations to form a protective shield for the needle without interfering with the position in which the needle is inserted into the body, said guard including: an elongated open-ended channel-like body portion formed of flexible plastic material adapted to be mounted in an inverted position over the needle inserted into the body of the patient to form an enclosure for the needle, said body portion having an intermediate notch therein on each side thereof to permit said body portion to be bent about an intermediate axis, a first pair of deformable integral tabs mounted at one end of the channel-like body portion, a second pair of deformable integral tabs mounted at the other end of the channel-like body portion, and a further pair of elongated mounting tabs integral with and extending outwardly from the tabs of the second pair, said tabs permitting the body portion to be set to different heights and inclinations.

3,901,227

INTRAVENOUS INJECTION BOARD

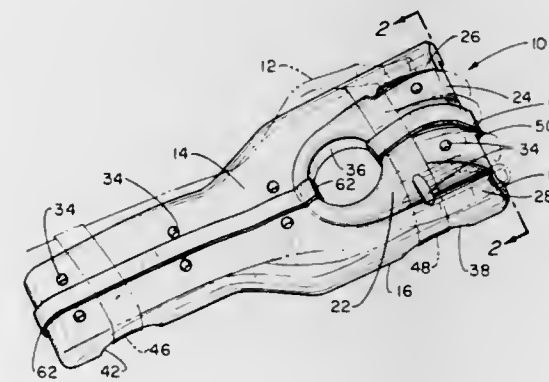
Morris Klatskin, Tustin, Calif., assignor to Investors Marketing & Mfg. Inc., Encino, Calif.

Filed Dec. 7, 1973, Ser. No. 422,701

Int. Cl. A61m 05/00

U.S. Cl. 128—133

2 Claims



1. An injection board for use as a support for an arm, hand and fingers having a front end, a back end, a top surface and a bottom surface, said board comprising:

a raised rounded portion formed within said board adjacent said front end and convex with said top surface, the fingers being adapted to rest upon the forward end of said raised rounded portion with the palm of the hand to be positioned against the aft end of said raised rounded portion;

said top surface including a ledge on each side of said raised rounded portion, said ledges being adapted to provide a thumb rest area and a little finger rest area, the lateral outer edge of each said ledge being smoothly contoured; said back end being of sufficient length to extend past the wrist of the user and into the forearm area;

said bottom surface including a cavity, a plurality of ventilation holes formed through said board connecting with said cavity, a first pair of spaced apart aligned recesses formed within said bottom surface adjacent said front end, a second pair of spaced apart aligned recesses formed within said bottom surface adjacent said back end, said first and second pair of aligned recesses to facilitate the placing of adhesive tape about the user's hand and arm binding such to said board, said first and second pair of aligned recesses also functioning to ventilate said cavity to the ambient; and means for making said board electrically conductive.

3,901,228

THERAPEUTIC FOOT REST

Robert J. Brown, 3301 Bounty Cir., Huntington Beach, Calif. 92646

Filed Dec. 18, 1973, Ser. No. 425,728

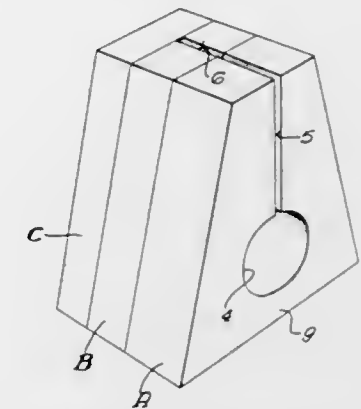
Int. Cl. A61F 13/00

U.S. Cl. 128—133

5 Claims

1. A therapeutic foot rest comprising: a body of resilient foam material having a flat base wall, a foot receiving cavity within said body, said body being composed of an outer layer of foam material defining said opening, an intermediate layer of foam material defining said cavity and a third layer of foam material forming the end wall of said cavity said layers being bonded together to form an ankle receiving opening leading

into said cavity from one side of said body, said body being vertically split above said opening in at least the outer layer



3,901,229

RESTRAINING GARMENTS

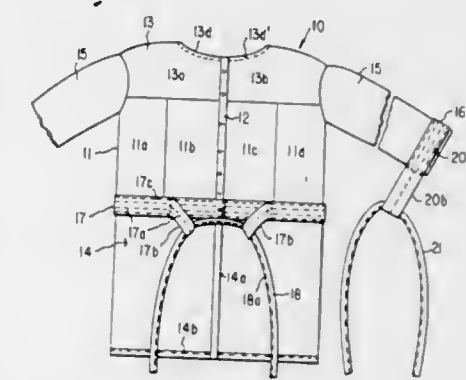
James E. Hensel, and Elizabeth H. Hensel, both of 12 Woodland Ave., Brookhaven, N.Y. 11719

Filed Feb. 7, 1974, Ser. No. 440,422

Int. Cl. A61f 13/00

U.S. Cl. 128—134

13 Claims



1. A restraining garment useable to restrain a person in a bed or chair, said garment having interconnected front and back portions which contact respective front and back portions of the body of a person wearing said garment, said garment having integral reinforcing strip portions including plural spaced loop means, said plural loop means adapted to extend from the garment at the back of the wearer and toward each other when said garment is on wearer; and an independent tie member passing through and being freely slidable through said loop means, and adapted to pass underneath a bed or around a chair, the ends of said tie member being tied together or to a part of the bed or chair to secure said garment to said bed or chair to restrain movement of a person wearing said garment.

3,901,230

ANESTHESIA REBREATHING APPARATUS INCLUDING IMPROVED RESERVOIR MEANS

Melvyn L. Henkin, 19640 Greenbriar Dr., Tarzana, Calif. 91356

Continuation-in-part of Ser. No. 218,337, Jan. 17, 1972, Pat. No. 3,814,091. This application May 1, 1974, Ser. No. 465,817

Int. Cl. A61m 16/00

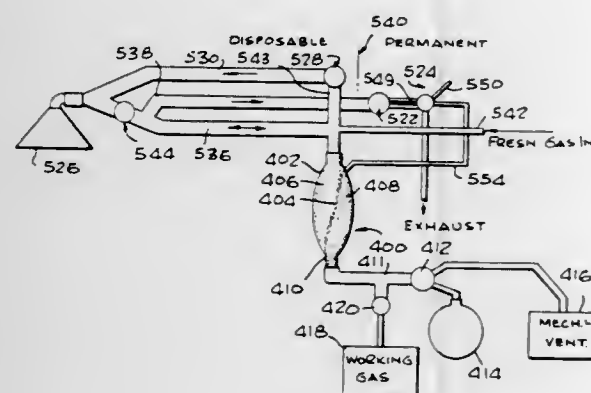
U.S. Cl. 128—188

10 Claims

7. Anesthesia rebreathing apparatus useful in combination with a source of fresh anesthesia gases, said apparatus comprising:

a gas overflow valve, having input and exhaust ports, mounted proximate to said fresh gas source; elongated breathing tube means having an open second end adapted to communicate with said fresh gas source and

an open first end adapted to communicate with a patient's airway, said breathing tube means providing a flow path in the direction from said airway to said fresh gas source and from said gas source to said airway;
 an elongated overflow tube means of substantially the same length as said breathing tube means, having an open first end in communication with said breathing tube means proximate to the first end thereof and an open second end in communication with said overflow valve input port, said overflow tube means providing a flow path in the direction from said breathing tube means to said overflow valve;



a reservoir assembly including outer wall means enclosing a volume and inner wall means partitioning said volume into first and second hermetically isolated chambers, said inner wall means being flexible for transmitting pressures between said chambers;
 container means having a flexible wall capable of being manually squeezed to increase the pressure therein;
 means for communicating the pressure in said container means to said reservoir assembly second chamber; and
 means for communicating said first chamber with said breathing tube means second end.

3,901,231

INFUSION PUMP APPARATUS

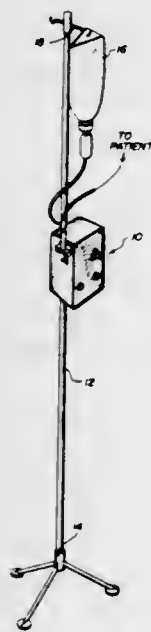
Raymond G. Olson, Niles, Ill., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.

Filed Feb. 7, 1974, Ser. No. 440,410

Int. Cl. A61m 5/00

U.S. Cl. 128-214 F

5 Claims



1. Infusion pump apparatus with an adjustable piston stroke

amplitude for reciprocating a piston within a syringe to deliver fluid comprising:

a housing;
 angulation means pivotally disposed in said housing and operatively connected to said piston to cause said reciprocation of said piston in said syringe;
 arcuate means pivotally disposed in said housing operatively connected to said angulation means;
 said arcuate means adaptable to adjustably determine said piston stroke amplitude by varying the displacement of said angulation means;
 motor means connected to said arcuate means operable to reciprocate said angulation means through said angular displacement; and
 calibration means cooperable with said operative connection between said angulation means and said arcuate means,
 said calibration means comprising (a) means for pre-selecting the fluid flow rate of said infusion pump apparatus by adjusting said displacement of said angulation means, and (b) adjusting means for establishing the minimum and maximum displacement of said angulation means.

3,901,232

INTEGRATED DEVICE FOR ADMINISTERING BENEFICIAL DRUG AT PROGRAMMED RATE

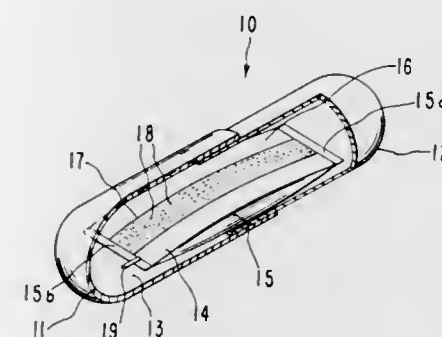
Alan S. Michaels, Atherton; John D. Bashwa, Palo Alto, and Alejandro Zaffaroni, Atherton, all of Calif., assignors to Alza Corporation, Palo Alto, Calif.

Filed Oct. 26, 1973, Ser. No. 409,814

Int. Cl. A61j 1/00; A61m 31/00

U.S. Cl. 128-260

11 Claims



1. A delivery device for the controlled and continuous release of a beneficial agent, the device comprising in combination,

- a. bioerodible container providing an internal space therein,
- b. a delivery device housed in the container, the device comprising,
- c. a beneficial agent,
- d. a reservoir containing the beneficial agent, said reservoir formed of a solid polymeric release rate controlling biologically acceptable imperforate material permeable to the passage of the agent by diffusion, the reservoir joined to,
- e. a hollow deformable closed member, said member comprising a means for moving from a collapsed position to an expanded position on release of the device from the container and moving from an expanded position to a collapsed position after a period of agent release time, with agent metered from the reservoir in a therapeutically effective amount by diffusion for a prolonged period of time on release of the device from the container in the environment of use while the means is in an expanded position and thereafter the means moving to a collapsed position.

3,901,233

EAR APPLICATOR

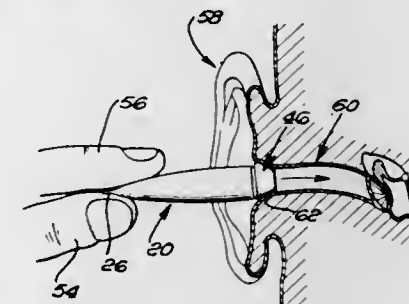
Murray Grossan, 8930 Sepulveda Blvd., Los Angeles, Calif. 90045

Filed Nov. 26, 1973, Ser. No. 418,815

Int. Cl. A61m 35/00

U.S. Cl. 128-261

6 Claims



1. An applicator for applying protective substance to the ear canal comprising:

- a container having therein a quantity of skin protective liquid and an outlet orifice for depositing said liquid in the ear canal;
- and a collar of absorbent spongy material surrounding said orifice and impregnated with a skin protective substance in ointment form for depositing said ointment on the meatus of the ear,
- said collar being of a size as to prevent its total entry into the ear canal.

3,901,234

COMBINATION PLASTER AND METAL SPHERES DEVICE

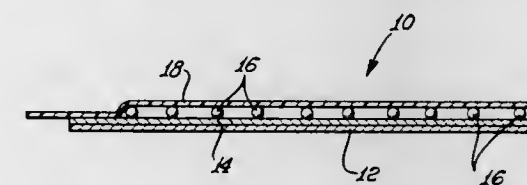
Keizo Yazawa, Tokyo, Japan, assignor to Steve Boxer, Van Nuys, Calif.

Filed Oct. 23, 1973, Ser. No. 408,659

Int. Cl. A61M 37/00; A61F 7/02

U.S. Cl. 128-268

2 Claims



1. A device for alleviating pain and stiffness at selected areas of a person's body, consisting of:

- a flexible base member having a layer of medicated adhesive material on one side thereof; and
- a multiplicity of rigid spheres on said adhesive layer, adhesively retained thereon in spaced and dispersed relation throughout a substantial area thereof whereby at least portions of said adhesive layer, may be adhered to a person's body to thereby press said spheres thereagainst to produce a multiplicity of localized small areas of pressure against the user's body.

3,901,235

ANTI-REFLUX DEVICE FOR URINARY COLLECTION BAGS

Bhupendra C. Patel, Elgin, and John F. Dye, Barrington, both of Ill., assignors to The Kendall Company, Boston, Mass.

Filed May 24, 1973, Ser. No. 363,614

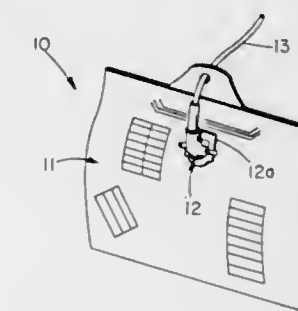
Int. Cl. A61F 5/44

U.S. Cl. 128-275

2 Claims

1. An anti-reflux device for a body fluid collection bag comprising:

at least two flexible walls of a plastic material joined together at the peripheral edges thereof, one of said at least two walls having an opening on an upper portion thereof; a tubular inlet connector comprising a back support and a tubular elbow portion attached thereto, said elbow portion having a generally circular opening therein that coincides with said opening on said wall, said circular opening being constructed so that fluids flowing there-through will be concentrated at the lowermost portion thereof, said connector being secured to the exterior of said wall so that said circular opening is aligned with said wall opening;



a drainage tube for transporting body fluids to said bag being attached to said tubular inlet connector; and,
 a flap valve consisting of a sheet of thin flexible material having substantially the same configuration as said back support and being secured to the interior of said wall having the opening thereon so as to substantially coincide with the outline of said inlet connector, said flap valve being secured in a manner that leaves only its lower periphery unsecured and free to flex inwardly toward said bag interior when fluid passes therethrough but to close when the bag pressure exceeds the drainage tube pressure, said lower periphery covering the lowest portion of said circular opening and extending slightly below it.

3,901,236

DISPOSABLE ABSORBENT ARTICLES CONTAINING HYDROGEL COMPOSITES HAVING IMPROVED FLUID ABSORPTION EFFICIENCIES AND PROCESSES FOR PREPARATION

Per G. Assarsson, Montclair; Paul A. King, Warwick, and Steven N. Yen, Highland Mills, all of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed July 29, 1974, Ser. No. 492,897

Int. Cl. A61F 13/16, 13/20; A61I 15/00

U.S. Cl. 128-284

23 Claims



1. A disposable absorbent article for body exudate having fibrous coated hydrogel particles as at least one of the absorbents contained therein; said particles having:

- a. improved in situ fluid absorption efficiencies over the corresponding non-coated particles,
- b. a particle size distribution such that essentially all of said coated hydrogel particles pass through a five mesh screen as measured on U.S. Standard Sieve Series,
- c. a coating of fibers, which fibers have an average length of less than about 5.0 millimeters and an average ratio of length to diameter of at least about 5:1, and

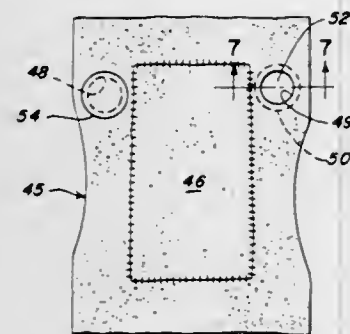
d. at least some of said fibers having a portion thereof extending outwardly from the surface of said particles.

3,901,237

FASTENING MEANS FOR A DISPOSABLE DIAPER

Talivaldis Cepuritis, and Gunta Cepuritis, both of Kenilworth, Ill., assignors to Johnson & Johnson, New Brunswick, N.J.
Filed July 31, 1974, Ser. No. 493,355

Int. Cl. B44d 1/20; A61f 13/16; A41b 13/02
U.S. Cl. 128-284



1. A disposable diaper of substantially quadrilateral configuration defined by longitudinal and transverse peripheral edges and having an inside surface for direction toward an infant when the diaper is worn by that infant and an outside surface for direction away from said infant, which disposable diaper comprises a thin, flexible backing sheet of substantially moisture-impermeable material, a moisture-retaining layer including a pad of a fibrous, non-woven, absorbent material superposed on said backing sheet and attached thereto, and an adhesive fastening means on the diaper and within the perimetric limits thereof; said fastening means being secured to said backing sheet and presenting through a cut-out open region in said diaper a pressure-sensitive adhesive surface contiguous to the inside surface of the diaper and spaced from the transverse peripheral edges thereof.

3,901,238

DISPOSABLE DIAPER HAVING A RESIN TREATED ABSORBENT PAD TO IMPROVE INTEGRITY, SOFTNESS AND DRYNESS

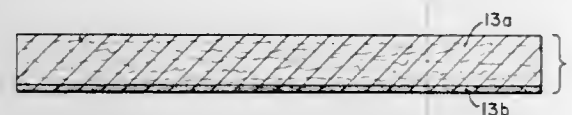
Dale A. Gellert, Aurora, Ind.; Kendall L. Harden, and John R. Noel, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Mar. 18, 1974, Ser. No. 452,095

Int. Cl. A61f 13/16

U.S. Cl. 128-287

17 Claims



1. A method of producing a soft, reinforced body fluid absorbent fibrous web having sufficient strength to resist tearing and shredding when used as an body fluid absorbent core, comprising the steps of:

- treating one surface of an uncompacted absorbent web of hydrophilic fibers having a basis weight between about 80 grams per square meter and about 500 grams per square meter and a density between about 0.03 grams per cubic centimeter and about 0.05 grams per cubic centimeter by applying a hydrophobic, film-forming material thereto to a depth not exceeding 50 percent of the total thickness of said web in the uncompacted state;
- drying the film-forming material applied to the surface of said web while said web is in the uncompacted state so that the material is non-tacky and will not self-adhere upon compaction of the web; and

c. compacting said web to an overall density between about 0.09 grams per cubic centimeter and about 0.13 grams per cubic centimeter.

3,901,239

DISPOSABLE DIAPER WITH PERMANENTLY ATTACHED ADHESIVE TABS AND PERMANENTLY ATTACHED COVER STRIPS

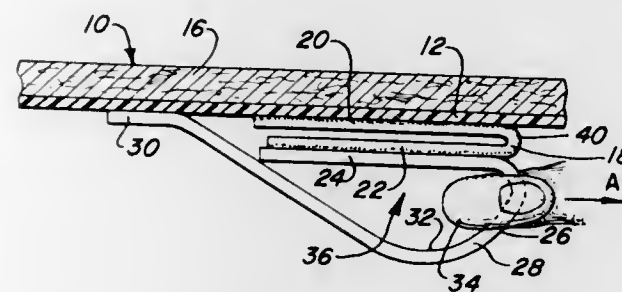
Ludwig Tritsch, Wilmette, Ill., assignor to Johnson & Johnson, New Brunswick, N.J.

Filed July 18, 1974, Ser. No. 489,644

Int. Cl. A61f 13/16

U.S. Cl. 128-287

6 Claims



1. In combination with a disposable diaper having an absorbent layer and a moisture-impermeable backing sheet, the improvement comprising: an adhesive tab having one end permanently attached to said backing sheet at a marginal location thereon and a free end folded back over said attached end and presenting a tacky surface; a cover strip having a release coating on one surface thereof and being affixed at one end to said backing sheet and at the other end releasably secured to and covering said tacky surface on said free end; said cover strip forming with said folded back free end a finger-receiving loop which enables said cover strip to be easily separated from the adhesive tab thereby exposing said tacky surface for use in fastening said diaper about an infant.

3,901,240

PERMEABLE POLYMERIC LINER ON ABSORBENT PADS

Charles E. Hoey, Marlton, N.J., assignor to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 354,062, April 25, 1973. This application Sept. 5, 1973, Ser. No. 394,601

Int. Cl. B32b 3/26, 5/18; A61f 13/16

U.S. Cl. 128-296

7 Claims



1. A flexible absorbent pad comprising a top layer of polymeric foam material permeable to liquids, an underlying layer of liquid-absorbent material and a bottom film of flexible, moisture-impermeable material, the improvement in which said polymeric foam material is crushed foam of an addition polymer comprising an ethylenically unsaturated acrylic monomer, the thickness of the crushed layer being from about 1 mil to about 10 mils the pore size less than about 10 mils with approximately 100,000 to 1,000,000 pores per square inch.

3,901,241

DISPOSABLE CRYOSURGICAL INSTRUMENT

Robert E. Allen, Jr., Laurel, Md., assignor to DU-AL Corporation, Laurel, Md.

Filed May 31, 1973, Ser. No. 365,608

Int. Cl. A61b 17/36; A61f 7/12

U.S. Cl. 128-303.1

3 Claims

3,901,242

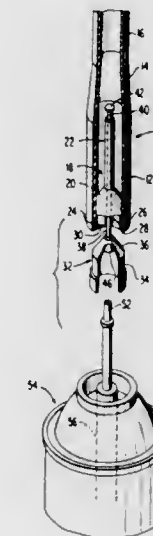
ELECTRIC SURGICAL INSTRUMENT

Karl Storz, Tuttlingen, Germany, assignor to Storz-Endoskop GmbH, Schaffhausen, Switzerland

Filed May 30, 1974, Ser. No. 474,614

Int. Cl. A61b 17/32

4 Claims



1. In a one-use, throw-away, leak-proof, syringe-type cryosurgical instrument of the type comprising:

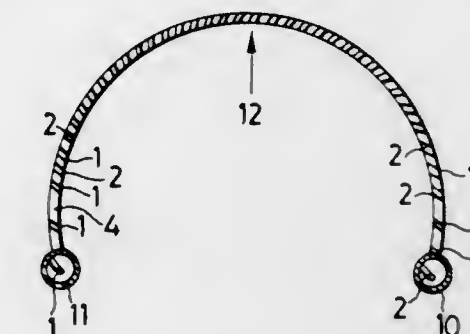
a longitudinal housing forming a cavity therein for holding a cryogenic fluid;

means to conduct cold from said cavity inside of said housing to the outside thereof at one end of said housing, said means including a surgical probe formed of a thermally conductive material, said means being in contact with said cryogenic fluid on the inside of said housing when said instrument is in its operative position;

means to trap cryogenic liquid within said housing, said trap means being located at the end of said housing opposite from said probe, said trap means comprising an axially directed internally projecting element having a large opening located at the end of said housing opposite said probe and a small opening located intermediate the two ends of said housing, said trap means having a thin elongated element for defining a large annular trap space thereabout within said cavity, said trap means aiding the insertion of cryogenic fluid within said housing while preventing said cryogenic fluid in liquid form from leaving said housing after said fluid has been inserted therein; and

an actuator cap means for feeding cryogenic liquid into said cavity through said elongated element while disposed in vertical position with said probe projecting upwardly, said actuator cap means comprising a receiver element for mating with the valve of an aerosol can, and a narrow elongated tube of length greater than the length of said thin elongated trap element;

the improvement wherein a tip portion of said narrow elongated tube which extends beyond said thin elongated trap element into said cavity during cryogenic-liquid feeding has a radially directed opening therein for feeding cryogenic liquid into said housing radially without causing contact of the cryogenic fluid with said thermal conductive means during said feeding.



1. An electric surgical instrument, comprising:
a. a pair of elongated, laterally spaced and substantially parallel hollow tubes,
b. an electrode support of electrically non-conductive material secured to and extending transversely between the tubes at one end thereof,
c. a pair of electrodes mounted upon the electrode support in spaced-apart relation and extending transversely between the tubes, and
d. an electrical conductor connected to each electrode and extending through one of said tubes for connection to a source of high frequency current.

3,901,243

EAR PIERCING DEVICE

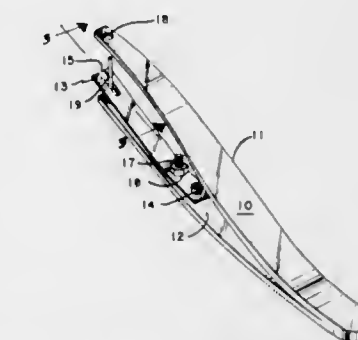
Lee Read, 1002 Johnson St., Boise, Idaho 83704

Continuation-in-part of Ser. No. 219,977, Jan. 24, 1972, abandoned. This application Nov. 12, 1973, Ser. No. 415,079

Int. Cl. A61b 17/00

U.S. Cl. 128-329

1 Claim



1. An ear piercing device, comprising:
first and second opposing parallel arms resiliently mounted to each other at one of their respective terminal ends;
means for detachably retaining a stud of an earring in an upstanding position;
said retaining means being mounted on said first arm at the end opposite the end at which said arms are mounted to each other;
said second arm having a hole disposed distally from the end opposite said mounting of said arms and adjacent said retaining means;
said retaining means comprising a recess cut into the interior side of said first arm in registry with said hole, and a leaf spring disposed parallel to the interior side of said first arm and having one end fastened thereto and its opposite end extending over said recess;
said spring including a slot disposed rectilinearly from its said opposite end in registry with said hole and recess;

and an upstanding stop pin disposed on the interior side of one of said arms.

3,901,244

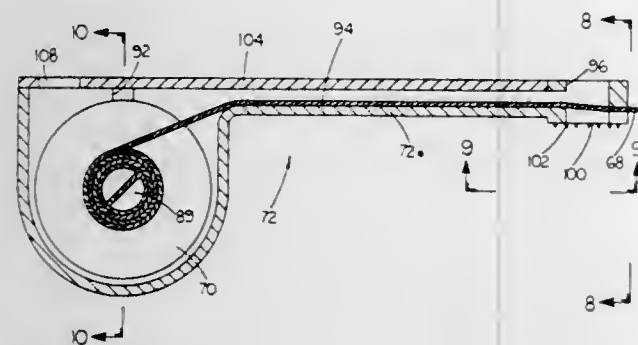
SUTURE CARTRIDGE

Edward E. Schweizer, P.O. Box 314, Katonah, N.Y. 10536
Continuation-in-part of Ser. No. 358,082, May 7, 1973, Pat.
No. 3,842,840. This application June 14, 1974, Ser. No.
479,587

Int. Cl.² A61B 17/04

U.S. Cl. 128—334 R

8 Claims



1. A suture cartridge for use in a surgical suture applicator which includes:

- a pair of lever members pivoted together and having jaw elements thereon;
- a needle slidably carried on one of said jaw elements for movement between a retracted position within said one jaw element and an extended position protruding therefrom;

means on the end of said needle for grasping a length of suture extended across the path of said movement; and means on one of said lever members for driving said needle from said retracted position to said extended position in response to closing movement of said lever member;

said suture supply cartridge comprising:

- a casing;
- a bobbin adapted to carry a length of suture wound thereon; mounting means in said casing rotatably receiving said bobbin;
- a forward extension on said casing forming a passageway for a length of suture unwound from said bobbin;
- a forward extension on said casing forming a passageway for a length of suture unwound from said bobbin;
- a transverse opening through said forward extension adapted for registry with said path of needle movement; suture gripping means on said forward extension outboard of said transverse opening;
- means on said casing for releasable securing said casing to said one jaw element of the suture applicator; and
- a flesh-gripping surface on said forward extension around said transverse opening.

3,901,245

BIO-MEDICAL PRESSURE CONTROL DEVICE

Eugene B. Spitz; Gene H. Samuelson; Richard E. Brenz, all of Media, and Charles C. Hansford, Chester, all of Pa., assignors to Bio-Medical Research, Ltd., Lima, Pa.
Filed Mar. 15, 1973, Ser. No. 341,774
Int. Cl. A61m 27/00

U.S. Cl. 128—350 V

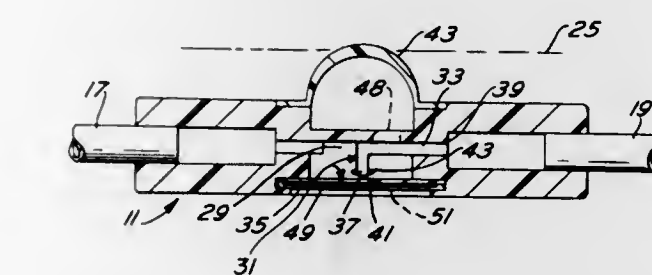
14 Claims

1. A cerebrospinal fluid anti-syphoning device comprising:
 - a. fluid housing means having a central chamber, said fluid housing means including a flexible dome forming an upper surface of said central chamber, said flexible dome adapted to be depressible into said central chamber for increasing fluid pressure therein;

- b. inlet means in fluid communication with said central chamber for insertion of said fluid into said chamber;

- c. outlet means in fluid communication with said central chamber for transport of said fluid from said chamber;
- d. fluid egress conduit means extending internal said central chamber and in fluid communication with said outlet means;

- e. flexible diaphragm means forming a lower continuous surface of said central chamber, said diaphragm means being positionally located adjacent said fluid egress conduit means, said diaphragm means adapted to block flow



of said fluid through said fluid egress conduit means when a fluid pressure differential between said inlet and outlet means is less than a predetermined value; and,

- f. diaphragm restraint means secured to said housing and positioned below said diaphragm means for preventing said flexible diaphragm means from being externally displaced from said housing means when said flexible dome is depressed, said diaphragm restraint means being a plate member having at least one opening passing there-through.

3,901,246

BALLOON TRACHEAL CATHETER WITH INFLATION VALVE AND INDICATOR

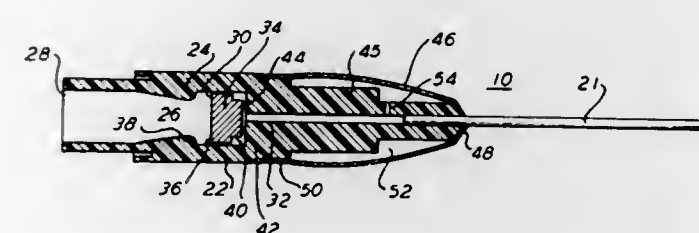
Dean R. Wallace, Fort Myers, Fla., assignor to Airco, Inc., Montvale, N.J.

Filed Jan. 24, 1974, Ser. No. 436,314

Int. Cl.² A61M 25/00

U.S. Cl. 128—351

11 Claims



1. A tracheal tube for insertion into the trachea of a patient for introducing and removing gas, said tube having an inflatable chamber surrounding the distal end thereof, a gas passageway having one end communicating with the interior of said inflatable chamber and having its other end adapted to receive gas for inflation of said chamber, said gas passageway including a valve means, said valve means comprising a molded flexible housing having a gas passage therethrough, a plug means positioned in an interference fit within said gas passage whereby said plug normally prevents the flow of gas through said gas passage, said housing including at least one inwardly directed projection facing into said gas passage, said projection being moveable outwardly to distort said housing from said plug means to break the interference fit to allow gas to bypass said plug means.

3,901,247

END OF LIFE INCREASED PULSE WIDTH AND RATE CHANGE APPARATUS

Frank R. Walmsley, Fridley, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

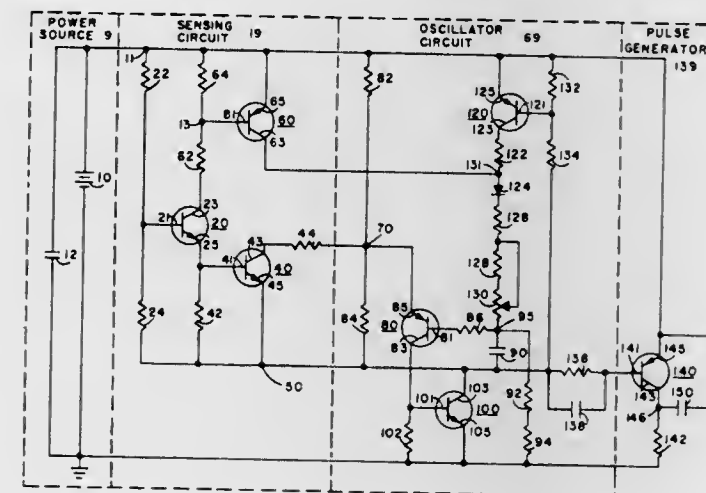
Continuation of Ser. No. 217,492, Jan. 13, 1972, abandoned.

This application Jan. 28, 1974, Ser. No. 437,146

Int. Cl.² A61N 1/36

U.S. Cl. 128—419 PG

14 Claims



1. In an electromedical pulse generator used to stimulate a selected portion of a living animal body of the type having terminal means adapted for connection to an electrical lead having power source means, and having electrical pulse generating means electrically connected to the power source means for supplying output pulses at a first predetermined rate to the terminal means, each pulse having a first predetermined pulse width sufficient to stimulate the selected portion of the body, the improvement comprising:

means electrically connected to the power source means and to the pulse generating means and responsive to a significant decrease in the power source output below a predetermined level for increasing the output pulse width from said first predetermined pulse width to a second, greater predetermined pulse width for continuing to stimulate the selected portion of the body over a predetermined range of power source outputs less than said predetermined level.

3,901,248

CHEWABLE SMOKING SUBSTITUTE COMPOSITION

Stefan Lichteckert; Claes Lundgren, both of Lund, and Ove Ferno, Helsingborg, all of Sweden, assignors to Aktiebolaget Leo, Helsingborg, Sweden

Continuation of Ser. No. 164,098, June 19, 1971, abandoned.

This application Aug. 15, 1974, Ser. No. 497,557

Claims priority, application United Kingdom, July 22, 1970, 35607/70

Int. Cl. A24b 15/00

U.S. Cl. 131—2

4 Claims

1. A chewable "substitute for smoking" gum composition comprising

1. a chewing gum base and
2. nicotine, held by a saliva-insoluble cation exchanger, wherein the cation exchanger is selected from the group consisting of a) methacrylic type, weakly acidic, containing carboxylic functional groups; b) polystyrene type, strongly acidic, containing sulfonic functional groups; and c) polystyrene type, having intermediate acidity, containing phosphonic functional groups; substantially uniformly distributed in said chewing gum base, wherein:

- A. the composition is in the form of a chewable gum unit weighing in the range of about 0.5 to about 4 grams;

- B. the chewing gum base is present in said gum composition in an amount in the range of about 15 to about 80 weight percent of said gum composition;

- C. the nicotine is present in said composition in an amount in the range of about 0.05 weight percent to about 2 weight percent based on the weight of the chewing gum base and calculated as the free base;

- D. the amount of nicotine held by the cation exchanger and distributed in said chewing gum base is in the range of about 1 to about 10 milligrams, such amount of nicotine approximating the amount available upon smoking a smoking tobacco product;

- E. said nicotine-cation exchange complex constitutes up to about 10 percent by weight of said chewing gum composition;

- F. the nicotine is present in said nicotine-cation exchange complex in an amount in the range of about 2 to about 60 percent by weight;

- G. the nicotine held by said saliva-insoluble cation exchanger being present in said gum composition as a nicotine-cation exchange complex which upon chewing liberates the nicotine cation, and

- H. said chewing gum composition when chewed releasing nicotine in small and reduced amounts within a period of the first few minutes of chewing, and

- I. especially within the first ten minutes of chewing releasing the nicotine at a rate less than if the nicotine were present by itself in an ordinary gum composition and less than if the nicotine-cation exchanger complex were used by itself absent the gum.

3,901,249

BRUSH HAND DRYER

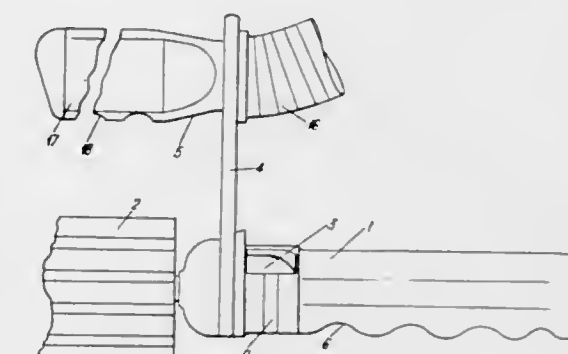
Leslie John Russell, 9 Eldon Ct., Brondesbury Rd., N.W. 6, England

Filed Aug. 1, 1973, Ser. No. 384,695

Int. Cl. A45d 20/50

U.S. Cl. 132—9

12 Claims



1. A hair brushing and drying device comprising a handle, a brush, said brush being mounted for rotation on the handle, control means, said control means effecting the rotation of the brush, a support, said support being mounted on the handle and a dryer, said dryer having air nozzle means said nozzle means being arranged in the support and spaced from the brush for directing air at the brush in a direction transverse to the rotational axis of the brush.

12. A device according to claim 1 in which said handle is hollow and has an internally screw-threaded open end, the device further including a stem on said brush, said stem extending into said handle through said open end, a retaining shoulder on said stem located within said handle and facing towards said open end thereof, an externally screw-threaded locking cap screwed into said internally screw-threaded open end of the handle and engaging said retaining shoulder to prevent said stem from being withdrawn from said handle.

3,901,250

AUTOMATIC ELECTRICAL DEVICE FOR FORMING AND DRYING HAIR CURLS AND THE RELATIVE ELECTRICAL SUPPLY UNIT

Umberto Tomiati, via Filippini 19, Verona, Italy (37100)

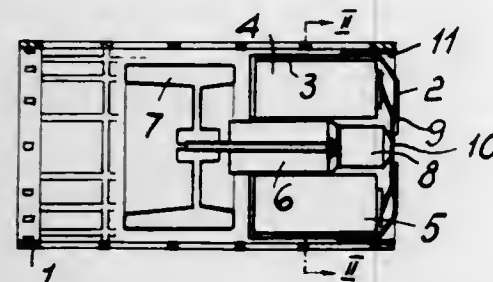
Filed July 16, 1973, Ser. No. 379,520

Claims priority, application Italy, July 21, 1972, 84950/72

Int. Cl.² A45D 2/12

U.S. Cl. 132—33 R

8 Claims



1. An automatic electrical device for forming and drying hair curls and the relative electrical supply unit, comprising an external perforated enclosure substantially of cylindrical form around which can be wound hair to form a curl, a fan consisting of an electric motor and an impeller disposed in said enclosure and arranged to create a forced air current involving at least the hair wound around said enclosure, at least one re-chargeable electric current generator disposed in said enclosure for supplying said electric fan, at least one microthermostat connected between said generator and said fan to automatically control at a pre-determined temperature the supply of electric current from said generator to said fan, an electrical supply unit arranged to house simultaneously a plurality of said devices for re-charging said generators of electric current during the periods of inoperation of said devices, support means for said generator and said fan in said enclosure, and means for establishing electrical connection by contact between said generator and said electrical supply unit during the re-charging of said generator.

3,901,251

DENTAL FLOSS DISPENSING AND MANIPULATION SYSTEMS

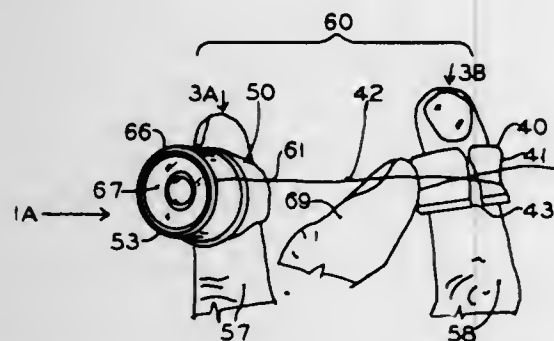
James A. Johnston, 7117 Gainsborough, Amarillo, Tex. 79106

Filed Nov. 14, 1973, Ser. No. 415,627

Int. Cl. A61c 15/00

U.S. Cl. 132—91

8 Claims



1. In combination, a floss dispensing and holding assembly and a finger protecting floss locking body assembly separable therefrom for holding a length of dental floss therebetween.

a. said floss dispensing and holding assembly comprising, in operative combination, rigid walls defining a floss holding chamber, a dental floss spool within said floss holding chamber, dental floss on said spool, and movable locking means supported on said chamber wall and releasably engaging said spool for releasably holding said floss against movement from said floss holding chamber, said floss dispensing and holding assembly also comprising a rigid narrow wedge-shaped guidance arm permanently

and firmly attached at an inner wide end thereof to said rigid wall of said floss dispensing and holding chamber and extending to a rounded narrow outer end, an upwardly open receptacle within said guidance arm and an orifice through a wall of said guidance arm near the narrow outer end of said guidance arm and continuous with said receptacle;

b. said finger protecting floss locking body assembly comprising a tapered body with a floss engaging orifice at one, narrow, end thereof and a finger engaging surface at the other, wider, end thereof, said ends spaced apart from each other and a firm wedge-shaped body portion therebetween firmly attached to and continuous with said finger engaging surface and to said floss engaging orifice, said wedge-shaped body portion being of variable width along its length; said tapered body, in one position, firmly fitting against inner side walls of said receptacle within said guidance arm and, in another position of said tapered body, said body being movable freely along a part of the length of said receptacle in said guidance arm and being separable and separate from said floss dispensing and holding assembly;

c. a length of said floss extending from said spool through said orifice of said guidance arm and through said orifice at the end of said tapered body, said wedge-shaped body portion fitting into said receptacle in said guidance arm with said length of floss attached to said tapered body whereby said floss is stored ready for use attached to said floss dispensing and holding assembly and to said locking body assembly.

3,901,252

TUBE CLEANING APPARATUS

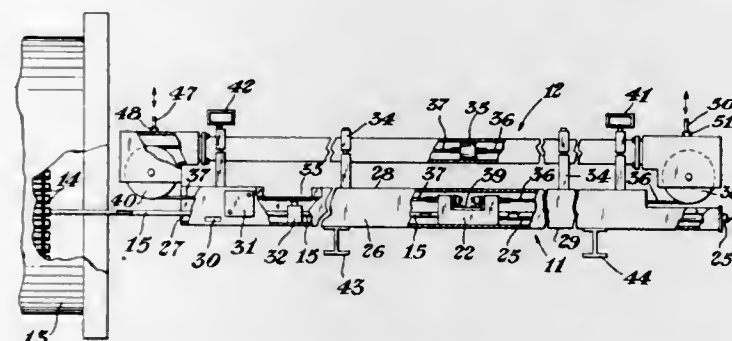
Jerry J. Riebe, Vancouver, Wash., assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 7, 1974, Ser. No. 495,477

Int. Cl.² B08B 3/02, 9/02

U.S. Cl. 134—56 R

5 Claims



1. An apparatus for cleaning the tubes of a tube bundle, which includes the combination of:

a hollow, elongate beam;

at least one tubular lance member which is enclosed by the hollow beam;

the lance having a front end adapted for inserting the lance into a tube, the lance having a rear end which is connected into one of the interconnecting channels of a manifold member, and the lance defining a conduit for carrying a liquid stream from the manifold into the tube;

the manifold member defining a block which is enclosed by the hollow beam and which is slidable within the beam, the manifold including several interconnected channels within the block which are adapted for carrying a liquid stream through the block and into the lance;

a liquid inlet line which has one end connected into a liquid source, which has an opposite end that is positioned within the hollow beam, and which is connected into one of the interconnecting channels of the manifold block;

a drive means which is mounted on the hollow beam, and which is operatively connected to the manifold block, the drive means being adapted for moving the manifold block to a forward position in which the front end of the lance

is inserted into the tube, and to a retract position in which the front end of the lance is withdrawn from the tube;

a stroke limiting means which is mounted on the elongate beam, which is operatively connected to the drive means, and which is adapted to actuate the drive means to move the manifold block from the forward position to the retract position;

a follower means which is enclosed by the hollow beam, which is slidable within the beam, which is mounted on the lance member ahead of the manifold block, and which is adapted to contact the stroke limiting means when the manifold block reaches the forward position, to thereby actuate the stroke limiting means.

3,901,253

FILM PROCESSOR CHEMICAL SUPPLY MECHANISM

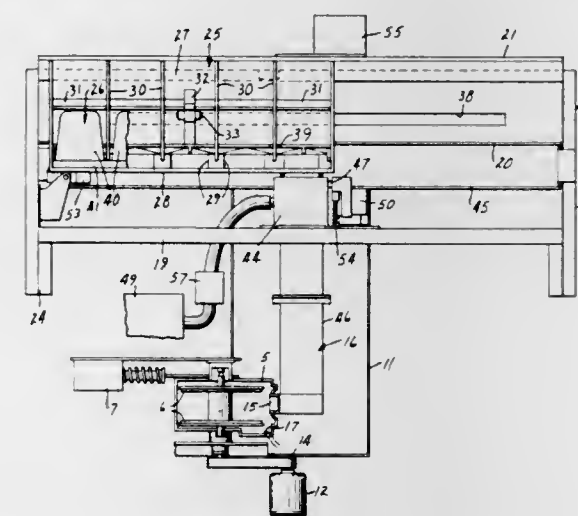
John E. Collins, North Hudson, Wis.; Delmar A. Dietsche, Shoreview; David C. Jones, Minneapolis, and Donald J. Mitchell, St. Paul, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 2, 1974, Ser. No. 429,539

Int. Cl. B08b 3/04

U.S. Cl. 134—57 R

10 Claims



1. In an automatic film processor having a reservoir, support means for moving film through the reservoir, and means for supplying processing chemical to the reservoir, the improvement comprising

a frame,

a support for a plurality of film processing solutions, fluid means for receiving solutions from said support and for discharging solutions into the reservoir, said fluid means being supported on said frame adjacent said support, means mounting said support for movement along a path past said fluid means, and

means for dumping solutions on said support into said fluid means.

3,901,254

POLLUTION-FREE WELL CUTTINGS DISPOSAL APPARATUS

Marvin O. Stearns, London, England, and James A. Gill, Houston, Tex., assignors to NL Industries, Inc., New York, N.Y.

Filed Oct. 5, 1973, Ser. No. 403,999

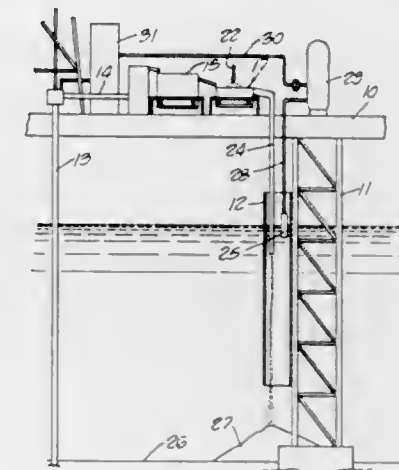
Int. Cl. B08b 3/02, 15/00

U.S. Cl. 134—104

5 Claims

1. Apparatus for removing oil from drill cuttings at an offshore drilling location above the surface of a body of water comprising in combination a platform; a partially submerged down pipe extending both above the surface of the water and below the surface of the water; means on said platform for shaking oily mud from said cuttings by vibratory screening action; means on said platform for discharging said shaken cuttings onto cuttings washer means; means on said platform and associated with said cuttings washer means for spraying

said cuttings with a wash liquid; pump means on said platform for collecting said wash liquid subsequent to its contact with said cuttings and for pumping it to desilting means located on said platform; return flow means for recirculating said desilted wash liquid to said cuttings washer means; means for conveying said washed cuttings from said platform to a point within



said down pipe and below the surface of said water; pump means for pumping oil dislodged from said cuttings in said down pipe and present within said down pipe adjacent the surface level of said water to oil-water separating means; means for receiving oil discharged from said oil-water separating means.

3,901,255

DRUM WASHER FOR VEHICLES

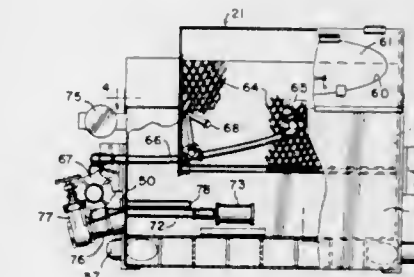
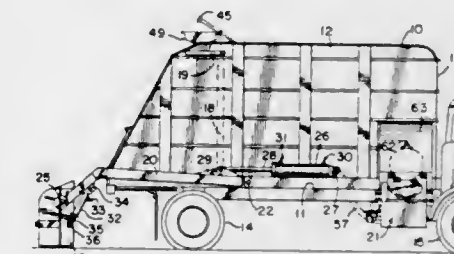
Bruce Harold Pettit, 210 S. Main St., La Rose, Ill. 61541

Filed Feb. 19, 1974, Ser. No. 443,682

Int. Cl.² B08B 3/02, 9/12

U.S. Cl. 134—107

8 Claims



1. In a drum washing system for a refuse hauling vehicle, a drum washer comprising a generally box-like housing having vertical side and end walls and a downwardly sloping top wall, a drum opening in said top wall, a hinged cover on the top wall for said opening, an interior wall of open grid construction below said opening to support a drum inserted through said opening, a floor in the housing below said grid construction supporting a supply of drum washing solution, a main flushing nozzle for directing washing solution upwardly into a drum supported on said grid construction, and means mounted on a wall of said housing for propelling said washing solution through said nozzle including a pump driven from a power takeoff on said vehicle, a suction line from said supply of

washing solution, a pressure line to said nozzle, and a control valve for activating said pump.

3,901,256

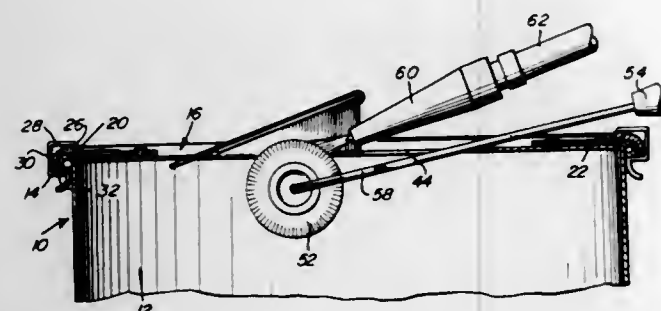
PAINT CAN LID WITH PAINT ROLLER CLEANING MEANS

Arne Habostad, 6000 24th Ave. N.W., Apt. 310, Seattle, Wash. 98107

Filed June 10, 1974, Ser. No. 478,096
Int. Cl. B08b 3/02

U.S. Cl. 134-138

10 Claims



1. A closure panel for disposition over the open upper end of a container, said panel including a generally rectangular opening formed therein for receiving therethrough a cylindrical paint roller element laterally advanced there toward, said panel further including upstanding support flanges adjacent and extending across the end edges of said opening, the upper portions of said support flanges being inclined downwardly toward one longitudinal edge of said opening, and an inclined shield panel extending between and removably supported from said support flanges and at least substantially closing said opening in a vertical direction, the higher side of said shield panel being spaced above the plane of said panel and defining entrance slot along which a water line discharge nozzle directed inwardly through said slot may be traversed for directing a jet of water along the full length of one longitudinal marginal edge of a roller element disposed inwardly of said opening.

3,901,257

UMBRELLA

Josef Schäfer, Solingen, Germany, assignor to Telesco Brophy Limited, Montreal, Canada

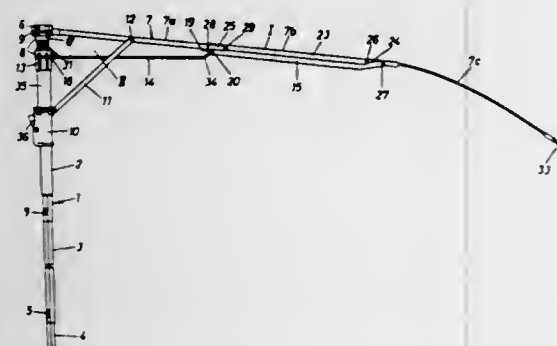
Filed July 3, 1973, Ser. No. 376,127

Claims priority, application Germany, July 15, 1972, 2234939

Int. Cl. A45B 19/04, 19/10

U.S. Cl. 135-25 R

8 Claims



1. An umbrella frame including a stick, a crown at one end of the stick, a main runner slidable on the stick, an auxiliary runner slidable between the main runner and the crown, dome ribs hinged from the crown; each dome rib including a first section hinged to the crown, a second section hinged to the first section and adapted to fold over the first section and at least a third section hinged to the outer end of the second section and adapted to fold over on the second section; a first

support member hinged to the main runner and to a substantially median point of the first dome rib section; a second support member hinged to the third dome rib section at a point spaced from the hinge point between the second dome rib section and the third dome rib section, said second support member being hinged near its other end to an extension of the first dome rib section beyond the hinge point with the second dome rib section, such that the extension of the first dome rib section, the second dome rib section, the spacing between the hinge point of the third dome rib section to the second dome rib section and the hinge point of the second support member and the third dome rib section form a first quadrilateral; and a stretcher member hinged to the auxiliary runner and to an extension of the second support member forming with the inner dome rib section and a portion of the stick a second quadrilateral to maintain positive opening and closing control of the first quadrilateral so formed as the inner dome rib section is being pivoted between an open and closed position by means of the main runner and the first support member.

3,901,258

ADAPTER ATTACHMENT FOR CRUTCHES, CANES AND WALKERS

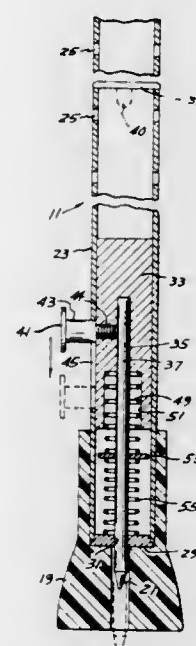
Ferman E. Montgomery, Traverse City, Mich., assignor to Ben Brandl, Maple City, Mich., a part interest

Filed May 1, 1972, Ser. No. 249,103

Int. Cl. A45B 9/04

U.S. Cl. 135-47

1 Claim



1. An adapter attachment for a crutch, cane or walker as an article of manufacture comprising;
an elongated cylindrical barrel adapted for attachment to a crutch, cane or walker, having a plurality of transverse apertures to receive fasteners for securing to said crutch, cane or walker;
a centrally apertured bottom plate within the lower open end of said barrel and frictionally retained therein;
a cylindrical plunger body slidably and reciprocally mounted within said barrel and spaced from said plate;
an elongated spike at one end snugly projected up into an axial bore in said body, and with its pointed end normally positioned through said bottom plate;
a resilient tip having an axial bore frictionally positioned over the end of said barrel and having an axial counter-bore of reduced diameter loosely receiving said spike enclosing the same when retracted;
said spike adapted on adjustment of said body to project beyond said tip to assist walking upon an icy or slippery ground surface;

spring means interposed in compression between said bottom plate and body normally urging said body to a retracted position;
a bayonet slot in said barrel;
a headed pin normally positioned on said slot projected radially into and secured to said body, the slot upon one end retainingly engaging said pin, limiting retraction of said body and spike; manual movement of said pin along said slot and into the offset end thereof projecting said spike beyond the end of said top, compressing said spring means and holding said body against retraction;
said pin being threaded into said body and frictionally and retainingly engaging said spike;
said spring means consisting of a pair of springs arranged end to end; a stabilizing washer interposed between said springs and loosely engaging said barrel; one end of one spring being nested and projected up into a counterbore in said body, an end of the other spring bearing against said bottom plate;
and a cap removably and frictionally secured upon the upper open end of said barrel, adapted for removal to permit insertion of the lower end of a crutch, cane or walker frictionally down thereinto, having first removed the crutch tip.

3,901,259

PRESSURE RELIEF APPARATUS

Alan Reginald Banbury, Tettenhall, England, assignor to Marston Excelsior Limited, Staffordshire, England

Continuation of Ser. No. 320,178, Jan. 2, 1973, abandoned.

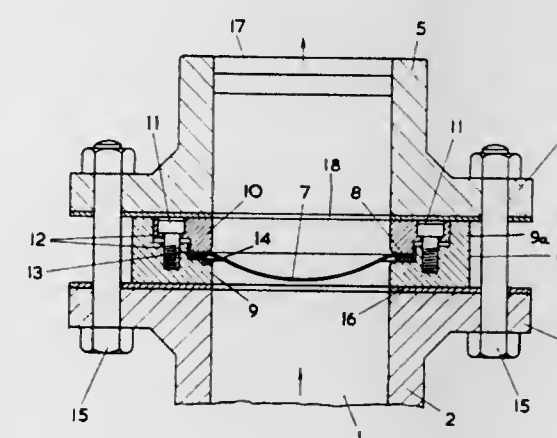
This application Sept. 6, 1974, Ser. No. 503,703

Claims priority, application United Kingdom, June 12, 1972, 27256/72

Int. Cl. F16k 17/02

U.S. Cl. 137-68

5 Claims



1. A safety pressure relief apparatus comprising a reverse bucking pressure relief disc having an edge and edge regions of a given area, inner and outer support members having a planar parallel gripping surfaces, said disc being secured between said members solely by axial pressure exerted upon said edge regions of said given area of said disc by said planar parallel gripping surfaces, said given area of said edge regions being so dimensioned and said axial pressure being such that when said disc is reversed upon the attainment of a predetermined pressure said edge regions are caused to move radially inwards from between and are released from said support members, and abutment means disposed around said edge of said disc and around the parallel gripping surfaces for restricting radially outward expansion of said edge of said disc, said abutment means comprises an axially extending shoulder on one of said support members parallel to an axial extending shoulder on the other support member which is disposed radially within an axial end portion of said one support member so that said other support member lies between two axial ends of said one support member.

3,901,260

CONTROL ARRANGEMENTS FOR FLUID CONTROL VALVES

Joseph Louis Bloom, Droitwich, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

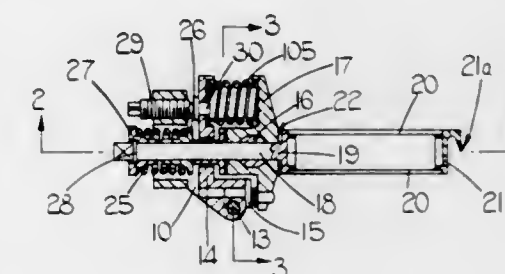
Filed July 3, 1974, Ser. No. 485,425

Claims priority, application United Kingdom, July 9, 1973, 32666/73

Int. Cl. F16R 31/44

U.S. Cl. 137-82

9 Claims



1. A control arrangement for a fluid control valve, comprising a carriage, means for securing said carriage to an input shaft for pivotal movement therewith, first and second lever elements pivotally mounted on said carriage, adjustment means supported on said carriage and co-operating with the first lever element to move the latter pivotally with respect to the carriage, and a blade-type metering element supported by said second lever element, said first and second lever elements being operatively interconnected so that angular adjustment of the first lever element imparts an angular movement to the second lever element, and the arrangement being such that angular movement of the second lever element is substantially less than a corresponding movement of the first lever element.

3,901,261

VALVE FOR MIXING HOT AND COLD WATER

Voldemar Riis, Vargarda, Sweden, assignor to AB Vargarda Armaturfabrik, Vargarda, Sweden

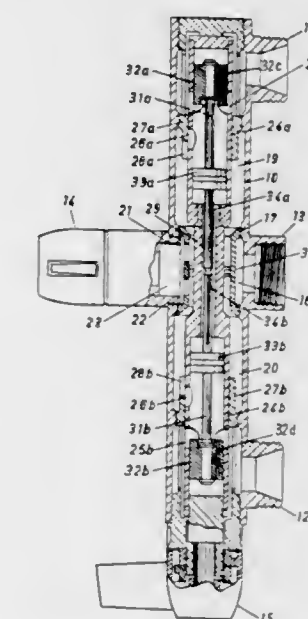
Continuation-in-part of Ser. No. 332,136, Feb. 13, 1973, abandoned. This application July 26, 1974, Ser. No. 492,336

Claims priority, application Sweden, Feb. 24, 1972, 2259/72

Int. Cl. G05D 11/16

U.S. Cl. 137-100

2 Claims



1. In a valve for mixing hot and cold water comprising an elongated housing, said housing having a mixing chamber connected to an outlet at its middle portion separating the housing into end portions, each of said end portions having an inlet for connection to a conduit supplying cold or hot water,

respectively, a first governing member for determining the total volume of water issued, and a second governing member for metering out the part streams of water admitted from each of the two inlets and thus the temperature of the mixed streams leaving the valve outlet, said housing further being provided with means for compensating changes in the streams of water caused by changes of the pressures in any of the supply conduits connected to the valve housing inlets, the improvement of a central passage extending through the mixing chamber and defined therefrom by at least one side wall, said passage in said at least one side wall having two openings for cooperation with a valve member operated by the first governing member, a fixed, tubular guide within each of the end portions, each guide having a profiled outlet opening, a rotatable, but axially non-displaceable sleeve within each of said guides, each sleeve having an inlet and outlet axially spaced therefrom and mating with the outlet opening of the pertaining sleeve, an axially displaceable spool within each of said sleeves, each spool having two lands, between themselves defining a passage from the inlet of the pertaining sleeve to the outlet thereof, one of said lands cooperating with said inlet for determining the entrance area to the sleeve, means for interconnecting the two sleeves for imparting a simultaneous angular movement thereto by the second governing member, and further means for transferring axial movement of one spool to the other spool, said further means extending through said passage and being provided with a guide separating the two openings in the passage wall.

3,901,262

FLUID CONDITIONER HOUSINGS

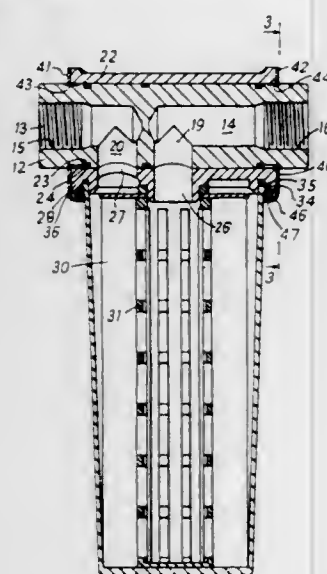
Janusz Gutkowski, 7 Rufus Close, Lewes, Sussex, England
Filed Jan. 24, 1974, Ser. No. 437,074

Claims priority, application United Kingdom, Jan. 25, 1973, 3753/73

Int. Cl. B01f 1/00

U.S. Cl. 137-101.11

3 Claims



1. A fluid treatment apparatus comprising a pipe adaptor for insertion in a pipeline, the adaptor having pipe inlet and outlet channels to communicate with the pipe, a container for containing a fluid treatment device, said container extending at right angles to the axis of the pipe adaptor, said adaptor having inlet and outlet ports forming continuations of said pipe inlet and outlet channels, said ports leading to said container so that fluid will pass from the inlet channel through the container and thence to the outlet channel, a coupler sleeve surrounding the pipe adaptor, said coupler sleeve having ports providing communication between the pipe adaptor ports and said container, said coupler sleeve being rotatable on the pipe adaptor to open and close communication between the pipe adaptor ports and the container, said coupler sleeve having a groove surrounding the rim of the container, said container having a lip on its rim engaged in said groove, a fixing element

surrounding said pipe adaptor, an expandable ring surrounding said rim under the lip, said fixing element engaging said ring to press it and the lip into the groove, said pipe adaptor having a cam surface engaging the fixing element including a part of said surface of reduced diameter whereby rotation of the coupler sleeve and fixing element about the pipe adaptor causes the fixing element to release the ring to a position which facilitates removal of the container.

3,901,263

REGULATING VALVE FOR FUEL METERING DEVICE, ESPECIALLY FOR THE COMBUSTION CHAMBER OF AN AEROJET ENGINE

Wilhelm Grunert, Dammarie-les-Lys, and Claude Gustave Gaudas, Draveil, both of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, Paris, France

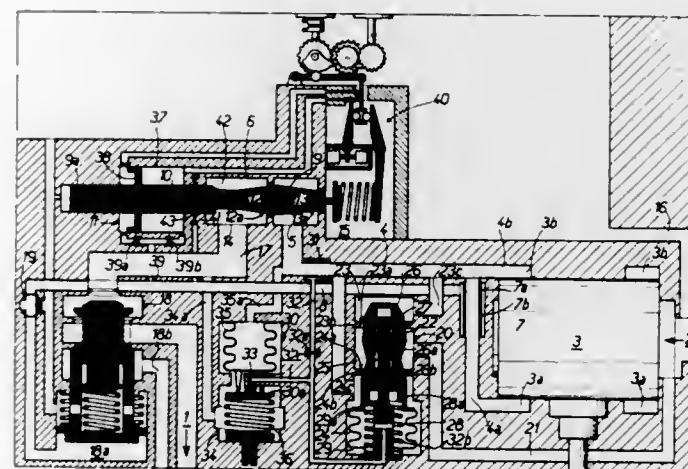
Filed Apr. 17, 1973, Ser. No. 351,845

Claims priority, application France, Apr. 18, 1972, 72.13606

Int. Cl. G05d 11/02

U.S. Cl. 137-117

7 Claims



1. In a system for controlling a flow of unfiltered fuel containing or liable to contain solid impurities, comprising a flow-metering device, intake ducting means leading to said metering device, and fuel feeding means for supplying said intake ducting means with said unfiltered fuel under pressure and output ducting means for delivering said fuel from said metering device; a regulating valve for by-passing part of said unfiltered fuel from said intake ducting means to a fuel return duct to control said intake pressure and comprising a valve housing having inlet and outlet chambers and means defining an orifice therebetween, piping means for delivering unfiltered fuel from said intake ducting means to said inlet chamber and from said outlet chamber to said fuel return duct, a throttling needle having an internal cavity therein and a tapering outer surface and extending in said inlet and outlet chambers through said orifice to define an annular passage therebetween, a stationary shaft coaxial with the needle and projecting within the internal cavity in said needle, guiding means in the internal cavity to guide the needle for axial movement along the shaft, pressure-deformable partition means around said shaft, connecting the needle to said valve housing and defining therein a control chamber including said internal cavity, and control means comprising means for supplying the control chamber with filtered fuel whereby said needle guiding means are bathed in and lubricated by filtered fuel, and means responsive to the pressure differential between said intake ducting means and said output ducting means for modulating the pressure of said filtered fuel in order to control the axial position of the needle on said shaft.

3,901,264

ADJUSTABLE FLOW CONTROL FOR HYDRAULIC VALVES HAVING HIGH PRESSURE MAIN SUPPLY AND CONTROLS FLUID FLOW TO CYLINDER AND EXHAUST PORTS

William T. Stephens, New Brighton, Minn., assignor to Gresen Manufacturing Company, Minneapolis, Minn.

Filed Mar. 6, 1972, Ser. No. 231,961

Int. Cl. F15b 13/02, 15/00

U.S. Cl. 137-118

4 Claims U.S. Cl. 137-218

3,901,265

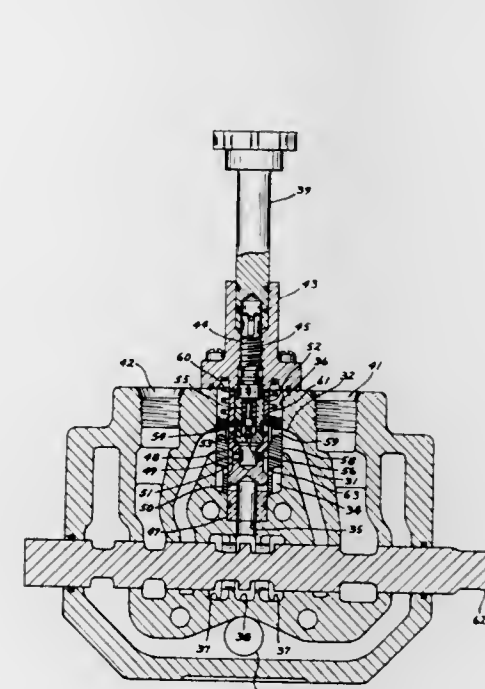
COMBINATION VALVE VACUUM BREAKER WITH COACTING VALVE IN A LIQUID FLOW PATH

Betty Irene Groombridge, 23, The Avenue, Welwyn, England
Division of Ser. No. 329,348, Feb. 5, 1973, abandoned. This application Oct. 4, 1973, Ser. No. 403,716

Claims priority, application United Kingdom, Feb. 3, 1972, 5087/72

Int. Cl. F16K 45/00

3 Claims



1. A liquid flow control device for controlling the pressurized flow of liquid in a single direction from a water main to a cistern containing a body of liquid open to the atmosphere and preventing back flow of the liquid when atmospheric pressure on the body of liquid exceeds the pressurized flow of liquid, said device including, in combination: a flow passage comprising a piece (4) having three interconnected, communicating branches, a first branch thereof (4b) comprising a pressurized-liquid outlet portion for directing the pressurized liquid into the body of water in the cistern, a second branch (4a) thereof comprising a pressure inlet portion for the liquid from the water main, and a third branch thereof open to the atmosphere and defining an atmospheric vent portion; a first collapsible valve sleeve of a flexible impermeable material freely depending from said first branch whereby the lower distal end of the flexible sleeve will be immersed in the body of water in the cistern and emission of pressurized liquid into the body of liquid in the cistern is substantially silenced by the body of liquid, said first valve sleeve being secured at one end thereof in a fluid-tight manner about the end of said first branch, spaced from the third branch, such that said one end of said first valve sleeve is held open, whereby pressurized liquid flowing in a normal direction through said first branch defining said outlet portion enters said first valve sleeve at said open end thereof and distends the remainder of said sleeve to cause pressurized liquid to enter the body of liquid in the cistern, with reversal of the direction of liquid effecting a collapse of the first valve sleeve and an interruption of said flow passage and preventing back-siphoning of the body of liquid from the cistern; and a second collapsible valve sleeve of flexible and impermeable material freely suspended into said flow passage and open to the atmosphere at one end, said second valve sleeve being secured at one end thereof in a fluid-tight manner about the end of said third branch and having a distal end above the body of liquid in the cistern whereby said one end is retained open to atmospheric pressure, and said second valve sleeve is in a normally collapsed closed condition during normal pressurized liquid flow into the cistern due to the pressure-differential between the atmosphere and the pressurized liquid thereby closing said third branch atmospheric vent, with reversal of the direction of liquid flow and subsequent collapse of said first valve sleeve further causing said second valve sleeve to be distended by ambient atmospheric pressure to open said third branch to said second branch to interrupt any back-siphoning of the body of liquid from the cistern to the said second branch.

1. An adjustable flow control for a hydraulic valve of the class above described comprising in combination; a valve body having a bore and including a high pressure main in communication therewith, cylinder ports in communication therewith, exhaust ports in communication therewith, and a high pressure loop in communication therewith, and a spool slidably disposed in said bore for selectively connecting said cylinder ports to said high pressure loop and to said exhaust ports; and flow control means disposed intermediate said high pressure main, said high pressure loop and an exhaust port, said flow control means including a flow control bore in the valve body, said flow control bore being in fluid communication with the high pressure loop, the high pressure main and an exhaust port and having flow control means disposed therein, intermediate said high pressure main, said high pressure loop and an exhaust port and further including a stationary sleeve disposed coaxially of said flow control bore having a seat for coacting with check valve means operable therein to prevent flow of fluid from said high pressure loop to said high pressure main in a first position, and to permit a variable controlled flow of fluid to said high pressure loop from said high pressure main in a second position, means adjustably disposed on said valve body for engaging said flow control means in said second position whereby said second position of said flow control means is varied so as to provide a variable orifice intermediate said flow control means and the seat therefor in said stationary sleeve, and flow control means slidably disposed coaxially on said stationary sleeve and operable in response to a predetermined pressure in the high pressure main to bypass excess fluid to an exhaust port.

3,901,266

PRESSURE CONTROL VALVES

Kenneth Theodore Guy, Ruislip, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

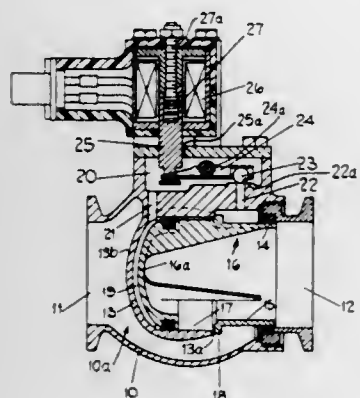
Filed Aug. 17, 1973, Ser. No. 389,222

Claims priority, application United Kingdom, Aug. 17, 1972, 38327/72

Int. Cl.² F16K 31/163

U.S. Cl. 137-219

9 Claims



1. A fluid flow controlling valve comprising, in combination, a valve body, a first chamber defined in the body, said body having an inlet and an outlet communicating with the first chamber, a valve housing provided in the first chamber, said housing being of cup shaped form having a closed end and an open end, said open end being directed towards said outlet, a piston slidable within the housing, said piston having a head and a skirt portion, said skirt portion extending into said outlet, said skirt portion having an aperture with the aperture being exposed beyond said valve housing to permit flow of fluid between the inlet and outlet as the piston is moved towards the outlet, a second chamber defined by the piston head and the closed end of the housing, and means for controlling the pressure in said second chamber whereby the pressure in said outlet can be controlled, said controlling means comprising a seating in communication with the inlet, a valve control surface co-operating with the seating to determine the fluid pressure in the second chamber, a movable part, said part having a second surface which is exposed to the pressure within said second chamber, resilient means for opposing movement of the movable part due to the force created by the fluid pressure acting on said second surface, the movement of said part determining the relative setting of said valve control surface and the seating, and electromagnetic means for influencing the relative setting of the valve control surface and the seating.

3,901,267

RELAY CONSTRUCTION AND METHOD OF MAKING THE SAME

William T. Moon, Jr., Knoxville, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.

Filed June 11, 1973, Ser. No. 368,696

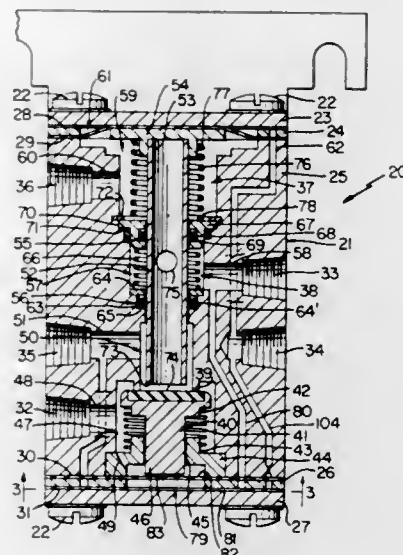
Int. Cl. F16k 11/10

U.S. Cl. 137-270

13 Claims

1. A relay construction comprising a housing means having port means, valve means disposed in said housing means, and passage means in said housing means interconnecting with said port means and said valve means, said housing means including means thereof adapted to be selectively repositioned for changing the path arrangement of said passage means and, thus, the operating function of said relay construction, said housing means comprising a plurality of sections disposed in stacked aligned relation, said means adapted to be selectively repositioned comprising one of said housing sections that is

disposed intermediate the outer sections of said stack thereof, said one housing section comprising a flexible gasket member



that seals adjacent housing sections together in said stack thereof.

3,901,268

COPPER TUBE SERVICE VALVE

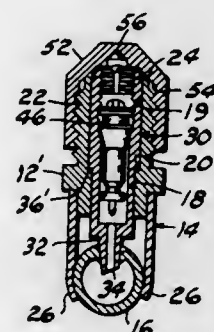
John W. Mullins, P.O. Box 20524, Oklahoma City, Okla. 73120

Filed Dec. 14, 1973, Ser. No. 424,986 The portion of the term of this patent subsequent to May 15, 1990, has been disclaimed.

Int. Cl. B23b 41/08; F16c 41/04

U.S. Cl. 137-318

1 Claim



1. A self-tapping service valve for a tubular line, comprising: a generally cylindrical centrally bored housing having wrench flats intermediate its ends and having a diametrically reduced periphery forming a relatively thin wall at one end portion, said housing having an internal annular shoulder intermediate its ends facing toward said thin wall end portion, said housing having external threads extending between said wrench flats and said thin wall portion; a tubular member coaxially secured, at one end portion, to the end portion of said housing opposite said threads, the other end portion of said tubular member being transversely bifurcated for forming a U-shaped slot having a bight portion formed on a radius substantially the same as the outside radius of a line to be tapped and defining a pair of legs straddling a line to be tapped, said tubular member having a wall thickness substantially equal with respect to the wall thickness of a line to be tapped; a tubular core, having a length slightly greater than the spacing between the free end surface of said housing thin wall portion and the bight portion of the U-shaped slot, coaxially freely received by the bore of the housing, said core having a diametrically reduced tapered end portion converging toward a line to be tapped when disposed within the U-shaped slot,

3,901,270

ARTICULATED SUPPORT FOR HYDRAULIC HOSE

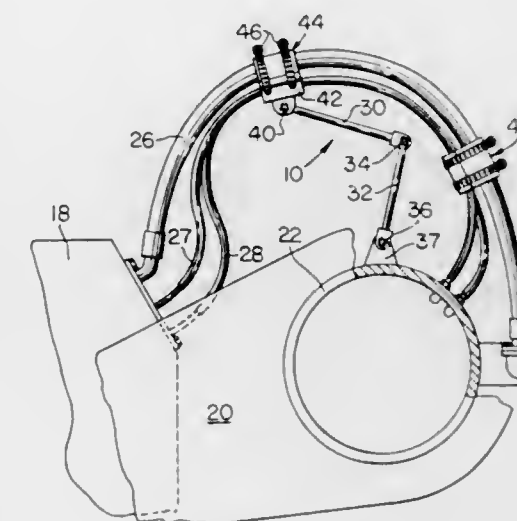
Roger M. Smith, Joliet, Ill., assignor to Caterpillar Tractor Company, Peoria, Ill.

Filed Nov. 29, 1973, Ser. No. 420,064

Int. Cl.² B60D 1/08

U.S. Cl. 137-351

8 Claims



said tapered end portion terminating in a beveled end surface forming a line piercing tip, said core having an external annular shoulder intermediate its ends facing toward the line piercing tip, said core having a diametrically reduced peripheral portion adjacent its end opposite said line piercing tip forming an annular end shoulder adjacent the housing thin wall portion, said core having internal threads at its end portion opposite said line piercing tip and having a seat formed on its inner wall surface at the inner limit of the threads; an air valve sealing with the seat in said core; and, a cap engaging the threads on said housing, said cap having a beveled inner end surface contacting the adjacent outwardly disposed end surface of said core and forcing the line piercing tip of said core into a line to be tapped while simultaneously seating and sealing said core intermediate shoulder with said housing internal shoulder and subsequently contacting the outer end surface of said housing thin wall portion and forcing the latter inwardly against the outer surface of said core outwardly of said annular end shoulder in locking relation as said cap is progressively engaged threadedly with said housing.

3,901,269

JACKET CONSTRUCTION FOR FLUID FLOW FITTINGS

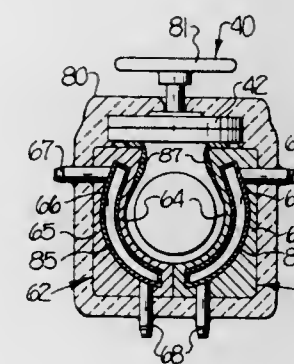
James R. Henderson, Charlotte, N.C., assignor to Controls Southeast, Inc., Charlotte, N.C.

Filed Aug. 14, 1973, Ser. No. 388,182

Int. Cl. F16k 49/00; F16l 53/00

U.S. Cl. 137-340

4 Claims



1. In a fluid conveying system including a fitting having a body through which a fluid flows, the combination therewith of means substantially surrounding the body of said fitting in close conformity and in heat-transferring relation thereto and cooperating with the fitting for directing a temperature-controlling fluid into heat-transferring relation thereto, said means comprising a housing including a cooperating pair of cast blocks of heat-conductive material, each block being substantially L-shaped in cross-section with the pair of blocks collectively being substantially U-shaped in cross-section, each block including inner and outer walls having therebetween a fluid passageway extending beneath and alongside the body of said fitting and provided with inlet and outlet ports for circulation of the temperature-controlling fluid through the passageway, a hollow member of relatively thin heat conductive material embedded within each cast block and surrounded by the block and defining said fluid passageway therein, and means carried by said pair of blocks for positioning the same in predetermined relation to each other and in substantially surrounding relation to the body of said fitting.

1. An articulated support arrangement for a flexible member extending between first and second relatively movable members and attached to each such movable member at first and second ends of said flexible member, said support arrangement including arm means pivotally connected to said first movable member for movement of said arm means within a first plane, said support arrangement further including clamping means for clamping and holding said flexible member, said clamping means including pivot connection means for connecting said clamping means to said arm means for movement of said clamping means only within said first plane, said arm means including first and second arm members, said first arm member being pivotally connected to said first movable member by a first pivot connection having an axis normal to said first plane, said second arm member and said first arm member being pivotally connected by a second pivot connection having a pivot axis normal to said first plane, said clamping means including an arcuately shaped saddle member for supporting a resilient bundling block member, said resilient bundling block member having means for resiliently holding said flexible member.

2. The invention of claim 1 wherein said first and second relatively movable members are components of an earthmoving scraper vehicle and said flexible member is a hydraulic hose.

3,901,271

SUPPORT STRUCTURE

Richard C. Stewart, 6 Bitterroot Ct., Owings Mills, Md. 21117

Filed Oct. 9, 1973, Ser. No. 404,262

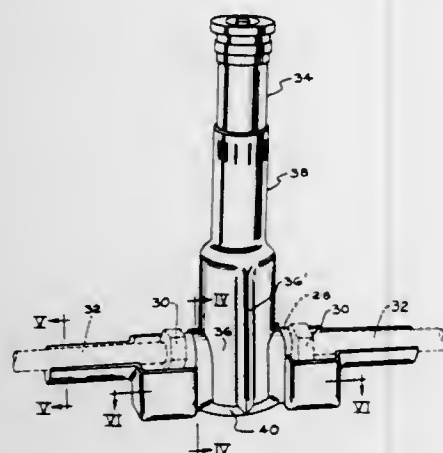
Int. Cl.² F16L 58/00

U.S. Cl. 137-364

3 Claims

1. In combination with a curb box, a valve support having opposed elongated and longitudinally spaced vertical side portions against which the earth is adapted to be packed to resist the torque of valve actuation, said valve support being of open top construction throughout its entire longitudinal extent to permit a valve and associated conduit lines to be lowered into the support with the curb box removed, a central cavity defined in said support to receive a valve, connection cavities defined on opposite sides of said central cavity and partially defined by said side portions to receive the conduit lines, said curb box having a lower portion defining an arch

embracing said central cavity, and means defining an interference fit between said arch and said support to align each said



arch with said central cavity and to brace said curb box normal to the longitudinal axis of said support.

3,901,272

UNIDIRECTIONAL FLOW CONTROL VALVE

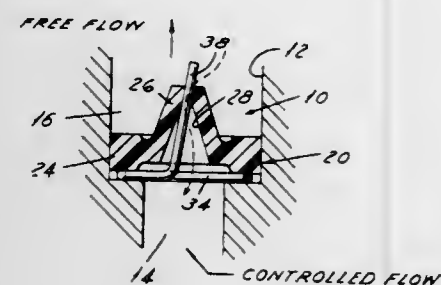
Delbert J. Banners, Plymouth, and Calvin J. Simmons, Madison Heights, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 4, 1974, Ser. No. 430,976

Int. Cl.² F16K 15/16

U.S. Cl. 137—513.5

1 Claim



1. A unidirectional vacuum bleed valve for use in a vacuum passage comprising an annular one-piece elastomeric member having a base portion retained against a portion of the passage and an upstanding duckbill-like portion tapering in an axial direction, the duckbill-like portion having a slitted opening that is normally closed by a higher pressure level existing externally of the duckbill-like portion than internally while also opening in response to a higher pressure internally than externally to provide free communication of vacuum to opposite sides of the duckbill-like portion, and a wire member having a base portion retained between the passage portion and the base portion of the elastomeric member and a second upstanding portion projecting through the slit to deform the slit to provide controlled vacuum bleed areas between the wire and slit portions engaged therewith when the pressure is higher externally of the duckbill-like portion than internally.

3,901,273

FLUID CONTROL SYSTEM WITH ON-LINE DIAGNOSIS MEANS ISOLATING MALFUNCTIONS

Charles William Brouwer, East Greenwich, and Larry Clyde Cowan, Saunderson, both of R.I., assignors to Leesona Corporation, Warwick, R.I.

Filed Apr. 9, 1973, Ser. No. 349,633

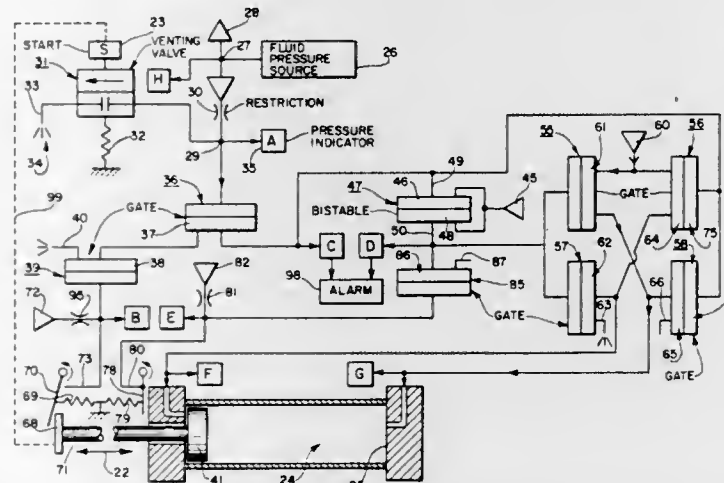
Int. Cl.² F16K 37/00

U.S. Cl. 137—552

9 Claims

1. Diagnostic apparatus for indicating the nature of malfunctions in a complex system comprising in combination, an industrial control system having a plurality of fluid control elements connected to switch in response to fluid presented thereto at two different fluid pressure levels, said system pro-

viding a sequence of operational steps to produce a cyclic mode, a plurality of key control positions in said system each having a fluid signal line presenting said two different pressure levels, said plurality of positions providing together a combination of operational pressures signifying the on-line operation status of said system, detection means coupled to each said signal line for thereat following the individual status of said two operational pressure conditions during operation of the system in on-line operation of said system to thereby provide said combination of pressure conditions, and visual



display means permanently carrying at least two invalid combinations of said operational pressure conditions at said key control positions forming sets of operational conditions not normally encountered in said cyclic mode and further carrying means identifying a specific predetermined malfunction in said system designated by each said invalid combination of detected on-line operational pressure conditions at said key control positions, wherein the same said fluid signal lines respond to different invalid conditions identifying different system malfunctions identified by said display means.

3,901,274

VALVE ACTUATING SYSTEM

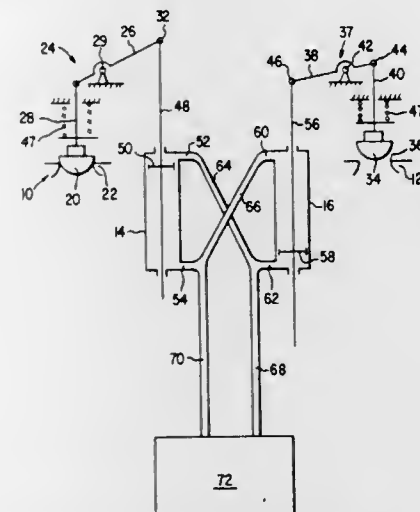
Bruce D. Taber, Boxford, and Michael J. Cronin, Salem, both of Mass., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 29, 1973, Ser. No. 410,929

Int. Cl.² F15B 13/09; F16K 11/22

U.S. Cl. 137—567

5 Claims



1. A valve actuating system including first and second valves actuated by fluidly cross-connected hydraulic valve actuators supplied with a pressurized fluid; first and second springs biasing the first and second valves, respectively, toward a closed position; and, means for selectively introducing pressurized fluid into the valve actuators comprising:

a variable displacement pump selectively communicating with the valve actuators through a trip valve, the trip valve hydraulically positioned through a first valve means; the first valve means having first and second

positions for respectively pressurizing and venting the trip valve;

a manual pump selectively communicating with the valve actuators through a selector valve; and,

a hydraulic circuit communicating the variable displacement pump and the manual pump with the valve actuators, the hydraulic circuit including a second valve means; the second valve means having first and second positions for venting and pressurizing a portion of the hydraulic circuit during variable displacement pump operation and manual pump operation, respectively; the first and second valves being closed when the first and second valve means are in their vented positions.

3,901,275

COMPACT CONTROL UNIT FOR AIR DISTRIBUTING SYSTEMS

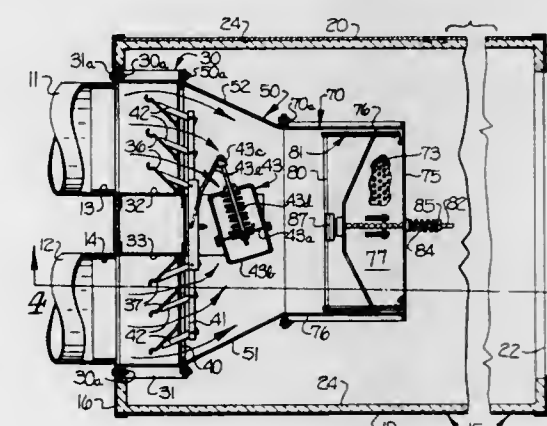
Hillard Glenn Logsdon, Charlotte, N.C., assignor to Aerona, Inc., Pineville, N.C.

Filed Feb. 1, 1974, Ser. No. 438,572

Int. Cl. F16k 19/00

U.S. Cl. 137—601

6 Claims



1. A compact control unit for an air distributing system comprising a housing having opposing pairs of side walls and an end wall, said end wall having a pair of air inlets for the flow of respective airstreams therethrough, an air mixing valve and a duct and an air volume regulator successively arranged and interconnected for the flow of air therethrough and each being positioned within said housing and out of contact with said opposing pairs of side walls of said housing, said air mixing valve being secured to and supported by said end wall of said housing for receiving the respective airstreams from said pair of air inlets, and said duct having flanged opposited ends and a minimum length in the direction of air flow therethrough of about six inches and having one flanged end secured to the outlet side of said air mixing valve and having its other flanged end secured to said air volume regulator so as to support the regulator in said out of contact relation with the side walls of the housing and to dampen the vibrations produced during the flow of air through the air volume regulator and to thereby reduce noises created thereby being transmitted to said housing.

3,901,276

PNEUMATIC VALVE APPARATUS

Calvin C. Daughette, Arlington, and Sidney Z. Winski, Dallas, both of Tex., assignors to LTV Aerospace Corporation, Dallas, Tex.

Filed Jan. 25, 1974, Ser. No. 436,567

Int. Cl. F16k 17/12

U.S. Cl. 137—614

11 Claims

1. Pneumatic launch apparatus comprising:

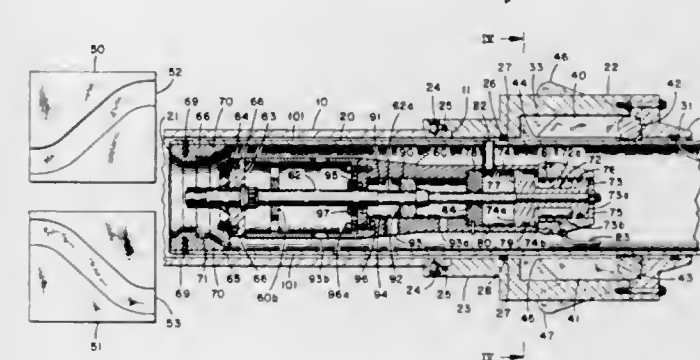
a. first and second elongated tubes, each tube having an open end and an enclosed end, the open end of said second tube adapted to be telescopically slideable through the open end of said first tube;

b. means for closing the open end of said second tube upon separation of said first and second tubes; and

c. means for closing the open end of said first tube upon separation of said first and second tubes, said means for closing the open end of said first tube comprising:

valve housing means forming an extension of the open end of said first tube,

flap means with mating end faces pivotally mounted within said valve housing means operable to move from



3,901,277

VARIABLE FLUIDIC IMPEDANCE FEEDBACK LOOP FOR OSCILLATING JET NOZZLE

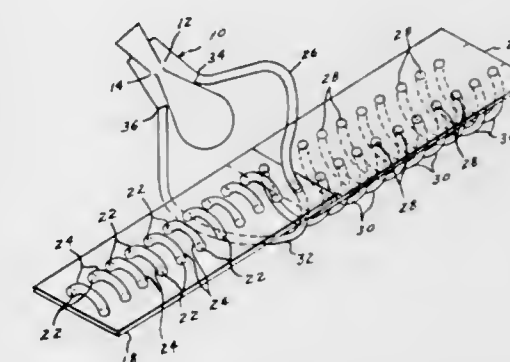
Hermann Viets, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 14, 1974, Ser. No. 497,408

Int. Cl.² F15C 1/08

U.S. Cl. 137—829

3 Claims



1. A variable fluidic impedance element in the feedback loop of a fluidic oscillator, having a pair of control ports, comprising: a first plate member; a plurality of tubular partial loop elements supported on said first plate member; a second plate member positioned adjacent and movable with respect to said first plate member; a plurality of tubular partial loop elements supported on said second plate member; a first terminal member on said first plate member; a second terminal member on said second plate member; means for connecting the terminal member and certain predetermined partial loop elements on the first plate member to certain predetermined loop elements and the terminal member on the second plate member to thereby provide a predetermined length of feedback loop and means for connecting said first and second terminal members to the control ports of said fluidic oscillator.

3,901,278

ALIGNMENT MEANS FOR PRESSURE TANK AIR BAGS OR THE LIKE

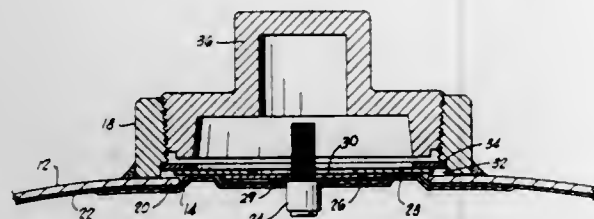
Robert B. Feistel, Jr., Oklahoma City, Okla., assignor to W.H. Stewart Company, Oklahoma City, Okla.

Filed Jan. 14, 1974, Ser. No. 433,235

Int. Cl. F16I 55/04

U.S. Cl. 138—30

1 Claim



1. In a pressure tank having an inflatable member therein for retaining pressure on liquid stored in the tank, the inflatable member having a valve assembly thereon accessible through an opening in one wall of the tank, said opening being appreciably larger in diameter than the valve assembly and the valve assembly having a circumferential flange thereon, the improvement comprising:

- a coupling secured to the exterior of the tank surrounding said opening, and
 - ring means secured in the coupling sized to surround and abut the valve assembly to prevent the valve assembly from being removed from said opening when the inflatable member is at least partially inflated, said ring means comprising:
 - a snap ring secured in a mating groove in the interior of the coupling adjacent the respective wall of the tank;
 - a first washer abutting the side of the snap ring facing the tank; and
 - a second washer abutting the side of the first washer facing the tank, the second washer having an outer diameter less than the outer diameter of the first washer but larger than the inner diameter of the first washer, and the second washer having an inner diameter greater than the outer diameter of the valve assembly and smaller than the diameter of the circumferential flange on the valve assembly;
- whereby the valve assembly will be loosely held in the tank opening accessible through the coupling.

3,901,279

FILLING APPARATUS FOR PASTY MEDIA, PARTICULARLY FOR SAUSAGE MEAT

Karl Schnell, Muhlstrasse 28, 7065 Winterbach, Germany

Filed Jan. 30, 1974, Ser. No. 437,998

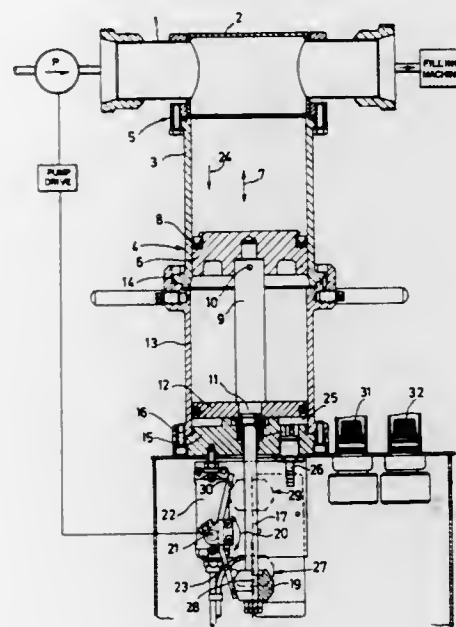
Int. Cl. F16I 55/04; A22c 11/02

U.S. Cl. 138—31

5 Claims

2. In filling apparatus for pasty media, particularly for sausage meat, having a supply pipe adapted to connect a filling machine to a filling pump having a pump drive, the improvement comprising, in combination, a buffer device connected to said supply pipe to receive pasty media supplied in excess of the amount used; said buffer device comprising a cylinder and a piston reciprocable in said cylinder and dividing said cylinder into two chambers; one of said chamber being connected to said supply pipe; means applying a substantially constant force to said piston opposing movement of said piston away from said supply pipe; said means applying a substantially constant force to said piston comprising means applying a substantially constant fluid pressure to that side of

said piston remote from the pasty medium; and two selectively operable adjustable pressure reducing valves connected in



parallel and operable alternately by said piston to regulate the application of fluid pressure to said piston.

3,901,280

PIPELINE OBTURATOR DEVICE

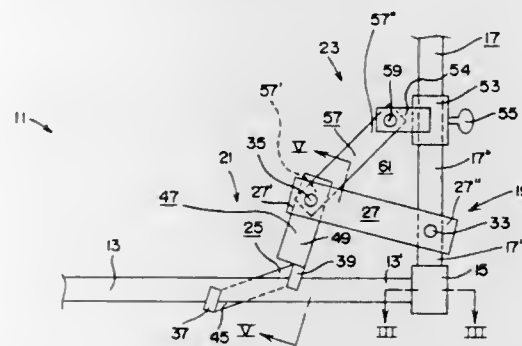
Frank E. Bobo, 212 Algee St., Tiptonville, Tenn. 38079

Filed July 19, 1974, Ser. No. 490,001

Int. Cl. F16L 55/00

U.S. Cl. 138—89

4 Claims



1. An obturator device for rapid sealable engagement with a severed active fluid delivery rigid pipeline, said device comprising cap means for sealably engaging the severed end of the rigid pipeline, lever means for applying leverage to said cap means, said cap means being fixedly attached to the work producing end of said lever means, first and second rigidly joined bite members respectively including upwardly and downwardly directed pipeline biting portions for respectively frictionally engaging lower and upper portions of the pipeline, a linkage arm member, first pivot means for pivotally connecting one end of said linkage arm member to said lever means, said first pivot means being disposed a predetermined spaced distance from said cap means to establish fulcrum means for enabling optimum force to be developed to overcome the resistance offered by the fluid emanating outwardly from the severed end of the pipeline and to urge said cap means sealably against the severed end of the pipeline, and stanchion means attached to an end of said linkage arm member which is remote from said one end thereof for supporting said linkage arm member in a disposition wherein the longitudinal axes of said linkage arm member and the pipeline extend convergently toward said cap means; said first and second bite members, in conjunction with said stanchion means and said linkage arm member, jointly fixedly supporting said fulcrum means as said lever means is manually operated.

3,901,281

AIRCRAFT FUEL LINE

Edward J. Morrissey, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 27, 1972, Ser. No. 319,084

Int. Cl. F16L 9/14

U.S. Cl. 138—140

8 Claims



1. A fuel line comprising a metal tube; a first layer of a cured resin-impregnated reinforcing material in the form of a filament or yarn wound on the metal tube; a layer of a foamed plastic material covering said first layer; a second layer of a cured resin-impregnated reinforcing material in the form of a filament or yarn wound on said layer of a foamed plastic material; a layer of a self-sealing material covering said second layer of a cured resin-impregnated reinforcing material; and a layer of a protective material, said protective material comprising windings of a fiber or tape with a protective coating applied thereto covering said layer of a self-sealing material.

3,901,282

LOOM HARNESS

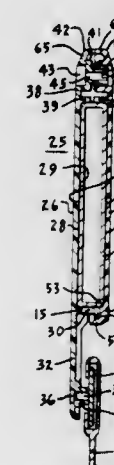
Charles F. Kramer, and Robert F. Parks, both of Greenville, S.C., assignors to Steel Heddle Manufacturing Company, Greenville, S.C.

Filed May 22, 1974, Ser. No. 472,344

Int. Cl. D03C 9/06

U.S. Cl. 139—92

11 Claims



1. The combination with a heddle frame having top and bottom rails, a plurality of heddles in said frame and means in said frame for supporting said heddles of a rail attachment intermediate the ends of the rails and having a portion extending outwardly therebeyond in the main plane of the rails, said rail attachment comprising a body having two unitary facing sections disposed in surrounding relation to the rail and extending inwardly and outwardly of said rail, each of said sections being of molded synthetic plastic material, each of said sections having connecting members inwardly of the rail, and separable connecting members outwardly of the rail, a wall portion extending outwardly along a side face of the frame rail, and inner and outer end portions beyond said frame rail for said connecting members, and

said separable connecting members comprising a snap connector integral with one section and in removable engagement in an opening in the other section.

3,901,283

WARP DRAW-OFF APPARATUS

Walther Filter, Langenhagen, Germany, assignor to Vereinigte Österreichische Eisen-und Stahlwerke-Alpine Montan Aktiengesellschaft, Vienna, Austria and Etablissement Wanderfeld & Co., Schaan, Liechtenstein

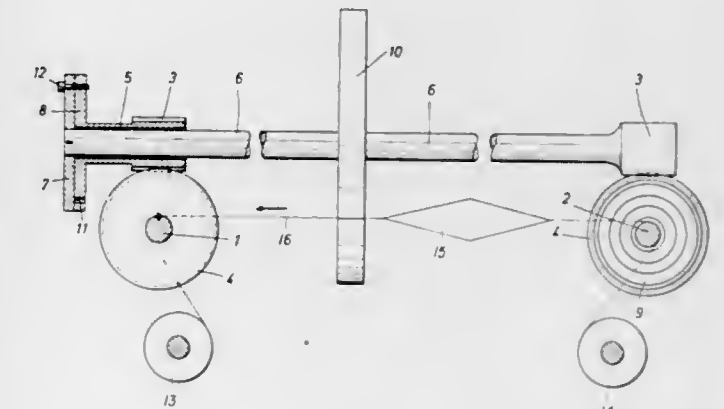
Filed May 13, 1974, Ser. No. 469,384

Claims priority, application Austria, May 16, 1973, 4264/73

Int. Cl. D03D 49/06, 49/20

U.S. Cl. 139—99

3 Claims



1. In a loom having a shed area and comprising a warp beam spaced from one end of said area, a cloth beam spaced from the other end of said area, and warp draw-off apparatus; the improvement in the warp draw-off apparatus comprising

- a. a first friction roll disposed between said warp beam and said area,
- b. a second friction roll disposed between said cloth beam and said area,
- c. a drive shaft extending transversely to the axes of said first and second friction rolls,
- d. two worm gearings respectively associated with said friction rolls and each including a worm wheel operatively connected to the associated friction roll and a worm nonrotatably connected to said drive shaft and meshing with said worm wheel,
- e. a friction clutch connecting said first friction roll and the associated worm wheel, and
- f. coupling means for coupling the worm of one of said worm gearings to said drive shaft in each of a plurality of relative angular positions while said apparatus is at a standstill.

3,901,284

WEFT CARRIER FOR A SHUTTLELESS LOOM

Christian Riolet, Saint-Chef, France, assignor to Saurer Diederichs S.A., Bourgoin-Jallieu (Isere), France

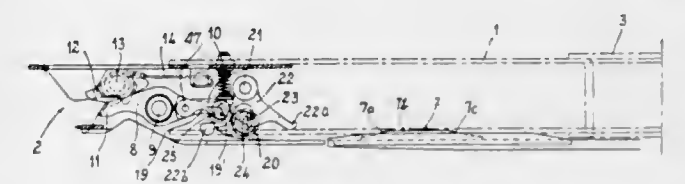
Filed Jan. 4, 1974, Ser. No. 430,876

Claims priority, application France, Jan. 22, 1973, 73.02702

Int. Cl. D03d 47/20

U.S. Cl. 139—122 N

10 Claims



1. A weft carrier for inserting a weft in a shed of a shuttleless loom having a tubular carrier guide outside said shed opera-

tively engageable with said carrier and provided with an actuation formation, said carrier comprising:

- a support telescopically displaceable in said tubular guide into and out of said shed and having a retaining surface;
- a gripping element pivoted on said support and engageable with said surface for pinching a weft thread against said surface;
- a spring between said support and said element biasing said element against said surface; and
- actuation means wholly carried in said support connected to said element and engageable with said formation for pivoting said element against said spring away from said surface on displacement of said support to the end of said shed.

3,901,285

NARROW FABRIC LOOM

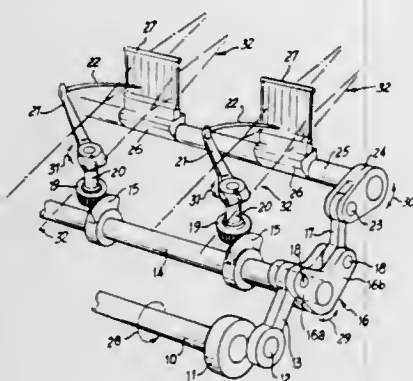
John Dalton Griffith, 59 Havenbault Ave., Littleover, Derby, Derbyshire, Great Britain

Filed Feb. 8, 1974, Ser. No. 440,772

Int. Cl.² D03D 47/06

U.S. Cl. 139—123

5 Claims



5. A narrow fabric loom having a reed carrying shaft carrying at least one reed, a drive shaft carrying gear drive means for at least one weft insertion means and a drive means, a single motion control means common to said reed shaft and said drive shaft, said motion control means including a power input shaft, an eccentric means on said power input shaft, a bell crank lever fixedly mounted on said drive shaft, a connecting means between said bell crank lever and said eccentric means operable to oscillate said bell crank lever, and a linkage connected to said bell crank lever and said reed carrying shaft whereby said drive shaft and said reed carrying shaft may be synchronously driven from said drive means.

3,901,286

WEFT TENSIONING AND CUTTING MEANS

Geert Jan Vermeulen, and Hubertus Henricus Aarts, both of Deurne, Netherlands, assignors to Ruti-Te Strake B.V., Deurne, Netherlands

Filed Aug. 20, 1973, Ser. No. 390,144

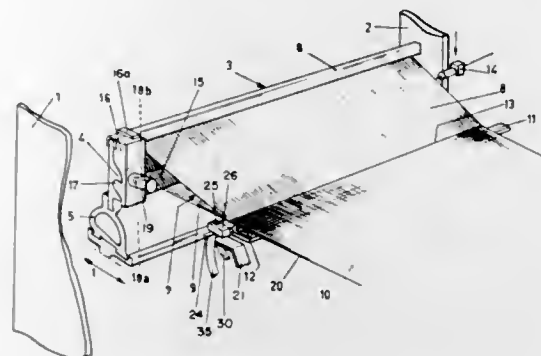
Int. Cl.² D03D 47/28

U.S. Cl. 139—127 P

3 Claims

1. A weaving machine comprising a reciprocable reed, two sheets of warp threads which are momentarily held in diverging planes to form with the reed a weaving shed, a weft-inserting device on one side of the machine and means carried by the reed on the opposite side of the machine adapted to catch, grasp and tension a weft yarn inserted through the weaving shed, characterized in that the means for catching, grasping and tensioning the weft comprises an air injector, the suction opening of which is located at the end of the weft inserting passage way and the outlet of which is bent toward the beating up line in the cloth, a slit in the side wall of said air injector extending from the suction opening along a portion of the length of the injector in the beating up direction of the reed, a thread clamp mounted on the machine in a fixed position, between the lateral edge of the cloth and the path of reciprocation of the air injector, such that with the reed in the beating up position the thread clamp is positioned in the path of the

cation of the air injector, such that with the reed in the beating up position the thread clamp is positioned in the path of the



end portion of the inserted weft extending from the lateral edge of the cloth toward the air injector.

3,901,287

PICKER STICK DRIVE MECHANISM FOR FLY SHUTTLE LOOMS

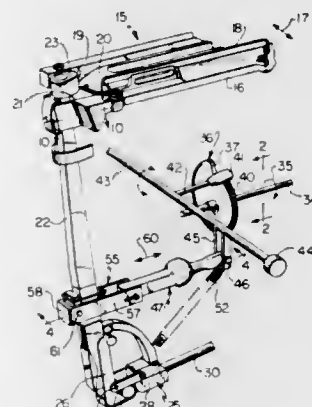
Charles E. Benedict, Tallahassee, and Calvin C. Oliver, Gainesville, both of Fla., assignors to Wayne H. Coloney Co., Inc., Tallahassee and Controlled Acoustics, Inc., Gainesville, both of, Fla.

Filed Feb. 11, 1974, Ser. No. 441,705

Int. Cl.² D03D 49/26

U.S. Cl. 139—147

9 Claims



1. Apparatus for throwing the shuttle of a fly shuttle loom from end to end of a lay movably mounted on a loom frame, the apparatus comprising a cam having a toe portion and at least a second portion, vibration absorbing pad means mounted on the periphery of at least part of the second portion of said cam, a pick ball carried by a pick shaft and engageable with said toe portion and said pad means of said cam, a pick arm mounted on said pick shaft in spaced relationship to said pick ball, connecting link means swingably connected to said pick arm, lug strap means carried by said connecting link means, a picker stick swingably mounted at one end on the loom in a manner to permit the picker stick to move in and out as well as back and forth relative thereto, an intermediate portion of said picker stick being received within said lug strap means, the upper end of said picker stick extending through an elongated slot in the loom lay and having a pick head selectively engageable with the shuttle of the loom, and resilient means connecting the fixed frame of said loom to said pick shaft in a manner to urge said pick ball into intimate engagement with said cam, whereby when the cam is driven the toe portion causes the picker stick to throw the shuttle from one end of the lay to the other and said pad means absorbs the noise and shock vibrations caused by contact between the second portion of said cam and said pick ball.

3,901,288

SHUTTLE BOX FOR LOOMS

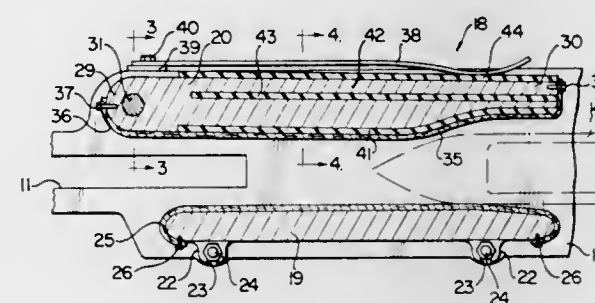
Charles E. Benedict, Tallahassee, and Calvin C. Oliver, Gainesville, both of Fla., assignors to Wayne H. Coloney Co., Inc., Tallahassee and Controlled Acoustics, Inc., Gainesville, both of, Fla.

Filed Feb. 11, 1974, Ser. No. 441,706

Int. Cl.² D03D 49/54

U.S. Cl. 139—185

1 Claim



1. In a shuttle box carried by the lay of a fly-shuttle loom and including a box front with frictional material mounted on one surface thereof, and means for mounting said box front in fixed adjusted position on said lay, the improvement comprising an elongated binder swingably mounted at one end in spaced relationship to said box front, resilient means urging the opposite end of said binder toward said box front, frictional material mounted on said binder on the side facing said box front, a first layer of acoustic vibration absorbing material carried by said binder behind and in engagement with said frictional material, an elongated generally vertically disposed slot extending inwardly from the opposite end of said binder more than one-half the length thereof, a second layer of acoustic vibration absorbing material completely filling said slot so that the interfaces between said slot and said second layer are in direct engagement, a third layer of acoustic vibration absorbing material mounted on the side of said binder opposite said frictional material, said first, second and third layers extending the full height of said binder, and a fourth layer of acoustic vibration absorbing material fixed to the upper surface of said binder, whereby said first and second layers of acoustic vibration absorbing material provide an impedance mismatch to resist the transmission of impact related vibrations through said binder and said third and fourth layers of acoustic vibration absorbing material suppress acoustic vibrations which reach the rear and upper surfaces of said binder.

3,901,289

APPARATUS FOR FORMING A STRONG SELVAGE IN A FABRIC

Walther Filter, Langenhagen, and Claus Filter, Rethem, Aller, both of Germany, assignors to Vereinigte Österreichische Eisen-und Stahlwerke, Vienna, Austria and Alpine Montan Aktiengesellschaft & Etablissement Wanderfeld & Co., Schaan, Liechtenstein

Filed June 3, 1974, Ser. No. 475,500

Claims priority, application Austria, June 13, 1973, 5207/73

Int. Cl.² D03D 47/40, 49/00

U.S. Cl. 139—291 R

5 Claims

1. An apparatus for forming a strong selvage in an edge portion of a woven fabric, said edge portion including fusible warp threads and filling threads having end portions freely projecting from said warp threads, said apparatus comprising: a. guide means for guiding movement of said edge portion in a predetermined path through a heating station and thereafter through a cutting station;

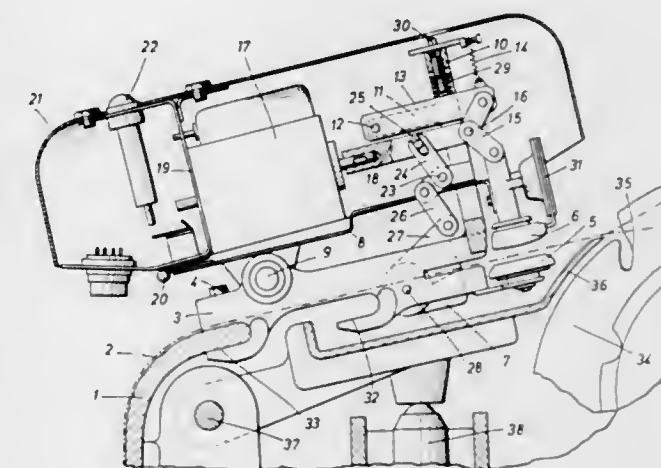
b. a carrier;

c. two jaws mounted on said carrier at said cutting station on opposite sides of said path for movement between a retracted position in which each jaw is remote from the

other jaw and from said path, and an operative position nearer said edge portion and said other jaw than said retracted position;

d. means for heating said jaws;

e. two shears mounted on said carrier at said cutting station for movement between an open position and a closed position, said shears when moving from the open to the closed position cutting said projecting end portions from an edge portion guided in said path; and



f. drive means for cyclically moving said jaws from said retracted position to said operative position while simultaneously moving said shears from the closed to the open position, and for thereafter moving said jaws from said operating position to said retracted position while simultaneously moving said shears from the open position to the closed position.

3,901,290

TEMPLE

Jaromir Jindra, Tyniste nad Orlici, Czechoslovakia, assignor to Elitex, Zavody textilního strojírenství, generalní reditelství, Liberec, Czechoslovakia

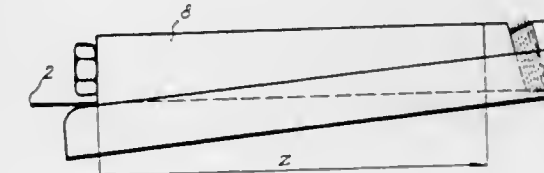
Filed Feb. 5, 1974, Ser. No. 439,751

Claims priority, application Czechoslovakia, Feb. 15, 1973, 112873-73

Int. Cl.² D03V 1/22

U.S. Cl. 139—292

5 Claims



1. A temple for holding or lateral tensioning of fabrics in looms, comprising at least two mutually parallel temple rollers with their tangential plane situated in the weaving of the loom plane, means for fastening the temple rollers for axial adjustment in slots of unequal length in a carrying plate for the purpose of mutual axial displacement when the loom is weaving very shrinkable fabrics, and an angularly adjustable middle batten disposed between the temple rollers.

3,901,291

SLIDE FASTENER STRINGER WITH A CONTINUOUS COUPLING ELEMENT WOVEN INTO A FABRIC TAPE
Akira Nogai, Kurobe, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Tokyo, Japan

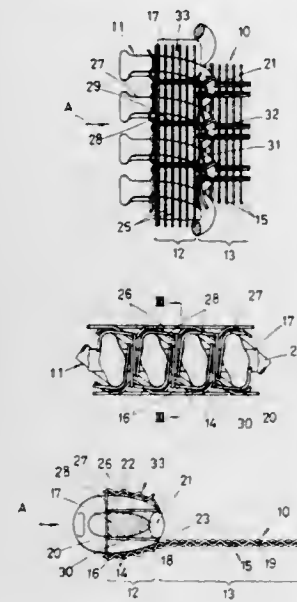
Filed Nov. 26, 1974, Ser. No. 527,224

Claims priority, application Japan, Dec. 4, 1973, 48-138411

Int. Cl.² A44B 19/18

U.S. Cl. 139—384 B

2 Claims



1. In a slide fastener stringer of the type comprising a continuous coupling element having a series of scoops each of which is constituted of a coupling head and upper and lower shanks and which are connected to each other via connecting portions remote from the coupling heads, and a core member extending longitudinally through said continuous coupling element, the combination thereof with:

a stringer tape including an element carrying portion and a major portion, said element carrying portion extending along one of the longitudinal edges of said stringer tape and underlying said continuous coupling element;

said stringer tape being of a woven fabric including a first group of warp yarns extending longitudinally of said element carrying portion, a second group of warp yarns extending longitudinally of said major portion, and a first filling yarn;

said first filling yarn repeatedly including a first portion interlaced with said first and second groups of warp yarns, a second portion passing under one of said lower shanks of said continuous coupling element and over said core member and one of said connecting portions of said continuous coupling element, and a third portion interlaced with said second group of warp yarns; and

a cover strip overlying said continuous coupling element; said cover strip being also of a woven fabric including a third group of warp yarns extending longitudinally thereof, and a second filling yarn;

said second filling yarn repeatedly including a first portion interlaced with said third group of warp yarns, and a second portion passing under said core member and one of said connecting portions of said continuous coupling element and over one of said upper shanks of said continuous coupling element.

3,901,292

BALE TIE END FORMER

Emil Simich, Chicago, Ill., assignor to A. J. Gerrard & Company, Des Plaines, Ill.

Filed June 19, 1974, Ser. No. 480,838

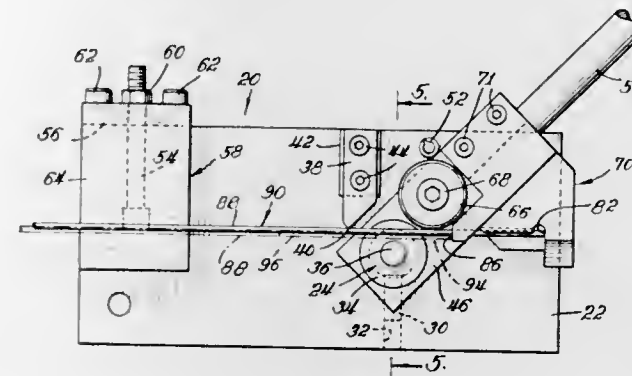
Int. Cl.² B21F 1/06

U.S. Cl. 140—73

9 Claims

1. For use in forming the end of a bale tie, apparatus comprising a base member having a forward end and a rearward

end, a stationary cylindrical forming anvil carried by said base member with its axis on one side of a longitudinal plane normal to said base member, a stationary reaction member carried by said base member on the other side of said longitudinal plane and offset at least in part rearwardly of the axis of said forming anvil, a lever carried by said base member and pivotally mounted adjacent its inner end on an axis coinciding with the axis of said forming anvil, a forming roller rotatably mounted on said lever spaced from the axis of said forming anvil, said forming roller having an initial position on said other side of said longitudinal plane and offset at least in part



forwardly of the axis of said forming anvil, said lever being swingable for moving said forming roller from said initial position concentrically of said forming anvil to bend a bale tie about a portion of the latter while the bale tie is engaged by said reaction member, and a guide unit secured to said lever adjacent said forming roller and presenting a wedge element for forcing upwardly the body section of a bale tie rearwardly of said reaction member to permit the free end of the bale tie to pass therebeneath as said lever is swung to a terminal position during forming of the end of the bale tie.

3,901,293

GUITAR STRINGING TOOLS

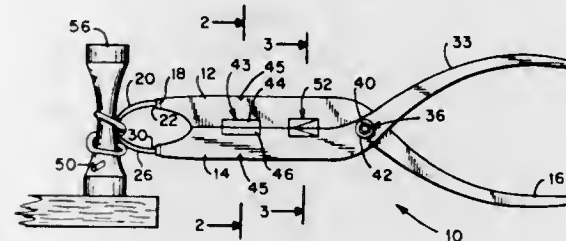
Joseph J. Cottone, 6 Butternut Ln., Levittown, N.Y. 11756

Filed Apr. 11, 1973, Ser. No. 350,085

Int. Cl. B21f 1/00

U.S. Cl. 140—123

5 Claims



5. A pliers for stringing a musical instrument or the like comprising: a pair of handles pivotally connected in a scissor-like arrangement, each handle terminating at its operative end with a retaining means, a jaw affixed to each handle adapted to be removably retained in said handle retaining means, each jaw comprising a relatively rigid spring wire extending outwardly and curved towards each other to form an overlapped relatively narrow tip thereby, for encircling and retaining said musical instrument string therein during the operational use of said pliers, whereby said string may be removed from its entwined location, said handle additionally being provided with pads adapted to be affixed to a first portion of said handles for

gripping said string and a second cooperating beveled portion adapted to provide a cutting means for said string.

blades and about vertically equidistant therefrom, said bar portion having integral flat opposite end portions including

3,901,294

CONTAINER FILLER WITH EXCESS PRODUCT REMOVAL ASSEMBLY

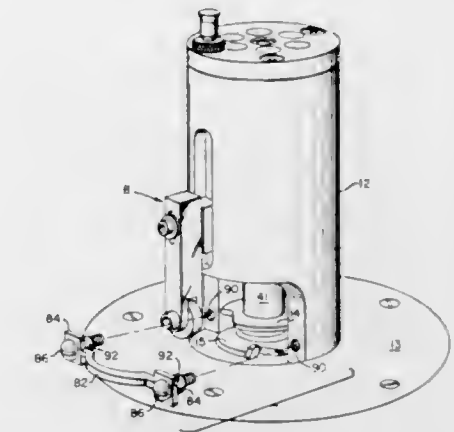
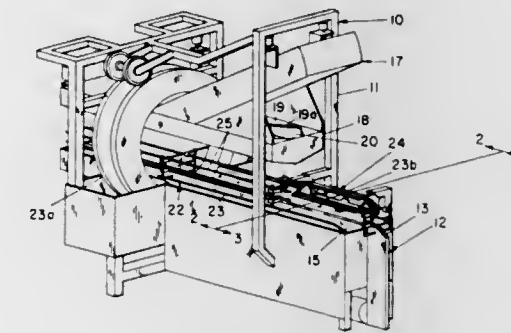
Fortunato S. Ajero, South Milwaukee, Wis., assignor to Hughes Company, Inc., Columbus, Wis.

Filed Jan. 22, 1974, Ser. No. 435,500

Int. Cl.² B65B 3/04

U.S. Cl. 141—124

10 Claims



fastening means for securing said guide means to said machine to provide an abutment for trimming the planar product.

3,901,296

HAMMER ROLL CONVERTER

John Tomac, 595 Grand Marais West, Windsor, Ontario, Canada

Filed Jan. 28, 1974, Ser. No. 437,532

Int. Cl. B25d 1/02

U.S. Cl. 145—29 C

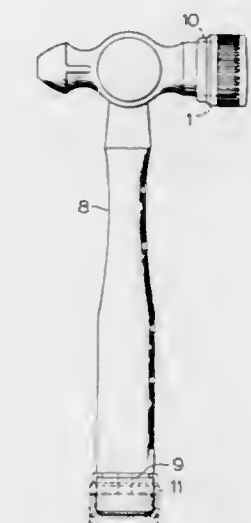
1 Claim

1. An improved machine for continuously filling containers with particulate material including a container drive assembly for continuously conveying containers through a filling zone and through an excess product shake-out zone and having guide bars which divert the containers into a transversely tilted position as they enter the shake-out zone, a feeder assembly for filling the containers within the filling zone with an excess quantity of particulate material, and a product return assembly for receiving and returning excess product ejected from the containers back to the feeder means, wherein the improvement comprises:

a. an elongated shaker plate extending alongside the container drive assembly downstream from the filling zone to define the length of the shake-out zone,

b. a carriage assembly engaging the ends of the elongated shaker plate in fixed supporting relation, the carriage assembly being adjustably mounted on the machine to selectively position the shaker plate to receive and engage the side walls of containers diverted into transversely tilted position by the container guide bars and support the containers in the selected tilted position as they are conveyed the length of the shake-out zone by the container drive assembly, and

c. a vibrator attached to the shaker plate between the fixed supported ends thereof to transversely vibrate the shaker plate and cause excess particulate material to be ejected from containers supported by the shaker plate onto the product return assembly.



3,901,295

TRIMMING APPARATUS

Verlan L. Downing, Bellevue, Wash., assignor to Dart Industries Inc., Los Angeles, Calif.

Filed Oct. 15, 1974, Ser. No. 514,547

Int. Cl.² B27C 1/02, 5/04

U.S. Cl. 144—118

3 Claims

1. A machine for trimming the edges of a planar product having curved edges, said machine having a pair of spaced-apart spring biased rotary cutting blades located within a housing and positioned adjacent a table, wherein the improvement comprises guide means located adjacent said cutting blades above said table, said guide means including a convex-shaped bar portion extending radially from the axis of said blades a distance proximate the peripheral edges of said

1. A cover for the poll of a metal hammer comprising a cylindrical container made of a hard plastic material, said cover being open on the top and closed at its bottom with a thick base; the cylindrical wall of said cover being tapered at a small angle towards said base, and narrowing down to a smaller diameter towards the top opening thereof; a plurality of spaced vertical corrugations located at about the center of the wide part of said cover; the hollow interior of said cover being of a diameter to provide a snug fit with the poll which it covers; and a plurality of equally spaced lugs located radially on the inside of said top opening to grip the neck of said hammer; in combination with the handle of a hammer, for storing an unused cover thereon, the free end of said hammer handle being of the same outside diameter as the interior diameter of said cover, and being provided with an annular groove wherein nest the said lugs, when the cover is stored.

3,901,297

HAMMER-HEAD MOUNTING

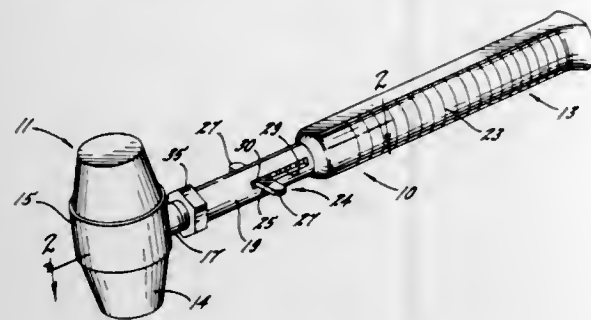
Joseph E. Young, 186 E. Wilson, Rockford, Ill. 61111

Filed May 28, 1974, Ser. No. 473,445

Int. Cl. B25d 1/00; B25g 1/00

U.S. Cl. 145-29 R

6 Claims



1. A hammer including a replaceable head having a downwardly projecting shank fixed thereto, a handle having a tubular upper end portion telescoped over the lower end portion of said shank, means normally holding said shank against being axially separated from said tubular portion, a keyway formed in the lower end portion of said shank, a nonrotatable key slidably captivated in said tubular portion and urged into mating engagement with said keyway to keep said head from turning on said handle, a spring urging said key into mating engagement with said keyway, means for sliding said key out of engagement with said keyway to permit said head to be separated from said handle for replacement, said key sliding means including an elongated slot formed through said tubular portion and a projection fixed to and extending outwardly from said key and through said slot to be slid in an axial direction to overcome said spring to retract said key from the keyway and to prevent said key from being turned within said handle.

3,901,298

FASTENER HOLDING ATTACHMENT

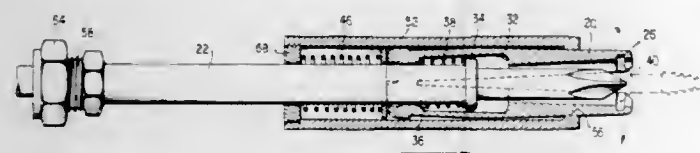
John B. Eby, R.F.D. No. 1, Belleville, Pa. 17004

Filed Apr. 5, 1974, Ser. No. 458,334

Int. Cl. B25B 15/06; B25D 1/04; B25B 13/32

U.S. Cl. 145-52

19 Claims



1. In combination with an elongate tool having a rearward driving end, a shank and a forward fastener-engaging end; a fastener-holding attachment telescoped on said shank; said fastener-holding attachment comprising jaw-control means and rigid, fastener gripping jaws concentrically mounted on said shank adjacent said fastener-engaging end for axial and radial movement relative thereto; the exterior and interior surfaces of said jaws including cam surfaces and fastener-engaging recesses, respectively, adjacent the forward gripping ends thereof and coacting fulcral surfaces adjacent the rearward ends thereof; said jaw-control means comprising a sleeve mounted for limited axial movement between jaw-open and jaw-closed positions in outer telescoping relation to said jaws; said jaw-control means further including resiliently biased means coacting with said sleeve for constantly biasing the outer ends of said jaws radially outwardly about said coacting fulcral surfaces and, concomitantly, positively limiting the radially outward movement of said jaws at all positions of axial sleeve movement to define a substantial jaw-opening gradient throughout the full range of axial sleeve movement; said resiliently biased means including biasing means for commonly opening said jaws and in cooperation with said sleeve limiting

the radially outward movement thereof; and camming means carried by said sleeve for coacting engagement with the cam surfaces on said jaws providing the limit on the outward movement of said jaws.

3,901,299

GOLF BAG

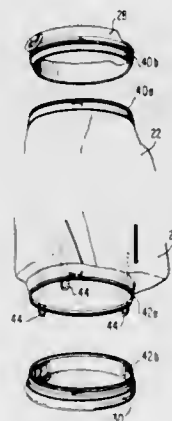
William A. Picco, 12433 Surrey Circle Dr., Tantallon, Md. 20022

Filed Dec. 27, 1973, Ser. No. 429,034

Int. Cl. A63B 55/00

U.S. Cl. 150-1.5 R

7 Claims



1. In a collapsible golf bag particularly adapted for transporting in a flattened state with detached rigid end members and being readily returnable to an expanded normal usage form with the attachment of said rigid end members to said bag, and said golf bag having a flexible body portion of generally tubular form adapted to be flattened while golf clubs are disposed therein, and a pair of rigid forming and stabilizing end members means releasably attachable to respective opposite ends of said bag body portion to maintain the same in said normal expanded usage form, wherein the improvement comprises directly hand operable quick releasable fastener means respectively attaching said rigid forming and stabilizing end members means to said opposite ends of the tubular bag body portion.

3,901,300

NON-INFLATABLE TIRE AND APPARATUS FOR PRODUCING SAME

John Geoffrey Toplis, Nottingham, England, assignor to Raleigh Industries Limited, Nottingham, England

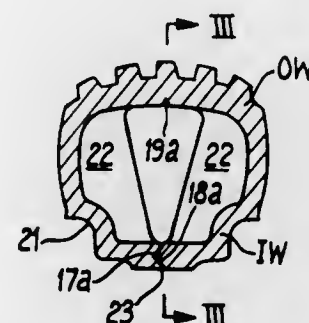
Continuation-in-part of Ser. No. 344,132, March 23, 1973, abandoned. This application Aug. 1, 1973, Ser. No. 384,598

Claims priority, application United Kingdom, Mar. 24, 1972, 13859/72

Int. Cl. B60C 7/00

U.S. Cl. 152-246

11 Claims



1. A hollow non-inflatable tire in the form of a one-piece moulding of elastomeric material and comprising a road-engaging portion, two side walls continuous with said road-engaging portion, a wheel-engaging portion having two separable parts one part continuous with one said side wall and the

other part continuous with the other said side wall, contiguous surfaces at the ends of said separable parts, interengageable formations on said contiguous surfaces, a first series of internal transversely extending ribs formed continuously with the one said side wall, with a portion of said road-engaging portion adjacent said one said side wall, and with the separable part of said wheel-engaging portion which is continuous with said one said side wall, and a second series of internal transversely extending ribs formed continuously with the other said side wall, with a portion of said road-engaging portion adjacent said other said side wall, and with the separable part of said wheel-engaging portion which is continuous with said other said side wall, each said rib, when said interengageable formations are interengaged, extending over less than half the interior transverse dimension of the tire at said road-engaging portion but extending over an increasingly greater proportion of the interior transverse dimension of the tire up to a maximum at said wheel-engaging portion.

3,901,301

PNEUMATIC TIRES AND WHEEL ASSEMBLIES

Reginald Harold Edwards, Sutton Coldfield, England, assignor to The Dunlop Company, Limited, England

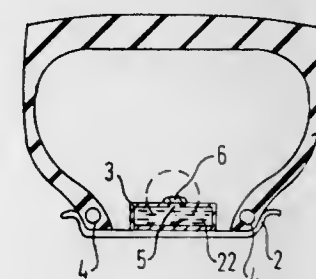
Filed Nov. 7, 1973, Ser. No. 413,604

Claims priority, application United Kingdom, Nov. 10, 1972, 51914/72

Int. Cl. B60c 17/00, 5/00

U.S. Cl. 152-330 L

27 Claims



1. An enclosing means for enclosing at least part of a lubricant composition for use in a pneumatic tire and wheel assembly, comprising a container in which the lubricant composition is located, an aperture in the container through which the lubricant composition can leave the container, and a sealing member for sealing the aperture, the member comprising at least in part a solid material having a softening and/or melting point in the range 60°C. to 120°C. whereby the member prevents escape of lubricant composition from the container during use of the enclosing means in normal running of the tire but on the build-up of an excessive temperature in the interior of the tire and wheel assembly the solid material of the sealing member will soften and/or melt and thereby release the lubricant composition.

3,901,302

PROTECTIVE GRILLE

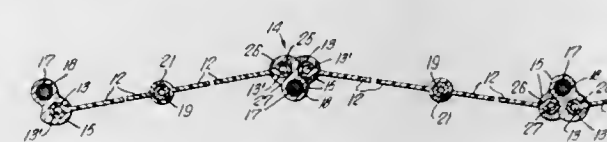
Robert Dagenais, 4231-52nd St., Laval, Quebec, Canada

Filed Oct. 16, 1973, Ser. No. 406,896

Int. Cl. E05D 3/00, 7/00

U.S. Cl. 160-183

7 Claims



1. A foldable closure structure comprising a foldable curtain having a plurality of panel members hingeably interconnected along opposed vertical edges, hinge members secured in spaced apart relationship to each said vertical edges, said

hinge members each having panel attachment means for connection to a portion of a respective vertical edge of adjacent panel members, a connecting rod pivotally interconnecting said hinge members of adjacent vertical edges along a common axis, each said hinge member having an abutment surface lying substantially parallel to said connecting rod for abutment with a portion of said vertical edge of said panel member adjacent to the panel member to which said hinge member is connected to, each said hinge member further having a circular bore therein for receiving said connecting rod, said attachment means being a through bore disposed parallel to said circular bore, and a panel receiving opening in said member extending to said through bore for slidably receiving a portion of said vertical edge of a respective panel member in said through bore, and suspension means for suspending said curtain in a frame opening.

3,901,303

DRAPERY HOLDER

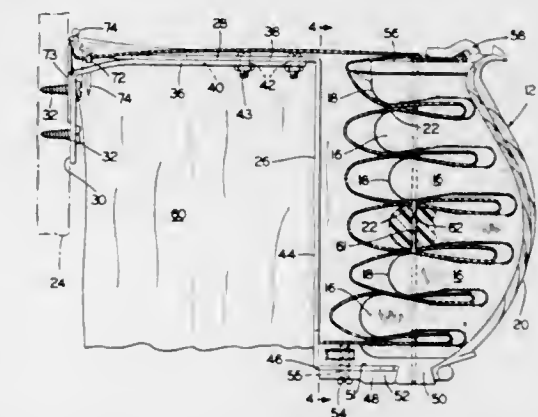
Douglass R. Falkenberg, Rocky River, Ohio, assignor to Douglas Manufacturing Co., Inc., Elyria, Ohio

Filed Apr. 25, 1974, Ser. No. 464,038

Int. Cl. A47h 13/14

U.S. Cl. 160-348

13 Claims



1. A drape or valance holder adapted to be secured to a wall surface for retaining material adjacent a window or wall opening which provides a concealed space between the holder and the wall surface comprising:

- a holder having a plurality of means for retaining the material in a predetermined decorative fashion;
- a bracket adapted to be secured to a wall surface in spaced relation therefrom;
- a connection means between said holder and said bracket positioning said holder in spaced relation from said bracket;
- said holder material retention means facing toward said bracket with the material adapted to be positioned within the space between the holder and bracket; and,
- the connection means between the holder and bracket coacting to permit material to pass over the bracket and toward the wall surface to enclose the space between the bracket and wall surface.

3,901,304

TRUCK TO BE USED WHEN CHANGING PATTERN BOARDS IN AUTOMATIC MOLD PART PRODUCING MACHINES

Arne Dupont Toft Jacobsen, Skovlunde, Denmark, assignor to Dansk Industri Syndikat A/S, Herlev, Denmark

Filed Sept. 19, 1972, Ser. No. 290,367

Claims priority, application Denmark, Sept. 27, 1971, 4684/71

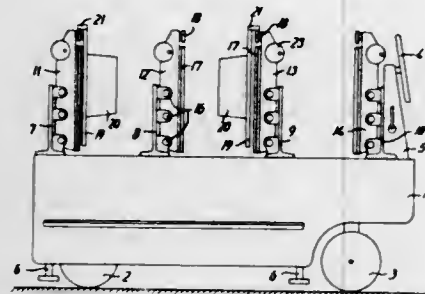
Int. Cl. B60p 1/52

U.S. Cl. 164-159

7 Claims

1. A pattern board transporting and changing truck for use with automatic mold part producing machines of the type incorporating a mold part pressure chamber having a pair of

axially displaceable end walls to releasably support a pair of pattern boards that are complimentary in shape to the end faces of the mold parts to be produced, comprising a wheeled truck body having at least one pair of pattern board carriers mounted for displacement relative to said truck body between a retracted transport position and an extended pattern board receiving and delivery position relative to said pressure cham-



ber and walls, each carrier having roller means for transferring a pattern board to and from said carrier, when in extended position, by a displacement of the pattern board parallel to the direction of displacement of the carrier relative to the truck body and for supporting said pattern board in a vertical position during transportation, and means to releasably secure said pattern board to said carrier when supported by said roller means.

3,901,305

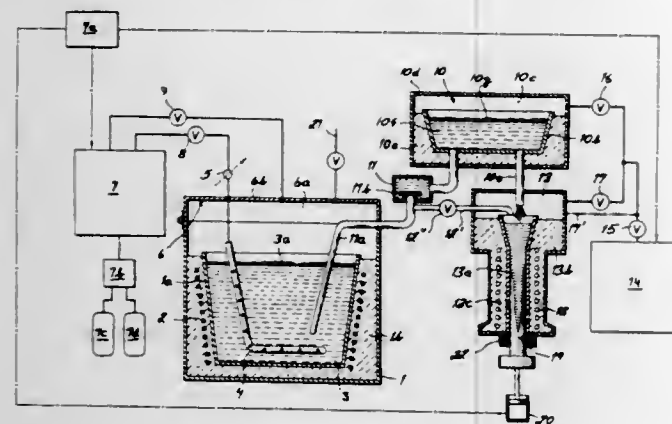
APPARATUS FOR CONTINUOUS CASTING OF METALS
Angel Tonchev Balevski, and Ivan Dimov Nikolov, both of Sofia, Bulgaria, assignors to Institut Po Metaloznanie i Tehnologia Na Metalite, Sofia, Bulgaria
Division of Ser. No. 241,251, April 5, 1972. This application Nov. 14, 1973, Ser. No. 415,752

Claims priority, application Bulgaria, Apr. 7, 1971, 17295 The portion of the term of this patent subsequent to Mar. 21, 1989, has been disclaimed.

Int. Cl. B22d 27/20

U.S. Cl. 164—259

5 Claims



1. An apparatus for the production of an elongated body, comprising:

- a treatment vessel adapted to receive a bath of molten metal;
- means forming a first chamber for treating the molten metal in said vessel with a gas mixture containing a soluble-gas as a component thereof at a low partial pressure;
- a continuous-casting mold provided with a further chamber for exposing solidifying molten metal therein to gas pressure;
- means connecting the chambers for transferring molten metal containing solubilized gas to said continuous casting mold; and means for subjecting the solidifying molten metal in said continuous casting mold to gas pressure in said other chamber of a higher partial pressure of said solubilizing gas.

3,901,306 MOLTEN METAL INJECTOR FOR AN INJECTION DIE CASTING MACHINE

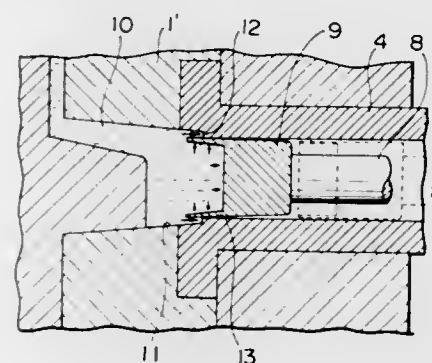
Isao Miki, Fuji, and Masataka Miyoshi, Yokohama, both of Japan, assignors to Nippon Light Metal Company Limited, Tokyo, Japan

Filed July 3, 1973, Ser. No. 376,132

Claims priority, application Japan, Aug. 17, 1972, 47-81811 Int. Cl. B22d 17/04

U.S. Cl. 164—312

3 Claims



1. In an injection die casting machine including fixed and movable dies defining a die cavity, an injection sleeve in communication at its inner end with said cavity for receiving into the bore thereof molten metal for injection into said cavity, and a plunger arranged for reciprocation in said sleeve and operable to inject said molten metal, in combination, the improvement comprising a cavity at the inner end of the injection sleeve, in coaxial relation to said sleeve, in which cavity is formed a slug of solid metal after injection, the peripheral wall of said cavity being of conical configuration flaring away from said sleeve to facilitate removal of the slug from such cavity at the end of the injection cycle, said cavity terminating at its smaller end in a narrow annular shoulder whereby backward flow of metal into the clearance between plunger periphery and sleeve bore adjacent said inner end of the sleeve is resisted.

3,901,307

VENT HOLE-MAKING MECHANISM FOR A FOUNDRY MOLD

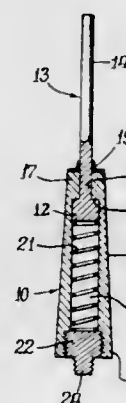
John R. Nieman, Pekin, Ill., assignor to Caterpillar Tractor Company, Peoria, Ill.

Filed Dec. 17, 1973, Ser. No. 425,218

Int. Cl. B22C 23/00

U.S. Cl. 164—410

6 Claims



1. Vent hole-making means for automatically making vent holes in foundry casting molds, said vent hole-making means including

- a body, defining a hollow and an upper end wall portion therein and a base portion;
- a pin member having a head end and a pin end of lesser diameter than the head end, said head end being slidably engageable within the hollow portion of said body and

said pin end extending beyond said body portion through a bore in said upper end wall of said body portion, said body being otherwise closed; said body further including wiper seal means mounted on said upper end wall and positioned about said pin end in sliding engagement therewith for preventing entry of foreign material into said hollow portion of said body and spring biasing means comprising a spring disposed within said hollow portion intermediate said base portion and said head for urging said head end of said pin member against said upper wall and for storing energy absorbed during the mold-making process.

3,901,308

ELECTRICAL OVERLOAD CONTROL FOR A COMBINATION APPARATUS

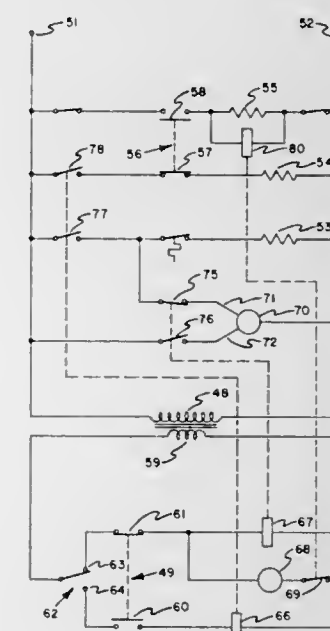
Isaac Berger, Hacienda Heights, Calif., assignor to Carrier Corporation, Syracuse, N.Y.

Filed June 24, 1974, Ser. No. 482,172

Int. Cl. H02j 3/14

U.S. Cl. 165—2

6 Claims



1. In a combination apparatus including a mechanical refrigeration unit employed in an air conditioning system and a second unit having a relatively heavy electric power demand when energized, the improvement of a control comprising:

- means to energize said second unit in response to a demand imposed thereon;
- means to sense the temperature of air in a space being served by said air conditioning system to selectively energize and deenergize the compressor of said refrigeration unit, said air conditioning system including fan means operable to route air to be conditioned in heat transfer relation with refrigerant passing through the refrigeration unit evaporator, the refrigerant absorbing heat and being vaporized thereby; and

means to deenergize said compressor regardless of the sensed air temperature when said second unit is energized, said fan means of said air conditioning system being selectively energized in response to the sensed air temperature even though said compressor is inoperable due to the energization of said heater element, whereby air is circulated in said space served by said air conditioning system.

3,901,309

REGENERATOR DISK FLEXIBLE RIM

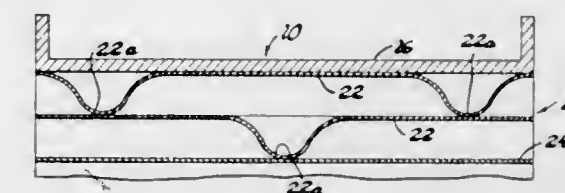
Glenn W. Thebert, Carmel, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed May 16, 1974, Ser. No. 470,533

Int. Cl. F28d 19/00

U.S. Cl. 165—8

6 Claims



1. A rotary regenerator matrix including an annular body of heat transfer material of a structure porous to fluid flow through the body and adapted to receive heat from a fluid flowing through the body, store heat, and to deliver heat to a fluid flowing through the body and, a flexible rim of a spirally wrapped, corrugated sheet encircling said body, the spiral wraps of said corrugated sheet being bonded to each other and to said body, the peaks of the corrugations of said corrugated sheet being crushed in paths angled across a plurality of corrugations and extending from one edge of said corrugated sheet thereacross.

3,901,310

MULTIZONE ENVIRONMENTAL CONTROL SYSTEM

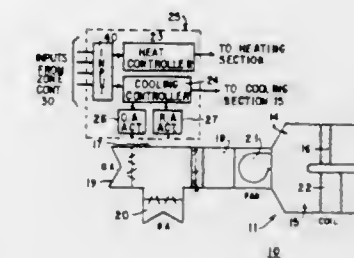
Charles F. Strawn, Arlington, Tex., assignor to Johnson Service Company, Milwaukee, Wis.

Filed Nov. 27, 1973, Ser. No. 419,414

Int. Cl. F24f 3/00

U.S. Cl. 165—22

18 Claims



1. In a multi-zone environmental control system including an air conditioning unit for supplying warm and cool air to a plurality of zones of a building, and an outside air damper means controllable to permit outside air to be introduced into said system, a plurality of zone controller means including an individual zone controller means for each of said zones for regulating the flow of warm and cool air supplied by said air conditioning unit into the corresponding zone to permit the temperature of the zone to be maintained at a preselected level, a control circuit for effecting selective energization of heating apparatus and cooling apparatus of said air conditioning unit in accordance with command signals provided by said zone controller means which are indicative of the heating and cooling demands of said zones, said control circuit comprising heat controller means including heat source control means and heat actuator controller means, said heat source control means including first signal comparator means having a first input connected to receive command signals indicative of the heating demand for the coolest zone, and a second input connected to receive a first reference signal, said first signal comparator means being operable to provide a heat control

signal for enabling said heat actuator controller means for energizing the heating apparatus whenever the amplitude of the command signal extended thereto differs with the reference signal by a predetermined amount, and cooling controller means including cooling source control means and cooling actuator controller means, said cooling source control means including second signal comparator means having a first input connected to receive a further command signal indicative of the cooling demand of the warmest zone and a second input connected to receive a second reference signal said second signal comparator means being operable to provide a cooling control signal for enabling said cooling actuator controller means for energizing said cooling apparatus whenever the amplitude of the command signal extended thereto differs with the second reference signal by a predetermined amount, outside air monitoring means for providing an output indicative of the temperature of the outside air, first control means enabled by said outside air monitoring means whenever the outside air temperature is less than a predetermined maximum value to enable outside said air damper means to be controlled by said cooling control signal prior to energization of said cooling apparatus and second control means including inhibit means enabled by said outside air monitoring means whenever the temperature of the outside air is below a predetermined minimum value for inhibiting the passage of said cooling control signal to said cooling actuator controller means.

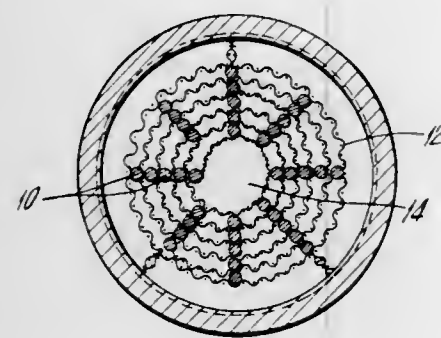
3,901,311

SELF-FILLING HOLLOW CORE ARTERIAL HEAT PIPE
Robert Kosson, Massapequa, and Burton Swerdling, Hauppauge, both of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Jan. 12, 1973, Ser. No. 323,150
Int. Cl. F28d 15/00

U.S. Cl. 165-105

27 Claims



1. A heat pipe having a closed casing, a wall capillary and a vaporizable liquid carried thereby and including an axially disposed artery formed by a porous structure disposed around a hollow core, said porous structure having a controlled porosity which permits capillary filling of said porous structure and pressure priming of the hollow core, with said artery and said hollow core providing longitudinal flow of vaporizable liquid, said axially disposed artery being supported in said heat pipe by a plurality of legs.

3,901,312

HEAT EXCHANGERS AND METHOD OF MAKING SAME
Stephen F. Pasternak, Park Ridge, Ill., assignor to Peerless of America, Incorporated, Chicago, Ill.

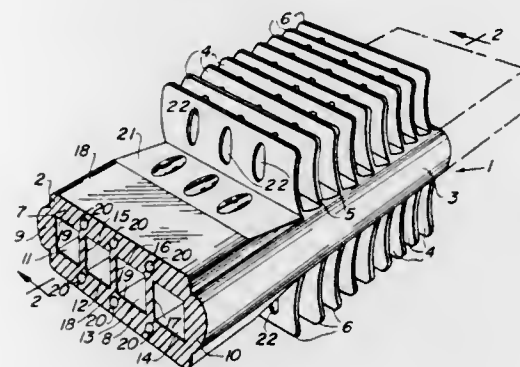
Filed Feb. 1, 1974, Ser. No. 438,750
Int. Cl. F28f 1/16

U.S. Cl. 165-181

4 Claims

1. A heat transfer element comprising
a. an elongated tubular member,
b. said tubular member having an integral side wall having a substantially rectangular-shaped outer face,
c. a plurality of fins

1. spaced from each other longitudinally of said wall, and
2. projecting outwardly from said outer face,
- d. said fins having
 1. elongated base portions
 - a. integral to said wall,
 - b. extending transversely to the length of said wall and of said tubular member,



2. outer longitudinal edges, and
3. a plurality of openings therethrough
 - a. spaced from each other transversely to the length of said wall, and
 - b. spaced from said outer longitudinal edges.

3,901,313

OIL WELL TREATMENT

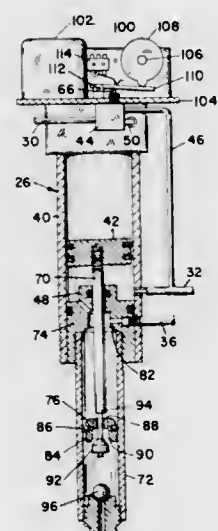
Thaddeus M. Donigulan, 913 Emerald Bay, Laguna Beach, Calif. 92651; Jared Erle Larsen, 16440 Mount Ararat St., and Susumu Takabayashi, 9076 Columblne Ave., both of Fountain Valley, Calif. 92708

Filed Aug. 13, 1973, Ser. No. 387,890

Int. Cl. E21B 33/03

U.S. Cl. 166-64

1 Claim



1. Apparatus for use in applying chemical from a storage container to the casing of a well of the kind in which fluid product issues at positive pressure from a tubing string in the casing comprising:
a gas separator for connection to said tubing string such that pressurized gas is separated from said product and stored;
a pumping means including a pump and flow conduits for transferring chemical from said storage container to said well casing and a gas pressure powered driver for driving said pump, the driver having mechanical advantage over the pump such that delivery pressure from the pump exceeds the pressure applied to the driver;
a normally closed, pressure-opened connection from the tubing to the casing of the well;
a line connecting the separator to said driver and to said pressure-opened connection;
control means including valving in said line and a timer for actuating said valving for causing the driver to operate the

pump and for opening said connection a predetermined number of times after a predetermined interval;
said pumping means comprising a driver cylinder and piston and a pumping cylinder and piston, the two pistons being mounted on a common shaft for reciprocation together in their respective cylinders and the pump piston and cylinder having smaller cross-sectional area than the driver piston and cylinder;
said control means comprising a three-way valve having an inlet for connection to said gas separator and having two alternate outlets each connected to the driver cylinder at a respectively associated side of the driver piston, one of the outlets of said three-way valve being connected to said pressure-opened connection;
means for mounting said pumping means such that it can extend through the bung hole of a drum with its pump extending within the drum; and
said three-way valve including an operating shaft and in which said timer comprises a rotating cam position to actuate said cam in a given rotational position and means for rotating said cam for a given period during a longer period.

3,901,314

PRESSURE CONTROLLED TESTER VALVE

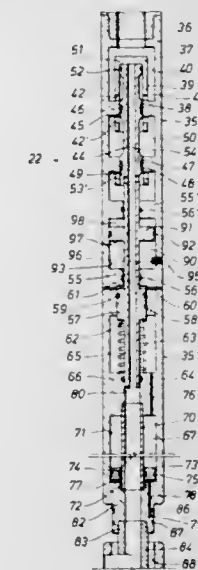
Benjamin P. Nutter, Bellville, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Sept. 18, 1974, Ser. No. 507,096

Int. Cl. E21B 49/00

U.S. Cl. 166-152

12 Claims



1. A well tester apparatus, comprising: an elongated housing; a mandrel movable longitudinally in said housing; valve means opened in response to movement of said mandrel in one direction and closed in response to movement of said mandrel in the other direction; piston means on said mandrel sealingly slidable within cylinder means in said housing, said piston means normally having balanced pressures acting on opposite sides thereof; and means for admitting annulus well fluids to one side of said piston means to provide an unbalanced pressure thereon to cause shifting of said mandrel in said other direction and automatic closure of said valve means.

3,901,315

DOWNHOLE VALVE

William H. Parker, Hurst, and Edmond I. Bailey, College Station, both of Tex., assignors to Del Norte Technology, Inc., Eules, Tex.

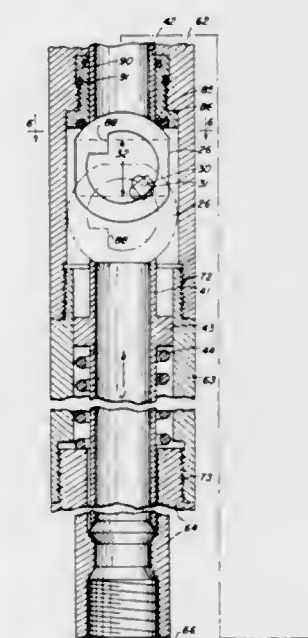
Filed Apr. 11, 1974, Ser. No. 460,031

Int. Cl. E21B 43/12, 41/00

U.S. Cl. 166-224 A

7 Claims

1. A disaster valve for oil well blowout protection, said valve comprising a housing having an internal cavity with a float-



said ball to align it in both said aligned and sealed positions, sealing means for protecting said valve against abrasive materials ambiently dispersed in the environment of the valve, at least some of said tubes having O-ring sealing grooves formed therein or at the end thereof to provide said sealing means, at least one of said O-rings being a non-compressible gasket seal for engaging said ball valve when in said closed valve position, the diameter of said gasket being greater than the diameter of the other of said O-rings and said metal-to-metal seal surrounding both the inside and outside periphery of said gasket as a backup seal in case said non-compressible seal fails.

3,901,316

ASPHALT PLUG EMPLACEMENT PROCESS

Randolph H. Knapp, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Aug. 13, 1974, Ser. No. 497,011

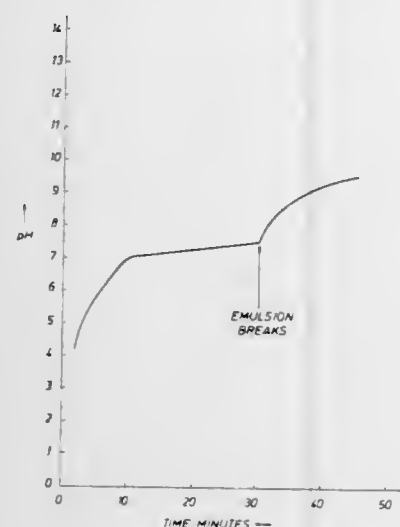
Int. Cl. E21B 33/138

U.S. Cl. 166-250

6 Claims

1. In a process in which a permeable earth formation is plugged by injecting an oil-in-water emulsion in which asphalt is dissolved or suspended in the oil-phase and the emulsifier is a cationic surfactant, the improvement which comprises:
correlating the composition and concentration of said asphalt-containing oil-phase and cationic emulsifier so that the emulsion (a) contains dispersed particles that are small enough and well enough suspended to flow through pores of the earth formation to be treated, (b) has a pH that is relatively near neutral and (c) breaks when the pH is raised by a significant amount; and
dissolving, in the aqueous liquid component of the emulsion, a pH-increasing reactant having a composition and concentration that are correlated with the temperature

and location of the earth formation to be treated so that the pH of the emulsion is increased to one at which the



emulsion breaks after the emulsion has at least substantially reached the earth formation to be treated.

3,901,317

METHOD OF USING SULFONATE BLENDS FOR IMPROVED OIL RECOVERY

Mark A. Plummer, and Wayne O. Roszelle, both of Littleton, Colo., assignors to Marathon Oil Company, Findlay, Ohio
Filed Aug. 10, 1973, Ser. No. 387,413
Int. Cl.² E21B 43/22

U.S. Cl. 166—274

22 Claims

1. An improved process of flooding an oil-bearing subterranean formation with an aqueous petroleum sulfonate mixture wherein the mixture is injected into the formation and displaced toward at least one production means in fluid communication with the reservoir to recover crude oil through the production means, the improvement comprising incorporating into the aqueous mixture at least two different petroleum sulfonates, the sulfonates defined as:

1. having an average equivalent weight within the range of about 390 to about 450,
2. having an aliphatic to aromatic proton ratio within the range of about 4.0 to about 20 moles/mole, but
3. the sulfonates having different aliphatic to aromatic proton ratios of a magnitude of at least 2.5 moles/mole.

3,901,318

METHOD AND APPARATUS FOR PACKING GRAVEL IN A SUBTERRANEAN WELL

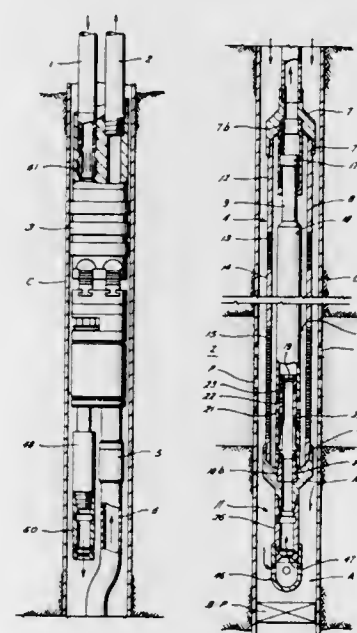
Dewitt L. Fortenberry, Lafayette Parish, La., assignor to Baker Oil Tools, Inc., Los Angeles, Calif.
Filed June 19, 1974, Ser. No. 480,743
Int. Cl.² E21B 43/04, 43/08, 43/10

U.S. Cl. 166—278

23 Claims

1. An apparatus for use in a subterranean well having a production zone and containing fluid in the well, comprising a packer having first and second fluid passages therein and having means adapted to receive first and second tubular strings extending to the top of the well, a liner assembly carried by and depending from said packer to be lowered with said packer in the well to the production zone, said assembly including a first perforated member through which fluid can flow between the exterior and the interior of said member, said first fluid passage communicating with the exterior of said perforated member, said assembly further including a second tubular member within said perforated member and providing a fluid passageway communicating with said second fluid passage and communicable with the interior of said perforated member, and means for selectively controlling fluid flow between the interior of said second tubular member and the exterior of said perforated member.

23. A method for gravel packing a production zone in a well, comprising the steps of providing a packer having first and second fluid passages therein and a liner assembly carried by and depending from said packer, said assembly including a first perforated member through which fluid can flow between the exterior and interior of said member, said first fluid passage communicating with the exterior of said perforated member, said assembly further including a second tubular member within said perforated member and providing a fluid passageway communicating with said second fluid passage and communicating with the interior of said perforated member, lowering said packer and liner assembly as a unit on a first



tubular string communicating with one of said fluid passages and setting said packer in the well above the production zone with said first perforated member overlapping said production zone, placing a second tubular string extending to the top of the well in communication with the other of said fluid passages, said first fluid passage communicating with the exterior of said perforated member, and pumping fluid containing gravel down one of said strings and into the zone surrounding the perforated liner, the fluid in advance of the fluid containing gravel and in the zone surrounding the perforated liner flowing through said second tubular member and through the other fluid passage and other of said strings to the top of the well.

3,901,319

SEALING A TUBE IN A BORE

John George Staley, Mansfield, and Robert Aldred, Newark, both of England, assignors to Coal Industry (Patents) Ltd., London, England
Filed Oct. 29, 1974, Ser. No. 518,715
Claims priority, application United Kingdom, Nov. 2, 1973, 50986/73

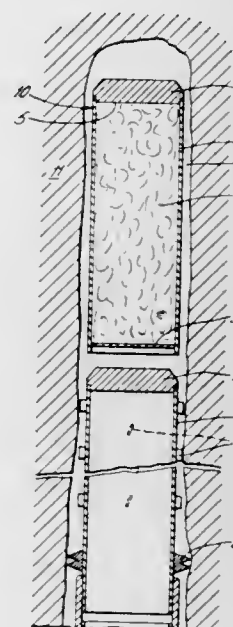
U.S. Cl. 166—286

Int. Cl.² E21B 33/13, 33/132

8 Claims

1. A method of sealing a tube in a bore comprising the steps of inserting a frangible tube containing a sealing material into a bore, forcing the tube up the bore to the innermost end

thereof, applying pressure to the tube to cause it to burst and passing a closed tubular standpipe up to the end of the bore



and forcing the sealing material between the bore and the standpipe.

3,901,320

METHODS FOR CLEANING AND FORMING SAND FILTERS AND A SELF-CLEANING STRAIGHT SPRING FILTER

Reynaldo Calderon, Houston, Tex., and Charles F. Umphenour, St. Charles, Mo., assignors to Texaco Inc., New York, N.Y.

Filed Sept. 23, 1974, Ser. No. 508,596

Int. Cl.² B01D 29/22; E21B 43/08, 37/02

U.S. Cl. 166—311

16 Claims



1. A method for cleaning a sand filter comprising a flexible screen formed of square straight springs around a perforated tube extending down into a petroliferous unconsolidated sand strata of an oil well comprising the steps of,

- a. scraping an outer ring over substantially the full length of the flexible screen for removing calcification from the exterior surface of the square springs for creating an area of unconsolidated formation around the screen,
- b. buckling the square springs outwardly by moving one end of the springs toward the other end with the outer ring for altering the gaps between the springs and breaking up the consolidated sand mass in the gaps,

c. flushing the consolidated sand mass from between the springs, and

d. reversing the scraping movement of the outer ring over the screen for restoring the square springs to their original contiguous position for filtering sand as sand-bearing oil passes through the screen through the perforated tube, and up out of the well.

13. A self-cleaning straight spring filter for mounting on the lower end of a tubing string for extending down into a petroliferous unconsolidated sand strata of an oil well comprising,

- a. a plurality of straight, contiguous springs having upper and lower ends mounted lengthwise around a perforated tube in a precisely spaced relationship to each other sufficient to filter the sand from sand-bearing oil passing between the springs and into the perforated tube,
- b. sleeve means connected to a reciprocal motion actuator means in the well for sliding over said springs for cleaning thereof, and
- c. said sleeve means being responsive to further movement of said reciprocal motion actuator means for contacting said spring lower ends for buckling and spreading said springs apart for additional cleaning thereof.

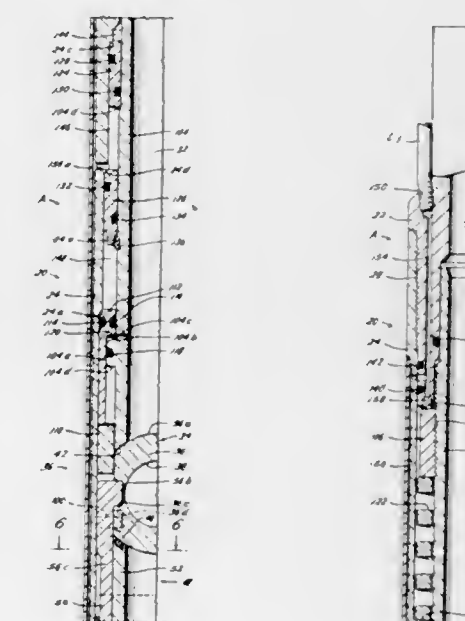
3,901,321

SAFETY VALVE METHOD AND APPARATUS

James D. Mott, Houston, Tex., assignor to Hydril Company
Filed Dec. 26, 1973, Ser. No. 427,978
Int. Cl.² E21B 43/12

U.S. Cl. 166—314

76 Claims



1. A method of operating a well tool mounted with a well conduit at a subsurface location and having a tubular housing mounting a rotatable ball element with a flow passage formed through the ball element for controlling flow of well fluids through the bore of the well conduit by rotational movement of the ball element, including the steps of:

- spacing the ball element from an annular seat that is sealably engaged by the ball element for blocking flow of fluid through the bore;
- rotating the ball element to enable flow of well fluids through the flow passage and well conduit; and
- sealing the ball element with the annular seat for excluding therebetween undesired foreign material in the well fluids by moving the annular seat to sealingly engage the ball element.

31. Valve apparatus for subsurface use in wells, including: a flow housing having a bore therethrough and means for mounting said flow housing with a well conduit at a desired subsurface location in a well;

bore closure means mounted with said flow housing for movement to and from an open position for enabling flow of fluid through said bore and a closed position for blocking flow of fluid through said bore, said bore closure means, comprising:

a flow closure element movably disposed in said bore to and from open and closed positions for controlling flow of fluid through said bore;

valve seat means having an annular resilient seal movably disposed in said bore for sealably engaging with said flow closure element in the open and closed positions for controlling flow of fluid through said bore; and

operator means operably connected with said flow closure element for effecting movement of said flow closure element to and from the open and closed position, said operator means spacing said annular resilient seal and said flow closure element from sealable engagement prior to moving said flow closure element from the closed to the open position wherein the valve apparatus controls the flow of fluid.

3,901,322

FIRE EXTINGUISHER DISCHARGE HORN

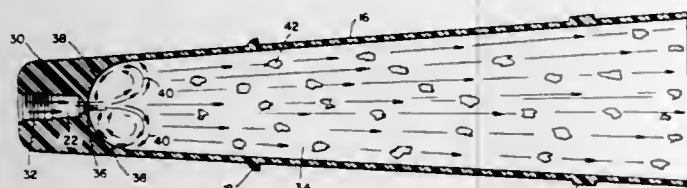
Jack Winston, San Francisco, Calif., assignor to Brooks Equipment Co., Inc., San Francisco, Calif.

Filed Nov. 1, 1973, Ser. No. 411,973

Int. Cl. A62c 13/32

U.S. Cl. 169-43

6 Claims



1. A method for expanding relatively high velocity carbon dioxide into relatively low velocity carbon dioxide gas and snow comprising the steps of:

injecting the relatively high velocity carbon dioxide into a shaped expansion chamber comprising a discharge horn having a small orifice at one end, a generally hemispherically shaped diverging nozzle section extending outwardly from the orifice, and an outwardly expanding open-ended tapered section contiguous with the nozzle section, said high velocity carbon dioxide being injected into the diverging nozzle section through the orifice;

recirculating the carbon dioxide in the hemispherically shaped diverging nozzle section of the shaped expansion chamber to expand said carbon dioxide into a mixture of carbon dioxide gas and snow, said recirculating increasing the turbulence and lowering the velocity of said carbon dioxide gas and snow; and

dispensing the recirculated carbon dioxide gas and snow from the open end of the tapered section of the expansion chamber, said turbulent, low velocity gas and snow being less subject to entrainment of ambient air.

3,901,323

HOUSING FOR A DRAFT CONTROL LINKAGE

Otto Mueller, Jr., Detroit, Mich., assignor to Massey-Ferguson, Inc., Detroit, Mich.

Continuation-in-part of Ser. No. 189,662, Oct. 15, 1971, abandoned. This application July 9, 1973, Ser. No. 377,850

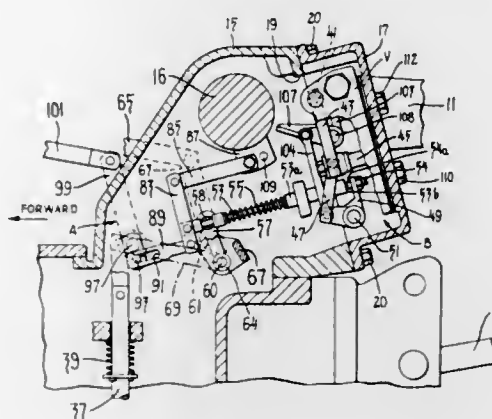
Int. Cl. A01b 63/112

U.S. Cl. 172-7

1 Claim

1. In a tractor having a draft linkage for connecting the tractor to an implement, hydraulic means for raising and lowering said draft linkage, draft sensing means for measuring changes in draft loads applied to said draft linkage, control means coupled to said draft sensing means and including a control valve connected to said hydraulic means for control-

ling the actuating of the hydraulic means in response to said draft sensing means, a housing having a main part and a detachable part with means for securing said detachable part to said main part on assemblage, characterized by said control means being divisible into two portions, one of said portions being mounted on said detachable part in operative relation with said control valve also mounted on said detachable part, said portions remaining in position in the divisible condition and being movable in and out of assemblage with the main



part, support means supporting the portion of said control means mounted on said main part and the portion of said control means mounted on said detachable part, on said main part and on said detachable part respectively, to permit movement of said portions into and out of engagement with each other when said main part and said detachable part are in and assembled condition, and resilient means included in said control means for biasing said portions of said control means toward contact with each other when said main part and said detachable part are in an assembled condition.

3,901,324

METHOD AND APPARATUS FOR REPLACING DAMAGED TURF

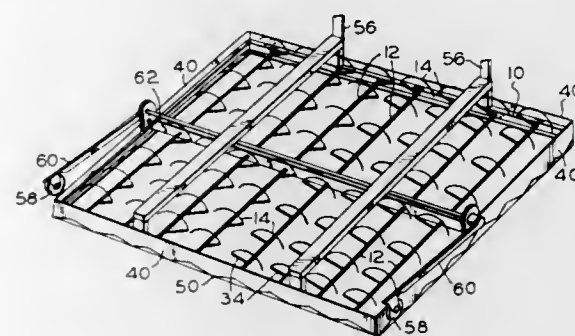
Floyd L. Fisher, Lake Oswego, Oreg., assignor to Hy-Play Corporation, Portland, Oreg.

Filed Jan. 30, 1974, Ser. No. 437,909

Int. Cl. A01B 45/04

U.S. Cl. 172-19

4 Claims



1. Apparatus for lifting and transporting section of sod (turf) of substantial size, comprising:

a frame,

a plurality of shafts rotatably carried on said frame,

a plurality of semicircular tines mounted on said shafts (frame) for rotation about horizontal axes coincident with the axis of curvature of said tines,

said shafts (tines) being carried on said frame in such position that upon rotation of said shafts the tines are (may be) rotated from a retracted position spaced above the surface of the sod to a sod engaging position wherein said tines penetrate the sod,

(and) means mounted on said frame for rotating said shafts to rotate said tines between said retracted and sod engaging positions,

knife means,

means mounting said knife means on said frame for vertical movement between a first position beside said frame and a second position below said frame to cut the sod on which said frame is positioned,

and means connected to said knife means for effecting movement of said knife means between said positions.

3,901,325

CULTIVATOR HAVING A FLOATING PLANT GUARD

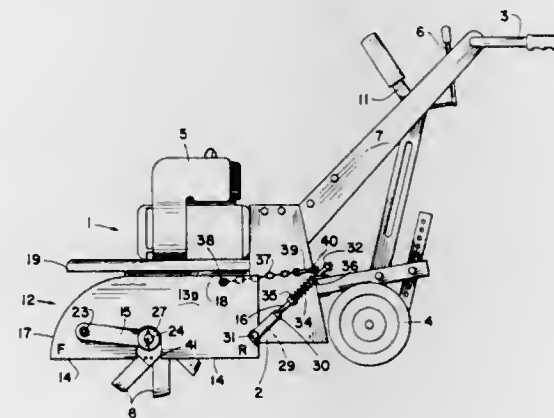
Harold W. Richards, P.O. Box 4, Rantoul, Kans. 66079

Filed Oct. 7, 1974, Ser. No. 512,740

Int. Cl. A01b 33/16, 39/26

U.S. Cl. 172-81

12 Claims



1. For use in combination with a cultivator having a frame with wheels thereon whereby the cultivator rolls along the ground over a path to be cultivated and also having attached soil disrupting members for tilling the soil as the cultivator moves along said path, a floating plant guard attachment comprises floating shield plates adapted for location toward each side of said cultivator on the outside of said soil disrupting members, said floating shield plates having an elongated lower edge for light contact with the ground, the front ends of said plates being upwardly pivotable with respect to said frame, and further including means associated with said frame for resiliently urging each of said plates in a direction pivoting said front ends upwardly as the cultivator moves along the path to be cultivated.

3,901,326

EARTHWORKING IMPLEMENT TOOL ASSEMBLY

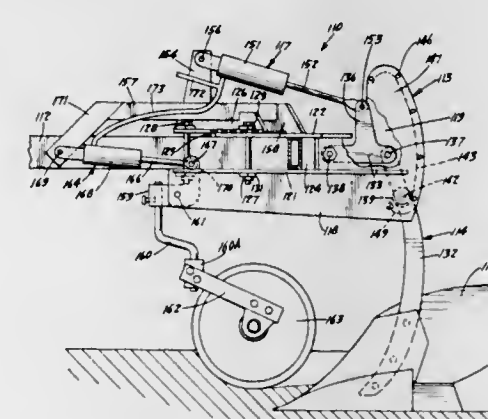
Cletus J. Geurts, Gibson City, Ill., assignor to Geurts, Inc., Minneapolis, Minn.

Division of Ser. No. 124,753, March 16, 1971, Pat. No. 3,760,882, which is a continuation-in-part of Ser. No. 486,712, Sept. 13, 1965, Pat. No. 3,642,074. This application Sept. 21, 1973, Ser. No. 399,287

Int. Cl. A01b 61/00

U.S. Cl. 172-264

36 Claims



1. In an earthworking implement having a beam: support means secured to the beam, said support means including a pair of generally upright and laterally spaced plate means, an

earthworking tool, mounting means connecting said tool to said plate means, said mounting means including a generally upright section attached to the tool and a generally horizontally directed section having a portion located between the plate means, pivot means pivotally connecting the portion of the generally horizontally directed section to said plate means for pivotal movement of the mounting means about a transverse axis, upwardly directed arm means secured to the generally horizontally directed section of the mounting means and biasing means located generally above the mounting means connected to the arm means and the support means continuously biasing the mounting means to yieldably hold the earthworking tool in an earthworking position and to allow the tool to be moved toward a release position when striking an obstruction and to force the tool to the earthworking position as soon as the tool passes over the obstruction.

3,901,327

APPARATUS FOR SUPPORTING FARM IMPLEMENTS FOR WORKING AND TOWING

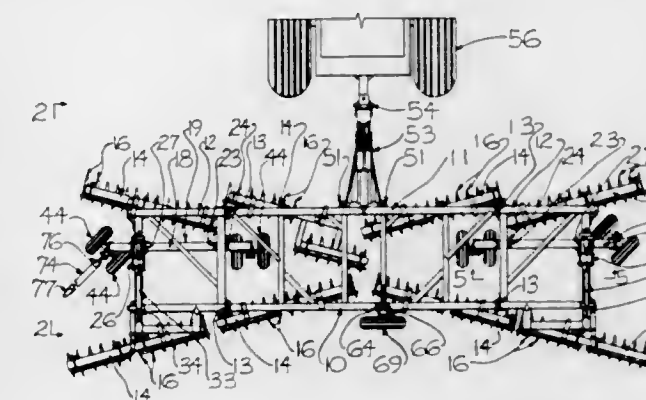
James L. Mitchell, Meridian, Miss., assignor to Midland Manufacturing Company, Inc., Electric Mills, Miss.

Filed Mar. 25, 1974, Ser. No. 454,561

Int. Cl. A01B 63/22

U.S. Cl. 172-413

11 Claims



1. Apparatus for supporting farm implements selectively for working and towing:

a. an elongated frame disposed to support farm implements in a working position with the longer dimensions of said elongated frame extending transverse to the direction of travel for working,

b. a working tongue connected to and projecting laterally from a side of said elongated frame for drawing said frame in said direction of travel for working,

c. at least one elongated rock shaft carried by said elongated frame with said rock shaft extending longitudinally of said elongated frame,

d. means connecting said rock shaft to said elongated frame for pivotal movement in a vertical plane extending transversely of said elongated frame,

e. a depending leg member mounted adjacent each end of said rock shaft for lateral pivotal movement relative thereto,

f. at least one wheel unit carried by each said leg member and adapted for lateral pivotal movement relative thereto about a pivot axis located forwardly of the axis of rotation of a wheel carried by said wheel unit and being movable selectively with said depending leg member to a first position with the pivotal axis of said wheel unit being generally vertical and to a second position with the pivot axis of said wheel unit being in a non-vertical position so that said wheel unit is free to pivot laterally relative to said supporting frame while in said first position and is held against lateral pivotal movement while in said second position whereby said wheel unit supports said elongated frame for movement selectively in said direction of travel for working and in other selected directions including a direction perpendicular to said direction of travel

- for working with said elongated frame traveling lengthwise,
 g. means retaining said rock shaft at selected pivotal positions relative to said elongated frame do that said elongated frame and the implements carried thereby are supported at selected elevations, and
 h. means operatively connecting a towing tongue to one end of said elongated frame for towing said frame lengthwise.

3,901,328

IMPLEMENT MOUNTING ARRANGEMENT FOR EARTHMOVING EQUIPMENT

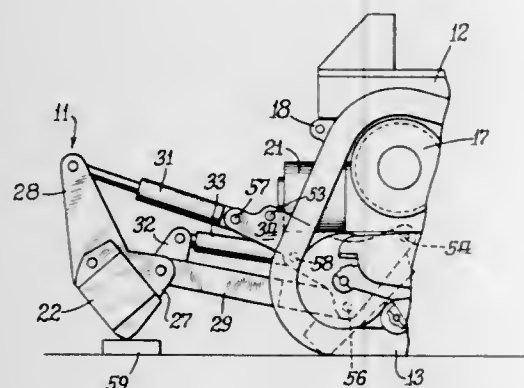
Glenn H. Stanfield, Joliet, Ill., assignor to Caterpillar Tractor Company, Peoria, Ill.

Filed Oct. 7, 1974, Ser. No. 512,197

Int. Cl.² B62D 21/12

U.S. Cl. 172-699

13 Claims



1. In an earthmoving vehicle having frame means, mounting means for mounting a ripper attachment to said frame means, said mounting means including a pair of laterally spaced-apart bracket means removably mounted upon said frame means by pin means, said pair of bracket means having a plurality of pin-receiving aperture means for receiving other pin means for placement of said pin receiving aperture means in aligned disposition with aperture means of said ripper attachment for receiving said other pin means to connect said ripper attachment to said pair of bracket means, a ripper attachment, said ripper attachment pinned to said bracket means at said pin receiving aperture means and selectively pivotable as a unit with said mounting means for pivoting about some pins of said first stated pin means toward and away from a portion of said earthmoving vehicle upon removal of all but said some pins of said first stated pin means to provide access to said portion without complete removal of said ripper attachment from said earthmoving vehicle.

3,901,329

BULLDOZER STABILIZER LINKAGE

Larry G. Eftefield, Joliet, Ill., assignor to Caterpillar Tractor Company, Peoria, Ill.

Filed June 28, 1974, Ser. No. 483,914

Int. Cl.² E02F 3/76

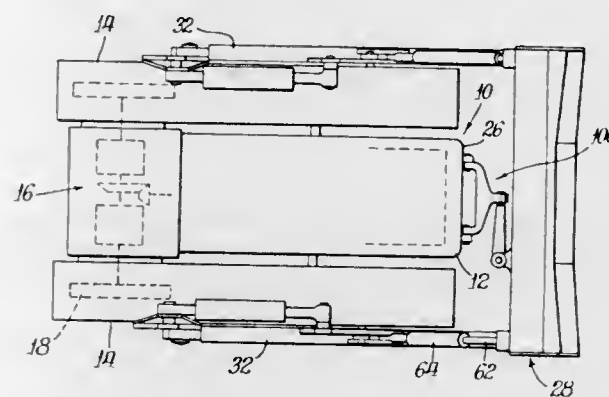
U.S. Cl. 172-804

6 Claims

1. In an earth-working vehicle having a frame, a pair of push arms pivotally secured at one end to the frame, a blade pivotally secured to the push arms at the ends thereof remote from their pivotal connection to the frame and just forwardly of the front end of the frame, and blade stabilizing means interconnecting the blade and the frame for minimizing lateral movement of the blade with respect to the frame, the improvement wherein said stabilizing means comprise:

- a single first link pivotally secured to the frame front end for movement about a first pivot axis;
- a second link pivotally connected to the blade for move-

ment about a second pivot axis transverse to said first pivot axis; and



means connecting said links to each other for relative universal movement.

3,901,330

ELECTRIC POWER DRIVE ASSEMBLY

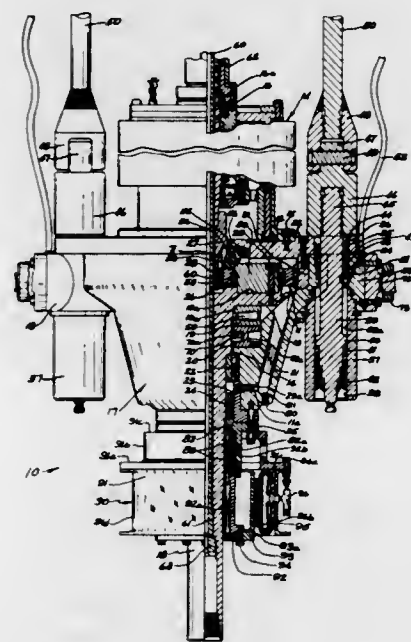
Damon T. Slator, and Cicero C. Brown, both of Houston, Tex., assignors to Brown Oil Tools, Inc., Houston, Tex.

Filed Nov. 21, 1973, Ser. No. 418,065

Int. Cl.² E21B 19/16

U.S. Cl. 173-57

10 Claims



1. A rotary drive assembly for rotating tubular members comprising:

- a. motor means for developing rotary power in said assembly;
- b. an axially extending rotatable stem means rotatably powered by said motor means; and
- c. friction braking means included in said assembly for selectively stopping and/or retaining said stem means at a fixed angular position about its axis.

3,901,331

SUPPORT CASING FOR A BORING HEAD

Branko Djurovic, Clkchy, France, assignor to Societe Anonyme de Compagnie Francaise des Petroles, Paris, France

Filed Dec. 3, 1973, Ser. No. 420,838

Claims priority, application France, Dec. 6, 1972, 72.43343

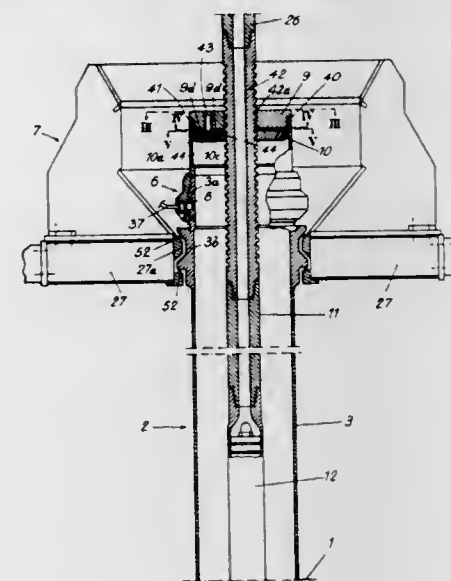
Int. Cl.² E21B 43/01, 7/12

U.S. Cl. 175-171

13 Claims

3. Drilling apparatus comprising:

- a. a mobile drilling head having bearing recesses in its inner wall;
- b. an immobile casing extending upwardly from said mobile drilling head;
- c. a drilling bit;
- d. a pipe string rigidly connected to said drilling bit and extending upwardly through said immobile casing



- e. means for coupling the upper portion of said immobile casing to said pipe string;
- f. a plurality of retractable arms mounted on said drilling bit in a position to cooperate with corresponding bearing recesses in said mobile drilling head to rigidly connect said mobile drilling head to said drilling bit.

3,901,332

APPARATUS FOR REMOVING DETRITUS FROM DRILL HOLES

Otmar Ebner, and Franz Ebner, both of Milano, Italy, assignors to Gebr. Boheler & Co. Aktiengesellschaft, Vienna, Austria

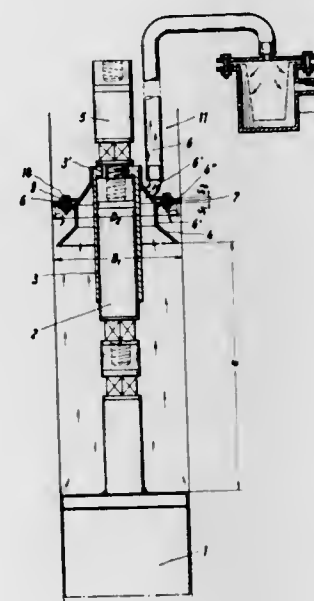
Filed Dec. 22, 1972, Ser. No. 317,722

Claims priority, application Austria, Dec. 23, 1971, 11063/71

Int. Cl. E21b 21/00

U.S. Cl. 175-209

8 Claims



1. In an axially impacting boring mechanism for forming large bores in stone, an improved mechanism for removing boring detritus from the bore during the operation of the boring apparatus, comprising

- a boring tool affixed to the forward end of a drill rod string; pneumatic means operatively connected to a rearward end of the drill rod string for advancing it into said bore; means operatively connected to the drill string for discharging compressed air into the bore adjacent the bottom thereof;
- a bell member having an opening facing the bottom of the bore hole for receiving detritus, said bell member further having
- a. a cylindrical side surface on which a stressed resilient circular sealing plate is mounted, and
- b. a tapered portion above said cylindrical side surface tapering inwardly away from said side surface to which the drill rod string is rotatably movably and axially non-movably mounted, and to which a flexible hose is secured for removing detritus received by said bell member; said plate sealingly engaging the wall of the drill bore, and spanning the entire opening between the wall of such bore and the drill rod string for trapping the compressed air introduced by said discharging means between the bottom of the bore hole and the plane of said sealing plate so that said trapped compressed air, acting alone, is effective to propel the detritus from the bottom of the bore into the opening of the bell member, said sealing plate further being effective to prevent the escape of any upwardly propelled detritus that is not received in the opening of the bell.

3,901,333

DOWNHOLE BYPASS VALVE

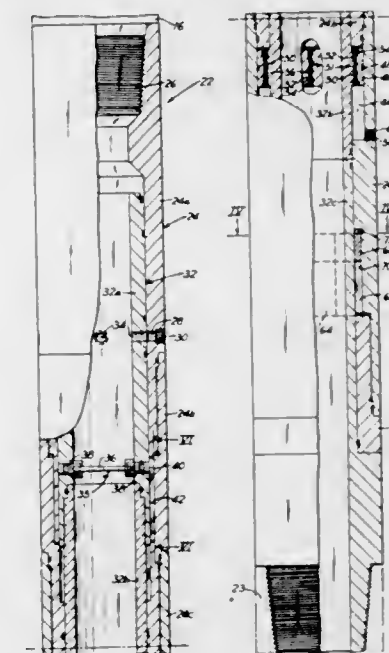
Ernest A. Mori, Pittsburgh, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Oct. 29, 1974, Ser. No. 518,299

Int. Cl.² E21B 17/04, 41/00

U.S. Cl. 175-242

10 Claims



1. A downhole bypass valve for positioning in a drill string above the drill bit comprising a tubular member adapted to be connected in and to form a part of the drill string, said tubular member having a longitudinal opening therethrough, a port extending laterally through the tubular member, a mandrel slidable in the tubular member between an upper position and a lower position, said mandrel having a longitudinal opening therethrough and extending below the lower end of the tubular member for suspension of the drill bit, a lateral opening through the mandrel positioned for uncovering the port when the mandrel is in the upper position and covering the port when the mandrel is in the lower position, a cut-off valve mounted in the mandrel below the lateral opening for movement from a closed position closing the longitudinal opening through the mandrel to an open position, cam means adapted

to operate the cut-off valve to open the cut-off valve when the mandrel is at the lower position and close the cut-off valve when the mandrel is at the upper position, and means preventing rotation of the tubular mandrel relative to the tubular member.

3,901,334

EGG WEIGHING APPARATUS

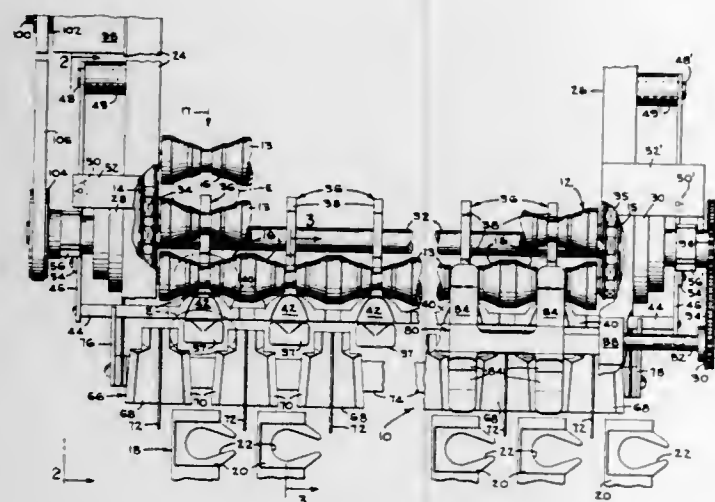
Boyd W. Rose, Riverside, Calif., assignor to FMC Corporation, San Jose, Calif.

Filed July 5, 1974, Ser. No. 486,138

Int. Cl. G01g 13/00

U.S. Cl. 177-52

12 Claims



1. An apparatus for weighing eggs as they are transferred from the discharge end of a delivery conveyor to an egg receiving pocket, said apparatus comprising

a ramp positioned adjacent the discharge end of the delivery conveyor and having an inclined egg supporting surface for receiving eggs from said delivery conveyor and guiding them in a downward direction,

a weighing cradle positioned adjacent the lowermost end of the ramp for receiving eggs from the ramp;

scale means supporting said weighing cradle;

a track positioned between the weighing cradle and the egg receiving pocket for receiving eggs from said cradle and guiding them to said pocket;

a rotary sweeper positioned above said ramp, weighing cradle and track, said sweeper being comprised of a plurality of spaced pusher arms with each arm being arranged to engage the leading face of an egg to limit the rate of roll of the egg down the ramp and to simultaneously engage the trailing face of an egg to push the egg from the weighing cradle along the track towards the egg receiving pocket; and

means for moving said ramp downwardly in timed relationship with the movement of the delivery conveyor and the sweeper so that each egg passing over said ramp will be positioned on said weighing cradle for a period of time free from contact by the pusher arms of the sweeper and the ramp.

3,901,335

ENDLESS TRACK VEHICLE AND COOLING SYSTEM THEREFOR

Thomas B. Johnson, Humble, Tex., assignor to Armco Steel Corporation, Middletown, Ohio

Filed Aug. 29, 1974, Ser. No. 501,757

Int. Cl. B62M 27/02; B62K 11/04

U.S. Cl. 180-5 R

16 Claims

1. An endless track vehicle adapted to be driven by a liquid-cooled engine on snow, the combination comprising a vehicle frame;

an endless track having upstanding ribs extending from the outer surface thereof;

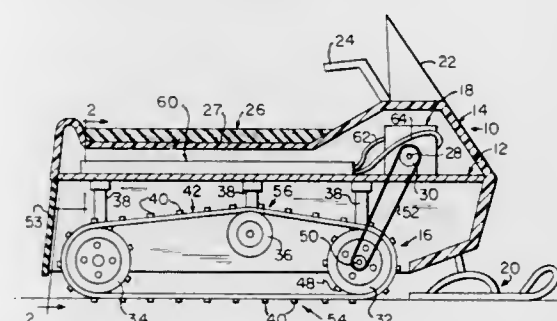
guide means coupled to said frame for guiding said track in orbital movement, said orbital movement including a top run and a bottom run, said bottom run supporting the vehicle on the snow;

a liquid-cooled engine coupled to said frame;

drive means, coupling said endless track and said engine, for driving said endless track in the orbital movement;

heat exchanger means, coupled to said frame, for cooling the liquid used in said engine; and

circulation means for circulating the liquid between said engine and said heat exchanger means,



said heat exchanger means being positioned so that the bottom surface thereof is above and directly communicating with said top run of said endless track and spans substantially the entire width of said top run and spans substantially the entire length of said top run so that the bottom surface of said heat exchanger means is cooled via contact with convection currents of air generated by the movement of said ribs with the orbital movement of said endless track and contact with streams of water, ice and snow thrown by said ribs during the orbital movement of said endless track.

3,901,336

DRIVE UNIT FOR CRAWLER VEHICLE

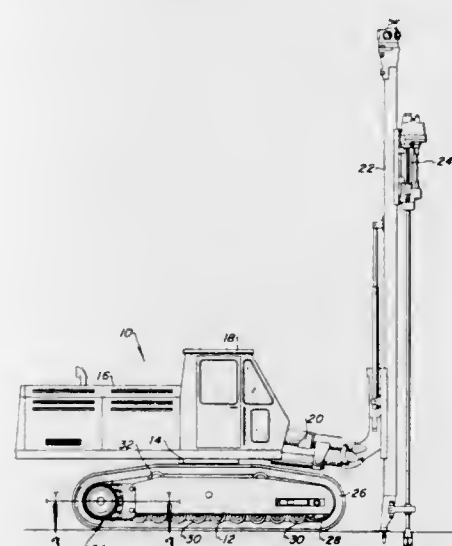
Harry Bendure, Coffeyville, Kans., assignor to Gardner-Denver Company, Dallas, Tex.

Filed Mar. 13, 1974, Ser. No. 450,637

Int. Cl. B62D 11/00

U.S. Cl. 180-6.48

8 Claims



1. A drive unit for driving a flexible track assembly on a crawler vehicle comprising spaced apart track support frames for supporting respective flexible track assemblies thereon, said drive unit comprising:

a housing mountable on a track support frame of said vehicle and constructed in such a way as to provide for mounting said drive unit on either track support frame of said vehicle, said housing including two spaced apart legs; a drive sprocket rotatably supported on said housing between said spaced apart legs and engageable with said track assembly, said drive sprocket comprising two oppo-

sitely facing hubs spaced apart one from the other to form an enclosed space between said hubs;

a speed reduction gear train disposed in said enclosed space formed between said hubs;

an enclosed portion of said housing formed by one of said legs and a member removably attached to said one leg; and,

additional speed reduction means disposed in said enclosed portion of said housing and drivably connected to said gear train.

3,901,337

WHEEL CHAIRS

Harold Cragg, Birmingham, England, assignor to The Spastics Society, London, England

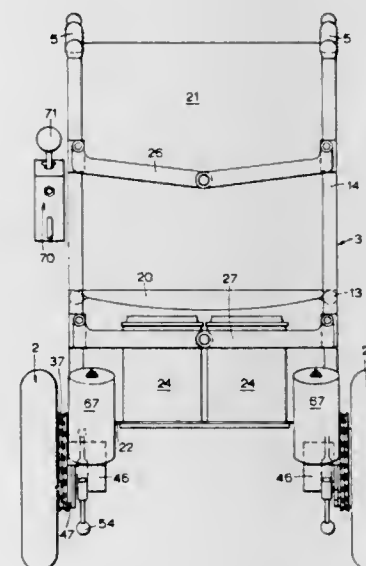
Filed Nov. 22, 1972, Ser. No. 308,790

Claims priority, application United Kingdom, Nov. 24, 1971, 54518/71

Int. Cl. B60k 7/60; B62d 11/04

U.S. Cl. 180-6.5

12 Claims



1. In a wheelchair, electric driving means comprising an electric motor, battery power means connected to said electric motor through control means, drive transmitting means coupled to said electric motor and including an output shaft, a driven pinion on said output shaft, a fixed pinion engageable with said driven pinion, a wheel plate carrying said fixed pinion and supporting a rotatable wheel, a ground-engaging tire supported on said wheel, and said fixed pinion being disposed inwardly of said ground-engaging tire, a mounting bracket mounting said wheel plate on a frame member of the wheel chair, a bushing of said mounting bracket including a suspension media arranged to permit resilient movement of said wheel plate independent of said frame member, and means supporting said drive transmitting means on said wheel plate for relative pivotal movement between two extreme positions in the first of which said driven pinion and said fixed pinion are inter-engaged for driving said wheel on operation of said electric motor, and in the second of which said driven pinion is disengaged to permit free rotation of said wheel.

3,901,338

STEERING DEVICE OF WIRELESS CONTROL TRACTOR

Nobuo Ohnishi, Osaka, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed May 30, 1973, Ser. No. 365,210

Claims priority, application Japan, May 31, 1972, 47-63315; May 31, 1972, 47-63316

Int. Cl. B62d 11/08

U.S. Cl. 180-6.7

3 Claims

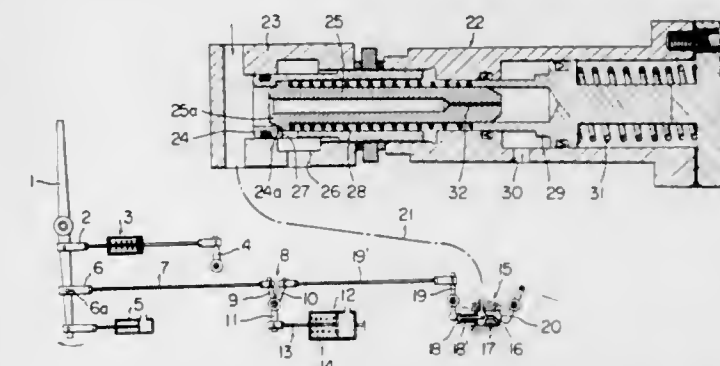
1. A steering device of a wireless control tractor comprising: a turning lever;

a steering clutch connected to said turning lever through a loose spring;

a pneumatic cylinder connected to a source of compressed air and to said turning lever for actuating said turning lever and disengaging said steering clutch in response to pneumatic pressure being supplied to said pneumatic cylinder as a result of said wireless control;

a multiplier having a lever connected to said turning lever through a brake operating linkage and adapted to be operated by said turning lever when said turning lever is actuated by said compressed air;

piston means within said multiplier having a drain hole open to a pressure chamber and contacted with a brake lever of a brake body at one end thereof and a rod for opening and closing the drain hole of said piston means by movement of said multiplier lever;



a spring-biased brake cylinder connected to said brake operating linkage and to said source of compressed air so as to operate said multiplier lever and said rod through means of said brake operating linkage under the tension of said spring only when the supply of said compressed air is shut off; and

slow turning valve means connected to a hydraulic circuit extending from a brake booster and communicating with the pressure chamber of said multiplier and to said compressed air source, for varying the relief set pressure of hydraulic fluid passing through said valve means and being supplied to said multiplier and said brake body between a high value when said supply of compressed air is terminated and a low value when said compressed air is supplied,

whereby said tractor will be rapidly turned when said high pressure fluid is supplied to said multiplier and brake body and will be slowly turned when said low pressure fluid is supplied to said multiplier and brake body.

3,901,339

HYDROSTATIC DRIVE-STEER SYSTEM

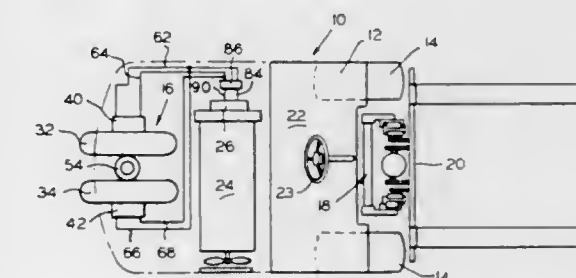
William A. Williamson, Niles, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Filed Apr. 15, 1974, Ser. No. 461,068

Int. Cl. B62d 11/04

U.S. Cl. 180-6.48

12 Claims



1. In a hydrostatic drive-steer system for vehicles having first and second dirigible drive wheels mounted for dirigible movement about a common vertical axis, hydraulic first and second motors for driving respective ones of said wheels, a

first hydraulic drive circuit connected to the first motor and a second hydraulic drive circuit connected to the second motor, means for supplying pressure fluid to said first circuit in a volume substantially equal to and independent of the pressure fluid which it supplies to said second circuit, and means for transferring a unit volume of fluid from said first circuit to said second circuit to effect a differential wheel speed whereby to cause the wheels to turn about said vertical axis, said latter means comprising a conduit connecting said first circuit to said second circuit and an operator operated device in said conduit for transferring said fluid unit volume from said first circuit to said second circuit.

3,901,340

STEERING BY DRIVING CONTROL LINKAGE

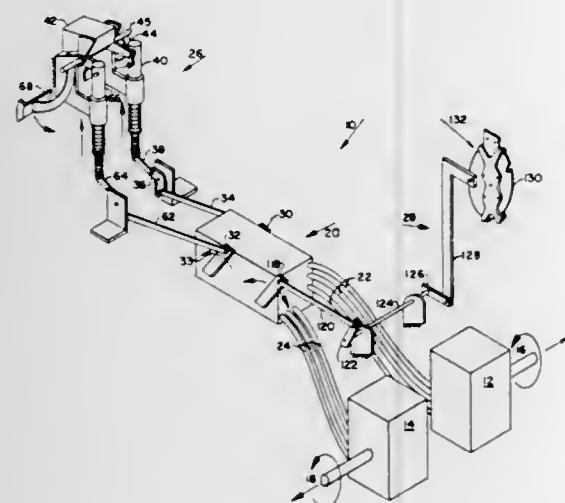
Alfred Sigmund Smemo, Dubuque, Iowa, assignor to Deere & Company, Moline, Ill.

Filed May 1, 1974, Ser. No. 465,991

Int. Cl.² B62D 11/04

U.S. Cl. 180—6.48

6 Claims

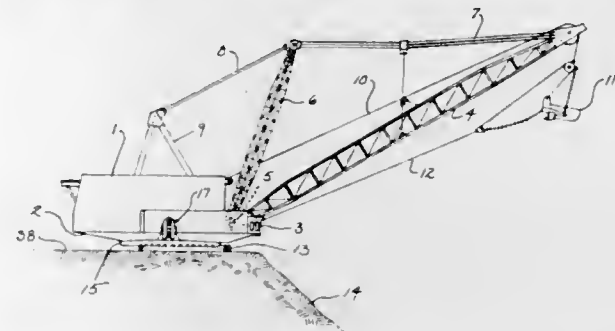


1. A manually operable steering control linkage means for controlling a valve for selectively retarding the speed of a pair of hydrostatic transmission units comprising: a fixed support member; said linkage means including similar first and second sets of linkages; each of said sets of linkages including an elongate member reciprocally mounted in said fixed support member for movement between first and second positions for controlling a respective one of the transmission units; variable resistance means connected to said elongate member for providing a substantially constantly increasing force resisting movement of the elongate member from the first position to a predetermined third position intermediate the first and second positions and for then providing a step increase in force resisting further movement of the elongate member towards said second position and then for providing a constantly increasing force resisting movement of the elongate member as it is moved toward said second position; and the movement of each of the elongate members from the first to the third position being selected so as to effect increased slowing of a respective one of the transmission unit, the third position of the elongate member corresponding to a stalled condition in the transmission unit and movement of the elongate member from the third to the second position being selected so as to effect a reversal in the direction of rotation of the transmission unit.

3,901,341
TRACTION MECHANISM
Erwin F. Stoldt, Farmington, N. Mex., assignor to Bucyrus-Erie Company, South Milwaukee, Wis.
Filed July 9, 1973, Ser. No. 377,588
Int. Cl.² B62D 57/02

U.S. Cl. 180—8 D

5 Claims



1. In a walking mechanism for a mobile machine, such as an excavator, having:
 - i. a base for stationary support of the machine;
 - ii. a shoe for supporting said machine when said base is lifted and horizontally translated to transport said machine from one location to another; and
 - 2 iii. a rotary walking shaft extending from said base for lifting and horizontally translating said base and said shoe relative to one another through a cycle of motion having both vertical and horizontal components;
 the improvement therein comprising:
 - a. a rotary cam on said walking shaft for rotation therewith that has a non-circular cam surface which is orbited about said walking shaft;
 - b. a frame on said shoe with a lengthwise slot;
 - c. a crank pin rotated with said rotary cam about said walking shaft with the distance between the crank pin and walking shaft centers forming a crank arm, said crank pin engaging said slot for imparting one of said components of motion upon rotation of said walking shaft; and
 - d. follower roller means carried by said shoe to engage said rotary cam and impart said other of said components of motion upon rotation of said walking shaft.

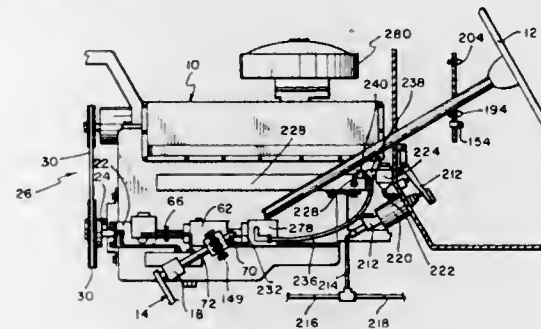
3,901,342
HYDRAULIC POWER BRAKE SYSTEM
INCORPORATING AUXILIARY MEANS FOR DRIVING THE PUMP THEREOF

Harold D. Nunn, Jr., 324 W. Cleveland, Pratt, Kans. 67124
Continuation of Ser. No. 27,092, April 9, 1970, abandoned.
This application June 28, 1973, Ser. No. 374,689

Int. Cl. B62d 5/06

U.S. Cl. 180—79.2 R

2 Claims



1. In an automobile having a control system of the type including a vacuum actuated brake booster means for augmenting a force applied to a controlled member from a brake pedal, and including an internal combustion engine that is operatively connected to the booster means to supply a vacuum pressure to the latter during engine operation; the combination therewith of auxiliary means including an electric motor operatively connected to said booster means for supplying

a vacuum pressure to the latter during operation of the electric motor, said electric motor being normally deenergized and inoperative, means responsive to a manual force applied to the control element exceeding a predetermined amount for initiating and sustaining energization and operation of said electric motor, whereby the supply of vacuum pressure is sustained upon cessation of engine operation, said engine being of the reciprocating piston type and having an intake manifold, said operative connection of the engine to the booster means comprising a duct connected between the intake manifold and the brake booster means for fluid pressure communication therebetween, said auxiliary means including a vacuum pump operatively connected to the electric motor and having its intake connected to said duct, said duct being provided with a unidirectional valve between its connections to the intake manifold and the vacuum pump for preventing fluid flow in the duct from the intake manifold to the vacuum pump, said means for initiating and sustaining operation of the electric motor comprising an electric relay means that includes a solenoid and first and second normally open electric relay switches that are closed during energization of the solenoid, a source of electrical energy, said electric motor being connected to said source of electrical energy in electrical series with the first electric relay switch, a normally open electric brake pedal switch together with means for closing such electric brake pedal switch in response to a manual force applied to the brake pedal in excess of a predetermined amount, said second electric relay switch and said electric brake pedal switch being in electrical parallel, and said solenoid being connected to said source of electrical energy in electrical series with the electrically paralleled second relay electric switch and the electric brake pedal switch, said automobile being provided with a power steering system of the type that includes a hydraulic pump, unidirectional drive means connecting the engine to drive the hydraulic pump, and unidirectional drive means drivingly connecting the electric motor to the hydraulic pump, whereby both the vacuum pump and the hydraulic pump are concurrently driven by the electric motor, and wherein the steering system includes a manually operated steering wheel coupled to a steering shaft, a normally open electric steering switch, means responsive to the application of a manual force upon the steering wheel effective to produce a torque in the steering shaft in excess of a predetermined value for closing said electric steering switch, and said electric steering switch being in electrical parallel with the electric brake pedal switch, whereby said solenoid is energized upon closure of either the electric brake pedal or electric steering switches.

3,901,343
VEHICLE POWER STEERING CONTROL SYSTEM
Naohiko Inoue, Yokohama, Japan, assignor to Nissan Motor Company Limited, Yokohama, Japan
Filed Nov. 9, 1973, Ser. No. 414,407
Claims priority, application Japan, Nov. 15, 1972, 47-113845

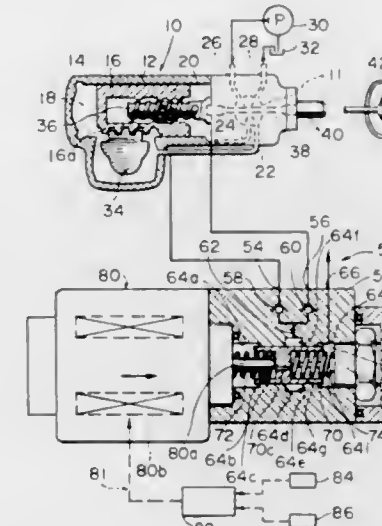
Int. Cl.² B62D 5/08

U.S. Cl. 180—79.2 R

5 Claims

1. A power-assisted steering control system for a motor vehicle having a source of pressurized fluid and a fluid reservoir and comprising:
a steering gear defining therein a chamber;
at least one fluid operated steering assistance actuator operatively disposed in said chamber and separating said chamber into first and second chambers;
a valve to selectively connect either one of said first and second chambers with said source of pressurized fluid;
a fluid pressure control valve selectively connecting either one of said first and second chambers with said fluid reservoir and having therein a movable flow control member to control the amount of the fluid flow flowing from said either one of said first and second chambers into said fluid reservoir; and

an electrical actuator responsive to signals indicative of at least one of the vehicle speed and the gradient of the road surface on which the vehicle is driven and having a mechanical actuating member operatively connected with



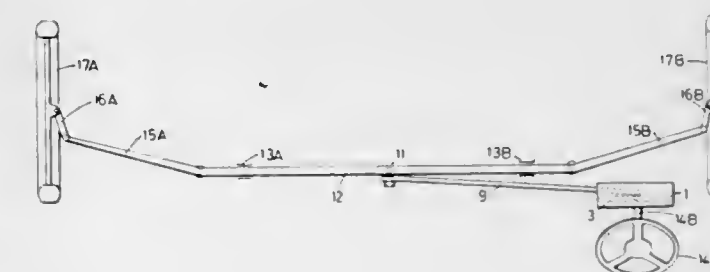
said movable flow control member, said mechanical actuating member being moved substantially proportionally to the degree of at least one of the vehicle speed and the gradient.

3,901,344
VEHICLE STEERING SYSTEM
Frederick John Adams, Campton, England, assignor to Cam Gears Limited, Hitchin, England
Filed Jan. 29, 1974, Ser. No. 437,670
Claims priority, application United Kingdom, Feb. 13, 1973, 7086/73

Int. Cl. B62d 3/12, 5/06

U.S. Cl. 180—79.2 R

8 Claims



1. A vehicle steering system comprising a pinion connected for rotation with a steering column, a toothed sector meshingly engaged by the pinion and supported for rotation thereby about an axis, and a steering linkage for effecting movement of steerable road wheels, said steering linkage including a first member pivotally connected to the sector at a predetermined radial distance from the axis of rotation of the sector, a second member pivotally connected to said first member, means for constraining said second member for substantially translational motion whereby rotation of said sector with said first member connected thereto imparts substantially translational motion to said second member, and means connecting said second member to a pair of steerable road wheels to impart angular motion to said road wheels in response to translational motion of said second member.

3,901,345

INSTALLATION FOR INCREASING THE SAFETY OF THE OCCUPANTS OF AN AUTOMOBILE VEHICLE

Walter Fleni, Paris, France, assignor to Societe Anonyme Francalse du Ferodo, Paris, France

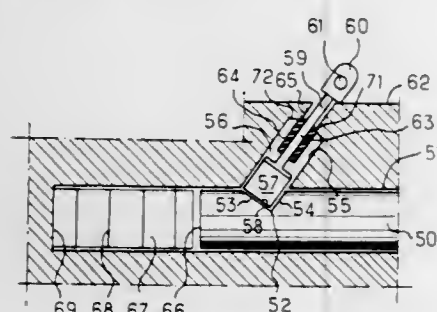
Filed May 21, 1973, Ser. No. 362,042

Claims priority, application France, May 23, 1972, 72.18286

Int. Cl.² B60R 21/10

U.S. Cl. 180—91

3 Claims



1. An installation for protecting a vehicle occupant maintained on his seat by a restraining belt in the event of an impact, comprising a shock absorber mounted on said vehicle, said shock absorber forming a part of the vehicle structure; and means for varying the damping conditions of the shock absorber as a function of a factor representing the tension of said belt, means contributing to absorption of the impact, said means being immobilized as long as the tension of the restraining belt does not exceed a predetermined value; a sliding member being connected to and projecting from the shock absorber; an anchoring device of the belt for locking said sliding member into position; said sliding member having a notch therein, an immobilization member engageable in said notch and being formed integral with a yoke anchoring device for the restraining belt and adapted to be separated from the notch upon crushing of an elastic material in said immobilization member.

3,901,346

SAFETY BUMPER FOR A DRIVERLESS VEHICLE

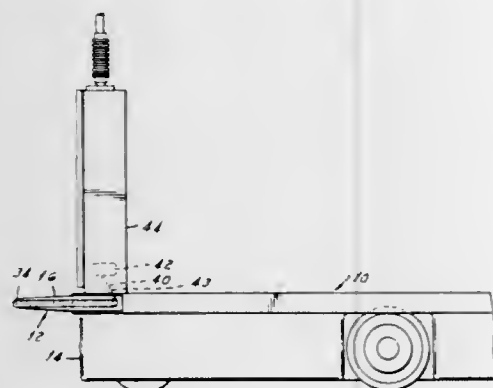
James P. Kohls, Petoskey, and Robert J. Borgman, Harbor Springs, both of Mich., assignors to Jervis B. Webb Company, Detroit, Mich.

Filed Sept. 26, 1973, Ser. No. 400,786

Int. Cl. B60k 27/08; B60r 19/10

U.S. Cl. 180—96

10 Claims



1. A safety bumper for a driverless vehicle having control means operable to stop the vehicle in response to contact between the bumper and an obstacle, wherein the improvement comprises:

a bumper assembly including a bumper member formed of resiliently deformable foam-like material having a substantially uniform sectional composition and deformability, said bumper member having a continuous outer periphery;

a collision sensing element mounted on said outer periphery of the bumper member for engagement with an obstacle, said sensing element comprising a resilient fluid conduit having a flexibility relatively greater than that of the bumper member so as to be deformable and create a change in the fluid pressure to said fluid conduit prior to substantial deformation of the bumper member on contact between the bumper assembly and an obstacle, and,

a control element operable in response to said change in the fluid pressure in said fluid conduit, the control element being operatively connected with said control means.

3,901,347

VEHICLE CONTROL SYSTEM

Edward Lawrence Horrey, and Barry Keith Atkins, both of Sheerness, England, assignors to Waso Limited, Sheerness, England

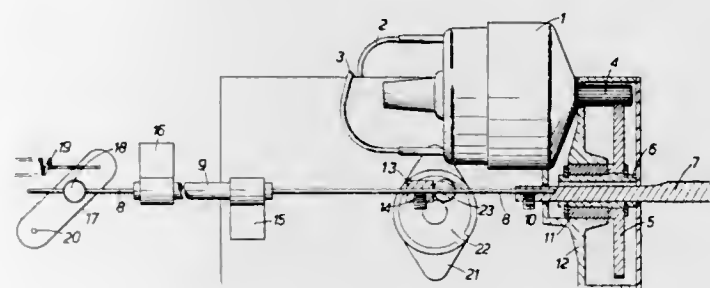
Filed July 9, 1973, Ser. No. 377,624

Claims priority, application United Kingdom, July 12, 1972, 32659/72

Int. Cl.² B60R 25/04

U.S. Cl. 180—114

10 Claims



1. A vehicle control system comprising: a manually operated control switch; an auxiliary device adapted to operate in response to actuation of the control switch, said auxiliary device being adapted to control a fuel supply system of the said vehicle said device comprising an electric motor, a member in mechanical engagement with and driven by said electric motor, the arrangement being such that the member is driven to one position when said control switch is in one condition, and is driven to another position when said control switch is in another condition, and a control valve incorporated in the fuel supply system of the vehicle, the driven member being connected to said control valve so that the control valve is closed when said driven member is in said one position, and is opened when said driven member is in said other position.

3,901,348

PRESSURIZED FLUID FEED SYSTEM FOR FLUID BEARINGS OF MOBILE PALLETS AND THE LIKE

Frank Anthony Maras, Aurora, and Donald Franklin Durham, Peoria, both of Ill., assignors to Caterpillar Tractor Company, Peoria, Ill.

Filed May 24, 1974, Ser. No. 473,137

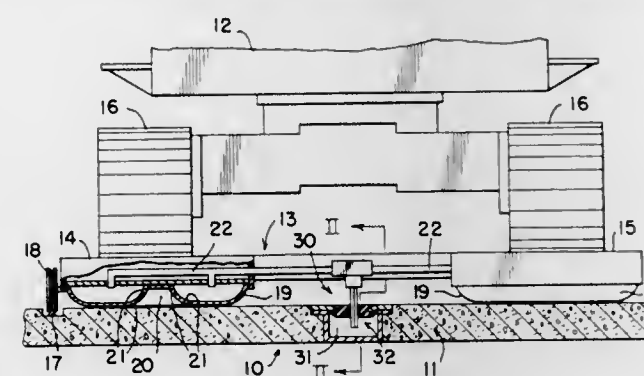
Int. Cl.² B60V 1/00

U.S. Cl. 180—116

10 Claims

1. A system for supplying a continuous low volume flow of high pressure fluid to a mobile pallet or the like during movement thereof along a given path comprising a rigid fluid conducting probe means mounted on and projecting from said pallet or the like and an elongated sealed conduit connected to a source of pressurized fluid and extending along said given path, said conduit having wall means receiving said probe means therethrough and adapted to accommodate relative

sliding movement of said probe means longitudinally with respect thereto while preventing the escape of pressurized



fluid from said conduit other than through said fluid conducting probe means.

3,901,349

GRANULATOR WITH SOUND ABSORBING HOUSING

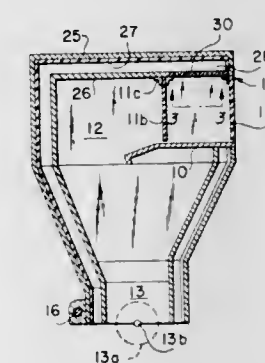
Donald B. DeNoyer, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.

Filed May 20, 1974, Ser. No. 471,793

Int. Cl. E04b 1/99; G10k 11/04

U.S. Cl. 181—33 K

14 Claims



1. A granulator comprising: a housing, a granulating means within the housing, said housing having an entrance means for introducing therein material to be granulated, and at least a portion of the housing comprising a double wall including inner and outer walls forming an air space therebetween, and perforations in the inner wall placing the interior of the housing into open communication with the air space, said perforations being arranged such that at least some of the sound waves passing through are reflected back into the interior of the housing to interfere with newly emitted sound waves of the same frequency, so as to function as a volume resonating muffler.

3,901,350

MUFFLER FOR A ROTOR VEHICLE INTERNAL COMBUSTION ENGINE

Dietmar Löffelhardt, Fellbach, Germany, assignor to J. Eberspacher, Germany

Continuation of Ser. No. 384,067, July 30, 1973, abandoned.

This application Sept. 16, 1974, Ser. No. 506,199

Claims priority, application Germany, June 30, 1972, 2232106

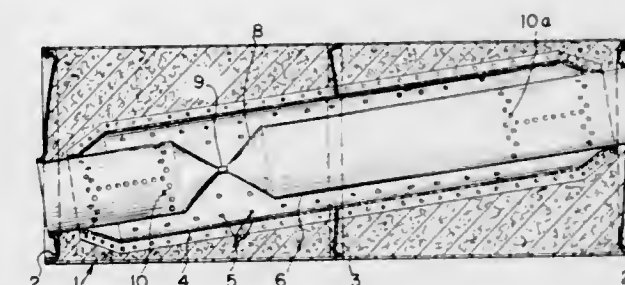
Int. Cl. F01n 1/10

U.S. Cl. 181—50

5 Claims

1. Muffler for an internal combustion engine of a motor vehicle, comprising an axially elongated imperforate tubular muffler housing, said muffler housing including an end member at each of its ends extending transversely of its axial direction and each said end member forming a closure for one end of said muffler housing and having an opening therethrough, an exhaust gas pipe having its axis extending generally in the axial direction of said muffler housing and extending through

and spaced inwardly from said muffler housing, said exhaust gas pipe having an open inlet end and an open outlet end, said open inlet end extending through and forming a closure for the opening in one of said end members of said muffler housing and said outlet end extending through and forming a closure for the opening in the other end of said end member of said muffler housing, said pipe having an axially extending inlet section extending from its inlet end toward said outlet end and an axially extending outlet section extending from its outlet end toward said inlet end and an intermediate section extending from said outlet section toward and spaced from said inlet section, said inlet section of said pipe extending for approximately 1/2 of the axial length of said pipe from one end of said housing and said outlet section extending for approximately 1/2 of the length of said pipe from the other end of said muffler housing, a constriction formed in said pipe between said inlet section and said intermediate section and said constriction forming a narrow flow passage communicating between said inlet section and intermediate section, said inlet section, outlet section and intermediate section having substantially the same diameter, a plurality of openings formed in said inlet section and in said outlet section for affording communication with the space laterally enclosing said exhaust gas pipe and the portions of said inlet section and said outlet section containing said openings extending for a major portion



of the axial length of said inlet section and outlet section, said constriction and said intermediate section consisting of the full axial length of said exhaust gas pipe between said inlet section and outlet section being imperforate, a tubular member positioned within and spaced inwardly from said muffler housing and laterally enclosing said pipe from a location upstream from the openings in said inlet section to a location downstream from the openings in said outlet section, the opposite ends of said tubular member upstream from the openings in said inlet section and downstream from the openings in said outlet section being connected to said pipe within said muffler housing, said tubular member having a plurality of openings therethrough along its axial length from said inlet section to said outlet section of said exhaust gas pipe with the openings communicating between the space between said exhaust gas pipe and said tubular member and spaced between said tubular member and said muffler housing, a sound-absorbing material filled into the space between said muffler housing and said tubular housing, and at least one partition disposed transversely of the axial direction of said muffler housing and extending between said muffler housing and said tubular member intermediate said end members in the range of said intermediate section of said exhaust gas pipe so that said partition divides the space between said muffler and said tubular member into at least two separate axially extending chambers each containing said sound-absorbing material.

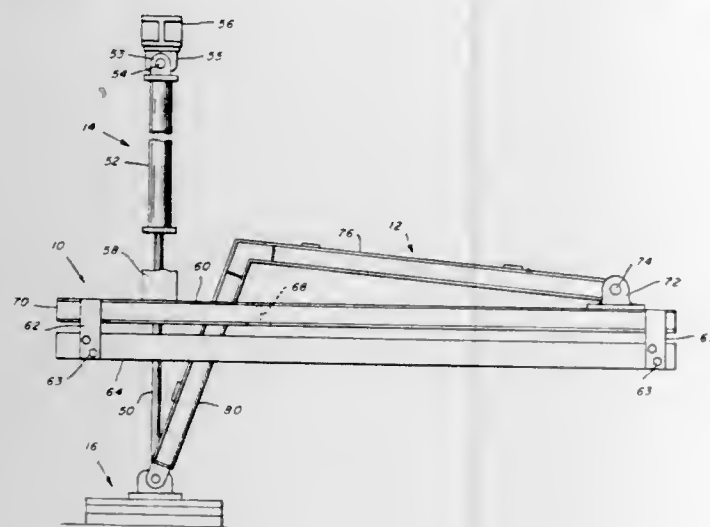
3,901,351

CARRIER FOR SEISMIC EXPLODER

James M. Johnson, P.O. Box 184, Broken Arrow, Okla. 74012
Continuation of Ser. No. 218,347, Jan. 17, 1972, abandoned,
which is a continuation-in-part of Ser. No. 193,053, Oct. 27,
1971, abandoned. This application Aug. 24, 1973, Ser. No.
386,252

Int. Cl. G01v 1/00

U.S. Cl. 181-114



1. A gas exploder system for generating seismic waves in the earth including a transport vehicle, a gas exploder gun having symmetry about a vertical axis, and gun carrier means for supporting said exploder gun, said gun carrier means, comprising:

- an elongated rectangular frame supported on said transport vehicle;
- a substantially isosceles triangular guide frame hinged fastened at its base end to a first end of said rectangular frame by at least two spaced apart hinge means in a substantially horizontal position, about a horizontal axis;
- the apex of said triangular guide frame hinged fastened to said gun above the axis of said gun, said gun positioned near the second end of said rectangular frame;
- hydraulic cylinder means supported with its axis vertical and its closed end uppermost, substantially over said apex and said axis of said gun, the piston rod of said cylinder extending downwardly and hinged connected to said apex and said gun; and
- means to fill said cylinder with pressure fluid.

3,901,352

UNDERWATER REFLECTOR OF SOUND WAVES

Philippe Henri Maurice Cluzel, Six Fours la Place, France,
assignor to Etat Francaise, Paris, France

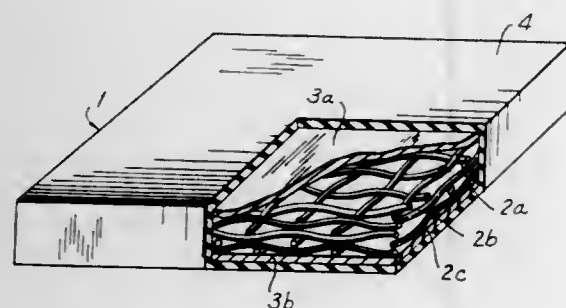
Filed Aug. 5, 1974, Ser. No. 494,909

Claims priority, application France, Aug. 16, 1973,
73.29805

Int. Cl. G10K 11/00

U.S. Cl. 181-175

8 Claims



1. An underwater reflector of acoustic waves adapted for high hydrostatic pressures comprising a sealed enclosure of

flexible, deformable material, at least one mesh element of crossed filaments, and two rigid plates sandwiching the element therebetween to form an assembly, said assembly being hermetically sealed in said enclosure.

3,901,353

DISAPPEARING STAIRWAY

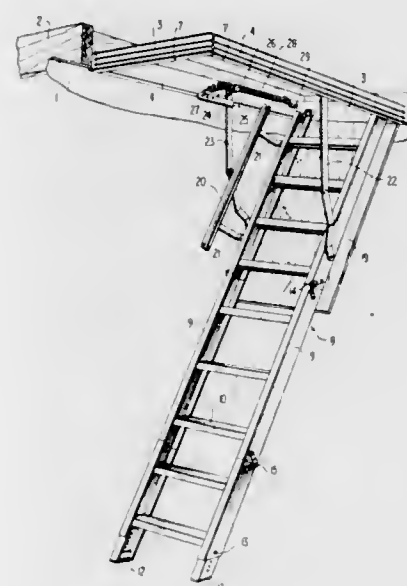
Phil Skolnik, 13131 Alameda Rd., Houston, Tex. 77045

Filed Jan. 14, 1974, Ser. No. 432,841

Int. Cl. E06C 9/00

U.S. Cl. 182-78

4 Claims



1. A disappearing stairway comprising a surrounding frame having front and rear ends and adapted to be mounted in an elevated position, stairs toward the rear end of the frame for pivotally mounting one end of the stairs on the frame, dual bracketing means extending from the rear end of the frame inwardly to a pivotal connection with the hanging means for affording movement of the stairs to an extended position with respect to the frame and to a retracted position above the lower edge of the frame and means for supporting the stairs including a toggle link pivotally connected at one end with the stairs and having the other end extending in overlapping relation with the surrounding frame, means pivotally connecting the toggle link with the surrounding frame spaced from said other end, an arm extending laterally from the toggle link and having one end of the spring connected therewith, and a saddle formed as a unitary fact of said other end of the toggle link and spaced from the pivot thereof and extending inwardly toward the stairs for supporting the spring intermediate its ends.

3,901,354

STEPLADDER STABILIZER

Alex J. Grebausk, 50 Birkett St., Carbondale, Pa. 18407

Filed July 5, 1974, Ser. No. 485,883

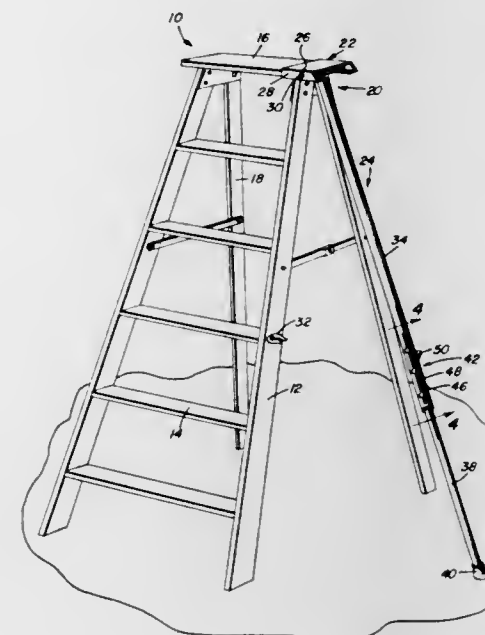
Int. Cl. E06C 1/38, 1/22

U.S. Cl. 182-172

6 Claims

1. In combination with a stepladder having side rails interconnected by rungs and a top platform extending laterally beyond the rails, a leg frame assembly pivotally connected to the platform and a ladder stabilizing assembly, comprising a hinge bracket secured to the platform establishing a pivot axis laterally spaced from the side rails in parallel relation thereto, and elongated leg assembly, and means pivotally connecting the leg assembly to the hinge bracket for pivotal displacement about said pivot axis to a limit position laterally outwardly

from the side rails, said hinge bracket including a top plate, side channels connected to the top plate and slidably received



on the platform, and a pivot pin extending between said side channel along said pivot axis underlying the top plate.

3,901,355

CIRCULATIVE CATERING TABLE

Yoshitaki Shiraishi, No. 68, Chodo 1-Chome, Higashi-Osaka,
Osaka, Japan

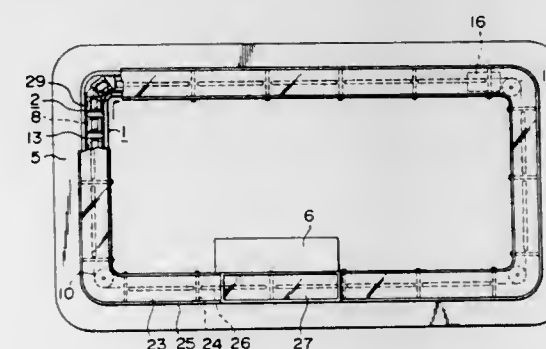
Filed Jan. 14, 1974, Ser. No. 433,056

Claims priority, application Japan, Dec. 10, 1973, 48-
140116

Int. Cl. E04h 3/04

U.S. Cl. 186-1 R

4 Claims



1. A circulative catering table comprising:
a base frame structure having inner and outer side walls defining therebetween an endless circulating path of travel; a fixed fringe table mounted substantially horizontally around the circumference of said outer side wall of said base frame structure; an endless conveyor mounted in said endless circulating path of travel for circulative transferring meals therealong, said endless conveyor comprising a strand of chain movable in and along said endless circulating path of travel and meshed with and driven from a horizontally disposed sprocket wheel which is supported on a vertical shaft, and a series of crescent plates swivable on said chain and having side wings thereof slidably rested on horizontal racks at the upper ends of said inner and outer side walls of said base frame structure in horizontal alignment with each other to provide a planar meal-transferring surface on said endless circulating path of travel; a series of U-shaped meal receiving and dispensing compartments successively secured to the upper surface of said plates of said endless conveyor for individually accommodating dishes or meals to be circulated; driving means mounted on said base frame structure and associated with said endless conveyor for imparting translational movement thereto; a cover

plate mounted overhead said circulating path of travel and supported on said inner side wall of said base frame structure by means of a number of posts in parallel spaced relationship to said meal compartments on said endless conveyor; and a number of sterilizing lamps mounted on the underside of said cover plate end to end in the longitudinal direction and wherein said meal compartments further comprise an opening in the upper plate thereof for receiving irradiation from said sterilizing lamps for maintaining in a sanitary state the meals which are under circulation in said compartments.

3,901,356

LIFT MECHANISM

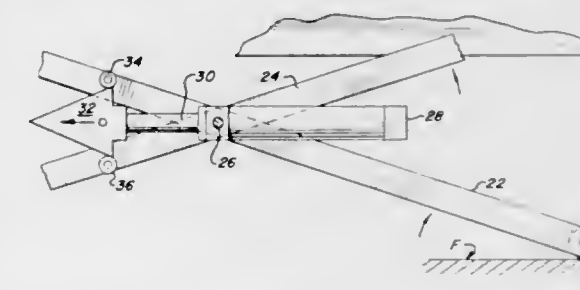
Louis L. Butler, Baton Rouge, La., assignor to Bear Manufacturing Corporation, Rock Island, Ill.

Filed Mar. 15, 1972, Ser. No. 234,839

Int. Cl. B66f 7/08

U.S. Cl. 187-8.71

10 Claims



9. The lift mechanism of claim 7 wherein said power means includes a hydraulic cylinder supportably mounted at the pivot connection between said scissor arms, a reciprocally movable piston rod extending from said cylinder toward said cam followers, and said cam means being mounted on said piston rod and normally disposed between said pivot connection and said cam followers for engaging and forcibly spreading said followers upon outward movement of said cam means relative to said pivot connection.

3,901,357

AUTOMATIC SLACK ADJUSTER

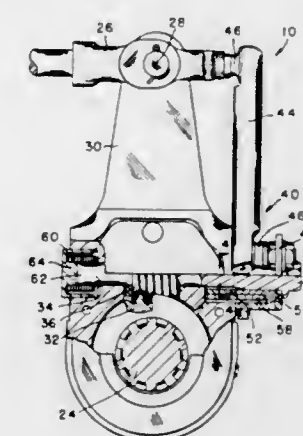
Richard J. Reltz; John M. Nicolson, and Guenter K. Herold, all
of Elyria, Ohio, assignors to The Bendix Corporation, South
Bend, Ind.

Filed July 1, 1974, Ser. No. 484,384

Int. Cl. F16D 65/56

U.S. Cl. 188-79.5 K

12 Claims



1. In an actuator for a brake:
a drive shaft for actuating said brake;
a lever including a housing mounted on said drive shaft for actuating said drive shaft;
said lever being movable in brake actuation and brake release directions;
an adjustment shaft rotatably mounted within said housing and drivingly interconnected with said drive shaft to

rotate the latter relative to said housing in a direction to effect brake adjustment when the adjustment shaft is rotated in a brake adjustment effecting direction, said adjustment shaft rotating said drive shaft in the opposite direction to back off said brake when the adjustment shaft is rotated in the opposite direction;

means on said adjustment shaft accessible from the exterior of said housing for manually effecting rotation of said adjustment shaft in either direction; and

automatic adjustment means connected with said adjustment shaft for rotating the latter in said brake adjustment effecting direction only upon movement of said lever in the brake actuation direction when the stroke of the lever exceeds a predetermined amount;

said automatic adjustment means including clutch means releasably connecting said automatic adjustment means for rotation of said shaft, said clutch means disconnecting said adjustment shaft and said automatic adjustment means when manual rotation of said adjustment shaft in either direction is effected.

3,901,358

ELECTRO-HYDRAULIC DISC BRAKE

Anson Keith Dixon, St. Catharines, Canada, assignor to ITT Industries, Inc., New York, N.Y.

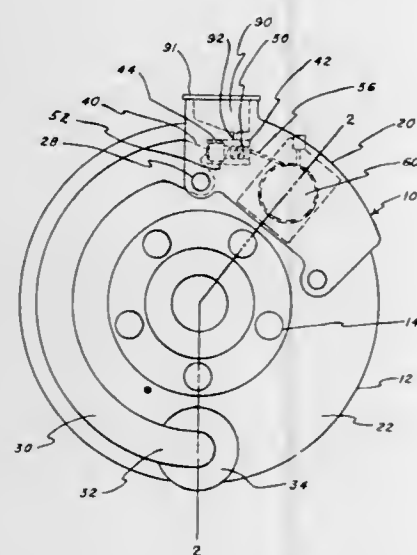
Filed June 3, 1974, Ser. No. 475,591

Claims priority, application Canada, July 5, 1973, 175755

Int. Cl.² B60T 13/66

U.S. Cl. 188—138

6 Claims



1. An assembly for braking a vehicle wheel having a rotor of magnetic material, comprising an electromagnetically actuable member for engaging said rotor responsive to an electrical braking input comprising a lever bearing said member, said lever being mounted for pivotal movement in a first direction responsive to said engagement, a hydraulic system self-contained at said wheel and including a cylinder and a chamber in hydraulic communication, a first piston movable within said cylinder, one end of said first piston disposed in a path described by said lever on its pivotal movement to render said first piston responsive to pivoting of said lever in said first direction for advancing into said cylinder to direct a flow of hydraulic fluid from said cylinder into said chamber, a second piston displaceable in said chamber, said second piston displaced by fluid flow into said chamber to move toward said wheel rotor, a floating friction disc assembly secured to said second piston for movement into braking engagement with said rotor on said movement of said second piston toward said rotor.

3,901,359

HYDRAULIC TWIN-TUBE VIBRATION DAMPER

Erwin Jentsch, Bischofsheim, Germany, assignor to General Motors Corporation, Detroit, Mich.

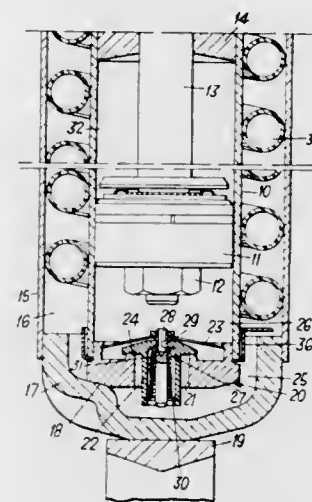
Filed Apr. 17, 1974, Ser. No. 461,500

Claims priority, application Germany, July 25, 1973, 2337665

Int. Cl.² F16F 9/06, 9/40

U.S. Cl. 188—269

6 Claims



1. A hydraulic vibration damper unit comprising a damper cylinder, a piston slidably mounted in said damper cylinder, a piston rod secured to said piston and projecting out of said damper cylinder for effecting reciprocatory movement of the piston, damping means carried by said piston, an annular compensating space coaxially surrounding said damper cylinder, a compensating valve operatively connected between said damper cylinder and said compensating space, a resilient pressure cushion arranged in said compensating space and comprising a gas-filled flexible tube, said tube being arranged in a helical configuration in said compensating space around the damper cylinder, a hydraulic fluid filling said compensating space around the tubing and filling said damper cylinder, and spaced clamping means secured in said unit to the ends of said damper cylinder and operatively connected to the ends of said tube for supporting said tube in said compensating space and spacing the convolutions of said tubing from each other.

3,901,360

LUGGAGE PROTECTOR

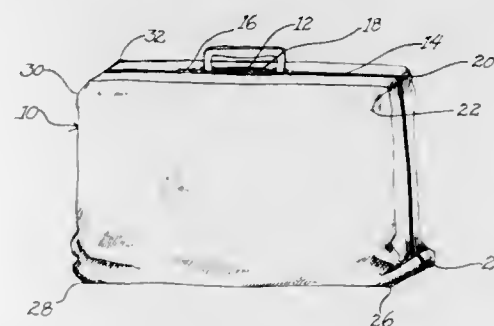
Mary Cook, 202 W. 6th, Columbia, Tenn. 38401

Filed Jan. 29, 1973, Ser. No. 327,750

Int. Cl. A45c 13/00

U.S. Cl. 190—26

3 Claims



1. A luggage protector comprising a unitary body of flexible material with no openings therein except a single slit opening for a handle, said body being adapted for insertion therein of a luggage article having a handle, said body having a single closure member in a channel extending all the way around said body from one end of said single slit opening to the other end of said single slit opening, said channel dividing said body into substantially equal halves, said slit opening being adapted for protrusion of said handle therethrough and said closure

member enabling said body to be opened all the way around same from one end of said slit opening to the other.

3,901,361

MARINE FORWARD-REVERSE CLUTCHES WITH PILOT BRAKES

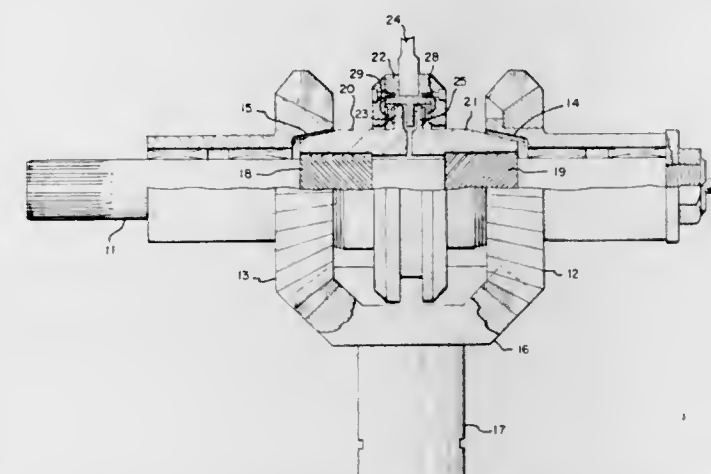
Alan W. Brownlie, Skaneateles, N.Y., assignor to American Challenger Corporation, Fulton, N.Y.

Filed Feb. 11, 1974, Ser. No. 441,205

Int. Cl.² F16D 21/00; F16H 3/14

U.S. Cl. 192—21

4 Claims



2. The clutch mechanism recited in claim 1 wherein said means for engaging comprises:

a flange on each clutch element, and

means movable axially with respect to said clutch elements into frictional engagement with said flanges to slow the rotation of one of said clutch elements.

3,901,362

CURVED THRUST PLATE ON CLUTCH THROWOUT BEARING

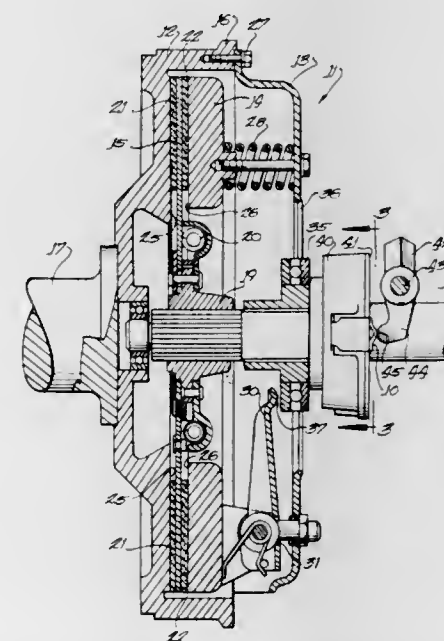
Robert J. Selzer, Fort Wayne, Ind., assignor to International Harvester Company, Chicago, Ill.

Filed Jan. 17, 1974, Ser. No. 434,311

Int. Cl.² F16D 23/14

U.S. Cl. 192—98

12 Claims



1. Apparatus for manually disengaging a vehicle clutch having a spring-engaged friction pressure plate and a plurality of release levers for actuating the pressure plate to a release position corresponding to the disengaged condition of the clutch and a throwout bearing, said throw-out bearing being movable in one direction from a clutch engaged position along

a predetermined axis for actuating the levers to effect actuation of the pressure plate to its release position, comprising:

convexly curved contact surface means fixed with respect to and movable in unison with said throw-out bearing;

and means for moving said throw-out bearing in said one direction from its clutch engaged position along said predetermined axis for actuating the levers to effect actuation of the pressure plate to its release position including a yoke mounted for pivotal movement between first and second positions corresponding to the engaged and disengaged conditions of the clutch, respectively, said yoke having convex contact surface means thereon operatively engageable with said first mentioned convexly curved contact surface means fixed with respect to said throw-out bearing during pivotal movement of said yoke from its first position to its second position.

3,901,363

CLUTCH ACTUATING CABLE WITH ADJUSTER

Victor S. DeGrazia, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

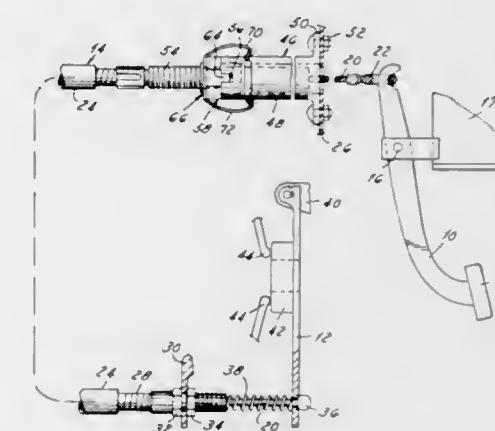
Division of Ser. No. 413,160, Nov. 5, 1973, Pat. No. 3,859,866.

This application July 31, 1974, Ser. No. 493,309

Int. Cl.² F16D 21/04

U.S. Cl. 192—110 R

4 Claims



1. A motor vehicle clutch actuating mechanism having a clutch free play establishing means;

said clutch actuating mechanism including a clutch pedal, a clutch release lever and a flexible cable operatively interconnecting said pedal and said lever;

support means supporting said flexible cable;

a stationary support structure;

adjustment means constructed to connect said support means to said support structure;

said adjustment means including an adjustment element connected to said support means;

said adjustment element having an axially extending gauge portion;

said support structure having a gauge receiving portion;

said adjustment element being displaceable from a first position wherein said gauge portion engages said support structure and said gauge portion is spaced apart from said gauge receiving portion to a second position wherein said gauge portion is seated in said gauge receiving portion;

retaining means constructed to hold said adjustment element in engagement with said support structure when said gauge portion is seated in said gauge receiving portion.

3,901,364 LIFE-SAVING CHUTE

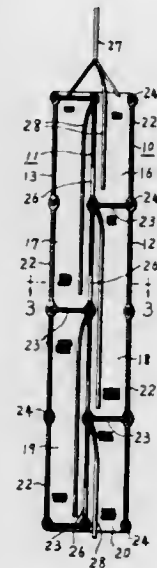
Akinaga Katsube, 9-16-5, 4-chome Sakuracho, Hatogayashi, Saitama, Japan

Filed Apr. 19, 1974, Ser. No. 462,441

Int. Cl. A62b 1/20; B65g 11/10

U.S. Cl. 193-25 R

8 Claims



1. A life saving chute comprising a plurality of descending passages, each one of said descending passages being composed of a flexible tubular member and a bottom member and disposed in any one of a plurality of columns which are vertically oriented during use, the bottom surface of the space defined by each one of said tubular members being completely closed by said bottom member so as to provide means for completely stopping the vertical descent of an escaping person, each adjacent pair of said descending passages adjoining each other as upper and lower ones thereof being disposed in different ones of said columns and having an opening therebetween for permitting a person to move from an upper to a lower one of said passages, wherein each one of said openings is provided in a common vertical portion of said tubular members, said portion being oriented vertically during use, and said life saving chute being movable as a whole.

3,901,365 TICKET VALIDATION APPARATUS FOR HEAT DEFORMABLE TICKETS

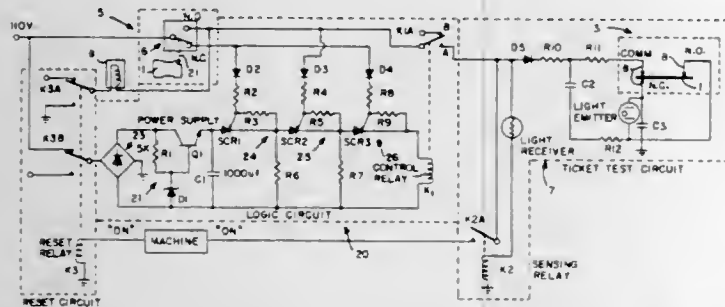
Fernando I. Velez, San Mateo, and Curtis Allen Ridgeway, San Jose, both of Calif., assignors to Fernando I. Velez, San Mateo, Calif.

Filed July 13, 1973, Ser. No. 379,129

Int. Cl. G071 7/02

U.S. Cl. 194-4 C

9 Claims



1. A ticket validation and machine control apparatus comprising:
a logic circuit having a first and a second state;
a means responsive to said ticket for setting said logic circuit to said first state for activating said machine; and
a means responsive to said activation of said machine for setting said logic circuit to said second state immediately

upon said activation of said machine for preventing reactivation of said machine with said ticket.

3,901,366 VENDOR PARTICULARLY FOR CARTONS OF CIGARETTES OR LIKE PACKAGES

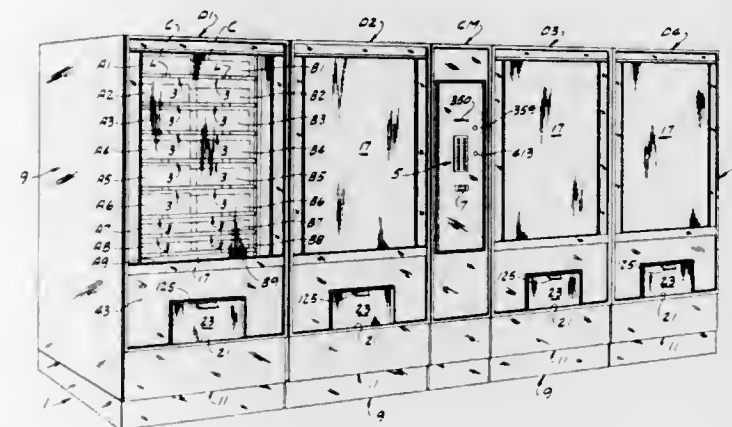
James T. Schuller; William W. Hendrickson, St. Louis, and Paul N. Albrecht, Ballwin, all of Mo., assignors to UMC Industries, Inc., New York, N.Y.

Filed Oct. 9, 1973, Ser. No. 404,327

Int. Cl. G071 11/58

U.S. Cl. 194-4 C

34 Claims



1.A vendor comprising:
a cabinet having a front door,
a plurality of article dispensers in the cabinet, one above another, each adapted to hold a row of articles to be vended extending in rear-to-front direction,
the forward ends of the dispensers being spaced rearward from the front of the cabinet so that there is a passage between the closed front door of the cabinet and the forward ends of the dispensers,
each dispenser comprising means for feeding the articles forward and discharging the forward article off the forward end of the dispenser to drop down through said passage,
said front door being windowed for viewing the articles held by the dispensers,
a delivery chamber at the lower end of said passage below the level of the lowermost dispenser for receiving an article dropping from the passage,
the front door having a delivery opening for access to said chamber,
a gate movable between a closed position closing off said passage from the delivery chamber below the level of the lowermost dispenser and an open position enabling an article to drop down into said delivery chamber, said gate normally occupying its closed position, purchaser-operable means for initiating operation of any one of said dispensers to effect discharge of the forward article off the forward end of said dispenser,
means for sensing dropping of an article in said passage, said sensing means being located at a level between the level of the lowermost dispenser and the gate,
means operable independently of said sensing means in response to initiation of operation of any one of said dispensers by said purchaser-operable means for moving the gate from its closed to its open position to enable the article dropping down in said passage to drop into said delivery chamber,
means operable by said sensing means in response to dropping of an article following operation of a dispenser for terminating the operation of the dispenser and returning the gate to its closed position, and in response to dropping of an article without operation of a dispenser onto the closed gate for precluding operation of any said dispensers.

3,901,367 COIN TESTING APPARATUS

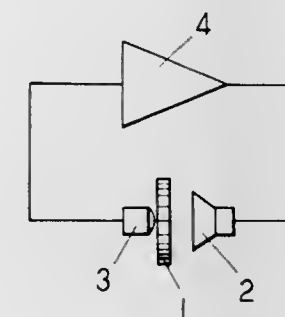
Kuniaki Miyazawa, Tokyo, Japan, assignor to Mitani Shoji Co., Ltd., Fukui, Japan

Filed Apr. 11, 1973, Ser. No. 350,041

Int. Cl. G071 3/02

U.S. Cl. 194-100 R

4 Claims



1. Coin testing apparatus for distinguishing coins of a given type from other coins, comprising, in combination, means including a speaker and a coin vibration sensor adapted to receive a coin to be tested between them thereby forming a mechanical filter; said speaker being positioned to direct its output toward a face of the coin to produce mechanical vibration of the coin; said coin vibration sensor being positioned to respond to vibrations of a face of the coin; said coin vibration sensor including means for producing an electrical output signal whose frequency varies according to the frequency of vibration of the coin; selector means tuned to pass a frequency conforming to a natural resonant frequency of a coin of said given type and attenuate frequencies conforming to the natural resonant frequencies of other coins; feedback means connecting said pressure sensor, said selector means, and said speaker in series, so that feedback means forms a closed loop in which the electrical signals generated in said loop as a result of resonant vibrations of a coin of said given type will pass through said selector means and provide feedback from said sensor to drive said speaker and thus build up the signal strength in said closed loop, and in which the electrical signals generated in said loop as a result of resonant vibrations of a coin of another type will be attenuated by said selector means; and output means connected to the output of said selector means for giving a given output signal when the signals in said closed loop build up in response to vibrations from a coin of said given type.

3,901,368 COIN ACCEPTOR/REJECTOR

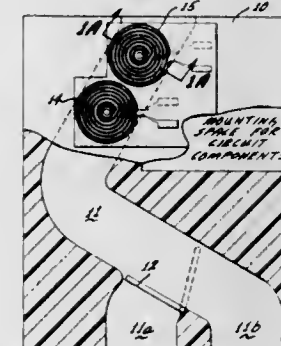
Lance T. Klinger, 8110 Redlands, Apt. 307, Playa Del Rey, Calif. 90291

Filed Mar. 11, 1974, Ser. No. 450,088

Int. Cl. G071 3/02

U.S. Cl. 194-100 A

28 Claims



1. A coin testing device comprising:
an oscillator producing a signal of a particular frequency at a relatively high Q and of a narrow band;

a resonating sensing circuit including at least one coil disposed, so that a coin to be tested will particularly change and determine the resonance frequency of the sensing circuit, when having a particular disposition with respect to the coil;
the sensing circuit being connected electrically to be energized by the oscillator without inductive coupling through said coil;
the sensing circuit having a narrow response characteristic band about said resonance frequency, when sensing a coin, the oscillation frequency being in said band;
the sensing circuit having a frequency response band remote from said oscillation frequency band when no coin is in its sensing range; and
circuit means connected to said sensing circuit for detecting the response of the circuit to the oscillations in the presence or absence of a coin.

3,901,369 ELECTRIC INDICIA EMBOSsing MACHINE

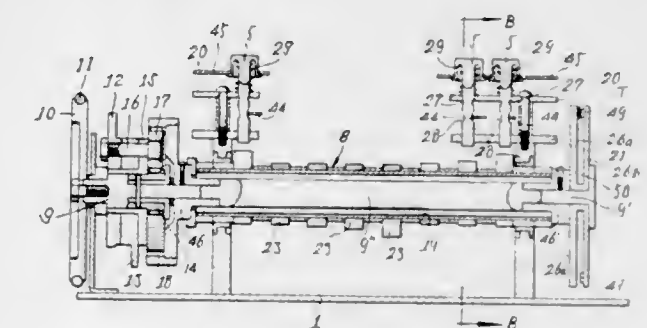
Hideo Tsukamoto, Tokyo; Katsumi Otsuka, Funabashi; Miyagi Tamura, Togane; Koji Kondo, Ichikawa, and Kosaku Yoshisawa, Chiba, all of Japan, assignors to New Kon Industrial Co., Ltd., Tokyo, Japan

Filed Jan. 7, 1974, Ser. No. 431,022

Int. Cl. B41J 23/12

U.S. Cl. 197-6.6

5 Claims



1. An electrical indicia embossing machine comprising a housing, a drive motor mounted on said housing, a cam shaft rotatably mounted on said housing, a planetary gear operably connected between said drive motor and said cam shaft, said planetary gear including a sun gear and internal gear, said sun gear being driven by said motor, said internal gear being affixed to said cam shaft, a flange mounting intermediate planetary gears in a position interposed between said sun gear and said internal gear, an embossing cam and a braking cam affixed to said flange for rotation together with said planetary gear, indicia carrying members and an embossing member operably associated with said cam shaft such that the rotational position of said cam shaft determines selected operable positions of said carrying members, indicia selection members including a plurality of spaced pushbutton assemblies each including a push-button pin slidably mounted on said housing, said cam shaft having a plurality of actuating cams having engaging surfaces disposed at different angular dispositions relative to the axis of said cam shaft and adapted to be engaged by said push-button pins when selected push-button pins are depressed, the number of said push-button assemblies being greater than the number of said actuating cams, said push-button assemblies being operable to halt the rotary movement of said cam shaft in a position corresponding to the selected indicia, said drive motor continuously rotating said cam shaft until said continuous rotation is interrupted by depression of said selected push-button pin whereupon said cam shaft halts its rotary movement in a position corresponding to the selected indicia, web feeding means for intermittently feeding a web material to said embossing means, a first operable mechanism between said embossing cam and said carrying members operable to actuate said embossing member to emboss a selected indicia onto said web when said cam

shaft has been halted, a second operable connection between said embossing cam and said web feeding means operable to actuate said web feeding means after said embossing member has been actuated and while said cam shaft is still halted, and biasing mechanism applying a biasing force against said braking cam and operable to effect a momentary increase in rotational speed of said braking cam as a predetermined cam profile is encountered, whereby said cam shaft makes a corresponding reverse rotational movement to effect release of the engagement between said push-button pins and said actuating cams on said cam shaft.

3,901,370

TAPE EMBOSSING TOOL

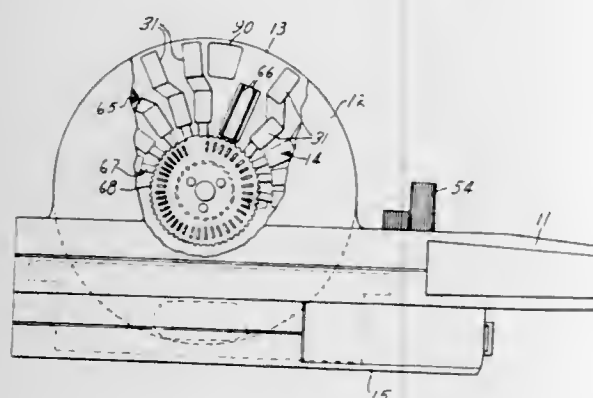
Curt A. Poulton, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 12, 1973, Ser. No. 406,110

Int. Cl. B47j 1/30

U.S. Cl. 197-6.7

3 Claims



1. An embossing tool for embossing a series of characters along a length of embossable strip material, said tool comprising

a body having a handle, means for defining an embossing station and a support portion on said body, lever means movable relative to said body and into said handle for applying an embossing force at said embossing station,

means defining a path for strip material on said body parallel to said handle and through said embossing station, opposed rotatable die disks joined together for concurrent rotation and having a plurality of axially opposed die elements, said die elements on said die disks being formed in two radially spaced circular arrays concentric with the axis of said die disks,

support means for supporting said die disks for movement in a radial direction normal to said path of said strip material to permit the selective placement of a pair of die elements from either the radially inner array or the radially outer array of die elements at said embossing station on opposite sides of the path of said strip material, said support means comprising a guide plate supported on said support portion for sliding movement and means for rotatably supporting said die disks on said guide plate, and

reciprocating link means movable normal to said lever means and engageable with the support means supporting the die disks for sliding the axis of the die disks toward and away from the path upon actuation of said lever means.

3,901,371 PRINT ACTUATOR ARRANGEMENT AND ENCODER

Philip Romeo Scott, Jr., Berlin, Mass., assignor to RCA Corporation, New York, N.Y.

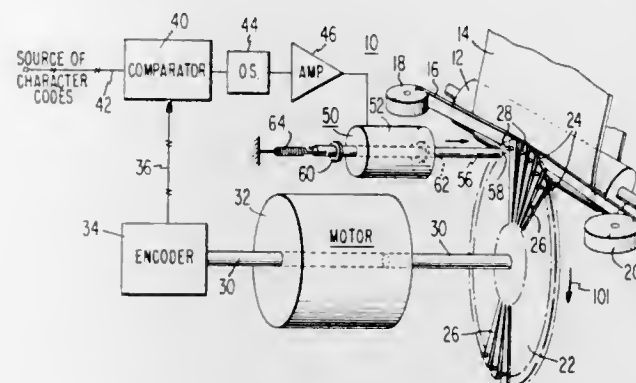
Filed Oct. 13, 1972, Ser. No. 297,385

Claims priority, application United Kingdom, Mar. 29, 1972, 14683/72; Mar. 29, 1972, 14684/72

Int. Cl. B41j 1/32

U.S. Cl. 197-53

6 Claims



1. Apparatus for printing on a recording medium comprising, in combination:

a rotatable member including, at a plurality of spaced points along the periphery thereof, symbol elements each movable into contact with said recording medium but normally biased away therefrom, each having a projecting portion opposite the symbol shape on said symbol element;

drive means for rotating said rotatable member for moving said symbol elements seriatim past a print station;

actuator means at said print station including a cam member movable between a first position interposed in the path occupied by said projecting portions as said symbol elements are rotated and a second normal position away from said path, said actuator being responsive to a momentary signal applied thereto for causing said cam member to be moved to said first position, the surface of said cam member when at said first position facing said projecting portions and forming an acute angle with the plane of the path taken by said symbol elements, said cam member when in said first position being arranged so that the projecting portion of the next symbol element of said plurality of symbol elements to come in contact therewith will thereby receive a force causing said element to be moved into contact with said recording medium, an oppositely directed force being thereby applied to said cam member; and

means responsive to a desired one of said symbol elements being next to approach said print station for producing said momentary signal for moving said cam member to said first position, said momentary signal terminating before said desired symbol element is at said print station, said oppositely directed force causing said cam member to be moved to said second position concurrently with the movement of said next symbol element.

3,901,372 PROTECTIVE COVER WITH VIEWING WINDOW FOR PRINTERS

Ronald S. Denley, Niles, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed July 22, 1974, Ser. No. 490,827

Int. Cl. B41J 29/8, 29/42

U.S. Cl. 197-186 R

24 Claims

1. A protective cover, including a viewing window, particularly adapted for use as part of a housing for enclosing printer apparatus and the like, said cover comprising:

a first major wall portion dimensioned to substantially enclose an opening in an associated housing, and having a surface profile that allows at least the peripheral edges

thereof to conform with the respectively adjacent peripheral edges of the opening in the associated housing, as mounted thereon, and

a second portion in the form of an integral, laterally disposed, recessed trough which further encloses said opening and includes first and second spaced side walls which extend downwardly from the underside of the cover at oppositely inclined angles toward each other, said walls at least cooperating to form a closed bottom of said trough, said trough having a predetermined lateral length and terminating at each end at least a short distance inwardly

air intake end communicating with said chamber in the region of one of said stations and an air discharge end and at least one additional channel having an air intake end which communicates with said suction-chamber in a region nearer to the other of said stations than to said one station and an air discharge end, and suction generating means connected with said air discharge ends of said channels; means for supplying commodities to said first station; and means for receiving commodities at said second station.

3,901,374

TRANSFER DEVICE FOR AUTOMATIC BOTTLE HANDLING MACHINES

Jean Louis Dubuit, 60 Rue Vitruve, Paris 20e, France

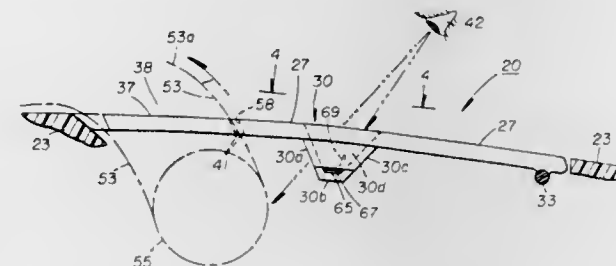
Filed Feb. 17, 1972, Ser. No. 227,560

Claims priority, application France, Feb. 17, 1971, 71.05303

Int. Cl. B65G 47/00

U.S. Cl. 198-22 B

9 Claims



from the respectively adjacent edges of said cover, at least said first side wall of said trough being formed to be transparent for viewing therethrough, and said second side wall being formed with the upper surface thereof having a light diffusing finish and being disposed at such an angle with respect to the transparent window that it will diffuse any ambient light that would not only be reflected thereto, but otherwise be capable of being reflected therefrom back to and then off the window as glaring light rays along any one of all intended line-of-sight angles of viewing through the window.

3,901,373

CONVEYOR FOR CIGARETTES OR THE LIKE

Willy Rudzinat, Dassendorf, Germany, assignor to Hauni-Werke Korber & Co., KG, Hamburg, Germany

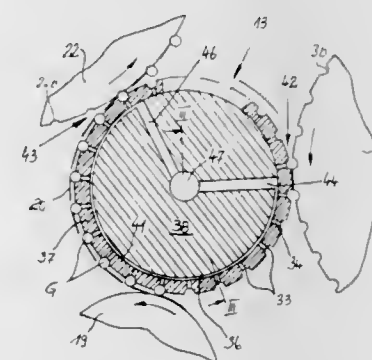
Filed Aug. 21, 1973, Ser. No. 389,658

Claims priority, application Germany, Aug. 25, 1972, 2241776

Int. Cl. B65G 47/00

U.S. Cl. 198-20 C

15 Claims



1. A transfer device for automatic handling machines for plastic bottles, comprising a conveyor belt having a run that moves in a downstream direction, means for dropping a first subgroup of bottles onto the conveyor belt in a first relatively downstream drop zone, means for dropping a second subgroup of bottles onto the conveyor belt in a second relatively upstream drop zone, said first and second drop zones being staggered relative to each other laterally of the conveyor belt so that once the second subgroup of bottles have all left the upstream drop zone and pass opposite the relatively downstream drop zone, another drop of bottles can be effect in both drop zones in order to produce a continuous flow of bottles, and generally vertical partitions for maintaining the bottles in position during a drop to guide and stabilize the bottles on the conveyor after said drop, at least a portion of all the partitions being movable transverse to the direction of movement of the conveyor belt for freeing the bottles after said stabilization for movement with the conveyor belt.

3,901,375

PACKAGE FEEDING AND TIMING MECHANISM

Robert G. Raque, Louisville, Ky., assignor to FMC Corporation, San Jose, Calif.

Filed Feb. 4, 1974, Ser. No. 439,160

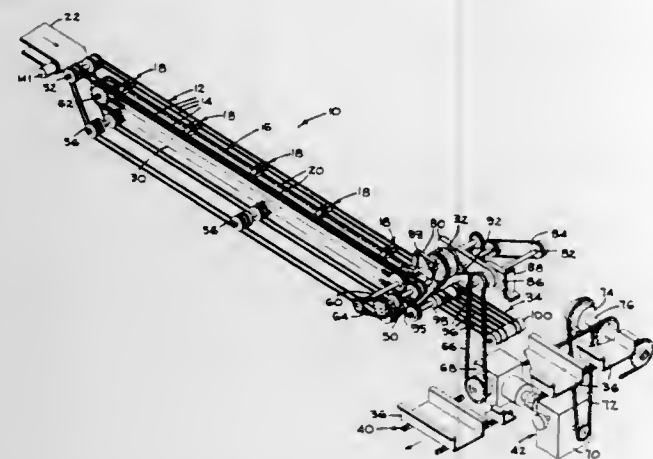
Int. Cl. B65G 47/26

U.S. Cl. 198-34

6 Claims

1. Package feeding apparatus comprising means for feeding a file of abutting packages, conveying means comprising a plurality of endless belts for sequentially accelerating said packages from said feeding means into interspaced relation and conveying them along a given path, a pair of spaced endless chains, pushers carried by said chains to provide endless series of package pushers having an upper reach of pushers movable along said path, means mounting each of said pushers for depressible movement below said path, and means for driving said pushers at a velocity exceeding the velocity of said packages, each of said pushers not coinciding with the space between two adjacent packages being temporarily de-

pressed by a package until the pusher advances to the next space between two packages, rollers on each pusher to facilitate relative longitudinal movement between a depressed pusher and a package moving along said path, each pusher including a side plate adjacent each chain, said pusher mounting means comprising a pivot connection between each chain



and a portion of the associated side plate that is intermediate the ends of the side plate, said rollers being mounted on one end of each side plate, a weight connecting the other ends of said side plates to pivotally bias said side plates and position said rollers in pushing relation with a package, and a stop mounted on each chain and engaged with the adjacent side plate for limiting pivotal motion of said pusher.

3,901,376

CONTINUOUSLY OPERATING DEVICE FOR CONVEYING AND SELECTING CASES

Edgar Dardaine, Sorel Moussel, and Jean-Luc Berry, Mesnil sur L'Estree, both of France, assignors to E. P. Remy et Cie, Dreux, France

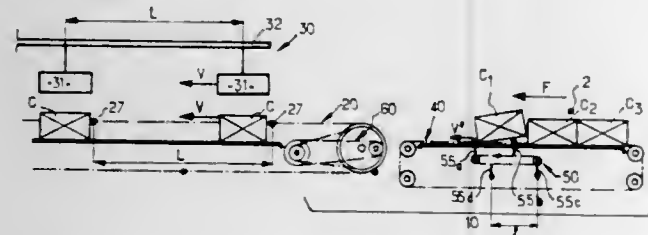
Filed Mar. 25, 1974, Ser. No. 454,785

Claims priority, application France, Apr. 10, 1973, 73.12936

Int. Cl.² B65G 47/26

U.S. Cl. 198—34

8 Claims



1. A device for conveying cases containing articles of manufacture to an encasing-uncasing machine including gripping members travelling at a constant speed along a rectilinear trajectory element and adapted to grip said articles for placing them in said cases or withdrawing same therefrom, said device comprising in combination: first conveyor means arranged substantially beneath said machine and comprising driving members moving in translation at a constant speed equal to that of said gripping members to selectively push each case to a position straight below a said gripping member; main conveyor means placed upstream of said first conveyor means, adapted to receive the cases distributed in a random manner thereon and driving same at a constant speed, much higher than the speed of said first conveyor means; a device for retaining the cases, provided with series of tappets moving in translation at a constant speed much lower than that of said main conveyor means and being adapted to project successively above said main conveyor means by engaging the trajectory of the cases and in synchronism with said driving members of said first conveyor means; said tappets being distributed with a spacing smaller than the length of a case, so that each case, driven by said main conveyor, which meets a tappet

by its front edge and is subjected to a braking action by the latter, exerts a braking action on the case following it by direct contact therewith, and then is raised by the following tappet which engages its bottom portion before it is freed by the first tappet; conveyor means for extracting the cases, placed downstream of the said main conveyor means and driven in translation at a constant speed equal to that of the latter, said extracting conveyor receiving the cases delivered by said main conveyor means and the said retaining device, and delivering them to the said first conveyor means; and driving means common to the aforesaid conveyor means, and retaining device to drive them at their said speeds.

3,901,377

TRANSFER CONVEYOR INCLUDING SUPPORTS MOVABLE TO A BRIDGING POSITION

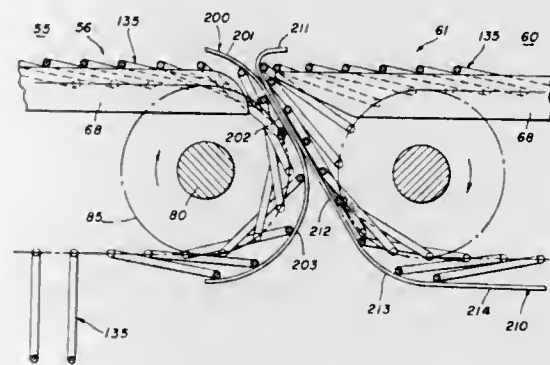
Maynard R. Euverard, Clarendon Hills, and Henry A. Heide, Addison, both of Ill., assignors to Velten & Pulver, Inc., Chicago Ridge, Ill.

Filed July 11, 1974, Ser. No. 487,591

Int. Cl.² B65G 37/00

U.S. Cl. 198—82

18 Claims



1. A transfer conveyor for smoothly receiving articles from the outfeed end of an associated conveyor disposed adjacent to the infeed end of said transfer conveyor, said transfer conveyor comprising an endless belt movable along a conveying reach from the infeed end of said transfer conveyor to the outfeed end thereof and along a return reach from the outfeed end of said transfer conveyor to the infeed end thereof, a plurality of supports mounted on said endless belt and movable from a conveying position to a storage position and then to a bridging position and back to the conveying position, said supports in the bridging position thereof extending toward the outfeed end of the associated conveyor with said supports at the infeed end of said transfer conveyor overlying the outfeed end of the associated conveyor and bridging the gap between the associated conveyor and said transfer conveyor, motor means for moving said endless belt and said supports mounted thereon in a closed path along said conveying reach and said return reach between the infeed end of said transfer conveyor and the outfeed end thereof, and means for moving said supports when on the return reach of said endless belt from the storage position to the bridging position and when on the conveying reach to the conveying position as said endless belt is driven by said motor means, whereby articles conveyed from the outfeed end of the associated conveyor are received on said supports in the bridging positions thereof and are conveyed along the conveying reach to the outfeed end of said transfer conveyor.

3,901,378

ROLLER CONVEYOR FOR ASYMMETRICAL MEMBERS

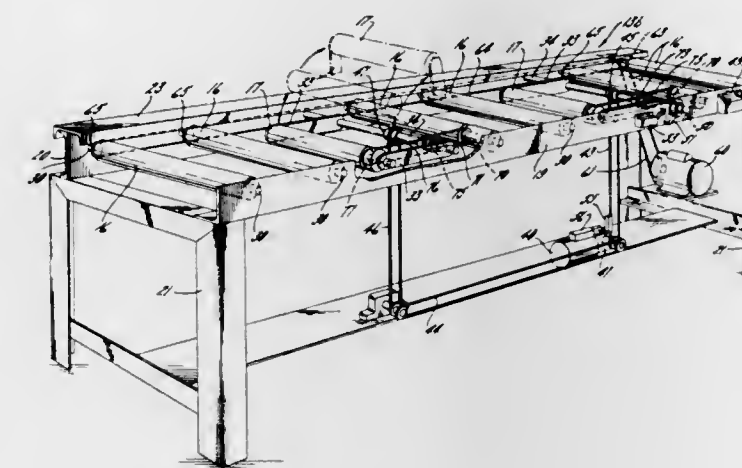
Burton A. Rolland, Rockford, Ill., assignor to W. A. Whitney Corporation, Rockford, Ill.

Filed Apr. 9, 1973, Ser. No. 349,013

Int. Cl. B65g 13/02

U.S. Cl. 198—127 R

2 Claims



1. A roller conveyor for transporting in a lengthwise direction an elongated structural member having a web with a first depending flange at one of its side edges and with either a shorter depending flange or no depending flange at its opposite side edge, said conveyor comprising a pair of laterally spaced supports, a series of generally horizontally extending and horizontally spaced standard rollers extending between and journaled by said supports for rotation about generally horizontal axes, power means for rotating said standard rollers about their own axes, a series of generally horizontally extending and horizontally spaced elevating rollers extending parallel to said standard rollers, one of said standard rollers being located next to one of said elevating rollers and another of said standard rollers being located next to another of said elevating rollers, arms supporting said elevating rollers for rotation about generally horizontal axes, means mounting said arms on said supports for up and down swinging to enable movement of said elevating rollers between lowered and raised positions, said last-mentioned means comprising generally horizontal shafts extending between said supports and journaled for rotation about horizontal axes, said arms being secured to said shafts to swing upwardly when said shafts are turned in one direction and to swing downwardly when said shafts are turned in the opposite direction, a selectively energizable reversible motor for rotating said shafts to swing said arms upwardly and downwardly, drive elements coaxial with and rotatable relative to said shafts, means rotatably connecting said standard rollers with said drive elements and rotatably connecting said drive elements to said elevating rollers whereby the latter are rotated in response to rotation of said standard rollers, said standard rollers having upper surfaces for supporting said first depending flange of said member and all disposed in substantially the same horizontal plane, said elevating rollers each having an upper surface which supports the opposite side edge of said web and which terminates short of said first flange when said member is in a conveying position on said conveyor, the upper surfaces of said elevating rollers being located no higher than the upper surface of said standard rollers when said elevating rollers are in said lowered positions thereby to enable said member to be moved endwise of the rollers and loaded onto the latter, and the upper surfaces of said elevating rollers being located above the upper surfaces of the standard rollers when the elevating rollers are in said raised positions thereby to enable raising of said opposite side edge of said web to effect a change in the angular orientation of the loaded member.

3,901,379

ANGULAR GUIDANCE FOR CONVEYOR BELT SYSTEMS

Dieter Bruhm, Harsum, Germany, assignor to Marryat Finance Limited, London, England

Continuation of Ser. No. 197,743, Nov. 11, 1971. This

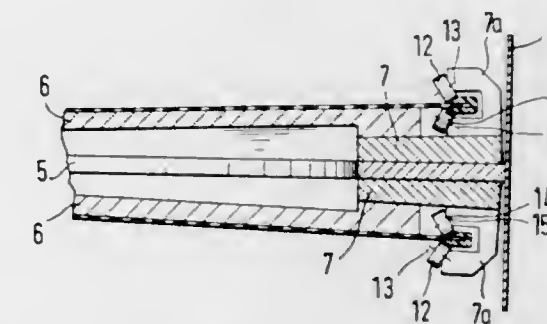
application May 23, 1974, Ser. No. 472,563

Claims priority, application Germany, Nov. 12, 1970, 2055682

Int. Cl. B65g 15/00

U.S. Cl. 198—182

2 Claims



1. An annular guidance apparatus for a conveyor belt supported on a conveyor belt frame wherein the belt runs in a plane defined by the direction of conveyance and including a plurality of conically-shaped idler rollers for leading a conveyor belt around an angular bend of the conveyor belt frame between the idle rollers comprising:

a longitudinally extending flexible shoulder member attached to the outer edge of the conveyor belt said shoulder member comprising a plurality of blocks having at least two inner abutment faces disposed on the inner side of said blocks and arranged in a row and evenly spaced over the length of the conveyor belt, said blocks each having an outwardly extending stud member, and a recess for receiving a stud member, each of the recesses of said blocks receiving the stud member of an adjacent block for linking the blocks in series with each other, a plurality of guide rollers mounted on the conveyor belt frame and disposed symmetrically about the conveyor belt at an angle to each other with the axis thereof diverging radially outwardly towards the outer edge of the conveyor belt, said guide rollers engaging the inner abutment faces of said blocks and compressing said blocks between the idler rollers as the conveyor belt is led around an angular bend of the conveyor belt frame.

3,901,380

VIBRATING CONVEYOR DRIVE

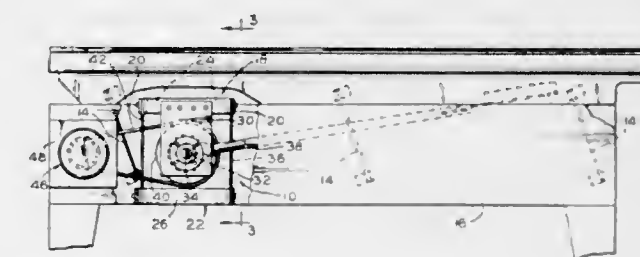
George F. Zier, Portland; Candido Casciato, Newberg, and Franklin G. Smith, Portland, all of Oreg., assignors to Vi-Con, Inc., Portland, Oreg.

Filed June 25, 1973, Ser. No. 373,170

Int. Cl. B65g 27/00

U.S. Cl. 198—220 DA

6 Claims



1. In a vibrator drive, a balanced rotor including a cylindrical weight, shaft means mounting the weight concentrically thereon and coupled to the weight for rotating the weight, and crank means on the shaft means and eccentric to the shaft means,

a pair of aligned bearing means journaling both ends of the shaft means,
base means,
means for rotating the shaft means,
resilient means mounting the bearing means on the base means and preventing pivotal movement of the shaft means,
single conveyor bed means,
means independent of the resilient means serving to mount the conveyor bed means for back and forth movement, and connecting rod means connecting the crank means to the conveyor bed means,
the single conveyor bed means being the only load of the crank means and the weight so that only inertia of the concentrically mounted weight and the action of the resilient means enables the crank means to drive the conveyor bed means.

3,901,381

AUTOMATIC WARE HANDLER

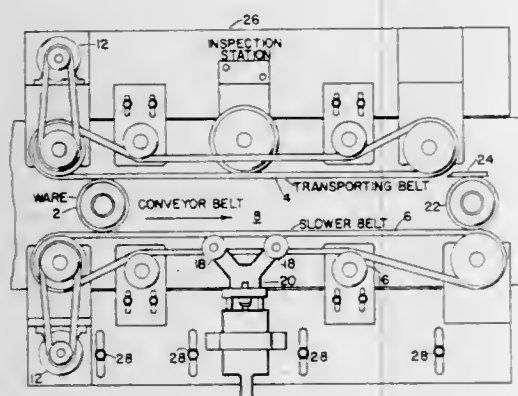
Richard M. Quinn, Muncie, Ind., assignor to Ball Brothers Service Corporation, Muncie, Ind.

Filed Oct. 10, 1973, Ser. No. 405,220

Int. Cl. B65g 47/24

U.S. Cl. 198—283

11 Claims



1. An apparatus for imparting rotary motion to cylindrical articles and thereafter stabilizing such articles during rotary deceleration in conjunction with concurrent imparting of translational movement, comprising: a first continuous belt mounted for movement and spaced from but adjacent to a conveyor belt; a second continuous belt mounted for movement and in part positioned adjacent the first belt and spaced a substantially constant distance therefrom; means for driving the first and second belts at constant but differing linear speeds in a common direction; a rotary drive wheel means positioned adjacent one of the first or second belts; and an idler means mounted opposite the rotary drive wheel for reciprocal movement towards and away from the drive wheel, whereby cylindrical articles such as glassware may be positioned between the first and second belts, and, as a result of the differing linear speeds thereof, rotated while being moved in a translational manner to a position adjacent the drive wheel whereupon the reciprocating idler means may engage and displace the rotating article transversely of the first and second belts into contact with the drive wheel to impart a greater rotary motion to the article, and, thereafter release the rapidly-spinning article to stabilizing influence of the first and second belts which decelerate the article with regard to rotary motion and move the article with translational movement away from the drive wheel and idler means.

3,901,382

TUBE DISPLAY CARTON

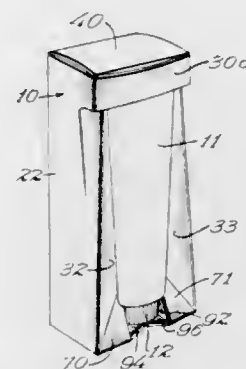
Harry I. Roccaforte, Western Springs, Ill., assignor to Hoerner-Waldorf Corporation, St. Paul, Minn.

Filed Oct. 23, 1974, Ser. No. 517,043

Int. Cl. B65D 5/50

U.S. Cl. 206—45.14

1 Claim



1. In a carton adapted for holding and displaying squeeze tubes or the like, said carton having a rear panel, side panels, and top closure flaps, an improved front panel and bottom closure comprising:

upper and lower sections in said front panel defined by a horizontal cut line in said front panel;

said lower front panel section including a first pair of inwardly movable shadow panels at either lateral side of said lower section;

said lower section having a tube receiving opening formed therein and extending to the lower edge of said front panel;

said bottom closure including a first flap hingedly connected along the lower edge of said front panel and adapted to substantially cover the bottom end of said carton;

score lines in each of said first shadow panels at the lower ends thereof and angled inwardly to form a pair of triangular secondary shadow panels which move inwardly with said first shadow panels;

a pair of cap retaining sections disposed on either side of said tube receiving opening at the lower end thereof, each of said cap retaining sections being hingedly attached to said first flap in said bottom closure and to a corresponding one of said secondary shadow panels and including an angled hinge line formed therein extending upwardly and inwardly from the junction of said retaining section with its corresponding secondary shadow panel and said first flap allowing each of said sections to be folded inwardly to form a cap restraint which frictionally engages the sides of the cap on said squeeze tube when in position in said carton.

3,901,383

TRANSPORT AND DISPLAY PACKAGE FOR SLAB-FORM OBJECTS

Manfred Witt, Neu-Isenberg, Germany, assignor to Ferrero GmbH, Marburg, Germany

Filed Feb. 1, 1973, Ser. No. 328,594

Claims priority, application Germany, Feb. 8, 1972, 2205856

Int. Cl. B65d 5/50

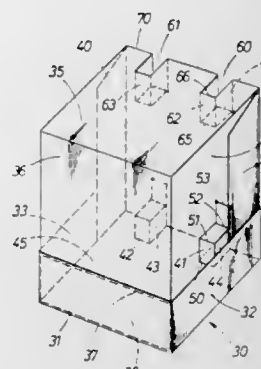
U.S. Cl. 206—45.15

4 Claims

1. A transport and display package for slab-form objects comprising: a back wall joined to an upper wall along a fold line, side walls joined to the back wall and to a front wall to form a container for transport; a portion of the back and upper walls partially separated therefrom by cuts but joined to the upper and back walls by fold lines to form inwardly ex-

tending projections, thereby providing barriers for supporting the objects during transport, and foldable to form planar

angularly spaced arms extending outwardly from said collar wall and being integral therewith, said collar and arms being, for brace application, forced over the top of the agitator and into wedged interposition between the collar and load open-



3,901,384

MUSICAL INSTRUMENT CARRYING CASE

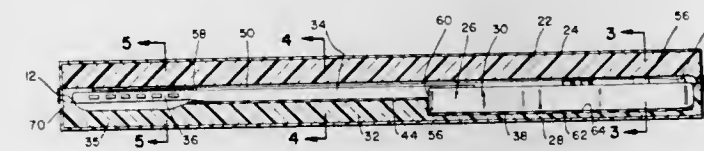
Peter R. Lee, P.O. Box 24121, Oakland, Calif. 94612, and Donald W. Burror, 3585 Liscome Way, Concord, Calif. 94520

Filed Oct. 26, 1973, Ser. No. 410,254

Int. Cl. A45c 11/00; B65d 85/54

U.S. Cl. 206—314

10 Claims



1. A carrying case for a fragile instrument comprising an upper resilient sheet member, a rigid lower support member subjacent and supporting said sheet member, rigid side members adjacent transverse sides of said sheet member intermediate said side member, complementary upper and lower receptacles respectively having complementary downwardly and upwardly opening cavities therein, said support member and said side members extending generally vertically upwardly from said lower receptacle and comprising walls of said upwardly opening cavity, said support member and said sheet member extending adjacently and in tangential contact with said instrument portion between the distal extremities of said instrument portion, a second upper resilient sheet member, a second rigid lower support member subjacent and supporting said second sheet member, and second rigid side members adjacent transverse sides of said second sheet member, each said second sheet member, support member and side member being longitudinally spaced from their respective first sheet member, support member and side member, a second portion of said instrument resting on said second sheet member intermediate said second side members.

3,901,385

WASHING MACHINE PACKING BRACES

Edward R. Rosen, 6 Wildwood Dr., Branford, Conn. 06405, and J. Paul Levine, 347 S. Lucerne, Los Angeles, Calif. 90020

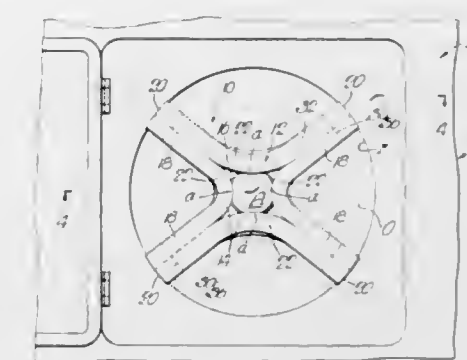
Filed Jan. 24, 1974, Ser. No. 436,112

Int. Cl. B65D 81/04, 85/30

U.S. Cl. 206—320

14 Claims

1. A packing brace for locking a pivotally yielding agitator and tub unit to the load opening in a washing machine, comprising a single piece of resilient material in the form of a collar with a center axis and an endless wall extending about said axis and defining a center aperture, and more than two



3,901,386

COMBINATION PACKAGE

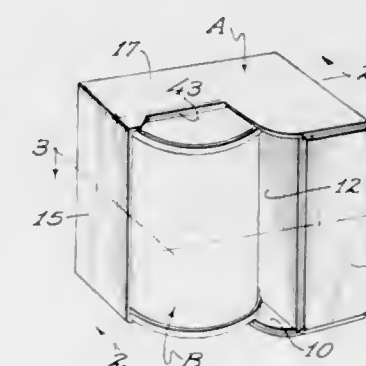
Russell J. Hennessey, St. Paul, Minn., assignor to Hoerner-Waldorf Corporation, St. Paul, Minn.

Filed Sept. 10, 1973, Ser. No. 395,991

Int. Cl. B65D 65/00, 5/48

U.S. Cl. 206—434

6 Claims



1. A combination package for a chimed end can and another product including:

a sleeve of generally rectangular section including top, bottom and side walls connected in tubular relation, a partition secured between said top and bottom walls parallel to said side walls, said partition dividing said sleeve into two rectangular compartments, rear closure flaps secured to the rear edges of said top and bottom walls and folded into a common plane, a rear wall connected to the rear edge of one of said side walls and folded outwardly of said rear closure flaps, and having a tuck flap adapted to extend inwardly of the other of said side walls,

can retaining flaps hinged to the forward edges of said top and bottom walls forwardly of one of said compartments and adapted to engage into the chimed ends of the can to hold the can against said rear closure flaps, and a front closure for the other of said compartments.

3,901,387

PROTECTIVE PACKAGES

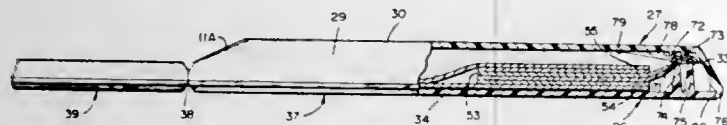
Kevin W. Flynn, Lincoln Park, N.J., assignor to Bio-Medical Sciences, Inc., Fairfield, N.J.

Filed Jan. 14, 1974, Ser. No. 433,264

Int. Cl. B65d 85/54

U.S. Cl. 206—525

1 Claim



1. In a housing for an article in which the housing includes two shells of rigid or semi-rigid material having complementary surfaces which are joined together in sealed registered connection and the article includes a tab which is received by and anchored to the inside of the housing, an improved article tab receiving and anchoring mechanism comprising
- a plurality of parallel, raised protuberances disposed on the inside surface of a first one of the shells at the point at which the article tab is to be anchored,
 - a V-shaped ramp disposed on the inside surface of the same shell about the protuberances, the apex of the ramp's V-shape being disposed in the direction from which the article tab is received and the incline of the ramp rising along an axis perpendicular to said parallel protuberances from a level which is substantially flush with the inside surface of the shell at the ramp's apex to a level at each protuberance at least as great as the height of that protuberance, and
 - a second plurality of parallel raised protuberances on the inside surface of the second of the shells, the second plurality of protuberances being disposed for meshing registry between the first plurality of protuberances within the V-shaped ramp of the first shell so as to anchor an article tab received by said ramp when said shells are brought into registered connection for sealing.

3,901,388

INTEGRATED REFLECTANCE PHOTOMETRIC SORTER
Leonard Kelly, Peterborough, Canada, assignor to Sphere Investments Limited, Nassau, Bahamas

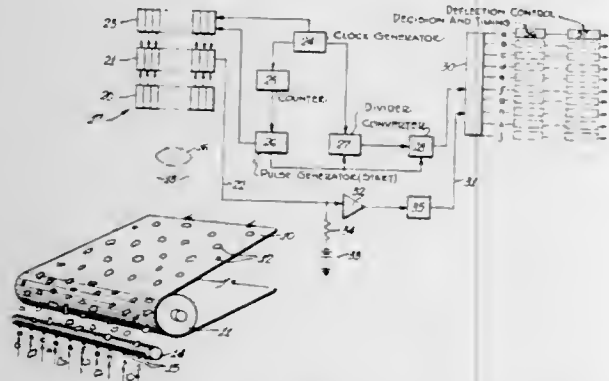
Filed Mar. 22, 1974, Ser. No. 453,626

Claims priority, application United Kingdom, Mar. 22, 1973, 13892/73

Int. Cl. B07C 5/342

U.S. Cl. 209—111.7

1 Claim



1. Apparatus for sorting in accordance with light reflected from a stream of objects moving through a sorting zone along a predetermined path having a predetermined width, comprising
- a single line array comprising a plurality of photodiodes integrated into a single monolithic chip, each having a photosensitive semiconductor junction and adapted for operation in a photon flux storage mode,

- illuminating means to direct a source of light into said sorting zone across said predetermined width of said path,
- a lens system to focus an image of said stream extending across the illuminated width of said path onto said array,
- a plurality of deflection means in said sorting zone extending across the width of said path in side by side relationship, each deflection means defining a channel, the number of photodiodes being of an order of magnitude greater than the number of channels,
- switch means compressing a semiconductor switch for each photodiode for connecting to a common output each photodiode singly and in succession through said array to provide at said common output a first signal representing a succession of values of reflected light impinging on each photodiode during a predetermined interval,
- timing means comprising a shift register having a unit for each said semiconductor switch, a source of clock pulses to step said shift register through successive cycles to actuate said semiconductor switches in sequence, and a counter to count a predetermined number of clock pulses corresponding to a channel and to provide a timing signal for each count relating portions of said first signal to respective channels, and
- control means including a demultiplexer having a section for each channel, each section being connected for actuation of a respective deflection means, said sections being enabled in sequence by said timing signal from said counter, and a signal treating means for processing said first signal and applying the processed signal to said demultiplexer for actuating enabled deflection means for the deflection of objects which reflected light of predetermined characteristics.

3,901,389

COMMODITY DISPLAY STAND

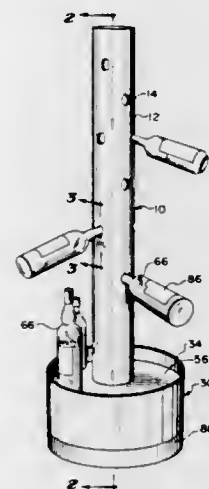
Paul Belokin, Jr., Rt. No. 4, Hayward, Wis. 54843

Filed Apr. 25, 1973, Ser. No. 354,310

Int. Cl. A47B 73/00

U.S. Cl. 211—74

5 Claims



1. A knockdown display rack for articles comprising:
- an elongated tubular wall member;
 - a base support for said tubular wall member including a substantially cylindrical rigid supporting side wall part and
 - separate removable flat substantially circular top and bottom wall parts fitting in sliding frictional contact within said side wall part and each having aligned apertures defining inner edge portions adapted to hold said tubular wall member in vertical sliding frictional and lateral support;
 - said base support including rigidifying spacer parts defined by an elongated rectangular planar member folded sequentially in opposite directions along a series of spaced transverse fold lines to form a plurality of inwardly radially disposed folded edges defining vertical wall portions and to form a plurality of outwardly radially disposed

- folded edges adapted to hold said tubular wall member in vertical sliding frictional and lateral support;
- said folded planar member being positionable within said substantially cylindrical side wall part with its top and bottom edges spacing said removable top and bottom wall parts, with said inwardly disposed folded edges extending into supporting contact with said tubular wall member and said outwardly disposed folded edges in supporting contact within said substantially cylindrical side wall part; and
- a plurality of spaced apertures extending through said tubular wall member adapted to axially receive a rigid elongated portion of an article;
- said spaced apertures being sufficiently larger than the cross-sectional area of the rigid portion of said article and the length of said rigid portion of said article being longer than the depth of said aperture whereby the near lower edge of said aperture and the further upper edge of said aperture engage the bottom and top portions, respectively of said rigid portion of said article as the sole support for same in cantilever relationship.

3,901,390

MAGNETIC RAIL CAR KNUCKLE-OPENER

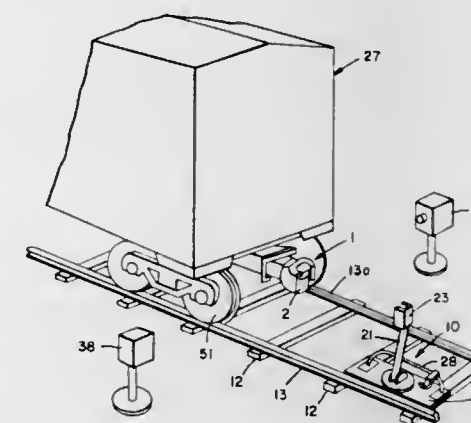
Armand Giovanelli, San Francisco, Calif., assignor to Southern Pacific Transportation Company, San Francisco, Calif.

Filed Aug. 16, 1974, Ser. No. 497,847

Int. Cl. B61g 7/04

U.S. Cl. 213—75 D

10 Claims



1. Apparatus for ensuring the full opening of conventional coupler knuckles on the front end of uncoupled rail cars rolling down a track comprising:
- a base plate mounted between the rails of said track;
 - an arm;
 - means pivotally mounting one end of said arm on said base plate, for movement of said arm from a substantially upright position to a substantially horizontal position;
 - a magnet mounted on the other end of said arm;
 - means for holding said arm in a substantially upright position with said magnet being in the path of a coupler knuckle of an oncoming rail car.

3,901,391

ARTICLE POSITIONING AND STACKING APPARATUS

Lloyd Carlson, and Robert A. Schmitt, both of Vancouver, Wash., assignors to Columbia Machine, Inc., Vancouver, Wash.

Filed Feb. 7, 1973, Ser. No. 330,297

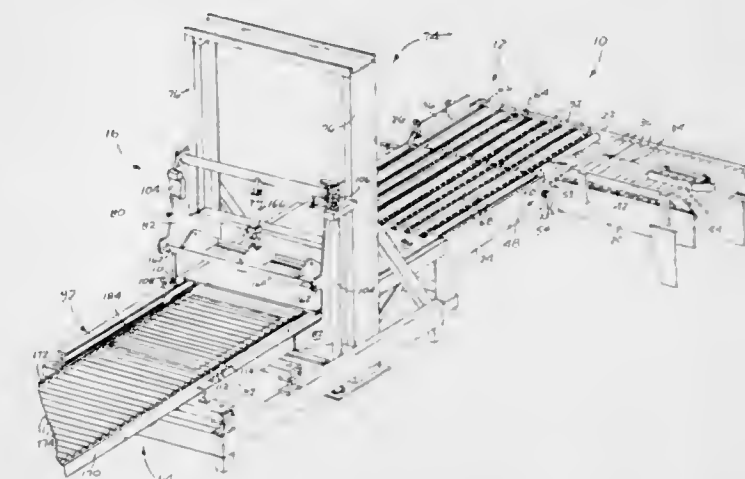
Int. Cl. B65G 57/10

U.S. Cl. 214—6 G

2 Claims

1. Article stacking apparatus comprising
- an upright frame,
 - an elongated, substantially horizontal, carriage mounted for vertical shifting on said frame,
 - a slide plate defining a substantially horizontal article-support surface mounted on said carriage for vertical movement therewith and for horizontal movement longitudinally of said carriage,

- at least one upright, elongated, double-acting ram operatively connected to said carriage in such a manner that it is operable on actuation to raise or lower said carriage under power between a lowered position at one elevation and various adjusted raised positions at higher elevations,
- article feed means disposed adjacent one end of said carriage at said one elevation operable to feed articles onto said plate when the carriage is at said one elevation,
- said article feed means comprising a conveyor for supporting the undersides of articles and conveying them in succession along a path toward the carriage and article-turning means adjacent said conveyor including means for frictionally engaging an upright side portion of an article causing the same to rotate about the portion engaged as the article is conveyed along said path, and means for raising from said conveyor a portion of the article adjacent said arm with remainder portions of the article supported on the conveyor,



- article receiving means defining an article support surface underlying the opposite end of said carriage,
- means operatively connected to said slide plate for moving the same on said carriage between a first position at the end of the carriage adjacent said article feed means and a second position adjacent the opposite end of the carriage, and
- fence means mounted on said frame above said slide plate intermediate the ends of the carriage, said fence means being mounted for shifting vertically relative to said plate between a raised position spaced a sufficient distance above said plate to permit articles received on the plate to be moved with the plate from its first to its second position and a lowered position more closely adjacent said plate to prevent articles from returning with the plate from its second to its first position, thus to wipe such articles from said slide plate and deposit them on said article receiving means.

3,901,392

MATERIAL HANDLING MACHINE

Thomas E. Streckert, P.O. Box 453, Abbotsford, Wis. 54405

Filed May 11, 1973, Ser. No. 359,684

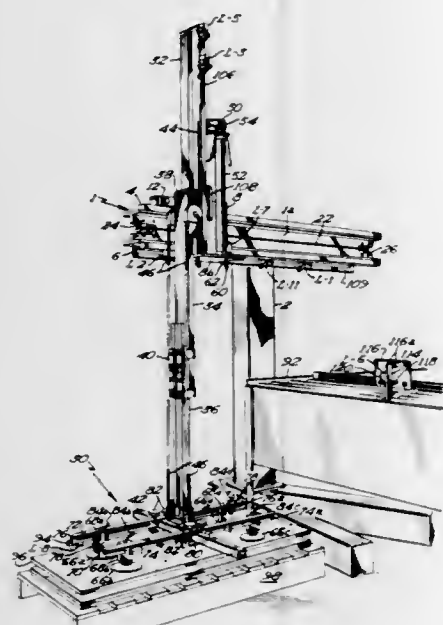
Int. Cl. B65g 57/04

U.S. Cl. 214—6 FS

16 Claims

6. Material handling apparatus comprising:
- a horizontally shiftable carriage on an elevated, horizontal guide track;
 - reversible motor means drivingly associated with said carriage and operable to move said carriage back and forth on said track;
 - a lift head mounted on said carriage for vertical movement upwardly and downwardly, said lift head being horizontally shiftable with said carriage;
 - material pickup means on said lift head;
 - means for raising said lift head;
 - a motor means control device operative to initiate movement of said motor means in one direction to shift said carriage in a predetermined, horizontal direction on said track;

a supply station at which pieces of material to be picked up by said material handling machine are deposited;
 a stacking station at which material picked up from said supply station by said machine is stacked;
 a signal emitter positioned to send a signal along a horizontal path which intersects the vertical direction of extent of a stack of material accumulating at said stacking station and on which said material handling machine is placing pieces of material picked up from said supply station;
 a signal sensing device mounted on said lift head and operative in response to a signal received from said signal emitter to deactivate said lift head raising means and to actuate said motor means control device to initiate movement of said carriage in said predetermined direction,



whereby, with said lift head moving upwardly with a piece of material picked up from said supply station, the stack of material accumulating at said stacking station will interfere with the transmission and reception of said signal by said emitter and sensing device and said sensing device will not deactivate said lift head raising means and actuate said motor means control device until said lift head and said sensing device thereon have been elevated to a level above the top of the stack of material accumulating at said stacking station.

15. A material handling machine comprising:
 a horizontally shiftable carriage on an elevated horizontal guide track;
 reversible motor means drivingly associated with said carriage and operable to move said carriage back and forth on said track;
 a motor means control device operable to initiate movement of said motor means in one direction to shift said carriage in a predetermined, horizontal direction on said track;
 a lift head mounted on said carriage for vertical movement upwardly and downwardly, and horizontally shiftable with said carriage;
 material pickup means on said lift head;
 means for lowering said lift head;
 a work station at a first location along said guide track;
 first and second material handling stations adjacent to each other at a location along said guide track between said work station and one end of said guide track at which the same material stacking or picking-up functions are carried out in proximity to said machine;
 first and second limit switches spaced closely together along the length of said track in substantially vertical alignment with said first and second material handling stations respectively, each of said limit switches being operative in

a control circuit to actuate said lift head lowering means in response to contact by said carriage as it moves in the same predetermined direction towards said first and second material handling stations, said limit switches being connected in a logic circuit of said control circuit in such a manner that only one of said switches is in said control circuit at a time, whereby said limit switches selectively and intermittently actuate said lift head lowering means in response to contact by said carriage as it moves in said predetermined direction to cause the selective and intermittent lowering of said lift head at said material handling stations to carry out the same material handling function at each of said stations.

3,901,393

MODE OF OPERATION SELECTION FOR THE FIRST TABLE OF A BALE WAGON

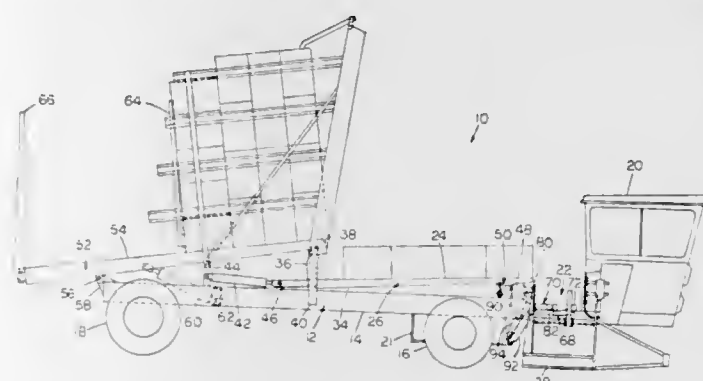
Lee D. Butler, Kingsburg; Edward J. Wynn, Fresno, and Thomas H. Wadsworth, Kingsburg, all of Calif., assignors to Sperry Rand Corporation, New Holland, Pa.

Filed Aug. 19, 1974, Ser. No. 498,833

Int. Cl.² B65G 57/32

U.S. Cl. 214-6 B

12 Claims



1. In a bale wagon having a mobile chassis, means mounted on said chassis for accumulating tiers of bales into a stack and being movable for unloading said stack from said wagon and means mounted on said chassis for accumulating bales into a tier and being movable for delivering said tier to said tier-accumulating means, the improvement which comprises:

means mounted on said chassis for receiving at least one bale on a first of its sides and being operable in either one of two modes for delivering said bale on said first of its sides, or a second of its sides adjacent to said first side, to said bale-accumulating means; and

means for selecting one of said two modes of operation for said bale-receiving means, in response to movement by said tier-accumulating means, for delivery of a next bale on one of said first and second sides thereof to said bale-accumulating means, said means further for selecting the other of said two modes of operation for said bale-receiving means, in response to movement by said bale-accumulating means, for delivery of a next bale on the other of said first and second sides thereof to said bale-accumulating means.

3,901,394

PACKING RAM FOR A SELF-CONTAINED REFUSE HANDLING AND TRANSPORTING APPARATUS

Samuel Vincen Bowles, 12039 Branford St., Sun Valley, Calif. 91352

Filed Jan. 2, 1973, Ser. No. 320,480

Int. Cl. B65f 1/12

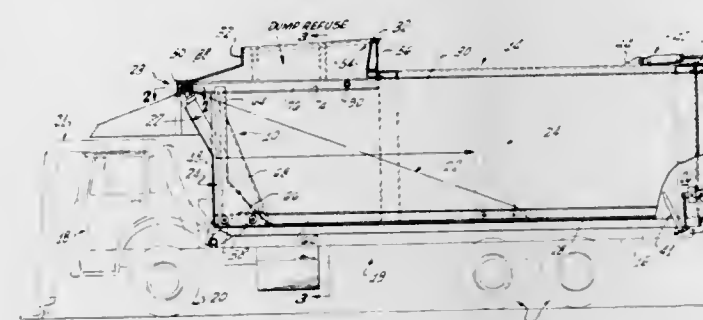
U.S. Cl. 214-82

7 Claims

1. In a self-contained refuse handling and transporting apparatus of the type comprising a truck chassis on which is mounted an elongated box-shaped refuse receptacle having a refuse loading opening near the front and a normally closed refuse discharge opening at the back, and a packing ram

disposed inside the receptacle including an extensible fluid operated packing cylinder and a packing blade supported adjacent the bottom of the receptacle and attached at its lower portion to one end of the packing cylinder, the blade being longitudinally movable inside the receptacle between a retracted position adjacent the front of the receptacle and an extended position toward the rear of the receptacle, the improvement comprising:

a pair of longitudinally disposed tracks along the sides of the receptacle near the top and extending a selected distance rearwardly from a point near the front of the receptacle;



an anchorage coupled to the end of the packing cylinder remote from the blade and including a laterally projecting tubular casing supported by said tracks whereby the packing cylinder is disposed diagonally to project from said casing downwardly and rearwardly toward the bottom of the receptacle;

anchoring means for securing said casing to said tracks at selected positions along said tracks; and
 means for selectively releasing said anchoring means whereby said casing may be moved between said selected positions.

3,901,395

IMPLEMENT STABILIZATION METHOD AND APPARATUS

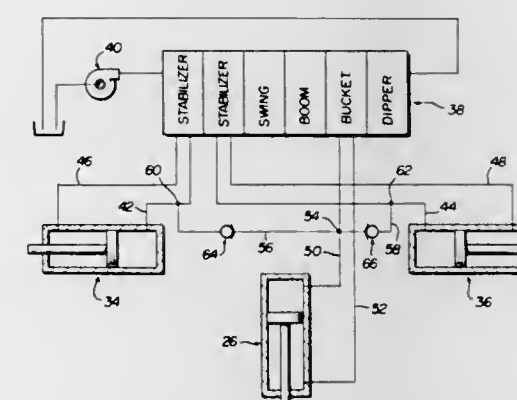
Donald R. King, Terre Haute, Ind., assignor to J. I. Case Company, Racine, Wis.

Filed July 11, 1973, Ser. No. 378,359

Int. Cl. E02f 3/74

U.S. Cl. 214-138 R

2 Claims



1. In a land vehicle having a vehicle mounted extensible tool controlled by a double acting pressure cylinder having tool extending and retracting chambers and a pair of vehicle-stabilizing, ground-engaging arms, said arms each having a double acting fluid pressure cylinder including arm extending and retracting chambers and said arms extensible by said cylinders to support and stabilize said vehicle during extension and movement of said tool, and said cylinder chambers each selectively supplied with fluid pressure by a pump through a system of conduits, the improved control circuit for replenishing any loss of fluid pressure in either of said arm extending cylinder chambers, comprising:

fluid supplementing circuits interconnecting each of said cylinder arm extending chambers with the supply conduit of said cylinder tool extending chamber, and

a check valve in each of said fluid supplementing circuits permitting free flow of fluid from said tool supply conduit of said tool extending chamber to said cylinder arm extending chambers when the fluid pressure in said tool supply conduit exceeds the fluid pressure in either of said cylinder arm extending chambers, maintaining said arms in supporting and stabilizing position and said check valves preventing fluid flow from said cylinder arm extending chambers to said tool supply conduit of said cylinder tool extending chamber.

3,901,396

POWER CONTROL HAND TRUCK

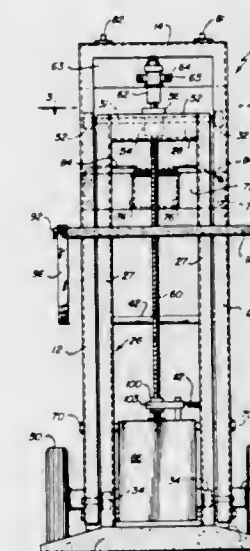
Chester E. Rhodes, Appleton, Wis., assignor to Woodward Mfg. & Sales Co., Inc., Appleton, Wis.

Division of Ser. No. 375,908, July 2, 1973. This application June 17, 1974, Ser. No. 480,232

Int. Cl. B60p 1/02

U.S. Cl. 214-152

4 Claims



1. A method for carrying a load upstairs on a two wheeled hand truck having electric power means for moving a telescoping frame part relative to another frame part, which includes the steps of

placing the wheels alongside a first stair,
 pushing the load forward to sufficiently allow the wheels to move past the first stair tread,

actuating the electric power means to lower a frame part and the carried load to make contact with the ground and thereby raising the wheels to contact a stair tread above the first stair,

braking the load when the electric motor is rendered inoperative to move the load,

tilting the load away from the stairs to allow said load to move to the stair tread on which the wheels rest without obstruction,

actuating the electric power means to release the braking means and to raise the movable frame part and the load to the level of the stair tread on which the wheels are positioned, and

repeating the sequence until the load climbs the stairs to a desirable level.

3,901,397

SELF-LOADING CARRIER

Gibson E. Brock, R.D. 5, Persimmon Rd., Sewickley, Pa. 15143

Filed Nov. 14, 1973, Ser. No. 415,553

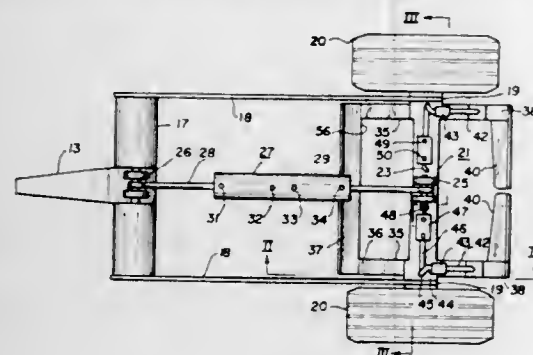
Int. Cl. B60p 1/54

U.S. Cl. 214-392

12 Claims

1. A self-loading trailer carrier for elongated loads comprising a pull yoke, a pair of draft beams connected with the pull yoke spaced from each other and extending rearwardly

thereof, a separate wheel assembly mounted to support the rear end of each draft beam so that the wheel assemblies can straddle the load, a longitudinally elongated load-straddling rack provided with load-supporting means at each end, those means at at least one end comprising a pair of swing load-supporting members mounted one on each side of the rack, and



means pivotally mounting the load-straddling rack between the draft beams intermediate the ends of the rack for rocking movement between a first loading position and a second transport position, at least one of the load-supporting means being positioned intermediate the wheel assembly axis and the pull yoke and further being positioned closely adjacent the ground when the rack is in the said first loading position.

3,901,398

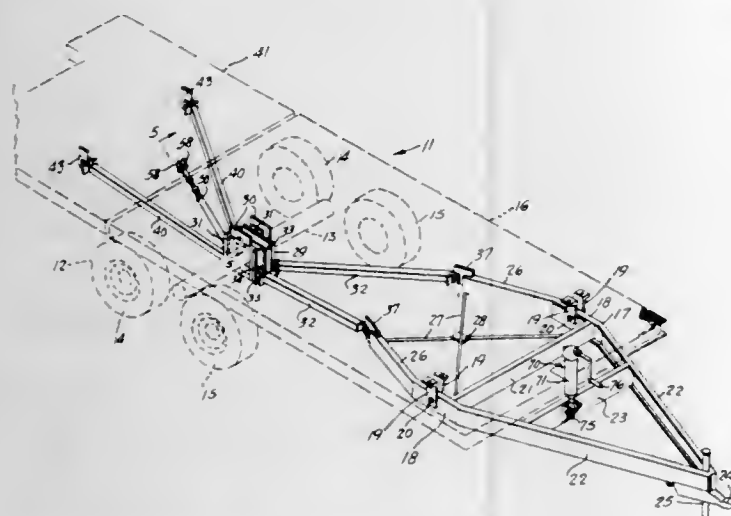
SEMI-TRAILER HAVING A HINGED RAMP MEMBER
Harry J. Bunch, Louisville, Ky., assignor to Bunch Bellcrank Systems, Inc., Louisville, Ky.

Filed Feb. 22, 1974, Ser. No. 444,917

Int. Cl.² B60P 1/28

U.S. Cl. 214-506

11 Claims



1. A semi-trailer comprising a wheeled truck assembly having a transverse axle, a main load-carrying bed member pivotally mounted at its rear portion on said transverse axle, a forwardly extending hitch frame beneath the forward portion of said bed member, means pivotally connecting the intermediate portion of said hitch frame to the bed member for rotation on a transverse axis, a ramp platform hinged to the rear transverse edge of said bed member, jack means acting between said bed member and hitch frame to at times vary the angle therebetween, and linkage means interconnecting the rear end of the hitch frame, the rear portion of the bed member and said ramp platform to control the angular position of the ramp platform relative to the bed member in accordance with the angular position of the bed member relative to the hitch frame, said linkage means including a box-like frame member surrounding said axle and pivoted at its upper portion to said bed member, first link means connecting the front portion of said box-like frame member to the rear end portion of said hitch frame, and second link means connecting the ramp platform to the rear portion of said box-like frame member.

3,901,399 OFFSET HANGER CONSTRUCTION FOR STERILE MEDICAL LIQUID BOTTLE

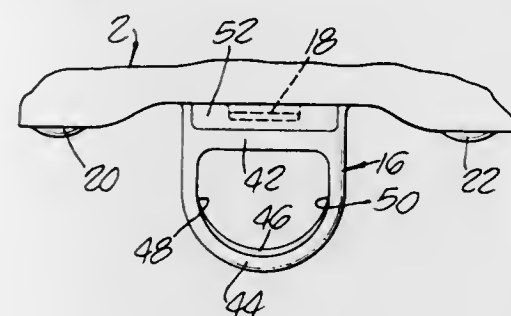
Charles J. McPhee, Sylmar, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Feb. 26, 1974, Ser. No. 445,850

Int. Cl.² B65D 23/012

U.S. Cl. 215-100 A

4 Claims



1. A thermoplastic liquid container with a base wall at one end and a dispensing outlet at an opposite end, and this container has a hinged hanger connected to the base wall, and a lug that is an integral protrusion from the base wall, said lug having an undercut recess into which the hanger can snap for holding the hanger in a folded position near the base wall, wherein the improvement comprises:

said lug recess defining a section having an overhanging nose spaced from the base wall; said hanger being planar and defining a portion of a ring, said ring having an inner offset portion of reduced thickness, said hanger having front and rear surfaces and a mold parting line between its front and rear surfaces, said offset portion positioned on one side of said mold parting line and defines a flat hanger ledge surface along said mold parting line, said offset portion has a curved cam surface for snapping over the lug's nose section with the hanger ledge surface engaging the underneath portion of said nose section, whereby the lug can be a substantially shallower protrusion from the base wall than a lug that must retain the hanger's entire thickness under its nose section.

3,901,400 CHILDPROOF CLOSURE

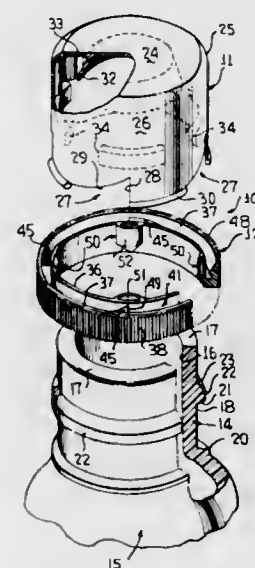
James E. Westfall, Western Springs, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed Feb. 4, 1974, Ser. No. 439,522

Int. Cl. B65d 55/02, 85/56; A61J 1/00

U.S. Cl. 215-221

9 Claims



1. A childproof closure combination comprising a closure and a cooperative annular fitment, said annular fitment being

adapted for encircling engagement about an associated container, said closure having an end panel and a depending peripheral skirt, means carried by said peripheral skirt, for securing said closure to an associated container, first cooperative means between and formed as portions of said peripheral skirt and said annular fitment for releasably interlocking coupling the same to each other, second cooperative means between and formed as portions of said peripheral skirt and said annular fitment for uncoupling said first cooperative coupling means upon relative rotation between said closure and fitment, said second cooperative coupling means being defined by cam and cam follower means of said peripheral skirt and fitment, said cam and cam follower means being defined by a cam surface of said fitment opposing a cam follower surface of said peripheral skirt, and said cam and cam follower surfaces being disposed along a portion of the periphery of said fitment and peripheral skirt, respectively, and being circumferentially inclined whereby upon relative rotation between said fitment and closure said cam and cam follower surfaces create axial forces between said closure and fitment causing axial motion therebetween resulting in the uncoupling of said first cooperative coupling means.

3,901,401

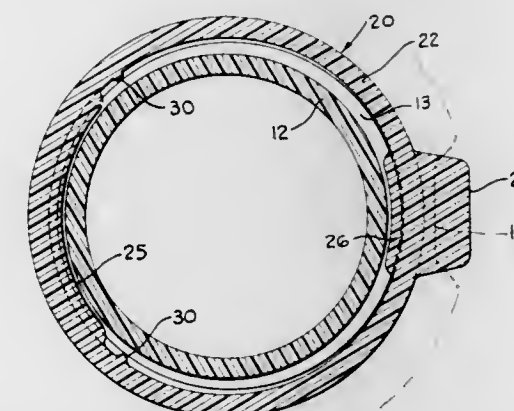
CONTAINER AND SAFETY CLOSURE THEREFOR
Edwin W. Lynn, Acton; Hervey L. Tardiff, and Paul Judge, both of Fitchburg, all of Mass., assignors to Brockway Glass Company, Inc., Brockway, Pa.

Filed Oct. 12, 1973, Ser. No. 406,017

Int. Cl.² B65D 55/02

U.S. Cl. 215-223

2 Claims



1. In combination, a container and a removable closure therefor, said container having a circular neck portion defining an access opening, a continuous annular rib encircling said neck, the upper surface of said rib being sloped to provide a camming surface and the lower surface of said rib having at least a portion thereof lying in a substantially radial plane to provide a locking surface, said closure comprising an end wall portion and a generally cylindrical skirt extending marginally therefrom, said skirt having a pair of arcuate bead formations of rounded cross section disposed diametrically opposite to each other and lying in a common radial plane, one of said bead formations being of substantially shorter arcuate extent than the other whereby said shorter bead comprises a latch element and the longer bead comprises a retaining element, said cap being sufficiently resilient to permit said arcuate bead formations to snap over said annular rib for applying and removing said cap, said closure having a tab formation extending radially outwardly from the lower edge of said skirt, an annular flange on said container disposed beneath said closure and extending radially outwardly beyond said tab and having a notch therein for permitting lifting movement against said tab when the latter is aligned with said notch, the interior diameter of the said closure being larger than the external diameter of said annular rib of the container neck to provide manufacturing tolerance between the interior surface of said closure and the exterior surface of said rib, and protuberance means at the exterior surface of said rib to engage the other

of said surfaces to prevent radial movement of said closure with respect to the container due to said tolerance, said protuberance means being disposed generally diametrically opposite to the initial release point of the closure.

3,901,402 STOPPER-PISTON

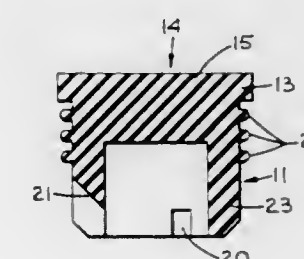
Waldemar A. Ayres, Rutherford, N.J., assignor to Becton, Dickinson and Company, East Rutherford, N.J.

Division of Ser. No. 341,044, March 14, 1973, Pat. No. 3,850,174. This application May 31, 1974, Ser. No. 475,044

Int. Cl.² B65D 51/16

U.S. Cl. 215-248

6 Claims



1. A stopper-piston made of a self-sealing, elastomeric, pierceable material adapted to seal the open end of a blood collection container and capable of maintaining a vacuum therein prior to the collection of a blood sample, said stopper-piston comprising:

a tubular body portion including sealing means positioned between the ends thereof and integrally formed therearound;

said sealing means adapted to exert sufficient compressive forces against the inner wall of the collection container so as to hold a vacuum;

a top surface formed at one end of said tubular body portion and capable of being pierced by a pointed tubular member;

said top surface extending beyond said body portion to form a rim which is deformable and provides a second sealing means when the stopper-piston is pushed into said container to function as a piston; and said rim has a diameter substantially equal to the external diameter of said container;

said body portion having at least three lobes formed at said other end so that when said stopper-piston is mounted in the open end of said blood collection container said lobes will compress inwardly toward the axis of the stopper-piston to provide supporting contact areas to maintain the stopper-piston in axial alignment when an axial force is exerted against the piston to move the piston into the container.

3,901,403

TEAR-OPEN TAMPERPROOF CLOSURE SEAL

Eugene W. Menke, Montoursville, Pa., assignor to The West Company, Phoenixville, Pa.

Filed Oct. 15, 1973, Ser. No. 406,270

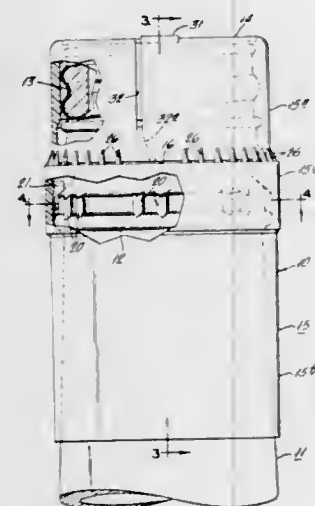
Int. Cl. B65d 41/62, 51/18, 51/20

U.S. Cl. 215-251

12 Claims

1. The combination of a tear-open tamperproof closure seal and a container having a finish with an annular protrusion having locking means, said seal having a body with a transverse end wall and a skirt depending from said end wall, said depending skirt having an upper portion, a lower portion and rupturable means connecting said portions, and providing a first weakened zone, said lower skirt portion having an annular enlargement adjacent said rupturable means, inwardly-projecting latch surface means on the inner periphery of said skirt below said enlargement for engaging below said protrusion to limit axial displacement of said seal and prevent the

same from disengaging said finish when mounted thereon, locking means on the interior of the enlarged portion of said skirt engageable with locking means on said annular protrusion of said finish operable to prevent rotation of said seal relative to the finish when mounted thereon, said upper portion of said skirt having a second weakened zone with a portion extending transversely to said first weakened zone, means



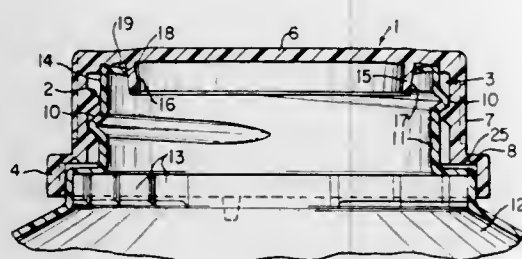
providing a finger grip alongside said portion of said second weakened zone for rupturing said connecting means when said finger grip is displaced circumferentially about said seal to disengage the upper portion of said seal from the container finish, said lower skirt portion remaining seated on the container with the locking portion overlying the annular protrusion on said finish when the upper portion is detached.

3,901,404 BOTTLE CAP

Jerome M. Feldman, Great Neck, N.Y., assignor to Dairy Cap Corporation, Jamaica, N.Y.
Continuation-in-part of Ser. No. 254,393, May 18, 1972, Pat. No. 3,812,994, which is a continuation-in-part of Ser. No. 215,562, Jan. 5, 1972, abandoned. This application May 3, 1973, Ser. No. 356,915
Int. Cl. B65d 41/34

U.S. Cl. 215-256

13 Claims



1. In a bottle cap for use with a bottle having a threaded neck opening into the bottle, said cap being constructed of flexible material and having a top wall, a cylindrical side wall depending from the top wall and a thread on the inner surface of the side wall for cooperating with the thread on the neck of the bottle, the improvement comprising:

- a first annular sealing surface extending downwardly from said top wall and toward said side wall at an acute angle relative thereto for engagement with the outside wall surface of the bottle neck adjacent its opening into the bottle, said cap being of solid construction from the first sealing surface radially outward to the side wall;
- a second annular sealing surface extending downwardly from said top wall inwardly of said first sealing surface for engagement with the top surface of the bottle neck, said second sealing surface normally extending away from the side wall of the cap at an acute angle relative to the top

wall with the cap being of solid construction between second sealing surface and the top wall;
c. said first and second sealing surfaces being spaced from each other to seal against the cooperating surfaces of the bottle neck at spaced zones; and
d. said cap being of sufficient flexibility to flex as the second sealing surface engages the top surface of the bottle neck to permit pivoting of said first and second sealing surfaces into flush sealing contact with the top and outside surface of the bottle neck.

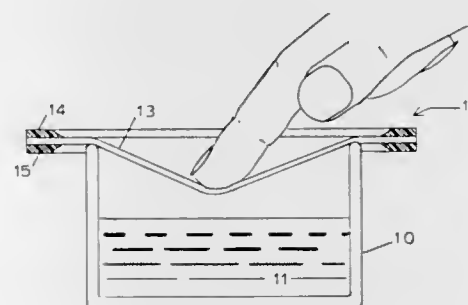
3,901,405 HERMETIC CLOSURE MEMBER

Robert B. Norberg, 814 8th St. S. E., Apt. 5, Minneapolis, Minn. 55414

Filed Feb. 4, 1974, Ser. No. 439,343
Int. Cl. B65D 51/00

U.S. Cl. 220-287

5 Claims



1. In combination, a container, said container including wall portions which define a smooth-surfaced planar-edged opening, a closure member for said opening, said closure member comprising a flat sheet of smooth-surfaced gas impermeable elastomeric material of a thickness from about 1/32 inch to 1/16 inch and of a size to extend beyond the outermost edge of said opening, said sheet including stiffening means adjacent the outer edges thereof and beyond the edges of the wall portion of said container which defines said opening, said stiffening means being of sufficient strength to hold the edges of said sheet external of the edges of said opening against inward movement thereof when the central portion of said sheet is distended in a direction perpendicular to the plane of said sheet and into the container.

3,901,406 CONTAINER

Jerome S. Kivett, c/o Regal Plastic Company, 1725 Holmes, Kansas City, Mo. 64108

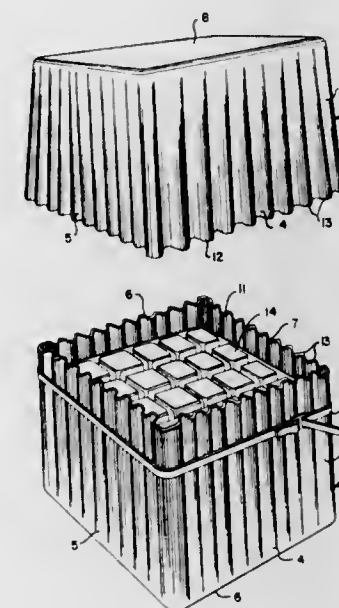
Filed Sept. 18, 1972, Ser. No. 290,012
Int. Cl. B65d 1/44, 21/04

U.S. Cl. 220-8

8 Claims

1. A closed container comprising:
 - a pair of sleeve members each having a plurality of side walls joined by corners and an end wall together defining a receptacle with an open end opposed to said end wall,
 - said side walls being formed of a semi-rigid material and into a configuration comprising a plurality of adjacent corrugations extending between said corners, said corrugations extending longitudinally from said open end to a position near said end wall,
 - the open end of one of said sleeve members being sleeved over the open end of the other of said sleeve members causing said adjacent corrugations of the respective walls to take inner and outer corrugation-reinforcing telescoped positions over substantially the length of the

sleeve and producing a closed container with substantial strength against crushing between said end walls, said



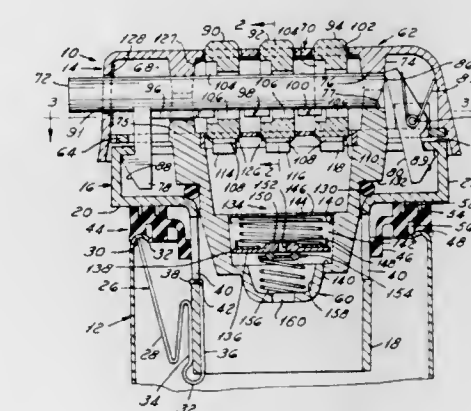
sleeve members being respectively reversible and nestable due to radial flexibility at said open ends.

3,901,407
LOCKING CAP ASSEMBLY FOR A FILLER NECK
Ronald P. Mitchell, Rochester, and Fred C. May, Grosse Ile, both of Mich., assignors to Mercury Manufacturing Company, Wyandotte, Mich.

Filed July 10, 1974, Ser. No. 487,149
Int. Cl. B65d 45/00

U.S. Cl. 220-315

17 Claims



1. A locking cap assembly for a filler neck comprising an adapter mountable on a predetermined range of sizes of open ends of filler necks in communication with the interior thereof, a cap removably receivable on said adapter for sealing the open end of the filler neck to prevent a liquid from escaping therethrough to the exterior thereof, and a lock carried by said cap for releasably retaining said cap on said adapter in sealing relation with the open end of the filler neck, whereby the same locking cap assembly may be utilized for sealing a range of sizes of open ends of filler necks.

3,901,408
MACHINE INCLUDING MEANS FOR INDEPENDENTLY ADJUSTING THE DOSE OF TWO REACTIVE, FLOWABLE COMPONENTS INTO A MIXING CHAMBER
Heinrich Boden, Opladen, and Ulrich Knipp, Schildgen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 366,319, June 4, 1973, abandoned.

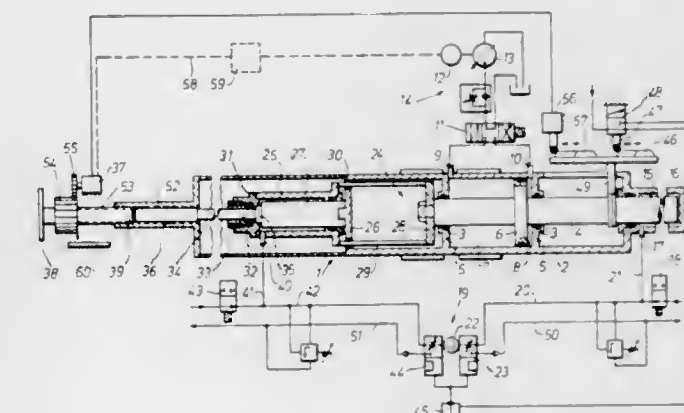
This application Sept. 9, 1974, Ser. No. 504,227

Claims priority, application Germany, June 7, 1972, 2227559

Int. Cl. B67D 5/60

U.S. Cl. 222-134

8 Claims



1. A machine for dosing two components through conduits into a mixing chamber, comprising a dosing arrangement for each component, each arrangement including a dosing piston with an associated dosing cylinder provided with inlets and outlets;

- a housing with guides for a hydraulic piston-cylinder-arrangement, which at its one end, carries a first dosing piston, which corresponds with the first dosing cylinder; a drive mechanism for the hydraulic piston-cylinder-arrangement;
- a second dosing piston which corresponds with the second dosing cylinder, either said dosing piston or said dosing cylinder is rigidly connected to said hydraulic piston-cylinder-arrangement whereas the other is connected to said housing; at least one differential dosing piston corresponding with said second dosing arrangement and projecting into the dosing chamber of said second dosing cylinder, said differential dosing piston being independently adjustable in its depth of projection to independently adjust the volume of said second dosing cylinder without changing the volume of said first dosing cylinder.

3,901,409
APPARATUS FOR BLENDING SMALL PARTICLES
Ronnie A. Bradley, Oak Ridge, Tenn.; Charles R. Reese, Union, S.C., and John D. Sease, Knoxville, Tenn., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed July 23, 1974, Ser. No. 491,096

Int. Cl. B67D 5/60

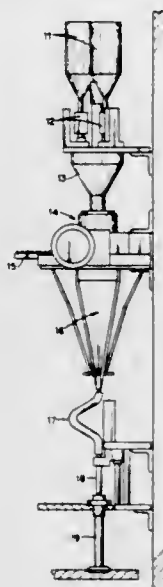
U.S. Cl. 222-145

5 Claims

1. Apparatus for blending particles and uniformly loading the blended particles in a receptacle comprising:

- a funnel-shaped radial mixing member having a larger particle-receiving end and a smaller particle-discharge end, said mixing member having its axis vertically oriented with its larger end disposed above the smaller end;
- a particle splitter cone having an upwardly extending apex disposed coaxially with and immediately below said radial mixing member;
- a housing defining a multiplicity of wedge-shaped vanes, said vanes engaging the surface of said cone to define a multiplicity of particle flow passageways spaced about said cone;

- d. a base disposed below said cone defining
- a multiplicity of open collection cavities spaced in a circular array, each of said collection cavities being open to and in gravimetric flow communication with said particle flow passageways;
 - a multiplicity of discharge ports open to the bottom surface of said base, said discharge ports each being in communication with respective collection cavities in said multiplicity of collection cavities;



- means for closing and sequentially opening said discharge ports whereby only one of said collection cavities can be unloaded at a time, and whereby the contents of said collection cavities can be unloaded in a sequential order; and
- means for passing blended particles discharged from said collection cavities to a receptacle.

3,901,410

CAPTIVE TIP-SEAL VALVE

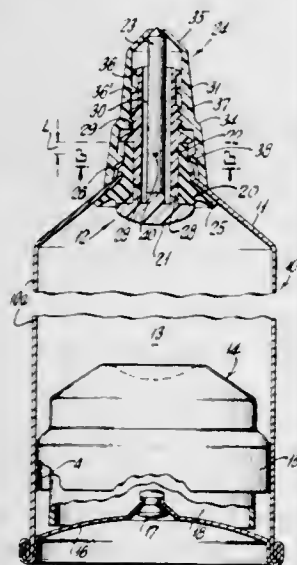
Robert S. Schultz, Old Greenwich, Conn., assignor to Robert S. Schultz, Old Greenwich, Conn.

Filed July 19, 1974, Ser. No. 489,902

Int. Cl. B65d 55/02, 83/14

U.S. Cl. 222-153

16 Claims



11. In combination, for use in a container of liquid product, a rigid centrally apertured container closure member having inner and outer sides, an elastomeric bushing in axially-retaining fitted relation to said member and extending through the aperture and between inner and outer sides, said bushing having a central longitudinal bore extending through the aper-

ture region of the closure member, a valve member seated in axial abutment with the inner end of said bushing and including a dispensing stem with an outer annular body portion fitted to and extending through and beyond the outer end of the bore of the bushing, said stem further comprising an elongate pin portion extending beyond the axially outer end of said annular portion, and a closure cap having a centrally apertured end and a skirt surrounding outwardly exposed parts of both said stem and said bushing, axially interfering rotatable means coaxing between an exposed part of said annular body portion and said skirt for captive axial retention of said cap on said stem, and threaded means coaxing between an exposed part of said annular body portion and said skirt for relative axial threaded positioning of said cap and stem, said pin being so formed as to coax with the aperture for such advance of said threaded engagement that said skirt abuts said closure member; whereby, upon retraction of threaded engagement, said cap is caused to relieve itself from contact with said closure member and to effectively open the cap-end aperture.

3,901,411

APPARATUS FOR DISPENSING PAVEMENT SEALER MATERIAL

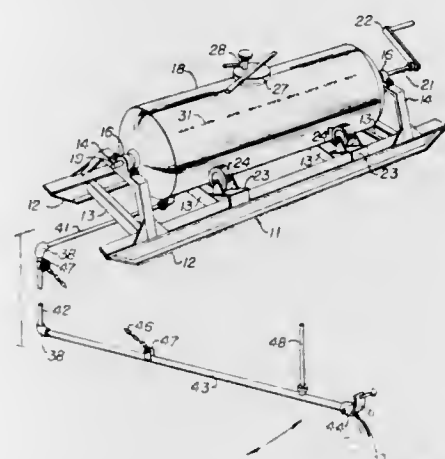
John F. Bauman, 432 Redwood Ave., Redwood City, Calif. 94061

Filed Nov. 19, 1973, Ser. No. 417,472

Int. Cl. B67d 5/64

U.S. Cl. 222-167

3 Claims



1. Apparatus for storing, mixing and dispensing pavement sealing material comprising a frame, a tank, said tank having a cylindrical body and conical ends, a plurality of rollers rotatably mounted on said frame for rotatably supporting said tank body, mechanical turning means for turning said tank, a filler tube and cap for filling said tank, said filler tube projecting radially from said tank body, a dispensing outlet nipple projecting radially from said tank body adjacent one end of said tank body, a valve member connected to said outlet nipple, said filler tube and dispensing outlet nipple being positioned relative to said rollers so that as said tank is revolved said rollers do not contact said filler tube, said cap, said outlet nipple, and said first valve member, the extent of radial projection of said tube and cap and of said outlet nipple and said first valve being sufficiently small so as not to contact said frame as said tank is revolved, and a piping system for detachable connection to an outlet of said first valve, said piping system comprising an upper horizontal pipe extending out beyond said frame and said one end of said tank body, a vertical pipe connected to said upper pipe, a lower horizontal pipe connected to said vertical pipe and a second valve at the outer end of said lower pipe.

3,901,412
CHILD-RESISTANT ACTUATOR FOR AEROSOL DISPENSER

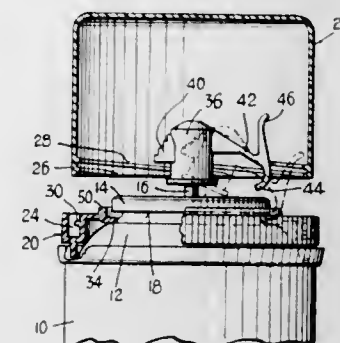
Sam F. Copia, N. Riverside, Ill., assignor to VCA Corporation, Greenwich, Conn.

Filed June 20, 1974, Ser. No. 481,388

Int. Cl. B65D 83/14

U.S. Cl. 222-182

10 Claims



1. An aerosol dispenser comprising, in combination:
 - a pressurized container having a tilt-type discharge valve provided with a protruding tiltable valve stem, and having a valve mounting cup carrying said valve and stem,
 - said cup having an annular exterior shoulder provided with an undercut,
 - an annular collar surrounding said cup and turnable thereabout,
 - an orificed actuator button carried by the valve stem,
 - said button having a laterally extending hook which is adapted to latch under the shoulder of the cap when the button is laterally displaced to tilt the valve stem for discharge,
 - said collar having inner peripheral portions adapted to engage and obstruct said hook so as to prevent discharging movement of the button,
 - said collar having a recess in it, adapted to register with and receive said hook when the collar is suitably turned, whereby the obstructing action of the collar is obviated.

3,901,413

HIGH PRESSURE SYRINGE

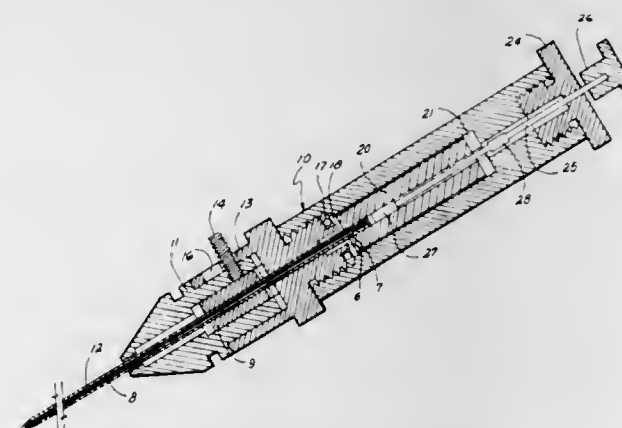
Rano J. Harris, Sr., Baton Rouge, La., assignor to Precision Sampling Corporation, Baton Rouge, La.

Filed Mar. 1, 1974, Ser. No. 447,233

Int. Cl. B67d 5/18

U.S. Cl. 222-309

9 Claims



1. In apparatus comprising a syringe useful for receiving and accurately measuring small quantities of a fluid specimen from a pressurized source, for dispensing, the syringe having the usual hollow barrel formed by an enclosing wall providing a bore, a reciprocable plunger fitted in said bore in sliding, sealing relationship therewith, said barrel having a hollow needle with dispensing end located on the opposite end of said barrel, the hollow opening of which is in communication with

the bore of said barrel, the improvement which comprises, as a part of the combination,

a valved needle assembly which includes a tubular adapter within the axial opening of which the hollow needle is rigidly mounted, said needle containing a wire of external diameter less than the diameter of the internal opening through the needle, the needle being sealed at its rearward end and being provided with a side opening which connects with the annulus which forms an open communication with the dispensing end of the needle, the tubular adapter being slidably mounted within a slip fitting which can be operatively affixed upon the wall which forms the forward end of the barrel, the tubular adapter including a resilient tubular seal mounted therein within the axial opening of which the side opening of the needle can be snugly contained and communication between the openings of the needle and barrel closed or extended through said axial opening thereof and into the bore of the barrel to open communication between the openings of the needle and barrel by movement of the tubular adapter within the slip fitting,

whereby, when the communication between the openings of the needle and barrel are closed by containment of the side needle opening inside the resilient tubular seal, the dispensing end of the needle can be inserted into a pressurized source of a fluid specimen, the openings between the needle and barrel can then be opened by projection of the side needle opening through the resilient tubular seal and into the bore of the barrel, such that on retraction of the plunger, a fluid specimen can be withdrawn from the pressurized source by passage thereof from the dispensing end of the needle through the annulus formed between the wire and inside wall of the needle, and via the side opening of the needle into the barrel, and when the communication between the needle opening and barrel is closed by movement of the side opening of the needle into the resilient tubular member, an accurately measured portion of the fluid specimen can be trapped within the barrel for subsequent injection when the dispensing end of the needle is inserted into a media, the communication between the barrel and needle openings reopened, and the plunger pushed forward.

3,901,414

LIQUID DISPENSER

Nicholas G. Capra, 467 Delavan Ave., Newark, N.J. 07107, and Vincent Toth, RD No. 1, 120 Mildred Ave., Stanhope, N.J. 07874

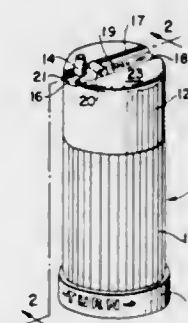
Continuation-in-part of Ser. No. 269,452, July 6, 1972, Pat. No. 3,792,800. This application Jan. 3, 1973, Ser. No.

320,729 The portion of the term of this patent subsequent to Jan. 19, 1991, has been disclaimed.

Int. Cl. B67d 5/32

U.S. Cl. 222-340

10 Claims



1. A dispensing container for liquids, said container having a side wall and opposite ends, a liquid dispenser on one end of said container, a cylinder mounted in said container, a piston in the cylinder mounted for relative reciprocation between the piston and cylinder, said piston and cylinder defining a chamber for liquid to be dispensed, first fluid communication means connected with the chamber to enable flow to said chamber and second fluid communicating means con-

nected with said chamber and with said dispenser for flow of liquid from the chamber to the dispenser, valve means is said second fluid communicating means to normally prevent flow of liquid from said chamber and operable to enable flow from said chamber to said dispenser, spring means engaged between said piston and cylinder to urge relative reciprocation between said piston and cylinder to pressurize liquid in said chamber and dispense said liquid through said dispenser when said valve means in said second fluid communicating means is open, manually operable, rotatable operating means carried by said container externally thereof, a piston rod connected at one end thereof to said piston and extending axially from said cylinder and connected at its other end to said operating means, double acting cam means connected between the operating means and the cylinder so that relative rotation between said container and said operating means causes relative reciprocation between said piston and cylinder to compress said spring and enlarge said chamber to draw liquid thereinto for subsequent dispensing of said liquid when said valve means is opened and said spring expands to pressurize the liquid in said chamber.

3,901,415

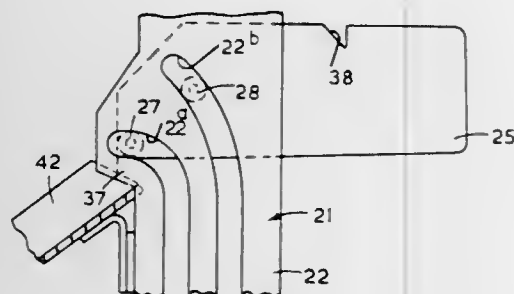
LADLING APPARATUS

William Edwin Shephard, Sheldon, and Horace Kenneth Bridgewater, Halesowen, both of England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England
Continuation of Ser. No. 274,284, July 24, 1972, abandoned.
This application Dec. 7, 1973, Ser. No. 422,851
Claims priority, application United Kingdom, July 22, 1971, 34328/71

Int. Cl. G01f 11/10

U.S. Cl. 222-357

11 Claims



1. Ladling apparatus for a die casting machine including in combination movable ladle means; a guide structure guidingly connected to said ladle means for movement between a filling station wherein said ladle dips into a reservoir of molten metal, and an emptying station wherein molten metal is discharged from said ladle means; and drive means operatively connected to said ladle and operable to move the ladle between said stations, said drive means being connected to said ladle means by means which is never immersed in the molten metal, said guide structure including a pair of guide tracks, and said ladle means including guide track followers engaging said guide tracks respectively, said guide tracks being substantially parallel to one another except adjacent said emptying station, said guide tracks adjacent said emptying station diverging from one another and comprising ladle-tilting portions whereby, adjacent the emptying station, coaction of the guide track followers and the divergent regions of said guide tracks as said ladle means is moved, results in tilting of said ladle means to discharge molten metal from said ladle means.

3,901,416

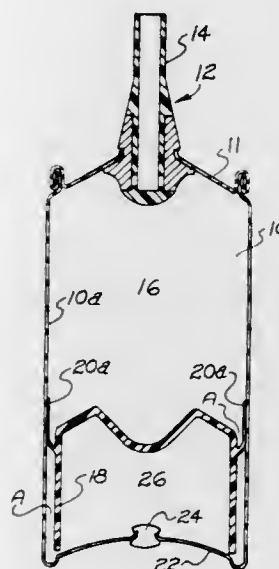
TOP-LOADED PRESSURE OPERATED CONTAINER FOR DISPENSING VISCOUS PRODUCTS

Robert S. Schultz, Old Greenwich, Conn., assignor to Robert S. Schultz, Old Greenwich, Conn.
Continuation-in-part of Ser. No. 290,977, Sept. 21, 1972, Pat. No. 3,827,607, which is a continuation-in-part of Ser. No. 175,253, Aug. 26, 1971, abandoned. This application Mar. 18, 1974, Ser. No. 452,447 The portion of the term of this patent subsequent to Aug. 6, 1991, has been disclaimed.

Int. Cl. B67d 1/04

U.S. Cl. 222-389

21 Claims



1. A piston for a pressurized container having a viscous product and provided with a dispensing valve, said piston comprising a piston body portion of a generally tubular configuration and a resilient annular elastomeric flange provided with an upstanding skirt portion on the outer wall of said piston body portion, said piston body portion being radially spaced from the inner wall of said skirt portion, said upstanding skirt portion being for contact with a container wall and being the only means of piston support, said skirt portion being relatively thin with respect to the space between said skirt portion and the piston body portion, said skirt portion having a large surface area of substantial axial length; whereby, when said piston is inserted in a suitable container and when the space within said skirt portion and above said piston is loaded with viscous product and the space beneath said skirt portion and piston is subjected to a predetermined charge of gas under pressure, said skirt portion will be pressure-loaded into peripheral and axially continuous light sealing and stabilizing contact with the container wall.

3,901,417

DEVICE FOR THE VENTING OF JERRY CANS

Wolfram Schlemann, Eugen-Nagele-Str. 17, 714 Ludwigsburg, Germany

Division of Ser. No. 280,817, Aug. 15, 1972, Pat. No. 3,834,594. This application Apr. 16, 1974, Ser. No. 461,402
Claims priority, application Germany, Oct. 26, 1971, 2153155 The portion of the term of this patent subsequent to Sept. 10, 1991, has been disclaimed.

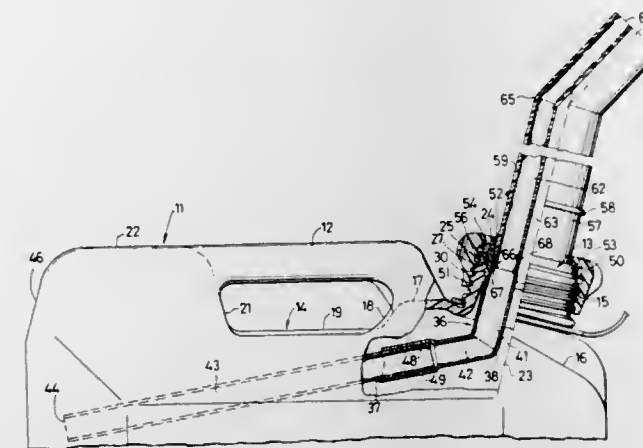
Int. Cl. B65D 25/48

U.S. Cl. 222-479

9 Claims

1. A discharge device for use with cans having a spout and vent means therein comprising
a discharge pipe means,
a vent tube means which extends at one end at least partially within said discharge pipe means and has a cross-sectional shape at its other end which substantially coincides with the shape on an end portion of said vent means within said can,

flange means on said discharge pipe means for pressing against the upper surface of said spout,
at least a part of said discharge pipe means and said vent tube means sharing a common wall,
said discharge pipe means having an end portion which extends together with said vent tube means beyond said



flange means for protruding into said spout for effecting a tight contact between said vent tube means and said end portion of said vent tube means within said can,
the walls of said discharge pipe means at its free end being approximately parallel, whereby said discharge pipe means may be injection molded.

3,901,418

OPERATING MECHANISM FOR SLIDABLE GATES

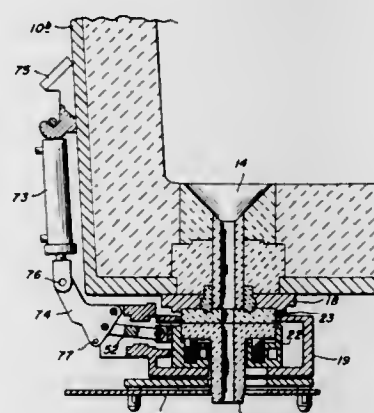
Joseph J. Klaus, Urbana, and Earl P. Shapland, Champaign, both of Ill., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Oct. 26, 1972, Ser. No. 300,957

Int. Cl. B22D 37/00

U.S. Cl. 222-504

17 Claims



1. The combination, with a bottom-pour vessel having a nozzle in its bottom wall, a slidable gate, and supporting means for said gate hinged to the underside of the bottom wall, whereby said gate may control flow of material through said nozzle, and in which said supporting means can be opened about the hinged connection for changing gates;
of an improved operating mechanism for said gate, said mechanism comprising:
a bell crank pivotally mounted on said supporting means adjacent the intersection of the bottom and side walls of the vessel;
an elongated linear-motion device for applying a force to operate said gate;
means on the side wall of said vessel above said bell crank supporting said device for pivotal movement with respect to said vessel; and
means operatively connecting said bell crank both with said device and with said gate;

said bell crank being disconnectable to permit said supporting means to move about the hinged connection, without interference from said operating mechanism;
said device extending up the side wall of said vessel above said bell crank with the longitudinal axis of said device lying approximately parallel with the side wall, whereby the device is readily accessible without being an obstacle.

3,901,419

FLOW PROMOTING DEVICE FOR BATCH HOPPERS

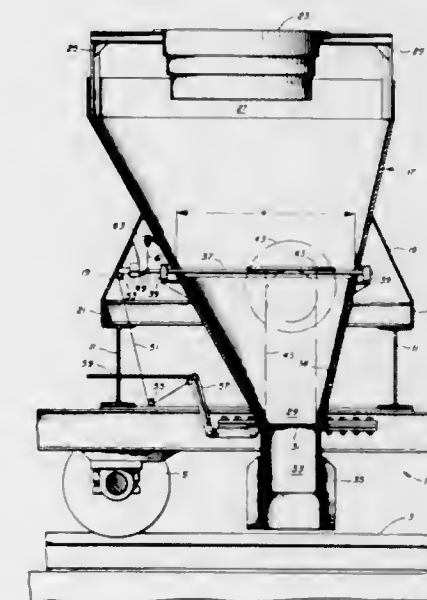
Imre Szendroi, Allentown, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Continuation-in-part of Ser. No. 237,316, March 23, 1972, Pat. No. 3,817,432. This application June 3, 1974, Ser. No. 476,006

Int. Cl. B65g 65/70

U.S. Cl. 222-506

7 Claims



1. In combination with a hopper adapted to receive through a top charging opening batch quantities of granular material and to discharge said material through a bottom discharge opening, the improvement comprising:

- gate means associated with said bottom discharge opening and adapted to be closed when said hopper is being charged and opened when said hopper is being discharged;
- a plate mounted on a rotatable shaft and locked in a horizontally extending position within said hopper above said bottom discharge opening to absorb the impact of said material during charging to provide unconsolidated material below said plate; and
- rotating means for rotating said plate from a horizontally extending charging position to a vertically extending discharging position in a predetermined time interval after the opening of said gate means.

3,901,420

MACHINE FOR IRONING SHIRT COLLARS

Antonio Lozano Revuelta, Avda. de Madrid, No. 95, 50 Barcelona, Spain

Filed Jan. 18, 1974, Ser. No. 434,691

Claims priority, application Spain, Jan. 23, 1973, 410889

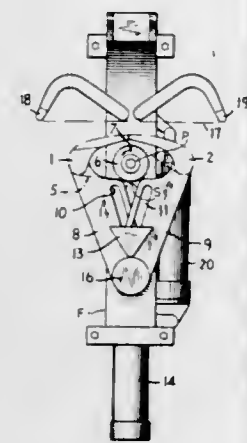
Int. Cl. D06C 15/00

U.S. Cl. 223-52.1

10 Claims

1. A machine for ironing shirt collars, comprising a vertically elongate frame; substantially symmetrical first and second arched heating die sections symmetrically mounted on said frame for symmetrical movements lateral of the frame to fit inner surface portions of differently sized collars to be

ironed, said die sections having interengaging fingers; a flexible band extending over and supported by said arched die



3,901,421

BICYCLE RACK

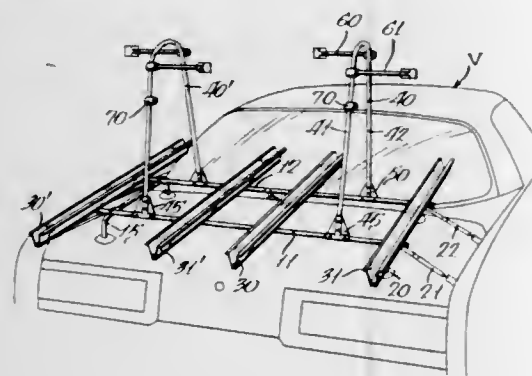
Richard J. Kalicki, 122 Algonquin, and Thomas W. Jalovec, 306 Illinois St., Park Forest, Ill. 60466

Filed Aug. 2, 1973, Ser. No. 384,981

Int. Cl. B60p 3/06

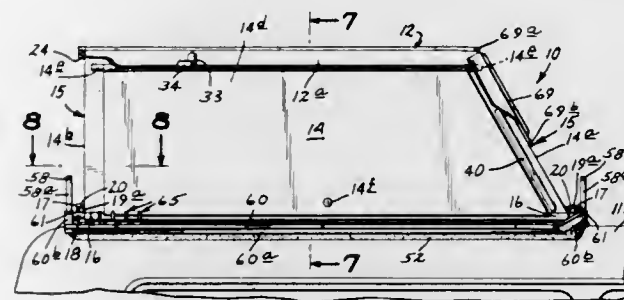
U.S. Cl. 224-29 R

8 Claims



1. A bicycle rack for a plurality of bicycles comprising a base having a pair of spaced-apart base members, a pair of spaced-apart elongate upwardly open channel members extending transversely to and overlying said base members, each of said channel members receiving the wheels of a bicycle disposed in upright position on the rack, a frame member of a generally inverted U-shape with a pair of legs secured one to each of the base members and extending upwardly between said channel members, a plurality of housings fastened at least one to each leg of the frame member and each having an open-ended central bore extending transverse to the plane of the frame member, a plurality of clamp members with at least one extending outwardly from each side of said frame member to a position to clamp and hold a bicycle having its wheel positioned in a channel member, each of said clamp members having an elongate rod insertable into either end of said open-ended central bore, and coacting means between said housing and an elongate rod for releasably and rotatably retaining a clamp member in association with a housing, said coacting means includes a slot in a housing wall extending for a part of the circumference thereof, and said elongate rod has a retractable pin engageable in the slot to rotatably retain the rod in the housing but permit disassociation therebetween, at least two of said housings are at different heights to provide variable height positioning of a clamp member selectively extending to either side of the frame member, and said retractable pin being engageable in said slot in either direction of extension of the clamp member.

3,901,422
FOLDING CAR TOP CARRIER
Franklin C. Anderson, 557 Ridge Rd., and Irvin E. Dorschner, 336 W. McKinley, both of Owatonna, Minn. 55060
Filed Aug. 31, 1973, Ser. No. 393,658
Int. Cl. B60r 9/00
U.S. Cl. 224-42.1 E 14 Claims



1. A folding cargo carrier for motor vehicles, said folding cargo carrier comprising:
a. rigid horizontally disposed generally rectangular top and bottom panels;
b. spaced rigid side and end panels, at least one of said panels having an access opening formed therein and a closure member disposed to cover said opening;
c. hinge means securing the lower edge portion of each of said side and end panels to extend along respective side and end edge portions of said bottom panel for pivotal movements of said side and end panels between a first generally vertically disposed cargo enclosure position extending between said top and bottom panels and a second generally horizontally disposed position closely overlying said bottom panel with said top and bottom panel in a closely spaced intimate relationship to form a thin cargo supporting platform;
d. independently operable connecting means slidably mounting an upper edge of each of said side panels to said top panel to control the position of said top panel relative to said bottom panel during said movements of said side panels between said first and second positions to permit one side panel to be positioned in either of its first and second positions independently of the other side panel;
e. first latch means releasably securing said side and end panels in said first position whereby said first latch means and rigid panels provide a rigid structure wherein said cargo carrier is operable at highway speeds in a cargo enclosure position;
f. second latch means releasably securing said top and bottom panels in said second position whereby said second latch means and rigid panels provide the thin cargo supporting platform wherein said cargo carrier is operable at highway speeds in a cargo supporting platform position;
g. support means securing and supporting said cargo carrier on the roof of the motor vehicle.

3,901,423
METHOD FOR FRACTURING CRYSTALLINE MATERIALS

Benny M. Hillberry, West Lafayette, and Robert J. Myers, Kokomo, both of Ind., assignors to Purdue Research Foundation, Lafayette, Ind.

Filed Nov. 26, 1973, Ser. No. 418,895

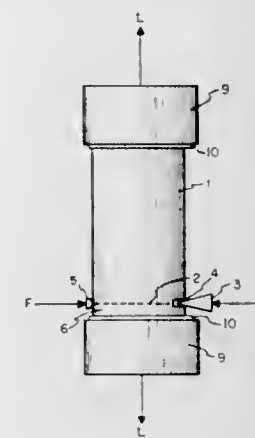
Int. Cl. B26F 3/02

U.S. Cl. 225-2

8 Claims

1. A method for producing thin wafers from crystalline material characterized by:
the step of introducing a preselected stress concentration into a crystal along a line to establish a predetermined fracture plane that will produce a thin wafer whereby the location of the fracture initiation is predetermined;
the step of applying a continuing tensile stress acting normally upon the predetermined fracture plane; and

the step of initiating fracturing of the crystal while maintaining the application of tensile stress by application of a sudden acting fracturing force acting substantially per-



pendicular to the predetermined fracture plane whereby said applied fracturing force and tensile stress enables said thin wafers to be produced at said location predetermined by said introduced stress concentration.

3,901,424
METHOD AND APPARATUS FOR FORMING LOOPS OF METAL BAND MATERIALS WITH FLOOR TYPE LOOPER

Takuji Sakai, Kunihiro Takada, and Yuji Katsuma, all of Kimitsu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

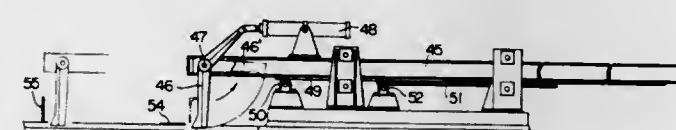
Filed Nov. 15, 1973, Ser. No. 416,206

Claims priority, application Japan, Nov. 17, 1972, 47-115277

Int. Cl. B65h 17/42

U.S. Cl. 226-1

4 Claims



1. A method of forming loops of metal strip on a looping floor, as said strip has its flat surface trailing over said floor, which comprises the steps of:
pushing up the side of said strip at a point near an inlet of said floor as said strip is progressing along said floor, so as to make the thus pushed portion of said strip stand vertically on the surface of said floor and to form a bend in said strip at said portion; and
pushing said strip, at a plurality of points therealong, toward the center of said floor, so as to cause the forerunning part of said strip to form waves along the direction of progress, the so waved part of said strip standing vertically on the surface of said floor.

3,901,425
WIRE MOVING APPARATUS

Edwin K. Taylor, Oklahoma City; James V. Boyd, Jones, both of Okla., and James H. Williams, Liberty, Mo., assignors to Sooner Products Co., Bristow, Okla.

Continuation-in-part of Ser. No. 149,909, June 4, 1971, abandoned. This application July 9, 1973, Ser. No. 377,717

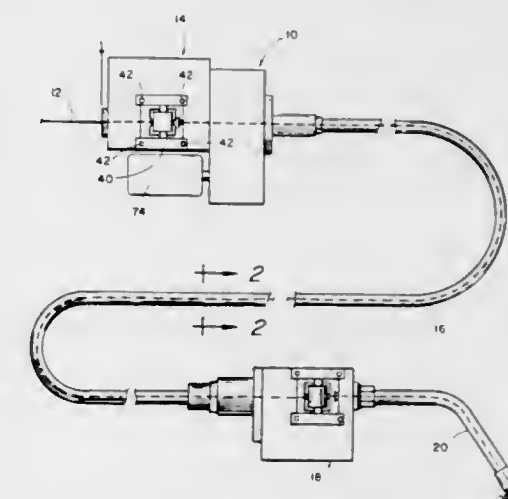
Int. Cl. B65h 17/20

U.S. Cl. 226-108

12 Claims

1. A wire moving apparatus for moving wire therethrough and comprising wire feed means for accepting the wire therein, wire dispensing means remote from the wire feed means for guiding the wire out of the wire moving apparatus, flexible cable means connected between the wire feed means

and the wire dispensing means, drive means operably connected to the wire feed means and the cable means to drivingly rotate a portion of said cable means; said flexible cable means comprising an elongated hollow flexible outer casing secured between the wire feed means and the wire dispensing means, an elongated flexible sheath journaled within the outer casing, one end thereof being rotatably connected to the wire feed means and operably connected to the drive means, the opposite end thereof being rotatably connected to the wire dispensing means, an elongated hollow flexible liner loosely disposed within the rotatable flexible sheath, one end of said liner being retained within the wire feed means and the oppo-



3,901,426

PORTABLE MOTORIZED YARN DISPENSER

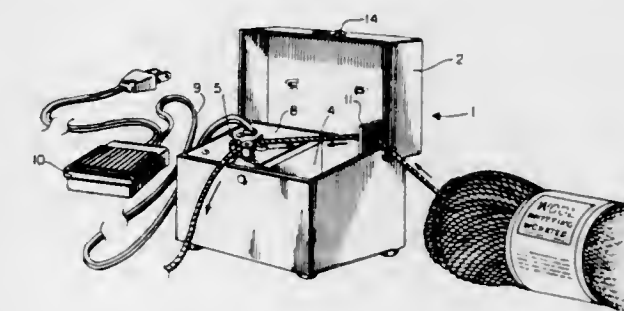
Edward J. Zatopek, and Shirley A. Zatopek, both of 7143 Chandler Dr., Box 14683, Baton Rouge, La. 70808

Filed June 14, 1974, Ser. No. 479,447

Int. Cl. B65H 17/26

U.S. Cl. 226-134

6 Claims



1. In a yarn feeding and dispensing device, a container, a partition in said container dividing the same into two compartments, a cover over the face of one of the compartments, a pair of rolls mounted on the top of said cover, an electric motor on the underside of said cover and operatively connected to said rolls, a power cord connected to said motor, a foot operated switch member connected to said power cord, a guide member on said cover placed immediately in advance of the nip of the feed rolls and an additional guide member attached to the end wall of the other compartment of said

container and protruding therefrom, a lid for the container hinged thereto in such a manner as to be retainable in either the open or closed position.

3,901,427

COPY PAPER FEEDER

Yoshiharu Namba, Tokyo, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

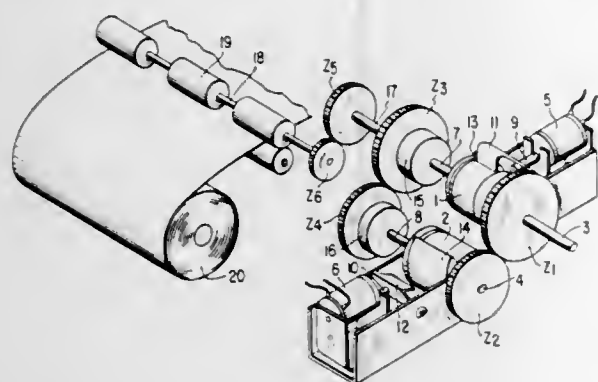
Filed Dec. 7, 1973, Ser. No. 422,855

Claims priority, application Japan, Dec. 27, 1972, 47-129858

Int. Cl. B65h 17/22

U.S. Cl. 226-135

7 Claims



1. A copy paper feeder in a copying machine or the like for feeding either one of only two selected lengths of paper from a roll of said copy paper, said feeder comprising:

roller means for delivering paper from said roll, said roller means being mounted on a roller shaft so that the length of paper delivered by said roller means is a function of the turn angle that said roller shaft is rotated through;

a drive shaft;

means for rotating said drive shaft;

first rotation providing means in response to a first control signal for providing over a first path a first predetermined amount of rotation from said drive shaft to said roller shaft to deliver a first selected length of paper from said roll, said first rotation providing means including first clutch means for connecting said drive shaft to a roller shaft in response to said first control signal, and first disconnecting means for causing said first clutch means to disconnect said drive shaft from said roller shaft, after said first amount of rotation has been provided to said roller shaft, said first disconnecting means including a first lobe having notching means provided about said first clutch means and a first solenoid means having a first elongated interposer for normally engaging said notching means to prevent rotation of said first clutch means and thereby disconnect said drive shaft from said roller shaft, said first solenoid means being responsive to said first control signal for temporarily disengaging said first elongated interposer from said notching means to permit said first clutch means to rotate through said first predetermined amount of rotation until said notching means is again engaged by said first interposer so that said first amount of rotation may be transmitted from said drive shaft to said roller shaft; and

second rotation providing means in response to a second control signal for providing over a second path a second predetermined amount of rotation from said drive shaft to said roller shaft to deliver a second selected length of paper from said roll, said second rotation providing means including a first gear connected to said drive shaft, a second gear mounted on a first auxiliary shaft, said first and second gears engaging one another, a third gear mounted on a second auxiliary shaft, a fourth gear mounted on a third auxiliary shaft, said third and fourth gears engaging one another, the ratio of the number of teeth of said fourth and third gears respectively being substantially the same as the ratio of said first selected

length of paper to said second selected length of paper, second clutch means for connecting said first and second auxiliary shafts in response to said second control signal, and second disconnecting means for causing said second clutch means to disconnect said first auxiliary shaft from said second auxiliary shaft after said second amount of rotation has been provided to said roller shaft, said second disconnecting means including a second lobe having second notching means provided about said second clutch means and a second solenoid means having a second elongated interposer for normally engaging said second notching means to prevent rotation of said second clutch means and thereby disconnect said first auxiliary shaft from said second auxiliary shaft, said second solenoid means being responsive to said second control signal for temporarily disengaging said second elongated interposer from said second notching means to permit said second clutch means to rotate through a fourth predetermined amount of rotation until said second notching means is again engaged by said second interposer so that said second amount of rotation may be transmitted from said drive shaft to said roller shaft.

3,901,428

TAG ATTACHER

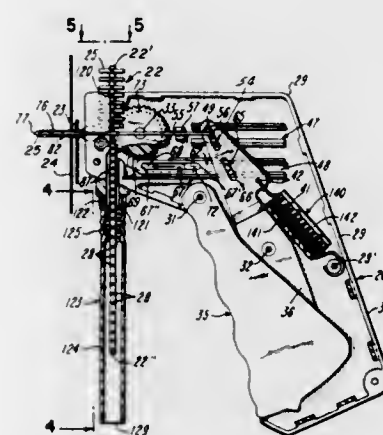
Joseph J. Grass, Kettering, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Filed May 8, 1974, Ser. No. 467,965

Int. Cl. B65c 5/06

U.S. Cl. 227-67

9 Claims



1. Apparatus for attaching tags to merchandise using fasteners, each fastener having a bar section and a button section joined by a filament section, with a connector joined to each bar section, and a rail joined to the connectors to provide a unitary fastener assembly, the apparatus comprising: a body, a needle having a piercing end extending outwardly of the body, a bore extending lengthwise of the needle, an elongated slot in the side of the needle communicating with the bore, means for advancing the fastener assembly and disposed so that when the advancing means is operated a bar section of a fastener is brought into axial alignment with the bore, the guideway being considerably shorter than the rail and having an infeed side into which the fastener assembly is inserted and an outfeed side from which the rail and the associated connectors which have been severed from the respective bars can pass, a knife for severing the connectors from the bar sections, a push rod engageable with the bar section for driving the bar section through the bore while the filament section of the fastener passes through the slot, and a shield connected to the body at the outfeed side of the guideway to receive the rail with the connectors for shielding the severed ends of those connectors from contact with the merchandise to prevent snagging the merchandise, the shield being sufficiently long so that the severed ends are shielded from the merchandise until substantially all the fasteners of the fastener assembly have been severed.

3,901,429

APPARATUS FOR COMPLIANT BONDING

John Albert Boyer, Allentown; David Paul Ludwig, and Friedrich Zwickel, both of Whitehall, all of Pa., assignors to Western Electric Company, Incorporated, New York, N.Y.

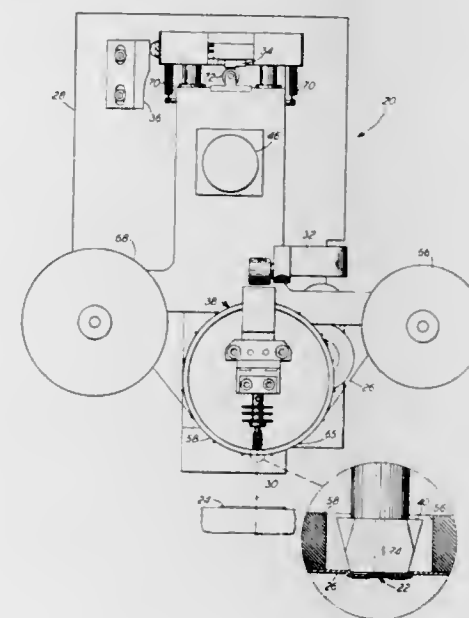
Division of Ser. No. 249,332, May 1, 1972, Pat. No. 3,800,409.

This application Jan. 17, 1974, Ser. No. 434,173

Int. Cl. B23K 37/04

U.S. Cl. 228-5.5

10 Claims



1. Apparatus for compliantly bonding an article to a substrate, which comprises:

means, including an opening in such means, (a) for effecting non-slipping rolling contact with a compliant member, (b) for positioning at least a portion of the compliant member over the opening and (c) for moving the opening and said portion of the compliant member onto the bonding axis in proximity to, but not in contact with, the heatable bonding tip; and

means, coupled to the bonding tip, for passing the bonding tip through the opening and for engaging the portion of the compliant member on said axis with the bonding tip to bond the article to the substrate.

3,901,430

PROCESS FOR MAKING WELDED CORRUGATED TUBE

Charles D. McLain, Alton, Ill., assignor to Olin Corporation, New Haven, Conn.

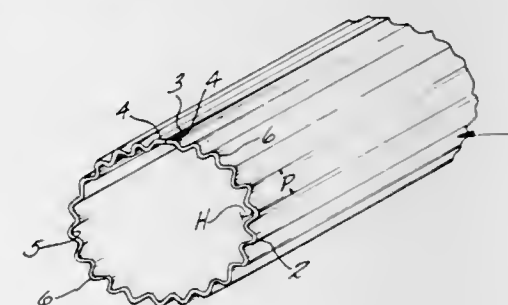
Continuation of Ser. No. 388,837, Aug. 16, 1973, which is a continuation of Ser. No. 218,422, Jan. 17, 1972, abandoned.

This application July 2, 1974, Ser. No. 485,093

Int. Cl. B21D 39/00

U.S. Cl. 228-146

7 Claims



1. A process for continuously forming a corrugated heat exchanger tube comprising:

A. providing a supply of metal strip having opposed longitudinally extending edge portions with longitudinal free edges and opposed surfaces;

B. continuously embossing said strip to form longitudinally extending corrugations on both surfaces of the metal strip having peaks and valleys while leaving the opposed longitudinally extending edge portions of the strip uncorrugated, wherein said uncorrugated edge portions and the corrugated peak portions on one surface of said strip are on the same plane and the sum of the widths of the said edge portions comprises less than about 20% of the width of the strip as corrugated;

C. continuously forming said corrugated strip into the shape of a tube with the strip edges abutting and extending in a straight line along the longitudinal axis of the formed tube; and

D. continuously welding said strip edges together, thereby continuously forming a fluid and pressure tight corrugated heat exchanger tube having a weld seam extending in a straight line along the longitudinal axis of the tube, corrugations parallel thereto and uncorrugated portions of the tube surface corresponding to the uncorrugated portions of said strip coextensive with the said weld seam on both sides thereof extending along the longitudinal axis of the tube.

3,901,431

CYLINDRICAL LEAK-RESISTANT, THERMOPLASTIC COATED, PAPERBOARD CONTAINER

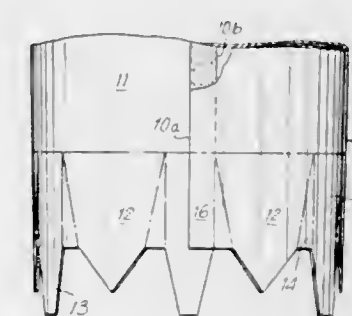
Richard Warren Carlson, Warwick, N.Y., assignor to International Paper Company, New York, N.Y.

Filed Aug. 19, 1974, Ser. No. 498,571

Int. Cl. B65D 3/04

U.S. Cl. 229-21

16 Claims



1. In a thermoplastic coated, paperboard container, provided with a generally cylindrical side wall, an improved bottom construction, comprising: a plurality of abutting, angular fingers on the bottom, exterior surface of the container; a plurality of overlapping, tapered fingers on the bottom, interior surface of the container; each of said angular fingers and said tapered fingers being separated by a triangular gusset panel, foldably connected to and horizontally aligned between said angular fingers and tapered fingers; and said angular fingers and tapered fingers being foldably connected to said side wall.

3,901,432

COLLAPSIBLE BOX STRUCTURE

Cecilia H. Lancaster, Bethesda, Md., assignor to Raymond N. Baker, Washington, D.C., a part interest

Filed Oct. 30, 1972, Ser. No. 301,741

Int. Cl. B65d 13/04, 5/36, 45/32

U.S. Cl. 229-23 R

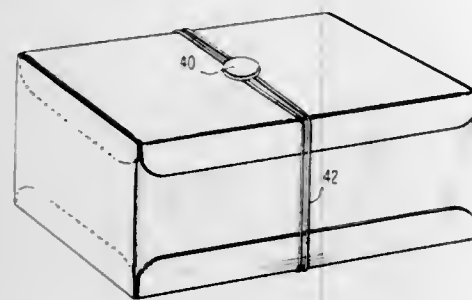
4 Claims

1. Three-piece collapsible box structure comprising sidewall means made of sheet-like material, such as cardboard,

the sidewall means being foldable into a flat configuration and expandable into an extended configuration which defines the sidewall peripheral outline of an enclosure which is open on its two remaining oppositely disposed surfaces,

closure means adapted to be assembled in combination with the sidewall means when in extended configuration including a pair of closures for separately covering respec-

tively each of the remaining open surfaces defined by sidewall means, the sidewall means including planar sidewall panels meeting along juncture lines and being foldable along at least such juncture lines, the closure means including side flaps adapted to extend in planes about the peripheral outline of the box structure, each in substantially parallel relationship to its respective adjacent sidewall panel,



a portion of such side flaps fitting internally of the peripheral configuration defined by the sidewall means and a portion of such flaps fitting externally of such configuration so that the internally fitted flaps maintain the sidewall means in extended configuration, and fastening means for releasably securing the closure means in covering relationship to the remaining oppositely disposed surfaces of the sidewall means.

3,901,433

NEWSPAPER DELIVERY MEANS AND METHOD

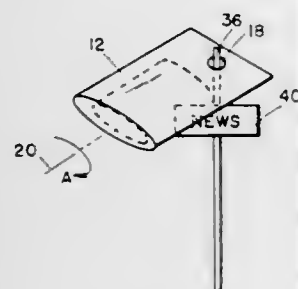
John P. Jacobs, and Melvin F. Jacobs, both of Hastings, Mich., assignors to J-Ad Graphics Inc., Hastings, Mich.

Filed Jan. 24, 1974, Ser. No. 436,059

Int. Cl.² B65B 67/12

U.S. Cl. 232-1 R

2 Claims



2. Apparatus for delivering printed material, said apparatus comprising:

- a stanchion having a straight vertical post;
- a ground engaging stabilizer member adjacent one end;
- a cross member rigidly secured to said post adjacent to but spaced from the other end thereof;
- said crosspiece extending laterally from each side of said post;
- a printed material receiving envelope made of a thin film of a polymeric material and having an open end;
- said envelope adjacent said open end, having an aperture extending through both sides and centered between the edges thereof for receiving said other end of said post therethrough to hang said envelope and its contents therefrom, said apertures being of generally the same size as the cross section of said vertical post;
- said envelope after being loaded with printed material being secured to said post by passing said other end of said post through said holes and twisted 180° about an axis extending lengthwise of said envelope and intersecting said holes to fold over the portion of said envelope adjacent said open end and to fold the adjacent corners thereof downwardly in opposite directions to close said envelope against the entry of weather and dirt;

said twisted portion of said envelope being bent out of the plane of the remainder of said envelope to bias said envelope against said crosspiece whereby said crosspiece holds said twisted envelope against untwisting.

3,901,434

NON-EXTRUDING LID SEAL FOR CENTRIFUGES

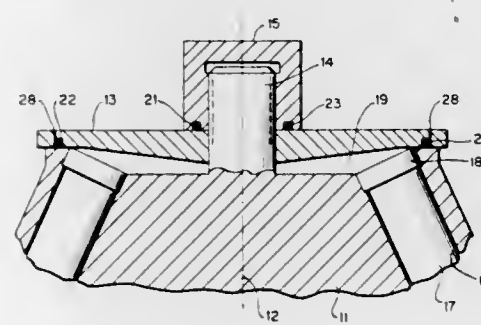
Herschel E. Wright, Santa Clara, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Oct. 10, 1973, Ser. No. 405,085

Int. Cl. B04b 1/00

U.S. Cl. 233-27

6 Claims



1. In a rotating receptacle having a chambered rotor and a cover therefor, a fluid pressure and centrifugal force relieving seal comprising:

- confronting peripheral portions of the rotor and the cover having confronting, normally contiguous, contacting surfaces, one of the members comprising the rotor and the cover having an annular groove at the confronting surface thereof, said groove having a first wall substantially parallel to the plane of the contacting surfaces and an outer cylindrical wall intersecting the first wall, the grooved member having a pressure-releasing hole extending to the exterior thereof from the intersection of said intersecting walls, and
- a resilient deformable sealing ring in said groove of such cross-sectional dimensions as normally to lie tangent to walls of the groove in the grooved member and to the confronting surface of the other member for sealing the confronting surfaces, whereby distortion of either of the members by fluid pressure or centrifugal force causing parting of the confronting surfaces of sufficient magnitude to distort the sealing ring out of tangency with either of the said groove walls opens said hole to permit release of sufficient fluid pressure to permit restoration of contact between said contiguous surfaces.

3,901,435

INFORMATION CARRIER FOR USE ON EXPOSED FILMS AND FILM-CONTAINING RECEPTACLES

Norbert Schlagheck; Herbert Schultes, both of Frustenfildbruck; Horst Schneider, Horrem, and Hans-Peter Huber, Munich, all of Germany, assignors to Agfa Aktiengesellschaft Gevaert, Leverkusen, Germany

Continuation-in-part of Ser. No. 182,979, Sept. 23, 1971, Pat. No. 3,766,525. This application Sept. 26, 1973, Ser. No. 401,102

Claims priority, application Germany, Sept. 25, 1970, 2047236

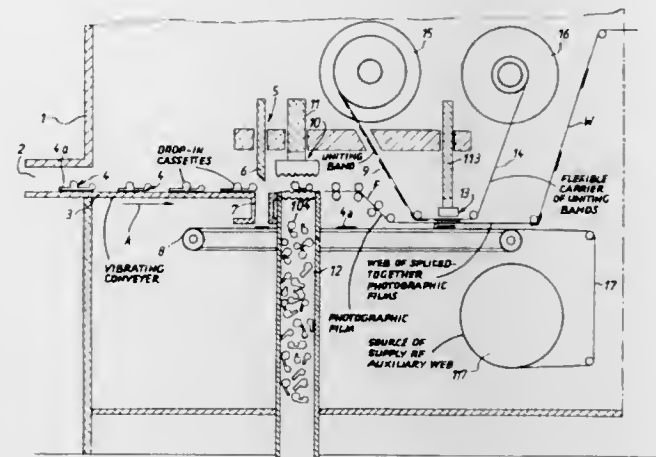
Int. Cl. G06k 19/00, 19/06

U.S. Cl. 235-61.12 R

9 Claims

1. The combination of an information carrier for attachment to and separation from a receptacle for a confined exposed first photographic roll film having a predetermined width and for attachment to the neighboring ends of said first film and another photographic roll film upon removal of said first film from its receptacle, said information carrier having a width at least approximating said predetermined width and the information on said carrier being in the form of photoelec-

trically detectable data; and an adhesive band applied to said carrier so that the band overlies said data, said band consisting



of light-transmitting material so that said data can be detected through said band.

3,901,436

TIME METER ASSEMBLY

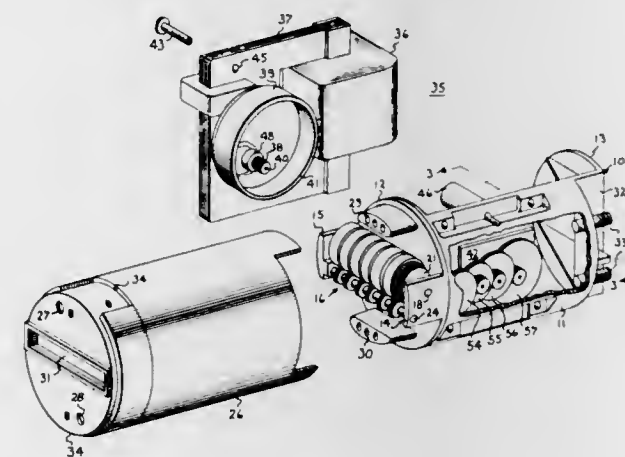
Carl F. Van Bennekom; William J. Schultz, both of Lynnfield, and Ralph M. Manning, Winchester, all of Mass., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 25, 1974, Ser. No. 436,435

Int. Cl.² G06M 1/10; G06C 15/42

U.S. Cl. 235-104

10 Claims



1. A time meter assembly comprising:

- a. a frame member;
- b. a counter comprising rotating indicating wheels mounted on said frame;
- c. a timing motor having a rotating shaft carrying a driving pinion for driving the wheels of the counter;
- d. gear reduction means forming a driving connection between said counter and said motor pinion, said gear reduction means comprising a gear shaft on which a reduction gear is rotatably mounted; and
- e. means mounting said motor on said frame with automatic alignment during assembly, said motor mounting means comprising a support plate on which said motor is mounted, shoulder means extending from said frame on which said plate is supported and guided for sliding movement in a direction to adjust the distance between said motor pinion and said reduction gear, said support plate having a locator hole therein adapted to receive an end of said reduction gear shaft in locking engagement when slidably moved to a position in which said motor pinion and reduction gear are in proper meshing engagement.

3,901,437

PROGRAMMED TEMPERATURE CONTROL SYSTEM FOR A FURNACE AND THE LIKE

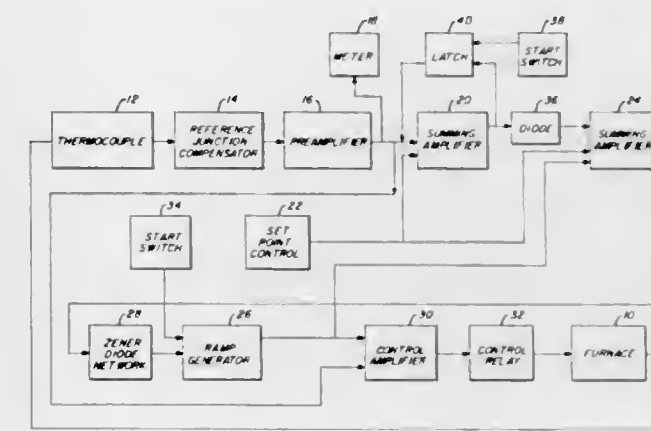
Robert E. Harkins, Fairmont, W. Va., assignor to Electronic Control Systems, Inc., Fairmont, W. Va.

Filed Feb. 4, 1974, Ser. No. 439,015

Int. Cl.² G05D 23/22

U.S. Cl. 236-15 B

8 Claims



1. A programmed temperature control system for a furnace comprising, means for sensing the temperature within said furnace, means for indicating the temperature within said furnace, means for setting a fixed preselected maximum temperature within said furnace, variable voltage means for increasing and decreasing the temperature of said furnace at a controlled rate, means for controlling the supply of power to said furnace responsive to output of said variable voltage means, first amplifier means for receiving input signals from said temperature sensing means and said temperature setting means, second amplifier means for receiving input signals from said first amplifier means, said temperature setting means and said variable voltage means to maintain said variable voltage means at the output of said temperature setting means for an indefinite period of time until the temperature in said furnace reaches said preselected maximum temperature, and diode means for controlling the input of signals from said second amplifier means to said variable voltage means to thereby adjust the rate of temperature increase and decrease in said furnace.

3,901,438

THERMOSTAT-REGULATED RADIATOR VALVE FOR SINGLE OR DOUBLE CONDUIT CENTRAL HEATING SYSTEMS

Fingal Christiansson, Vastervik, Sweden, assignor to Fingal Christiansson Ingeniorsbyra, Vastervik, Sweden

Filed Feb. 19, 1974, Ser. No. 443,933

Claims priority, application Sweden, Feb. 19, 1973, 029915/73

Int. Cl.² F24F 11/00

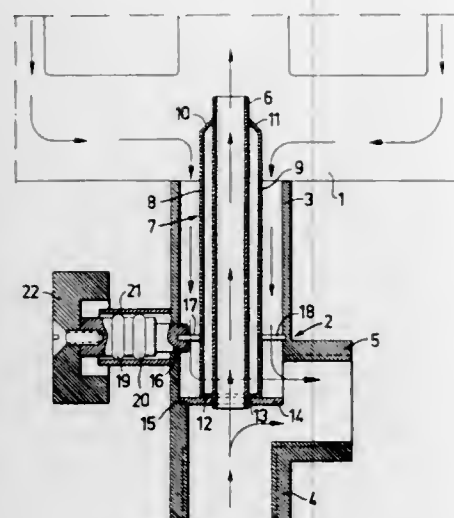
U.S. Cl. 236-43

7 Claims

1. A thermostat regulated radiator valve for central heating systems comprising:

- bi-metal means mounted within a conduit conducting fluid from a radiator for controlling fluid flow through the radiator in dependence on the temperature of the outgoing flow from the radiator,
 - a resilient pliable tube means in said conduit capable of conducting the whole flow from the radiator,
 - said bi-metal means being of U-shape and with the legs thereof pinching said tube means between their ends to a variable degree to regulate fluid flow therethrough.
7. A thermostat-regulated radiator valve for central heating systems comprising:

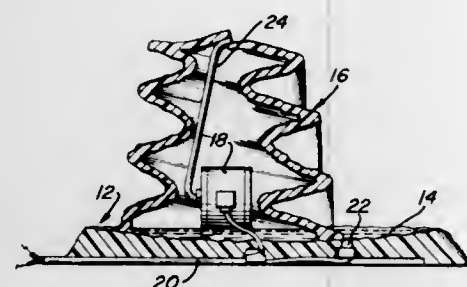
temperature-responsive means mounted within a conduit conducting fluid from a radiator for controlling fluid flow through the radiator in dependence on the temperature of the outgoing flow from the radiator, a resilient pliable tube means in said conduit for conducting fluid from the radiator,



said responsive means being effective in response to the temperature of the fluid in the conduit to pinch the tube means and thereby vary its fluid-carrying capacity and thereby control the fluid flow according to the temperature of the return fluid flow in the conduit.

3,901,439
PORTABLE MINIATURE WATERFALL
Lovell J. Willis, 1460 E. William, Decatur, Ill. 62521
Filed Oct. 12, 1973, Ser. No. 406,092
Int. Cl. B05b 17/04
U.S. Cl. 239-12

3 Claims



1. A portable miniature waterfall comprising a portable unitary base provided with a shallow liquid holding basin formed therein, a simulated rock formation carried within and extending upwardly from said basin, said simulated rock formation being of cast plastic or resin and having a plurality of simulated rock-surface levels to allow liquid to cascade over said rock-surface levels and being formed to cooperate with said basin to define an interior chamber, a pump positioned in said chamber to receive water from said basin, and a conduit connecting the pump with an elevated position in said rock formation for elevating liquid from the basin to a discharge opening in the rock formation from which the liquid may cascade back over said levels into the basin.

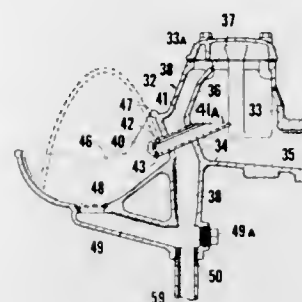
3,901,440
DRINKING FOUNTAIN PUMP STAND
John Gordon Baker, Evansville, Wis., assignor to Baker Manufacturing Company, Evansville, Wis.
Filed Apr. 26, 1974, Ser. No. 464,518
Int. Cl. E03B 9/20
U.S. Cl. 239-28

15 Claims

1. In an improved drinking fountain pump stand of the type wherein a base is engageable on a well drop pipe and has an outlet, and a handle assembly is mounted on the base for

engaging and reciprocating a well pump rod to cause water to flow from the well drop pipe to the base outlet, the improvement which comprises a fountain assembly mounted on the base, said fountain assembly including:

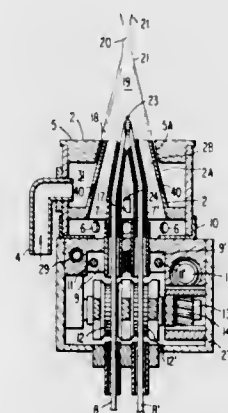
a. a reservoir having an inlet portion in communication with the base outlet, said reservoir being defined by walls having internal surfaces which slope downwardly toward the inlet portion,



b. a barrier tube having an upwardly directed fountain outlet located outside the reservoir and an inlet end located within the reservoir at a higher level than the fountain outlet to direct water from the reservoir to the fountain outlet and prevent gravitational backflow of water from the fountain outlet to the reservoir,
c. a bowl extending below the fountain outlet to receive and drain water discharged from the fountain outlet.

3,901,441
MULTIPURPOSE ELECTRICALLY MELTING WIRE METALIZING MACHINE PROVIDED WITH A MULTIPLE INJECTION PORT
Ryoichi Kasagi, No. 5-6, Minamitsukaguchi-cho 1-chome, Amagasaki-shi, Hyogo, Japan
Filed Sept. 6, 1974, Ser. No. 503,571
Claims priority, application Japan, Sept. 6, 1973, 48-100463
Int. Cl. B05B 1/24
U.S. Cl. 239-81

4 Claims



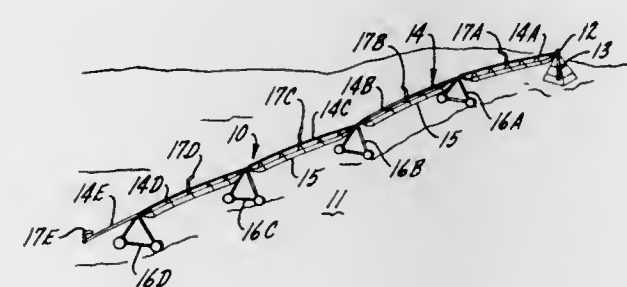
1. In an apparatus for spraying molten metal onto a substrate of the type wherein two or more metallic wires are conveyed through a casing in contact with electrical conductors, said wires being brought into close proximity after passing through said casing so as to cause an electric arc therebetween to melt the metal wires, said melted metal is conveyed to the substrate by a stream of high pressure fluid, the improvements comprising:

a. a spraying cylinder (1) removably affixed to the end of said casing such that said wires are brought into proximity along the approximate axis of said spraying cylinder, said spraying cylinder having a plurality of radial apertures therethrough adjacent the end affixed to said casing,
b. a hollow, generally conical wall body (2) attached to the inner surface of said spraying cylinder (1) at one end thereof, said conical wall body (2) having a plurality of apertures (40) therethrough, the axes of said apertures

forming an acute angle with the central axis of said conical wall body (2),
c. an annular injection port body (5) attached to the interior of the distal end of said spraying cylinder (1), the inner diameter of said injection port body and the outer diameter of said conical wall body defining a first injection port (18) therebetween,
d. first injection means to inject a pressurized fluid through a wall of said spraying cylinder (1) into a high pressure chamber (31) defined by the inner surface of said spraying cylinder (1), said conical wall body and said annular injection port body, and
e. second injection means (24) to inject a pressurized fluid interiorly of said conical wall body.

3,901,442
SUSPENSION DISTRIBUTION SYSTEM
John A. Chapman, Wahoo, Nebr., assignor to Valmont Industries, Inc., Valley, Nebr.
Filed Aug. 19, 1974, Ser. No. 498,304
Int. Cl. B05B 3/12
U.S. Cl. 239-99

10 Claims

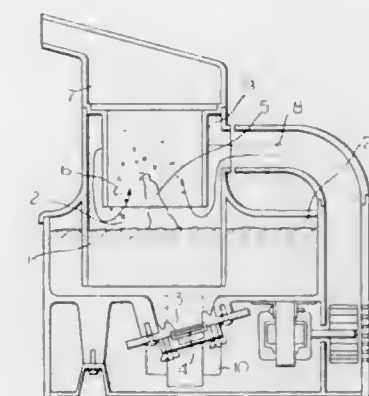


1. A center pivot agricultural liquid distribution system, of the kind comprising an elongated distribution conduit extending radially from a central pivot point in a field and drive means for pivoting the conduit about the pivot point to sweep at least a segmental circular area of the field, capable of substantially uniform distribution of a liquid suspension containing solid particles of given maximum dimension over the field area swept by the conduit, comprising:

a limited number of discharge nozzles mounted on and connected to the conduit at predetermined axially spaced intervals, each adapted to spray the liquid suspension outwardly of the conduit, the spray pattern of each nozzle extending at least to the edge of the spray pattern for the next adjacent nozzle, each discharge nozzle having an internal diameter larger than the aforesaid maximum particle dimension;
a corresponding number of nozzle actuators, one actuator being connected to each discharge nozzle to actuate that discharge nozzle between an open discharge condition and a closed condition;
and control means for operating the nozzle actuators in accordance with a repetitive timing cycle in which the first discharge nozzle, nearest the pivot point, is maintained in its open discharge condition for a limited incremental portion of each cyclic period, and each successive nozzle, outwardly of the pivot point, is maintained in its open discharge condition for a progressively longer portion of the cyclic period.

3,901,443
ULTRASONIC WAVE NEBULIZER
Sadao Mitsui, Chiba, and Minoru Takahashi, Tokyo, both of Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan
Filed Jan. 7, 1974, Ser. No. 431,202
Claims priority, application Japan, Feb. 6, 1973, 48-15459; Feb. 12, 1973, 48-17601; Feb. 12, 1973, 48-17602; Aug. 31, 1973, 48-103005
Int. Cl. B05B 3/14
U.S. Cl. 239-102

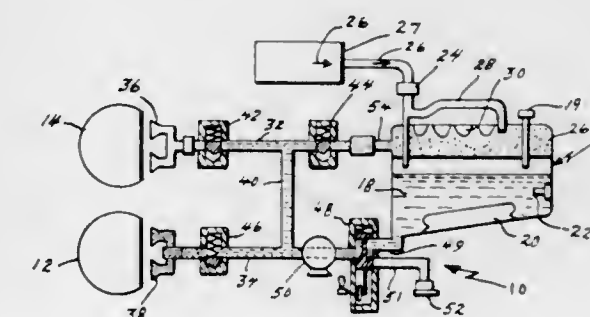
8 Claims



1. An ultrasonic wave nebulizer comprising a nebulizing chamber filled with a predetermined amount of liquid, a chamber base formed at the bottom portion of said nebulizing chamber, a piezo-electric transducer inserted into and secured to said chamber base so that the vibration surface of said piezo-electric transducer has an inclination of 2° - 22° with respect to the surface of said liquid in said nebulizing chamber, an electric circuit means for electrically oscillating said transducer with a natural frequency thereof, an exhaust duct for expelling fog composed of minute liquid particles and formed above said vibration surface of said transducer to the exterior, and an air supply inlet for supplying an air flow to said fog thereby forcibly expelling said fog through said exhaust cylinder.

3,901,444
WINDOW WASH SYSTEM
Dale E. Maltbie, and Glenn W. Albright, both of Wichita, Kans., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Sept. 25, 1974, Ser. No. 509,199
Int. Cl. B05b 1/10, 15/02
U.S. Cl. 239-112

10 Claims



1. A window wash system for inflight cleaning of aircraft windows comprising means for storing a washing fluid and a gas therein, means for dispensing said washing fluid, first means connecting said storage means to said dispensing means, second means connecting said storage means to said dispensing means and to said first connecting means, means located within said first connecting means for controlling the flow of washing fluid from said storage means to said dispensing means and means located within said second connecting means for controlling the flow of gas from said storage means to said dispensing means and to said first connecting means

whereby depending upon the condition of said pair of controlling means either said washing fluid flows through said dispensing means or said gas flows through said dispensing means and said pair of connecting means.

3,901,445

GAS BURNER - LANCE CONSTRUCTION

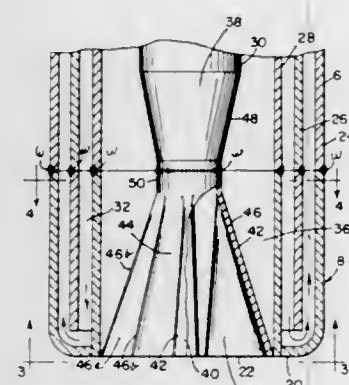
Yi-Chung Chang, Murrysville, Pa., assignor to Pullman Incorporated, Chicago, Ill.

Filed Nov. 8, 1974, Ser. No. 522,180

Int. Cl.² C21C 5/46

U.S. Cl. 239—132.3

22 Claims



1. In a burner-lance for burning a fuel-gas with a gaseous oxidant in a furnace having a substantially elongated lance barrel section and a lance tip section, said lance tip section comprising:

- a port means in the end thereof,
- a corrugated partition structure within said port means,
- an inner tube connecting with said partition structure and defining a first gaseous passage,
- an outer tube concentric about said inner tube and defining a second gas passage, and
- said corrugated partition structure having a deeply corrugated vertically extending partition wall formed into an upright tubular member and defining a plurality of alternating deep upright hollow ridge portions and open groove portions with the ridge portions communicating with the first passage and the groove portions communicating with second passage, whereby alternating plume layer gases can mix with one another outwardly of the port means.

3,901,446

INDUCED VORTEX SWIRLER

John A. Petreikis, Jr., S. Chicago Heights, Ill., and Stanley Kreiger, Riviera Beach, Fla., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 9, 1974, Ser. No. 468,607

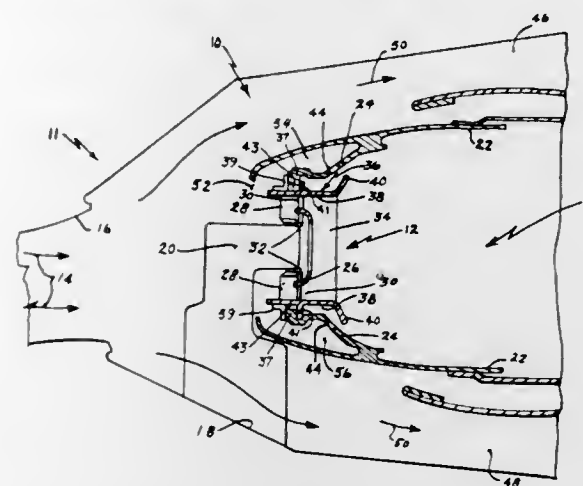
Int. Cl.² F02C 7/22

U.S. Cl. 239—132.5

3 Claims

1. In a combustion chamber for a gas turbine engine having annular chamber walls and a fuel nozzle located in the central portion thereof, the improvement therein comprising a vortex swirler, said vortex swirler being positioned about and concentric with said nozzle and having an annular dome wall connected to said chamber walls, a deflector plate moveably mounted on said annular dome wall and surrounding said nozzle, a plurality of swirler vanes secured to the inner periphery of said deflector plate, inwardly directed deflector means secured to said swirler vanes thereby forming a continuous annular passage adjacent said nozzle and a plurality of apertures in said annular dome wall surrounding said deflector plate for directing air thereagainst whereby primary mixing of fuel and air take place within the region of said deflector means and film cooling of the combustion chamber and dome walls take place with air directed off said deflector plate and

toward said walls, said deflector plate, swirler vanes and deflector means remaining concentric to said fuel nozzle regardless of the variation in said combustion chamber walls or mode of operation.



3,901,447

IRRIGATION SYSTEM

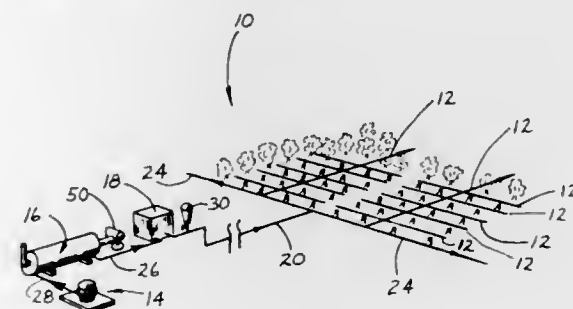
Jack R. Gross, 732 Cambridge, Fresno, Calif. 93704

Filed Feb. 27, 1974, Ser. No. 446,145

Int. Cl.² B05B 1/24

U.S. Cl. 239—139

9 Claims



1. In an irrigation system of the type including a pressurized source of water, a plurality of distribution conduits connected with said source of water and equipped with a plurality of uniformly spaced spray heads for emitting temperature-controlling bodies of mist, the improvement comprising:

- a continuous-flow heat exchanger including a fire box of a tubular configuration, means for conducting a stream of water along the external surface of said fire box in contiguous relation therewith, including a tubular shell concentrically related to the fire box defining a water jacket surrounding the fire box, means defining in said shell a water intake port connected in communication with said source of water and a discharge port connected in communication with said distribution conduits, and means for heating the water of said stream comprising a pressure burner adapted to project a pressurized stream of heated gases axially through said tubular fire box.

3,901,448

IRRIGATION SYSTEM EMITTERS WITH RENEWABLE FILTERS

Benton P. Babin, 1226 Dauphine St., New Orleans, La. 70116

Filed Mar. 4, 1974, Ser. No. 447,942

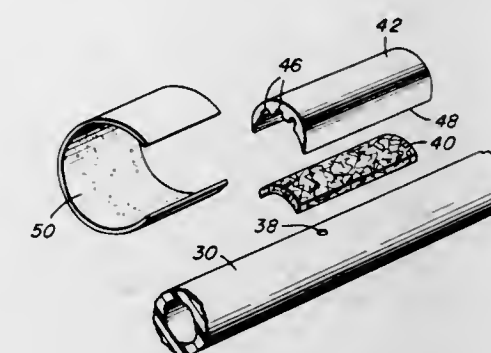
Int. Cl.² B05B 15/00; A01G 27/00

U.S. Cl. 239—145

7 Claims

1. In an irrigation system, a fluid conducting tube, a fluid discharge opening laterally through said tube from the interior thereof, an emitter assembly associated with said opening, said emitter assembly comprising a filter overlying the opening and selectively removable filter retaining means releasably affixed to the tube and overlying the filter in a manner so as to retain the filter over the tube opening, said filter retaining means

including a substantially rigid filter cover with opposed sides freely engaging the tube to the opposite sides of the filter, the cover, between the opposed sides, being outwardly spaced from the tube and defining a chamber for the reception of the filter, and a cover securing member engaging the cover and



freely encircling the tube and releasably clamping the cover to the tube, said cover securing member being readily severable for release of the cover from the tube, said cover chamber being of a size, relative to the filter, so as to allow limited movement of the filter within the chamber to effect a self-cleaning action under the force of discharge fluid.

3,901,449

CORDLESS ELECTRIC SPRAYER

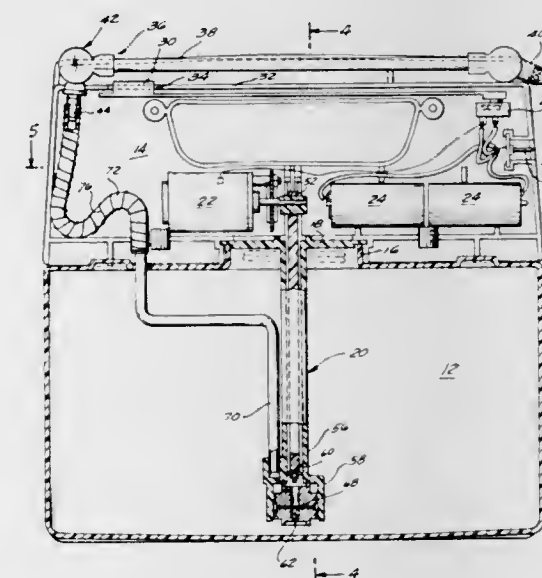
Carl E. Bochmann, Brecksville, Ohio, assignor to H. D. Hudson Manufacturing Company, Chicago, Ill.

Filed Mar. 1, 1974, Ser. No. 447,088

Int. Cl.² B05B 9/043

U.S. Cl. 239—332

3 Claims



1. An electric sprayer comprising: a tank; a piston pump extending into said tank, said pump comprises a body portion, an elongated cylindrical member extending from said body, a piston rod disposed for movement within said cylinder member, an inlet port defined in said body, a one-way check valve mounted in said inlet port, an outlet port defined in said body; discharge equipment including a spray nozzle connected to said pump outlet; an elongated slender rigid tube extending from said pump outlet for connection with said discharge equipment; an elongated elastomeric tube interposed between and connected to said rigid tube and said discharge equipment; a coil spring mounted about and coextensive with said elastomeric tube; a housing extending over portions of and connected to said tank; and a motor mounted in said housing, said motor being connected in driving relationship to said pump.

3,901,450

FLOTATION WITH XANTHATE

David Weston, 34 Parkwood Ave., Toronto, Ontario, Canada
Continuation of Ser. No. 874,026, Nov. 3, 1969, abandoned.
This application Nov. 6, 1972, Ser. No. 303,691 The portion of the term of this patent subsequent to May 29, 1990, has been disclaimed.

Int. Cl. B02c 17/00

U.S. Cl. 241—24

15 Claims

1. A process for the flotation of copper values from copper ores containing copper sulphides and at least one of the sulphuric acid soluble copper minerals to separate said values from host rock materials containing clay or talcose materials, said process comprising: conditioning an appropriately prepared pulp of an ore containing such minerals in the presence of an alkaline agent and alkali metal xanthate at a pH of from about 9.5 to about 12 to produce heavy activation of said copper values; prior to flotation, subjecting the pulp to a final stage of agitation conditioning in the presence of a selected agent from the group consisting of dispersing agents and flocculating agents at a pH of from about 9.5 to about 12 to depress the host rock ingredients of the ore; and then subjecting the pulp containing both the copper sulphide values and the sulphuric acid soluble copper mineral values to froth flotation to produce a concentrate of said copper values.

3,901,451

DEVICE FOR DISPERSING ANIMAL EXCREMENT

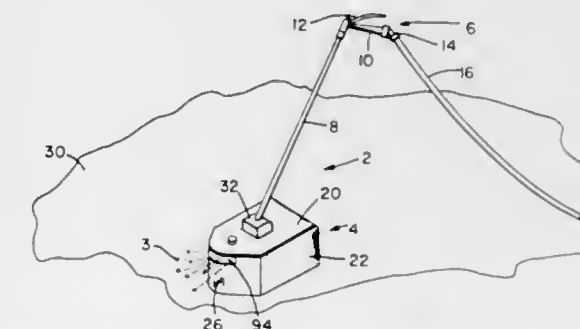
Walter G. Lemke, 3206 May Rd., Richmond, Calif. 94803,
and Leslie W. King, 5524 Manilla Ave., Oakland, Calif. 94618

Filed Nov. 29, 1973, Ser. No. 420,216

Int. Cl.² B02C 23/18

U.S. Cl. 241—38

1 Claim



1. An apparatus for dispersing an agglomerate substance disposed on a surface, comprising a housing means which forms a chamber enveloping said substance when the walls of said housing means are placed in contact with said surface, said chamber having at least one discharge port therein, cutter means contained within said housing, a fluid pressure means for removing said substance from said surface and transferring said substance to said cutter means, and then from said cutter means through said discharge port, a control means comprising a grip means, a fluid inlet means, and a controllable valve means, said control means being spaced from said housing means by a tubular extension means which conducts a fluid from said control means to said fluid pressure means.

3,901,452

BEATER FOR HAMMER MILLS

Josef Loevenich, Leverkusen, Germany, assignor to Babcock & Wilcox Limited, London, England

Filed Oct. 5, 1973, Ser. No. 404,055

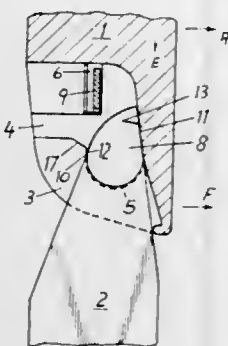
Int. Cl. B02c 13/28

U.S. Cl. 241—197

1 Claim

1. A beater for a hammer mill including a rotatable arm with a replaceable cast head at one end thereof in which the head is provided with a hollowed cove having two insertion grooves directed towards the rear of the head and two bearing recesses, and with the arm provided with two pivots resting

in the bearing recesses and secured against falling out, characterized by each of the pivots having two flat surfaces, bearing recesses each having two flat surfaces adapted to contact the corresponding surfaces on a corresponding pivot, the arrangement of the surfaces on the pivots being formed in such a way that the extension of the surfaces in the direction of the arm form a single surface and the cross section of the pivots have



a tear drop-like shape, a hump of predetermined dimension being provided on the head inside of the hollow cove at a point where the head contacts the arm, the pivots being constructed and arranged, when they are inserted into the grooves and rotated relative to the recesses into their operative position in the recesses, to prevent relative rotational movement between the arm and the head.

3,901,453

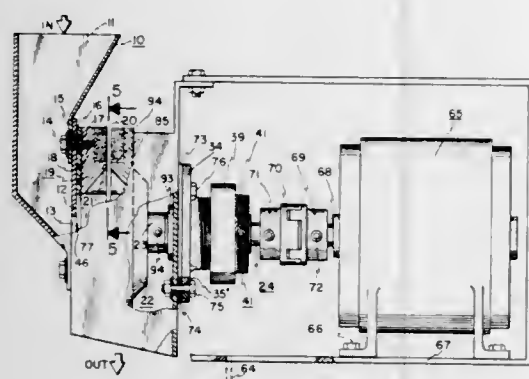
GRAIN MILL STRUCTURE

Elmo C. Robinson, 350 North 750 East, Orem, Utah 84057
Filed Feb. 14, 1974, Ser. No. 442,464

Int. Cl.² B02C 7/14

U.S. Cl. 241-259.1

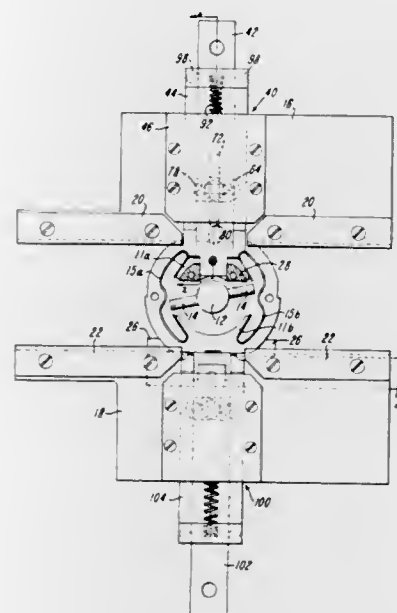
9 Claims



1. In a grain grinding mill apparatus having structure defining a grinding compartment, a grinding stator fixedly disposed in said compartment and attached to said structure, a grinding rotor cooperatively disposed proximate to and aligned with said grinding stator, and a motor having an output shaft and a first coupler connected to said output shaft; an improvement comprising a drive shaft having one end axially connected to said grinding rotor and a remaining end provided with means for coupling said drive shaft to said first coupler, a thrust-journal bearing bearing-keyed to and encompassing said drive shaft, a bushing lockingly encompassing and securing said thrust-journal bearing, a flange having an interior slide bore and slidably receiving said bushing mounted to said structure, a collar engaging said bushing and circumferentially disposed over said flange, means for fixing the disposition of said collar relative to said flange, said last-mentioned means including screw-thread adjustment means operably disposed with respect to said housing and said collar, and means for releasably locking said screw-thread adjustment means.

3,901,454
**FORM RETAINER AND INSULATOR BACKUP
ASSEMBLY FOR STATOR WINDING MACHINES**
Arthur C. Reiger, Jr., Dayton, Ohio, assignor to The Globe
Tool and Engineering Company, Dayton, Ohio
Filed June 19, 1974, Ser. No. 480,955
Int. Cl.² H02K 15/085
U.S. Cl. 242-1.1 R

7 Claims



2. For use in a stator winding machine, a form retaining and insulating backup assembly including a form retainer plate adapted to interlock with a coil winding form to maintain the form in proper location relative to a stator to be provided with coils, a guide plate having insulation engaging fingers straddling said form retainer plate, means for driving said form retainer plate linearly toward and away from a locking position relative to a winding form, motion transfer means coupling said form retainer plate and said guide plate throughout a substantial portion of movement of said form retainer plate whereby said guide plate is caused to move therewith, the motion of said guide plate in one direction being sufficient to cause said fingers to be located in supporting relation to the insulating liners of a stator to be wound, and means for disengaging said motion transfer means from said form retainer plate whereby said form retainer plate may be moved relative to said guide plate as needed to lock a winding form in place.

3,901,455

WINDING FIBRES

Malcolm Norman Carlisle, 2 Sherbourne Ave., Westminster
Park, Chester, England

Continuation-in-part of Ser. No. 278,743, Aug. 8, 1972,
abandoned. This application Mar. 6, 1974, Ser. No. 448,566
Claims priority, application United Kingdom, Aug. 13,
1971, 38121/71

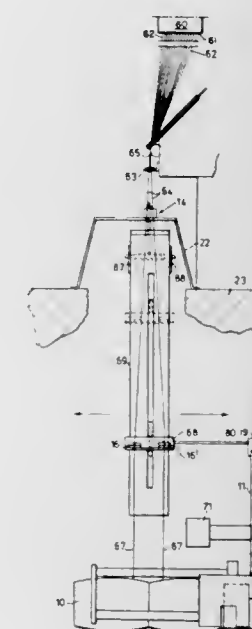
Int. Cl.² B65H 54/02, 54/28

U.S. Cl. 242-18 G

2 Claims

1. An apparatus for winding glass fibre strands into cakes comprising:
a source of a plurality of glass filaments in the form of a container for holding molten glass, a wall of the container having openings through which flow streams of molten glass; means for attenuating the molten streams of glass into advancing continuous filaments; primary guide means placed below said container for gathering the advancing continuous filaments into a plurality of strands, winding means on which glass fibre strands are formed into cakes, including at least a driven drum onto which said strands are wound, and oscillatable traverse means adjacent said drum for traversing said strands during winding,

secondary guide means positioned at a point intermediate said traverse means and said primary guide means for further combining and guiding said glass fibre strands on their passage between the primary guide means and the winding drum,
positioning means for selectively positioning said secondary guide means at a point intermediate between the traverse means and the primary guide means, comprising an elongated member mounted so as to pivot about its upper end,



connecting means connecting said elongated member to said oscillatable traverse means so as to cause it to move from side to side synchronously with the oscillations from side to side of said traverse means, and to determine the angle said elongated member is placed to the vertical, and means to adjustably mount said secondary guide means on said elongated member to allow it to be positioned at any pre-determined point along said member.

3,901,456

AUTOMATIC WINDING MACHINE

Rene Pradier, Renaison, France, assignor to Rhone-Poulenc-
Textile, Paris, France

Continuation-in-part of Ser. No. 324,400, Jan. 17, 1973,
abandoned. This application July 15, 1974, Ser. No. 488,769
Claims priority, application France, Jan. 17, 1972,
72.01650

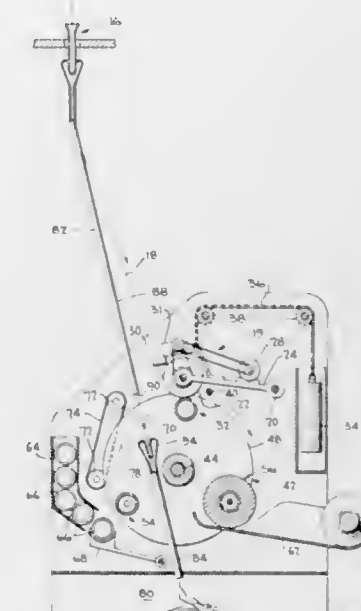
Int. Cl. B65H 54/02, 67/04

U.S. Cl. 242-18 A

8 Claims

1. An automatic winding machine for winding textile yarn continuously delivered at high speed, comprising:
pneumatic means including a first transport tube with a longitudinal slit therein and a second transport tube axially aligned with and spaced from said first transport tube for supplying yarn along a delivery path from a supply zone to a waste zone, said space being sufficient to permit passage therethrough of an empty yarn winding support; rotatable carrier means for rotatably supporting a plurality of yarn winding supports spaced about the rotatable axis of the carrier means, means for rotating said carrier means to move said yarn winding supports individually to a winding station along an arcuate path intersecting said delivery path at the space between said first and second transport tubes, such that movement of a yarn winding support to said winding station moves the yarn to be

wound through said longitudinal slit in said transport tube, and brings the yarn in contact with yarn engaging means adjacent said winding support; and



drive means for rotating a yarn winding support at said winding station and for distributing the yarn longitudinally along a rotating yarn winding support.

3,901,457

ARRANGEMENT IN CENTRIFUGAL BRAKES FOR FISHING REELS

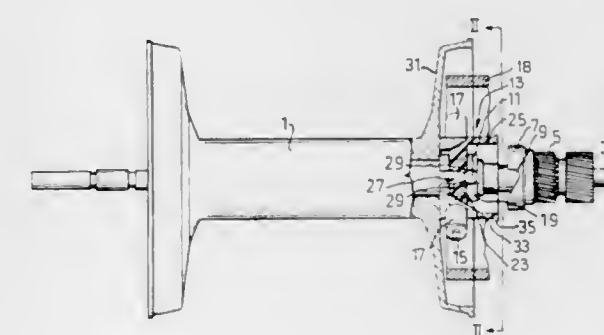
Karl Ture Ingvar Turesson, Svängsta, Sweden, assignor to
ABU Aktiebolag, Svängsta, Sweden

Filed June 28, 1972, Ser. No. 267,095

Claims priority, application Sweden, July 5, 1971, 8687/71
Int. Cl.² A01K 89/02

U.S. Cl. 242-84.52 C

5 Claims



1. An arrangement mounting centrifugal brake weights for a fishing reel comprising a line spool having a co-rotating spindle, a dog pin mounted transversely in said spindle for driving said spindle, drive means to drivingly engage said dog pin, a coaxial inner cylinder mounted about said spindle, a slot formed in said cylinder to engage said dog pin to rotate said cylinder therewith, said dog pin extending beyond said cylinder, an enlarged coaxial outer cylinder, a spider connecting said cylinders at a portion thereof displaced axially from said dog pin to permit engagement of said dog pin by said drive means, a plurality of substantially radially extending staffs extending from said outer cylinder, and brake weights slidably mounted on said staffs to move outwardly under centrifugal force when said spindle and said outer cylinder rotate.

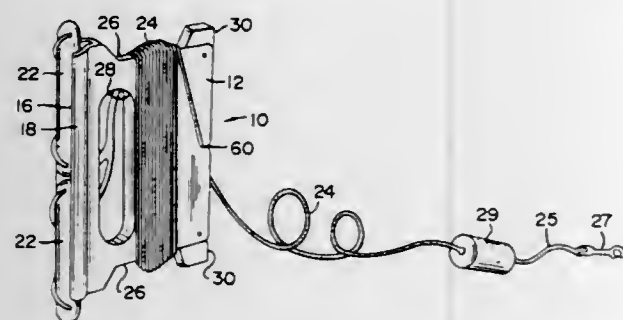
3,901,458

ROPE CADDY

Frank Kuncz, Jr., 2453 Roberts St., Largo, Fla. 33540
Continuation-in-part of Ser. No. 246,195, April 21, 1972,
abandoned. This application Dec. 6, 1973, Ser. No. 422,564
Int. Cl. B65h 75/36

U.S. Cl. 242—85.1

14 Claims



1. A line storing device comprising: a base having a predetermined configuration defining a line storage portion thereon, handle means connected to said base, line retention means mounted on said base so as to be movable between a line retaining and a nonretaining position and positioned on said base adjacent to and in cooperative relation with said line storage portion, said line retention means comprising at least one lobe pivotally mounted on said base so as to be movable into and out of said line retaining position, whereby removal of line from said device is restrained when said line retention means is in said line retaining position; bracket means connected to said base and being configured to hold a line gripping element on said base.

3,901,459

SAFETY BELT RETRACTOR LOCKING DEVICE

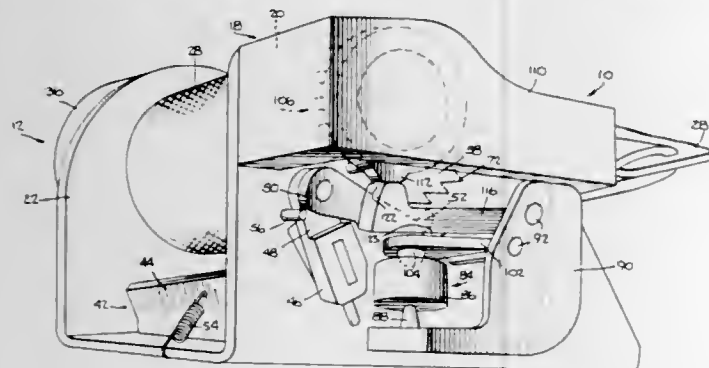
Louis Romanzi, Milford, and David S. Robinson, Jackson, both
of Mich., assignors to Irvin Industries, Inc., Greenwich,
Conn.

Filed May 28, 1974, Ser. No. 473,762

Int. Cl. B65H 75/48

U.S. Cl. 242—107.4

20 Claims



1. A safety belt retractor locking device comprising:
a. a frame;
b. a shaft rotatably mounted on the frame;
c. a belt attached to the shaft for protraction and retraction with respect thereto;
d. means for rotating the shaft to retract the belt;
e. a ratchet wheel mounted on the shaft for rotation therewith;
f. a pawl pivotally mounted on the frame for movement from an inoperable position wherein said pawl is spaced from the ratchet to an operate position wherein said pawl engages the ratchet to prevent protraction of the belt;
g. a gear mounted on the shaft for rotation therewith;
h. a latch pivotally mounted on the pawl for movement from an inoperable position wherein said latch is spaced from the gear to an operate position wherein said latch engages

the gear for movement therewith to displace said pawl to its operate position;

- i. an inertial mass mounted on said frame and responsive to a change in vehicle velocity, said mass disposed for movement between a first position wherein the velocity change is below a predetermined magnitude and a second position wherein the velocity change is greater than said predetermined magnitude;
- j. a lever pivotally mounted on the frame in engagement with the mass and displaced for movement responsive to the position of the mass;
- k. said lever further being in engagement with the latch such that when the mass is in its second position the latch is displaced by the lever to its operate position to prevent further protraction of the belt; and
- l. restraining means mounted on the frame responsive to protraction and retraction of the belt, said restraining means being operative to prevent movement of the mass to its second position upon initial protraction and full retraction of said belt.

3,901,460

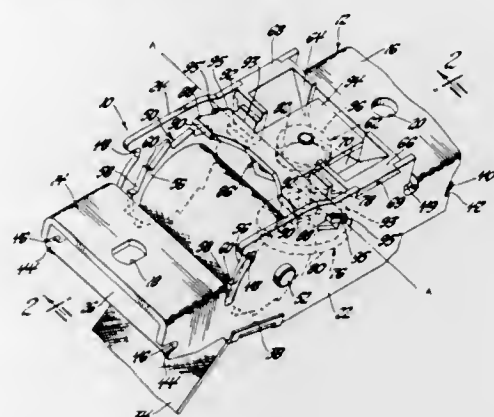
RESTRAINT BELT RETRACTOR WITH PENDULUM ACTUATED LOCKING

Floyd I. Dully, Detroit; Henry W. Griffin, Birmingham, and
Barthold F. Meyer, Bloomfield Hills, all of Mich., assignors
to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 348,963, May 9, 1973, which is a
continuation-in-part of Ser. No. 328,877, Feb. 1, 1973,
abandoned. This application June 14, 1974, Ser. No. 479,371
Int. Cl. B65H 75/48

U.S. Cl. 242—107.4

1 Claim



1. A restraint belt retractor for a vehicle comprising, a metallic retractor housing adaptable to be mounted on the vehicle and including a pair of spaced generally parallel opposed walls, each wall defining an attachment surface and a notch that are spaced from each other, a corrugated cover including a pair of ears and a pair of tangs, the ears of the cover being respectively received by the notches of the walls so that the cover may be rotated to an assembled position where the tangs of the cover respectively snap into engagement with the attachment surfaces of the walls to hold the cover in position and where the corrugations of the cover are located between and extend normal to the planes of the walls so as to engage these walls and thereby prevent movement of the walls toward each other, belt reel means rotatably mounted between the opposed walls of the retractor housing for movement about a generally horizontal axis and receiving a restraint belt that is wound and unwound relative thereto during such rotation, the belt reel means including annular ratchet means generated about the axis of its rotation at each of its ends so as to define upper and lower sides of the reel means, the ratchet means having locking surfaces facing in the belt unwinding direction of rotation, spring means biasing the reel means in a belt winding direction, a locking member having a generally fork-like configuration with spaced tine portions having locking surfaces at the ends thereof and with an elongated handle portion extending in an opposite direc-

tion to the tine portions, means mounting the locking member between the opposed walls of the retractor housing so as to extend generally horizontally adjacent the upper side of the reel means and so as to be pivotally movable between locked and unlocked positions about an axis parallel to the rotational axis of the reel means and extending transversely of the longitudinal axis of the handle portion adjacent the end thereof in proximity to the tine portions, this axis of locking member movement being generally in vertical alignment with the upper side of the reel means, the locking surfaces of the tine portions being engageable with the locking surfaces of the ratchet means at the upper side of the reel means at each end thereof when the locking member is in locked position so as to prevent belt unwinding movement of the reel means, the handle portion of the locking member having a lower side that faces downwardly and this handle portion normally providing a gravity bias that positions the locking member in unlocked position where the handle portion is located downwardly from the locked position and where the tine portions of the locking member are located upwardly from the locked position so as to disengage the upper side of the reel means and to thereby allow belt unwinding movement of the reel means, pendulum support means extending between the opposed walls of the retractor housing and including a fixed horizontally extending annular support portion of a plastic construction that defines an aperture below the handle portion of the locking member in horizontally spaced relationship to the reel means and in vertical alignment therewith, a pendulum with a lower weight and an arm whose lower end is secured to the weight and whose upper end extends upwardly through the aperture in the pendulum support means, the pendulum being in vertically aligned relationship with the reel means so as not to substantially increase the vertical thickness of the retractor, the upper portion of the pendulum including an annular portion seating against the annular plastic support portion of the pendulum support means so as to position the pendulum in a depending vertical orientation, and a control portion on the upper end of the pendulum arm which engages the lower side of the handle portion of the locking member during swinging pendulum movement from its vertical orientation in response to abrupt vehicle acceleration or deceleration in any horizontal direction such that the handle portion is moved upwardly against its gravity bias to position the locking member in locked position so that belt unwinding movement of the reel means is thereby prevented.

3,901,461

VEHICLE SENSITIVE RETRACTOR WITH IMPROVED UNIVERSAL INERTIA MECHANISM

Robert L. Stephenson, Sterling Heights; Robert C. Pfeiffer,
Rochester, and Yogendra Singh Loomba, Washington, all of
Mich., assignors to Allied Chemical Corporation, New York,
N.Y.

Filed July 10, 1974, Ser. No. 487,328

Int. Cl. B65h 75/48

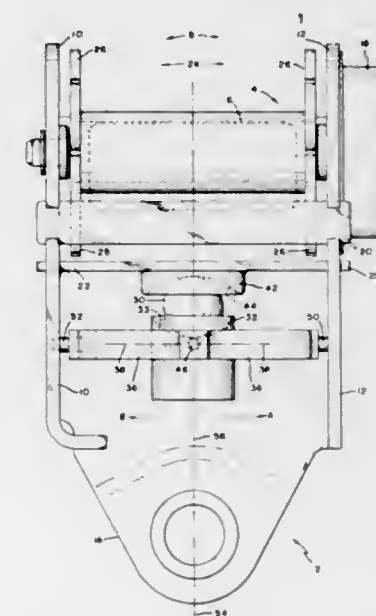
U.S. Cl. 242—107.4

5 Claims

1. In a vehicle-sensitive, inertia-operated safety belt retractor having a support structure having two opposed, parallel side walls, a reel for winding the safety belt, means adapted to lock the reel and thereby restrain an occupant of the vehicle during emergency situations, an inertia mechanism, a support assembly mounted on said retractor for supporting the inertia mechanism, and an actuating means responsive to said inertia mechanism for operating the means for locking the reel; the improvement wherein:

the inertia mechanism is a sphere in contact with said actuating means and adapted to roll in an infinite variety of directions in an approximately horizontal plane;
said support assembly includes a sphere support upon which said sphere rolls; a swivel axis for said sphere support adapted to allow said sphere support to pivot in two lateral directions; a trunnion for supporting said sphere support, a swivel axis for said trunnion adapted to allow

said trunnion to pivot in two lateral directions, said swivel axis for said trunnion being disposed approximately perpendicular to said swivel axis for said sphere support, said support assembly thereby being adapted to pivot in any lateral direction to an infinite variety of operable static positions to which said support assembly is adjustable according to the position in which the retractor is oriented by virtue of installation in the vehicle; and



said actuating means is disposed above said sphere and has a rest position and a locking position, wherein in said locking position said actuating means causes actuation of said reel locking means, said actuating means thereby being adapted to respond to the rolling of said sphere on said sphere support to actuate said reel locking means.

3,901,462

DEVICE FOR BRAKING CONTAINERS

Adolf Moritsovich Alexandrov, Federativny prospekt, 6, korpus 3, kv. 8; Vladimir Efimovich Aglitsky, Zatspeky val, 6/13, kv. 61; Ilya Solomonovich Kantor, Malo-Moskovskaya ulitsa, 31, kv. 45; Jury Arnoldovich Topolyansky, Matveevskaya ulitsa, 10, korpus 4, kv. 233, and Jury Abramovich Tsimbler, Sojuzny prospekt, 10, kv. 261, all of Moscow, U.S.S.R.

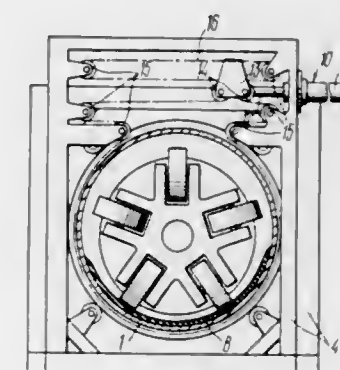
Filed May 2, 1974, Ser. No. 466,510

Claims priority, application U.S.S.R., July 27, 1973,
1954143

Int. Cl. B65g 51/20

U.S. Cl. 243—38

1 Claim



1. A device for braking containers in the pipeline of a unit for pneumatic transportation of goods, comprising a pipe portion built into the pipeline; a braking member comprising a layer placed onto the inner surface of said pipe portion and having a width which is less than a half of the pipe portion inner circumference; said braking member being made from a material having a friction coefficient that is higher than that

of the material of the pipe portion; said pipe portion being mounted for rotation around its longitudinal axis between a position in which said braking member and said containers are brought into frictional contact during the braking of the latter and an alternate position in which said braking member and said containers are out of frictional contact so that said containers can freely pass through said pipe portion.

3,901,463

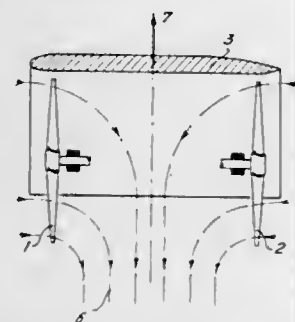
LIFT AND PROPULSION MEANS FOR A VERTICAL TAKE-OFF AND LANDING AERODYNE

André Kovacs, 177, rue de la Convention, 75015 Paris, France
Filed Apr. 3, 1974, Ser. No. 457,339

Claims priority, application France, Apr. 6, 1973, 73.12497
Int. Cl.² B64C 29/00

U.S. Cl. 244-12 CW

6 Claims



1. Lift and propulsion means for a vertical take-off and landing aerodyne, comprising:

- a single drive shaft and power means for rotating said shaft;
- at least two propellers mounted on said shaft, said propellers being spaced apart along the length of said shaft, and the blades of at least one of said propellers having a variable and reversible pitch; and
- an arch-shaped airfoil above said shaft, said airfoil having a substantially semi-circular cross-sectional shape the shape of curvature of which is substantially coaxial with said shaft, said airfoil extending over both propellers and the sides of said airfoil extending down at least to the level of said shaft.

3,901,464

FLIGHT CONTROL DEVICE

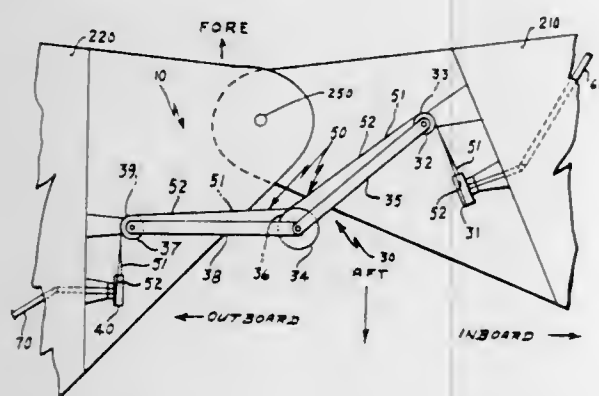
Bennett R. Arnstein, Los Angeles, Calif.; Jacob C. Cobin, deceased, late of Los Angeles, Calif., and by Evelyn Cobin, administratrix, Los Angeles, Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 8, 1974, Ser. No. 522,366

Int. Cl.² B64C 13/30

U.S. Cl. 244-46

8 Claims



1. A flight control device for an airborne vehicle having a body and at least one wing, wherein each wing of said winged airborne vehicle is of the variable sweep type, is attached by suitable pivotal means, including a pivot, to said airborne vehicle body, and has a spoiler suitably positioned thereon,

and wherein said flight control device is adapted for use in actuating and controlling said spoiler, comprising:

- a first motion and power transmitting means which includes a first motion and power transmitting element;
 - a drive mechanism to which said first motion and power transmitting element is connected, wherein said drive mechanism includes:
 - a first rotatable member mounted on the body of the winged airborne vehicle;
 - a second rotatable member also mounted on the body of the winged airborne vehicle, with said second rotatable member having a preselected pitch diameter;
 - a third rotatable member, identical to said second rotatable member and also mounted on the body of the winged airborne vehicle, with said third rotatable member disposed below of and in parallel spaced relationship with said second rotatable member, and with said third rotatable member rotatable independently of said second rotatable member;
 - a fourth rotatable member linked by suitable means to said second rotatable member, with said fourth rotatable member having a pitch diameter which is twice the preselected pitch diameter of said second rotatable member;
 - a fifth rotatable member, identical to said fourth rotatable member, with said fifth rotatable member linked by suitable means to said third rotatable member, and with said fifth rotatable member disposed below of and in parallel spaced relationship with said fourth rotatable member, and further with said fifth rotatable member rotatable independently of said fourth rotatable member;
 - a sixth rotatable member linked by suitable means to said fourth rotatable member and mounted on the wing of the winged airborne vehicle, with said sixth rotatable member having a pitch diameter which is equal to the pitch diameter of said second rotatable member;
 - a seventh rotatable member, identical to said sixth rotatable member, and also mounted on the wing of the winged airborne vehicle, with said seventh rotatable member disposed below of and in parallel spaced relationship with said sixth rotatable member, and further with said seventh rotatable member rotatable independently of said sixth rotatable member;
 - a eighth rotatable member mounted on the wing of the winged airborne vehicle; with said second, fourth, and sixth rotatable members and said pivot of said body-wing pivotal means arranged in a first parallelogrammatic arrangement, and with said second, fourth, and sixth rotatable members and said pivot of said body-wing pivotal means acting as vertices of said first parallelogram; and with said third, fifth, and seventh rotatable members and said pivot of said body-wing pivotal means arranged in a second parallelogrammatic arrangement, with said third, fifth, and seventh rotatable members and said pivot of said body-wing pivotal means acting as vertices of said second parallelogram;
 - a first means for flexibly connecting and for driving said first, second, fourth, sixth, and eighth rotatable members;
 - a sound means for flexibly connecting and driving said first, third, fifth, seventh, and eighth rotatable members;
 - and, a second motion and power transmitting means which includes a second motion and power transmitting element connecting said eighth rotatable member to the spoiler which is positioned on the wing of said winged airborne vehicle;
- whereby when motion and power are imparted to said first motion and power transmitting element, the imparted motion and power are transmitted by said first element to said drive mechanism and then to said second motion and power transmitting element, and by said second element to the spoiler, thereby causing the spoiler to be actuated and controlled.

3,901,465

VARIABLE-AREA VARIABLE INCIDENCE WING AND AIRCRAFT INCORPORATING SAME

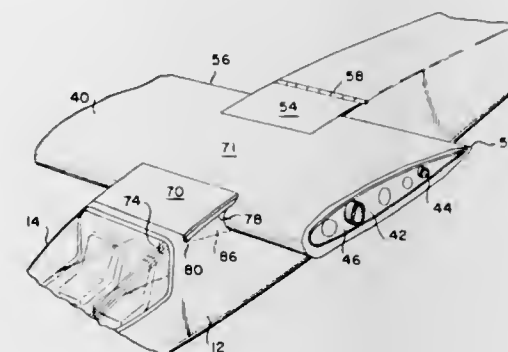
Lawrence J. DeAngelis, 9101 Ballard Ln., Clinton, Md. 20735

Filed Mar. 5, 1974, Ser. No. 448,203

Int. Cl.² B64C 3/48

U.S. Cl. 244-48

9 Claims



1. An aircraft having a variable area, variable incidence wing comprising,
 - a fuselage having an upwardly open recessed portion to receive therein a wing in high-wing position,
 - a full-span wing extending on either side of said fuselage and having a central portion thereof received within said recessed portion,
 - means mounting said wing for limited pivotal movement about a horizontal axis disposed aft of the wing trailing edge, said wing central portion having a panel extending therefrom aft of the wing trailing edge to said pivotal mounting means, thereby effectively extending the upper airfoil of the wing of said central portion at any pivoted angle, and,
 - means disposed within the fuselage cooperatively associated with said wing for pivoting the wing about said axis relative to the line of thrust thereby to vary the wing incidence.

3,901,466

THRUST AND FLIGHT PATH CONTROL DECOUPLING SYSTEM

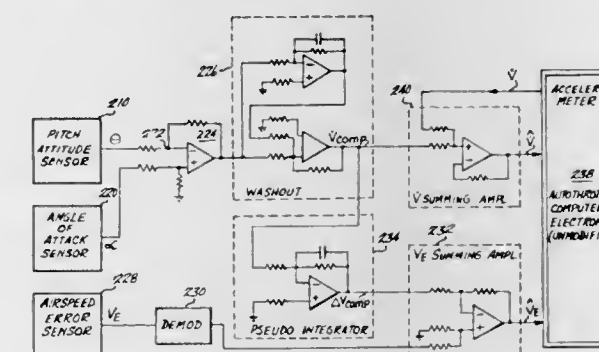
Antonius A. Lambregts, Renton, Wash., assignor to The Boeing Company, Seattle, Wash.

Division of Ser. No. 307,286, Nov. 16, 1972. This application
Dec. 20, 1973, Ser. No. 426,852

Int. Cl.² B64C 13/18

U.S. Cl. 244-77 D

15 Claims



1. In combination an autothrottle control system for an aircraft having a first input coupled to first means for providing a signal representative of longitudinal acceleration information of said aircraft, and a second input coupled to second means for providing a signal representative of air speed error of said aircraft;
 - signal processing means responsive to signals representative of pitch attitude and angle of attack information of said

aircraft for providing a first compensation signal representative of longitudinal acceleration of said aircraft induced by short term flight path angle changes and a second compensation signal representative of the deviation of air speed due to short term flight path angle changes;

third means for combining said first compensation signal with said signal representative of longitudinal acceleration information of said aircraft; and

fourth means for combining said second compensation signal with said signal representative of air speed error of said aircraft.

3,901,467

AIRCRAFT FIRE BOMBING SYSTEM

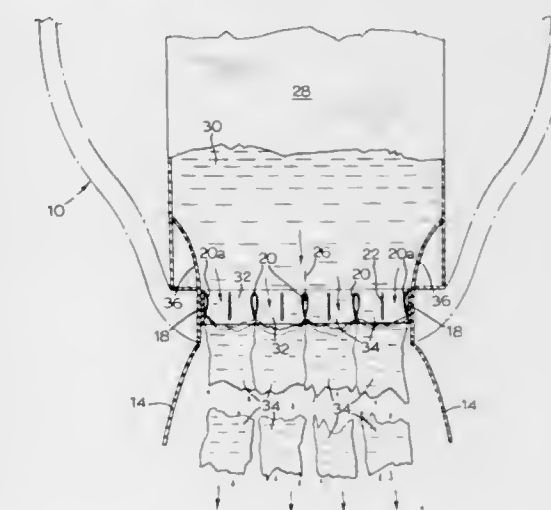
John Knox Hawkshaw, Brampton, Canada, assignor to Field Aviation Company Limited, Malton, Canada

Filed Nov. 6, 1974, Ser. No. 521,333

Int. Cl. B64d 1/16

U.S. Cl. 244-136

11 Claims



7. In an aircraft having a fire extinguishing storage tank therein, said tank having a discharge opening at the lower end thereof for discharging said liquid and means for normally closing the opening to retain liquid in the storage tank, the improvement of flow control means in said discharge opening comprising a plurality of calibrator blades extending longitudinally of said opening, said calibrator blades being arranged at laterally spaced intervals across the width of the discharge opening, each of said calibrator blades having an inner end disposed inwardly of said tank and an outer end disposed outwardly of said tank, said blades decreasing in thickness in a direction towards the outer end thereof.

3,901,468

LOGIC BACKUP FOR A TRAIN DETECTION SYSTEM IN AN AUTOMATIC BLOCK SYSTEM

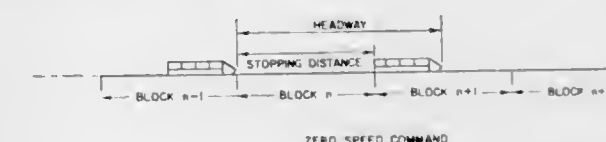
David S. Cochran, Palo Alto, and Leonard S. Cutler, Los Altos Hills, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 31, 1974, Ser. No. 438,493

Int. Cl.² B61L 21/06

U.S. Cl. 246-34 R

5 Claims



1. In a train detection backup system for providing supplemental detection of train occupancy in a block system which provides a primary indication of train occupancy, the apparatus for each block comprising:

first input means having an output port and two input ports coupled to receive a first electrical signal representing the true occupancy status of the preceding block at one input port, and to receive a second electrical signal representing the logical combination of the true and false occupancy statuses and the primary indications of train occupancy from the block system for succeeding blocks at the other input port for providing an electrical signal at the output port in response to the occurrence of said signals at the input ports thereof;

true occupancy latching means having a first and a second output port and having a first input port coupled to receive the output signal from the first input means and having a second input port coupled to receive an electrical signal representing the true occupancy status of at least one of the succeeding blocks for providing an electrical signal at the first output port representing true occupancy of the block in response to the occurrence of said signal at the first input port and an electrical signal at the second output port representing the complement of true occupancy of the block in response to the occurrence of said signal at the second input port;

second input means having three output ports and having four input ports coupled to receive electrical signals from the block system, the block and preceding blocks for providing electrical signals at the output ports in response to the occurrence of said signals at the input ports;

false occupancy latching means having a first and a second output port and a first and second output port coupled to receive electrical signals from the second input means for providing electrical signals at the output ports in response to the occurrence of said signals at the input ports;

output means having one output port and three input ports coupled to the second input means and the false occupancy latching means for providing an electrical signal representing the logical combination of true and false occupancy status of the block and preceding blocks at the output port for succeeding blocks in response to the occurrence of said signals at the input ports; and

transmission means having one output port and four input ports coupled to the block system, the first input means and the true and false occupancy latching means of the block for providing an electrical signal representing the logical combination of true and false occupancy status of the block and succeeding blocks at the output port for preceding blocks in response to the occurrence of said signals at the input ports.

3,901,469

CHRISTMAS TREE STAND

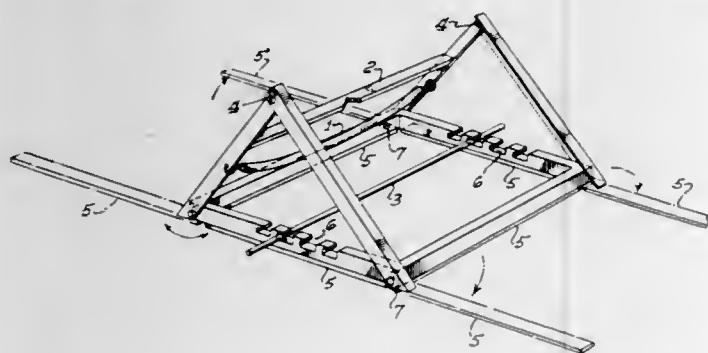
Billy Ray Davis, and Bob G. Davis, both of 1501 Launer Dr., La Habra, Calif. 90631

Filed May 3, 1974, Ser. No. 436,518

Int. Cl.² A47G 33/12

U.S. Cl. 248—46

9 Claims



1. A tree stand of the type useful for holding Christmas trees comprising:

a rectangular base having at least two opposing members with a slot means associated therewith and the other

members of said base being attached to said opposing members near the extremities thereof;

a first pair of upright members affixed at their lower ends to said base, one of said first pair of members being affixed near a first end of one of said opposing members and the second of said first pair being affixed near a second end of said one of said opposing members and the upper ends of said first pair being secured together;

a second pair of upright members affixed at their lower ends to said base, one of said second pair of members being affixed near a first end of the other of said opposing members and the second of said second pair being affixed near a second end of the other of said opposing members and the upper end of said second pair also being secured together;

a supporting arm having holding means located near the mid-point thereof, said arm being affixed at each end to the first of each pair of said upright members;

spring means attached at each end to the first of each pair of said upright members at a point longitudinally displaced along the longitudinal axis of said members with respect to the point of attachment of said arm;

slot means affixed to said two opposing members; and

a longitudinal rod shaped to fit into said slot means, whereby an object such as a Christmas tree may be inserted into the stand and be held by said spring means, said longitudinal rod and said supporting arm.

3,901,470

FLOOR SUPPORT MOUNT

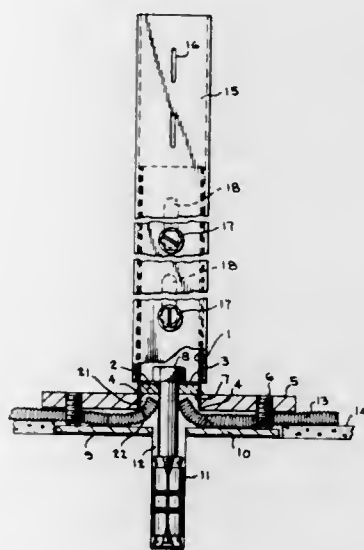
Richard C. Roeder, 1718 Lublock, Houston, Tex. 77007

Filed June 12, 1973, Ser. No. 369,413

Int. Cl.² F16M 11/14

U.S. Cl. 248—188.4

14 Claims



1. A floor support mount adapted to be rigidly and removably secured to a surface comprising

a base plate having means for leveling and positioning said base plate,

a first hollow upright member rigidly attached to said base plate and perpendicular thereto,

an opening in said base plate communicating with said hollow member,

an second plate having an opening therein, rigidly attached at the lower end of said first hollow upright member and adjacent to said base plate, and a fastening mean accessible through said hollow upright member passing through said second plate and adapted to seat in an anchor in said surface.

3,901,471

WALLBOARD BRACKET

Thomas M. Hilgers, Rt. No. 83, Box 232A, Mundelein, Ill. 60060

Continuation of Ser. No. 325,901, Jan. 22, 1973, abandoned, and a continuation of Ser. No. 80,975, Oct. 15, 1970, abandoned. This application Apr. 1, 1974, Ser. No. 456,882 Int. Cl.² E04G 3/00

U.S. Cl. 248—216

8 Claims



1. A bracket for use in securing an edge portion of a wallboard or the like to a support member, the edge portion being defined between generally parallel side surfaces, comprising a body including a first side surface engaging portion for engaging one side surface of said wallboard and a web portion lying in a plane generally perpendicular to the plane of said first side surface engaging portion formed integral with said first side surface engaging portion, a tab attached to said web portion formed integral with said web portion and normally disposed in an open position which permits movement of one face of the wallboard adjacent the first side surface engaging portion and the edge portion of said wallboard in abutting relation with said web portion, said tab being bendable to a second position lying in a plane parallel to and spaced from the plane of said first side surface engaging portion, and prong means disposed in a plane generally parallel to and spaced from the plane of the first side surface engaging portion and formed integral with said web portion for entry into said support member to bring the underside of the web portion into resting contact with said support member for support thereby, said tab being readily bendable to its said second position after said prong means are inserted into said support member and an edge portion of a wallboard is caused to engage said first body portion to thereby secure the associated edge portion between said first body portion and said tab to maintain the associated wallboard in generally fixed relation to said support member, said prong means and tab being formed from the same planar portion of stock to provide configurations which allow a plurality of the brackets to be stacked in nested relation when said tabs are in their said open positions.

3,901,472

ADJUSTABLE APPARATUS FOR SLIDING FORM CONSTRUCTION

Nils Harald Ahlgren, Skyttevagen 22, 133 00 Saltsjobaden, Sweden

Filed Dec. 10, 1973, Ser. No. 423,536

Int. Cl.² E04G 11/20

U.S. Cl. 249—20

17 Claims

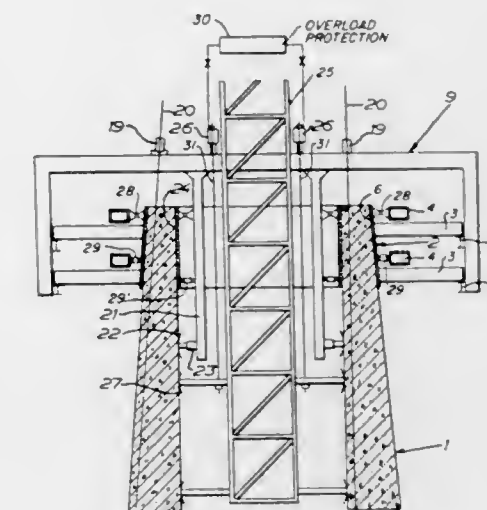
1. An apparatus for sliding form construction of vertical

structures of concrete having variable cross-section, wherein the sliding form comprises:

a plurality of sliding form portions;

a plurality of beam members in fixed angular relationship one to another, but mounted for movement relative to one another while retaining said fixed angular relationship, the relative movement one to another of said beam members being substantially horizontal;

said sliding form portions being arranged with said beam members so that said sliding form portions may be inclined to the vertical by adjusting their relative positions with respect to said beam members;



guide members associated with each pair of beam members having fixed angular relationship between them, so as to retain said fixed angular relationship as the beams are moved relative to each other;

corner-shaping sliding form elements connected to said guide members;

and a rigid structure associated with said movable beam members and having support means therefor; so that said movable beam members are movable on said support means relative to said rigid structure;

said rigid structure being mounted so as to be raised by cooperation of climbing jack means secured thereto with climbing rods placed in said concrete structure.

3,901,473

APPARATUS AND METHOD FOR CASTING COMPOSITE CAST ROLLS

Heinz Dieter Braukmann, Duisburg; Wolfgang Hattwig, Rheinkamp-Baerl, and Manfred Wichert, Duisburg, all of Germany, assignors to Rheinstahl GleBerei AG, Germany

Filed Apr. 12, 1974, Ser. No. 460,454

Claims priority, application Germany, Apr. 16, 1973, 2319208

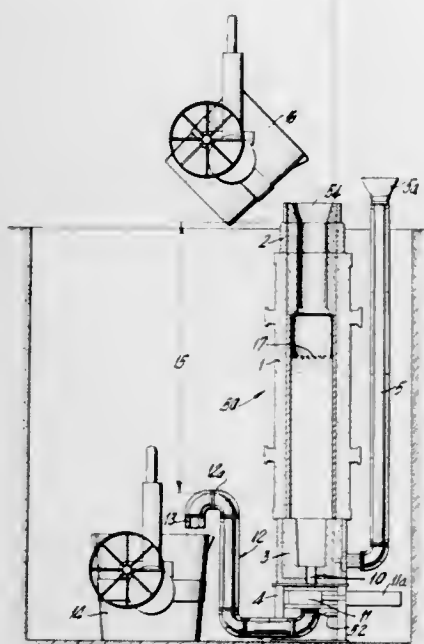
Int. Cl. B22d 7/02

U.S. Cl. 249—109

4 Claims

1. An apparatus for casting composite rolls comprising a vertically elongated mold having an open top for the inpouring of core material and a lower inflow passage for shell material, a shell material filling funnel connected to said inflow passage for the delivery of shell material thereto, means defining a bottom discharge passage at the bottom of said mold having a regular closure valve therein, and a syphon connected to said discharge passage having an upwardly extending portion with a bend therein, the downwardly extending discharge leg

having a discharge opening therethrough, the top of said syphon being at a predetermined distance from the top of said



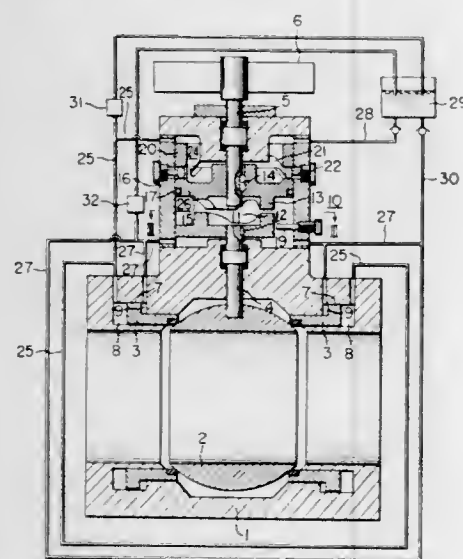
mold whereby to regulate the outflow rate of the shell material.

3,901,474 ROTARY VALVE

Yasuna Kubota, Kunitachi, Japan, assignor to Taimei Kinzoku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 27, 1973, Ser. No. 428,771
Int. Cl.² F16K 25/02

U.S. Cl. 251-159

5 Claims



1. A rotary valve comprising:

- a valve casing,
- a rotary valve plug in said valve casing, said plug being rotatable between its valve opening position and its valve closing position,
- a movable valve seat slidably mounted in said valve casing and movable between a first position in which the valve seat is pressed into contact with the valve plug to seal it and a second position in which the valve seat is out of contact with the valve plug,
- a rotatable valve rod connected to the valve plug for rotating the valve plug between its said valve opening position and its said valve closing position,
- a driving shaft rotatably supported in said valve casing, an operating means at one end portion of said driving shaft, a clutch interposed between the valve rod and the driving shaft, said clutch comprising:
- a driven member connected to said valve rod, said driven member being rotatable about an axis through a pre-

termined angle to rotate the valve plug between its said valve opening position and its said valve closing position, and

- a driving member connected to said driving shaft, said driving member being rotatable about an axis through an angle greater than said predetermined angle so as to make an angular rotation in addition to that of said driven member,
- a cylinder in the valve casing,
- a piston disposed around said driving shaft, said piston being axially slidable in said cylinder,
- means for moving said piston axially in said cylinder in response to the additional angular rotation of said driving member, and
- a fluid circuit for transmitting the axial movement of said piston to said movable valve seat whereby the movable valve seat is normally held in its said first position and is moved to its said second position by the rotation of the driving shaft corresponding to the additional rotation of said driving member and is held in said second position when said valve plug is being rotated by the rotation of the driving shaft corresponding to the rotation of the driven member through said predetermined angle.

3,901,475 PLASTIC BALL SEAT MEMBER WITH CONSTANT BLEED MEANS

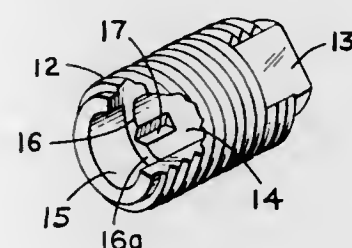
Richard C. Dreibelbis, Fair Lawn, N.J., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Feb. 28, 1974, Ser. No. 446,746

Int. Cl.² F16K 15/04

U.S. Cl. 251-360

2 Claims



1. A ball seat member for a ball type valve adjustable within a given pressure range by relative longitudinal movement of the ball seat member comprising:

- a cylindrical member unitarily formed from plastic material to predetermined final dimensions having an upstream end and a downstream end and threaded means on the exterior thereof by which the longitudinal position of the ball seat member may be adjusted,
- a first longitudinal bore extending in from the upstream end of the cylindrical member and defining a passage for control fluid,
- a second longitudinal bore of greater diameter than the first longitudinal bore and coaxial therewith, extending in from the downstream end of said cylindrical member,
- a flat annular surface connecting the first longitudinal bore and the second longitudinal bore, normal to the axis thereof, forming a ball seat,
- means defining at least one sized longitudinal bleed groove means of predetermined uniform transverse section molded in the wall of the first longitudinal bore and extending from the flat annular surface to a location intermediate the ball seat and the upstream end of the cylindrical member,
- the bleed-groove means having a cross-sectional area sized to permit control fluid to bleed from the upstream side of the ball seat to the downstream side at a rate equal to or greater than a predetermined minimum value when the ball is seated on the ball seat and the supply pressure is at a predetermined minimum value, and

- g. means defining at least one external longitudinal groove means of uniform transverse section molded into the exterior surface of the plastic cylindrical member, and having a length not less than the desired longitudinal adjustment range of the ball seat member.

3,901,476 CHAIN VISE

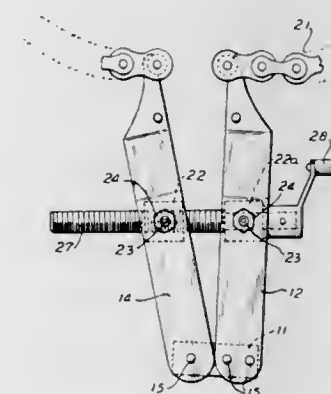
Anthony R. Giampaglia, 277 Delano Pl., Fairview, N.J. 07022

Filed Aug. 23, 1974, Ser. No. 500,149

Int. Cl.² B66F 3/08

U.S. Cl. 254-67

1 Claim



1. A chain vise comprising:-

- a support for pairs of jaws,
- a pair of first members rigidly attached at their ends to opposite sides of the support, and defining a fixed jaw,
- a pair of second members attached pivotally at their ends to opposite sides of the support, and defining a pivotable jaw,
- the opposite end of each pivotable and fixed jaw provided with hooks defining opposed seats for the ends of chains, so that the ends of chains positioned on the seats may be drawn together, by manipulating the jaws,
- the opposite ends of each pair of first members and the opposite ends of each pair of second members rigidly secured together,
- a first block having a threaded central bore rotatably attached to the pivotable jaw, generally in spaced relation to both of the opposite ends of the pivotable jaw,
- a second block having a smooth central bore rotatably attached to the fixed jaw in spaced relation to both of the opposite ends of the fixed jaw,
- a threaded shaft engaged with the threaded central bore of the first block,
- an unthreaded end on the shaft rotatable in the smooth central bore of the second block,
- a crank attached to the shaft at its unthreaded end whereby the rotation of the shaft adjusts the position of the pivotable jaws in relation to the fixed jaw,
- the first and second blocks rotatably attached to the jaws, by being mounted on pairs of axles whose end portion are in threaded engagement with each jaw,
- the positions of the fixed and pivotable jaws adjacent to the hooks being deflected toward each other, the hooks being in general parallelism with each other, and positions of the jaws adjacent to the first and second blocks are in general parallelism with each other.

3,901,477 APPARATUS FOR MAKING CONCRETE BUILDINGS IN ACCORDANCE WITH SLIDE MOLDING TECHNIQUES

Bernhard Ahl, Am Zehnplennigshof 13, 5038 Hahnwald, Cologne, Germany
Filed Mar. 18, 1974, Ser. No. 452,048
Claims priority, application Germany, Mar. 21, 1973, 2314025

Int. Cl.² B66F 1/00

U.S. Cl. 254-107

8 Claims



1. Apparatus for making concrete buildings in accordance with slide molding systems comprising an upper pair of gripping jaws and a lower pair of gripping jaws, means between said upper and lower pair of gripping jaws for imparting relative reciprocal motion therebetween, each pair of gripping jaws being pivotally connected at spaced points to one each of a pair of levers, means mounting each lever for pivotal movement about a fixed axis, each pair of gripping jaws and its associated lever defining a parallelogram linkage mechanism for disposing each pair of levers both parallel and obliquely relative to each other to define respective unclamped and clamped positions thereof, individual spring means connected to one of each of said pair of jaws for biasing the associated pair of jaws toward a position at which said levers are in the obliquely related positions thereof, and individual means for deactivating each spring means separately to permit the levers associated therewith to be moved by the associated spring means to their oblique position to thereby clamp a vertical support therebetween.

3,901,478 CRANE INCORPORATING VERTICAL MOTION APPARATUS

Earl A. Peterson, 4111 Chestnut Ave., Long Beach, Calif. 90802

Continuation-in-part of Ser. No. 823,894, May 12, 1969, abandoned. This application Aug. 2, 1971, Ser. No. 168,310

Int. Cl.² B66C 23/60

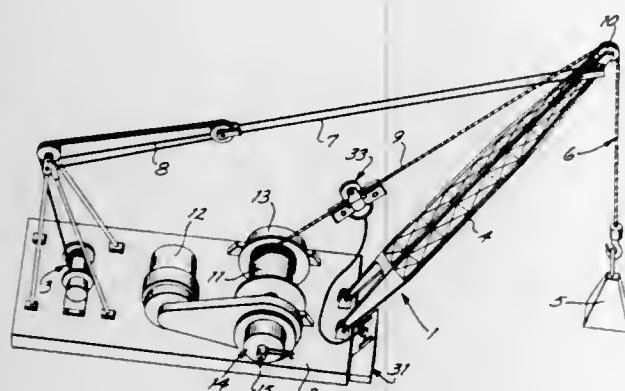
U.S. Cl. 254-139.1

9 Claims

1. A crane apparatus for use with a supported platform comprising:

- a boom pivotally secured to the platform;
- a first shaft;
- a drum concentrically disposed about and secured to said first shaft;
- a hoisting cable secured to said drum and moveably disposed over said boom;
- a continuously slipping clutch having an outer housing and inner hub coupled to frictionally rotate with respect to each other and fluid means for dissipating the frictionally generated heat therein, said inner hub being securely

coupled to said first shaft whereby said hoisting cable is maintained in a controlled tension mode;
 f. a second shaft;
 g. an overrunning clutch interposed between said first and second shafts having means for engaging said first and second shafts when said drum is paying out hoisting cable



whereby said overrunning clutch is in a free-wheeling mode when said drum is rotating to reel in hoisting cable; and
 h. a brake interposed between said second shaft and the platform whereby braking force is imposed on the hoisting cable when said drum is rotating to pay out hoisting cable.

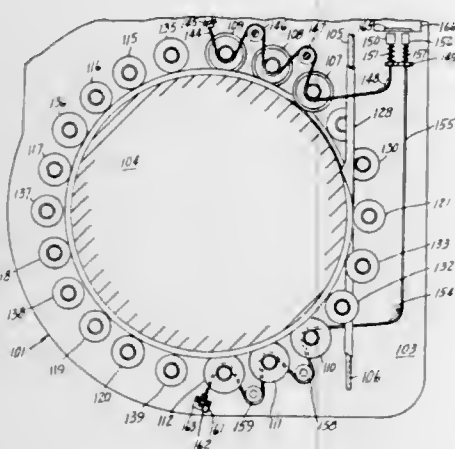
3,901,479 TRACTION TYPE HOIST

Carter H. Arnold, Palos Verdes Estates, Calif., assignor to Western Gear Corporation, Lynwood, Calif.

Division of Ser. No. 207,374, Dec. 13, 1971, Pat. No. 3,791,626. This application Feb. 7, 1974, Ser. No. 440,515
 Int. Cl.² B66D 1/48

U.S. Cl. 254-174

4 Claims



1. In a hoist of the type that includes a drum, a rope reeved around said drum in a predetermined path of travel and an element having a portion thereof in engagement with said rope, when the latter is on said drum,
 means for detecting a nonuniformity in the rope or a deviation of said rope from said path to reduce the likelihood of damage comprising:
 means for holding said element against said rope,
 sensing means for sensing movement of said element away from said drum and
 means responsive to said sensing means for indicating said movement and for controlling the rotation of the drum.

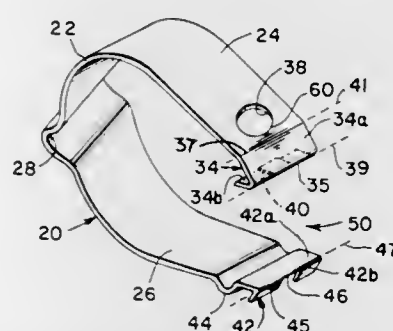
3,901,480 TAMPER-PROOF WIRE FABRIC FENCE CLAMPS

Peter A. Basile, Edison, and Andrew Kolessar, Roselle Park, both of N.J., assignors to Amerace Corporation, New York, N.Y.

Filed Jan. 10, 1974, Ser. No. 432,358
 Int. Cl.² A44B 21/00

U.S. Cl. 256-32

15 Claims



1. A tamper-proof clamp for affixing wire fabric material to a fence frame structure, comprising: an elongated strap, said strap normally being generally U-shaped and having a base portion and first and second arm portions extending outwardly therefrom, a groove substantially centrally disposed within said base portion, said groove opening inwardly and extending across the width of said strap, the free end of said first arm portion being inwardly bent at the terminal end thereof to form a first hook-shaped portion, said first hook-shaped portion including an up-struck portion extending inwardly thereof, the free end of said second arm portion being outwardly bent at the terminal end thereof to form a second hook-shaped portion, said second hook-shaped portion including an aperture therein for enabling said second hook-shaped portion to engage the up-struck portion of said first hook-shaped portion, an outwardly facing ridge extending transversely with respect to said strap proximate said second hook-shaped portion, said first and second hook-shaped portions being adapted to be displaced towards each other for cooperative engagement with said up-struck portion in said first hook-shaped portion being received within said aperture in said second hook-shaped portion when said strap is disposed about said frame structure with said wire fabric being retained in said groove to affix said wire fabric material to said frame structure, said cooperatively engaged first and second hook-shaped portions being adapted for common bending displacement toward said outwardly facing ridge until flush therewith.

3,901,481 SAFETY BARRICADE FOR A ROOF

John F. Probst, Hartland, Wis., assignor to P.A.L. Development Corporation, Butler, Wis.

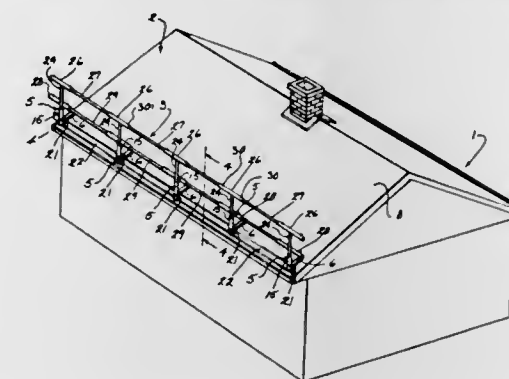
Continuation-in-part of Ser. No. 291,990, Sept. 25, 1972, abandoned. This application Aug. 23, 1973, Ser. No. 390,928
 Int. Cl.² E04H 17/14; E04G 1/16

U.S. Cl. 256-59

11 Claims

1. A safety construction for a roof, comprising a series of base members secured to the roof adjacent the roof edge, a support member extending upwardly from the outer end of each base member, pivotal means for connecting each support member to the respective base member whereby the support member can be pivoted with respect to the base member, locking means connected to said pivotal means for locking the support member with respect to the base member, said base member having an edge disposed generally normal to the axis of pivotal connection of the base member and the support member, said base member having at least one slot communicating with said edge and disposed diagonally with respect to said edge, said slot adapted to receive a fastener to secure the base member of the roof, said fastener being automatically removable from the base member by driving the base member

inwardly in the direction of said edge, and connecting means interconnecting the lower portions of said adjacent support



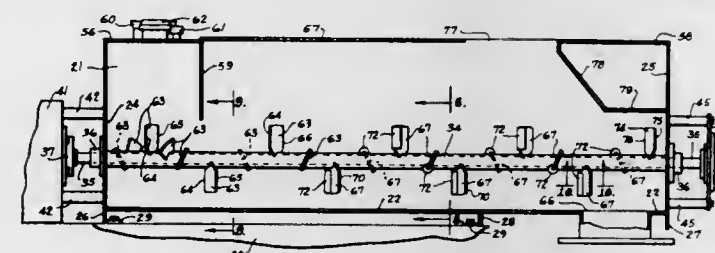
3,901,482 DOUGH MIXER

Clarence A. Kieffaber, Overland Park, Kans., assignor to Marion Corporation, Kansas City, Kans.

Filed May 20, 1974, Ser. No. 471,214
 Int. Cl.² B01F 7/04

U.S. Cl. 259-6

19 Claims



1. A continuous dough mixer having an elongated trough-like body portion having a discharge opening adjacent one end thereof, means feeding dough ingredients into said mixer adjacent the other end of said body portion, a pair of parallel shafts extending lengthwise of said body portion, means rotating said shafts about the axes thereof in the same direction of rotation and paddles on said shafts, said paddles having flat faced body portions having the opposed flat faces thereof extending from said shafts at oblique angles to said axis, each of said body portions having a pair of longitudinal side edges one of which is a leading edge and the other a trailing edge of said paddle during rotation of said shafts, said flat faces extending to said trailing edges and thickened portions on certain of said paddles projecting outwardly from both opposed flat faces of said body portion longitudinally along said leading edges of said paddles.

3,901,483 METHOD AND APPARATUS FOR MIXING MATERIALS, INCLUDING GROUND MEAT

William Lasar, 7322 Rio Honda, Downey, Calif. 90241
 Filed July 13, 1973, Ser. No. 379,069

Int. Cl.² B01F 7/04, 7/08, 15/02

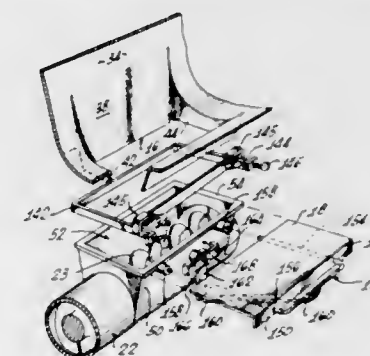
U.S. Cl. 259-41

2 Claims

1. An apparatus for mixing materials such as foodstuffs, the apparatus comprising:

a housing defining a longitudinally and vertically extending mixing chamber, said chamber adapted to receive the materials to be mixed;
 mixing means connected with said housing for exerting a mixing action on the materials within said chamber;
 a casing connected to the lower end of said housing, said casing defining an outlet chamber positioned beneath said mixing chamber, said casing having,

a casing inlet opening,
 a casing exit opening;
 a housing outlet opening at the lower end of said housing generally coextensive and aligned with said casing inlet opening for passage of material outwardly of said mixing chamber into said outlet chamber through said openings; conveyor means connected to said casing for moving material therein from said casing inlet opening to said casing exit opening;
 a generally rectangular U-shaped guide frame positioned between said housing and said casing extending about at least a portion of the periphery of said housing outlet opening;
 a door mounted in said guide frame for guided motion between a closed position in which said door closes said housing outlet opening and an open position in which said



housing outlet opening is unobscured by said door, said guide frame and said door being entirely separable from said housing and said casing for cleaning, said guide frame having,
 two spaced opposed arms guiding said door for sliding motion therebetween;
 a cross member connecting said arms at one end thereof;
 a keeper member contacting the opposite ends of said arms extending therebetween; the apparatus further including:
 projecting portions on at least one of said housing and said casing, said projecting portions engaging said arms and said members on the interior surfaces thereof; and releasable securing means connecting said keeper member to said arms for securing said arms and said members to said projecting portions.

3,901,484 ELECTRIC FOOD BLENDER

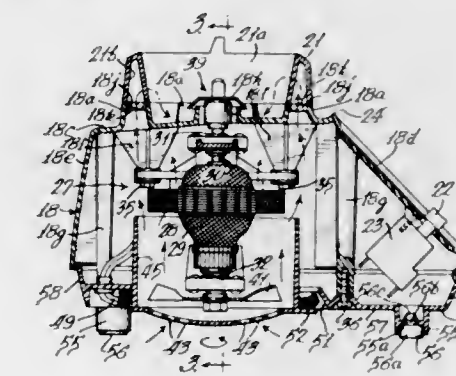
Peter Jacob Ernster, Glendale, Wis., assignor to Oster Corporation, Milwaukee, Wis.

Filed Dec. 26, 1973, Ser. No. 428,086

Int. Cl.² B01F 7/20

U.S. Cl. 259-108

7 Claims



1. A food blender comprising an upright vessel having rotatable mixing and cutting blades mounted in the bottom thereof; a power unit having a housing enclosing an electric motor; means on said housing for supporting said vessel; said motor

including a stator and an armature having commutator brushes engaging the lower end thereof; said armature having a shaft which is supported for rotation about a vertical axis and which extends through said housing into driving engagement with said blades; said housing being formed by a cup-shaped main housing member having sidewalls, a top wall and an open bottom; said stator being mounted on the underside of said top wall, armature bearings for said armature shaft being carried by bearing supports secured to said stator, a fan mounted on the lower end of said armature shaft, a base housing member which is secured to said main housing member to close said open bottom forming an enclosure for said motor, said base housing member being molded plastic having air inlet means through which motor cooling air is drawn in by said fan, an upstanding cylindrical flange integral with said base housing member and surrounding said air inlet means, said flange extending upwardly around the lower end of said armature enclosing said commutator brushes, the top edge of said flange being in close proximity with said stator to direct said motor cooling air across said armature and said stator, air discharge openings in said main housing member to exhaust said motor cooling air.

3,901,485

CONCRETE DELIVERY UNITS

Friedrich Wilhelm Schwing, Wanne-Eickel, Germany, assignor to Gerhard Schwing, Wanne-Eickel, Germany

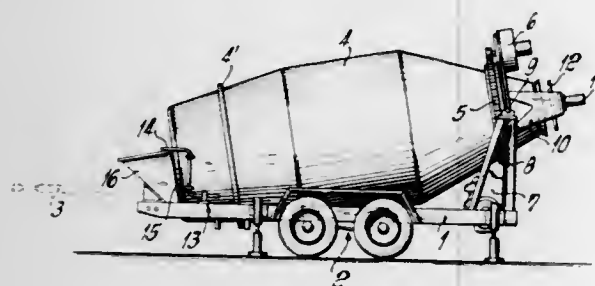
Filed May 16, 1973, Ser. No. 360,621

Claims priority, application Germany, May 24, 1972, 2225191; Dec. 22, 1972, 2263088

Int. Cl.² B28C 5/20

U.S. Cl. 259—177 A

1 Claim



1. Apparatus for mixing and delivering concrete, comprising
 - a. a mobile frame,
 - b. a rotatable drum on said frame with its axis at all times oblique to the lengthwise direction of said frame and having vertically spaced inlet and outlet openings at the rear and front ends respectively with the rear end and outlet opening uppermost,
 - c. a ring around said inlet opening,
 - d. power means to rotate said drum,
 - e. unidirectional screw within said drum and having an oblique axis corresponding to that of the drum to cause concrete to travel upwardly from said inlet to the outlet opening,
 - f. a feed hopper adjacent said inlet opening of such size and height that a vehicle can discharge its concrete load directly thereto,
 - g. an elastic connection between said ring and hopper, and
 - h. a regulator for controlling the discharge area of said outlet opening.

3,901,486

APPARATUS FOR MELTING RAW THERMOPLASTIC SYNTHETIC RESIN MATERIAL

Mitsuo Matsui, Ashikaga, Japan, assignor to Tokyo Tobari Co., Ltd., Tokyo, Japan

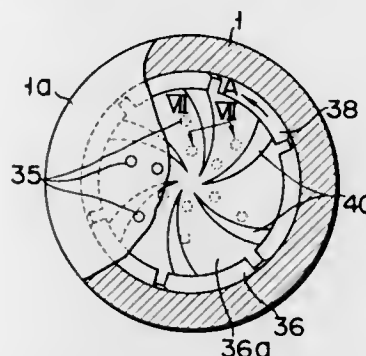
Filed Jan. 11, 1974, Ser. No. 432,539

Claims priority, application Japan, Apr. 20, 1973, 48-47376[U]; Apr. 20, 1973, 48-47377[U]

Int. Cl.² B29B 1/06

U.S. Cl. 259—191

4 Claims



1. An apparatus for melting raw material of thermoplastic synthetic resin comprising a cylinder for melting said raw material which is fitted to the body of the apparatus so as to project horizontally and has an inlet at the side of the apparatus body and an outlet at the projecting end, and a screw rotatably inserted into the cylinder and provided on the outer peripheral surface with helical grooves for forcibly delivering by rotation said raw material from the inlet to the outlet of the cylinder, wherein the forward end face of the screw closely abuts against the inner wall of the forward end face of the cylinder and is provided with a plurality of extrusion grooves progressively decreasing in cross-sectional area toward the center of the end face of the screw and convergently curved from the periphery to the center of the end face of the screw in a direction opposite to the rotating direction of the screw, and those sides of said extrusion grooves which are directed in the rotating direction of the screw are gently inclined upward so as to form gradually upwardly widening openings.

3,901,487

CONTINUOUSLY OPERABLE SCREW MACHINE

Fridolin Kaser, Hemmingen, Germany, assignor to Werner & Pfleiderer, Stuttgart, Germany

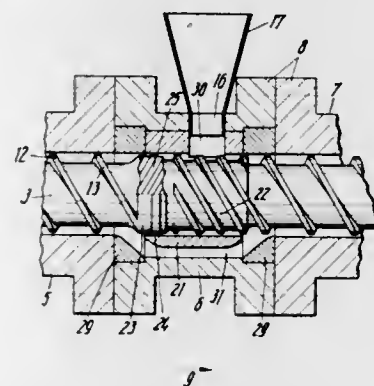
Filed Nov. 19, 1974, Ser. No. 525,170

Claims priority, application Germany, Nov. 21, 1973, 2357945

Int. Cl.² B29B 1/06

U.S. Cl. 259—191

13 Claims



1. A continuously operable screw machine for treating plastic materials, the machine having a casing which encloses a worm shaft provided along its periphery with one or more worm threads which casing has an inlet aperture for the main bulk of the material to be treated and an additive feed aperture, disposed downstream of the inlet aperture in the conveying direction, a back-pressure device being disposed upstream of the feed aperture, in the conveying direction and at least

one by-pass channel for the said main bulk, by-passing the back pressure device, said at least one by-pass channel extending to a point downstream of the additive feed aperture.

3,901,488

WORKPIECE SUPPORT FOR THERMAL DEBURRING APPARATUS

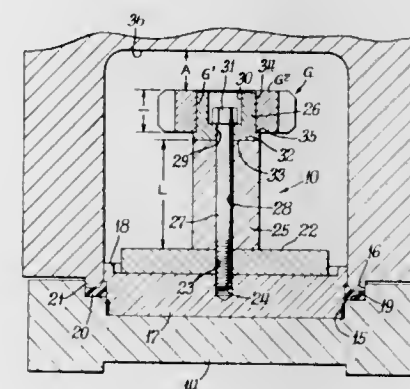
Larry D. Riddle, Morton, Ill., assignor to Caterpillar Tractor Company, Peoria, Ill.

Filed May 8, 1974, Ser. No. 468,182

Int. Cl.² C21D 7/00

U.S. Cl. 266—2.5

8 Claims



1. In apparatus which includes a base and a housing that cooperate to form a chamber of predetermined height for thermally deburring a variety of workpieces which are of essentially similar shape but which vary in height and in the span across spaced vertical surfaces which may be slidably engaged with vertical surfaces on the support means to mount the workpiece in the chamber for deburring, improved support means for mounting a particular one of said variety of workpieces, said support means comprising, in combination: a one-piece pedestal which stands on the base, the length of said pedestal being selected to position said workpiece with its upper end at a predetermined distance below the top of the chamber;

means firmly detachably securing the pedestal to the base; and a removable one-piece adapter which surmounts the pedestal and has vertical surfaces the span of which is selected so said surfaces are slidably engaged by those on the workpiece for unobstructed mounting and removal of the latter.

3,901,489

CONTINUOUS PROCESS FOR REFINING SULFIDE ORES

Takashi Suzuki, Urawa, and Kazuo Tachimoto, Tokyo, both of Japan, assignors to Mitsubishi Kizoku Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 356,172, May 1, 1973. This application

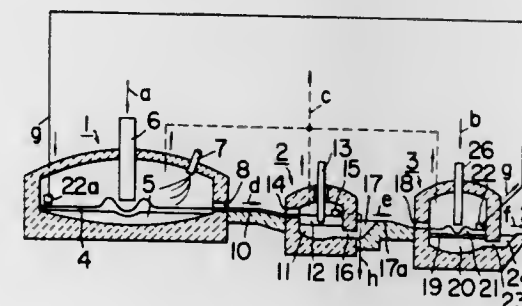
Dec. 28, 1973, Ser. No. 429,295

Claims priority, application Japan, May 4, 1972, 47-44302

Int. Cl. C22b 9/10

U.S. Cl. 266—11

9 Claims



1. A system for continuous processing of metal sulfide ores to produce crude metal therefrom, which consists of:
 - a. a smelting furnace 1 for smelting the raw material metal sulfide ores, which is provided with a lance 6, a burner 7,

a melt discharging port 8, a sealing damper 9 fitted on the outside of the melt discharging port 8 in a manner to be sufficiently wide to close the discharging port and movable up and down to control a slag layer in the furnace at a required constant thickness, a melt overflow weir 10, and a revert slag charging port 22a;

- b. a separator 2 for separating matte and slag in the melts transferred from the smelting furnace, which is provided with heating means 13 to maintain the same at a required temperature, a melt charging port 14 being communicated with the melt overflow weir 10 of the smelting furnace, a slag discharging port 15, a matte tapping port 16, a matte siphon 17, and a matte overflow weir 17a; and
- c. a blister furnace 3 for making white metal, crude metal and blister furnace slag from the matte transferred from the separator, which is provided with a lance 26, a matte charging port 18, a blister furnace slag discharging port 22, a crude metal tapping port 23, a crude metal siphon 24, and a crude metal overflow weir 25,

said smelting furnace, separator, and blister furnace being arranged in such a manner that the reaction conditions such as temperature, composition, surface level, and interfacial level of a melt residing in each furnace may be controlled independently of the other; the feeding quantity of the melt into the separator being equilibrated with the rate of feeding of the raw material into the smelting furnace by maintaining the melt overflow weir 10 and the bottom end of the sealing damper at their respective required constant levels to set the residence quantities of the matte and slag in the smelting furnace; and the feeding quantity of the matte into the blister furnace being equilibrated with the feeding rate of the melt into the separator by maintaining the slag charging port 15 and the matte overflow weir 17a at their respective constant levels to set the residence quantities of the matte and slag in the separator.

3,901,490

CUTOFF SYSTEM FOR SOLID AND GAS PROVIDED ON A REDUCING FURNACE OF CONTINUOUS OPERATION

Kenjiro Kanbara, Sakai, and Satoru Miyasita, Himeji, both of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

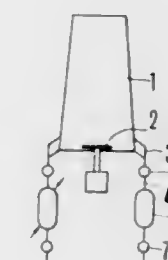
Filed June 26, 1974, Ser. No. 483,296

Claims priority, application Japan, July 12, 1973, 48-78835

Int. Cl. C21b 1/00

U.S. Cl. 266—20

3 Claims



1. A cut-off system for solids and gases for a continuous operation reducing furnace, comprising:
 - exhaust pipe lines for reduced iron grain which are arranged in parallel on the bottom portion of a reducing furnace; at least one treating vessel being provided in said exhaust pipe lines;
 - sealing valves being respectively provided on the high temperature side of said lines with means for cutting off the reduced iron grain, said means including a reciprocating slide plate on an upper stage of said valves, and a cut-off mechanism for atmospheric gas including a valve seat provided with a gas sealing groove and a turning valve body and further including a cooling mechanism on a lower stage of said valves; and

sealing valves also being provided on the low temperature side of said pipe lines, said sealing valves being respectively provided with means for cutting off the reduced iron grain, said means including a reciprocating slide plate on an upper stage of said valves and a cut-off mechanism for atmospheric gas including a valve seat provided with sealing packing and a turning body on a lower stage of said valves.

3,901,491

APPARATUS FOR CUTTING BILLETS FROM A CONTINUOUS CAST STRAND

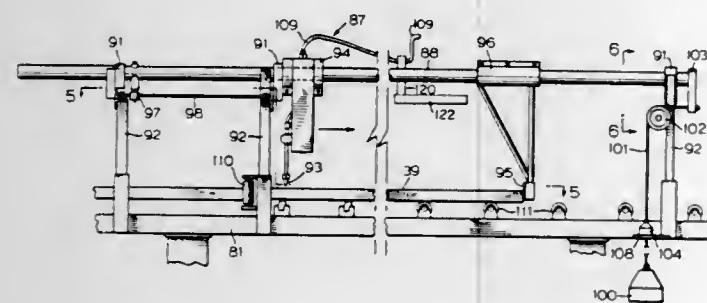
Tibor Miklos Vertesi, Whitby, Canada, and Joseph Rokop, Bethel Park, Pa., assignors to Gamma Engineering Ltd., Burlington, Canada

Filed Mar. 27, 1968, Ser. No. 728,868

Int. Cl. B23k 7/00

U.S. Cl. 266—23 K

4 Claims



1. Apparatus for cutting billets from a strand produced by a continuous metal casting apparatus, comprising: a cutting table for receiving and passing a continuous metal strand; carrier means mounted above the table and freely movable from a position of rest forwardly in a direction parallel to the path of the strand over the table, said carrier means being also freely rotatable in a plane transverse to the direction of said path; a cutting torch adjustably mounted on the carrier means and being directed towards said path; a stop adjustably mounted on the carrier means forwardly of said torch and movable across said path; interacting cam means fixed to the table and to the carrier means, said cam means being adapted to rotate the carrier means whereby (1) the carrier means is moved forwardly from its position of rest by engagement of the stop with the free end of the strand (2) the cutting torch is moved across the strand to cut a billet of predetermined length therefrom, and (3) the stop is disengaged from the strand when the billet has been cut; and means to return the carrier means to its original position of rest when the stop is disengaged from the strand.

3,901,492

APPARATUS FOR MAKING METAL POWDER

James H. Lafferty, Reading, Pa., assignor to Carpenter Technology Corporation, Reading, Pa.

Filed Apr. 29, 1974, Ser. No. 464,948

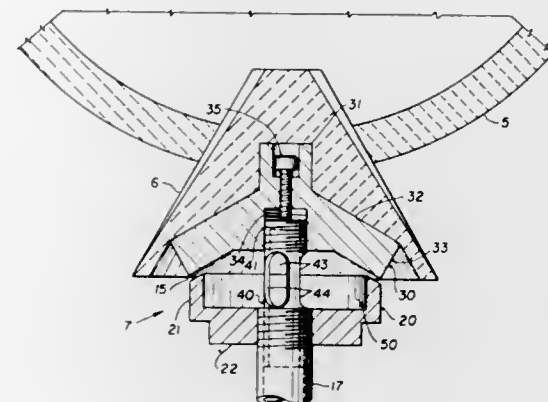
Int. Cl. C21C 7/00

U.S. Cl. 266—34 R

8 Claims

1. In an apparatus for making metal powder by atomizing molten metal for use with a container for molten metal having a downwardly opening aperture in which a distributing element for the molten metal is supported by atomizing fluid nozzle and support means so that the upper portion of the distributing element forms an orifice with the wall of said aperture for the flow of molten metal therethrough downwardly about the outwardly presented periphery thereof, the improvement in which said atomizing fluid nozzle and support means comprises an atomizing fluid feed pipe having a plurality of openings formed adjacent to one end thereof, an atomizing fluid nozzle- and plenum-forming assembly including a body member and a cap member supported in mutually spaced relation on said feed pipe on opposite sides of said feed

pipe openings, and said nozzle- and plenum-forming assembly being supported within the periphery of and below said distributing element with the closely spaced opposed peripheral



portions of said cap and body members forming an endless annularly extending atomizing fluid nozzle slit communicating with said feed pipe openings through a plenum formed between said cap and body members.

3,901,493

VESSEL ADDITION APPARATUS

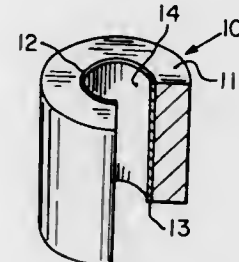
George Rocher, Pittsburgh, Pa., assignor to Metallurgical Exoproducts Corporation, McKees Rocks, Pa.

Filed Sept. 12, 1974, Ser. No. 505,466

Int. Cl. C21C 7/00

U.S. Cl. 266—34 T

5 Claims



1. A vessel addition assembly suitable for installation on a refractory lined rod extending into the vessel comprising a solid addition agent of a first material having a central aperture therethrough defined by an inner surface and an inner sleeve of a second material having a slower dissolution rate than the first material positioned within the aperture and in engagement with the surface and adapted to slidably accommodate the refractory lined rod.

3,901,494

AUXILIARY VEHICLE SPRING INSTALLATION

Ernest H. Sena, 510 1/2 S. Magnolia, Monrovia, Calif. 91016

Filed Oct. 29, 1973, Ser. No. 410,537

Int. Cl. B60g 11/14

U.S. Cl. 267—61 R

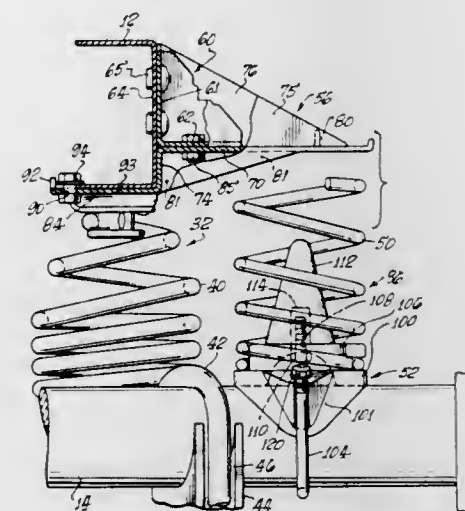
8 Claims

1. In an automotive vehicle having a chassis, a rigid axle below and extending transversely of and beyond the sides of said chassis, and main suspension coil springs between said chassis and axle adjacent the sides of the chassis for resiliently supporting said chassis on said axle, the improvements comprising:

auxiliary coil springs over said axle laterally outboard of said main suspension springs, means mounting the lower ends of said auxiliary springs to

said axle, and brackets on said chassis at opposite sides thereof over said

portion and extension means disposed at each end of said arcuate portion for engaging a portion of the frame; said



auxiliary springs for seating contact with the upper ends of said auxiliary springs.

3,901,495

RESILIENT CUSHION MEMBER

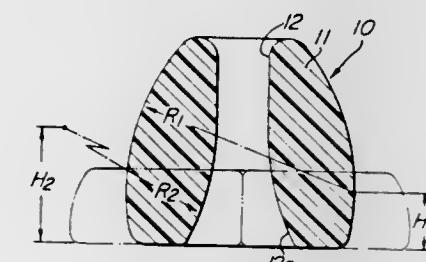
Masuo Suzuki, Nagoya, Japan, assignor to Suehiro Takatsu, Japan

Filed Aug. 23, 1971, Ser. No. 173,860

Int. Cl. F16F 1/36

U.S. Cl. 267—153

4 Claims



1. A cushion member consisting essentially of a bell-shaped outer configuration such that the cross-sectional width increases along the length thereof with an axial bore with a diameter which initially decreases briefly along its length, continues uniformly, then flares to an enlarged size at the opposite end.

3,901,496

PICTURE FRAME

Marshall R. Chambers, 927 Spring St., Apt. No. 8, Troy, Mich. 49770

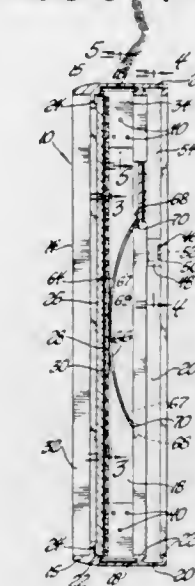
Division of Ser. No. 393,912, Sept. 4, 1973, Continuation-In-part of Ser. No. 333,244, Feb. 16, 1973. This application Oct. 30, 1974, Ser. No. 519,088

Int. Cl. F16f 1/26

U.S. Cl. 267—160

4 Claims

1. A spring device for holding one or more display elements within a frame comprising: an elongated, resilient arcuate



3,901,497

PIPE CLAMPING APPARATUS

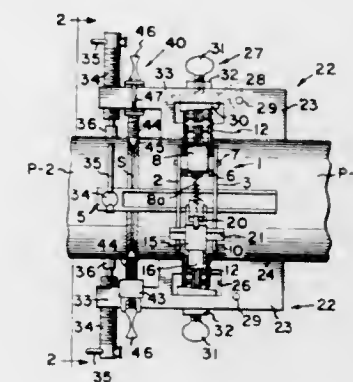
Timothy C. Dearman, 4191 E. Stanley Rd., Mount Morris, Mich. 48458

Filed Apr. 6, 1973, Ser. No. 348,524

Int. Cl. B25B 1/20

U.S. Cl. 269—37

14 Claims



1. Apparatus for use in welding to one another confronting ends of a pair of pipe members having a joint therebetween, said apparatus comprising clamp means forming a loop of such size as to encircle one of said pipe members; a plurality of elongate support members carried by said clamp means and extending axially of said loop a distance sufficient to span the joint between and engage both of said pipe members; spacer means for each of a selected number of said support members; and means mounting each of said spacer means on the associated support member for movement axially of said loop to a position in which said spacer means may overlie the joint and for movement radially inwardly of said loop to a position in which said spacer means may enter the joint and space the confronting ends of said pipe members apart.

3,901,498

MITER TABLE

Edward P. Novak, 911 Shenk Ave., Erie, Pa. 16505

Filed Mar. 11, 1974, Ser. No. 449,763

Int. Cl. B27B 5/20; B23Q 1/04

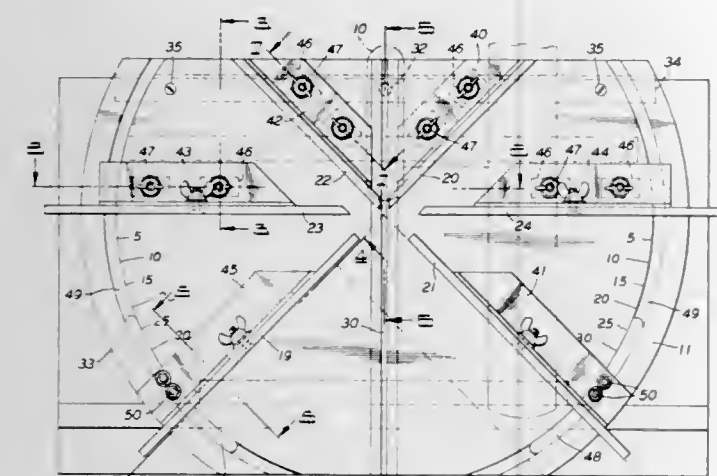
U.S. Cl. 269—81

2 Claims

1. In combination, a radial saw and a miter table having a table top with a thickness, said saw being adapted to have a saw blade and adapted to have means to move said saw blade in reciprocatory path over said table comprising

means supporting said table on said radial saw, fence means, support means for supporting said fence means on said miter table,

said support means comprising fence members having a first flange adapted to rest on said miter table, and non-circular blocklike inserts substantially equal in thickness to the thickness of said table fixed to the bottom of said flanges,



3,901,499

MOUNTING DEVICE FOR CRYSTALLINE RODS

Ludwig Sporrer, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany

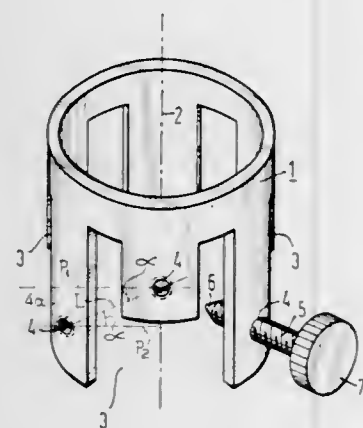
Filed Feb. 27, 1974, Ser. No. 446,160

Claims priority, application Germany, May 7, 1973, 2322969

Int. Cl. B25b 1/10

U.S. Cl. 269-156

8 Claims



1. A device for mounting ends of a semiconductor rod undergoing a floating zone melting treatment, with each rod end being supported by one such device, said device comprising a hollow cylindrically shaped frame member for encompassing a rod end, said frame member having a peripheral wall with three U-shaped recesses symmetrically spaced 120° apart about said wall.

3,901,500 METHOD AND APPARATUS FOR PRODUCING COPYING SETS

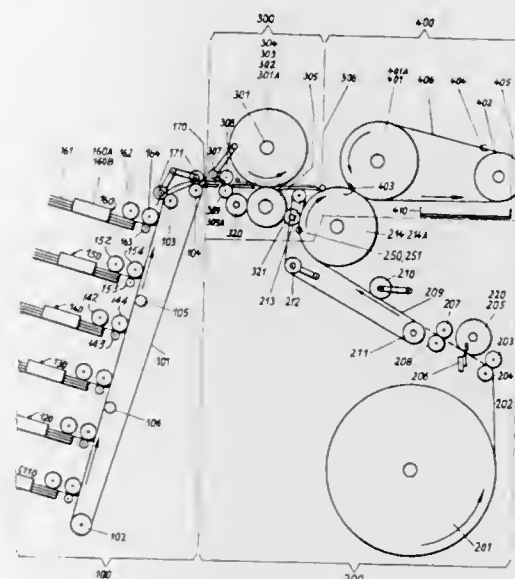
Karl Heinz Gath, Weinbergstrasse 35, D-3221 Rollinghausen, Germany

Continuation-in-part of Ser. No. 237,658, March 24, 1972, abandoned. This application Dec. 14, 1973, Ser. No. 424,709

Int. Cl. B42b 1/02

U.S. Cl. 270-53

10 Claims



1. A method for continuously producing quick separating copying sets having a plurality of n sheets of writing paper and $n-1$ sheets of carbon paper interleaved between the writing paper, the sheets of each set being joined along a bonded edge area, comprising:

- Supplying continuously to a writing paper feed station, at timed intervals, groups of n aligned sheets of writing paper, the sheets of each group having their forward edges in spaced relationship with respect to each other along their direction of feed;
- Accelerating and feeding from said feed station one writing paper sheet at a time from each of said writing paper groups to a writing sheet processing station at timed intervals, and processing each of said writing paper sheets;
- Advancing the processed writing paper sheets to a writing paper and carbon paper interleaving station, a single sheet at a time, in timed sequence with the processing of said sheets;
- Supplying carbon paper from continuous roll stock to a carbon paper cutting and feeding station;
- Sequentially cutting $n-1$ sheets of carbon paper from said continuous roll stock in timed relationship with respect to the writing paper feed and processing operation;
- Feeding said carbon paper sheets to an adhesive applying station for adhesively preparing each carbon paper sheet by applying a glue line thereto along both sides of the carbon sheet edge area to be secured to the writing paper in each copying set;
- Advancing each of said adhesively prepared carbon paper sheets sequentially to the carbon paper and writing paper interleaving station in synchronism with the individual writing paper sheet advance thereto, after a first sheet of writing paper in each group of writing paper sheets has passed through the interleaving station, the other writing paper sheets of each group meeting a sheet of adhesively prepared carbon paper in overlaying, aligned relationship to effect a preliminary joining of the $n-1$ writing and carbon paper sheets a pair at a time along mutual edge areas;
- Discharging sequentially the said first sheets of writing paper and the $n-1$ pairs of interleaved writing and carbon paper sheets to a copying set collecting and stacking station;

i. Collecting and stacking in aligned, contiguous order and in sequence the discharged first writing paper sheets and the writing and carbon paper sheet pairs so that each first writing paper sheet of a copying set is overlaid with $n-1$ carbon and writing paper pairs, with the lower adhesively prepared edge areas of each carbon sheet of each pair contacting the writing paper sheet below same, whereby each discharged and stacked group of writing paper sheets and the interleaved carbon paper sheets finally are bonded together and form an adhesively joined copying set.

3,901,501

DEVICE FOR MAKING A THRICE PARALLEL FOLDED SHEET IN WHICH THE OPEN BENT COVERS ARE DIRECTED TOWARDS THE MIDDLE

Hermann F. Kistner, Neckarweihingen, Germany, assignor to Maschinenbau Oppenweiler Binder & Co., Oppenweiler, Germany

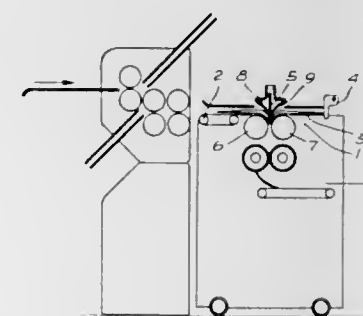
Continuation-in-part of Ser. No. 97,559, Dec. 4, 1970, abandoned. This application June 27, 1973, Ser. No. 374,138

Claims priority, application Germany, Nov. 22, 1969, 1958764

Int. Cl. B65h 45/12

U.S. Cl. 270-62

4 Claims



1. In a device for folding a twice prefolded sheet having two open inwardly directed sheet flaps on one side of said sheet and two folded end edges, said two end edges being formed by two folds connecting said flaps to said sheet, the improvement comprising means for making a gate fold in said sheet as a third fold parallel to and midway between said end edges on said one side of said sheet so that said sheet flaps abut against each other:

- a folding table having a table plate forming an upper table surface, said table plate having a slot which divides said table surface into a front part and a back part, said twice prefolded sheet being adapted to be movably fed onto said upper table surface;
 - a folding stop arranged on said back part of said table surface for engaging one of said end edges of said prefolded sheet, the distance between said table slot and said folding stop corresponding substantially to the distance between said gate fold and one of said end edges;
 - a pair of parallel fold rollers being rotatably mounted underneath said table surface and forming a folding gap therebetween which extends underneath and parallel to said slot;
 - a folding sword operatively mounted in said device above said table slot and being disposed above and parallel to said slot, said folding sword being movable between a first position which is located above said table surface and a second position in which said folding sword extends through said table slot and into said folding gap and thereby introduces such twice prefolded sheet therein;
- first upper sheet engaging guiding means arranged at both sides of said folding sword above said table surface and cooperable with said folding sword to define concavely curved upper guiding surfaces when said folding sword is at least in the second position;

said first upper guiding means are made of elastic material; second lower sheet engaging guiding means integral with said table surface at opposite side of said table slot and cooperable with said first upper guiding means to define concavely curved lower guiding surfaces, said concavely curved lower guiding surfaces respectively cooperating with said concavely curved upper guiding surfaces of said first upper guiding means to form a curved guiding slot leading from said table surface into said folding gap to hold said sheet flaps near such sheet when such sheet is introduced into said folding gap and to introduce said sheet flaps into said folding gap.

3,901,502

TILTING SUCTION DEVICE FOR LIFTING OBJECTS WITH FLAT TOP SURFACES

Hilmar Vits, Huschelrath 16, Leichlingen, Germany

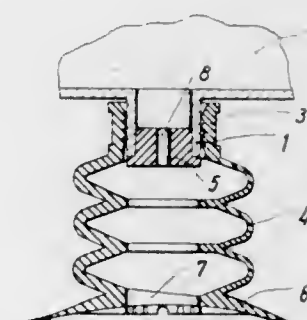
Filed Dec. 21, 1973, Ser. No. 427,120

Claims priority, application Germany, Dec. 28, 1972, 2263732

Int. Cl. B65H 3/08

U.S. Cl. 271-103

4 Claims



1. A tilting device for lifting objects having flat top surfaces, comprising a liftable, inclinable suction cup connected with a nipple of a suction pipe, the suction cup being disposed at one end of a bellows having folds over its complete periphery, the other end of the bellows being attached to the nipple of the suction pipe, and the wall of the bellows comprising elastic material and the spring rigidity of the elastic material in opposed halves of the wall being different.

3,901,503

WEIGHTED MUSCLE EXERCISER

Odo Klose, Wuppertal, Germany, assignor to Mega product-u. Verpackungsentwicklung Marketing GmbH & Co. Kommanditgesellschaft, Wuppertal, Germany

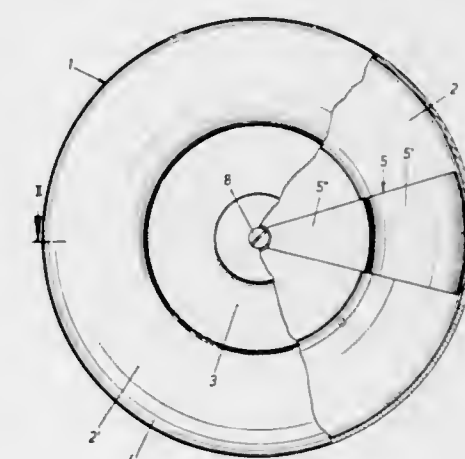
Filed May 14, 1974, Ser. No. 469,893

Claims priority, application Germany, May 18, 1973, 2325211

Int. Cl. A63b 23/02

U.S. Cl. 272-57 R

6 Claims



1. A muscle exercise comprising:

a hollow circular disk-shaped housing provided with an annular hollow enlarged cross-section edge bead surrounding an axis and lying in a plane perpendicular thereto;

a sector shaped weight having received within said housing bead and adapted for traversal around said axis in a circular path within the housing bead; and means journaling said weight in said housing for rotation about said axis.

3,901,504

SEE-SAW SWING APPARATUS

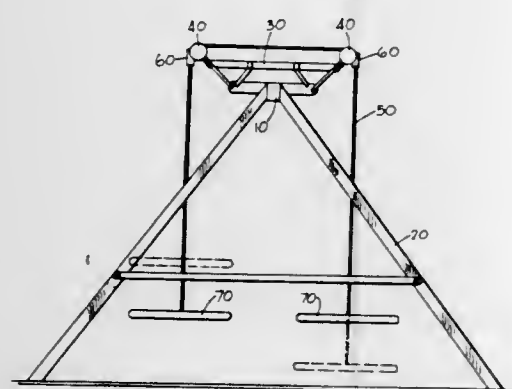
Wesley Francis Kell, 14D Wright Dr., Eglin AFB, Fla. 32542

Filed July 22, 1974, Ser. No. 490,357

Int. Cl. A63g 9/00

U.S. Cl. 272-85

3 Claims



1. A swing comprising:

a frame having a pair of spaced apart vertically upstanding supports and an elongated horizontal support bar connected at its ends to the upper end of the supports;

a pair of spaced apart pulleys being attached to said support bar and being disposed in a common plane;

a cable, said cable being passed over said pulleys such that each of its ends is freely suspended below a respective pulley; and

a pair of seats, each end of said cable being centrally attached to a seat such that each seat is free swinging when supported by said cable and any upward movement of one seat produces a corresponding downward movement of the other seat.

3,901,505

NOVELTY MATCHING GAME

Ruth Margaret Gerechter, 1075 Space Park Way No. 19, Mountain View, Calif. 94040

Filed June 3, 1974, Ser. No. 475,890

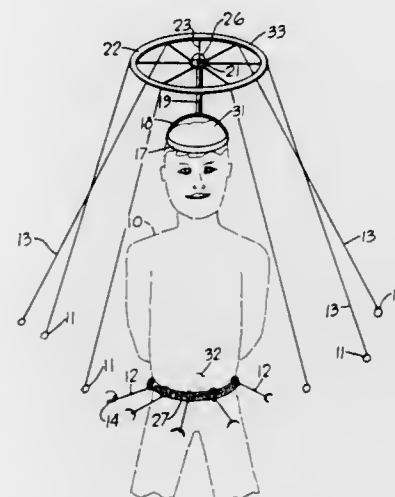
Int. Cl. A63F 9/00, 9/06

U.S. Cl. 273-1 M

2 Claims

1. A toy in the form of a rotatable hoop, together with buttons which are individually tied by strings to the rim of the hoop, said hoop being rotatably mounted on a support rod which is fixed to a headband adaptable to be worn about the head of a player, in which the toy includes a belt adaptable to

be worn about the player's waist, with finger members individually tied by strings to the belt, each said finger member



shaped to latch onto a button which may be adjacent to the finger.

3,901,506

BASKETBALL RETRIEVAL APPARATUS AND METHOD

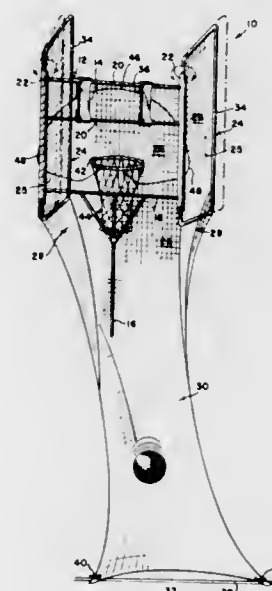
T. John Caveney, 341 River Rd., Tewksbury, Mass. 01876

Filed Dec. 13, 1973, Ser. No. 424,372

Int. Cl. A63b 69/00

U.S. Cl. 273-1.5 A

9 Claims



5. In combination with a backboard of predetermined vertical dimension having a basketball basket in the lower central portion thereof, mounted at a spaced distance above floor level,

a basketball retrieval apparatus comprising:

a main back frame having a pair of side frames pivotally mounted on each opposite side thereof, said side frames being foldable outwardly from a position flatwise against, and in parallelism with, said main back frame to a position normal thereto;

means for detachably mounting said back frame on said backboard to position said frames above and alongside the hoop of said basket; and

flexible netting chute means covering said frames and extending downwardly therefrom to said floor level, to form an open, flexible chute for returning each successive thrown basketball to the player at the foul line.

9. A method of inducing concentration during basketball practice, comprising the steps of:

providing means to retrieve a ball which hits but does not enter the basket; and limiting the width of the access path of the ball from the court to the rim of the basket in such a way that failure of the ball to enter said access path will result in the ball missing the retrieval means; said limiting of the access path being achieved by swinging lateral deflector members attached to a backboard inwardly toward the centre of said backboard.

3,901,507

MANUFACTURE OF METAL FRAMES FOR TENNIS AND OTHER RACKETS

Jean Santini-Ormleres, 115 Rue Vendome, Lyon; Rene Spenle, 75 Bie Rue Pierre Voyant, and Michel Chervin, 112 Rue Anatole France, both of Villeurbanne (Rhône), all of France

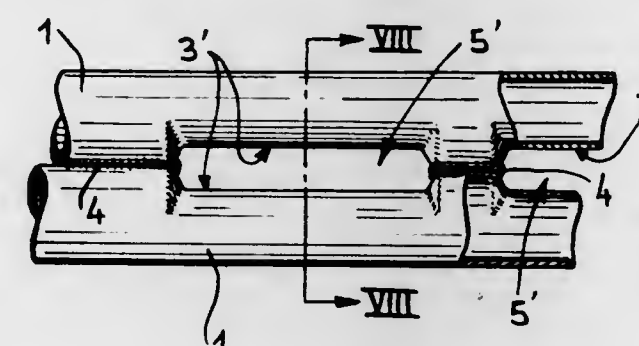
Filed July 13, 1973, Ser. No. 379,001

Claims priority, application France, Aug. 2, 1972, 72.28500

Int. Cl. A63b 49/00

U.S. Cl. 273-73 C

3 Claims



1. A metal frame for securing the ends of interwoven strings for a tennis or other racket, comprising two tubular oval-shaped metal frame elements assembled and secured one on top of the other and having mutually adjacent faces contacting each other, the adjacent face of at least one of said oval frame elements being formed with a series of depressions disposed such that when the frame elements are secured together face to face said depressions form spaces between the elements to receive and pass the strings.

3,901,508

TABLE BASKETBALL

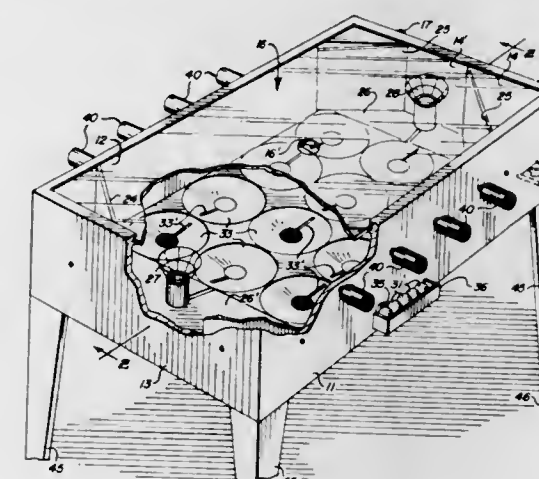
Robert W. Spangler, 4620 E. Calle Tuberia, Phoenix, Ariz. 85018

Filed Nov. 4, 1974, Ser. No. 520,567

Int. Cl. A63f 7/06

U.S. Cl. 273-85 C

13 Claims



1. A simulated basketball game comprising:

an enclosed casing having a playing floor, a pair of side walls, a pair of end walls, and a transparent top,

at least one ball, said floor being provided with a plurality of spaced funnel shaped cavities forming recesses extending through said floor for receiving and passing through said ball, a plurality of lever arms arranged to extend through and inwardly of each of said side walls above said floor with one end of a different one of said lever arms terminating adjacent a different one of said recesses,

a plurality of cup shaped members one formed to fit within the cavity of a different one of said recesses each mounted on said one of a different one of said lever arms, half of said lever arms being fulcrumed on said side walls for rotating said cup shaped members on their ends toward one end of said casing and the other half of said lever arms being fulcrumed on said side walls for rotating said cup shaped members toward the other end of said casing,

a pair of baskets one mounted adjacent each of said end walls inside of said casing for receiving a ball projected by said cup shaped members upon rotation of its associated lever arm, and

a plurality of deflection plates one mounted across each inside corner of said casing between a side wall and one of said end walls and positioned for deflecting a ball projected toward it by a lever arm laterally of and toward the longitudinal axis of the floor of the casing.

3,901,509

SHUTTLE BALL

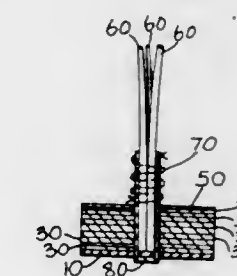
Henry Liong, 300 Fourth Ave., Redwood City, Calif. 94063

Filed Aug. 26, 1974, Ser. No. 500,458

Int. Cl. A63B 67/18

U.S. Cl. 273-106 A

2 Claims



1. A shuttleball, comprising:

a horizontal, circular leather base disc having two spaced slots defining two opposed sides of a square centered on the center of the disc;

a plurality of like horizontal circular spacer discs with diameters equal to the diameter of the base disc, each spacer disc having a central hole, with all the spacer discs being located in a vertical stack extending upwardly from the base disc;

a horizontal circular leather top disc having the same shape and size as any one of the spacer discs located on top of the stack;

a rectangular strip extending down through the holes in the top and spacer discs, down through one of the slots in the base disc, below the base disc to the other slot, and up through the other slot and thence up through the holes in the spacer and top discs with the ends of the strip extending above the top disc;

a plurality of feathers extending upwardly from the base disc through the holes in the other discs and located between the ends of the strip; and

a rubber band wrapped around the feathers and the end of the strip to secure the feathers, strip and discs together.

3,901,510

DEVICE FOR TESTING THE SKILL OF A MANIPULATOR

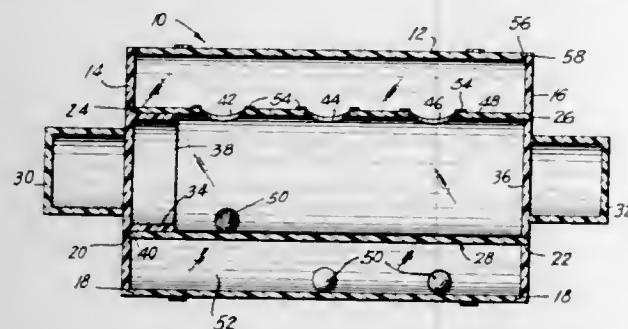
Peter Demaio, 142 Bay 7th St., Brooklyn, N.Y. 11228

Filed July 17, 1974, Ser. No. 489,380

Int. Cl.² A63F 7/04

U.S. Cl. 273-113

10 Claims



1. A device for testing manipulative skills, the device comprising a hollow container of substantially translucent material, a hollow member of substantially translucent material and disposed substantially coaxially within and spaced from the walls of the container and providing, between the container and the member, a substantially unobstructed interspace, both ends of the container and of the member being closed, the walls of the member having a plurality of openings providing communication through the walls of the member from the inner space within the member to said interspace, the openings being all substantially in a single line parallel to the longitudinal axis of the member, and a plurality of pieces the largest dimension of each of which is less than the dimensions of any one of the openings, the pieces being free for movement within said interspace, the device having means for imparting movement to the device to cause the common axis of the container and the member to revolve in non-planar movement to cause said pieces to roll centrifugally in relatively circular paths on the inner walls of the container, to fly freely in, and to fall through, the interspace and be caught in an opening to enter said inner space.

3,901,511

LIGHTED HOLE ASSEMBLY AND BALL PROJECTOR FOR PLAYBOARD

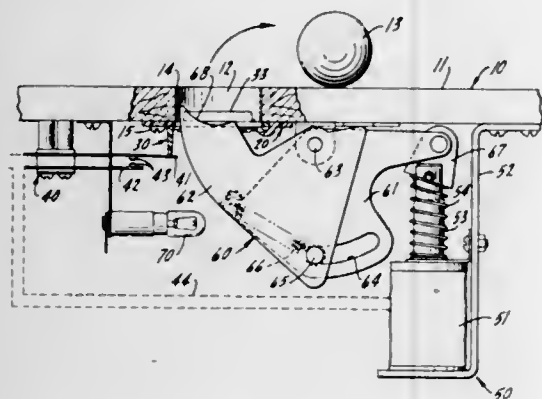
Roman F. Garbark, Westchester, Ill., assignor to D. Gottlieb & Co., Northlake, Ill.

Filed Oct. 10, 1974, Ser. No. 513,539

Int. Cl. A63F 3/00

U.S. Cl. 273-119 A

8 Claims



1. In a pin ball machine the combination comprising a playboard with a hole therethrough, a wafer of translucent material secured to the underside of the playboard and defining a bottom for the hole, the wafer having a diametrical slot, a trigger member underlying the wafer and having a pair of fins extending upwardly through the slot adjacent the edges thereof and in position to be struck by a ball dropping into the hole, the trigger member being yieldably mounted with respect to the wafer so that it sinks downwardly upon receiving the weight of the ball, a switch responsive to the sinking move-

ment, a solenoid connected to the switch, the trigger member having a central slot between the fins, a pivoted ejection finger mechanically coupled to the solenoid and extensible by the latter through the central slot so that a ball dropping into the hole and making contact is promptly ejected, a source of light under the hole, the wafer having an upwardly facing light emitting surface so that light received from the source is transmitted through the wafer and into the hole for maintaining the same in a normally illuminated condition.

3,901,512

BOARD GAME APPARATUS

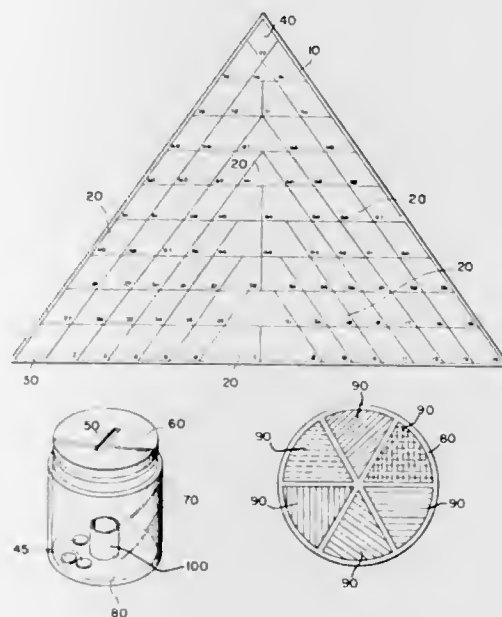
Aristid Z. Fekete, 11824 Madison Ave. No. 9C, Lakewood, Ohio 44107

Filed June 24, 1974, Ser. No. 482,015

Int. Cl.² A63F 3/00

U.S. Cl. 273-134 AE

1 Claim



1. Game apparatus comprising:

a triangular cardboard playing board, the board being ruled into a plurality of playing regions which take on trapezoidal, triangular and rhomboidal shapes;

a plurality of playing pieces;

a cubical die;

means providing a selection in a random manner from seven different possible outcomes, the means including a vertical cylindrical jar having an open mouth at its top and a horizontal bottom and almost completely filled with water, a circular disc ruled into six congruent wedge-shaped sections, each section being differently colored, said disc being disposed on top of the jar bottom and covering it, an upwardly facing open topped cup disposed on the center of the disc in the jar and disposed below the water line, a lightweight steel token which, when dropped into the jar mouth, will settle in any one of seven different positions, each position being a different outcome, one of said positions being attained when the token settles into the cup, each of the other six positions being defined when the token settles onto a corresponding one of the six disc sections, and an elongated rod having a magnet at one end for removing the token from the jar without spilling water therefrom; and

a plurality of cards, each card containing instructions for the movement of the playing pieces upon the board and corresponding to one and only one of said outcomes as selected by said means.

3,901,513

BOARD GAME APPARATUS

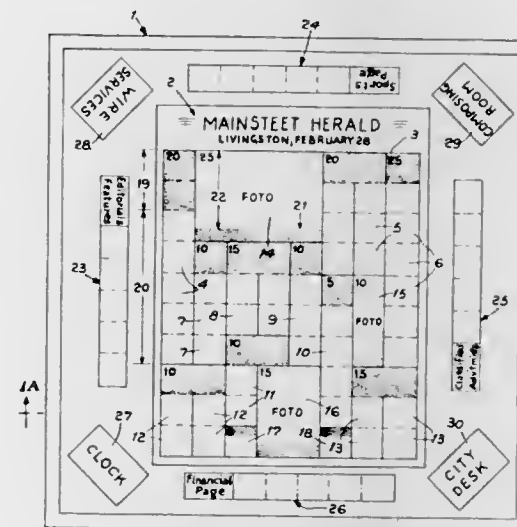
Robert H. Spohn, 7 Brookside Pl., Livingston, N.J. 07039

Filed May 16, 1974, Ser. No. 470,470

Int. Cl. A63F 3/00

U.S. Cl. 273-135 R

1 Claim



1. In a board game apparatus, a board having a rectangular playing surface, on the central area of which is depicted the outline, with masthead, of the front page of a newspaper, with the portion that is customarily occupied by stories and pictures imprinted with a pattern of front-page makeup by means of lines separating the various story and picture columns, and items within the columns, into cells, there being means including playing pieces in the form of square tiles bearing indicia of story headlines or picture captions to be placed during play of the game by any player to fill or complete the various story or picture cells by placing into them, singly or in combination, tiles such that their indicia render in their totality the front page of the newspaper in facsimile; said cells having numerical indicia signifying their individual worth or weight in terms of points by virtue of their respective positions on the front page, and in accordance with prevailing newspaper practice, and being subdivided by markings into headline and caption section, into which are to be placed one or more special story headline, or picture caption, tiles, and into body sections to be occupied ultimately by tiles, hereinafter described, which complete the cells; said board also having upon its playing surface outlines of cells at its four sides, outside the margins of the front page, to depict the contents of four inside pages of the newspaper whose front page occupies the central area, one each for Editorials and Features, Classified Advertisements, Sports and Financial news, and there being for placement on said cells during play, tiles bearing special titles of items customarily found on these pages and other tiles representing the text of "continued stories" continued from the front page to be placed on certain cells, each such inside page depicted being controlled during the game by a single player; said board also having spaces at two of its corners labeled, respectively, City Desk and Wire Services, to accommodate corresponding piles of cards and there being some cards bearing the titles and some cards bearing partial titles, of stories or pictures presumed to originate within or without the city, the board having also a space at its third corner, labeled Clock, for a pile of card pockets and there being card pockets, with windows on one side of each, the reverse sides being imprinted sequentially with the hours of the day, one hour on each pocket, during which the newspaper is in preparation, into which card pockets are inserted, face out to the window, the City Desk or Wire Services cards drawn from the piles in order to assign a time to them and to establish a time priority basis for positional exchanges of headlines that allow a player's later acquired story to supplant an opponent's earlier one in a higher counting cell; the board having at its fourth corner a space labeled Composing Room to accept cards which are rejected from the City Desk and Wire Services piles and to

collect them there for later redistribution to their original piles; and there being City Desk and Wire Services cards, which when drawn by a player from the tops of the board having at its fourth corner a space labeled Composing Room to accept cards which are rejected from the City Desk and Wire Services piles and to collect them there for later redistribution to their original piles; and there being City Desk and Wire Services cards, which when drawn by player from the tops of their respective piles authorize that player to place into a front page cell the headline or picture caption tiles corresponding to the story titles on some cards and picture titles on other cards; there being, in addition, certain Special Assignment cards, included among the City Desk and Wire Services cards at the start of the game, which cause bonus points to be awarded to the player drawing them; there being, in addition, to the aforesaid headline and caption titles, and the aforesaid inside page tiles, a set of foto tiles, and a set of interchangeable body tiles whose surfaces carry simulated print, for completing the non-headline and non-caption portions of the pictures or stories, respectively; the object of the game played on said board game apparatus being to insert tiles into said cells to complete the front page and as much as possible of the inside pages in a manner described in the rules of play, and in such a way as to outscore all opponents in the value of points earned (1) for completing individual stories and pictures (2) for completing specified groups of stories and pictures (3) for placing the final tile necessary to complete the front page (4) for placing inside page tiles (5) as bonuses awarded for drawing Special Assignment cards, or for continuing a front page story or stories to one's inside page, etc.

3,901,514

GOLF PUTTER

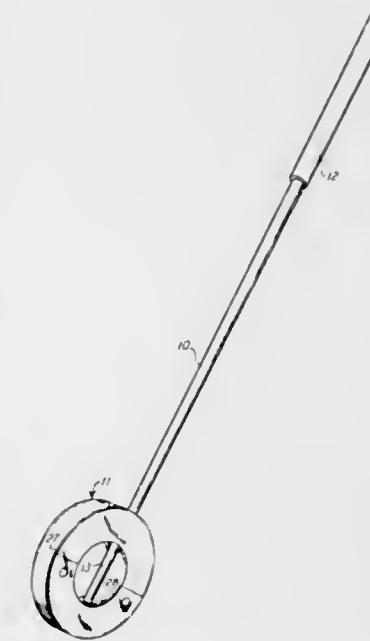
William J. Priaulx, 4413 Northwestern Ave., Racine, Wis. 53405

Filed Apr. 8, 1974, Ser. No. 458,901

Int. Cl.² A63B 53/04

U.S. Cl. 273-168

5 Claims



1. A golf putter comprising an O-shaped putter head of a cylindrical shape having a circumference extending around said head and having a flat planar face on each opposite end of said head and with said faces being parallel to each other, and with the ratio of the diameter of the cylindrical shape to the total length thereof between said faces being 4 to 1 for optimum alignment of said head relative to the desired direction of the golf stroke, a shaft extending into said head and extending radially therefrom in one direction and parallel to said faces for swinging control of said head in the use of the golf putter for presenting either one of said faces to a golf ball

for both left-handed and right-handed players, said head having its circumferential surface co-incident with the flat plane tangential to said circumferential surface for presenting a flat configuration on said head in the shortest straight line extending between said faces, and presenting a circular surface along the plane extending between and parallel to said faces, thereby permitting said flat configuration to be positioned parallel to the ground at any lie of the club, said head having a central axial opening extending therethrough between said faces and with said opening being of a diameter one-half the diameter of said cylindrical shape, and a semi-circular face plate on one of said faces and disposed radially opposite from the radial said one direction extent of said shaft, for engaging the golf ball during the stroke.

3,901,515

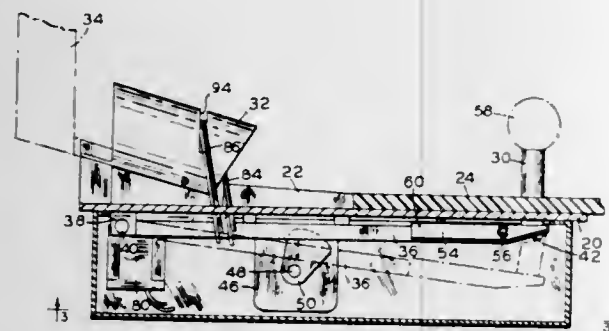
AUTOMATIC GOLF TEE

Joe Mozel, 11740 Wilshire Blvd., Los Angeles, Calif. 90025
Filed Mar. 25, 1974, Ser. No. 454,382

Int. Cl. A63b 57/00

U.S. Cl. 273-201

10 Claims



1. An automatic golf ball teeing device comprising:
 - a base including a base surface;
 - a generally horizontally extending swing arm pivotally mounted at one end thereof beneath said base surface for pivotal movement about a horizontal axis;
 - motor means on said base and means driven by said motor means for controlling the movement of said swing arm about said axis between a lower position and a raised position;
 - a tee platform means pivoted to said swing arm adjacent the free end thereof, said tee platform means being tiltable on said swing arm about a horizontal tilt axis between a first and a second position;
 - a tee attached to said tee platform means and extending above said base surface when said swing arm is in said raised position and being retracted vertically to a position for receiving a ball when said swing arm moves to said lowered position;
 - said tilt axis being positioned such that said tee platform means is tilted to said first position by the weight of a golf ball on said tee and tilts to said second position in the absence of a golf ball on said tee;
 - switch means operatively engaged with said tee platform means for connecting said motor means to a source of power to effect operation of said motor means to move said arm from said raised to said lower position when said platform means moves from said first to said second position thereof;
 - a switch actuator means mounted on said base;
 - a normally closed switch for connecting said motor means to said source of power mounted on said swing arm, said switch adapted to be engaged and opened by said switch actuator means when said swing arm is above selected positions;
 - and means for adjusting the elevation of said switch actuator means thereby to control the height of said swing arm at which said switch contacts said actuator means, regulating the height of said tee above said base.

3,901,516 APPARATUS FOR PREVENTING OBLIQUE MOVEMENT OF A PICKUP FOR A RECORD PLAYER DURING ITS ASCENDING OR DESCENDING MOVEMENT

Yoshiyuki Yuki; Tsutomu Ishii, both of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha Hamamatsu, Japan

Continuation of Ser. No. 256,968, May 25, 1972, abandoned.

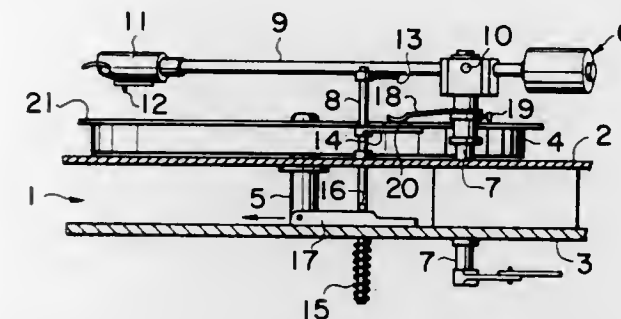
This application Apr. 25, 1974, Ser. No. 464,196

Claims priority, application Japan, May 29, 1971, 46-44482[U]; May 29, 1971, 46-44483[U]

Int. Cl. G11b 19/22

U.S. Cl. 274-1 D

11 Claims



1. Apparatus of a record player for reproducing sound from a disc record, comprising a tone arm pivotally supported and provided with a stylus positioned over the disc record, said stylus being movable toward and away from the disc record in a vertical direction and further movable in another direction perpendicular to said vertical direction, a first member connected to said tone arm and movable therewith, and a second member located in a confronting relation to the first member, one of said first and second members being a magnet and the other of said first and second members being of a magnetic material, said first and second members being magnetically attracted to, and in contact with, each other when the stylus is moving toward and away from said disc record but out of contact when said stylus is positioned on said disc record, wherein the stylus is prevented from moving in said another direction by the friction force between said members generated by said magnetic attraction.

3,901,517

DYNAMIC SEAL

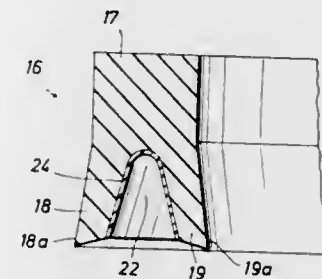
E. B. Heathcott, Dresden, Tenn., assignor to Utex Industries, Inc., Houston, Tex.

Filed Oct. 11, 1972, Ser. No. 296,683

Int. Cl. F16j 15/08

U.S. Cl. 277-205

10 Claims



1. A sealing device comprising:
 - an annular body section,
 - at least one deformable, annular lip attached to said body section, said lip having a generally radial innermost surface and a generally radial outermost surface, one of said surfaces forming a generally circumferentially extending sealing surface, said body section and said lip being comprised of an elastomeric material, and
 - an annular biasing section comprising a pair of annularly extending legs having a common juncture and being disposed at an angle to one another and forming a gener-

ally radial outermost leg and a generally radial innermost leg, both of said legs being bonded to said sealing device, one of said legs being bonded to said lip on said surface opposite said sealing surface, said biasing section being comprised of a fibrous material reinforced with a polymeric material selected from the class consisting of thermosetting and thermoplastic resins and which is harder than the material of said lip and said body section and having the characteristics of sufficient resiliency to permit flexure of said lip and sufficient rigidity to resist compression of the free ends of said legs toward one another to thereby control deformation of said lip and minimize permanent set of said lip in a deformed condition.

3,901,518

DUST SEAL COVER FOR BALL JOINT

Yasuo Uchida, Hamamatsu, Japan, assignor to Ishikawa Tekko Kabushiki Kaisha, Tokyo, Japan

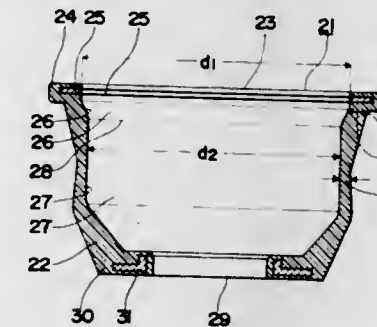
Filed Aug. 26, 1974, Ser. No. 500,611

Claims priority, application Japan, Sept. 25, 1973, 48-107782

Int. Cl. F16C 11/06

U.S. Cl. 277-212 FB

2 Claims



1. Dust seal cover adapted to be mounted on an outer surface of a socket of a ball joint, comprising a generally cylindrical cover body (22) of a resilient material formed with a large opening (23) at one end thereof having an inner diameter (d_1) slightly smaller than the outer diameter of a cover mounting portion (11) of said socket (7), a rigid resilient ring (25) integrally embedded in a radially outwardly extending peripheral edge flange portion (24) at said large opening (23) and having a smaller inner diameter than the outer diameter of said cover mounting portion (11) of said socket (7), a generally cylindrical inner wall portion (27) formed in said cover body (22) connected to said large opening (23) by way of an inwardly tapered inner wall portion (26) so that said cylindrical inner wall portion has an inner diameter (d_2) smaller than that of said large diameter (d_1), a portion of said cylindrical inner wall portion (27) located opposite to said tapered inner wall portion (26) being converged inwardly and connected to a small opening (29) formed in said cover body (22) at the other end thereof, the junction (32) between the radially outwardly extending peripheral edge flange portion (24) and the cover body (22) lying on a plane containing one end of the tapered inner wall portion (26), and an annular lip edge portion (28) formed inside said cover body (22) at a position in a plane containing the junction between the other end of said inwardly tapered inner wall portion (26) and said cylindrical inner wall portion (27), the inner peripheral surface of said small opening (29) being sealingly and slidably contacted with the outer peripheral surface of a shank (3) of a ball stud (4), the outer surface of the peripheral surface of the peripheral edge (30) of said small opening (29) being sealingly and slidably contacted with the outer surface of a mounting member (9), wherein, upon mounting said cover body (22), said mounting portion (11) of said socket (7) is resiliently clamped by said radially outwardly extending peripheral edge flange portion (24) of said large opening (23) under the influence of said rigid resilient ring (25), while said

annular lip edge portion (28) adjacent to said large opening (23) is sealingly pressed against the outer surface of said cover mounting portion (11) of said socket (7).

3,901,519

CLAMPING OF PARTS BY ADHERENCE ON AXIAL THRUST SUPPORT

Pierre Lecailtel, and Bruno Dressler, both of Billancourt, France, assignors to Regie Nationale des Usines Renault, Billancourt and Automobiles Peugeot, Paris, both of, France
Division of Ser. No. 204,151, Dec. 2, 1971, Pat. No. 3,795,405.

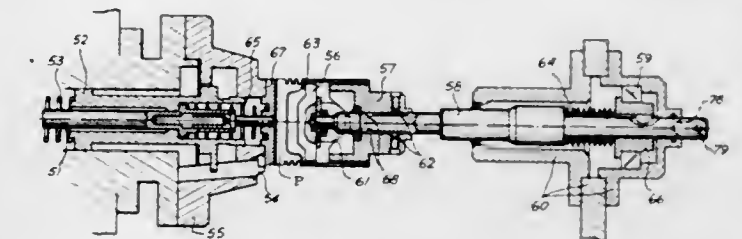
This application Aug. 22, 1973, Ser. No. 390,534

Claims priority, application France, Dec. 4, 1970, 70.43694; Nov. 24, 1971, 71.42070

Int. Cl. B23B 5/24, 33/00

U.S. Cl. 279-1 L

8 Claims



1. A clamping device for pieces to be machined adapted for the initial centering and indexing of the work piece such as a piston comprising:
 - a receiving member adapted for frontly supporting a face on the head of a work piece to be machined;
 - fixed support members positioned on said receiving member for supporting a work piece to be machined;
 - a retractable centering element surrounding said receiving member for initially centering a work piece to be machined and adapted to be retracted away from the work piece during the machining operation;
 - an oscillatable thrust rod free for rotation about its own axis and elastically coupled to a thrust body;
 - said thrust rod supporting the portion of a work piece to be machined opposite to its face supported by said receiving member;
 - said receiving member comprises circular plate which carries the fixed support members which are placed adjacent the periphery of said plate; and
 - a rockable support member articulated by a swivel joint on one extremity of the thrust-rod, the rockable support member having a plurality of supporting points which, when the device is clamping a work piece to be machined, cooperate with the fixed support members on the circular plate.

3,901,520

SKATE

Charles Robert McMahan, Shalimar, Fla., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed June 21, 1974, Ser. No. 481,631

Int. Cl. A63C 17/18

U.S. Cl. 280-7.13

4 Claims

1. A skate shoe which may be alternately fitted with either two or four roller skate wheels or with an ice skate blade comprising
 - a shoe, a sole plate fastened to the underside of the shoe which is formed as an open channel member together with a set of attachable roller skate wheels and an attachable ice blade assembly that may be interchangeably fastened to the channel member,
 - said channel member formed with a flat plate section of the general width of the shoe that is mounted adjacent the underside of the shoe with a flange section integrally joined to each of the opposed lateral sides of the flat plate section, said flange sections each bent at an acute angle

to the said flat plate section, with each said flange section bent at its free end to form a support wall section that lies in a plane perpendicular to the plane of the flat plate section, said support wall sections being spaced apart by a relatively uniform distance and fitted with mounting holes through which the axles of skate wheels or bolts fastening the attachable ice blade assembly may be mounted,



said flange sections joined together by a support bar spaced from the flat plate section, oriented with the bar axis generally parallel to the plane of the said flat plate section, which support bar serves to maintain the flange sections and attached support walls in a fixed spaced relation to each other.

3,901,521

ROLLER SKATE CONSTRUCTION

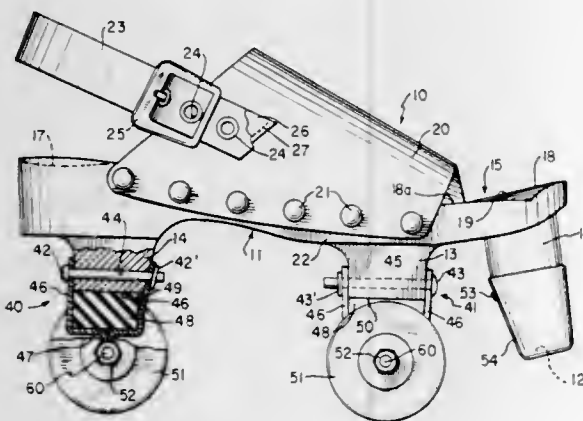
Joseph P. Famolare, Jr., Florence, Italy, assignor to Famolarf, Inc., New York, N.Y.

Filed May 28, 1974, Ser. No. 473,337

Int. Cl. A63c 17/14

U.S. Cl. 280—11.2

1 Claim



1. A sandal skate comprising
 - a. a one-piece, rigid thermoplastic sole means having shaped convex and concave upper surface portions configured to conform to the contours of a human foot for the firm, uniform, and comfortable support thereof;
 - b. front and rear vertical posts integral with and projecting downwardly from the lower surfaces of said sole means;
 - c. front and rear truck means each supporting an axle therein;
 - d. a pair of skate wheels mounted for free wheeling rotation adjacent the ends of said axles;
 - e. fastening means securing said front and rear truck means to said posts with said axles parallel to one another and perpendicular to the longitudinal axis of said sole means;
 - f. an integral toe brake extending downwardly from forward peripheral underside portions of said sole means;
 - g. a brake pad being mounted on said integral toe brake;
 - h. said front and rear posts being generally rectangular in cross section having generally parallel front and rear walls and having generally parallel side walls;
 - i. said post side walls being straddled by said skate wheels and said front and rear walls being engaged and generally

clamped between parallel vertical wall portions of said truck means;

- j. a resilient shock absorbing pad being disposed between said truck means and the bottom walls of said front and rear vertical posts, and
- k. said shock absorbing pad being maintained in compression;
- l. said means mounting said trucks to said posts comprising a longitudinally extending bolt extending through said wall portions of said truck means and longitudinal holes formed in each of said posts;
- m. a vamp being fastened to the medial lateral edges of said sole means;
- n. a heel strap being fastened to and bridging the rear edges of said vamp;
- o. whereby said upper contoured surfaces of said sole means are elevated substantially above said skate wheels.

3,901,522

VIBRATION DAMPED SKI

Herbert C. Boehm, Hamden, Conn., assignor to Olin Corporation, New Haven, Conn.

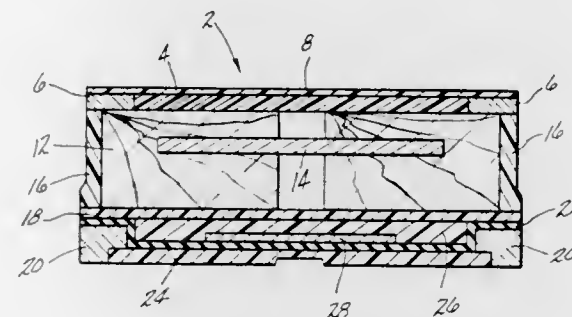
Continuation of Ser. No. 380,308, July 18, 1973, abandoned.

This application Aug. 22, 1974, Ser. No. 499,726

Int. Cl. A63C 5/12

U.S. Cl. 280—11.13 L

6 Claims



1. A laminated ski structure of the type comprising a top surface, a bottom surface, and a plurality of intermediate layers disposed between said top and bottom surfaces, the improvement comprising at least one of said intermediate layers being a vibration damping laminate comprising a high modulus of elasticity member substantially completely surrounded by elastomeric material a portion of said elastomeric material possessing pronounced viscoelastic properties and having a loss tangent greater than about 0.8 and the remainder of said elastomeric material being rubber, said material possessing pronounced viscoelastic properties being insulated from external environment by outwardly adjacent material possessing substantially lower viscoelastic properties.

3,901,523

CABLE BINDING

Simon Burger, Dachau, Germany, assignor to Heinrich Wunder K.G., Dachau, Germany

Filed Jan. 7, 1974, Ser. No. 431,319

Claims priority, application Austria, Jan. 8, 1973, 125/73

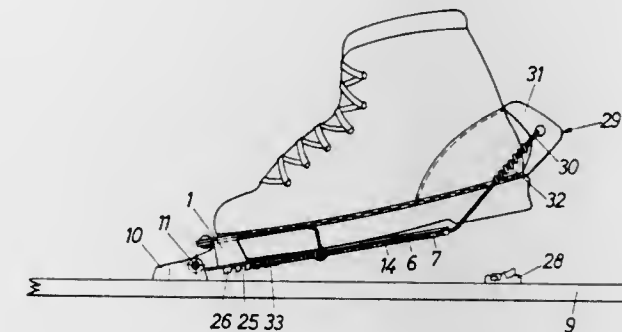
Int. Cl. A63C 9/08

U.S. Cl. 280—11.35 E

2 Claims

1. A cable binding for releasably mounting a skiing boot on a ski, comprising a soleplate which has a surface for supporting the boot and means for pivoting the soleplate to the ski adjacent to the toe portion of the boot on an axis which is transverse to the longitudinal axis of the ski, said soleplate having means for retaining the toe portion of the boot on the soleplate and following the movement of the toe portion of the boot about said transverse axis, a flexible cable which is detachably secured to the underside of said soleplate and extends in a rearward direction on the sides of said soleplate and around the heel of the boot, at least one rack having a plurality

of tooth spaces which are rearwardly and upwardly inclined, said rack being disposed on the underside of said soleplate and extending in the longitudinal direction of the ski and serving



for a releasable fixation of said cable, and means provided on said cable and interengageable with a selected tooth of the rack.

3,901,524

WEIGHT INCREASING DEVICE FOR SKATE

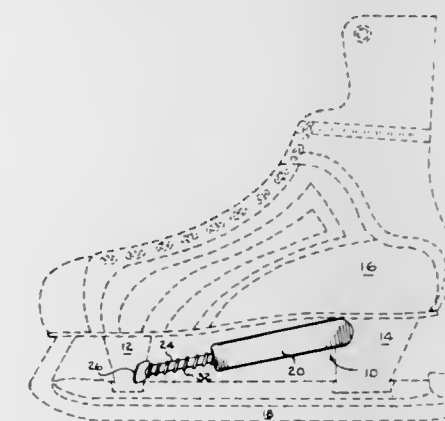
Laurent R. Ouellette, Laprairie, Canada, assignor to La Compagnie Manufacturiere Lauouel Inc., Longueuil, Canada

Filed July 29, 1974, Ser. No. 492,886

Int. Cl. A63c 3/00

U.S. Cl. 280—11.37 E

6 Claims



1. A weight increasing device adapted to be mounted on an ice skate having a boot, a blade and a pair of posts for supporting the boot on the blade, the said device comprising a weighted block member, a rod slidably mounted in said block member and extending outside therefrom, spring means mounted between the block member and the rod for resiliently biasing said rod relative to said block member and means for positively retaining the rod to said block member to prevent it from sliding completely out therefrom, and gripping means disposed at the free end of the rod and at the end of the block member opposite the rod for laterally retaining the said device to said posts.

3,901,525

SKI CONSTRUCTION FOR VEHICLES

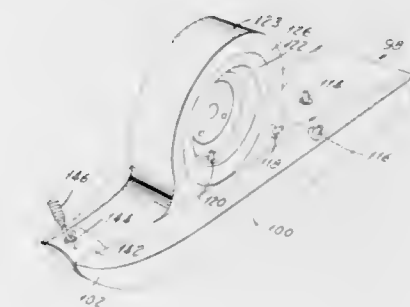
Roy E. O'Brien, 17834 Millar Rd., Mt. Clemens, Mich. 48043; Donald J. Leslie, 1310 N. Washington, Apt. No. 11, Royal Oak, Mich. 48067, and Michael R. Leslie, 1947 Robina Ave., Berkley, Mich. 48072

Division of Ser. No. 324,205, Jan. 16, 1973, Pat. No. 3,845,967. This application Nov. 1, 1974, Ser. No. 519,802

Int. Cl. B62B 19/04

U.S. Cl. 280—14

9 Claims



1. A ski construction for a vehicle comprising a ground engageable ski element, said ski element comprising a gas-inflatable unit having flexible resilient walls, said ski element including means for attachment to an axle hub of a vehicle, said ski element including an upturned forward nose portion.

3,901,526

SLED WITH STEERABLE RUDDER

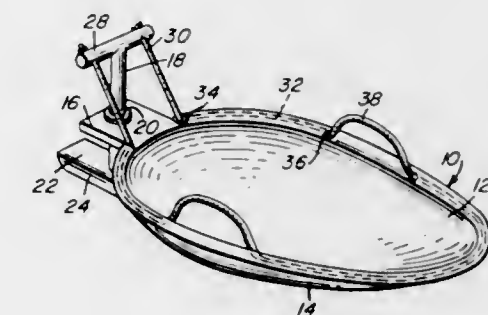
Ian G. Scott, 72-17 34th Ave., Jackson Heights, N.Y. 11372, and Rose Oberstein, 55 Knolls Crescent, Bronx, N.Y. 10463

Continuation-in-part of Ser. No. 232,442, March 7, 1972, abandoned. This application Apr. 5, 1973, Ser. No. 348,059

Int. Cl. B62b 13/08

U.S. Cl. 280—21 R

5 Claims



1. A riding toy comprising a body having a smoothly curved convex bottom surface for sliding engagement with a supporting surface, said body having a hollow, open-topped concave upper surface for receiving an occupant, and a control member mounted on said body in trailing aligned relation to the central portion of the bottom surface for engagement with the supporting surface for controlling the path of movement of the toy, said control member including a longitudinally extending rudder, means mounting said rudder from said body for pivotal movement about substantially a vertical axis, and means operatively connected with said rudder and extending forwardly into the body for enabling manual control of the rudder and steering control of the toy when sliding on a supporting surface, said rudder including a vertically disposed plate, said mounting means including a mounting flange attached to said body with the plate extending rearwardly from the flange, said plate including a vertically extending hinge disposed adjacent the flange.

3,901,527

WHEEL CHAIR WITH EXTENSIBLE WHEEL BASE TO FACILITATE INGRESS AND EGRESS

Uzi Danziger, and Reuven Danziger, both of 13 Brenner St., Netanya, Israel

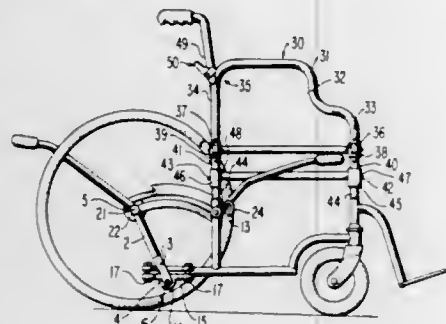
Filed Mar. 8, 1974, Ser. No. 449,481

Claims priority, application Israel, Mar. 8, 1973, 41737

Int. Cl.² A16G 5/00

U.S. Cl. 280—34 R

4 Claims

**1. A wheelchair comprising:**

- a chassis;
- a seat for a rider, mounted on said chassis;
- first and second rear propelling wheels disposed on opposite sides of said chassis;
- a wheel hub, having mounted thereon one of said rear propelling wheels;
- a pivot arm pivotably connecting said wheel hub to said chassis at a fixed pivot point thereon;
- an arcuate guide connected to said wheel hub and slideably engaging said chassis at a point on said chassis above said pivot point, said arcuate guide defining an arcuate path of said wheel hub about said pivot point between two opposite end positions of said arcuate guide;
- said pivot point being positioned on said chassis at a point substantially vertically below a midpoint along said arcuate path between the two opposite end positions; and
- hub locking means for locking said wheel hub in either of the two end positions of the arcuate path.

3,901,528

BABY CARRIAGE

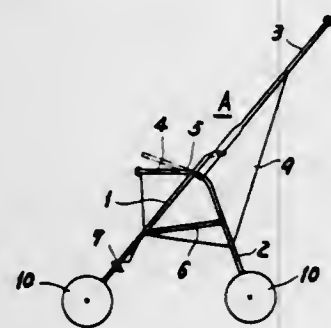
Takeshi Miyagi, 47, Mikuriya Nishinomachi, Higashi Osaka-shi, Osaka, Japan

Filed Apr. 5, 1973, Ser. No. 348,148

Int. Cl. B62b 11/00

U.S. Cl. 280—36 B

7 Claims

**1. A foldable baby carriage having folded and unfolded positions comprising:**

- a. a pair of front legs each of which has a first end attached to a wheel and a second end for pivotal attachment;
- b. a pair of rear legs each of which has a first end attached to a wheel, a second end for pivotal attachment and an abutting face on second end;
- c. a pair of handle bar legs each having a first end for attachment to a handle and a second end for pivotal attachment;

- d. a pair of arm rest bars each having a first end for attachment to an arm rest and a second end for pivotal attachment;
- e. the second end of each front leg being pivotably connected to a handle bar leg at a point spaced from the second end of the handle bar leg;
- f. the second end of each rear leg being pivotably connected to a handle bar leg at a point closer to the second end thereof than the point of attachment of the front leg to the handle bar leg;
- g. the attachment and configuration of the said front and rear legs being such that the abutting face on the second end of each said rear leg abuts the periphery of a front leg when the carriage is in its unfolded position;
- h. the second end of each arm rest bar being pivotably connected to a rear leg and a handle bar leg at the same point that the rear leg and the handle bar leg are pivotably connected to each other;
- i. means attached to each front leg at a point spaced from the second end thereof and to each arm rest bar at a point spaced from the second end thereof to prevent unintentional collapsing of the carriage in its unfolded position;
- j. a prefabricated bag attached to each said front leg, each said handle bar leg and each said arm rest bar;
- k. a handle bar attached to the first end of each said handle bar leg; and
- l. an arm rest attached to the first end of each said arm rest bar.

3,901,529

VEHICLE BANKING ARM CONSTRUCTION

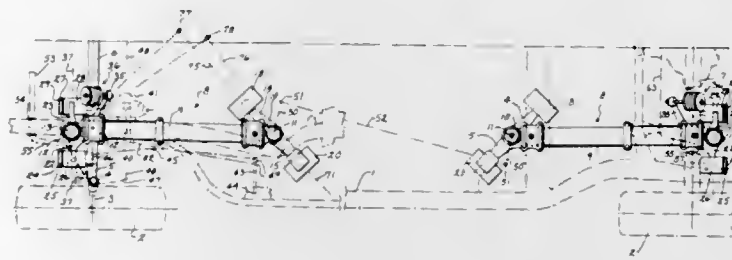
Joachim Kolbe, 5126 Haskell Ave., Encino, Calif. 91316

Filed Sept. 27, 1974, Ser. No. 509,830

Int. Cl.² B60G 7/04

U.S. Cl. 280—112 A

11 Claims



1. In a vehicle having a superstructure and a banking support connecting the superstructure, at its forward end to a wheel spindle carrying, wheel supported, rigid front axle structure, and at its rearward end to a wheel supported rigid rear axle structure, said banking support comprising a plurality of pairs of cooperating roll banking arms, each roll banking arm including a longitudinally extending torsionally operated resilient spring means connected by a separate support member and a ball and socket joint at one end to the superstructure and at the other end to the respective rigid axle structure, support half arms forming a part of said separate support members at the outer ends of said spring means and bearing at their outer ends against respective resilient multiturn cushions with the related ball joints and the multiturn cushions placed a selected distance longitudinally of the vehicle from the related axle structure, and support half arms forming a part of the related support members at the inner ends of said spring means bearing at their ends against respective multiturn cushions supported by the superstructure, wherein the improvement comprises for each roll banking arm the arranging of said superstructure supported support half arm forming a part of the related support member, and the related multiturn cushion carried thereby along an axis line extending in either direction diagonally from the related banking arm ball and socket joint and passing through the central district of the related axle structure.

3,901,530

MULTIPLE MINI HYBRID WITH DIRECT BAG CONNECTION

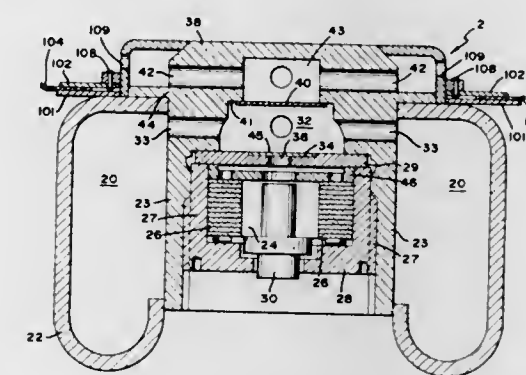
Donald G. Radke, Rochester, Mich., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Aug. 8, 1973, Ser. No. 386,806

Int. Cl. B60r 21/10

U.S. Cl. 280—150 AB

8 Claims



1. A system for protecting a passenger in a vehicle consisting of an inflatable bag, a multiplicity of gas sources for said bag and a holding device for said bag through which each of the multiplicity of sources extends directly into said bag, said holding device comprising a bracket assembly and a retainer assembly with a bag pressed therebetween, said multiplicity of gas sources passing through an aperture in each of said assemblies so as to extend into said bag, gas outlet ports of each of said gas sources being contained within said bag and the gas storage and generating assemblies of the gas sources being located outside of the bag and one the opposite side of said holding device from said bag, each of said multiplicity of gas sources comprising:

- a. a stored gas chamber adapted to be filled with compressed gas;
- b. a gas generating chamber, adjacent to but separate from said stored gas chamber, said gas generating chamber being adapted to contain a combustible material, said combustible material being adapted to generate high pressure combustion gas in said gas generating chamber upon combustion, said gas generating chamber being adapted to contain an actuating means for igniting said combustible material, thereby causing combustion of said combustible material;
- c. a mixing chamber in communication with said stored gas chamber, in which mixing chamber said stored compressed gas and said generated combustion gas are mixed to form a hybrid gas adapted for inflating said safety device;
- d. a combustion gas barrier disposed between said mixing chamber and said gas generating chamber, said combustion gas barrier being adapted to prevent said stored compressed gas from entering said gas generating chamber prior to actuation of said combustible material, and being adapted to rupture when the heat and pressure in said gas generating chamber exceed a predetermined temperature and pressure of said combustion gas barrier, whereby said combustion gas flows into said mixing chamber;
- e. an outlet means including said outlet ports being disposed between and being adjacent to said mixing chamber and said safety device, through which outlet means said hybrid gas passes from said mixing chamber to said safety device;
- f. a hybrid gas barrier disposed between said mixing chamber and said outlet means to prevent said stored compressed gas from entering said outlet means from said mixing chamber prior to actuation of said combustible material, said hybrid gas barrier being adapted to rupture when the heat and pressure in said mixing chamber exceed a predetermined temperature and pressure, whereby said hybrid gas flows through said outlet ports and into

said safety device, the pressure at which said combustion gas barrier is designed to rupture being higher than the pressure at which said hybrid gas barrier is designed to rupture;

- g. said combustion gas barrier having weak points disposed therein, said weak points being designed to rupture to form gas passing apertures in said barrier when the heat and pressure in said gas generating chamber exceeds a predetermined temperature and pressure; and
- h. wherein said actuating means for igniting said combustible material comprises a squib mounted in the wall of the gas generating chamber in communication with the exterior of the inflator and with said combustible material within said gas generating chamber.

3,901,531

SAFETY MECHANISM FOR THE OCCUPANTS OF VEHICLES, PARTICULARLY OF MOTOR VEHICLES

Arthur Prochazka, Munich, Germany, assignor to Bayern-Chemie Gesellschaft für flugchemische Antriebe mit beschränkter Haftung, Aschau, Germany

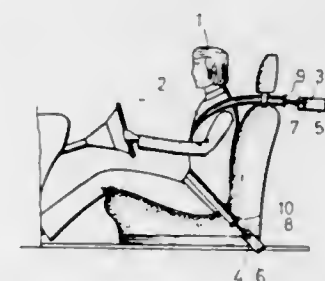
Filed Oct. 11, 1973, Ser. No. 405,694

Claims priority, application Germany, Oct. 11, 1972, 2249786

Int. Cl. B60r 21/10

U.S. Cl. 280—150 SB

7 Claims



1. In a safety belt tensing apparatus for holding the occupant of a vehicle securely in position in the event of a collision, said safety tensing apparatus having cylinder means and a piston reciprocally mounted in said cylinder means, said piston being connected to said safety belt, the improvement comprising gas propellant means for effecting a movement of said piston in one direction in said cylinder means in response to a collision event to effect a tightening of said safety belt holding said occupant, force-limiting means for controlling the tightening force generated by said gas propellant means and said piston on said safety belt to a predefined maximum force and damping means for controlling the rate of deceleration of said movement of said piston in said cylinder means.

3,901,532

OUTRIGGER FLOAT MOUNTING

John T. Hornagold, Roseville, Minn., assignor to Bucyrus-Erie Company, South Milwaukee, Wis.

Filed May 16, 1974, Ser. No. 470,391

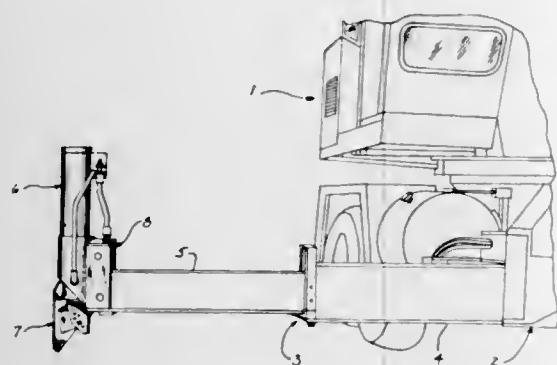
Int. Cl. B60s 9/10

U.S. Cl. 280—150.5

4 Claims

1. In an extensible outrigger assembly comprising an extensible horizontal beam, a vertical cylinder mounted on the outer end of the beam that has a downwardly extensible and upwardly retractable rod, a float pivotally mounted on the outer end of the rod to be movable between a horizontal working position and a vertical stored position alongside the vertical cylinder, a camming member mounted on the outrigger assembly near the vertical cylinder rod, and a cam follower mounted on the float that engages the camming member upon retraction of the rod to cause the float to pivot from working to stored position the improvement wherein:

the cam follower is relatively movably mounted on the float; and there is a resilient connection between the float and cam follower which normally holds the float and cam follower in normal relative positions but which can be overridden to allow the float to pivot from its stored



position toward its working position so that it can ride over an obstacle encountered when the beam is extended with the float in stored position, the resilient connection serving to return the float and cam follower to their normal relative positions after the obstacle has been passed.

3,901,533

SPLASH GUARD

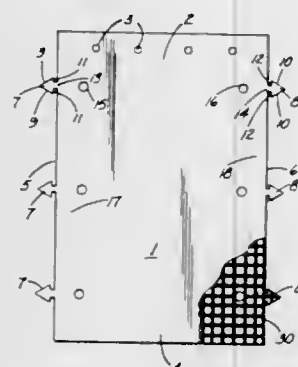
Samuel J. Kosik, Jr., Box 231, Botkins Angle Rd., New Knoxville, Ohio 45871, and Frank B. Robb, 722 Chestnut Rd., Willoughby, Ohio 44094

Filed Sept. 7, 1973, Ser. No. 395,358

Int. Cl. B62d 25/16

U.S. Cl. 280-154.5 R

4 Claims



1. In splash guard construction, in combination, a generally rectilinear body including means to mount the same adjacent a wheel for splash control, said body being initially formed in flat condition with interlocking formations integrally formed at one side section of the body for one edge at least and extending outwardly from said edge, said side section being flexible whereby the same may be rolled, and interlocking elements in said body corresponding to and adjacent the same edge as the interlocking formations, said side section being rolled thereafter and said formations being brought into interlocking engagement with the elements, said section thereby forming a tubular section extending longitudinally of the body whereby to provide stiffness to said body.

3,901,534

CONVERTIBLE BACK REST-LUGGAGE RACK COMBINATION FOR MOTORCYCLES OR SIMILAR VEHICLES

Robert E. Popken, 768 Chamberlain Pl., Webster Groves, Mo. 63119

Filed Oct. 23, 1973, Ser. No. 408,319

Int. Cl. B62J 1/28, 7/04

U.S. Cl. 280-289

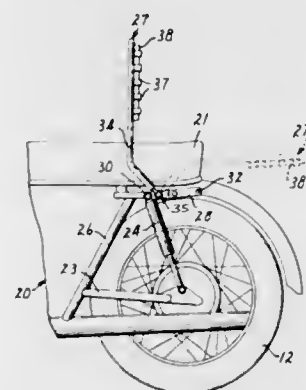
4 Claims

1. A combination back rest and luggage rack device

adapted for attachment to a motorcycle or other vehicle of the type having a saddle seat, comprising in combination:

a pair of mounting brackets adapted for mounting on the frame of said vehicle of the type described, one bracket being disposed on each side of said seat at a location below and at the rear of the seat, both ends of said brackets being attached to the frame of said vehicle each of said brackets comprising a mounting plate having a stud protruding from one face thereof at a point between said ends of said bracket, said stud having an axis perpendicular to said plate,

a generally U-shaped frame comprising a pair of legs joined at one end, said legs being adapted to straddle the rear of the seat, and at the other end of each leg a terminal portion,



rotating means attached to the terminal portion of said legs for mounting said U-shaped frame to said studs so that said U-shaped frame can be rotated about the axis of said studs,

cross members spanning said legs and connected thereto in the portion of said frame adjacent the closed end, cooperative means associated with said rotating means and said stud to permit holding said U-shaped frame in either a generally vertical position or a generally horizontal position as desired, whereby said device can be employed in a generally vertical position as a back rest for a rider of the vehicle or in a generally horizontal position as a load supporting luggage rack.

3,901,535

MODULAR DUMP TRAILER STRUCTURE

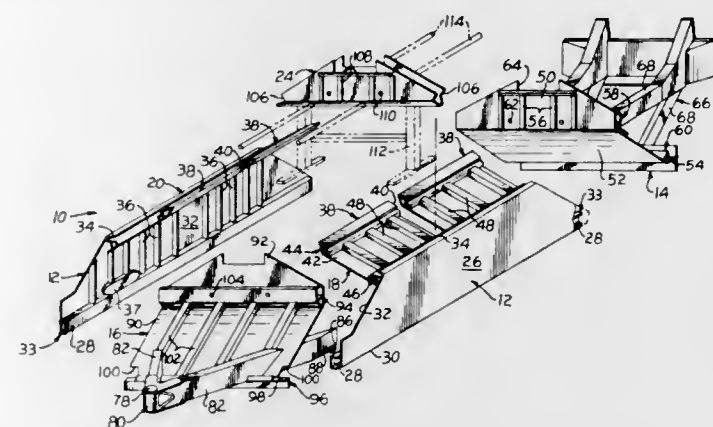
James E. Gee, Washington; Frank A. Grooss, Morton, and Raymond L. Moser, Tremont, all of Ill., assignors to Caterpillar Tractor Company, Peoria, Ill.

Filed June 11, 1974, Ser. No. 478,306

Int. Cl. B62d 53/06

U.S. Cl. 280-423 R

16 Claims



1. A material hauling unit with a modular prefabricated structure comprising; first and second modular side wall assemblies, a modular front wall assembly, a modular rear wall assembly, and a modular bottom floor assembly, each said side wall assembly including at least one longitudinally extending structural support member attached to an upper edge portion

of said side wall assembly, said front wall assembly including at least one laterally extending structural support member attached to said front wall assembly at an upper edge portion thereof, said laterally extending support member having a first bearing surface thereupon, said front wall assembly further including recess means including first and second oppositely disposed recesses on opposite sides of said front wall assembly for receiving said longitudinally extending support members upon engagement of said first bearing surface and said longitudinally extending support members upon assemblage of said front wall assembly with said first and second side wall assemblies.

3,901,536

APPARATUS FOR ALIGNING HITCHES OF TOWING AND TOWED VEHICLES

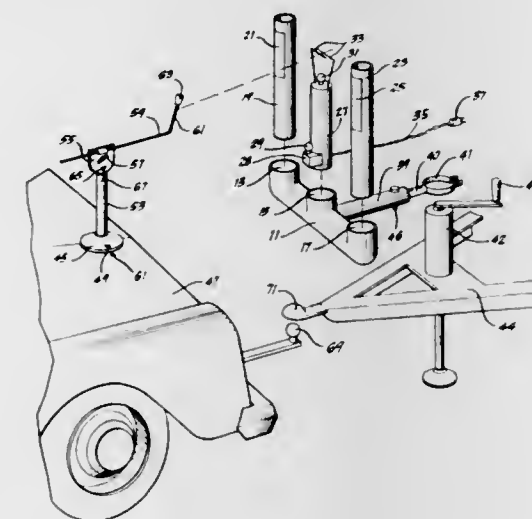
Lewis Granville Black, 2403-1B Via Mariposa West, Laguna Hills, Calif. 92653

Continuation-in-part of Ser. No. 379,332, July 16, 1973, abandoned. This application June 3, 1974, Ser. No. 475,512

Int. Cl. B60Q 1/00

U.S. Cl. 280-477

10 Claims



1. A visual aid for aligning the hitch of a towing vehicle with the mating hitch of a towed vehicle, comprising: a base member adjustably connected to the hitch of the towed vehicle; a pair of parallel boundary posts attached to said base member for defining a rectangular target area; a target post centrally located within said target area and having one end thereof attached to said base member; an indicator lamp mounted on the other end of said target post; a pair of normally open contacts flexibly connected to the other end of said target post and extending longitudinally beyond said other end of said target post and said indicator lamp thereon, said pair of contacts being adapted to connect said indicator lamp to a source of electrical energy when said pair of contacts is closed; and sighting means adjustably connected to the towing vehicle for aiming the towing vehicle at said target area and said target post, said sighting means being adapted to engage and close said pair of contacts when said sighting means and said pair of contacts are positioned on the towing and towed vehicles, respectively, to indicate alignment of the engaging portions of the towing and towed vehicle hitches.

3,901,537
CHECKBOOK

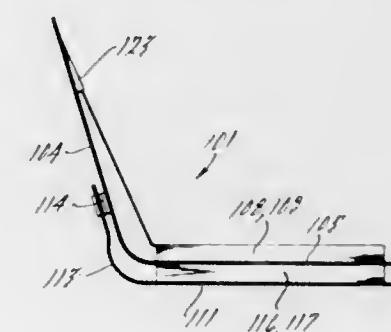
Dorothy C. Oldham, 261 Bal Cross Dr., Bal Harbour, Fla. 33154

Continuation-in-part of Ser. No. 118,949, Feb. 25, 1971, abandoned, which is a continuation of Ser. No. 655,443, July 24, 1967, abandoned. This application Jan. 31, 1972, Ser. No. 221,997

Int. Cl. B41I 1/32

U.S. Cl. 282-13

4 Claims



1. In a checkbook, a cover comprising a continuous flat rectangular member of flexible material folded along its upper long edge to form a top and a bottom of equal size, a first flap on the inside of said top, said flap forming a relatively shallow pocket open toward the folded edge of said cover, a second rectangular flap on the inside of said bottom and having a first long edge coextensive with the outer long edge of said bottom, two shorter edges being secured to the side edges of said bottom, the other long edge being unsecured, whereby said second flap forms a relatively deep pocket open toward the folded edge of said cover, a stack of unapertured and unnotched rectangular checks formed with the bottom of each check joined to the top of the next check by a perforated line so that the checks are folded in accordion fashion, individual record sheets corresponding to said checks, said record sheets being of unapertured and unnotched rectangular shape corresponding to the shape of said checks and being connected top to bottom and interleaved between the checks, means retaining the lowermost record sheet and the corresponding lowermost check in the stack in said relatively deep pocket thus retaining the entire stack which lies above said second flap, the width of each record sheet relative to the depth of said shallow pocket being such that when completed record sheets are folded away from the stack their outer portions only may be slipped into and retained by said shallow pocket, whereby all completed record sheets may be moved away from said stack to expose the uppermost check in response to opening movement of said cover top, overlapping indicia on said checks and record sheets for entering the numerical amount drawn and the payee, said record sheets further having indicia above and below said indicia for the amount drawn for entering the previous and new balances, said new balance indicia being spaced a sufficient distance below said outer portions of the record sheets as to be exposed below said shallow pocket, whereby a person making entries on the next check may readily view the present balance, means responsive to the making of entries at the indicia on said checks for transferring said entries to the corresponding record sheets, said last-mentioned means being in non-interfering relation with the swinging movement of said checks and record sheets about their top and bottom edges, a closure continuous with and extending from the long edge of said bottom opposite said folded edge, said closure being of the same size as said top but foldable against the outside of said bottom, a third flap on the inside of said closure shaped similarly to said first flap and secured along its side edges to said closure, the inwardly facing long edge being unsecured, whereby said third flap forms a relatively shallow pocket open toward the fold between said closure and bottom, a fourth flap on the side of said bottom facing said closure shaped similarly to said second flap and having one long edge coextensive with the fold between said

top and bottom, the two shorter edges of said fourth flap being secured to the side edges of said bottom, the other long edge being unsecured whereby said fourth flap forms a relatively deep pocket open toward the fold between said bottom and closure, a stack of accordion-folded and interleaved deposit slips and deposit record sheets similar in size to said checks and their record sheets, means retaining the lowermost deposit slip and sheet in the pocket formed by said fourth flap, whereby the outer portions of completed deposit record sheets may be slipped into the pocket formed by said third flap, overlapping indicia on said deposit slips and record sheets for listing the deposits, and means responsive to entry of deposits on said deposit slips for transferring said entries to said deposit record sheets.

3,901,538

QUICK-CONNECT COUPLING

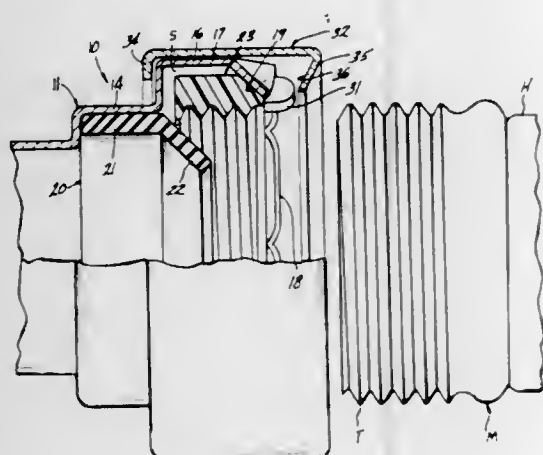
Stephen W. Blakely, Godfrey, Ill., assignor to Olin Corporation, New Haven, Conn.

Filed Feb. 13, 1974, Ser. No. 442,220

Int. Cl.² F16L 35/00

U.S. Cl. 285—33

18 Claims



1. A quick-connect coupling device comprising a female coupling member adapted for use with a conventional threaded male coupling member, said female member comprising:

- A. a tubular shell member for receiving said male member comprising a shank portion, a first enlarged portion, a larger main portion, and a mouth portion;
- B. a sealing means housed within said first enlarged portion;
- C. an inwardly sprung snap ring located within said main portion adjacent said sealing means possessing internal threads adapted for engaging and holding said male member;
- D. a locking means located in said main portion which contacts and forces said snap ring radially inward into locking engagement with said male member when removal without release is attempted; and
- E. biasing means annularly displaced from said locking means for releasing said male member from engagement by forcing said snap ring to expand radially out of contact therewith.

3,901,539

COMPENSATOR SECTION FOR A PIPELINE

Eduard C. Ijzerman, Velsen-Noord, Netherlands, assignor to Hoogovens IJmuiden BV, Netherlands

Filed Aug. 28, 1973, Ser. No. 392,210

Claims priority, application Netherlands, Sept. 1, 1972, 7211908

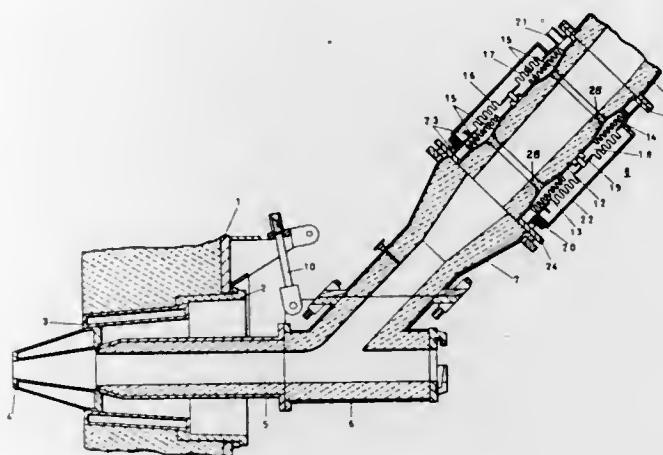
Int. Cl. F16I 53/00, 55/00

U.S. Cl. 285—41

14 Claims

1. A compensator section for a pipeline for hot fluid, the section including a double-walled pipe constituting a length of the pipeline, each wall of the double wall having two rigid end

portions, a rigid intermediate portion and two longitudinally expansible portions separating the respective end portions



from the intermediate portion, there being circulating space for cooling fluid between the two walls of the double wall.

3,901,540

CONNECTING MEMBER FOR THE RECEPTION OF ELECTRICAL WIRING BETWEEN TWO LAMP FITTINGS IN A STRIP LIGHTING SCHEME

Jupp Muller, Neheim-Husten; Harald Riegler, Herdringen, and Karl Lowenstein, Neheim-Husten, all of Germany, assignors to Trilux-Lenz KG, Neheim-Husten, Germany

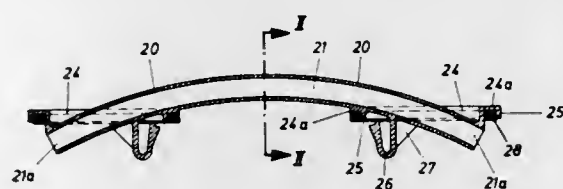
Filed Apr. 17, 1973, Ser. No. 351,896

Claims priority, application Germany, Apr. 17, 1972, 2218435

Int. Cl.² H02G 3/04; F21V 21/00

U.S. Cl. 285—194

3 Claims



1. In combination

- a. two spaced lamp fittings, each said lamp fitting having an opening to the interior thereof;
- b. An enclosed, elongated, rigid channel member having an arched configuration spanning the distance from the opening to the interior of one said lamp fitting to the opening to the interior of the other lamp fitting, said channel member including a passage for containing electrical wiring;
- c. two covers integral with said channel member, one adjacent each end of said channel member, closing said openings to the interior of said lamp fittings, each cover extending about said channel member and in a plane transverse to the adjacent portion of said channel member end;
- d. annular sealing means on one surface of each of said covers and about said channel member forming a seal about each of said openings and between said covers and said lamp fittings; and
- e. a locking means extending from said channel member adjacent each end thereof and adapted to engage the interior surface of each lamp fitting at the side of said opening to ensure a tight seal between a cover and a lamp fitting about said opening.

3,901,541

BALER DOOR LATCH

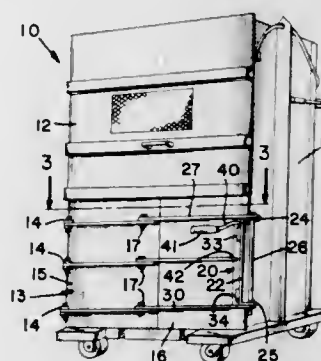
Wilbur E. Peterson, Harmony, Minn., assignor to Harmony Enterprises, Inc., Harmony, Minn.

Filed Feb. 19, 1974, Ser. No. 443,397

Int. Cl.² E05C 3/04

U.S. Cl. 292—100

3 Claims



1. A latch for a door vertically hinged in a doorway comprising an elongated vertical strike carried by the doorway and a latch mechanism carried by the free edge of the door, said latch mechanism comprising, in combination:
 - a latch bar member having an elongated lip;
 - vertical spaced means pivotally mounting said bar member on said door, for rotation about a first vertical axis aligned with the longitudinal axis of the bar member, from a locking position in which the inner surface of said lip engages behind said strike;
 - and over-center means for rotating said bar member into and out of said locking position, and for maintaining said bar member in said locking position in the presence of forces on said door tending to rotate said bar.

3,901,542

RETRO-FIT LOCK KIT AND METHOD OF INSTALLING SAME

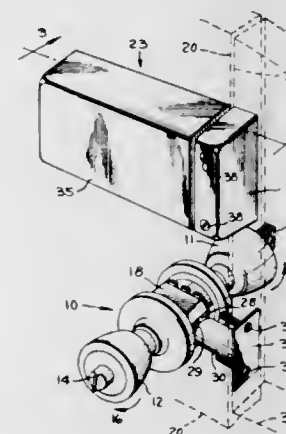
Robert Stephen Salzman, 27 Holbrook Dr., Stamford, Conn. 06906, and Gerald Martin Goldman, Knollwood Extension, Elmsford, N.Y. 10523

Filed Oct. 23, 1974, Ser. No. 517,165

Int. Cl.² E05B 47/02

U.S. Cl. 292—144

9 Claims



1. In a retro-fit kit for converting a mechanical door lock supported by a door, to an electrically operative door lock, said mechanical door lock having a retractor for controlling a locking bolt, and at least one mounted door knob for actuating said retractor, a locking apparatus comprising:
 - switching means disposed in a space in said door vacated by said locking bolt and operatively engageable with said retractor, said switching means being operative between a closed circuit position and an alternate open circuit position;

an electrically operative bolt mechanism secured generally to a back portion of the door and operatively connected to said switching means, said electrically operative bolt mechanism being operative between a normally closed bolt position and an open bolt position, said electrically operative bolt mechanism being in the normally closed bolt position when said switching means is in one circuit position, and being in an open bolt position when said switching means is in the alternate circuit position; and interconnecting means for interconnecting said switching means and said electrically operative bolt mechanism.

3,901,543

VEHICLE BUMPER ASSEMBLY

Stig Ivar Norlin, Trollhattan, Sweden, assignor to Saab-Scania Aktiebolag, Linköping, Sweden

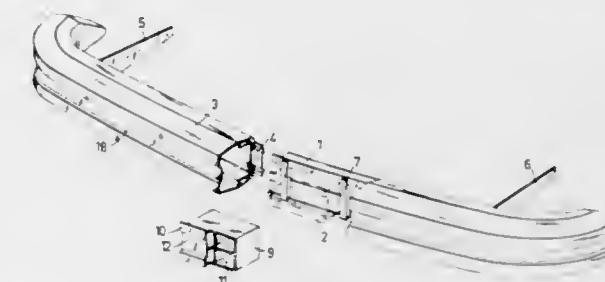
Filed Apr. 20, 1971, Ser. No. 135,686

Claims priority, application Sweden, Apr. 20, 1970, 5441/70

Int. Cl. B60r 21/14

U.S. Cl. 293—71 R

4 Claims



1. A vehicle bumper including at least one profiled, preferably U-shaped beam or the like intended to be securely mounted to the frame and/or body of the vehicle, and a number of shock absorbing inserts arranged to abut the web of the beam and to extend outside the profile of the beam to a distance of at least one fourth the total height of the beam, characterized in that the beam is provided with a number of stays or plates which extend transversely between the longitudinally extending limb portions of the beam and which divide the beam into pocket-like sections in which the inserts are individually mountably arranged; that the inserts preferably comprise cellular blocks and consist of a number of tubes of a semi-elastic or plastic material, and that a protective casing surrounding the beam and the inserts has an open longitudinally extending groove arranged in its rear side which permits the casing to be stretched when being mounted in position.

3,901,544

PET SCOOP, SANITATION DEVICE

Lucien Tucciarone, 640 Center St., Ridgefield, N.J. 07657

Filed Dec. 19, 1973, Ser. No. 426,001

Int. Cl.² A01B 1/02; A01K 1/01; A47L 13/52

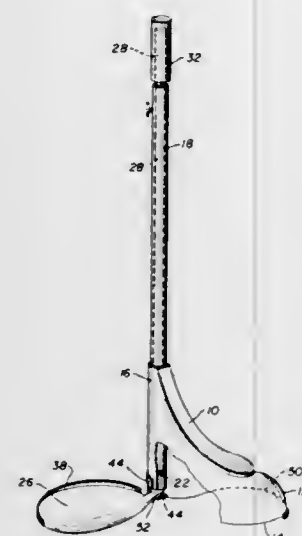
U.S. Cl. 294—19 R

3 Claims

1. Apparatus for removing animal excrement from a surface comprising:

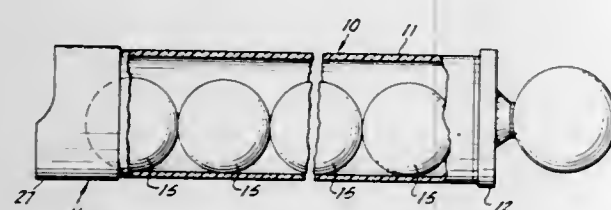
- a vertical hollow tube open at both ends;
- a heel plate secured to the bottom of the tube and forming a side opening with the bottom of the tube;
- a hollow member defining an upright hollow hemisphere with a side wall opening communicating with the interior, said member being open at the bottom and having an end portion spaced from the hemisphere, said end portion being secured to said tube whereby the interior of the hemisphere communicates with the side opening of the plate;
- a horizontal disc having an extension extending into the side opening of the plate, said disc being horizontally pivotable between a first position at which the bottom of the member is sealed and a second position at which said bottom is exposed, the disc having a raised peripheral section which closes the member side opening when the

disc is in the first position, the member side opening being exposed when the disc is in the second position; and



3,901,545
BALL PICK UP DEVICE
Michael Shott, 342 E. 53rd St., Long Beach, Calif. 90805
Filed May 8, 1974, Ser. No. 467,949
Int. Cl.² A63B 57/00
U.S. Cl. 294—19 A

8 Claims



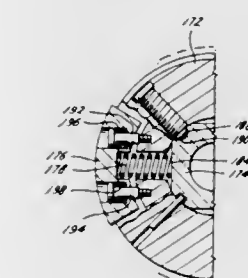
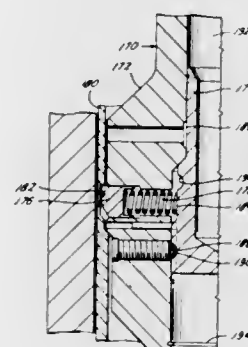
1. A ball pick up device comprising, in combination:
a tubular cylinder conformed to receive on the interior thereof a plurality of balls;
an end cap removably secured to one end of said tubular cylinder; and
a pick up adaptor connected to the other end of said cylinder including a tubular housing attached in surrounding relationship about the other end of said cylinder received in the upper end of the central cavity thereof, a plurality of triangular guide webs formed in radial planes on the interior of said housing having a first vertex adjacent the lower end of the central cavity thereof, a second vertex common to the interior surface of said housing intermediate the upper and lower ends of the central cavity, and a third vertex joining a radial edge from said second vertex and a diagonal edge from said first vertex, the respective third vertices of said webs extending towards the interior of said housing to form a central opening therebetween just greater than the dimensions of the ball, and a plurality of associated leaf springs mounted in cantilever from the interior of said housing immediately adjacent the radial edge of each said web, said leaf springs extending towards the interior of said housing to form a central opening therebetween substantially less than the dimensions of the ball.

3,901,546
CASING HANGER ASSEMBLY AND OPERATING TOOLS THEREFOR

Andre L. Piazza, and Raymond K. Lamb, both of Houston, Tex., assignors to The Rucker Company, Houston, Tex.
Division of Ser. No. 357,832, May 7, 1973, Pat. No. 3,827,488.
This application Feb. 6, 1974, Ser. No. 440,193
Int. Cl.² E21B 31/02

U.S. Cl. 294—86.15

2 Claims



1. A well running and retrieving tool comprising, a body;
a fluid piston slideably positioned in the body for longitudinal movement therein,
outwardly extending locking dogs having an upwardly directed engaging shoulder carried by the body,
spring means positioned between the piston and the dogs urging the dogs outwardly when the piston is in a first longitudinal position, but releasing the dogs when the piston is moved to a second longitudinal position by fluid pressure away from said spring means thereby releasing the spring means, and
means engaging the dogs yieldably urging the dogs inwardly.

3,901,547
MULTIPLE PREHENSION MECHANISM
Frank R. Skinner, II, 2248 Ann Dr., St. Joseph, Mich. 49085
Continuation-in-part of Ser. No. 360,022, May 14, 1973,
abandoned. This application Mar. 5, 1974, Ser. No. 448,341
Int. Cl. B25b 5/04

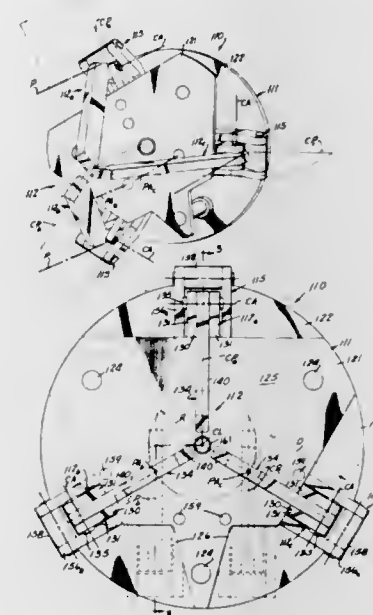
U.S. Cl. 294—88

22 Claims

1. A multiple prehension mechanism adapted to assume different prehensile operational modes to grasp objects comprising:

a palmar base defining a working surface thereon, said base having a centerline generally normal to said working surface;
at least three finger assemblies carried by said base, each of said finger assemblies including a support means mounted on said base, a finger pivotally mounted on each of said support means about a curl revolute axis generally perpendicular to said centerline for movement toward and away from said working surface;
single finger drive means operatively connected to all of said fingers for simultaneously pivoting said fingers about the respective said curl revolute axis of said finger to engage the objects; and,
positioning drive means operatively connected to said sup-

port means for selectively positioning said support means so that said fingers close in intersecting curling planes in



3,901,549
CONTOURED CHAP-STYLE CYCLING APRON
Richard D. Ramirez, 260 N. Manor Cir., Takoma Park, Md. 20012

Filed Apr. 12, 1973, Ser. No. 350,481

Int. Cl. B62j 17/06

U.S. Cl. 296—78.1

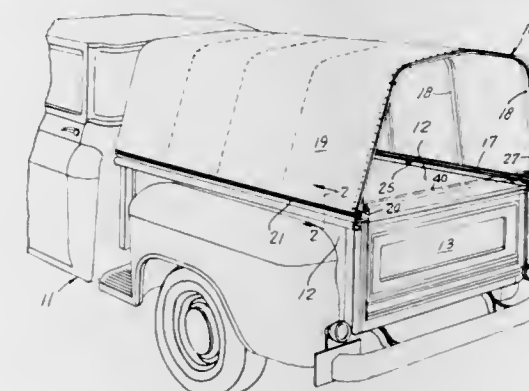
16 Claims

a first position and in substantially parallel and laterally spaced curling planes in a second position.

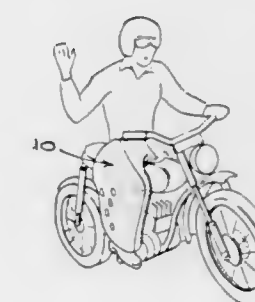
3,901,548
SLIDABLE COVER ASSEMBLY FOR A PICKUP TRUCK
John A. Seaman, Jr., P.O. Box 141, McMinnville, Tenn. 37110
Filed May 31, 1974, Ser. No. 474,949
Int. Cl.² B60P 3/42

U.S. Cl. 296—10

1 Claim



1. In combination with a pickup truck having a cab and an open top truck body of substantially lower height than said cab, said truck body having upstanding opposed longitudinal sides with outwardly extending top flanges, a cover assembly comprising a rigid, arched framework consisting of a plurality of bowed members and flexible sheet material overlying and secured on said framework, said cover assembly overlying the truck body and extending to a height equal to that of said cab, a pair of longitudinal bottom plate members secured to said framework and located to overlie said top flanges of the truck side walls substantially in parallelism therewith and substantially of equal length with said side walls, respective longitudinal lower channel bars, having U-shaped cross sections turned with the open sides positioned and facing inwardly towards the center of the body and being secured on the outer portions of said top flanges, respective upper channel bars, having U-shaped cross sections turned with the open sides facing outwardly away from the center of the body and being removably secured to the bottom surfaces of said plate members near the outer edges thereof and having bottom flanges received in the openings of said lower channel bars, and respective depending anti-friction means secured to the bottom surfaces of said plate members and being supportably engaged on said top



1. A protective article of apparel for use by riders of and in association with wheeled and other type of mechanized vehicles such as motorcycles, snowmobiles and the like having a seat for the operator, said article comprising a generally chap-style apron of flexible material including a medial lap-covering portion interconnecting a pair of generally knee-contoured, and knee-and-outer leg-covering portions; said article further including a crotch portion, a partial seat-engaging portion adapted to overlay the vehicle seat and to be sat upon by the rider when in use, a separate flexible flap member unitarily and fixedly connected thereto in said crotch portion and seat area, said flap member embodying means for connecting said chap-style apron via said flap member in a positive manner to said vehicle; and said article being of a size and shape adaptable to overlay and essentially protectively enclose the user's legs and lap when the user is in a generally normal seated position upon the vehicle.

3,901,550
PASSIVE RESTRAINT SEAT SYSTEM
Norbert Hamy, Beaconsfield, Canada, assignor to Trebron Holdings Limited, Beaconsfield, Canada
Filed Feb. 28, 1974, Ser. No. 446,904
Claims priority, application United Kingdom, Mar. 3, 1973, 10459/73

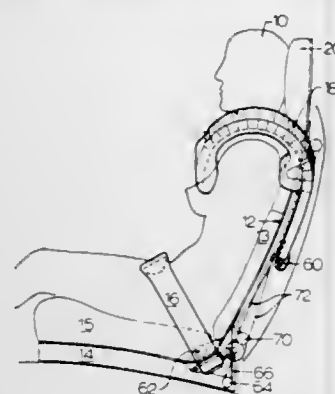
Int. Cl.² A47C 31/00

U.S. Cl. 297—390

29 Claims

1. In a vehicle restraint system having at least one guard arm, the improvement wherein at least a portion of said guard arm is adapted for bending movement, tension means carried within at least said portion of the guard arm, one end of the

tension means being secured to the guard arm, and means to apply a force to the other end of the tension means to bend the



guard arm to a restraining position to at least partially encircle a portion of a body of a vehicle occupant.

3,901,551

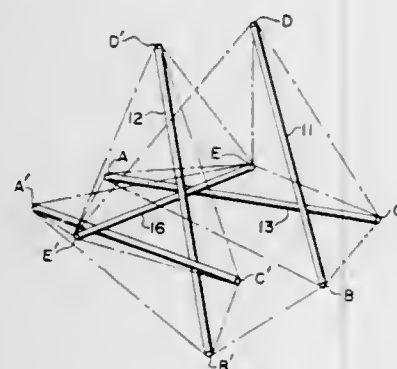
STRESSED STRUCTURE FOR SUPPORTING WEIGHT
Stephen J. Wiesner, 2331 Oberlin, Palo Alto, Calif. 94306

Filed Oct. 9, 1973, Ser. No. 404,176

Int. Cl.² A47C 4/00

U.S. Cl. 297-447

3 Claims



1. A stressed chair assembly for supporting a weight comprising

left and right upright compression members, left and right arm compression members, a crossing compression member, said compression members being non-touching and stressed in the assembly to thereby include substantially compressive force only, whereby compression member mass may be minimized while providing structural strength for supporting forces from the assembly stress and the supported weight,

a plurality of structure vertices defined by the ends of said compression members,

a plurality of tension members extending between predetermined ones of said structure vertices, said tension members being stressed in the assembly to include tensile force only, whereby tension member mass may be minimized while providing structural strength for supporting forces from the assembly stress and the supported weight, a single one of said plurality of tension members being a redundant member, so that when tensile force is removed from said redundant member the tensile and compressive forces are removed from all of said tension and compression members so that the chair assembly may be collapsed and stored,

said compression and tension members being disposed so that a plane of symmetry extends through the center thereof,

said crossing compression member being substantially orthogonal to and passing through said plane of symmetry, said left and right upright and arm compression members having one end each for contacting an underlying support surface,

and a flexible seat member suspended between the other ends of said left and right upright and arm compression members for supporting the weight, said compression and tension member assembly having at least one soft mode allowing said one ends of said compression members to adapt to the shape of the underlying surface for stabilizing the structure, said left and right upright compression members and said left and right arm compression members each having three tension members connected to each end thereof, and said crossing compression member having five tension members connected to each end thereof.

3,901,552

GRANULAR-FLOOR SUPPORTED CARGO HAULING TRAILER APPARATUS

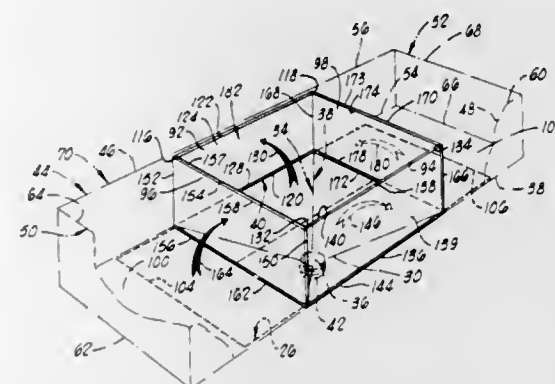
Jack C. Stone, Box 310, Burns Flat, Foster, Okla. 73624

Filed Dec. 10, 1973, Ser. No. 423,316

Int. Cl. B60p 1/56

U.S. Cl. 298-24

9 Claims



1. A trailer apparatus, comprising:

a trailer frame, having a first side, a second side, a forward end, a rearward end and a trailer frame opening formed through a portion thereof;

a first side wall connected to the first side of the trailer frame and extending a distance upwardly therefrom having ventilation openings formed therethrough;

a second side wall connected to the second side of the trailer frame and extending a distance upwardly therefrom having ventilation openings formed therethrough;

a forward end wall connected to the forward end of the trailer frame;

a rearward end wall connected to the rearward end of the trailer frame, the first side wall, the second side wall, the rearward end wall and the forward end wall each cooperating to form a continuous wall extending about the trailer frame;

a hopper, having an open upper end defining a hopper inlet opening and an open lower end, the space between the upper end of the lower end defining a hopper material bin space for retainingly storing granular material and the like, the upper end connected to the trailer frame in communication with a portion of the trailer frame opening;

a hopper door connected to the hopper and positionable in a closed position substantially closing the open lower end of the hopper cooperatively retaining the granular material and the like within the hopper material bin space and an open position discharging the granular material and the like from the hopper material bin space via the open lower end of the hopper; and

a trailer floor assembly positionable in a floor supported

cargo hauling position and a granular material hauling position, comprising:

a first floor section, having opposite ends, opposite sides, and an upper and a lower face, one side pivotally connected to the trailer frame generally near the first side of the trailer frame and extending a distance generally between the forward and the rearward ends of the trailer frame, the first side pivotally movable in one direction generally toward the first side of the trailer frame to a granular material hauling position and pivotally movable in one other direction generally toward the trailer frame to a floor supported cargo hauling position, a portion of the lower face of the first floor section supportingly engaging a portion of the trailer frame and covering a portion of the trailer frame opening in the floor supported cargo hauling position thereof, the first floor section being disposed generally adjacent the first side wall and covering the ventilation openings in the first side wall generally adjacent the first floor section in the granular hauling position of the first floor section;

a second floor section, having opposite ends, opposite sides, and an upper and a lower face, one side pivotally connected to the trailer frame generally near the second side of the trailer frame and extending a distance generally between the forward and the rearward ends of the trailer frame, the second side pivotally movable in one direction toward the second side of the trailer frame to a granular hauling position and pivotally movable in one other direction generally toward the trailer frame to a floor supported cargo hauling position, a portion of the lower face of the second floor section supportingly engaging a portion of the trailer frame and covering a portion of the trailer frame opening in the floor supported cargo hauling position thereof, the second floor section being disposed generally adjacent the second side wall and covering the ventilation openings in the second sidewall generally adjacent the second floor section in the granular hauling position of the second floor section;

a forward floor section, having opposite ends, opposite sides, and an upper and a lower face, one side pivotally connected to the trailer frame and extending generally between the first and the second sides of the trailer frame, the forward floor section pivotable in one direction generally toward the rearward end of the trailer frame to a granular material hauling position and pivotable in one other direction generally toward the trailer frame to a floor supported cargo hauling position, a portion of the lower face of the forward floor section engaging a portion of the trailer frame and covering a portion of the trailer frame opening in the floor supported cargo hauling position thereof; and

a rearward floor section, having opposite ends, opposite sides, and an upper and a lower face, one side pivotally connected to the trailer frame and extending generally between the first and the second sides of the trailer frame, the rearward floor section pivotable in one direction generally toward the forward end of the trailer frame to a granular material hauling position and pivotable in one other direction generally toward the trailer frame to a floor supported cargo hauling position, a portion of the lower face of the rearward floor section engaging a portion of the trailer frame and covering a portion of the trailer frame opening in the floor supported cargo hauling position thereof, the first and the second floor sections and the forward and the rearward floor sections each cooperatively forming a material bin space retaining granular material and the like in the granular material hauling positions thereof and each cooperatively forming a portion of a trailer floor surface supporting floor supported cargo and the like in the floor supported cargo hauling positions thereof, a portion of the material bin space formed via the first and the second floor sections and the forward and the rearward floor sections communicating with the hopper material bin space.

3,901,553

CONCRETE PAVEMENT CUTTING MACHINE

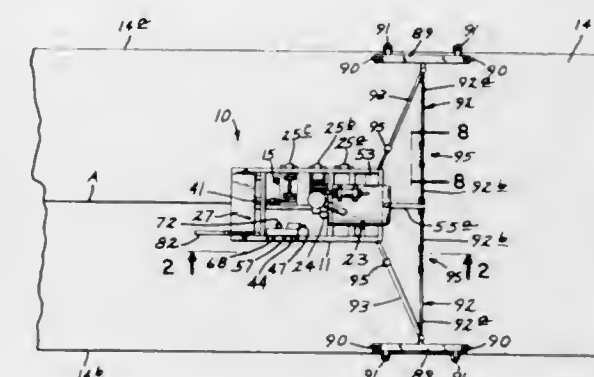
Wynn S. Binger, Eden Prairie, and Robert E. Shope, Apple Valley, both of Minn., assignors to Construction Materials, Inc., Minneapolis, Minn.

Filed Oct. 30, 1974, Ser. No. 519,344

Int. Cl.² E01C 23/09

U.S. Cl. 299-39

15 Claims



1. A concrete pavement cutting machine comprising:
 - a. A mobile frame including fixed and steerable wheels mounted for movement of said mobile frame along a path of travel;
 - b. a mounting platform underlying said mobile frame;
 - c. arm means mounting said platform to said mobile frame for swinging movements toward and away from the concrete pavement underlying said mobile frame at a constant degree of angular relationship with the plane of the concrete pavement;
 - d. a plurality of cutting discs mounted in tandem on said platform for rotation in a common vertical plane extending longitudinally of the direction of travel of said mobile frame;
 - e. hydraulic power means including engine means for driving said cutting discs, for imparting said movement to said platform, for driving one of said fixed and steerable wheels and for steering said steerable wheels;
 - f. Means for adjusting the depth to which said cutting discs cut into the concrete pavement whereby said cutting discs cut into the concrete pavement a substantially equal amount at progressively greater depths from the surface of the concrete pavement; and
 - g. means for introducing a flow of liquid coolant to each of said cutting discs.

3,901,554

SPOKE MOUNTABLE DISPLAY DEVICE

James D. Kennedy, Streamwood, and J. Henry Lindner, Wood Dale, both of Ill., assignors to Elgin Molded Plastics Co., Elgin, Ill.

Filed Apr. 8, 1974, Ser. No. 459,023

Int. Cl. B60b 7/00

U.S. Cl. 301-37 SA

5 Claims

1. A display device for mounting over spokes of a spoked vehicle wheel comprising a bracket assembly and a display panel,

A. said bracket assembly comprising

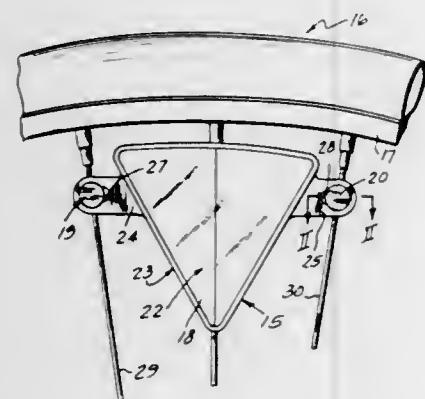
1. a pin means having a longitudinally slotted shank of generally uniform cross-sectional configuration, said shank having at least one circumferentially extending radially outwardly projecting ridge means integral therewith, said pin means being formed of rigid but deformable material,

2. a cap-like means having a sleeve portion and a head portion extending generally across one end of said sleeve portion and integral therewith, the inside wall of said sleeve portion having dimensions generally suited to slidably engage circumferentially said shank, said inside wall having at least one circumferentially extending, radially inwardly protruding raised portion integral

therewith, said cap-like means being formed of rigid but deformable material,

3. the interrelationship between said pin means and said cap-like means being such that, when said respective means are fully interengaged slidably, in an assembled configuration, the forward end of said shank is in adjacent but spaced relationship to the inside wall of said head portion, said ridge means is matingly received in locking engagement adjacent said raised portions, and said pin means and said cap-like means are restrained from disengagement, said shank being radially inwardly compressed as said ridge means thereof is slidably moved over said raised portions of said cap-like means during such slidable engagement,

- B. said display panel having
 1. a portion which is adapted for display, and



2. a flattened body portion generally integral with said display portion, said body portion having an aperture transversely defined therein whose size permits said slotted shank to extend therethrough and further permits the head of said pin means to abut against aperture adjacent regions of said flattened body portion when in assembled configuration,
- C. the interrelationship between the length of said shank, the longitudinal width of said sleeve portion, and the thickness of said adjacent regions of said flattened body member being such that, when said bracket assembly and said display panel are in assembled configuration with a support member therebetween, the length of said shank between said head of said pin means and the open end of said sleeve portion when said cap-like means and said pin means are so fully slidably engaged is about equal to the thickness of said support member and the thickness of said adjacent regions of said flattened body member.

3,901,555

MATERIAL DISTRIBUTING SYSTEM

Cecil S. Wise, Dallas, N.C., assignor to Fiber Controls Corporation, Gastonia, N.C.

Division of Ser. No. 848,133, July 9, 1969, Pat. No. 3,671,078, which is a continuation-in-part of Ser. No. 694,268, Dec. 28, 1967, abandoned, Continuation of Ser. No. 561,579, June 29, 1966, abandoned, which is a continuation-in-part of Ser. No. 538,437, March 3, 1966, abandoned, which is a continuation-in-part of Ser. No. 444,885, March 2, 1965, abandoned, which is a continuation-in-part of Ser. No. 217,154, July 15, 1962, abandoned. This application May 4, 1972, Ser. No. 250,248

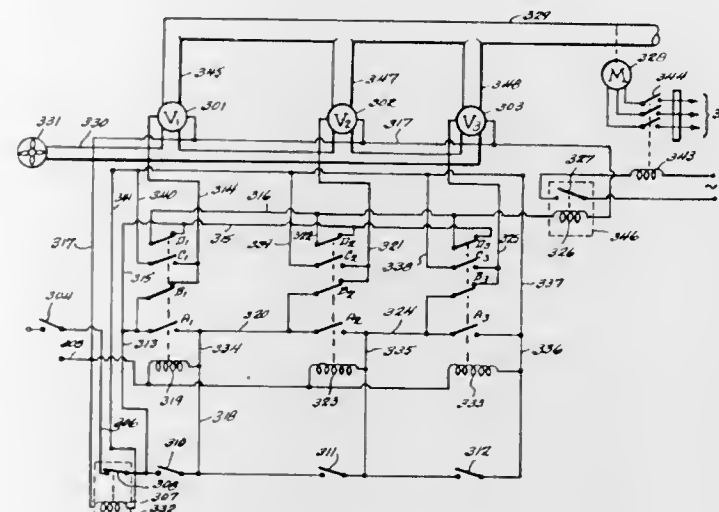
Int. Cl. B65g 53/36

U.S. Cl. 302-28

4 Claims

1. A method of distributing fibers from at least a single source to a plurality of stations, comprising the steps of: checking, only after one of said stations indicates a demand for fibers, each of said stations in a fixed sequence to determine which of said stations is demanding fibers, halting said checking whenever a given station is determined to be demanding fibers, and entraining said fibers

from said source in an air stream connecting said source to a given station,



removing said fibers from said air stream at said station determined to be demanding fibers until said station is no longer demanding said fibers, and continuing said checking until each of said stations in said fixed sequence has been checked.

3,901,556

VEHICLE BRAKE CONTROL SYSTEM HAVING A PLURALITY OF MASTER CYLINDERS WHICH ARE SEPARATELY ACTUATABLE FOR DIFFERENT BRAKING OPERATIONS WHILE BEING JOINTLY ACTUATABLE FOR EMERGENCY BRAKING

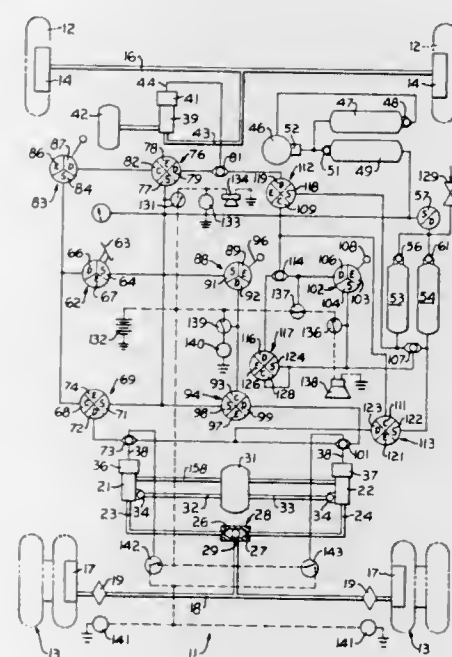
Peter F. M. Prillinger, Peoria Heights; Paul C. Rosenberger, and Alfred W. Sieving, both of Decatur, all of Ill., assignors to Caterpillar Tractor Company, Peoria, Ill.

Filed Mar. 14, 1974, Ser. No. 450,974

Int. Cl. B60T 15/16, 11/00

U.S. Cl. 303-13

9 Claims



1. A brake control system for a vehicle which has at least a first brake means that is applied by transmitting hydraulic pressure thereto, comprising:

first and second master cylinders each having an outlet and each having an actuator means for generating hydraulic pressure at said outlet thereof in response to a brake signal,

a first check valve connected to said first brake means and to both of said first and second master cylinder outlets and having valve means for transmitting hydraulic pressure to said first brake means from the one of said outlets

which has the higher pressure thereat while blocking direct communication between said outlets, manually controllable service brake signal generating means coupled to said first master cylinder actuator means for selectively applying said first brake means by actuation of said first master cylinder without actuation of said second master cylinder, a manually controllable second brake signal generating means coupled to said second master cylinder actuator means for selectively applying said first brake means by actuation of said second master cylinder without actuation of said first master cylinder, and an emergency brake signal generating means coupled to both said first and said second master cylinders for simultaneously actuating both of said master cylinders to apply hydraulic pressure to said first brake means through said first check valve.

3,901,557

BEARING ASSEMBLIES

Douglas William Daniels, Bristol, England, assignor to Rolls-Royce (1971) Limited, London, England

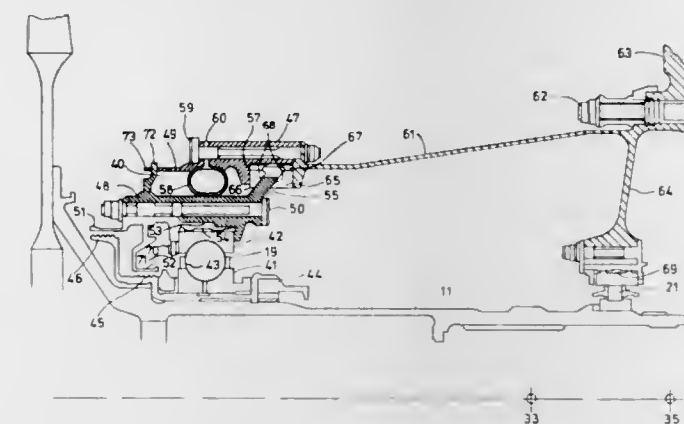
Filed Apr. 3, 1973, Ser. No. 347,562

Claims priority, application United Kingdom, Apr. 18, 1972, 17793/72

Int. Cl. F16c 35/08

U.S. Cl. 308-15

9 Claims



1. A bearing assembly including a shaft having a longitudinal axis, a bearing supporting the shaft for rotation about the longitudinal axis in a non-rotating structure, said structure having radially inner and outer parts, means being provided between said parts of the structure for locating the bearing radially during normal rotation of the shaft, which means is also capable of allowing the shaft to deflect about a node point on the axis under abnormal out of balance loads, wherein the improvement comprises a flange on one of the parts of said structure having surfaces extending generally tangentially to a radius struck from an estimated mean position of said node point, means defining a recess in the other part of the structure into which the flange projects and a pair of rings in the recess, one on each side of the flange, and each of which has a first surface which slidably engages one of said surfaces of the flange and a second surface which slidably engages the recess, the rings being movable within said recess towards and away from the axis so as to locate the flange and hence the bearing while the shaft rotates in its deflected condition whereby variations of the axial position of the node point can be accommodated.

3,901,558
PNEUMATIC/ELECTRO-PNEUMATIC INTERLOCK CIRCUITRY FOR DOUBLE-END CONTROL LOCOMOTIVE

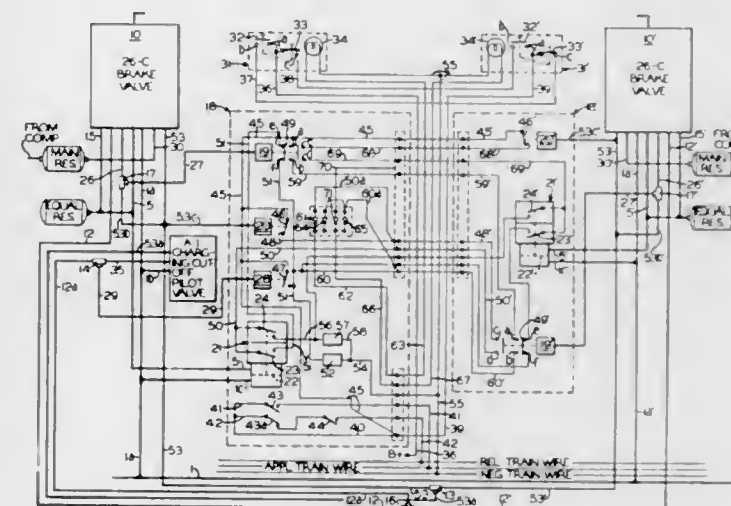
Richard O. Burkett, Apollo, Pa., assignor to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Aug. 26, 1974, Ser. No. 500,623

Int. Cl. B60T 13/68

U.S. Cl. 303-16

10 Claims



1. In a train having a locomotive with a control station at each end, a combined pneumatic and electro-pneumatic brake control system including:

- a. a brake pipe extending through the train, the pressure variation carried in said brake pipe controlling the train brakes;
- b. an equalizing reservoir at each control station;
- c. a brake valve at each control station comprising:
 - i. an operating handle movable from a brake release position through a brake application zone, in which said equalizing reservoir at the same control station is charged with fluid pressure according to the position of the handle in the brake application zone, to a handle-off position and an emergency position;
 - ii. relay valve means subject to said equalizing reservoir pressure at said same control station for controlling the fluid pressure in said brake pipe; and
 - iii. cut-off valve means operable to establish a cut-out condition of said brake valve by interrupting the variation of pressure in said brake pipe by said relay valve means; and
- d. a mastercontroller device at each control station subject opposingly to said brake pipe pressure and said equalizing reservoir pressure at the same control station, and having a normally open application switch and a normally open release switch, one or the other of which is actuated when a pressure differential arises between said brake pipe and equalizing reservoir pressures, depending upon the sense of said pressure differential;
- e. a brake application wire extending through said train to provide electrical control of pressure in said brake pipe so as to effect variation thereof in a first sense;
- f. a brake release wire extending through said train to provide electrical control of pressure in said brake pipe so as to effect variation thereof in a sense opposite said first sense;
- g. a source of electric power; and
- h. interlock means for establishing a first circuit via which electric power is connected from said source to said mastercontroller at one of said control stations only when said brake valve thereat is cut in and said brake valve at the other control station is cut out and is in handle-off position, thereby to enable said mastercontroller at said one of said control stations to control energization of said application and release wires via said application and release contacts according to the sense of said brake pipe/equalizing reservoir pressure differential thereat.

3,901,559

VEHICLE ANTISKID BRAKING SYSTEM

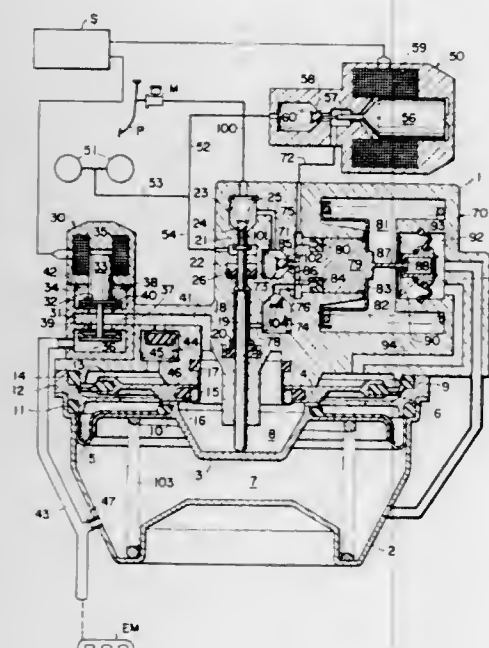
Masami Inada, Toyooka, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Apr. 3, 1973, Ser. No. 347,493

Claims priority, application Japan, Apr. 7, 1972, 47-35407; Jan. 31, 1973, 48-11939

Int. Cl. B60t 8/02

U.S. Cl. 303-21 F



1. A vehicle antiskid braking system comprising: a master cylinder in which a fluid pressure is exerted to apply thereof to the brakes; wheel braking cylinder means; conduit means to provide fluid connection between said master cylinder and said wheel braking cylinder means; skid sensing and computer means for producing a first signal indicating a need for a reduction of the brake actuation fluid pressure and a second signal indicating a need for an increase of the brake actuating fluid pressure within said wheel braking cylinder means; hydraulic pressure modulator means on said conduit means interposed between said master cylinder and said wheel braking cylinder means, including cut off valve means to cut off said fluid connection between said master cylinder and said wheel braking cylinder means in response to said first signal, pressure reducing means to increase total capacity of said conduit means between said pressure modulator means and said wheel braking cylinder means in response to said first signal thereby decreasing the brake actuating fluid pressure in said wheel braking cylinder means, and pressure increasing means to increase said brake actuating fluid pressure in said wheel braking cylinder means in response to said second signal by pumping fluid into said wheel braking cylinder means while said pressure reducing means being in its normal rest position; said pressure increasing means including: first electromagnetically operable valve means; a servomechanism; a pressure increasing piston and cylinder assembly; said first electromagnetically operable means being in fluid connection with said servomechanism to supply vacuum or atmosphere pressure to said servomechanism in response to said first or second signal and said pressure increasing piston and cylinder assembly being connected to said servomechanism so as to close said cut off valve means in response to said first signal while on the other hand function as a reciprocating pump in response to said second signal thereby the brake actuating fluid pressure is increased in said wheel brake cylinder means.

WHEEL SLIDE PROTECTION SYSTEM

Michael William Hardy, Water Orton, England, assignor to Girling Limited, Birmingham, England

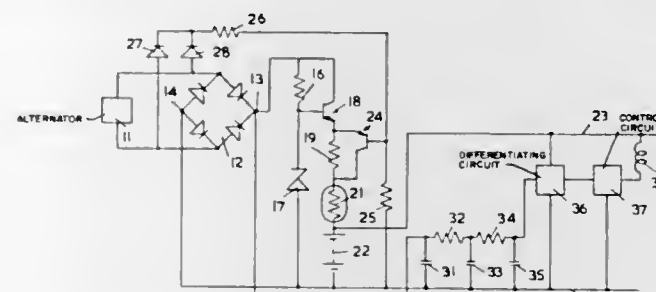
Filed July 18, 1973, Ser. No. 380,223

Claims priority, application United Kingdom, July 18, 1972, 33516/72; Aug. 5, 1972, 36678/72

Int. Cl. B60T 8/08

7 Claims U.S. Cl. 303-21 CG

2 Claims



1. A wheel slide protection system for a vehicle, including an alternator which in use is driven by a wheel to be controlled, the alternator producing an output which is dependent upon the rotational speed of the wheel, a differentiating circuit to which the output is applied, the differentiating circuit producing an output dependent upon the rotational deceleration of the wheel, control means operable by the output from the differentiating circuit for releasing the brakes from said wheel when the rotational deceleration of the wheel exceeds a predetermined value, a battery which provides power for the system and is charged by said alternator through a voltage regulator, said voltage regulator including a resistor through which the alternator charges the battery, and a transistor bridging said resistor and coupled to the alternator whereby when the rotational speed of the wheel is below a first predetermined value the transistor is fully conductive, so that the resistor is short-circuited, and when the rotational speed of the wheel is above a second and higher predetermined value, said transistor is off, said transistor presenting a variable impedance between the two predetermined rotational speeds of the wheel to vary the charging rate of the battery.

3,901,561

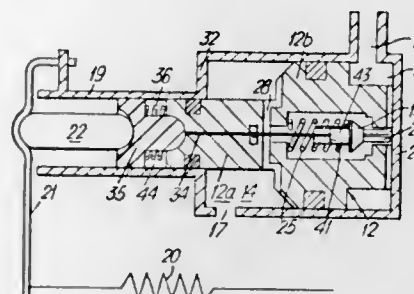
LOAD-DEPENDENT BRAKE FORCE DISTRIBUTOR

Hermann Selp, Bad Vilbel, Germany, assignor to ITT Industries, Inc., New York, N.Y.
Division of Ser. No. 301,040, Oct. 26, 1972, Pat. No. 3,841,713. This application Jan. 14, 1974, Ser. No. 433,034
Claims priority, application Germany, Nov. 9, 1971, 2155706

Int. Cl. B60t 8/18

U.S. Cl. 303-22 R

4 Claims



1. A load-dependent brake force distributor connected between a master cylinder and wheel brake cylinders comprising: a cylinder; a stepped piston disposed in a longitudinal slidable sealed relation in said cylinder; an input pressure medium chamber formed between one end of said cylinder and one side of said stepped piston;

an output pressure medium chamber formed between the other end of said cylinder and the other side of said stepped piston;
a first valve disposed concentrically of said stepped piston to connect said input chamber to said output chamber in its open position;
a first arrangement connected to said stepped piston responsive to a load-dependent control force to open and close said first valve;
a second arrangement connected between said first arrangement and said first valve to provide a direct connection between said input chamber and said output chamber when said control force fails;
said cylinder having a first diameter and including a cylindrical projection extending therefrom having a second diameter less than said first diameter; and said stepped piston including
a first portion spaced from said cylindrical projection having a third diameter less than said first diameter,
a second portion adjacent said cylindrical projection having a fourth diameter equal to said first diameter, and
a third portion having a fifth diameter equal to said second diameter slidably sealed to the inner surface of said cylindrical projection;
said first arrangement including
a traction spring exerting a force dependent upon said load,
a bar connected at one end to said cylindrical projection and at the other end to said traction spring, and
a push rod connected between said bar and said third portion of said stepped piston;
said cylinder including
a transverse closing wall spaced from the adjacent end of said first portion of said stepped piston;
said first and second portions of said stepped piston including
a cavity disposed concentrically of the longitudinal axis of said stepped piston,
an aperture at each end of said cavity, one of said apertures communicating with said input chamber and the other of said apertures communicating with said output chamber,
said first valve being disposed within said cavity, and
a valve spring disposed about said valve within said cavity to assist in the control of said first valve;
said first valve including
a pin projecting from one end thereof through said other of said apertures, said pin abutting said closing wall and opening said first valve against the force of said valve spring when a predetermined amount of said control force is applied to said third portion of said stepped piston; and
said second arrangement including
said first valve whose normal operation is modified only when said control force fails; and
a traction rod connected between the interior of said first valve through said one of said apertures and said push rod to pull said first valve into its open position upon failure of said control force.

3,901,562

BRAKE PIPE REDUCTION INDICATING APPARATUS

Peter H. Powell, Chippenham, England, and Archibald J. Harvey Peterson, Pointe-Claire, Canada, assignors to WABCO Ltd., Hamilton, Canada

Filed Mar. 15, 1974, Ser. No. 451,445

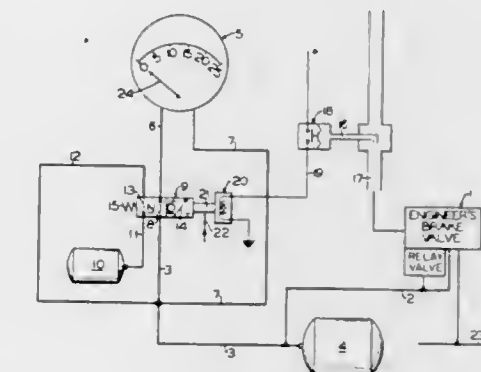
Int. Cl. B60T 17/22; G01M 3/02

U.S. Cl. 303-86

5 Claims

1. Brake pipe reduction indicating apparatus for use with automatic railway vehicle brake equipment and comprising: a first means normally charged to a predetermined fluid pressure and operative responsively to a reduction of such fluid

pressure therein for causing a brake application on the vehicle commensurate with the degree of reduction; b. second means normally charged with fluid pressure at a degree corresponding to said predetermined fluid pressure; c. operator's means selectively operable to a plurality of positions for initiating a reduction of fluid pressure in said second means to a selected reduced degree according to the position to which said operator's means is operated, d. said operator's means including relay valve means operable responsively to reduction of fluid



pressure in said second means to a degree corresponding to the degree of fluid pressure prevailing in said first means at the time said reduction is initiated, for effecting reduction of pressure in said first means to said selected reduced degree; and wherein the improvement comprises: e. indicating means cooperatively responsive to reduction of fluid pressure in said first and second means for indicating the pressure differential between the initial pressure prevailing in said first means at the onset of said reduction and the final pressure prevailing therein at termination of such reduction.

3,901,563

HYDROMECHANICAL RECOIL AND TRACK ADJUSTER SYSTEM

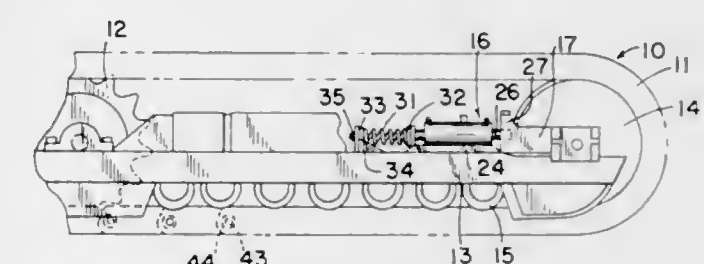
Dennis M. Day, Hinckley, Ill., assignor to Caterpillar Tractor Company, Peoria, Ill.

Filed May 17, 1974, Ser. No. 470,844

Int. Cl. B62D 55/30

U.S. Cl. 305-10

14 Claims



1. An adjusting and recoil apparatus comprising: cylinder means defining first and second chambers; a first piston reciprocable in said first chamber for adjusting and accommodating recoil from a movable element; a second piston reciprocable in said second chamber; means biasing said second piston inwardly; means for providing fluid at a preselected pressure to said first chamber for urging said first piston outwardly; means providing a flow passage from said first chamber to said second chamber including a pressure regulating valve permitting fluid flow from said first chamber to said second chamber to urge said second piston outwardly against the biasing of said biasing means only when the pressure in said first chamber is caused to be a relief pressure substantially above said preselected pressure, forces from said movable element being accommodated by said fluid in said first chamber when the pressure is below said relief pressure; and means for providing a return flow of fluid from said second chamber to said first chamber as a result of the fluid pressure in said second chamber caused by the biasing of said second piston by said biasing

means causing said second piston to provide a pressure in said second chamber exceeding the fluid pressure in said first chamber.

3,901,564

DRAWER EXTENSIBLE SLIDE CHASSIS

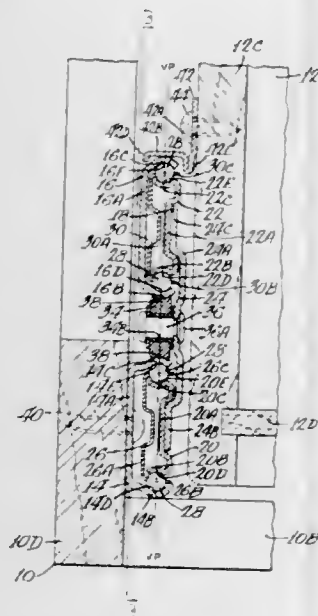
Henry P. Armstrong, 236 The Kingsway, Islington, Ontario, Canada

Filed Oct. 29, 1973, Ser. No. 410,431

Int. Cl. F16c 17/00

U.S. Cl. 308—3.8

4 Claims



1. A drawer extensible slide chassis comprising:

a case attachment rail;
a drawer attachment rail;
an extension slide including first and second rails disposed in substantially parallel spaced relationship along one side of and affixed to a generally bar shaped connecting member;

each of said rails being channel shaped in cross section including a web and two laterally extending ball bearing raceway flanges;

the first rail of the extension slide being partially telescoped into the case attachment rail and slidably correlated therewith on ball bearings supported by the said rail ball bearing raceway flanges;

the drawer attachment rail being partially telescoped over the second rail of the extension slide and slidably correlated therewith on ball bearings supported by the said respective rail ball bearing raceway flanges;

a resilient and deformable propulsion roller carried by the extension slide connecting member, disposed between opposed flanges of the extension slide first and second rails, and located between and tractionally contacting opposed flanges of the case attachment rail and the drawer attachment rail;

a pair of ball bearing retainers for guiding said ball bearings; and plastic slide members engaged between said ball bearing retainers and a raceway flange of each of said rails.

3,901,565

ADAPTOR AND LATCHING MEANS FOR REMOVABLY ATTACHING DRAWERS TO TELESCOPING BALL BEARING DRAWER SLIDES

Magnus F. Hagen, 3713 Twilight Dr., Fullerton, Calif. 92632, and Fred A. Jordan, 14906 Lodosa, Whittier, Calif. 90605
Continuation-in-part of Ser. No. 396,593, Sept. 12, 1973, abandoned. This application Sept. 23, 1974, Ser. No. 508,727

Int. Cl. F16C 21/00

U.S. Cl. 308—3.8

16 Claims

1. A drawer slide mechanism, comprising:

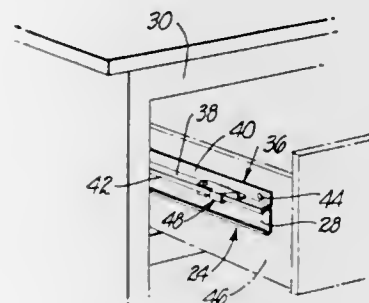
an outer slide member having facing ball races along the longitudinal side edges thereof;

an inner slide member having oppositely facing ball races along the longitudinal side edges thereof, the ball races of the inner slide member being spaced inwardly from and facing respective adjacent ball races of the outer slide member to provide operable space for balls;

balls in the space between the respective adjacent ball races of outer and inner slide members;

a generally channel-shaped ball bearing retainer disposed between the outer and inner slide members, said ball bearing retainer having flanges at the outer longitudinal edges between adjacent ball races of the outer and inner slide members, said flanges having openings for the balls, said openings being of smaller size than the diameter of the inner slide member being spaced inwardly from and facing respective adjacent ball races of the outer slide member to provide operable space for balls;

balls in the space between the respective adjacent ball races of outer and inner slide members;



a generally channel-shaped ball bearing retainer disposed between the outer and inner slide members, said ball bearing retainer having flanges at the outer longitudinal edges between adjacent ball races of the outer and inner slide members, said flanges having openings for the balls, said openings being of smaller size than the diameter of the balls so said balls are held in the races of the outer slide member by the flanges of said ball bearing retainer; and a drawer mounting adaptor adapted to be attached to the side of a drawer and resting on the top of the outer slide member of a slide mechanism;

balls so said balls are held in the races of the outer slide member by the flanges of said ball bearing retainer; and a drawer mounting adaptor adapted to be attached to the side of a drawer and resting on the top of the outer slide member of a slide mechanism;

a first releasable means for holding the adaptor against being lifted from the wall raise of the outer slide member; and a second releasable means for holding the adaptor against sliding longitudinal movement on the ball race of the slide mechanism.

3,901,566

TILTABLE CONVERTER SELF-ALIGNING BEARING
Ernst Riegler, Enns, and Manfred Schmidt, Linz, both of Austria, assignors to Vereinigte Österreichische Eisen-und Stahlwerke - Alpine Montan Aktiengesellschaft, Linz, Austria

Filed Oct. 31, 1973, Ser. No. 411,442

Claims priority, application Austria, Jan. 30, 1973, 774/73

Int. Cl. F16c 1/24, 23/04, 33/72

U.S. Cl. 308—36.1

10 Claims

1. A movable bearing for a carrying trunnion of a converter, the bearing being adapted to accommodate axial, angular and wobbling movements of the trunnion, comprising:

a. a bearing housing including annular, radially inwardly depending portions at different ends of the housing;

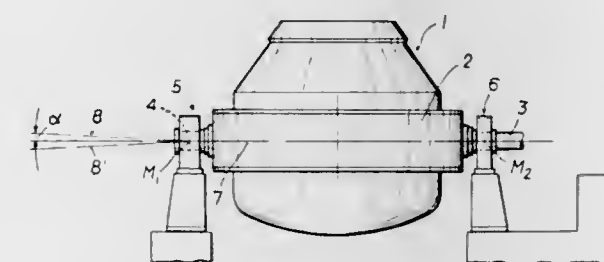
b. a slide bushing secured to and within the bearing housing;

c. an outer ring coupled to the slide bushing so as to be displaceable within the bearing housing in an axial direction;

d. an inner ring within the outer ring and adapted for rotational movement relative to the outer ring;

e. at least one spacer ring located adjacent each end of the inner ring and adapted to be secured on a carrying trunnion so as to fix the inner ring in position axially of the trunnion, a recess being formed in said at least one spacer ring at each end of the inner ring;

f. a sleeve disposed in each of the recesses of the spacer rings and encircling a respective spacer ring, the sleeves and the recesses being dimensioned to provide both axial and radial spaces between the sleeves and the spacer



rings, the sleeves also being located relative to the depending portions of the bearing housing such that the sleeves are guided by the depending portions of the bearing housing so as to move relative to the spacer rings upon movement of a trunnion journaled in the bearing;

g. at least one annular housing sealing member, disposed at each end of the bearing housing between at least a part of a depending portion of the bearing housing and a sleeve; and

h. a pasty sealing agent filling spaces between the sleeves and the spacer rings.

3,901,567

ANTI-FRICTION BALL BEARING ASSEMBLY

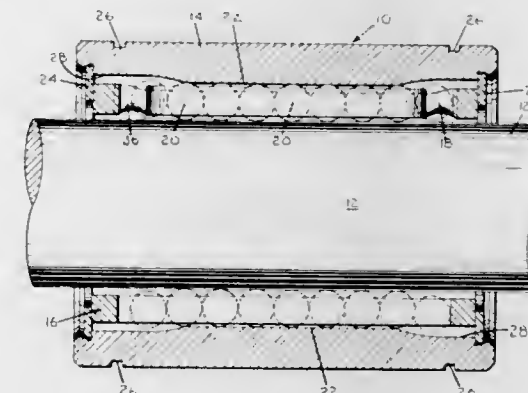
Albert R. McCloskey, Fairfield, Conn., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Feb. 22, 1973, Ser. No. 334,706 The portion of the term of this patent subsequent to Jan. 29, 1991, has been disclaimed.

Int. Cl. F16c 17/00

U.S. Cl. 308—6 C

1 Claim



1. An anti-friction ball bearing assembly comprising an outer sleeve and an inner sleeve concentrically fitting within said outer sleeve, said inner sleeve having a central opening for the passage of a shaft therethrough, the inner sleeve having a number of tracks defining paths for the circulation of balls between said sleeves and said shaft during relative movement between said shaft and said bearing assembly, the outer surface of the inner sleeve being provided with a number of guideways, the intersections of the plane portions defining the outer surface of the inner sleeve registering with said guideways, said inner surface of the outer sleeve is further provided with a number of substantially concave raceway surfaces aligned with said tracks such that they provide a rolling bearing surface for said balls while said balls are in their loaded

state, a smooth transition portion that presents no abrupt changes in direction for said balls contiguous with the ends of said raceway surfaces to enable said balls to smoothly begin or end said portion of their circulation path in which said balls are in contact with said shaft and raceway surfaces, said smooth transition being defined by a curve which is tangent to said raceway surfaces and blended with a recess provided on the inner surface of the outer sleeve at each end thereof.

3,901,568

ROTARY MECHANISM BEARING ARRANGEMENT

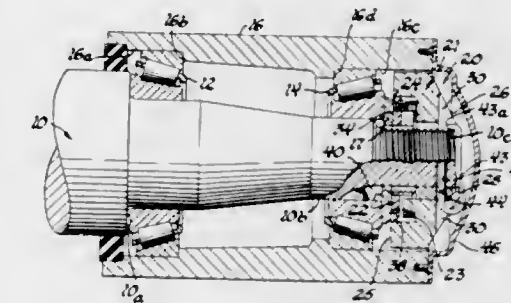
Francis O. Gadd, Birmingham; Charles N. Hay, Sandusky, both of Ohio, and William C. Long, Rochester, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 14, 1974, Ser. No. 497,334

Int. Cl. F16C 33/00

U.S. Cl. 308—211

5 Claims



1. A rotary mechanism including a spindle threaded at its outboard end, an inboard bearing means and an outboard bearing means mounted on said spindle, a hub supported on said spindle by said bearing means for rotation relative to said spindle, a thrust retaining washer keyed to and slidably positioned on said spindle for abutment against said outboard bearing means, a self-adjusting nut assembly positioned on said spindle in abutment against said washer outboard thereof for adjusting the axial position of said outboard bearing on said spindle, said self-adjusting nut assembly comprising a cam element in the form of a collar slidably and rotatably mountable on said spindle with axial extending cam surfaces on one side thereof, a bearing nut threadably engaged on said spindle outboard of said cam element, said bearing nut having axial extending cam surfaces adapted to cooperate with said cam surfaces on said cam element, spring means encircling a part of said cam element and a part of said bearing nut with one end of said spring operatively engaging said cam element and the opposite end of said spring engaging said bearing nut to normally rotatably bias said cam element relative to said bearing nut in an up-cam-ramp direction, key means operatively interconnecting said spindle and said bearing nut to prevent rotational movement of said bearing nut relative to said spindle, said bearing nut being in the form of a body of revolution about an axis of a predetermined diameter to provide an annular outer bearing surface, said hub being of an axial length with a bore on its outboard end to receive said bearing nut with the outboard end of said hub encircling said bearing nut whereby said hub can be rotatably supported by said bearing nut.

3,901,569

ROLLER THRUST BEARING

Takeo Uehara, Uozu, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 27, 1974, Ser. No. 500,918

Claims priority, application Japan, Aug. 27, 1973, 48-100705; Aug. 27, 1973, 48-100706

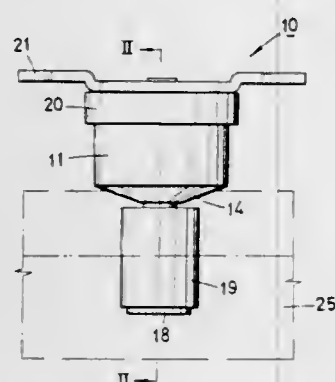
Int. Cl. B60B 33/00; E05D 13/00; F16C 17/10, 19/14

U.S. Cl. 308—230

2 Claims

1. A thrust bearing structure comprising:

- a mounting plate adapted to be connected to a horizontally sliding door;
- a shaft having a top end thereof secured to said mounting plate, a large diameter portion formed at the lower part thereof, and a disk-shaped portion formed at the lower end thereof so as to radially extend further than the outer periphery of said large diameter portion of the shaft;
- a cylindrical roller rotatably fitted on the large diameter portion of the shaft through a central bore thereof in a concentric manner therewith and supported by said disk-shaped portion of the shaft;
- a lower block made of synthetic resin and having a central bore through which said shaft extends so as to rotatably hold said lower block above said large diameter portion thereof, said lower block having a circular bearing groove



- formed in the top surface thereof so as to be concentric with said central bore;
- a plurality of metallic rolling elements rollingly fitted in said circular bearing groove of the lower block;
- a retainer made of synthetic resin and having a central bore through which the shaft extends so as to rotatably carry said retainer on the top surface of the lower block, said retainer having uniformly spaced radial openings adapted to retain said rolling elements at uniform intervals in said bearing groove; and
- an upper block made of synthetic resin and having a central bore through which said shaft extends so as to rotatably carry said upper block above said retainer, said lower block having a circular bearing groove corresponding to the bearing groove of the lower block.

3,901,570

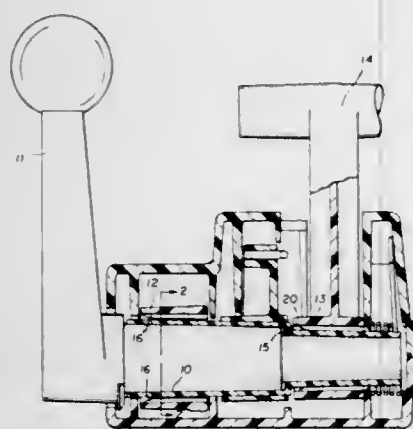
RESIN SHAFT AND BEARING FOR SANDBOX TOY
James C. Alexander, Orchard Park, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.

Filed Aug. 5, 1974, Ser. No. 494,624

Int. Cl. F16c 33/04

U.S. Cl. 308—238

10 Claims



1. A resin shaft and bearing for a sandbox toy comprising:
- a. a resin shaft element;
- b. a resin bearing element formed as a sleeve generally concentrically surrounding said shaft element so said

- bearing element and said shaft element are rotatable relative to each other;
- c. a plurality of axial ridges formed on one of said elements and extending generally radially toward the other one of said elements to define a plurality of grooves between said ridges extending continuously for substantially the axial length of said bearing element;
- e. the distal edges of said plurality of ridges terminating at the locus of a generally cylindrical shape having a predetermined diameter;
- f. said other one of said elements having a generally smooth and generally cylindrical surface having a diameter differing by a predetermined amount from said diameter of said cylindrical shape locus to afford a predetermined clearance between said distal edges of said ridges and said smooth cylindrical surface;
- g. the distance between adjacent ones of said distal edges of said ridges being several times the expected size of sandbox sand particles; and
- h. the radial distance from said distal edges of said ridges to the proximal end of said ridges being several times the expected size of sandbox sand particles.

3,901,571

INSTRUMENT CABINET

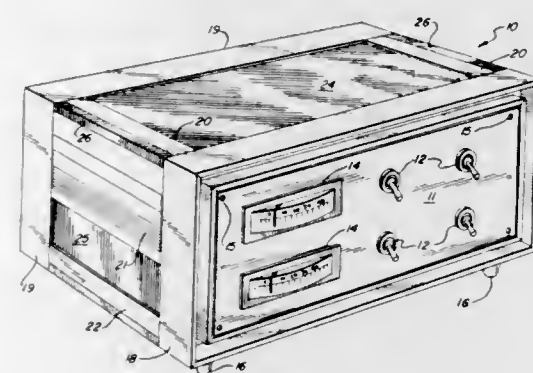
Donald W. Begitschke, River Grove, and Warren J. Olsen, Schaumburg, both of Ill., assignors to Arco Engineering Company, Chicago, Ill.

Filed Feb. 1, 1974, Ser. No. 438,576

Int. Cl. A47B 77/00, 47/00

U.S. Cl. 312—257 R

34 Claims



1. A cabinet comprising, in combination, four main channels defining vertical columns at the two front edges and the two rear edges of the cabinet, each of said main channels terminating in a gusset perpendicular to each end, struts for joining from front to rear opposed pairs of channels, each of said struts having an angle type configuration with two legs, the legs being perpendicular to each other, T-slots having an undercut portion in each of the legs of the struts, and flanking the junction of the two legs, clamping means for mounting the gusset portions of the main channel to each of said struts, one portion of said means slideably engageable with each of said T-slots, and cross ties defining a front and rear bezel for said cabinet, each of said cross ties having at least one T-slot for engaging the main channel adjacent gussets, whereby the cabinet is self-jigging for purposes of assembly by securing the struts and cross tie members to their respective main channels and its opposed end gussets.

3,901,572

DRAWERS

Leon G. Litchfield, Youlgreave, England, assignor to L.B. (Plastics) Limited, Youlgreave, England

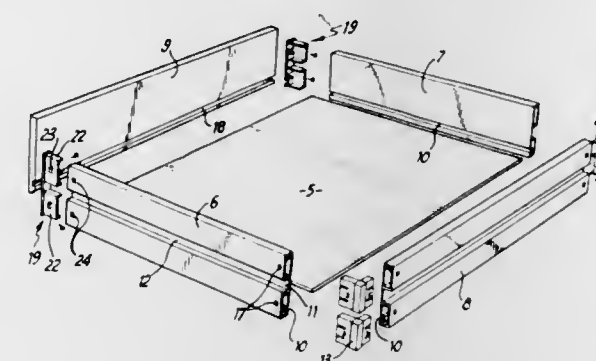
Filed May 29, 1973, Ser. No. 364,710

Claims priority, application United Kingdom, Dec. 8, 1972, 56752/72

Int. Cl. A47B 47/00

U.S. Cl. 312—330

8 Claims



1. A drawer construction in which at least the sides and back are formed from identical hollow extruded plastics panels each provided with a longitudinal recess in the face thereof which will be innermost in use in order to accommodate a drawer bottom, and each having its ends open, wherein the improvement comprises two rear corner pieces each comprising

- a. an upright portion consisting of an angle forming a corner of the drawer, against the edges of which the outer vertical edges of the back panel and a side panel abut, said angle forming two sides of a vertical chamber which is bounded on the other two sides by said panels,
- b. one side flange of said angle being narrower than the other to cause the inner vertical edge of one of said panels to overlap the inner vertical edge of the other panel, thus preventing a gap from occurring between the inner vertical edges of said panels, said angle having rectangular top and bottom pieces to close the top and bottom of said vertical chamber and having locating portions which are engaged in the open ends of said panels.

3,901,573

METHOD OF PROCESSING TUNGSTEN HALOGEN LIGHT BULBS

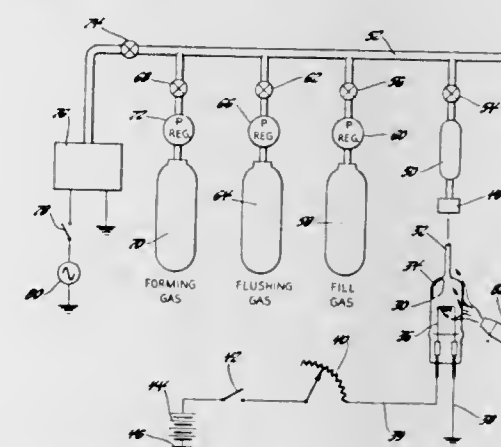
Arthur Doienga, Sterling Heights, and John C. Hill, Bloomfield Hills, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 27, 1973, Ser. No. 391,883

Int. Cl. H01J 9/385

U.S. Cl. 316—21

3 Claims



1. A method of processing tungsten halogen light bulbs wherein said bulb includes a glass envelope having a contaminated interior bulb wall defining an open ended cavity in

which a contaminated tungsten filament is supported, comprising the steps of:

1. filling the cavity with a reducing gas,
2. heating the envelope to a temperature sufficient to outgas the contaminants on said bulb wall,
3. energizing the filament when the bulb wall has reached said temperature to expel the contaminants from the filament, continuing heating of the bulb wall to maintain a temperature during said energizing sufficient to prevent absorption or adsorption of the expelled contaminants thereon,
4. removing the contaminated gas,
5. refilling said cavity with a halogen containing gas, and
6. sealing said open ended cavity to retain said halogen containing gas therein.

3,901,574

ELECTRICAL CONNECTOR

Clarence Leonard Paullus, Lewisberry, and Larry Ronald Stauffer, Camp Hill, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

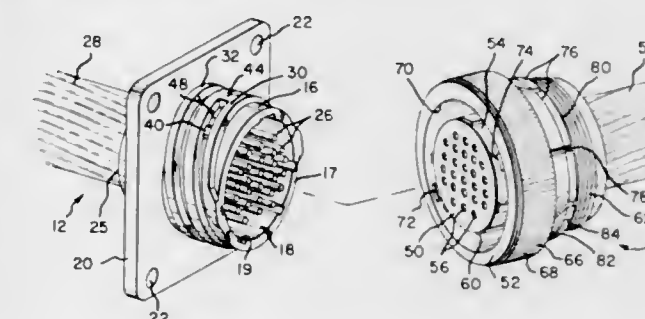
Continuation of Ser. No. 214,164, Dec. 30, 1971, abandoned.

This application Dec. 28, 1973, Ser. No. 429,255

Int. Cl. H01R 13/54

U.S. Cl. 339—90 R

12 Claims



1. An electrical connector assembly of the type comprising a cylindrical plug and cylindrical receptacle, said receptacle having a mating face within a cylindrical hood, with said hood having an helical groove thereon, said plug, dimensioned to fit within the hood, has a locking ring rotatably mounted thereon, said locking ring having at least one projecting lug formed unitarily therewith on the inner surface thereof, said lug being dimensioned to be received in the helical groove wherein the improvement comprises:

- a. said locking ring, being of firm and resiliently deformable material, having an inner diameter larger than the outer diameter of said hood to permit an elongation of said locking ring when positioned on said hood; and
- b. deforming means positioned in said groove for resiliently deforming said locking ring into a generally elongated shape as said lug passes thereover.

3,901,575

PLUG FOR PATCH SYSTEMS

Charles Donald Hoover, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of Ser. No. 419,167, Nov. 26, 1973, Pat. No. 3,874,763. This application Apr. 8, 1974, Ser. No. 458,618

Int. Cl. H01R 13/54

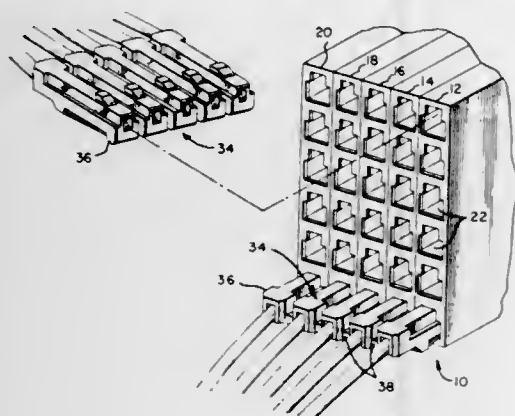
U.S. Cl. 339—91 R

13 Claims

1. A plug for use in high density patch systems having a receptacle portion with a plurality of closely spaced polarized cavities therein, said plug comprising:

- a substantially rectangular plug member having a polarized transverse profile adapted to mate with said cavities, a longitudinal passage through said plug, a locking lance extending laterally outwardly from one longitudinal side of said plug, a spring member extending in parallel spaced relation longitudinally along the opposite side of said plug

with both ends of said spring member integrally connected to said plug member, said spring being deformed during insertion of said plug member into said receptacle portion and biasing said locking lance into full latching engagement in said receptacle portion when said plug is



fully inserted therein, and detent means at a forward end of said plug spaced from said locking lance whereby said plug is inserted in two steps with said detent means providing only mechanical latching in said receptacle portion.

3,901,576

ARRESTER HOLDER

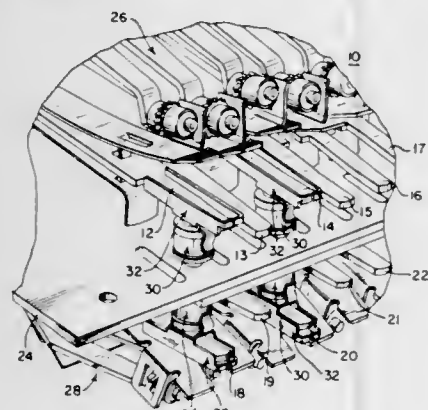
Sheldon Harvey Berman, Skokie, Ill., assignor to Cook Electric Company, Morton Grove, Ill.

Filed Feb. 1, 1974, Ser. No. 438,745

Int. Cl. H01R 11/22

U.S. Cl. 339-258 F

11 Claims



1. An arrester holder for mounting onto a terminal contact bar an arrester having an electrode at one end, said arrester holder comprising:

leg means having first and second leg portions and a clip assembly interconnecting said first and second leg portions and mounting said first leg portion in spaced apart relationship to said second leg portion so as to enable said first leg portion to be resiliently deflectable relative to said second leg portion for positioning of said first and second leg portions about said terminal contact bar, said clip assembly having holding means for said electrode to electrically connect said electrode to said terminal contact bar.

3,901,577

GROUNDING CLAMPS AND CONNECTORS THEREFOR
Robert A. Philibert, Burlington, and Frank L. Browne, Bristol, both of Conn., assignors to General Signal Corporation, Rochester, N.Y.

Filed Jan. 25, 1974, Ser. No. 436,422

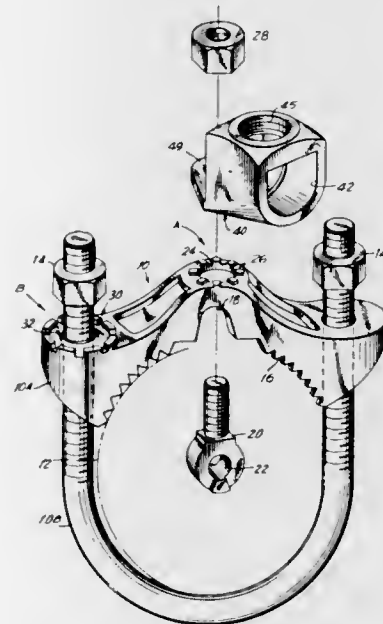
Int. Cl. H01R 7/26

U.S. Cl. 339-265 F

8 Claims

1. A clamping device for clamping to ground potential and for connecting equipment to such potential, comprising:

a pair of clamping members for fitting around a water pipe or the like;
means for clamping said members to the pipe or the like independently of the connection to said clamping device of the equipment to be grounded;
means for connecting said equipment to be grounded, including one of said clamping members, which is shaped to receive means for firmly securing said equipment to said clamping device; and further including a threaded



3,901,578

ILLUMINATOR EMPLOYING HOLOGRAPHIC TECHNIQUE

Kenneth Clifford Hudson, Philadelphia, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 18, 1974, Ser. No. 452,044

Int. Cl. G02b 27/00

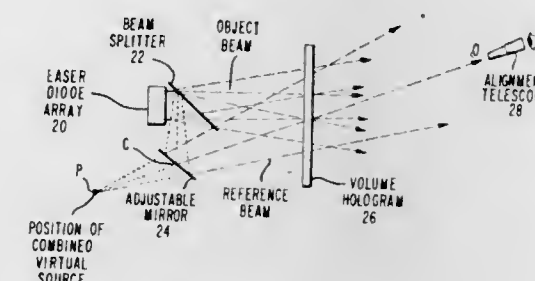
U.S. Cl. 350-3.5

1 Claim

1. An illuminator comprising:

a. a plurality of spaced unmodulated substantially point light sources arranged in a predetermined array, wherein each light source radiates light which itself is at least partially coherent but which is noncoherent with respect to light radiated from any other light source and wherein each of said light sources is a laser diode light at the same wavelength band in the infrared region, and
b. a volume hologram recording medium situated in predetermined spaced relationship with respect to said array to have a given area thereof illuminated by light from said light sources, said area of said medium containing a predetermined hologram which is characterized by its ability when illuminated by said light sources to produce a single resultant output light beam composed of a respective beam component from each light source which appears to originate at a virtual substantially point source which is

positioned in substantial coincidence with the virtual substantially point sources at which the respective beam



3,901,579

REFLECTING HARNESS FOR PERSONS

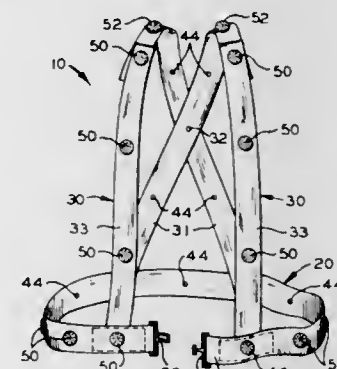
Frances Edith Demerest, 897 Mulbollen Dr., Monroe, Mich. 48161

Filed Jan. 14, 1974, Ser. No. 432,942

Int. Cl. G02b 5/12

U.S. Cl. 350-98

8 Claims



1. A light reflecting safety harness for a person comprising:
A. three flexible tapes, each having its outer surface completely retro-reflective, and each one of which tapes is connected to the other two to form a belt and two shoulder straps crossing at the wearer's back,
B. length adjustment means attached to each of said tapes,
C. a buckle means attached to the tape forming said belt, and
D. a plurality of faceted reflecting means attached at spaced intervals along each of said tapes and at their connections with each other.

3,901,580

LASER INSTRUMENT FOR VIEWING THROUGH DENSE ATMOSPHERES

Denis L. McCarthy, 3008 Avenue M, Brooklyn, and Joseph D'Albert, 10 Patricia Rd., Long Island City, both of N.Y. 11210

Continuation-in-part of Ser. No. 79,082, Oct. 8, 1970, Pat. No. 3,744,874. This application May 4, 1973, Ser. No. 357,491 The portion of the term of this patent subsequent to July 10, 1990, has been disclaimed.

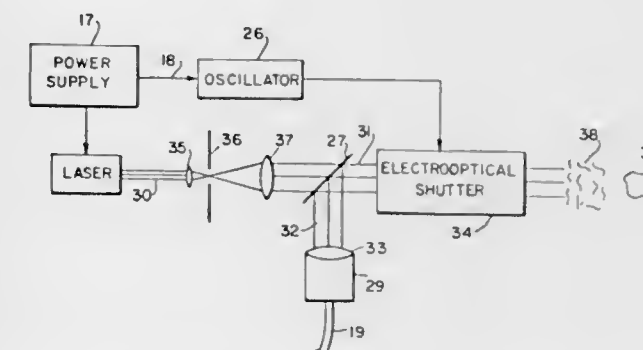
Int. Cl. G02b 5/16

U.S. Cl. 350-96 B

4 Claims

1. An instrument for viewing of objects through a particle laden atmosphere by an observer, comprising a viewing

means, an optical image transfer means connected to said viewing means, a laser means producing a coherent beam of light having a width of at least 2 inches at the object viewed, optical beam splitting means positioned in said laser beam to divide said laser beam into two differently directed light beams, means to optically couple said optical image transfer



means to said beam splitting means to receive the portion of the laser beam reflected from the viewed object so that the observer views the object along and within the laser beam through the beam splitting means and sees the object by the reflected light of the laser beam, and means to vary the intensity of said laser beam at a high frequency rate.

3,901,581

TAPERED COUPLER FOR OPTICAL COMMUNICATION SYSTEM

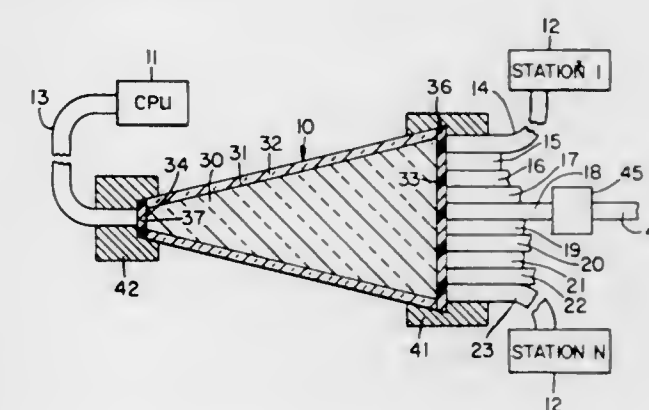
Frank L. Thiel, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed July 5, 1973, Ser. No. 376,580

Int. Cl. G02B 5/14

U.S. Cl. 350-96 C

7 Claims



1. In an optical communication system having a first plurality of optical signal transmission lines which are to communicate with a first optical signal transmission line, wherein each of said transmission lines comprises at least one optical waveguide having a core of transparent material having a refractive index n_1 , surrounded by a layer of transparent cladding material having a refractive index n_2 that is lower than n_1 , a coupler for coupling different optical signals between each of said first plurality of transmission lines and said first transmission line, said coupler comprising an elongated rod in the shape of a truncated cone, said rod having large and small substantially parallel, planar, circularly shaped endfaces that are substantially perpendicular to the axis thereof, said rod consisting of transparent material having a refractive index n_3 that is substantially equal to n_1 , a layer of transparent cladding material disposed upon the surface of said rod and forming with the surface thereof a light reflecting interface, the refractive index n_4 of said cladding material being lower than n_3 , means at said small endface for preventing light from said rod from reflecting from said small endface back into said rod, first support means for disposing the end portions of said

first plurality of transmission lines in a bundled, parallel arrangement, the optical wave-guides of which said transmission lines are comprised terminating in faces that are disposed adjacent to said large endface, said faces being disposed in a planar array that is substantially parallel to said large endface, said waveguide faces being circumscribed by a circle of radius R , the diameter of said first transmission line being r , the minimum length L_m of said rod being defined by the equation

$$L \geq \frac{R+r}{\tan(\theta_c/2)}$$

wherein θ_c is the acceptance half angle of said at least one optical waveguide, and
second support means for disposing the end portion of said first transmission line adjacent to said small endface, the axis of said first transmission line being substantially parallel to that of said rod.

3,901,582

MIRRORED OPTICAL CONNECTOR

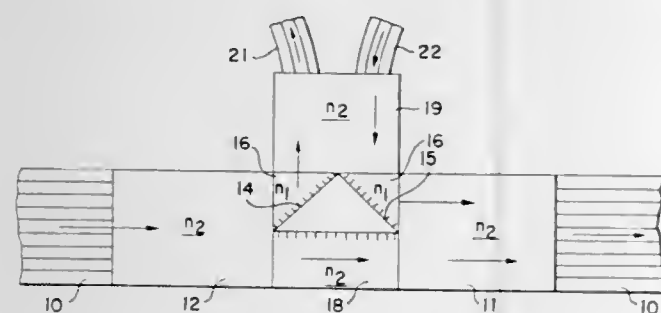
A. Fenner Milton, Washington, D.C., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 29, 1974, Ser. No. 528,517

Int. Cl.² G02B 5/16

U.S. Cl. 350—96 C

4 Claims



1. An optical coupler-connector for providing input into and output from a main optical multimode fiber optic transmission line, which comprises:

- first and second optically transparent scrambler arms;
- said scrambler arms optically bonded at one end to the ends of said main transmission line;
- a central element optically connected between said first and second scrambler arms;
- said central element including a 45° prism with mirrored faces in one half section thereof and a solid rod forming the remainder of said central element;
- said 45° prism positioned with its mirrored faces at a 45° angle relative to an axial line through said first and second scrambler arms of said coupler-connector;
- a third scrambler arm optically secured to said central element with its optical axis perpendicular to the axis through said first and second scrambler arms; and
- input and output auxiliary transmission lines optically connected with said third scrambler arm.

3,901,583

REFLECTIVE ROADWAY MARKER

Howard A. Schaefer, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio

Continuation-in-part of Ser. No. 296,947, Oct. 12, 1972. This application Oct. 10, 1973, Ser. No. 404,864

Int. Cl.² G02B 5/12

U.S. Cl. 350—97

5 Claims

1. A retroreflective roadway marker comprising a body member, said body member having a peripheral rim and

having top and side walls, said body member being of concave internally dished-out construction with an internal cavity exposed at its lower surface, at least one side wall being inclined inwardly from said rim to said top wall, said one side wall including a generally vertical portion extending from said rim to said top wall and disposed for facing oncoming traffic, a retroreflective optical system in said generally vertical portion of said one said wall, said body member and its optical system being integral and made of tempered glass having an impact strength of at least 10,000 psi and which disintegrates into harmless particles upon failure, said optical system being exposed for angular dispersion up to a minimum of 20° deviation off axis of vehicle travel toward said marker, said optical system including a smoothly curved spherical segment lens surface projecting outwardly from said generally vertical portion of its side wall and disposed toward the exterior of said body member for receiving rays of light from the headlight of an approaching vehicle, a smoothly curved spherical segment reflective surface associated with said lens surface and disposed toward the interior of said body for reflecting the light passing



through said lens surface, the focal point of said lens surface being disposed with respect to said reflective surface to assure reflection of the light to the eyes of the driver as the vehicle continues to approach the marker, securing means on the lower surface of said rim for mounting said marker directly to the roadway surface without the necessity of partially embedding the marker below the roadway, entirely all of said optical system being disposed above said securing means whereby the entire optical system is disposed above the roadway, said body member being of smooth contour free of any optical system at the portion of said body member diametrically opposite said vertical portion, said top wall merging into said side walls to form a continuous wall being eccentrically shaped in its elevation view with its maximum vertical distance being off center and disposed toward said vertical portion of said one side wall containing said optical system, said continuous wall of said body member being tapered downwardly away from the general area of said optical system and toward said diametrically opposite portion, and said diametrically opposite portion thereby presenting an eccentric sloping surface which minimizes road hazard.

3,901,584

SOLID-STATE ELECTRO-OPTIC DISPLAY DEVICE

Satoshi Yamazaki, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

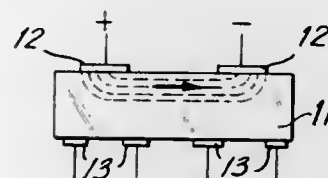
Filed Jan. 22, 1974, Ser. No. 435,565

Claims priority, application Japan, Jan. 22, 1973, 48-9257

Int. Cl.² G02F 1/26

U.S. Cl. 350—150

3 Claims



1. A solid-state electro-optic display device for displaying optionally one or a plurality of images in a single region, comprising a transparent ferroelectric crystal having two essentially parallel surfaces, a first electrode structure on one of said parallel surfaces for generating at least one electric field parallel to and in a portion of said crystal proximate said

one surface, a second electrode structure on the other of said surfaces for generating at least one electric field parallel to and in a portion of said crystal proximate said other surface, said first and second electrode structures being different from each other and each of said electrode structures being constructed and arranged for displaying different indicia, means for selectively applying voltages to said electrode structures and cooperating with same to generate said electric fields, and polarizer and analyzer plates at said parallel surfaces, whereby the intensity and the nature of light passing through said crystal may be varied.

3,901,585

ZOOM LENS ASSEMBLY

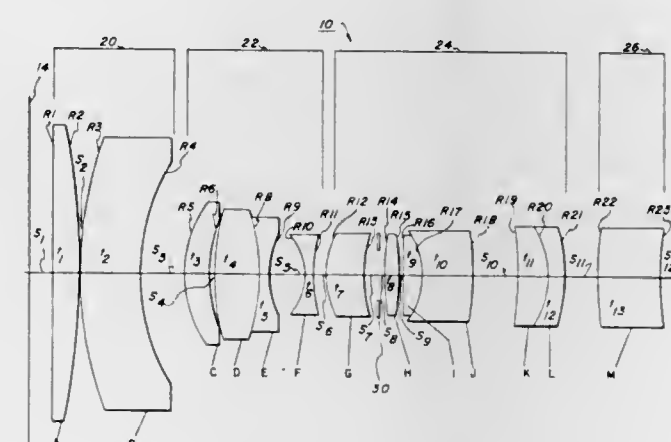
Harold F. Bennett, Pasadena, and Wai-Min Liu, Arleta, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 23, 1973, Ser. No. 408,777

Int. Cl.² G02B 15/00

U.S. Cl. 350—184

5 Claims



1. A zoom lens assembly consisting essentially of an axially fixed front member, an axially movable second member, an axially movable third member, and an axially fixed rear fourth member, the first fixed member comprising, from the front to the rear, a double convex element and a negative meniscus element convex to the front, the axially movable second member comprising, from the front to the rear, a positive meniscus element convex to the front, a doublet comprising a double convex element, the rear surface of which is affixed to a first double concave element, and a second double concave element, said third movable member comprising, from the front to the rear a negative meniscus element convex to the front, a first double convex element; a first doublet comprising a second double convex element the rear surface of which is affixed to a first negative meniscus element concave to the front and a second doublet comprising a positive meniscus element, the rear surface of which is affixed to a second negative meniscus element concave to the front, the fourth fixed member comprising a positive meniscus element.

3,901,586

DEVICE FOR VARYING MAGNIFICATION PRODUCED BY AN OPTICAL SYSTEM

Shigeru Suzuki, and Hideaki Mochimaru, both of Yokohama, Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed Dec. 19, 1973, Ser. No. 426,047

Claims priority, application Japan, Dec. 28, 1972, 47-3474

Int. Cl.² G02B 17/00, 7/02

U.S. Cl. 350—202

2 Claims

1. A device for varying magnification produced by an optical system comprising:

- a. a lens;
- b. means for supporting said lens for movement in the direction of its optical axis;
- c. a reflector;

d. means for supporting said reflector in an inclined position on the optical axis of said lens and for movement thereon; and

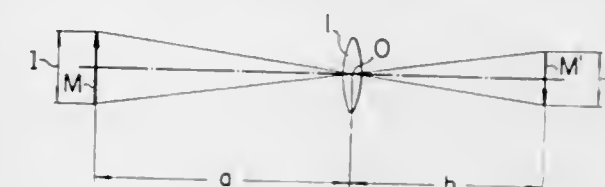
e. a link means interconnecting said lens and said reflector support means for imparting to said lens and said reflector movements which satisfy the following formula:

$$Y = (X^2/f - X)$$

wherein f is the focal length of the lens, X is the distance covered by the lens in its movement, and Y is the distance covered by the reflector in its movement, said link means comprising:

i. means for supporting said lens support means and said reflector support means for movement in the direction of the optical axis of the lens;

ii. a guide member interposed between said lens support means and said reflector support means and disposed approximately at right angles to the optical axis of the lens;



iii. a connector arranged to intersect said guide member and having one end connected to said lens support means and the other end connected to said reflector support means;

iv. a movable member fitted over said guide member and connected to said connector so that the connector can move both in pivotal movement and sliding movement, and wherein the distance between the line parallel to the optical axis of the lens and including the center of pivotal movement of the connector relative to the lens support means and the line parallel to the optical axis of the lens and including the center of pivotal movement of the connector relative to the reflector support means is equal to kf , wherein k is a proportional constant; and

v. means for driving said movable member a distance kX along said guide member when said lens support moves a distance X along its supporting means.

3,901,587

FRAMING AND MOUNTING MEANS FOR A REAR VISION MIRROR

Ernest Haile, 30 Cadwalader Ter., Trenton, N.J. 08618

Filed Oct. 7, 1974, Ser. No. 513,000

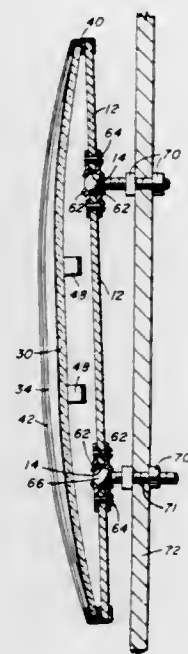
Int. Cl.² G02B 5/10

U.S. Cl. 350—293

6 Claims

1. A mirror construction comprising a mirror element including first and second opposite side edges, a mounting plate of a plan shape corresponding to the plan shape of said element over one side of which said element is placed in plan registry therewith, shock absorbing means extending about the peripheries of said plate and element supporting said element from said plate in a manner cushioning said mirror element from shock experienced by said plate, said plate including first and second opposite side edges, one of said plate side edges corresponding to one of said element side edges, the other side edge of said plate corresponding to the other side edge of said element and including a right-angled first flange extending therealong and projecting outwardly of said one side of said plate, said first flange including opposite end portions which progressively decrease in width toward said plate at continuously increasing rates, the free longitudinal edge portion of said first flange terminating outwardly in a second inwardly directed right-angled flange overlying said one side of said plate, said shock absorbing means including a resilient inwardly opening and channel-shaped peripheral gasket extending about said mirror element and embracingly engaging the peripheral edges thereof with

one side of said gasket abutting the opposing peripheral surfaces of said one side of said plate, and inwardly opening and channel-shaped peripheral mounting frame extending about the peripheries of said plate and gasket and embracingly engaging the remote sides thereof, said mounting frame including a pair of elongated channel-shaped sections, one of said sections extending along said one side edges of said plate and mirror element and the other frame section extending along the other side edges of said plate and mirror element, said one side of said gasket including portions thereof abuttingly en-



gaged with the outer surface of said second flange, said mirror element including partial spherical opposite ends with said element being outwardly convex away from said one side of said plate, said other side edge of said plate being generally straight, said one sides of said plate and element including opposite end portions which converge toward the corresponding opposite ends of said other side edges of said plate and element, said plate including mounting means spaced inwardly from the marginal edges thereof for providing the sole support of said mirror construction from a suitable support structure.

3,901,588

CALIBRATING DEVICE FOR LIGHT SCATTER PHOTOMETERING INSTRUMENT

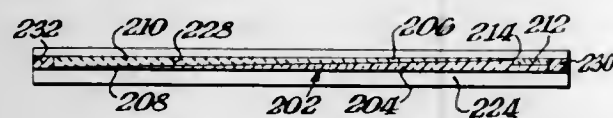
David K. Longhenry, East Lyme, Conn., assignor to Pfizer, Inc., New York, N.Y.

Filed June 19, 1973, Ser. No. 371,389

Int. Cl. G02b 5/22; G01j 1/42

U.S. Cl. 350—314

6 Claims



1. A device for calibrating an optical instrument which measures the light scattering characteristics of a series of samples traversed on a carriage in steps past a photometering station comprising an elongated frame, a bracket attached to the frame for readily detachably mounting said frame upon said carriage in a predetermined position, an elongated composite plate of transparent glass in said frame, said composite plate comprising a flat sandwich of nested wedge-shaped sheets of highly transparent and neutral density filter glasses, a surface of said composite plate having a uniform mat finish which scatters the light passing through it, and the density of

the filter glass being sufficient to cover a predetermined range of light scatter corresponding to that caused by a predetermined range of said samples throughout the varying thickness of said filter glass over the length of said composite plate as said device is traversed in steps past the photometering station, a flat neutral filter glass section is appended alongside the length of said wedge-shaped sheet of neutral density filter glass, said flat neutral filter glass section has a surface having a mat finish for an auxiliary light scattering verification, a variable leaf is disposed over said appended section, movable means attaching said leaf to said frame whereby the position of said variable leaf can be modified for adjusting the amount of scattered light transmitting through said flat appended section, fine adjusting means is provided on said leaf and said frame for precisely adjusting the position of said leaf over said appended glass section, and said fine adjusting means comprises overlying notched sections on said leaf and said frame.

3,901,589

CLIP-ON FLIP-UP GOGGLES

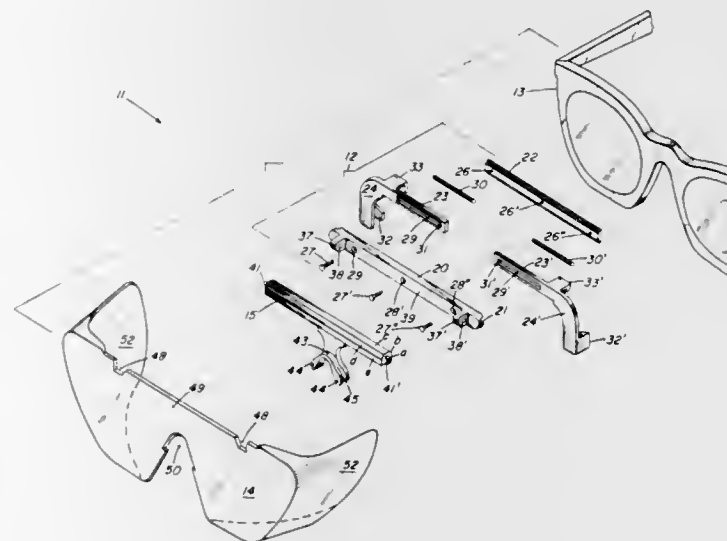
Harold Bienenfeld, Roslyn Harbor, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Filed July 8, 1974, Ser. No. 486,533

Int. Cl. G02C 9/02, 9/04

U.S. Cl. 351—47

4 Claims



1. Clip-on flip-up goggles comprising, in combination:
 - a. a shield having a transparent substantially flat front portion;
 - b. a shield holder for supporting said shield in a fixed position relative thereto; and
 - c. clipping means provided with means for detachably securing same to the frame of a pair of spectacles;
 - d. means for securing said shield holder to said clipping means so said shield holder is rotatable relative to said clipping means about an axis of rotation parallel to said front portion of said shield; and
 - e. means for retaining said shield holder in any one of five selected positions while permitting manual change of position wherever desired, said means comprising five planar surfaces extending lengthwise along said clipping means parallel to said axis of rotation, each equidistant therefrom, each of said planar surfaces intersecting the adjacent planar surfaces at an angle of about 135° to form ridges therebetween, each of said ridges being equidistant from said axis of rotation, each of said ridges being a distance from said axis of rotation greater than the distance of said planar surfaces from said axis of rotation, said means also comprising a surface on said clipping means located a distance from said axis of rotation intermediate the distances of said ridges and of said planar surfaces from said axis of rotation.

3,901,590

LOOP CONTROL SYSTEM IN MOTION PICTURE PROJECTOR OR THE LIKE

Akira Ashida, and Kiyoshi Takahashi, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

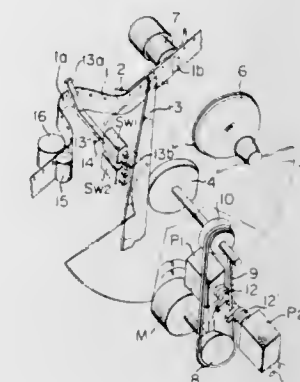
Filed Apr. 24, 1974, Ser. No. 463,847

Claims priority, application Japan, Apr. 28, 1973, 48-48669

Int. Cl. G03B 31/00

U.S. Cl. 352—14

28 Claims



1. A device for feeding strip material with a predetermined amount of loop being formed therewith, while said strip material is moving along a travelling path therefor, which comprises in combination:

- a. means for transferring said strip material, the amount of the loop formed with said strip material being varied in accordance with the change in the operating speed of said transfer means;
- b. means for detecting positional displacement of the edge of said strip material corresponding to the variation in the loop amount at the topmost part thereof, said detecting means being disposed in such a manner that the operational direction of said means with respect to the edge of said strip material is inclined with respect to the direction of variation in said loop amount so as to obtain the variation in said loop amount in terms of the positional displacement of the edge of said strip material, and a signal output being generated whenever said loop amount deviates from a predetermined amount; and
- c. means for controlling the transfer speed of said strip material which is operatively connected to said transfer means and is capable of responding to said signal output from said detection means, said control means operating to control the operating speed of said transfer means in a manner to cause said loop amount in said strip material to be a predetermined amount in accordance with said signal from said control means.

3,901,591

MECHANISM FOR COOLING PHOTOSENSITIVE MATERIALS IN AN ELECTROPHOTOGRAPHIC COPYING MACHINE

Sakae Mitsumasu, Ebina, Japan, assignor to Rank Xerox Ltd., London, England

Filed Jan. 16, 1974, Ser. No. 433,970

Claims priority, application Japan, May 18, 1973, 48-57835

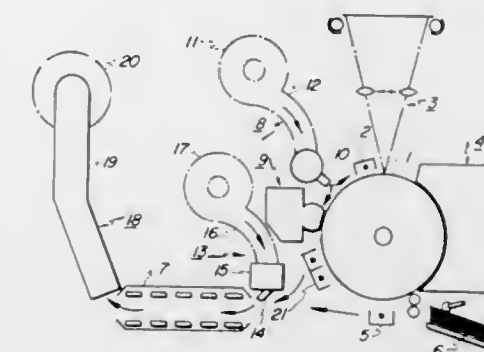
Int. Cl. G03g 15/22

U.S. Cl. 355—3 R

2 Claims

1. A copy machine comprising an enclosure, a rotatable photosensitive material, means for creating a toner image on said material, copy paper, transfer means for transferring said image to said paper, fixing means having an entrance opening and an exit opening through which said paper is moved for permanently fixing said toner to said paper by application of heat thereto, first cooling means for blowing a first air stream onto the surface of said photosensitive material, said first cooling means comprising a blower, ducting, and a nozzle, said blower coupled by said ducting to said nozzle and the outside of said enclosure for drawing air into said enclosure by said blower and directing it through said nozzle toward the

surface of said material, second air directing means for directing a second air stream into said entrance opening of said fixing means, said second air directing means comprising a blower, a nozzle, and duct means operating in conjunction with said blower and said nozzle to withdraw air from outside



3,901,592

COLOR PRINTING APPARATUS

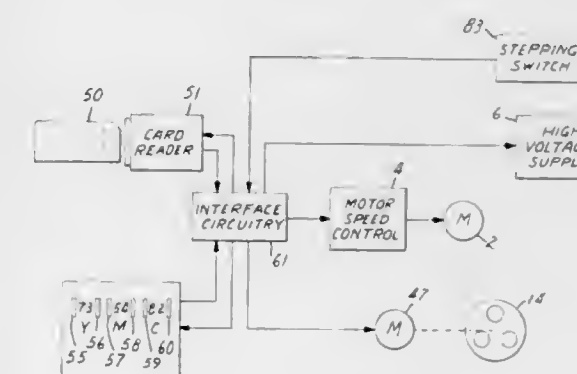
Robert F. Nepper, North St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 15, 1973, Ser. No. 406,189

Int. Cl. G03b 27/76

U.S. Cl. 355—4

4 Claims



1. Apparatus for transferring color material to a receptive sheet from a photosensitive intermediate containing the material with the degree to which the color material is transferred being determined by a parameter of the apparatus that is controllable in response to a control signal, the apparatus including a circuit portion responsive to an input signal for providing the control signal for controlling said parameter; a first source of input data including manually settable controls for establishing the input data from said first source; a second source of input data including a stored data reader for providing input data from said second source; and interfacing circuitry connected to said circuit portion and to said first and second data sources for accepting data from a selected one of said two data sources and responding to the accepted data to provide said input signal for said circuit portion

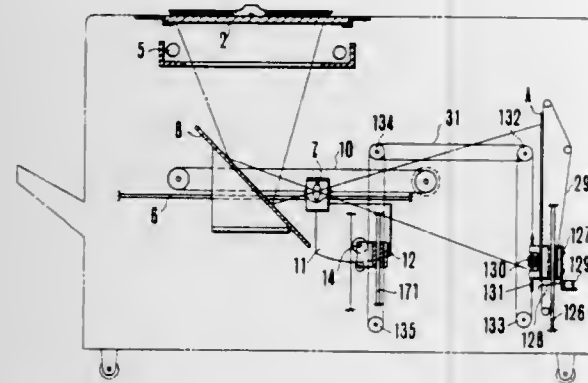
3,901,593 COPYING MACHINES OF THE VARIABLE MAGNIFYING POWER TYPE

Masahiro Kogiso, Kokubunji; Toshio Koike, Hachioji; Junichi Yasui, Tama; Yohsuke Igarashi, Tachikawa; Mitsuo Kuromori, Hino, and Kiyoshi Ishii, Yamanashi, all of Japan, assignors to Iwatsu Electric Co., Ltd., Tokyo, Japan
Filed Mar. 21, 1974, Ser. No. 453,397

Claims priority, application Japan, Mar. 27, 1973, 48-35198; Mar. 27, 1973, 48-35199; Mar. 27, 1973, 48-35201; Mar. 27, 1973, 48-37213

Int. Cl.² G03G 15/00; G03B 27/10
U.S. Cl. 355-11

14 Claims



1. In a copying machine of the type comprising an original supporting member adapted to support an original and a variable magnifying power type optical system including a projection lens for projecting the light image of said original and a reflective mirror located in the path of said light image, said projection lens and said reflective mirror being adjustable in a direction parallel with said original supporting member, the improvement which comprises means for feeding a photosensitive paper into the projection field of said optical system, and a photosensitive paper positioning member interlocked with said optical system through interlocking means for arresting said photosensitive paper at a predetermined exposure position in said projection field in accordance with a given magnifying power.

3,901,594

SEMI-AUTOMATIC DOCUMENT HANDLER

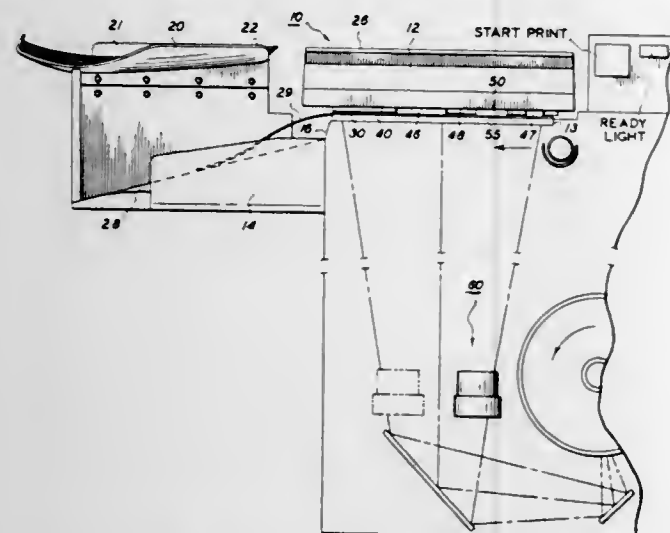
Donald A. Robertson, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 8, 1974, Ser. No. 449,306

Int. Cl.² G03B 27/32

U.S. Cl. 355-18

2 Claims



1. In a copying apparatus with a generally horizontal document copying platen, said platen extending to one side of said copying apparatus to provide for corner book copying on said platen, and further including a platen overlayable platen cover

for holding document sheets on said platen for copying, and ejection means for ejecting documents from said platen toward said one side, the improvement comprising:

upper and lower document trays, both mounted to said same one side of said apparatus closely adjacent said platen,

said upper document tray comprising means for holding a stack of documents and for guiding and supporting movement of said documents from said upper document tray onto said platen,

said upper document tray having a generally horizontal, but concave, main document supporting portion and nearly vertically extending therefrom, but slanted from the vertical, an edge stop, for partially flexurally pre-separating documents stacked in said tray,

said lower document tray being spaced below said upper document tray and below said platen and positioned and formed to guide and catch therein documents ejected from said platen by said ejection means, and

said lower document tray having a document supporting surface extending downwardly sloping away from said platen for supporting the unsupported portion of a book being copied on said platen.

3,901,595

PARALLEL LINE SCANNING SYSTEM FOR STEREOIMAGING

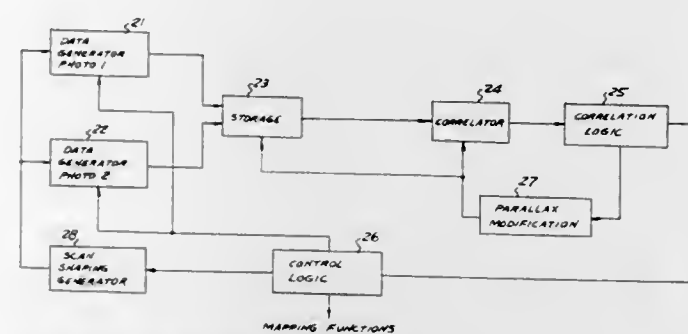
Uuno V. Helava, Southfield; Arliss E. Whiteside, Royal Oak, and Gerald A. Brumman, Farmington, all of Mich., assignors to The Bendix Corporation, Southfield, Mich.

Filed Feb. 13, 1974, Ser. No. 442,024

Int. Cl.² G01C 11/12

U.S. Cl. 356-2

33 Claims



1. In an automatic stereomapper for making a map from a pair of stereoscopic images, said stereomapper having means for mechanically translating said stereoscopic images relative to said stereomapper along a series of parallel lines at predetermined intervals within the area of the stereoscopic images to be mapped, means scanning corresponding areas on both stereoscopic images for generating parallax data indicative of the displacement of corresponding imagery on the stereoscopic images, a control computer for converting the parallax data into information from which the map can be made and means for receiving the information for making the map, an improvement to the means for generating parallax data for generating parallax data about a plurality of parallel lines, disposed parallel to said mechanical translation during each of the translations comprising:

means for generating, during each mechanical translation of said stereoscopic images, blocks of digital data indicative of corresponding imagery on both stereoscopic images about a plurality of parallel lines disposed parallel to the direction of the translation;

means for temporarily storing said blocks of digital data in a predetermined sequence;

means receiving at least two blocks of digital data from said storage means, one block of data indicative of the imagery on one stereoscopic image and the other block of data indicative of the corresponding imagery on the other stereoscopic image for correlating the data in said at least two blocks of digital data in a plurality of shifted relation-

ships to generate correlation data indicative of the correlation at each shifted relationship;

means receiving said correlation data for generating parallax data indicative of the shifted relationship between the data in said at least two blocks of digital data when said correlation data is indicative of maximum correlation; and

means receiving said parallax data for generating a data transfer signal transferring the next two data blocks to be correlated from the storage means to the correlation means and a parallax address modification signal to shift the data in one of the two blocks of digital data transferred to the correlation means to the shifted relationship having maximum correlation during the correlation of the two blocks of data just previously correlated.

3,901,596

LASER TELEMETER

Daniel Vincent, Antony, and Pierre Trevoux, Chateaufort, both of France, assignors to Compagnie Generale d'Electricite, Paris, France

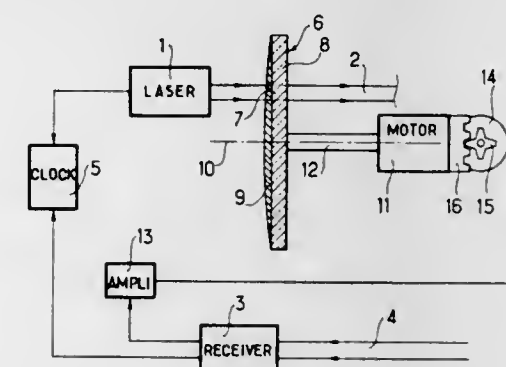
Filed Apr. 25, 1973, Ser. No. 354,422

Claims priority, application France, Apr. 27, 1972, 72.15038

Int. Cl. G01c 3/08; G02b 5/22

U.S. Cl. 356-4

7 Claims



1. A laser telemeter for measuring the distance to a target, comprising:

generator means for emitting a succession of light pulses along a first axis towards the said target, said light pulses travelling along a path at least a portion of which lies along said first axis;

attenuator means, one portion of which is placed in the said path of said pulses, for absorbing partly the energy of the said pulses, said attenuator means comprising several zones such that the fraction of the energy of a pulse absorbed by the said portion is the same when that portion takes up various positions in one of these zones, said fraction being different for the various zones of said attenuator means, each of said zones being centered about an axis of said attenuator means;

photosensitive receiver means for receiving the light pulses sent back by the said target;

means, connected to the said generator and to the said photosensitive receiver, for measuring the interval of time between the leaving of each of said pulses and the reception thereof by said photosensitive receiver;

servo-control means, controlled by said photosensitive receiver, for controlling the position of the portion on said attenuator means so as to be able to move said portion from one of said zones to another to keep the energy of said light pulses received by said photosensitive receiver substantially equal to the predetermined value; and

means for rotating said attenuator about said attenuator axis for causing said portion to continuously move through a zone of constant attenuation, said zone being controlled by said servo-control means.

3,901,597

LASER DISTANCE MEASURING DEVICE

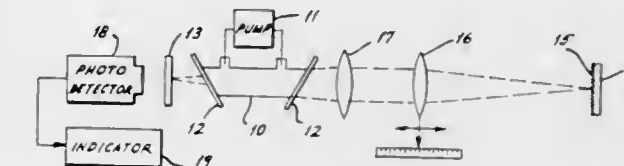
Matthew B. White, Cohasset, Mass., assignor to Philco-Ford Corporation, Blue Bell, Pa.

Filed Sept. 13, 1973, Ser. No. 396,802

Int. Cl. G01c 3/08

U.S. Cl. 356-4

9 Claims



1. An optical system for use in measuring the distance between a part of said system and an object having a non-specular reflecting surface, said system comprising:

a laser,

a focusing lens associated with said laser and positioned to direct laser optical energy into a focal saddle, said lens and said surface comprising a specular reflector for the physical condition where said surface is present inside said focal saddle,

a specular mirror positioned with respect to said lens so that it forms in combination with said lens and said surface a low-Q resonant cavity when said surface is present in said focal saddle,

means operatively associated with said laser for indicating when said surface is present in said focal saddle, and means associated with and responsive to the position of said lens for determining said distance measurement.

3,901,598

APPARATUS FOR EXPOSURE OF COLOR CALIBRATING FILM

Jacques Vanheerentals, Schoten, Belgium, assignor to Agfa-Gevaert AG, Leverkusen, Germany

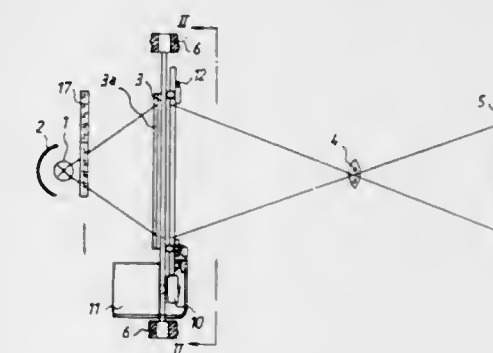
Filed Apr. 26, 1974, Ser. No. 464,687

Claims priority, application Germany, Apr. 26, 1973, 2321002

Int. Cl.² G03B 27/76

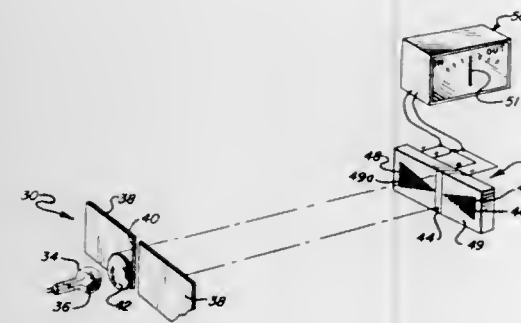
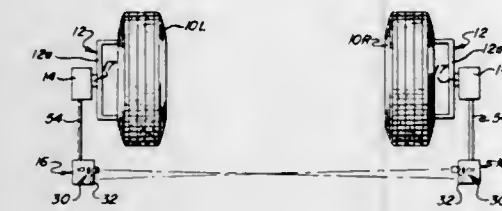
U.S. Cl. 355-71

9 Claims



1. An arrangement for producing a calibrating image upon a test-exposure film specimen, comprising, in combination, holding means for holding in a predetermined plane a test-exposure film specimen upon which the calibrating image is to be formed; a first density wedge and a second density wedge each having a density which varies from approximately 0 percent to approximately 100 percent; mounting means mounting said density wedges for relative movement between a first stationary relative orientation in which the density of said first wedge increases along a first predetermined direction and the density of said second wedge increases along a second predetermined direction transverse to said first direction, and a second stationary relative orientation in which the density of said first wedge increases along said first predetermined direction and the density of said second wedge increases along a second predetermined direction.

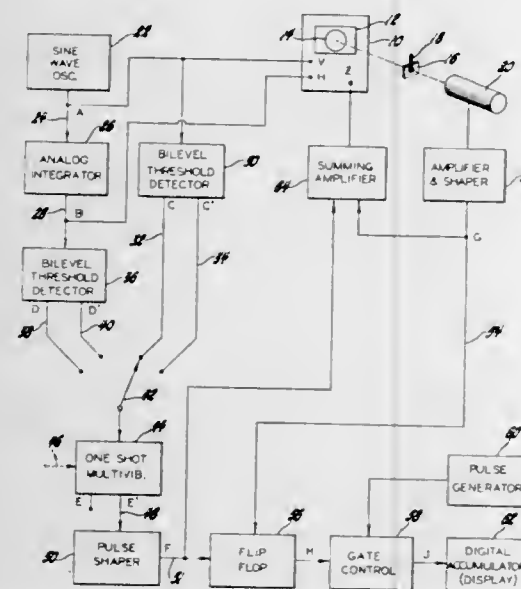
sides of the respective axes, each of said elements providing a response signal which varies in accordance with the



3,901,605
APPARATUS FOR MEASURING ANGULAR POSITION
Norman R. Brainard, Flint, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 5, 1974, Ser. No. 494,522
Int. Cl.² G01B 11/26
U.S. Cl. 356-152

3 Claims



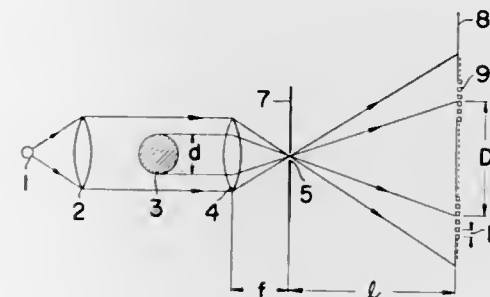
1. An apparatus for determining the angular position of an element relative to a reference point comprising a cathode ray tube, driving circuitry for scanning a light spot in a circular pattern on the cathode ray tube, means for electrically providing a reference signal corresponding to a reference point on the circular pattern, means for producing an output signal when the light spot reaches the angular position of the element including, a light sensor disposed to view the light from a portion of the circular pattern, the element being disposed in the path of the light from the spot to the sensor to control the portion of the pattern viewed by the light sensor according to the angular position of the element, and electrical means responsive to the reference signal and the output signal for determining the angular position of the element relative to the reference point.

3,901,606
NON-CONTACT TYPE DIMENSION MEASURING DEVICE
Kazuo Watanabe, Oobu, and Masasi Mizuno, Ichinomiya, both of Japan, assignors to Daido Seiko Kabushiki Kaisha, Nagoya, Japan

Filed Dec. 17, 1973, Ser. No. 425,692
Claims priority, application Japan, Dec. 27, 1972, 48-1606
Int. Cl.² G01B 11/04

U.S. Cl. 356-159

7 Claims

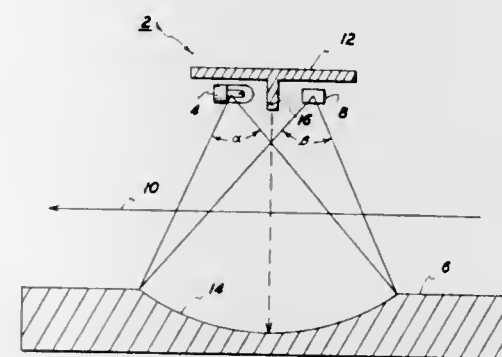


1. A non-contact type dimension measuring device comprising:
a first optical system for projecting collimated rays onto an object to be measured;
a screen means having a plurality of photoelectric converter elements arranged in a plane;
a second optical system for producing an image of said object on said screen means; and
an operational circuit responsive to signals representing the size of said magnified image from said photoelectric converter elements for calculating the dimension of said object;
means for repeatedly vibrating said object; and
a second operational circuit repeatedly receiving signals indicative of the measured value of the dimension of the object from said first operational circuit for calculating an average value thereof.

3,901,607
HIGH APERTURE REFLECTION PHOTODETECTOR APPARATUS
David O. Kingsland, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 21, 1974, Ser. No. 444,454
Int. Cl. G01n 21/18, 21/30
U.S. Cl. 356-199

5 Claims



1. An optical sensing device for sensing the presence and absence of material flowing in discrete units along a flow path, including:
a light source,
a photodetector,
an opaque divider between said light source and said photodetector,
a reflector having a spherical reflecting surface, the center of curvature of said reflecting surface lying midway between said light source and said photodetector,

said light source and said photodetector being respectively in object and image conjugate relationship with said reflector,
said light source, photodetector, and divider being positioned on one side of said flow path, and said reflector being positioned on the opposite side of said flow path so that material flowing therealong in discrete units alternately closes and opens optical communication along an optical path including said light source, said reflector, and said photodetector.

3,901,608
WRITING INSTRUMENT
Phillip Phillips, 30 W. 32nd St., New York, N.Y. 10001
Continuation-in-part of Ser. No. 389,296, Aug. 17, 1973, abandoned, which is a continuation of Ser. No. 221,201, Jan. 27, 1972, abandoned. This application Oct. 9, 1974, Ser. No. 513,228

Int. Cl.² B43K 5/14, 7/02, 5/00
U.S. Cl. 401-135

12 Claims



1. A writing implement comprising a writing element at the lower end, an ink reservoir, an ink carrier providing communication between said reservoir and said writing element and means for venting said ink reservoir defined by axially spaced lower first and upper enlarged second chambers, at least one first passageway extending longitudinally from said first chamber and communicating with the exterior of said implement for providing communication between the exterior and said first chamber, at least one second passageway extending between and communicating with said first and second chambers, said second passageway including portions transversely offset relative to all of said first passageways and a third passageway delineated by said ink carrier and extending along the length thereof and providing communication between said second chamber and said ink reservoir.

3,901,609
CONNECTOR ASSEMBLY FOR SCAFFOLD STRUCTURES

Peter Eric Gostling, Sutton Coldfield, England, assignor to C. Evans & Sons Limited, Ilford, England

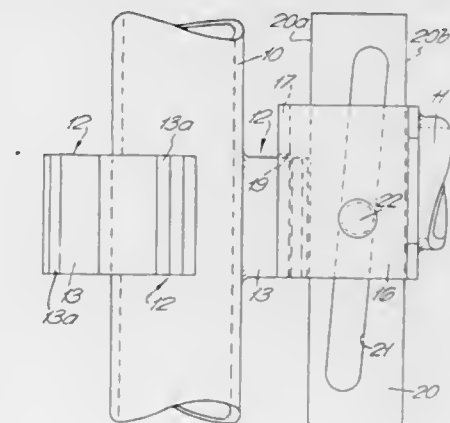
Filed Oct. 10, 1973, Ser. No. 404,995
Int. Cl. E04g 7/30; F16b 7/04

U.S. Cl. 403-49

7 Claims

1. A connector assembly for builders' scaffolding of the kind consisting of upright standards interconnected by cross members to form a rigid structure, said connector assembly comprising a first element of substantially T-shaped cross-section

having a tail portion fixed to an upright standard and a crossbar portion which lies parallel to and spaced from an upright standard, a second element in the form of a pair of spaced side walls and a base wall interconnecting one end of each of said side walls, the other ends of said side walls being fixed to a cross member, a slot formed in said base wall receiving said tail portion of said first element, those portions of said base wall disposed on opposite sides of said slot defining hooks engaging opposite ends of said crossbar portion of said first element, and a rectangular wedge member slidably carried between said side walls of said second element and operably urging said hooks into locking engagement with said crossbar portion of said first element, said wedge member comprising a flat plate and a slot formed in said plate, a pin positioned in



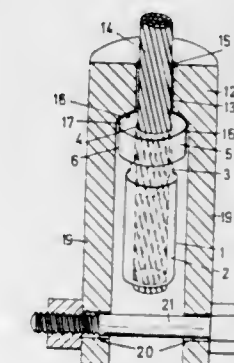
said slot and fixed at its ends to said side walls of said second element, a first side edge of said wedge plate engaging said crossbar of said first element and said slot being inclined relative to said first side edge whereby, in use, movement of said wedge member in one direction relative to said pin urges said crossbar into engagement with said hooks, said first side edge of said wedge plate and an opposed second side edge of said wedge plate being substantially parallel with each other whereby, when said wedge member is moved in one direction, said first side edge will engage with said first element and, when said wedge member is moved in the opposite direction, said second side edge will engage with said cross member so that said wedge member will be retained in a non-operative position to facilitate inter-engagement of said two elements.

3,901,610
TERMINALS FOR STRANDS AND ROPES
Thomas Ernest Mason, Doncaster, England, assignor to Bridon Limited, Doncaster, England
Continuation of Ser. No. 265,560, June 23, 1972, abandoned.
This application July 18, 1974, Ser. No. 489,476
Claims priority, application United Kingdom, July 2, 1971, 31026/71

Int. Cl.² F16G 11/02

U.S. Cl. 403-78

4 Claims



1. A load bearing assembly comprising a metal terminal adapted to be reduced onto a wire rope or wire strand, said terminal having an elongate body, a collar at one extremity of said body, a transitional neck portion merging with said collar

and integrally connecting the collar to said body, said neck portion having a single rounded peripheral depression which is of smaller diameter than said body and said collar for permitting plastic flow of said elongated body on said wire rope or strand upon reduction, said body only being uniformly reduced onto the rope or strand along the length of said body for uniformly gripping the rope or strand, said collar having a bearing surface which is directed away from said body and which extends from the outer periphery to the inner periphery of said collar, the inner periphery of said collar and said transitional neck portion being adapted to be disposed adjacent to the rope or strand in spaced relation to the latter, and a fitting having a cavity which receives said terminal, the fitting having a bearing surface which bears against the bearing surface of said collar when the rope or strand is under tension, whereby the terminal is put under longitudinal compression.

3,901,611 CONNECTOR

Ole Finn Simonsen, Baie d'Urfe, Canada, assignor to Dominion Bridge Company, Ltd., Canada

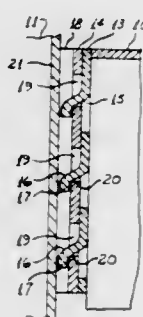
Filed Oct. 15, 1973, Ser. No. 406,322

Claims priority, application Canada, July 18, 1973, 176750

Int. Cl.² F16B 9/02

U.S. Cl. 403—187

5 Claims



1. A joint comprising:
 - a. a pair of frame members each having a flat end face and a flat side face, the two members being interconnected with the end face of one member flatly abutting the side face of the other member;
 - b. each member being formed with a track running parallel to said flat side face and opening into said flat end face;
 - c. a through passageway in each frame member connecting the flat side face and the track thereof;
 - d. a connector having:
 - a first part mounted for sliding motion of said connector along the flat side face of one of said members;
 - said first part consisting of a flat plate inserted into the track of said one of said members to be slidably displaced therein;
 - a threaded axially rotatable second part threaded into a tapped bore opening into the flat end face of the other of said members;
 - said threaded second part consisting of a screw mounted for rotation on said plate to project perpendicularly therefrom;
 - a flat lug integral with said first part inserted into a correspondingly shaped groove of the other of said members to prevent relative rotation of said members; and
 - e. means, provided in said other member, to allow access to said threaded second part for rotation thereof.

3,901,613

UNIVERSAL JOINTING ARRANGEMENT FOR TUBULAR PROFILES

Stig Olof Andersson, Gnosjö, Sweden, assignor to Sture Svensson, Hillerstorp, Sweden

Filed Oct. 11, 1973, Ser. No. 405,533

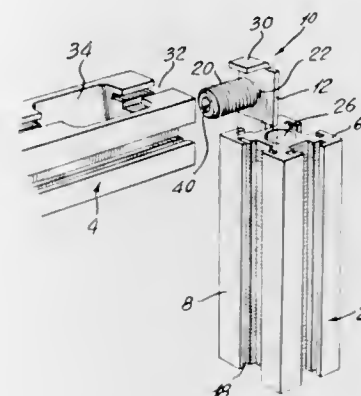
Claims priority, application Sweden, Oct. 12, 1972, 13153/72; Mar. 16, 1973, 7303713

Int. Cl. F16b 7/04

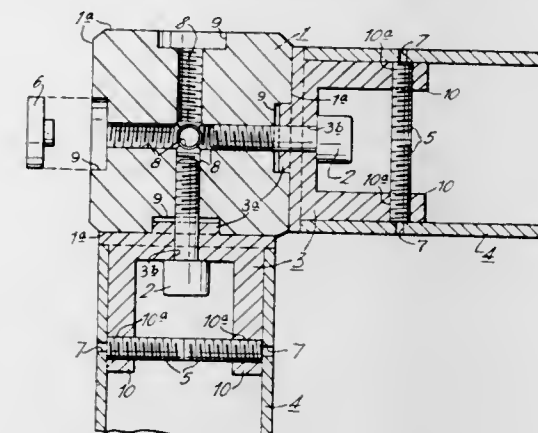
U.S. Cl. 403—406

9 Claims

1. Universal jointing assembly comprising a module body having a plurality of faces, means defining a recess in each of the faces of said module body, at least one connector piece having a projection engaged in one of said recesses and at least one pair of leg members, a jointing screw member securing



said connector piece to said module body, at least one tubular member telescopically engaged over said connector piece and



comprising, by weight, about 12–30% of a hydrocarbonaceous binder, which comprises, by weight, 60–80% of a bitumen having a penetration of 20/30 to 80/100, 10–30% of an oil selected from the group consisting of a heavy anthracenic oil and a chrysene oil, and 2–10% of an elastomer; about 20–40% of filler and about 30–60% of fine sand; and hard granulates set in said grout layer and constituting gripping elements and projecting above said grout layer.

3,901,616

SELF-PROPELLED PAVER

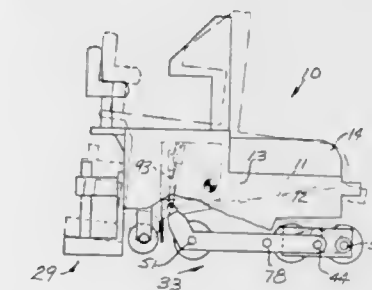
Kenneth J. Greening, 1415 Nashua Dr., Florissant, Mo. 63033

Filed July 22, 1974, Ser. No. 490,318

Int. Cl.² E01C 19/38

U.S. Cl. 404—102

6 Claims



means for expanding said legs members to engage the interior walls of said tubular member.

3,901,614

REFRACTIVE SPHERICAL ROADWAY MARKER

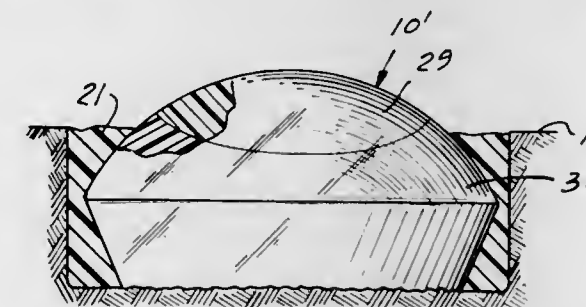
James L. Overacker, 215 Manhattan Dr., Boulder, Colo. 80303

Filed May 31, 1974, Ser. No. 475,143

Int. Cl.² E01F 9/06

U.S. Cl. 404—16

5 Claims



1. A roadway marker comprising a device of transparent material having a front and a back side and comprising:
 - a convex upper refracting surface having a spherical radius over at least part of its front side;
 - a substantially horizontal lower surface of smaller radius than the spherical radius of the upper surface;
 - a surface bounding the refracting and the lower surfaces which is conical on at least the side opposite the side having a spherical radius;
 - the conical surface having a light-reflecting treatment;
 - the conical surface having an angle from the vertical and being of a width such that the treatment of its surface will reflect light refracted through the upper surface from a light source located between one minute of arc and approximately 25° of arc from the horizontal back to said source; and
 said transparent material being characterized by having decreasing hardness from its upper surface to its lower surface, thereby to provide a resilient base an impact-resistant top portion.

3,901,615

SURFACE LAYER FOR ROADWAYS AND A PROCESS FOR PREPARING SAID LAYER

Marcel Ceintrey, Marly le Roi, France, assignor to Societe Chimique Routiere et d'Entreprise Generale, Paris, France

Filed May 24, 1974, Ser. No. 473,296

Int. Cl.² E01C 11/24

U.S. Cl. 404—20

2 Claims

1. A liquidtight and rough surface layer for roadways comprising a layer of about 4–20 kg/sq.m of a solidified grout

comprising, by weight, about 12–30% of a hydrocarbonaceous binder, which comprises, by weight, 60–80% of a bitumen having a penetration of 20/30 to 80/100, 10–30% of an oil selected from the group consisting of a heavy anthracenic oil and a chrysene oil, and 2–10% of an elastomer; about 20–40% of filler and about 30–60% of fine sand; and hard granulates set in said grout layer and constituting gripping elements and projecting above said grout layer.

3,901,617

SELF-PROPELLED VIBRATORY COMPACTOR VEHICLE

George D. Herbst, Milwaukie, Oreg., assignor to Hyster Company, Portland, Oreg.

Continuation of Ser. No. 217,916, Jan. 14, 1972, abandoned. This application Oct. 15, 1974, Ser. No. 514,416

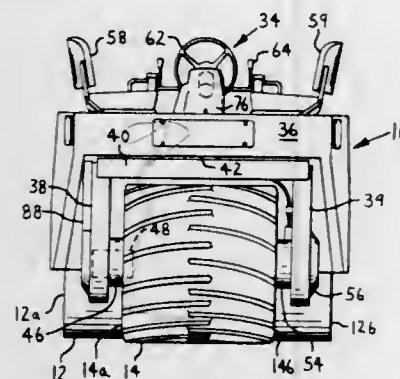
Int. Cl. E01c 19/38

U.S. Cl. 404—117

10 Claims

1. A self-propelled vibratory compactor vehicle especially adapted for compacting loose, granular materials comprising: a one-piece rigid frame,

a single, undriven rigid metal compaction drum supporting one end of said frame and extending substantially the full width of said frame,
vibrator means within said drum for vibrating said drum and resilient means connecting said drum to said frame for isolating said frame from drum vibrations,
a single steerable and driven nonvibrating, high-flotation, low-pressure, wide, flexible, pneumatic tire supporting an opposite end of said frame,



a steering yoke rotatably mounted to said frame and mounting said single tire in a centered position between the opposite sides of said frame, said tire ends terminating inwardly of the corresponding ends of said vibratory drum,
and hydraulic wheel motor means carried by said yoke for driving said tire.

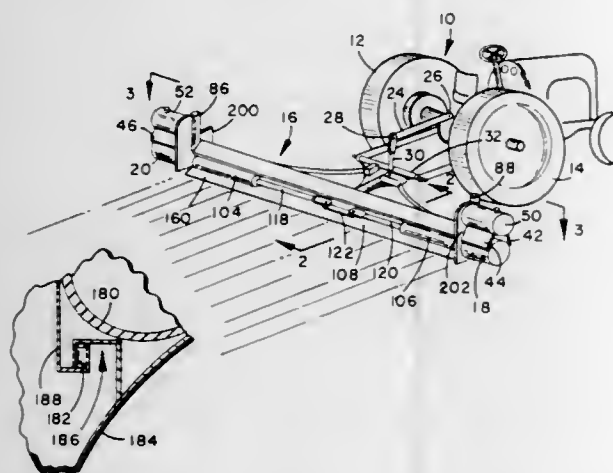
3,901,618 GRADER

Patrick J. Sant'Agata, 5745 E. Hampton Way, Fresno, Calif. 93727

Filed June 13, 1974, Ser. No. 478,847
Int. Cl.² E01C 19/22

U.S. Cl. 404-118

8 Claims



1. The combination of a traction device and a spreading apparatus comprising:

- a spreading apparatus having a pair of spreading blades which axially move across each other to provide a leading main blade surface thereof which can be moved inwardly and outwardly for changing the axial length thereof and the attendant width of its spreading capability;
- a hydraulic ram attached to said blades for operatively moving said pair of blades inwardly and outwardly with respect to each other;
- means connected to said hydraulic ram and said traction device to operatively drive said ram by a hydraulic source of pressure from said traction device;
- a second pair of boundary edge blades each connected to the ends of said first pair of blades which provide the outer extremities and boundaries to the material being spread by the spreading apparatus;
- drums connected to said apparatus for supporting said apparatus as it is being pulled by said traction device; and,

a second hydraulic ram system connected to said first pair of blades and said drums for operatively orienting said blades to the desired level at which said blades are to be moved over the surface of the material it is spreading.

3,901,619

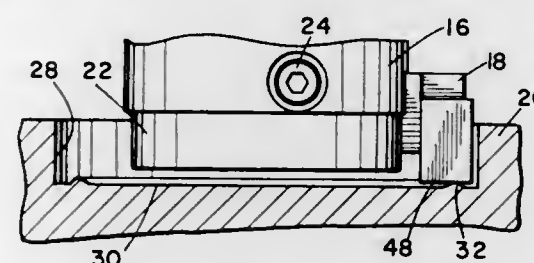
METHOD AND APPARATUS FOR ALIGNING AND MACHINING SURFACES IN CYLINDER HEADS

Vernon A. Scritchfield, 4211 Front St., San Diego, Calif. 92103

Filed Sept. 20, 1974, Ser. No. 507,942
Int. Cl.² B23B 35/00, 49/00

U.S. Cl. 408-1

7 Claims



1. Apparatus for machining cylinder surfaces in cylinder heads for Volkswagen engines and other similar cylinder heads comprising,

- a cylindrical tool holder having one end for being coaxially supported in a rotatable spindle of a drill mechanism, said mechanism can be secured in a fixed position relative to a cylinder bore in the cylinder head,
- a circular ring having a predetermined outer circular edge surface sized for insertion into the cylinder bore with a close fit and having a predetermined inner concentric and centered circular surface forming a hole and sized for receiving the cylindrical tool holder with a close fit, said tool holder supported in said spindle being received in said circular ring supported in the cylinder bore, whereby the tool holder axis is aligned with the axis of the cylinder bore,

and said tool holder having means upon being removed from said circular ring for holding a removable cutting tool with a cutter tip, said tool projects radially outward from the cylindrical surface of the tool holder and said cutter tip has a cutting edge that projects below the bottom surface of the tool holder to machine the bottom of the cylinder bore.

3,901,620

METHOD AND APPARATUS FOR COMPRESSOR SURGE CONTROL

Meherwan P. Boyce, College Station, Tex., assignor to Howell Instruments, Inc., Fort Worth, Tex.

Filed Oct. 23, 1973, Ser. No. 408,809
Int. Cl.² F04D 27/02, 27/00

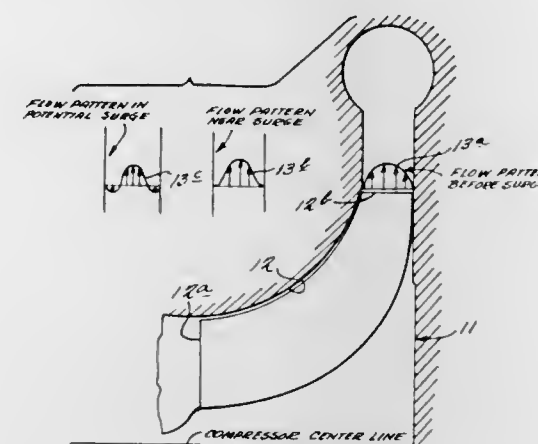
U.S. Cl. 415-1

11 Claims

1. A method of detecting an impending surge condition in a compressor comprising:

- positioning a velocity probe adjacent the wall of the compressor outlet,
- said velocity probe having a flow direction sensing ability at a predetermined portion thereof,
- positioning said predetermined portion of said velocity probe within the boundary layer of material flowing through the compressor and adjacent the wall of the compressor,
- orienting said predetermined portion of said velocity probe at a predetermined orientation with respect to the expected downstream direction of material flow in said boundary layer under non-surge conditions to cause a detectable output indication from said velocity probe whenever said material flow substantially reverses in direction from said expected downstream direction, and detecting an impending compressor surge condition in

response to said output indication from said velocity probe indicating flow reversal in the boundary layer



which is, in turn, indicative of impending surge conditions.

3,901,621

AUGER ASSEMBLY

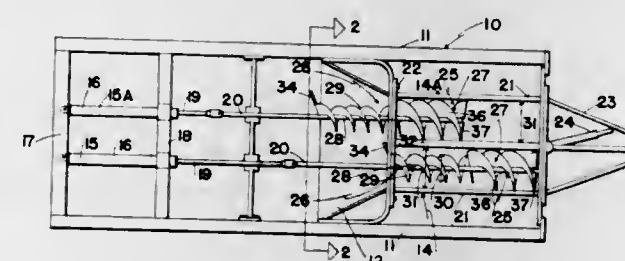
Manson Ivor Coles, Winnipeg, Canada, assignor to Manco Company Limited, Winnipeg, Canada

Filed July 9, 1973, Ser. No. 377,630 The portion of the term of this patent subsequent to Feb. 13, 1990, has been disclaimed.

Int. Cl. F01b 3/00

U.S. Cl. 415-74

8 Claims



1. In a concrete pump assembly which includes a support framework and a hopper in said framework; a pair of auger assemblies in side by side relationship extending from said hopper to convey concrete from said hopper, each of said auger assemblies including an auger tube having a substantially constant diameter extending from said hopper, and an auger flight component within said tube, said component including a feed auger section and a main auger section in end to end relationship one with the other within said tube and supported for rotation therein, each section including an auger flight, the diameter of the auger flight of said feed section being substantially less than the internal diameter of said tube, the diameter of the auger flight of said main section being substantially equal to the internal diameter of said tube, and a fluid operator in said framework for each of said auger assemblies and each connected to the respective auger flight component to reciprocate said component in said auger tube, said fluid operators reciprocating said components whereby one of said feed auger components in said hopper and the other of said feed auger components is in said tube alternately.

3,901,622

YIELDABLE SHROUD SUPPORT

James M. Ricketts, Oxford, Mich., assignor to General Motors Corporation, Detroit, Mich.

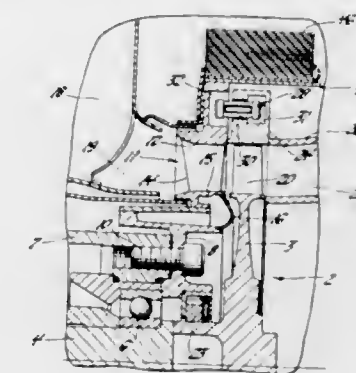
Filed May 31, 1973, Ser. No. 365,444
Int. Cl.² F01D 25/26, 25/28

U.S. Cl. 415-134

2 Claims

1. A turbine stator structure comprising, in combination, a metallic support ring defining angularly distributed radially extending slots in a radial face of the ring; a shroud ring of ceramic material disposed adjacent to the said face; the rings

being coaxial, and the shroud ring defining holes each confronting one of the said slots; and mounting pins each extending into a said slot and into the corresponding hole so as to position and support the ceramic shroud ring and tolerate relative radial expansion of the respective metallic and ceramic material rings, each mounting pin having a head at each



end and having a central portion joining the heads, the central portion having longitudinal slots dividing it into at least three substantially equally spaced radially yieldable struts extending in generally parallel relation between the heads, the central portion extending into a said hole and being of such size as to have a slight interference fit therein to center the pin in the hole.

3,901,623

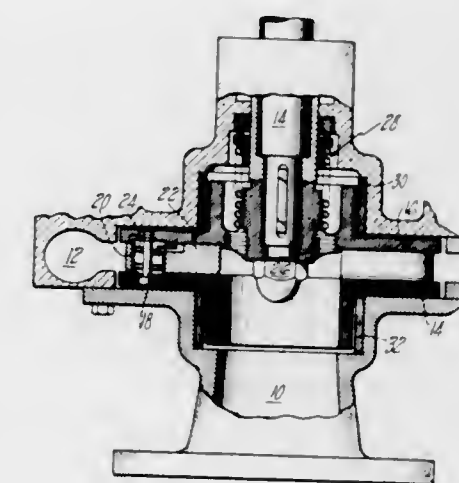
PIVOTAL VANE CENTRIFUGAL PUMP

Charles W. Grennan, Newington, Conn., assignor to Chandler Evans Inc., West Hartford, Conn.

Filed Feb. 8, 1974, Ser. No. 439,844
Int. Cl. F01d 5/12

U.S. Cl. 415-141

2 Claims



1. In a radial flow centrifugal pump, said pump having a drive shaft and a housing which defines an axial inlet and a collector for receiving fluid being pumped, means for varying the pump flow area comprising:

- impeller means, said impeller means including a plurality of pivotally mounted vanes, said vanes being pivotal about axes oriented parallel to and disposed circumferentially about the axis of rotation of the impeller means, said vanes being mounted for pivoting adjacent their discharge ends and being characterized by increasing width from their inlet to discharge ends, said vanes cooperating to define flow channels of variable width therebetween, the shape and mounting of each of said vanes resulting in the generation of a pivotal moment in the direction of maximum flow channel width in response to the summation of the pressure and mechanical forces applied to the vanes;
- means for mounting said impeller means on the pump drive shaft; and

spring means for loading said pivotal vanes toward the channel width position commensurate with minimum flow, said spring means generating forces substantially equal and opposite to the pressure and mechanical forces imposed on the vanes under minimum flow conditions, on the operation of said pump the pressure forces on the vanes and thus the pump blade-to-blade channel width increasing in response to increases in pump back pressure.

3,901,624

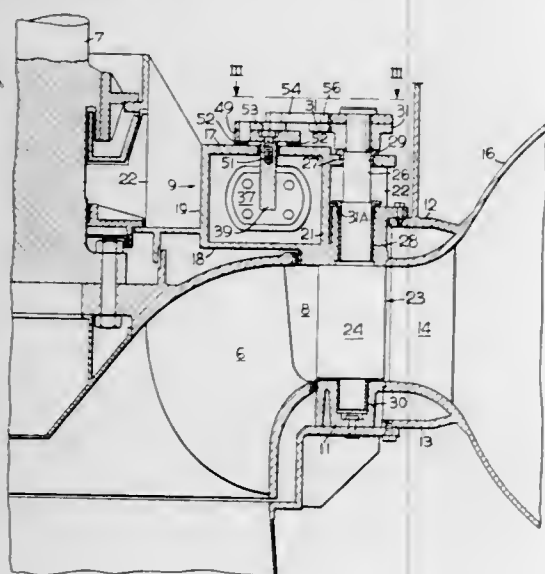
INTEGRATED GATE OPERATING SERVOMOTOR

Howard A. Mayo, Jr., and Robert H. Peterson, both of York, Pa., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 10, 1973, Ser. No. 423,543
Int. Cl. F01d 17/12

U.S. Cl. 415-150

3 Claims



1. A hydraulic turbine having a runner comprising: a head cover constructed of upper and lower ring-like members connected together by a plurality of spaced substantially radially directed rib-like members defining a plurality of box-like liquid tight normal structural compartments; a bottom ring spaced from said head cover and defining therewith a water passageway leading to said runner; a plurality of pivotally supported circumferentially spaced wicket gates disposed across said water passageway; walls defining an opening through at least one of said rib-like members; a pressure fluid operated piston operatively associated with said opening seal means engaging said piston and the associated rib-like member about said opening to provide a fluid tight sliding seal therebetween, said seal and piston defining with the associated compartment a fluid tight chamber on at least one side of said piston; means for providing pressure fluid to said chamber to cause movement of said piston; and means pivotally connecting said piston to said wicket gate to cause pivotal movement thereof upon movement of said piston.

3,901,625

SELF-ADJUSTING FAN VANE

Karlheinz Witzel, Heidelberg, Germany, assignor to Walker Manufacturing Company, Mannheim, Germany
Filed Aug. 27, 1973, Ser. No. 392,085

Int. Cl. F04c 29/38

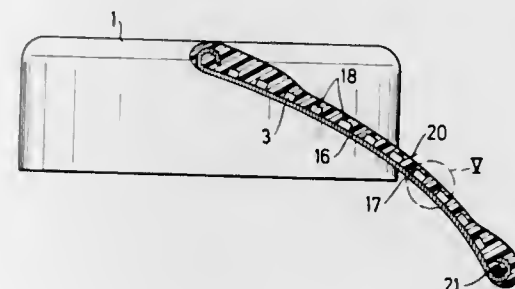
U.S. Cl. 416-132

10 Claims

1. In a fan for an internal combustion engine, in combination:
a. a hub having an axis of rotation and a periphery, and
b. a plurality of vanes extending radially from said periphery in spaced relationship, each vane including a leading edge portion attached to said hub and substantially inflexible, and a flap attached to said leading edge portion and more flexible than said edge portion, said flap including a trailing

edge portion remote from said leading edge portion and having two axially offset surfaces connecting said edge portions, one of said surfaces being concavely arcuate about an axis of curvature approximately radial relative to said axis of rotation,

(1) said flap essentially consisting of synthetic resin composition and a lattice-shaped insert embedded in said composition, the insert being of a material having a coefficient of thermal expansion smaller than the coefficient of thermal expansion of said composition,



(2) said insert including two sets of webs, the webs of each set being elongated in a common direction, being transversely spaced from each other, and transversely intersecting the webs of the other set,

(3) the webs of one set being corrugated about axes of curvature extending in the direction of elongation of the webs of the other set, the webs of said other set being elongated in a direction from one of said edges toward the other edge.

3,901,626

ACTUATING MECHANISM FOR A VARIABLE PITCH FAN OR PROPELLER

David Roberts McMurtry, Bristol, England, assignor to Rolls-Royce (1971) Limited, London, England

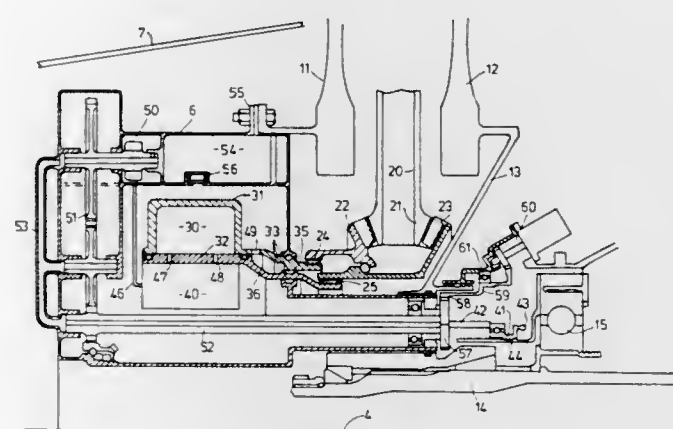
Filed July 30, 1973, Ser. No. 383,510

Claims priority, application United Kingdom, Aug. 10, 1972, 37304/72

Int. Cl. B64c 11/38

U.S. Cl. 416-157

1 Claim



1. An engine comprising:
a bladed rotor having variable pitch fan blades, means for rotating the fan blades about their longitudinal axes to vary their pitch,
an actuating mechanism for varying the pitch of said fan blades, said mechanism comprising in combination, a casing, means connecting the casing to the bladed rotor for rotation therewith about the axis of the engine, a hydraulic actuator, a pump, a hydraulic fluid tank for supplying hydraulic fluid to the pump, and a valve supplied with fluid from the pump and selectively operable to supply the fluid to the hydraulic actuator,

said actuator, pump, tank and valve all being contained within and rotatable with said casing, means for sealing the casing against egress of said fluid therefrom, means including a splined connection for connecting the actuator to the blade rotating means, means for driving the pump for supplying pressurized fluid to the actuator during normal operation of the engine, auxiliary drive means for selectively providing a second drive to the pump, said auxiliary drive means being disposed externally of the casing of the mechanism and being connected to drive the pump by means of a gear, and

said actuating mechanism being a complete module which can be assembled and removed as a unit through disconnection of the splined connection.

3,901,627

SPINNER ASSEMBLY FOR MODEL AIRPLANES

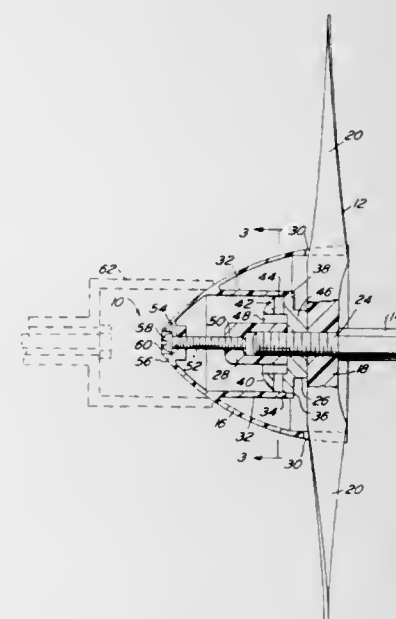
Matthew A. Sullivan, Elkins Park, Pa., assignor to Sullivan Products, Inc., Willow Grove, Pa.

Filed July 17, 1974, Ser. No. 489,319

Int. Cl. B64c 11/14

U.S. Cl. 416-245

12 Claims



1. In a spinner assembly for attachment to a threaded propeller shaft of a model airplane comprising a propeller having hub and blade portions, a generally conical, hollow nose cap, and first and second threaded nuts for fastening said propeller to said threaded shaft, said first threaded nut abutting against said propeller hub and said second threaded nut abutting against the opposite side of said first nut from said propeller hub, the improvement comprising flange means extending from the interior surface of said nose cap and shoulder means on said first threaded nut, said flange means frictionally engaging said shoulder means when said nose cap is in operating position.

3,901,628

HYDRAULIC PUMP WITH AIR VENT VALVE

Siegfried Bornholt, Lohr, Main, and Georg Schmitt, Taubertschhofshelm, both of Germany, assignors to G. L. Rexroth GmbH, Lohr, Main, Germany

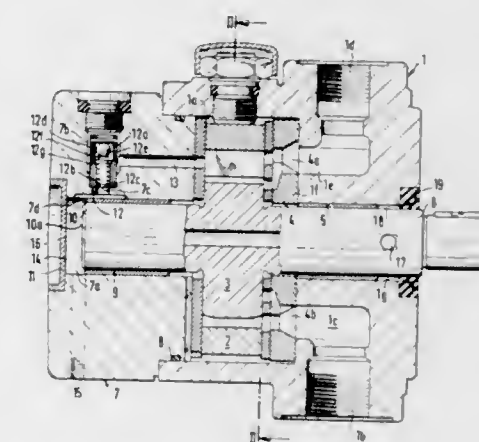
Filed Apr. 24, 1974, Ser. No. 463,781

Claims priority, application Germany, June 1, 1973, 2327814

Int. Cl. F04B 49/08

U.S. Cl. 417-299

9 Claims



1. In a hydraulic pump, particularly a vane pump, a combination comprising a stator including housing means formed with an axial bore having a closed end and an open end, said stator having inlet means for admission of hydraulic fluid, and outlet means for pressurized fluid; a rotor in said stator; shaft means coaxial with and fixed to said rotor, said shaft means having a pair of coaxial portions respectively projecting to opposite sides of said rotor and being rotatably mounted in said axial bore, one of said portions projecting beyond the open end of said bore and the other of said portions ends short of said closed end of said bore so as to define with said closed end a pocket for fluid leaking along said shaft means; channel means for evacuation of leak fluid from said pocket; and an air vent valve installed in said stator, said valve having an intake opening communicating with said outlet means, a discharge opening communicating with said pocket, and a valve member arranged to seal said openings from each other in response to increasing fluid pressure at said inlet opening such as develops on completion of priming of the pump.

3,901,629

ASPIRATOR-EJECTOR ADAPTED TO ASPIRATE AND TO SUPPLY TWO FLUIDS WITHOUT MIXING THEM

André Robert Chancholle, 20 Ave. Frizac, and Jean Maurice Francois Perissé, 19 Rue Paul Vidal, both of Toulouse 31, France

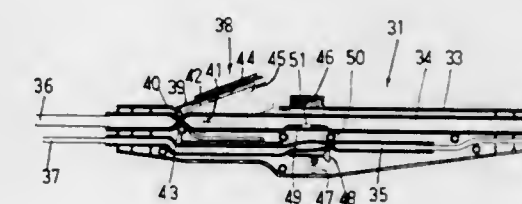
Filed Oct. 15, 1973, Ser. No. 406,466

Claims priority, application France, Oct. 18, 1972, 72.36929; Apr. 26, 1973, 73.15232

Int. Cl. F04B 43/06

U.S. Cl. 417-395

6 Claims



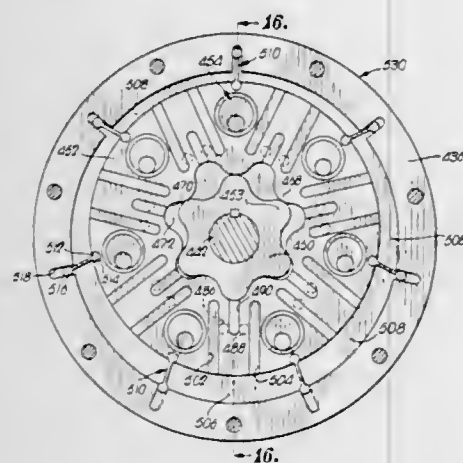
1. Aspirator-ejector apparatus adapted to aspirate and supply two fluids without their mixing, said apparatus comprising an aspiration tube adapted for connection to a vacuum source, a supply tube adapted for connection to a reservoir of supply fluid,

closure means for said aspiration tube for normally interrupting communication between the aspiration tube and the vacuum source,
 closure means for said supply tube for normally interrupting communication between the aspiration tube and the vacuum source,
 at least one control means for opening both said closure means, and
 a pump including a flexible, sealed member defining first and second distinct chambers, the first chamber being connected to the vacuum source, the aspiration tube and the corresponding closure, the second chamber being connected to the supply tube, the reservoir and the corresponding closure means,
 said aspiration tube and said supply tube being constituted of flexible material capable of being pinched to close the tubes to fluid passage, said control means including two independent control elements manually operable and having normal positions in which said tubes are pinched and closed, said control elements respectively comprising a pawl and a button having normal raised positions.

3,901,630

FLUID MOTOR, PUMP OR THE LIKE HAVING INNER AND OUTER FLUID DISPLACEMENT MEANS

John B. Kilmer, 900 S. 8th St., Lamar, Colo. 81052
 Division of Ser. No. 166,672, July 28, 1971, Pat. No. 3,796,525. This application Mar. 7, 1974, Ser. No. 449,000
 Int. Cl.² F01C 1/02; F03C 3/00; F04C 1/02
 U.S. Cl. 418-59 13 Claims



1. In a device of the class including fluid motors, pumps and certain activators, meters, couplers and the like, in which energy is translated from fluid to mechanical or from mechanical to fluid manifestations thereof, the combination of:

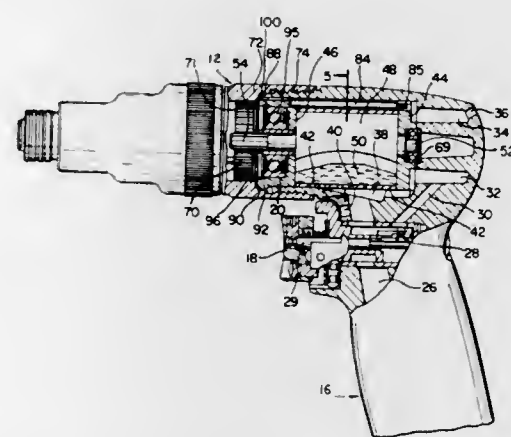
- a pair of elements,
- said elements being relatively movable with respect to each other;
- means for supporting said elements for relative rotational movement therebetween;
- a member,
- said member being relatively movable with respect to each of said elements respectively;
- first fluid displacement means for effecting a fluid coupling between said member and one of said elements at a plurality greater than two of zones between said member and said one element, the effective volumes of said zones being individually variable and at any time dependent upon the relative position of said member and said one element;
- said first fluid displacement means including means for effecting fluid ingress and egress connections with said zones in a predetermined order for the selective introduction or removal of fluid;
- means for effecting both fluid and mechanical couplings between said member and the other of said elements,

said coupling means including interengaging epicyclic gear means having cooperating tooth means on said member and said other element respectively, said tooth means on said member having a different number of teeth than said tooth means on said other element to provide a mechanical gear ratio different from unity between said member and said other element,
 said gear means forming a part of structure presenting second fluid displacement means including a plurality greater than two of fluid displacement chambers between said member and said other element, the effective volumes of said chambers being individually variable and at any given time dependent upon the relative positions of said member and said other element,
 said second fluid displacement means additionally including means for selectively effecting fluid ingress and egress connections with said chambers in a predetermined order for the selective introduction or removal of fluid; and
 further means, separate from and operably sufficient independently of both of said fluid displacement means and said gear means, for supporting said member and for limiting said predetermined movements to relative orbital movement between said member and said one element and to relative orbital and rotational movements between said member and said other element,
 said further means providing said support for the member and said limitation of relative movement between the member and the respective elements without reliance upon mechanical forces transmitted through said tooth means and comprising a plurality greater than two of spaced eccentric crank means intercoupling said member and said one element.

3,901,631

PNEUMATIC MOTOR AND HOUSING ASSEMBLY

John Lupton Wickham, Glen Arm; Robert Anthony Meloni, Baltimore, and Jack Ralph Veara, Sykesville, all of Md., assignors to The Black and Decker Manufacturing Company, Towson, Md.
 Filed Mar. 19, 1974, Ser. No. 452,502
 Int. Cl.² F01C 21/00; F04C 15/00
 U.S. Cl. 418-70 17 Claims



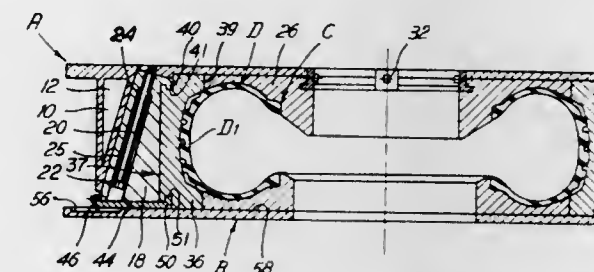
1. A pneumatic motor subassembly adapted for installation in the housing of a portable pneumatic power tool, said subassembly comprising a generally cylindrical rotor member having a plurality of vanes disposed for radial movement therein; a pair of shaft ends extending axially from the ends of said rotor; a tubular liner surrounding said rotor; a pair of front and rear end plates disposed at opposite ends of said liner and said rotor; a pair of anti-friction bearings mounted in the surfaces of said end plates remote from said rotor; means retaining said bearings on said shaft ends of said rotor to hold said end plates, said liner and said rotor in assembled relationship as a separate preassembled motor subassembly; and means retaining said liner and said end plates in predetermined aligned relative positions prior to and during installation of said motor within a power tool housing, said alignment means comprising

corresponding grooves entirely contained in the outer peripheries of said liner and of said front and rear end plates, and a retaining pin disposed within all of said grooves and also entirely contained in the outer peripheries of said liner and of said front and rear end plates.

3,901,632

VULCANIZING MOULD FOR PNEUMATIC TYRES AND THE LIKE

Tito Prosdociml, Rovereto, Italy, assignor to Meccanica Marangoni S.p.A., Rovereto-Trento, Italy
 Filed Oct. 23, 1973, Ser. No. 408,326
 Claims priority, application Germany, Nov. 7, 1972, 2254334
 Int. Cl.² B29H 5/02
 U.S. Cl. 425-47 6 Claims



1. A vulcanizing mould for pneumatic tires, comprising: a first plate positionable over one side of a tire to be vulcanized; a counter plate positionable over the opposite side of the tire and in opposed relationship to said first plate; said first plate carrying first ring means on the side thereof facing said counter plate; said first ring means having a generally truncated cone shaped surface that faces radially inwardly of the tire and that extends around the circumferential periphery of the tire when said first and counter plates are brought into engagement with the opposite sides of the tire;

said counter plate engaging with a second ring means on the side thereof facing said first plate; said second ring means having a radially outwardly facing surface that engages and cooperates with said first ring surface, such that moving said first and said counter plates together shifts said second ring means radially inwardly;

said second ring means being comprised of a plurality of segments, each of which is comprised of two separate elements; one of said segments elements being radially outward of the other radially inward element; all said outward elements having a respective outward surface and these element surfaces together defining said outwardly facing surface of said second ring means and all said outward elements also having clamping means for releasably clamping the respective said inward elements; each said inward element having clamping means that are securely but releasably clamped by said clamping means of said outward element, whereby said elements of each said segment are clamped together, and release of said clamping means permits easy removal of said inward element from said outward element; said clamping means comprising a clamping plate that is removably secured to said outward element of each of said segments; each said clamping plate including a first projection extending from said clamping plate toward said inward element; said inward element clamping means comprising a first groove for receiving said first projection and said first projection extending into said first groove; said clamping plates being at one axial end of said second ring means; at the opposite axial end of said second ring means, said outward element clamping means further comprising a second projection from each said outward element extending toward said inward element; said clamping means further comprising a second cooperating groove in

each said inward element to receive a said second projection and said second projection extending into said second groove, whereby said outward and inward elements are securely locked together by means of said first and second projections extending into the respective said grooves;
 on the radially inward side of each said inward element is a profile for moulding the tread on the tire circumferential periphery;
 radial movement guide means on said second ring means and on said counter plate and in cooperative engagement with each other for guiding the radial motion of said second ring means segments that is caused by their cooperative engagement with said first ring means conical surface;
 cooperating guide elements connected with said second ring means for guiding motion of said second ring means relative to said first ring means and for retaining continuous engagement of said first ring means inward surface with said second ring means outward surface, thereby to cause radial shifting of said second ring means segments as said first and counter plates move.

3,901,633

APPARATUS FOR CONTINUOUSLY VULCANIZING MATERIALS IN THE PRESENCE OF HYDROGEN OR HELIUM

Willis L. Chrisman, Fairmont, Ind.; John D. Stauffer, De Kalb, Ill., and Edwin H. Arnaud, Jr., Eden, N.C., assignors to The Anaconda Company, New York, N.Y.
 Division of Ser. No. 224,876, Feb. 9, 1972, Pat. No. 3,846,528, which is a continuation-in-part of Ser. No. 842,418, May 9, 1969, Pat. No. 3,645,656. This application May 3, 1974, Ser. No. 466,808
 Int. Cl.² B29F 3/08
 U.S. Cl. 425-72 4 Claims



1. Apparatus for vulcanizing polymeric coverings and the like on an electric cable comprising a tube forming a vulcanizing chamber, a pressurized source of a gas selected from the group consisting of helium and hydrogen, a gas inlet to said chamber connected to said source of gas, said chamber being maintained filled with said gas under pressure, an extruder head in sealed relation to and at one end of said chamber for continuously extruding a covering on said cable and for continuously feeding the covered cable into said gas-filled chamber, heating means exterior to and substantially surrounding said chamber for heating said covered cable by conduction through said gas and means downstream of said chamber to permit egress of said cable continuously therefrom while sealing the chamber.

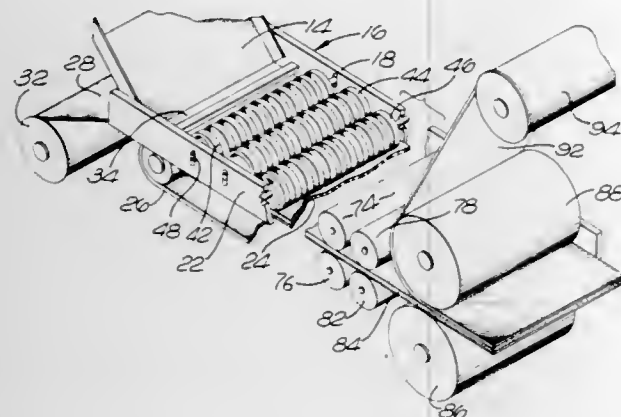
3,901,634

COMPACTOR FOR PRODUCING CEMENT WALL PANELS

John B. Webb, 1020 W. Bay Ave., Newport Beach, Calif. 92661, and Harley W. Burr, 1611 N. Freeman, Santa Ana, Calif. 92706
 Filed Nov. 9, 1972, Ser. No. 305,213
 Int. Cl. B28b 19/00; B29d 7/14
 U.S. Cl. 425-115 9 Claims

1. Apparatus for converting dry cement mix into concrete panels comprising:
 means for inserting said cement mix into one end of said apparatus;

means for compacting said dry cement mix comprising:
a plurality of rotatable members tandemly spaced apart along the axis of said apparatus and a generally planar surface movable along the axis of said apparatus; and
means for continuously feeding a flexible sheet onto said planar surface;



3,901,635

CONTROL SYSTEM FOR BRIQUETTERS

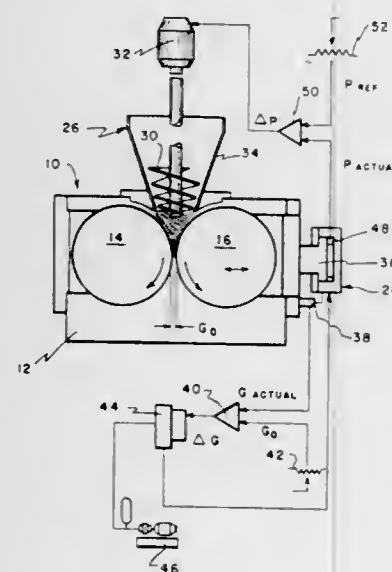
Joseph Irwin Greenberger, Pittsburgh, Pa., assignor to Wean United, Inc., Pittsburgh, Pa.

Filed Feb. 8, 1974, Ser. No. 440,921

Int. Cl.² B29C 3/06, 15/00; B30B 3/00

U.S. Cl. 425-145

3 Claims



1. A control for a briquetting machine or the like, said machine having a pair of relatively movable cooperating rolls forming a roll gap between which material to be compressed is fed and a screw for feeding material to said roll gap,
separate power means for causing said relative movement between said rolls and for varying the rate of feed of said screw,
a transducer associated with said power means for said rolls for measuring the relative movement therebetween and for producing a signal representative of said measurement,

a second transducer associated with said power means for said rolls for measuring a change in the power developed by said power means for said rolls and producing a signal representative of said measurement, and
a control means for receiving said signals and for comparing said signals with values representing desired values for said measured values and for controlling the operation of said power means to vary the relative positions of said rolls and the rate of feed of said screw to produce a substantial constant thickness and constant density product.

3,901,636

PLASTIC EXTRUSION AND ODOR ELIMINATION APPARATUS

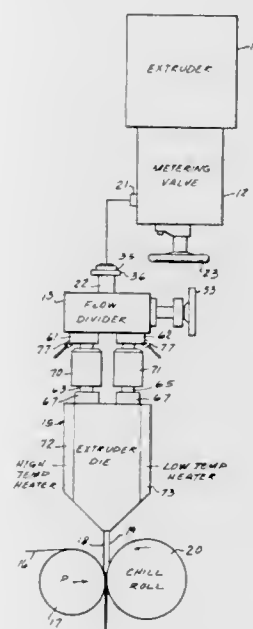
Stanley C. Zink, Beloit, Wis., and William R. Penrod, Rockton, Ill., assignors to Beloit Corporation, Beloit, Wis.

Filed June 11, 1973, Ser. No. 368,958

Int. Cl.² B29D 7/02; B29F 3/08

U.S. Cl. 425-378

4 Claims



1. In a flow divider valve for coating and deodorizing hot melt plastic and in combination with an extruder and a metering valve supplying hot melt plastic to the flow divider valve and a dual slot die downstream of the flow divider valve, for extruding two streams of hot melt plastic film at different temperatures for coating a substrate,

a valve body having an inlet therein and spaced outlets leading from said valve body for connection with inlets of the dual slot die,

a passageway in said valve body leading at right angles with respect to said inlet, and a flow divider slidably guided in said passageway and having a peak positionable in alignment with the center line of said inlet to equally divide the flow of hot melt plastic to flow along said passageway in opposite directions, said flow divider being generally cylindrical in cross section and having a sliding fit with said passageway and having oppositely sloping sides terminating into a peak conforming generally to the form of the passageway and movable along said passageway and inlet to divide the flow to flow in opposite directions along said passageway proportionate to the positioning of said peak along said inlet,

and means adjustably moving said flow divider along said passageway and selectively proportioning the flow of hot melt plastic through said outlets.

3,901,637

APPARATUS FOR TAIL REMOVAL IN BLOW MOLDING MACHINES

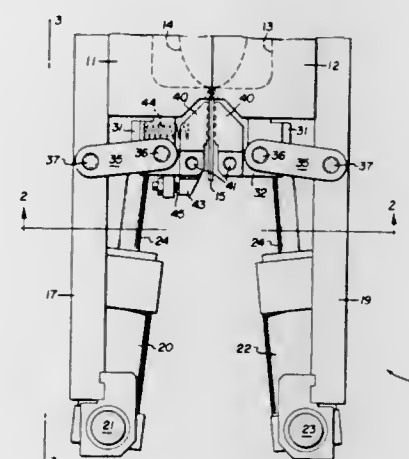
Noel B. Eggert, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Dec. 17, 1973, Ser. No. 425,317

Int. Cl. B29d 23/03

U.S. Cl. 425-387 B

9 Claims



4. In a blow molding apparatus having opposed blow mold sections defining a blow mold cavity therebetween, the blow mold sections pinching shut a tubular parison positioned in a first plane to create a tail exteriorly of said blow mold cavity, the improvement of opposed tail pulling elements mounted respectively on said mold sections, resilient means urging said elements toward said first plane for engaging said tail on said first plane, and means for moving said tail pulling elements along a compound path away from said blow mold cavity, said path having a first portion during which said tail pulling elements move toward each other and away from said blow mold sections and a second portion during which said tail pulling elements move away from each other and away from the blow mold sections.

3,901,638

APPARATUS FOR PRODUCING BIAXIALLY STRETCHED RECEPTACLES BY BLOW MOLDING

Shinsuke Yoshikawa, and Yuji Sawa, both of Iwaki, Japan, assignors to Kureha Kagaku Kogyo K.K. and Mitsui Toatsu Chemicals, Inc., both of Tokyo, Japan

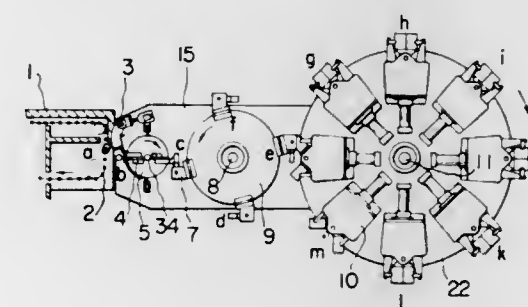
Division of Ser. No. 367,927, June 7, 1973. This application Apr. 19, 1974, Ser. No. 462,561

Claims priority, application Japan, June 7, 1972, 47-56101

Int. Cl. B29d 23/03

U.S. Cl. 425-326 B

9 Claims



1. An apparatus for blow molding a receptacle from a thermoplastic comprising:

a. means to heat unstretched, individual parisons;
b. a delivery rotary rotatable about a vertical axis, said delivery rotary having a plurality of gripping chucks attached thereto to grip and maintain said parisons in a vertical orientation as said delivery rotary rotates;

c. transfer means to remove one parison at a time from said heating means and transfer it to one of said chucks on said delivery rotary;

d. a stretching rotary rotatable about a vertical axis and disposed adjacent said delivery rotary;

e. a plurality of stretching chucks attached to said stretching rotary, said stretching chucks having a portion to grip each end of each parison and remove it from said delivery rotary;

f. stretching means attached to said stretching rotary to cause said stretching chuck portions gripping each end of said parison to move away from each other at equal speeds while said stretching rotary rotates continuously;

g. a molding rotary rotatable about a vertical axis and disposed adjacent said stretching rotary;

h. a plurality of molds attached to said molding rotary, each mold being separable so as to enable it to be clamped about the stretched parison, and having means to cut off the portions of the parisons gripped by said stretching chucks, and means to grip and seal the ends of the parison within the mold;

i. means to blow mold said parison retained in said mold as said molding rotary rotates continuously; and

j. means to synchronously drive said delivery rotary, said transfer means, said stretching rotary, and said molding rotary.

3,901,639

SHEET PLASTIC ARTICLE POLISHING APPARATUS

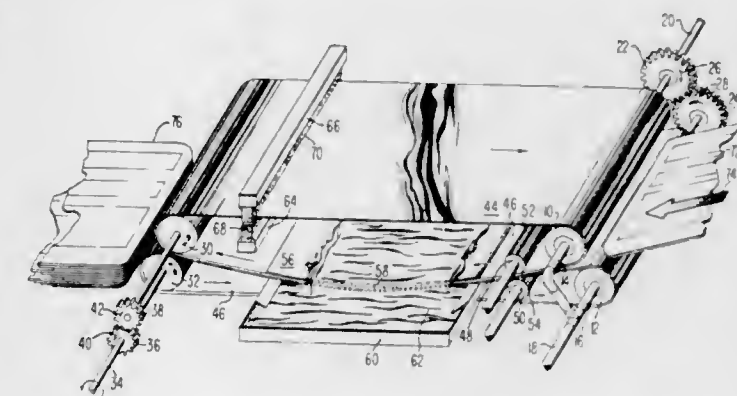
David R. Mandelson, Rochester; Leo H. Miller, Penfield, and Dunham Briggs Seeley, Fairport, all of N.Y., assignors to Burroughs Corporation, Detroit, Mich.

Filed Dec. 19, 1973, Ser. No. 425,983

Int. Cl.² B29C 15/00

U.S. Cl. 425-371

2 Claims



1. Apparatus for polishing the back-to-back surfaces of relatively flat plastic sheet-like articles having a relatively thin cross-section dimension between said back-to-back surfaces, said apparatus comprising: first and second rotatable endless belts, each belt having an inside surface and an outside surface, said first and second belts being arranged relative to each other such that substantial portions of their outside surfaces are in contacting face-to-face relationship, said outside surfaces of each belt having a high gloss, mirror-like finish, each belt being made of flexible metallic material which is adapted for retaining heat at a relatively high temperature for a controllable period of time; a first pair of longitudinally spaced-apart rolls mounted within said first belt and in contact with said inside surface thereof, one roll of said first pair of rolls being adapted for being rotatably driven so as to rotate said first belt and thereby rotatably drive the other roll of said first pair of rolls, said other roll of said first pair of rolls having an enclosed chamber therein; a second pair of longitudinally spaced-apart rolls mounted within said second belt and in contact with said inside surface thereof, one roll of said second pair of rolls being adapted for being rotatably driven so as to rotate said second belt and thereby rotatably drive the other roll of said second pair of rolls, said other roll of said

second pair of rolls having an enclosed chamber therein, said one rolls, of said first and second pair of rolls being situated adjacent each other and said other rolls of said first and second pair of rolls being situated adjacent each other; first means for rotatably driving said one rolls of said first and second pairs of rolls whereby said first and second endless belts as well as said other rolls of said first and second pairs of rolls are rotated synchronously so that said contacting face-to-face outside surfaces of said first and second belts move at substantially the same linear speeds in the same direction, said same direction being in a direction from said adjacent other rolls toward said adjacent one rolls; second means for delivering a heated fluid to said enclosed chambers of said other rolls of said first and second pair of rolls so as to enable transfer of heat from said fluid and other rolls to said first and second endless belts thereby elevating the temperatures of said belts to a relatively high temperature; first and second squeeze rollers situated within said first and second endless belts, respectively, and adjacent said other rolls of said first and second pair of rolls, said first and second squeeze rollers being in pressure contact with the inside surfaces of said belts so as to force the outside surfaces of said belts into face-to-face contacting relationship; a stationary arcuate member situated within said first endless belt and contacting the inside surface of said first endless belt so as to force the face-to-face contacting outside surfaces of said first and second belts to follow an arcuate path as said first and second belts move in the afore-said same direction; and, third means adapted for retaining a heat quenching liquid, said third means being located with respect to said arcuate member and said face-to-face contacting outside surfaces of said belts such that said belts move in an arcuate path through said third means and are contacted by the heat quenching liquid.

3,901,640

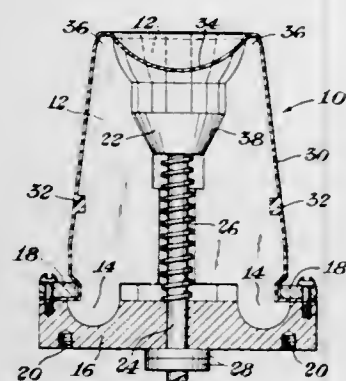
EXPANDABLE FORMING PLUG

Reuben A. Tigner, Bay City, and Lewis S. Mounts, Midland, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 3, 1973, Ser. No. 421,005
Int. Cl. B29c 1/00

U.S. Cl. 425-403

3 Claims



1. An expandable plug for use in cooperation with a forming mold in apparatus for producing hollow articles from thermoplastic synthetic resinous sheeting or film comprising, a plurality of adjacent elongated pivotal segments, means for holding one end of said segments in a juxtaposed pivotal relationship with each other, means for moving the other opposing ends of said segments outwardly away from one another as said segments advance and force said sheeting or film into said forming mold, means for returning said segments to their original adjacent position as said segments are withdrawn from said forming mold and a flexible, resilient cover or sleeve positioned around said plurality of segments.

3,901,641

COMPACTING STEP BY STEP

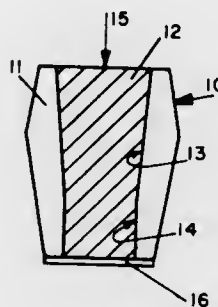
Harald Onder, Wetzikon, Switzerland, assignor to Swiss Aluminium Ltd., Neuhausen am Rheinfall, Switzerland

Division of Ser. No. 262,247, June 13, 1972, Pat. No. 3,876,744. This application July 5, 1973, Ser. No. 376,340
Claims priority, application Switzerland, June 24, 1971, 9231/71

Int. Cl. B29C 3/00

U.S. Cl. 425-406

6 Claims



1. An axially elongated mold for continuously producing a continuous length of product by step-by-step compacting a composition comprised of small particles and a binding agent, said mold being open ended, vertically arranged and longitudinally divided into a plurality of segments, said mold being of polygonal internal cross-section, moving means operable for synchronously moving all of said segments inwardly and outwardly in a direction transverse to the longitudinal axis of said mold, to produce the step-by-step compaction from more than two lateral directions, said segments, in combination, being shaped to form, in the downward axial compacting direction, a first tapered mold cavity and then a second mold cavity having walls parallel to the axis of said mold.

3,901,642

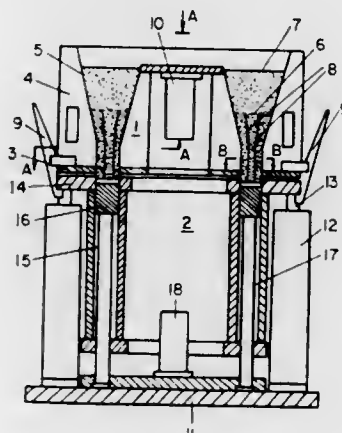
APPARATUS FOR THE PRODUCTION OF PRESSURE-SHAPED PARTS FROM ORIENTED WOOD PARTICLES

Urman Alexandrov Urmanov, and Veselin Georgiev Ivanov, both of Sofia, Bulgaria, assignors to DSO Mebel, Sofia, Bulgaria

Filed Dec. 10, 1973, Ser. No. 423,486
Claims priority, application Bulgaria, Apr. 25, 1973, 23437
Int. Cl. B29c 3/00

U.S. Cl. 425-410

2 Claims



1. An apparatus for producing shaped bodies from oriented wood particles, comprising:
a base;
a plurality of fluid operated cylinders connected to said base;
means movable relative to said base and connected to said cylinders for displacement thereby and defining a verti-

cally extending mold cavity opening upwardly along a horizontal face;
a ram conforming to the configuration of said cavity and mounted on said base for compacting a mass of particles within said cavity between said face and said ram upon displacement of said face toward said base;
an orienting device removably mounted on said face and including:
a parallel-wall chamber registering with said mold cavity, a downwardly converging chamber communicating with said parallel-wall chamber and disposed thereabove, means for vibrating said chambers, a plurality of vertically extending parallel plates spaced apart in said chambers for orienting wood particles descending therein upon vibration of said chambers; and a grid disposed between said chambers, said particles passing through said grid upon vibration; and press platen adapted to bear against said face upon removal of said device to compact oriented wood particles in said cavity between said ram and said platen upon displacement of said face toward said base by said platen.

3,901,643

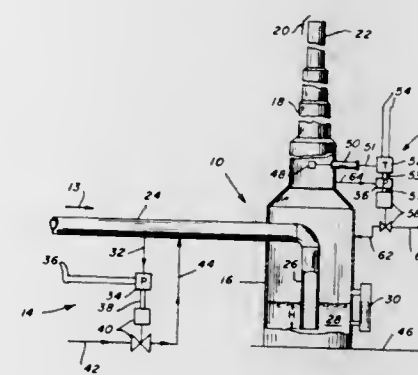
TEMPERATURE-PRESSURE ACTIVATED PURGE GAS FLOW SYSTEM FOR FLARES

Robert D. Reed; John S. Zink, and Robert E. Schwartz, all of Tulsa, Okla., assignors to John Zink Company, Tulsa, Okla.

Filed Aug. 30, 1974, Ser. No. 502,159
Int. Cl. F23d 13/20

U.S. Cl. 431-202

9 Claims



1. The temperature-pressure activated purge gas flow system for waste gas flares comprising:
a. a flare gas system including flare stack conduit means to introduce flare gas into said stack, pilot ignition means and means to introduce purge gas into said system;
b. means to measure the temperature and the pressure in said flare gas system and to determine the temperature difference between said temperature and a selected ambient temperature; and
c. means responsive to said temperature difference and to said pressure to control the flow of purge gas into said flare gas system.

3,901,644

IMPROVED BURNING FUEL OIL BURNING SYSTEM

Gregorio Cardenas Armas, Las Palmas (Canary Island) Paraguay 7, Las Palmas, Spain

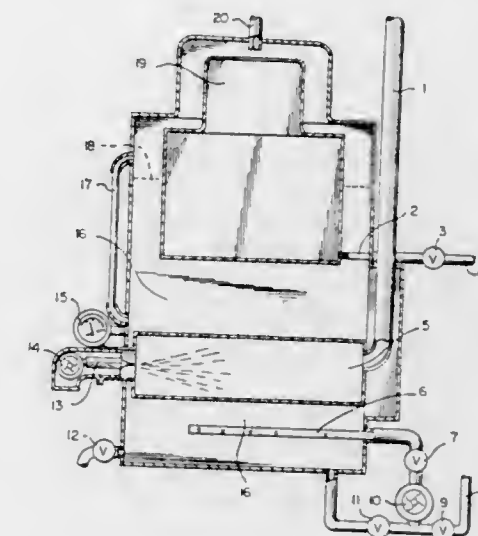
Division of Ser. No. 368,582, June 11, 1973. This application
Apr. 5, 1974, Ser. No. 458,455
Int. Cl. F23d 11/44

U.S. Cl. 431-217

8 Claims

1. An apparatus for burning fuel-oil, said apparatus comprising:

a water tank;
means for heating water in said tank;
means for injecting fuel-oil into said tank so that said fuel-oil rises through the hot water to form a layer in the top of said tank;
a combustion chamber including an openended mixing chamber for fuel-oil and water;



a fuel-oil line communicating between said tank and the mixing chamber, said fuel-oil line including a heater for heating said fuel-oil and a pump for pumping said fuel-oil to said mixing chamber;
means for injecting a jet of water into said mixing chamber to form an intimate mixture of fuel-oil and water; and means for supplying to the open end of said mixing chamber sufficient air to support combustion of the mixture.

3,901,645

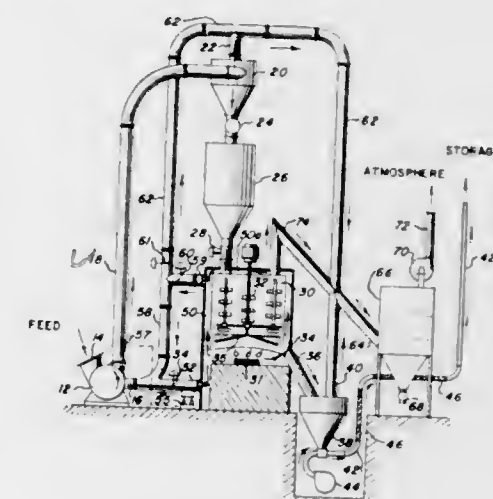
CALCINING KETTLE AND SYSTEM

George E. Rowland, Lombard, Ill., assignor to Universal Kettle Company, Inc., Chicago, Ill.

Filed Apr. 7, 1971, Ser. No. 132,126
Int. Cl. F27b 15/00, 15/12

U.S. Cl. 432-16

21 Claims



1. A device for calcining particulate material comprising a kettle having a side wall and a bottom wall, means for agitating the particulate material in the kettle, flat flame burner means for heating the bottom wall, and a luminous wall furnace surrounding and facing the side wall for heating the side wall with radiant heat, said luminous wall furnace including a porous material having a firing surface facing said side wall at which combustion takes place to generate principally radiant energy to be directed toward said side wall and a manifold on the side of said surface opposite said side wall for receiving an air-gas mixture and applying the mixture to said porous material for flow therethrough to said firing surface.

19. A method of calcining particulate material which comprises delivering said material to a calcining kettle, heating the material in the kettle, recovering calcined product from the kettle, recovering steam from the kettle, separating dust from said materials, combining the recovered steam and separated dust, collecting the same and further including the step of separating dust from the recovered product and combining with the steam and dust from the feed.

3,901,646

FURNACE CONSTRUCTION

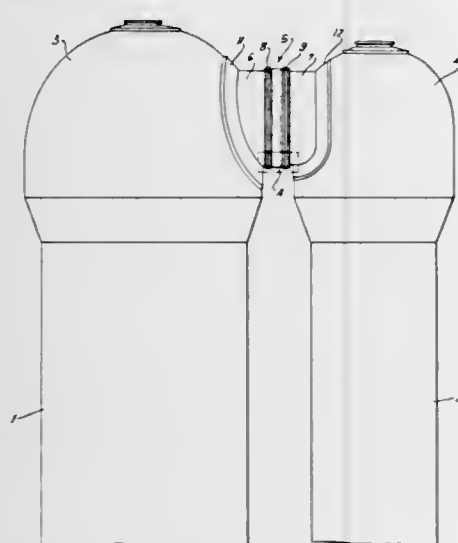
Willi Coenders, and Franz Trockel, both of Essen, Germany, assignors to Heinrich Koopers GmbH, Essen, Germany
Division of Ser. No. 300,623, Oct. 25, 1972. This application Oct. 16, 1973, Ser. No. 406,780

Claims priority, application Germany, Oct. 26, 1971, 2153225; Feb. 23, 1972, 2208479

Int. Cl. F24h 7/00

U.S. Cl. 432-214

7 Claims



1. In a furnace, a combination comprising a combustion chamber and an air heater chamber; a pair of tubular sockets each connected to and communicating with one of said chambers and each having a free end, said free ends facing toward one another; a pair of annular reinforcing members each rigidly connected with one of said free ends, one of said reinforcing members being telescoped into the other reinforcing

member and defining therewith a radial gap communicating with the interior of said reinforcing members and sufficient to permit limited relative displacement of said tubular sockets in radial direction, said reinforcing members being provided with respective external and internal shoulders which project into said gap and bear upon one another for preventing axial separation of said tubular sockets; and means for shielding said shoulders against contact with the contents of said sockets and reinforcing members, said shielding means including a labyrinthine-type seal mounted in said gap intermediate said shoulders and the region where said gap communicates with said interior.

3,901,647

LOW RADIATION OPEN-BOAT CRUCIBLES

Lloyd A. Relyea, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 26, 1974, Ser. No. 464,581

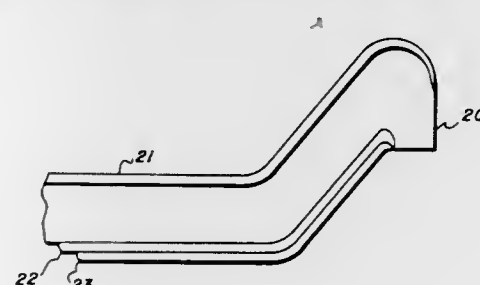
Int. Cl. F27b 21/04

U.S. Cl. 432-264

8 Claims

1. A metal crucible apparatus having a highly infrared radiating upper surface which includes at least one material selected from the group consisting of tantalum, molybdenum, columbium, stainless steel and SiO₂ which includes a cavity suitable for holding a source of evaporant material, said crucible having a bottom or underside which contains a thin homogeneous reflecting coating of gold, with the gold coating being confined to the bottom of said crucible.

8. A metal crucible apparatus having an upper surface, a cavity suitable for holding a source of evaporant material, an



underside containing a silicate layer, a thin chromium layer overlaying the silicate layer, and a substantially continuous layer of gold overlaying the chromium layer.

CHEMICAL

3,901,648

COMPOSITION FOR THE COLOURATION OF POLYURETHANES

Paul Georges Louis Arbaud, Chantilly, France, assignor to Ugine Kuhlmann, Paris, France

Continuation of Ser. No. 133,439, April 12, 1971, abandoned.

This application Mar. 19, 1973, Ser. No. 342,564

Claims priority, application France, Nov. 20, 1970, 70.41760

Int. Cl. D06p 3/24

U.S. Cl. 8-4

5 Claims

1. A method for the coloration of a shaped article of polyurethane or a polymer based on a polyurethane, which comprises, applying a coloring composition in a single step to the surface a shaped article of said polyurethane or polymer based on a polyurethane at a temperature from ambient temperature up to 50° C, said coloring composition comprising 1 to 20% of a dyestuff, soluble in alcohols, consisting of either a metal-liferous complex of an azo dyestuff of the 1:2 type, or a sulphonic salt of a dyestuff with an amine of high molecular weight, and 10 to 85% of a solvent containing an alcoholic function selected from the group consisting of methanol, ethanol, propanol, isopropanol, butanol, isobutanol, isoamyl alcohol, and mixtures thereof, and 1 to 35% of a polar and aprotic solvent selected from the group consisting of dimethylformamide, dimethylacetamide and mixtures thereof, and 1 to 50% of a hydroxy-free organic solvent selected from the group consisting of methyl, ethyl, propyl, isopropyl, butyl, amyl and isoamyl acetates of monomethyl and monoethyl ether of ethylene glycol.

3,901,649

PROCESS FOR TREATING FABRICS AND THREE-COMPONENT FABRICS OBTAINED THEREFROM

Razmic S. Gregorian, Aiken, S.C., and Hans R. Hoernle, Augusta, Ga., assignors to United Merchants and Manufacturers, Inc., New York, N.Y.

Division of Ser. No. 209,456, Dec. 17, 1971, Pat. No.

3,797,996. This application Dec. 11, 1973, Ser. No. 423,681

Int. Cl. D06M 15/20

U.S. Cl. 8-114.5

8 Claims

1. A process for making a decorative flocked fabric comprising:

- coating a substrate with a flock adhesive binder wherein said substrate is a napped fabric composed of textile materials selected from the group consisting of nylon, cellulosic materials and polyacrylic materials, wherein the binder is applied to the napped side;
- applying a flock selected from the group consisting of nylon, cellulosic materials, and polyacrylic materials to the coated substrate and permanently securing the flock to the substrate by curing the binder;
- applying a chemical shrinkage agent to the substrate and to the flock;
- drying the fabric; and
- washing the fabric.

3,901,650

TEXTILE FLAME RETARDANTS

Peter Golborn, Lewiston, and James J. Duffy, Buffalo, both of N.Y., assignors to Hooker Chemicals and Plastics Corporation, Niagara Falls, N.Y.

Division of Ser. No. 239,793, March 30, 1972, Pat. No.

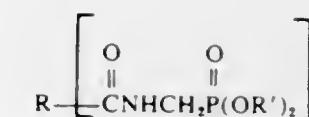
3,823,206. This application June 29, 1973, Ser. No. 374,826

Int. Cl. D06m 1/00, 3/00

U.S. Cl. 8-115.7

18 Claims

1. A process for rendering textiles flame retardant which comprises applying to said textile a flame retardant amount of a compound of the formula



wherein R' is selected from the group consisting of phenyl, lower alkenyl and halogen substituted and unsubstituted lower alkyl of 1-6 carbon atoms, y is an integer from 1-2 provided that when y is 1, R is selected from the group consisting of hydrogen, lower alkyl of 2-8 carbon atoms, benzyl, lower dialkylphosphonoalkyl and phenoxyethylene and when y is 2, R is lower alkylene of 1-4 carbon atoms.

3,901,651

TREATING WATER TO RETARD CORROSION

Robert S. Benner, Blissfield, and Larry A. Green, Adrian, both of Mich., assignors to Aquaphase Laboratories, Inc., Adrian, Mich.

Continuation of Ser. No. 150,829, June 7, 1971, abandoned, which is a continuation of Ser. No. 783,394, Dec. 12, 1968, abandoned. This application Mar. 1, 1973, Ser. No. 337,106

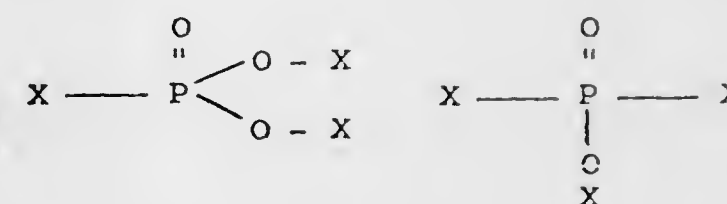
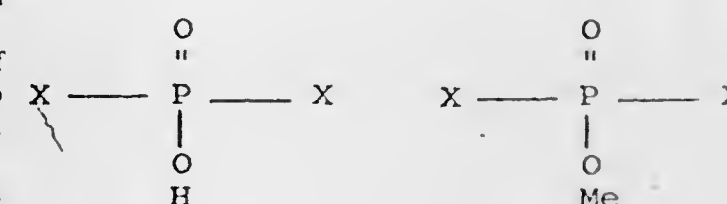
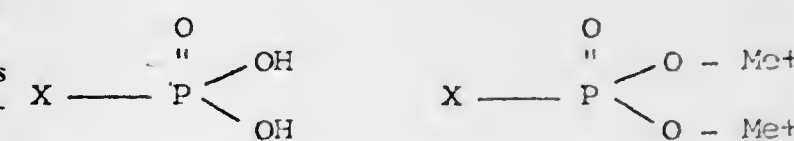
Int. Cl. C23F 11/16, 11/18, 14/02

U.S. Cl. 21-2.7 A

10 Claims

1. The method of treating water in a water system to retard the corrosion of the metals which contact the water in the system which comprises adding to the water a composition consisting essentially of a water soluble phosphone or phosphine in a concentration of about two ppm to 20 ppm, a water soluble sulfonated lignin in a concentration of about four ppm to 20 ppm, and a water soluble metal cation in a concentration of about one ppm to 10 ppm, said sulfonated lignin including a component selected from the group consisting of products which are oxidizable to form α carboxylic acid, β carboxylic acid, or mixtures of the two,

said water soluble phosphone or phosphine being selected from the group consisting of



where X = aromatic, aliphatic, or cyclic hydrocarbons with or without nitrogen sulfur, phosphorous, hydroxy groups, carboxy, Me = metal and maintaining the pH of the system between 6 and 9,

said cation being selected from the group consisting of nickel, zinc, lead, cobalt, magnesium, antimony, tin and chromium or mixtures thereof.

3,901,652

APPARATUS FOR PROCESSING AND TREATING FELLED TREES

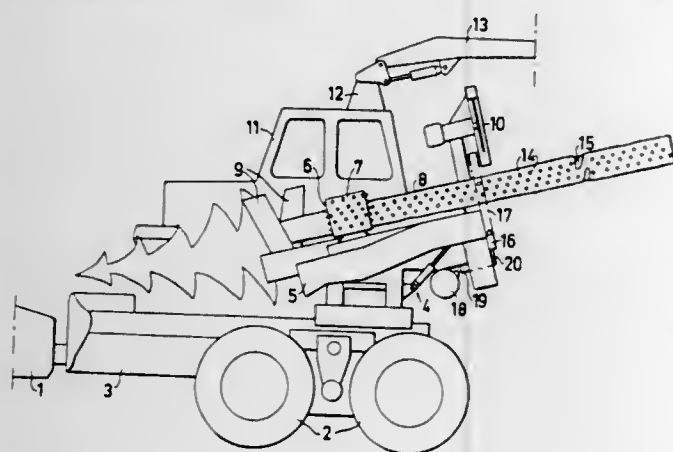
Karl Thore Lindblom, Alfta, Sweden, assignor to Ostbergs Fabriks AB, Alfta, Sweden

Filed Sept. 13, 1973, Ser. No. 397,046

Int. Cl. B27k 3/02

U.S. Cl. 21-63

1 Claim



1. In the known apparatus for processing felled trees which includes:

- a main frame,
 - feed rolls on said main frame having friction increasing gripping members thereon for engaging the trunk of a felled tree and moving said felled tree in a direction generally corresponding to the longitudinal axis of the tree trunk, and
 - delimbing means located adjacent said feed rolls for removing limbs from said tree trunk,
- the improvement which comprises:
- an array of nozzles disposed annularly around the path which each tree trunk is to follow at a location adjacent to said feed rolls, each nozzle being directed radially toward the line of movement of a tree trunk as it is being fed longitudinally by said feed rolls,
 - means for feeding said nozzles with a liquid to protect the portions of the tree trunk which have been pierced or depressed by the gripping members of the feed rolls against attack by fungus, and
 - means for correlating the spraying of liquid through said array of nozzles with the longitudinal movement of a tree trunk through said feed rolls.

3,901,653

LIQUID SAMPLING DEVICE

Robert H. Jones, Fullerton, and Charles V. Hummel, La Habra, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed July 19, 1973, Ser. No. 380,908

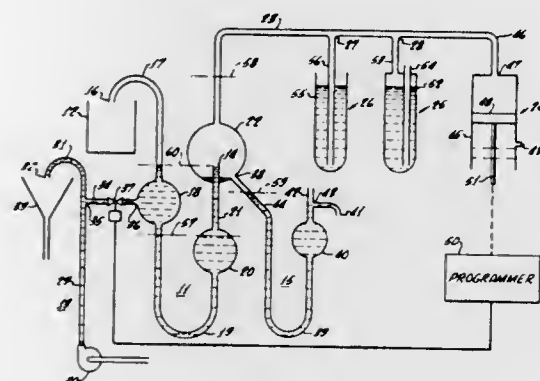
Int. Cl. F04F 1/00; G01N 1/10

U.S. Cl. 23-230 R

23 Claims

19. A method of dispensing a predetermined quantity of a liquid sample to a recipient system having a dosing tube, a supply tube, and a drain tube, including the steps of:
- supplying air under vacuum, atmosphere and pressure to said dosing tube during corresponding vacuum, vent, and pressure portions of an operation cycle;
 - passing a liquid sample from a source through said supply tube to said dosing tube during the vacuum portion of a cycle of operation;
 - blocking the flow of said liquid sample from said supply tube to said dosing tube during the vent and pressure portions of a cycle of operation;

removing liquid from said dosing tube in excess of a predetermined quantity through said drain tube during the vent portion of a cycle of operation; and



discharging liquid in said dosing tube to said recipient system during the pressure portion of a cycle of operation.

3,901,654

RECEPTOR ASSAYS OF BIOLOGICALLY ACTIVE COMPOUNDS EMPLOYING BIOLOGICALLY SPECIFIC RECEPTORS

Stanley J. Gross, Encino, Calif., assignor to Biological Developments, Inc., Encino, Calif.

Filed June 21, 1971, Ser. No. 155,261

Int. Cl. G01n 33/16

U.S. Cl. 23-230 B

2 Claims

1. Fluorescent method of assaying quantitatively for a compound which is specific for a receptor compound, which comprises producing a mixture, suitable for fluorometric assay, of (1) a sample to be analyzed, (2) a known quantity of the receptor compound in its purified form and which is biologically specific for the compound to be assayed, and (3) a known quantity of a fluorescence quenching compound, possessing an absorbance spectrum corresponding to the emission spectrum of the receptor, and which is homologous to said assay compound so as to bind with said receptor competitively; and analyzing said mixture for receptor fluorescence quenching.

3,901,655

URINE TOXICOLOGY CONTROL

Ravindra Shivprasad Shukla, Monsey, N.Y., and Joseph Diago Pinto, Ridgewood, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Dec. 26, 1973, Ser. No. 428,564

Int. Cl. G01n 33/16

U.S. Cl. 23-230 B

6 Claims

1. The method of making a lyophilized normal human urine drug control from pooled normal human urine for use as a control in human urine drug screening and analysis procedures which comprises:
- mixing a washed styrene-divinylbenzene copolymer resin and human urine together in the ratio of about 5 grams of resin per 100 ml. of urine for about one-half hour;
 - separating the resin treated urine from said resin;
 - filtering the separated resin treated urine through an infusorial earth bed;
 - adding known concentrations of pure drugs to the filtered urine; and
 - lyophilizing the drug containing urine.

3,901,656

APPARATUS AND METHOD FOR PREPARING AND PRESENTING SERUM CHEMISTRIES FOR ANALYZATION

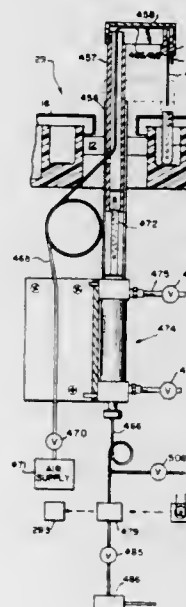
Larry George Durkos; Charles Dewey Christle, both of Indianapolis; Jerry William Denney, Carmel; Jon Caton Trusty; Walter Lee Reynolds, both of Indianapolis; Robert Wayne Cole, Zionsville; Fred Edwin Brinson, Danville, and Allen Kent Lovell, Indianapolis, all of Ind., assignors to American Monitor Corporation, Indianapolis, Ind.

Continuation of Ser. No. 283,415, Aug. 24, 1972, abandoned, which is a continuation-in-part of Ser. No. 179,013, Sept. 9, 1971, abandoned. This application Mar. 20, 1974, Ser. No. 452,728

Int. Cl. G01N 31/00, 33/16

U.S. Cl. 23-230 B

42 Claims



31. A method of preparing a succession of serum chemistries for analyzation, comprising the steps of conveying a plurality of serum specimens each contained in a specimen container along a first path; selecting particular ones of said serum specimens to be analyzed; successively transferring a predetermined amount of each of said particular serum specimens to individual chemistry containers in a chemistry conveying means, said transferring step for each of said selected serum specimens including the steps of sealing the specimen container containing one of the selected serum specimens, inserting a pressure tube into the sealed container and connecting said pressure tube to a first fluid under pressure to pressurize said container to a predetermined and substantially constant pressure level, inserting one end of a pickup tube into the serum specimen in said sealed container, venting the other end of said pickup tube through a venting valve for a predetermined time period to allow the pressure in the sealed container to cause a predetermined amount of the serum specimen to flow into said pickup tube, moving said pickup tube to a position for communication with one of said chemistry containers, and connecting the other end of said pickup tube through a first valve to a supply of a second fluid under pressure and selectively opening said first valve for a predetermined time period to allow said second fluid to flow into the other end of said pickup tube to cause a predetermined amount of the serum specimen in said pickup tube to flow into said chemistry container; and dispensing a predetermined and repetitive amount of a preselected reagent into each of said chemistry containers.

3,901,657

DEVICE FOR TESTING SOLUTIONS AND BODY FLUIDS

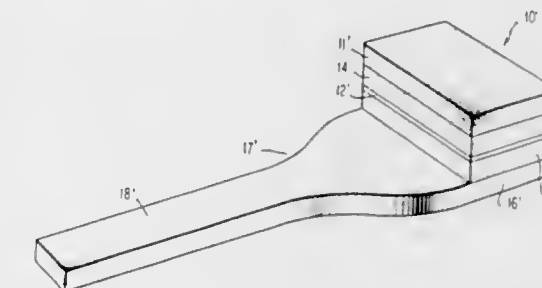
Charles L. Lightfoot, Chatham, N.J., assignor to Sun Scientific, Incorporated, New York, N.Y.

Filed Apr. 29, 1974, Ser. No. 465,330

Int. Cl. G01N 33/16, 21/06

U.S. Cl. 23-253 TP

13 Claims



1. A reactive test device capable of converting morphine to a chromogenic compound comprising a first portion including a morphinophilic agent and a second portion including a periodate reagent for morphine capable of reacting with morphine to produce a chromogenic compound which produces a visually observable color at a pH of about 11 to 13.

3,901,658

WHOLE BLOOD ANALYSIS ROTOR ASSEMBLY HAVING REMOVABLE CELLULAR SEDIMENTATION BOWL

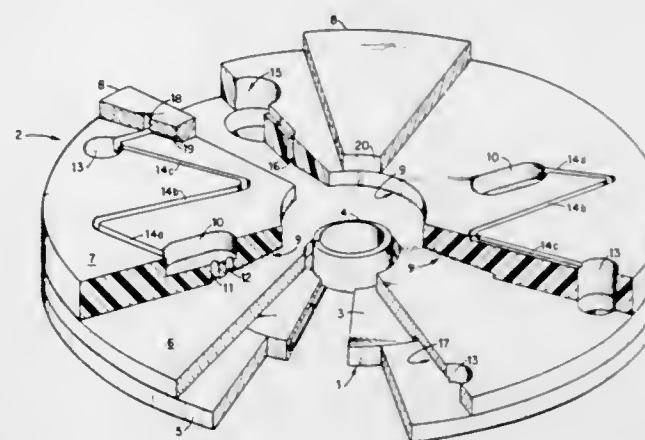
Carl A. Burtis, Knoxville, and Wayne F. Johnson, Loudon, both of Tenn., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed July 30, 1974, Ser. No. 493,006

Int. Cl. B04B 5/12; G01N 33/16, 21/00, 1/10

U.S. Cl. 23-259

7 Claims



1. A rotor assembly for a photometric solution analyzer of the rotary cuvette type suitable for use in analyzing whole blood samples comprising:
- a generally disk-shaped main rotor body defining:
 - an annular plasma distribution manifold;
 - a plurality of volume measuring chambers distributed in a circular array, said volume measuring chambers being in liquid flow communication with said plasma distribution manifold;
 - means limiting the centripetal level of plasma in said volume measuring chambers during operation of said rotor;
 - a plurality of sample analysis cuvettes disposed in a circular array about the periphery of said main rotor body, said sample analysis cuvettes being in liquid communication with said volume measuring chambers; and

- v. means for loading reagents into said sample analysis cuvettes; and
- b. a sedimentation bowl nested within said main rotor body and adapted to rotate with that body as a unit, said sedimentation bowl comprising:
- a hollow disk-shaped base portion, said base portion having a centrally located top opening for receiving whole blood samples and discharging displaced plasma; and
 - an upstanding, open-ended, annular neck portion integrally fixed to said base portion in register with said top opening, the top end of said neck portion terminating within the center of said annular plasma distribution chamber within a plane axially intermediate to the axial extremities of such chamber.

3,901,659

REACTOR FOR CARRYING OUT CATALYTIC REACTIONS WITH SOLID BED CATALYSTS

Otto Joklik, Vienna, Austria; Gunter Elebracht, and Gunter Siekmann, both of Brackwede, Germany, assignors to Rhein-stahl AG, Germany

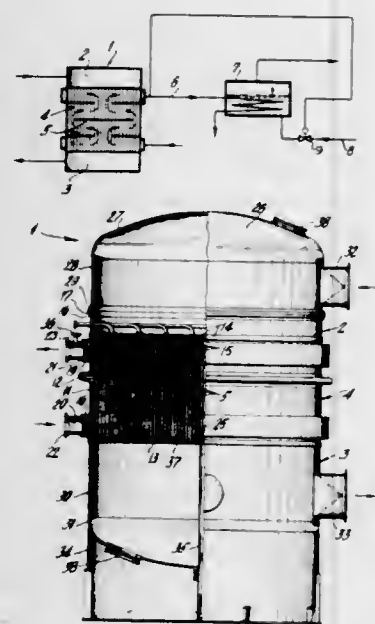
Filed Apr. 16, 1973, Ser. No. 351,584

Claims priority, application Austria, Mar. 7, 1972, 1867/72; May 3, 1972, 3819/72

Int. Cl.² B01J 8/06

U.S. Cl. 23—288 K

1 Claim



1. A reactor for carrying out catalytic reactions with solid bed catalysts, comprising a reaction vessel and a cooler, said cooler having a separate controllable cooling medium bath, and a coil in the bath for reaction vessel fused salt coolant, the reaction vessel comprising a reaction part including spaced substantially parallel tube plates, a plurality of parallel contact tubes adapted to contain a catalyst mounted between and seated in said tube plates, means defining a gas inlet chamber and a gas outlet chamber on the respective outer sides of said tube plates in communication with the interiors of said contact tubes, said cooler comprising a drum body with a water space and a steam space and having at least one fused salt cooling tube extending through said water space, piping interconnecting said reaction vessel and said coil of said cooler permitting separation of said vessels from each other, said reaction vessel having at least one tubing unit with an inlet and an outlet, said piping including a distributor conduit connected to a respective inlet and outlet each having passages for the heat exchange fluid extending around the periphery of and in contact with said vessel and into said reaction vessel transversely to said tubes, baffle and wall means around and between said tubes permitting back and forth flow of coolant over the

exteriors of and transverse to the axes of said tubes from said inlet to said outlet and means for circulating a fused salt coolant between said reaction vessel and said cooler coil, said tube unit including an exterior cylindrical wall extending between and connected to said tube sheets at the respective ends thereof, each end of said cylindrical wall being offset outwardly to define an annular coolant flow space comprising said inlet and said outlet respectively, and including a plurality of upstanding teeth extending around the continuation of the cylindrical wall within the outwardly extending portions forming the annular flow space and arranged in spaced circumferential relationship to define separating teeth at the inlet and outlet, said inlet said inlet comprising a tubular member extending through said gas inlet chamber and through one tube sheet up to said baffle, and being provided with an inner closed end with axially extending openings on the sides thereof for the transverse flow of coolant therethrough, said outlet comprising a tube extending through said outlet gas chamber and through the adjacent tube sheet and also terminating in a closed end with a side wall having perforations therein for the lateral flow of gases therethrough, a connection piece extending into said tube unit which may be closed in order to be able to rapidly discharge the heat exchange fluid by means of an inert gas under pressure connected to said connection piece, said cooler including means for supplying bath water to the coolant and regulating means in said supply means connected to said coolant piping for regulating the supply of bath water to the cooler.

3,901,660

APPARATUS FOR THE CONTINUOUS CARRYING OUT HETEROGENEOUS CATALYTIC REACTION IN LIQUID PHASE

Alexander Ohorodnik, Liblar; Kurt Sennewald, Hurth-Hermulheim; Joachim Hündeck, Hurth-Knappeack, and Paul Stutzke, Walberberg, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

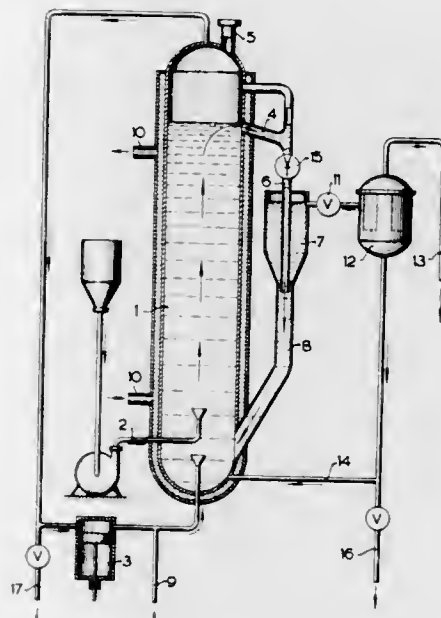
Division of Ser. No. 192,871, Oct. 27, 1971, Pat. No.

3,829,478. This application Oct. 31, 1973, Ser. No. 411,390
Claims priority, application Germany, Oct. 29, 1970, 2053115

Int. Cl.² B01J 8/22; C07C 53/16

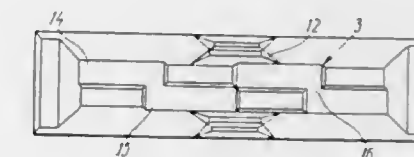
U.S. Cl. 23—288 A

3 Claims



1. An apparatus for carrying out heterogeneous catalytic reactions continuously therein, in a fluidized bed and in liquid phase, comprising a jacketed reactor provided at its lower part with a liquid matter inlet projecting thereinto and supplying the reactor with liquid starting material; a supply tube disposed at the head of the reactor feeding fine particulate catalyst thereinto for suspending it in the liquid material; an overflow disposed at the upper part of the reactor; a recycle conduit opening into the lower part of the reactor and having a

catalyst separator mounted thereon, the separator having a lower tapered end; the overflow projecting outwardly from the reactor, projecting into the separator from above and extending downwardly and concentrically into the recycle conduit so as to form an injector providing for a suction intake into the recycle conduit; a gas inlet disposed at the lower end of the reactor projecting and delivering gaseous matter thereinto so as to cause a circulation of the suspension of fine particulate catalyst, liquid starting material and resulting liquid reaction product upwardly through the reactor to and through overflow and down through the recycle conduit back into the reactor; an outlet disposed at the head of the reactor removing gaseous matter therefrom; a cycle line connecting the gas inlet and outlet together, a gas discharge line branching off from and a gas supply line opening into, the cycle line, a circulating pump in the cycle line between the gas discharge and supply lines; pipes opening into, and supplying, the jacket of the reactor with a heating or cooling liquid; a valved conduit projecting outwardly from the upper part of the catalyst separator removing reaction product and opening into a filtering means retaining traces of catalyst coming from the catalyst separator and travelling through said conduit; and the filtering means being fitted with an upper reaction product outlet and a lower catalyst discharge line.



in the transverse direction and a portion of a side surface (10) of said ingot corresponding to the length of said tooth; the minor base including flanges (14) and grooves (15) in alternating relation with one another, the number of flanges and grooves being equal.

3,901,661

PREALLOYED STEEL POWDER FOR FORMATION OF STRUCTURAL PARTS BY POWDER FORGING AND POWDER FORGED ARTICLE FOR STRUCTURAL PARTS

Yoshikazu Kondo; Tsuguo Kawamura, both of Yokohama; Hiroshi Aoyama, and Tomoyoshi Araki, both of Ikeda, all of Japan, assignors to Toyo Kohan Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 341,944, March 16, 1973, abandoned. This application Oct. 31, 1973, Ser. No. 411,264

Claims priority, application Japan, Apr. 6, 1972, 47-33828

Int. Cl. B22f 9/00

U.S. Cl. 29—182
1. A prealloyed steel powder for formation of structural parts by powder forging, which consists essentially of up to 0.5% by weight of carbon, 0.8 to 5.0% by weight of copper, 0.1 to 0.7% by weight of molybdenum, 0.3 to 1.3% by weight of nickel, and up to 0.6% by weight of manganese, the balance being iron and unavoidable impurities incorporated during the manufacturing process, and which exhibits excellent quench hardenability and excellent mechanical properties after powder forging.

7 Claims

3,901,662
METAL INGOTS

Ivan Antonovich Chernichenko, kvartal 20, 36, Shelekhov Irkutskoi oblasti; Vasily Vasilievich Turchaninov, ulitsa 3 Sovetskaya, 69, kv. 53; Vladimir Nikolaevich Metlyayev, ulitsa 5 Armii, 22, kv. 7, both of Irkutsk; Ivan Ivanovich Sobol, kvartal 7, 35, kv. 18, Shelekhov Irkutskoi oblasti; Boris Nikolaevich Kuligin, ulitsa Belovezhskaya, 77, kv. 112, Moscow; Valery Gavrilovich Borisov, ulitsa Detskaya, 68, korpus 3, kv. 33, Leningrad, and Dmitry Nikolaevich Kostevich, kvartal 2, 20a, kv. 1, Shelekhov Irkutskoi oblasti, all of U.S.S.R.

Continuation of Ser. No. 269,186, July 5, 1972, abandoned.

This application Apr. 26, 1974, Ser. No. 464,981

Claims priority, application U.S.S.R., July 7, 1971, 1678086
Int. Cl. B22d 7/00

U.S. Cl. 29—187

3 Claims

1. An ingot adapted for assembly in a stack comprising: a transverse trapezoidal cross section including a flat major base of rectangular shape, a rectangular minor base and oblique side surfaces; engagement elements at opposite sides on each of said oblique side surfaces and comprising at least one tooth (7) disposed outside the oblique side surfaces and arranged in a transverse direction relative to said ingot, and a recess (8) adjacent said tooth and complementary in shape to the latter for engagement with a similar recess and a corresponding

3,901,663
COATING GRAPHITE BODIES WITH METALS

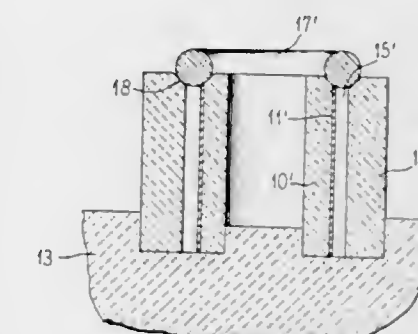
Horst Hofmann, and Helmut Katz, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Sept. 10, 1973, Ser. No. 395,916

Int. Cl. B32b 15/04

U.S. Cl. 29—195

6 Claims



1. A carbon body having, on at least a portion of the surface thereof, a gas-impermeable metal coating comprising

- a graphite member,
- a first layer of rhenium metal ranging in thickness from about 0.8 to 2.5 microns over at least a portion of the surface of said member and bonded thereto, and
- a second layer of a metal selected from the group consisting of copper, silver, gold, and alloys thereof ranging in thickness from about 150 to 250 microns, said second layer being gas impermeable and deposited over said first layer.

3,901,664

MOTOR FUEL

Robert H. Kozlowski, Berkeley, and Joel W. Rosenthal, El Cerrito, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 163,513, June 25, 1971, abandoned.

This application Nov. 23, 1973, Ser. No. 418,522

Int. Cl.² C10L 1/08

U.S. Cl. 44—56

7 Claims

1. A motor fuel comprising 1–40 volume percent oxylate and 99–60 volume percent light hydrocrackate, said hydrocrackate containing essentially no aromatics, and said oxylate being a mixture of t-butyl alcohol, isopropyl alcohol and methyl alcohol and containing an amount, based upon 100 volumes of said oxylate, of t-butyl alcohol in the range 2–90

volumes, of isopropyl alcohol in the range 2-50 volumes, and of methyl alcohol in the range 2-50 volumes.

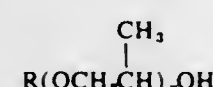
said gaseous product and utilizing the resulting desulfurized gaseous product, without intervening conversion, as incre-

3,901,665
MULTI-FUNCTIONAL FUEL ADDITIVE COMPOSITIONS
Perry Polss, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Oct. 6, 1972, Ser. No. 295,659
Int. Cl. C10I 1/18

U.S. Cl. 44-58 4 Claims

1. Multi-functional fuel additive compositions suitable for use in hydrocarbon fuels to impart anti-icing and carburetor detergency consisting essentially of

- A. Polyisobutylene having a molecular weight of from about 400 to about 900, and
- B. from about 10 to 160 percent by weight of said polyisobutylene of a polyoxyalkylene compound of the formula



wherein R is alkyl of 10 to 18 carbon atoms, and x has an average value of 4 to 20.

3,901,666
SYNERGISTIC ANTI-ICING COMPOSITION
Robert H. Rosenwald, Western Springs, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed June 15, 1973, Ser. No. 370,566 The portion of the term of this patent subsequent to Sept. 4, 1990, has been disclaimed.
Int. Cl. C10L 1/20

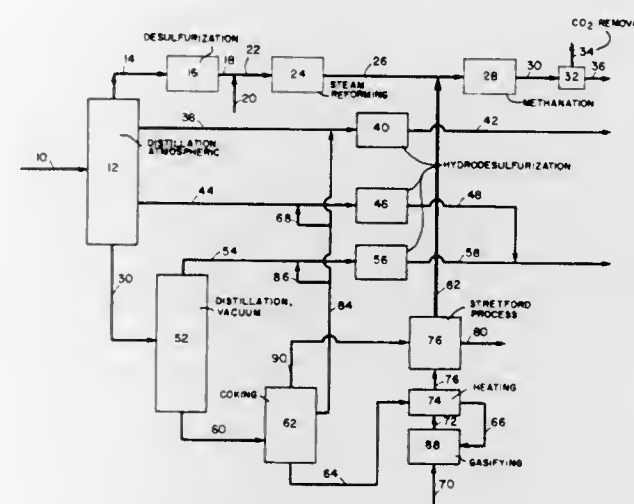
U.S. Cl. 44-72 8 Claims

1. A synergistic anti-icing composition comprising (1) from about 5% to about 95% by weight of a polyhydroxy alcohol prepared by the alkylene oxide addition to a polyol, said polyhydroxy alcohol containing from about 10 to about 50 carbon atoms and from about 2 to about 10 hydroxyl groups and (2) from about 95% to about 5 percent by weight of the condensation product from the reaction of a polyamine selected from the group consisting of N-alkyl polyamine wherein the alkyl group contains from 12 to 40 carbon atoms and N,N'-dialkyl polyamine, wherein the alkyl groups contain from 12 to 40 carbon atoms with an epihalohydrin compound.

3,901,667
MANUFACTURE OF METHANE-CONTAINING GASES USING AN INTEGRATED FLUID COKING AND GASIFICATION PROCESS
John W. Herrmann, Mountainside, N.J., assignor to Exxon Research and Engineering Company, Linden, N.J.
Filed Oct. 18, 1973, Ser. No. 407,566
Int. Cl. C10K 3/06

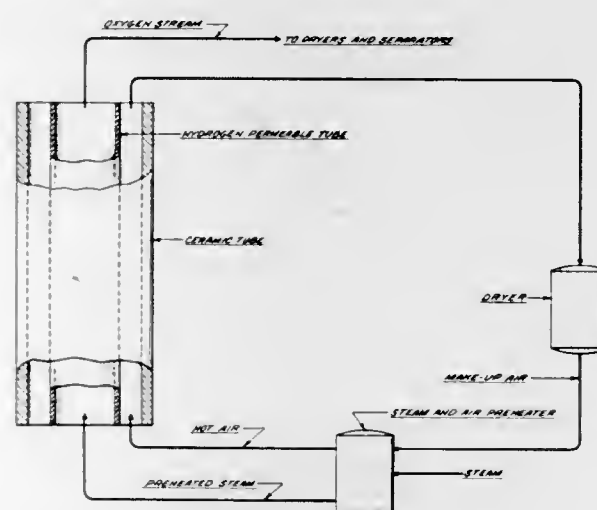
U.S. Cl. 48-214 5 Claims

1. In a refinery process for manufacturing a gas containing methane wherein a naphtha gasification process comprising a steam reforming stage and a methanation stage is integrated with a fluid coking and coke gasification process, and wherein the gaseous product of said coke gasification process comprises hydrogen, carbon oxides and a minor amount of hydrogen sulfide, the improvement which comprises desulfurizing



mental feed for the methanation stage of the naphtha gasification process.

3,901,668
MANUFACTURE OF OXYGEN FROM HIGH TEMPERATURE STEAM
Walter H. Seitzer, West Chester, Pa., assignor to Sun Ventures, Inc., St. Davids, Pa.
Filed Nov. 5, 1973, Ser. No. 412,998
Int. Cl. B01D 53/22
U.S. Cl. 55-16 4 Claims

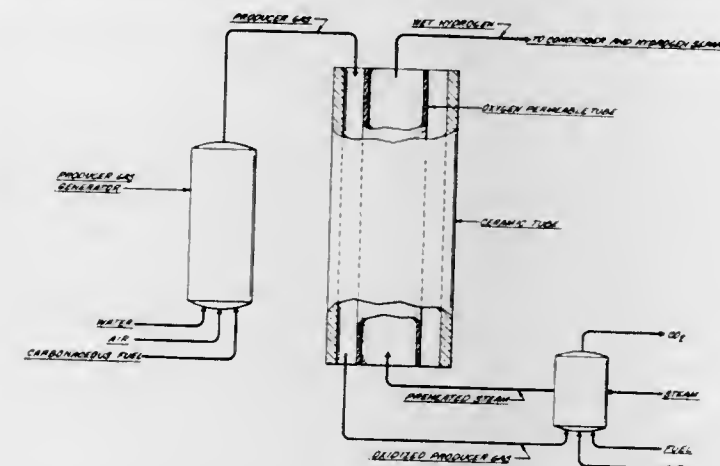


1. A process for preparing oxygen from steam which comprises dissociating steam into hydrogen and oxygen by heating it at a temperature above 1,500°C., passing the dissociated steam through a first chamber having a wall in common with a second chamber, which common wall is permeable to hydrogen and through which wall said hydrogen passes by diffusion at steam dissociation temperature to said second chamber, sweeping said second chamber with a gas to remove said permeated hydrogen, and cooling the gaseous effluent from said first chamber to yield an oxygen rich stream.

3,901,669
MANUFACTURE OF HYDROGEN FROM HIGH TEMPERATURE STEAM
Walter H. Seitzer, West Chester, Pa., assignor to Sun Ventures, Inc., St. Davids, Pa.
Filed Nov. 5, 1973, Ser. No. 412,999
Int. Cl. B01D 53/22
U.S. Cl. 55-16 5 Claims

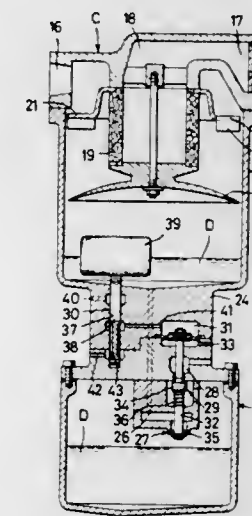
1. A process for preparing hydrogen from steam which comprises dissociating steam into hydrogen and oxygen by heating at a temperature above 1,500°C., passing the dissoci-

ated steam through a first chamber having a wall in common with a second chamber, which common wall is a refractory oxide permeable to oxygen and through which oxygen from



the dissociated steam diffuses at a temperature above 1,500°C., sweeping said second chamber with a gas to remove said permeated oxygen, and cooling the gaseous effluent from said first chamber to yield a hydrogen rich stream.

3,901,670
LUBRICANT SEPARATING MEANS FOR AIR DRIVEN MACHINERY
Takeshi Minami, No. 4-10, 3-chome, Takanodai, Suita, Osaka, Japan
Filed Mar. 7, 1974, Ser. No. 448,980
Int. Cl. B01D 50/00
U.S. Cl. 55-219 1 Claim

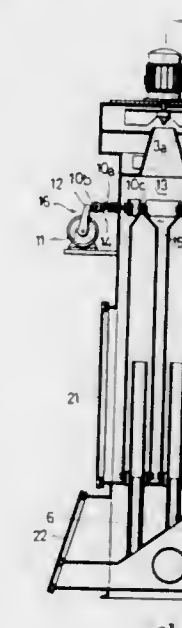


1. An oil recovery apparatus to recover lubricating oil from an aerosol mist in an air driven machine where air is driven through an oil storage tank (B) forming an aerosol which is carried to the contacting machine parts to be lubricated and out through a discharge passage (14) comprising in combination:

- a. a vertical hollow case with an upper gas passage section and a lower storage section, there being an air inlet (16) and outlet (17) in said upper gas passage section;
- b. a vane separator (21) in said upper gas passage section with vertical outer blades (23) providing rotary motion to the aerosol-containing gas passing through said upper gas passage separating the heavier aerosol from the lighter gas, a baffle board (20) extending between the upper and lower sections to receive aerosols thereon to enhance the liquid-gas separation;
- c. upper and lower tanks in said lower storage section including a float (39) in said upper tank and a duct (26) between said tanks;
- d. valve means for feeding recovered oil from the upper tank to the lower tank across said duct (26) including a valve portion (24) between said upper and lower tanks a

first passage (28) extending from said lower tank to said valve portion having switching valve means (27, 29) therein controlling said duct (26) a diaphragm chamber (31) with a diaphragm (33) in said first passage and a first valve rod (32) for reciprocation in said first passage said valve rod being connected with said diaphragm (33) and said switching valve means (27, 29), a second vertical passage housing, a second valve rod (38) connected to said float (39) and air supply ports (40, 41) in said second vertical passage one of said ports (41) communicating with said diaphragm chamber (31) a recess (43) in said second valve rod (38) allowing communication between said air supply ports at certain positions of the float, and spring means holding the switching valve means in certain positions so that the raising of the float above a certain level raises said second rod providing communication between said air supply ports (40, 41) to said diaphragm chamber (31), acting on said first valve rod (32) which in turn acts on said switching valve means (27, 29) to allow flow of oil down said duct (26), said switching valve means closing said duct flow as the float sinks to a predetermined level.

3,901,671
DUST COLLECTING APPARATUS
Yoshiaki Kitami, Nagoya, Japan, assignor to Senko Kikai Kabushiki Kaisha, Nagoya, Japan
Filed July 23, 1974, Ser. No. 490,954
Int. Cl. B01D 46/04
U.S. Cl. 55-304 1 Claim



1. In dust collecting apparatus comprising a casing, a dust laden-gas inlet in said casing, suction blower means for providing a negatively pressurized atmosphere in said casing, a dust collector vessel disposed in a lower portion of said casing, a plurality of connecting tubes providing communication between the interior of said casing and said dust collector vessel, a plurality of fabric, hollow cylindrical filter members longitudinally disposed in said casing and having a closed upper end and a lower open end connected to each of said plurality of connecting tubes, and oscillating means supporting the upper ends of said plurality of fabric filter members to apply oscillation to said fabric filter members, the improvement which comprises a gas inlet tube extending in each of said fabric filter members to have an open upper end adjacent the intermediate region thereof in the longitudinal direction of said fabric filter member and an open lower end communicating with said gas inlet, said blower means charges a dust-laden gas through said inlet and then through the upper open end of said gas inlet tube into each of said fabric filter members, and means for driving said oscillating means while a dust-laden gas is being charged into each of said fabric filter members.

3,901,672

FILTER SYSTEM FOR HALOGEN GAS DETECTOR

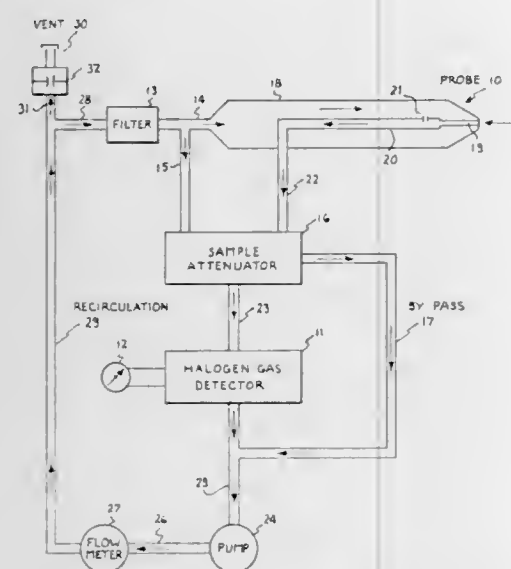
John A. Roberts, Lynnfield, Mass., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 26, 1973, Ser. No. 428,436

Int. Cl. B01d 53/02

U.S. Cl. 55-387

7 Claims



1. In a halogen gas detection system of the type comprising a gas sampling probe having an inlet through which a sample gas is drawn, a filter containing a filtering material which removes halogen substances from gas drawn through a filter, a halogen gas detector, and a pumping system for drawing sample gas from said probe and purified gas from said filter through said detector, said pumping system comprising a pump having its suction side connected to said detector on the downstream side, means for prolonging the life of said filtering material comprising:

- a recirculation conduit arranged to conduct gas discharged from said pump to the inlet side of said filter to form a recirculating system, and
- venting means connected in the recirculating system for discharging excess gas from said recirculating system.

3,901,673

RECOVERY OF NATURAL GAS LIQUIDS BY PARTIAL CONDENSATION

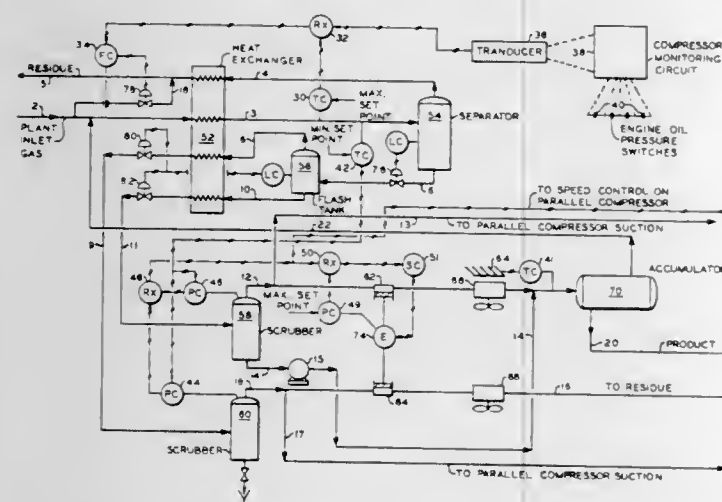
Carl W. Zahn, and Hadwen A. Clayton, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 15, 1972, Ser. No. 315,535

Int. Cl. F25j 3/00

U.S. Cl. 62-21

5 Claims



1. In the recovery of natural gas liquid by partial condensation, a method for controlling the minimum temperature of the partially condensed inlet material stream to a separator comprising:

- passing an inlet material stream that has been partially condensed by passage through a heat exchanger into a separation means thereby producing a vapor outlet stream and a liquid outlet stream;
- separately passing the vapor outlet stream from said separating means in heat exchange with said inlet material stream to said separating means;
- flashing at least a portion of the liquid outlet stream from said separating means in a flash tank with both flash tank vapor outlet stream and flash tank liquid outlet stream separately passing in heat exchange with inlet material stream to said separating means;
- separately passing both the heat exchanged flash tank vapor stream and flash tank liquid stream to separate scrubber tanks said scrubber tanks comprising means for pressure control wherein the pressure is controlled by drawing vapor from the scrubber tanks to the suction side of a plurality of compression means;
- sensing the temperature at the separating means inlet stream and producing a signal responsive to said inlet stream temperature;
- transmitting said signal as set point for the means for pressure control of each of the scrubber tanks;
- generating output signals responsive to the pressure of each of the scrubber tanks; and
- actuating a first selector relay by the signal corresponding to the higher scrubber pressure and transmitting said signal to a speed controller as set point for the compressor drive thereby controlling the flow rate of material through the inlet heat exchanger and thereby effecting control of the minimum temperature of the inlet feed stream material.

3,901,674

METHOD OF MAKING OPTICAL FIBER

Richard R. Strack, Southbridge, Mass.; Walter P. Siegmund, and Merton L. Smith, both of Woodstock, Conn., assignors to American Optical Corporation, Southbridge, Mass.

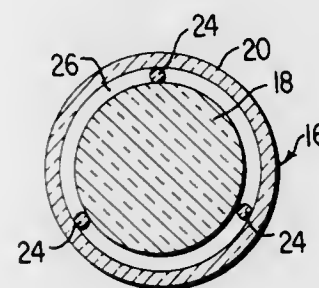
Division of Ser. No. 284,813, Aug. 30, 1972. This application

Mar. 22, 1974, Ser. No. 453,737

Int. Cl.² C03B 37/02

U.S. Cl. 65-3

5 Claims



1. The method of making a fused completely circumferentially clad light-conducting fiber having core and cladding components spaced apart throughout the major portion of its length and circumference comprising the steps of:

- placing a rod of relatively high refractive index lightconducting material approximately centrally within a sleeve of relatively low refractive index material having an inner transverse dimension substantially greater than a corresponding transverse dimension of said centrally disposed rod thereby leaving a space between said rod and sleeve circumferentially about said rod;
- placing a plurality of long and thin spacer members longitudinally in said space between said rod and sleeve in widely separated relationship with each other about the circumference of said rod;
- heating one end of the entire assembly of said rod, sleeve and spacer members to a fusing and drawing temperature; and
- drawing said assembly longitudinally to the reduced cross-sectional size of a fiber.

3,901,675

APPARATUS FOR PRODUCING FIBERS AND ENVIRONMENTAL CONTROL THEREFOR

Carl S. Buchanan; Harland E. Fargo, both of Newark, Ohio, and Charles F. Riebel, Franklinville, N.J., assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed May 21, 1971, Ser. No. 145,664

Int. Cl. C03b 37/00

U.S. Cl. 65-11 R

3,901,676

METHOD FOR CRYSTALLIZATION OF A FIBER WHILE STRETCHING

Gerhard Heinze, Schildgen; Manfred Schön, Cologne, and Friedrich Schwochow, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 11, 1974, Ser. No. 441,545

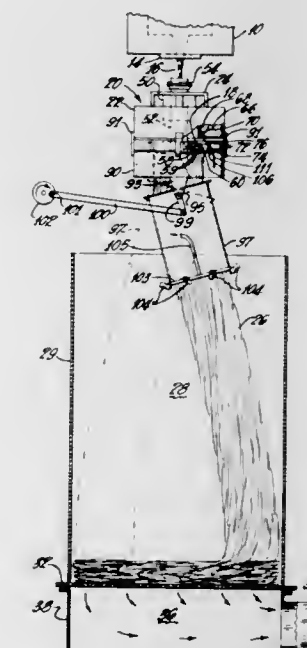
Claims priority, application Germany, Feb. 17, 1973,

1 Claim 2308019

Int. Cl. C03b 29/00, 21/00

U.S. Cl. 65-33

4 Claims



1. A process for the production of a glass fiber of improved modulus of elasticity comprising heating the fiber to a temperature at which crystallization occurs while stretching the fiber at least about 10% of its length.

3,901,677

METHOD FOR IMPROVING SOIL

Yoshiro Nakamura, Morioka; Akira Umehara, Osaka, and Itsuyo Yamada, Kobe, all of Japan, assignors to Sankyo Kasei Company, Ltd., Japan

Continuation of Ser. No. 280,351, Aug. 14, 1973, abandoned.

This application June 18, 1974, Ser. No. 480,465

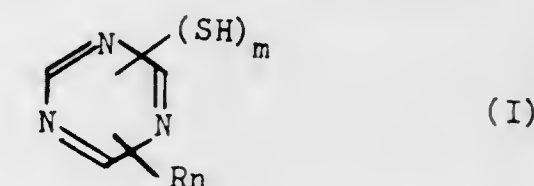
Claims priority, application Japan, Aug. 20, 1971, 46-63740

Int. Cl.² C05C 11/00

U.S. Cl. 71-64 SC

7 Claims

1. A method for treating soil to fix harmful metal ions having a normal electrode potential of at least -0.440 V at 25°C. contained therein which is characterized in that to such soil is added at least one of mercapto-s-triazines and water-soluble salts thereof, said mercapto-s-triazine having a formula of



wherein R is hydrogen, -NH₂, -OH, alkyl having 1 to 8 carbon atoms, alkoxy having 1 to 8 carbon atoms, phenyl, cyclohexyl, oxazinyl, phenoxyl, -NR'₂ or SR', R', being hydrogen, alkyl having 1 to 8 carbon atoms, phenyl, cyclohexyl, naphthyl or benzyl, R'' being alkyl having 1 to 8 carbon atoms, phenyl, cyclohexyl, naphthyl or benzyl; m is an integer of 1 to 3 and n is 0 or an integer of 1 to 2.

3,901,678

PYRIDILIUM-S-TRIAZINES FOR REGULATING PLANT GROWTH

Hanspeter Fischer, Bottmingen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 316,948, Dec. 20, 1972, Pat. No. 3,855,220, and a continuation-in-part of Ser. No. 460,405, April 12, 1974. This application Oct. 25, 1974, Ser. No. 517,988

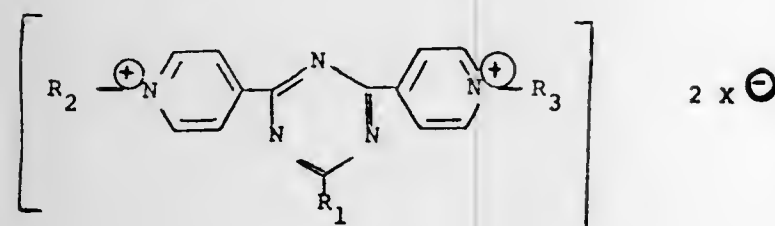
Claims priority, application Switzerland, Dec. 22, 1971, 18819/71

Int. Cl.² A01N 9/22

U.S. Cl. 71-74

22 Claims

1. A composition for regulating the growth of plants which comprises (1) as active ingredient an effective amount of a compound of the formula



in which R₁ is hydrogen, alkyl of from 1 to 8 carbon atoms, haloalkyl of from 1 to 4 carbon atoms, NH₂, OH, phenyl, 4-pyridyl or N'-methyl-4-pyridylium; each of R₂ and R₃ independently represents alkyl of from 1 to 8 carbon atoms, alkenyl of from 3 to 7 carbon atoms, haloalkyl of from 1 to 4 carbon atoms, alkoxy of from 1 to 4 carbon atoms, alkylthio of from 1 to 4 carbon atoms, cyano or alkoxycarbonyl in which the alkoxy moiety has from 1 to 4 carbon atoms; and X is the anion of an acid selected from the group consisting of hydrochloric, hydrobromic, hydroiodic, phosphoric, thiophosphoric, sulphuric, fluoroboric, perchloric, methylsulphuric, ethylsulphuric, benzenesulphonic, p-toluenesulphonic, naphthoic, benzoic, halobenzoic, acetic, haloacetic, aminoacetic, propionic, halopropionic, butyric, lactic, stearic, oxalic, tartaric and fluorsulphuric; and (2) a carrier.

3,901,679

2-CHLOROETHANE-PHOSPHONIC-(OR THIONO PHOSPHONIC) ACID AMIDO COMPOUNDS AS PLANT GROWTH REGULANTS

Wolfgang Hofer, Wuppertal-Vohwinkel; Reinhard Schliebs, Cologne; Robert Rudolf Schmidt, Leverkusen-Rheindorf, and Ludwig Eue, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Sept. 29, 1970, Ser. No. 76,595

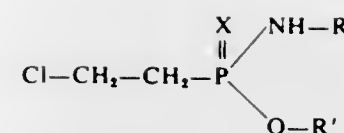
Claims priority, application Germany, Oct. 4, 1969, 1950100

Int. Cl. A01n

U.S. Cl. 71-76

17 Claims

1. Method for regulating plant growth which comprises applying to the plant a 2-chloroethanephosphonic acid amido or 2-chloroethanethionophosphonic acid amido compound of the general formula



in which

X is oxygen or sulfur;

R is lower alkyl of from 1 to 6 carbon atoms or phenyl; and R' is hydrogen or unsubstituted phenyl or phenyl substituted with nitro, halogen, alkyl or hydroxy; or a salt moiety.

3,901,680

COMBINED HERBICIDE

Takeo Satomi, Nishinomiya, and Naganori Hino, Toyonaka, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed June 18, 1973, Ser. No. 370,760

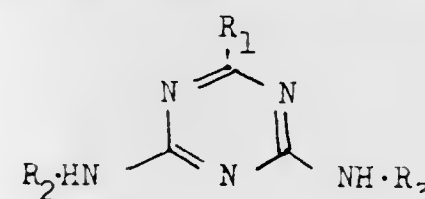
Claims priority, application Japan, June 23, 1972, 47-63514

Int. Cl.² A01N 9/22

U.S. Cl. 71-87

7 Claims

1. A herbicidal composition comprising an inert carrier and as an essential ingredient, a herbicidally effective amount of a mixture of (A) O-methyl- or (B) O-ethyl-O-(3-methyl-6-nitrophenyl)-N-secondary-butyl-phosphorothioamide and a sym-triazine herbicide represented by the formula:



wherein R₁ represents a chlorine atom, methoxy group or methylthio group, and R₂ and R₃ each represents an ethyl group or an isopropyl group, the mixing weight ratio of the phosphorothioamide compound A or B to the sym-triazine being 1 to 0.1-0.5.

3,901,681

1H-IMIDAZO(4,5-B)PYRIDINE COMPOUNDS

George O. P. Doherty, Greenfield, Ind., and Kenneth H. Fuhr, Columbus, Ohio, assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 181,574, Sept. 17, 1971, Pat. No.

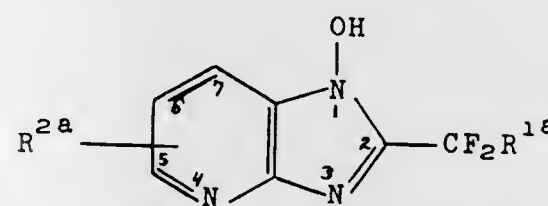
3,813,408, which is a continuation-in-part of Ser. No. 21,535, March 20, 1970, abandoned. This application Feb. 15, 1974, Ser. No. 442,694

Int. Cl. A01n 9/22

U.S. Cl. 71-92

8 Claims

1. The method which comprises applying to a plant part a growth-inhibiting amount of an active agent, said active agent being a compound selected from the group consisting of the compounds of the formula



wherein R^{1a} represents hydrogen, chlorine, fluorine, difluoromethyl, or trifluoromethyl, and R^{2a} represents halogen, nitro, -CF₃, -CF₂Cl, -CF₂H, or loweralkylsulfonyl of C₁-C₄; and the alkali metal salts thereof; the alkaline earth metal salts thereof; and the salts thereof with organic amines having a K_a of the order of 10⁻⁵ or greater and selected from

3,901,684

METHOD FOR ALTERING PLANT FLOWERING AND SEXUAL REPRODUCTION

Kang Lin, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

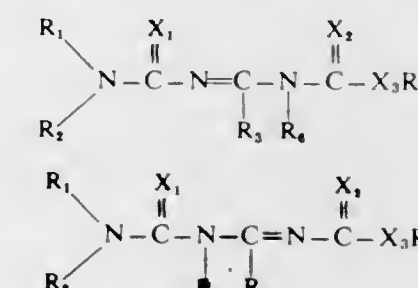
Filed Jan. 30, 1973, Ser. No. 328,059

Int. Cl. A01n 9/12

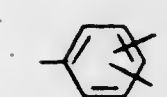
U.S. Cl. 71-100

16 Claims

1. A method for preventing pollen shed in crop plants comprising applying an allophanimide to the plant in an amount which is effective to prevent pollen shed without causing substantial foliar burn, chlorosis, or necrosis, the allophanimide being a compound of either of the following formulas:



wherein

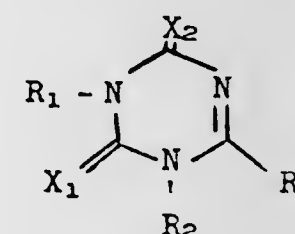
R₁ is hydrogenR₂ is

I

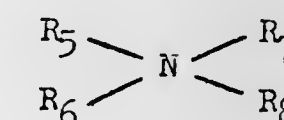
where

Y is hydrogen, halogen, or methyl; and

Z is halogen;

R₃ is OR₄;R₄ is methyl or ethyl;R₅ is methyl or ethyl;R₆ is hydrogen;X₁ and X₂ are oxygen; andX₃ is oxygen or sulfur.

wherein

R₁ is phenyl or substituted phenyl, andR₂ is hydrogen or a cation selected from lithium, sodium, potassium, calcium, magnesium, barium, or

where

R₅, R₆, and R₇ can be the same or different and each can be hydrogen, alkyl of 1 through 4 carbon atoms or hydroxy alkyl of 2 through 4 carbon atoms; andR₈ is hydrogen, alkyl of 1 through 12 carbon atoms or benzyl;R₅ and R₆ can be taken together to form a ring that is -(CH₂)₂-O-(CH₂)₂- or -(CH₂)_n- where n is 4 through 6 and R₇ and R₈ are hydrogen.

3,901,683

CROP YIELDS WITH KETOXIMES

Lawrence E. Limpel, Yonkers, N.Y., and Joseph A. Ignatoski, Mentor, Ohio, assignors to Diamond Shamrock Corporation, Cleveland, Ohio

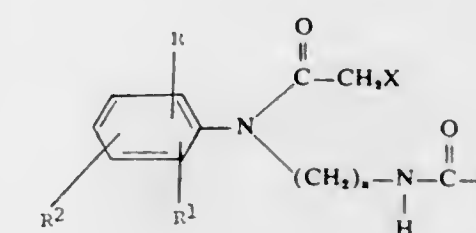
Filed July 23, 1973, Ser. No. 381,739

Int. Cl.² A01N 9/12

U.S. Cl. 71-98

7 Claims

1. A method of reducing insect damage to crop seeds and seedlings and improving crop yield, which method comprises treating seeds of said crop before planting with an insecticidally effective, yield improving, amount of one of the compounds 3,3-dimethyl-1-methylthio-2-butanone O-methylcarbamoyloxime and the sulfoxide and sulfone thereof.



wherein:

R and R¹ are hydrogen, alkyl or alkoxy having at least 1 and not more than 10 carbon atoms and can be like or unlike.R² is hydrogen, alkyl or alkoxy having at least 1 and not more than 10 carbon atoms, NO₂ or halogen,

R³ is hydrogen, alkyl, alkoxy, alkylthio, polyalkoxy, polyalkylthio, alkoxyalkyl, alkylthioalkyl, polyalkoxyalkyl, polyalkylthioalkyl, haloalkyl, hydroxyalkyl, mercaptoalkyl, oxoalkyl, alkenyloxyalkyl, alkenylthioalkyl, each of a maximum of 18 carbon atoms or cycloalkyl having at least 3 and a maximum of 6 carbon atoms.

X is chlorine, bromine or iodine, and n is an integer of 1 or 2.

3,901,686

1-NAPHTHOIC ACID, 2,2-DIMETHYLHYDRAZIDE

Gerhard H. Alt, Creve Coeur, Mo.

Division of Ser. No. 365,336, May 30, 1973, Pat. No. 3,855,289. This application Aug. 29, 1974, Ser. No. 501,556
Int. Cl.² A01N 9/20

U.S. Cl. 71-118

9 Claims

1. A method of regulating the natural growth or development of dicotyledonous plants which comprises applying to said plant an effective growth regulating amount of 1-naphthoic acid, 2,2-dimethylhydrazide.

3,901,687

PROCESS FOR THE SELECTIVE CONTROL OF WEEDS IN KENTUCKY BLUEGRASS

Richard Elton Bailey, Plain City, Ohio, assignor to O. M. Scott and Sons Company, Marysville, Ohio

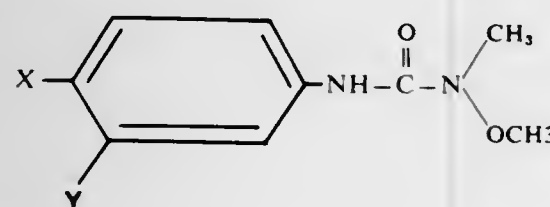
Filed Aug. 31, 1973, Ser. No. 393,606

Int. Cl.² A01N 9/20

U.S. Cl. 71-120

8 Claims

1. A process for the selective control of weeds in mature Kentucky bluegrass turf comprising treating said turf with a compound of the formula



wherein X is selected from the group consisting of chlorine and bromine and Y is selected from the group consisting of chlorine, bromine and hydrogen, with the proviso that X and Y are not simultaneously bromine, in an amount effective to kill said weeds but insufficient to damage said Kentucky bluegrass.

3,901,688

HIGHLY REFLECTIVE ALUMINUM FLAKE

James T. Casey, Newfoundland, and Frank A. Badia, Ringwood, both of N.J., assignors to The International Nickel Company, Inc., New York, N.Y.

Division of Ser. No. 238,375, March 27, 1972, Pat. No. 3,776,473. This application Nov. 19, 1973, Ser. No. 417,356
Int. Cl.² B22F 1/00

U.S. Cl. 75-0.5 R

2 Claims



1. Aluminum flake powder having individual particles characterized by flat, smooth surfaces, by a generally rounded

shape with smooth edges, by a thickness of not more than about 1 micron and, in the aggregate, characterized in the unpolished condition by a specular reflectivity of at least about 70%.

3,901,689

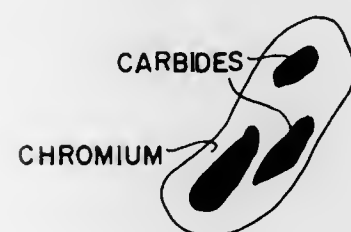
METHOD FOR PRODUCING CHROMIUM-CHROMIUM CARBIDE POWDER

John Franklin Pelton, Yorktown Heights, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 388,433, Aug. 15, 1973, Pat. No. 3,846,084. This application June 25, 1974, Ser. No. 482,990
Int. Cl. B22f 9/00

U.S. Cl. 75-.5 B

9 Claims



1. A method for producing a powder comprising:
 - A. heating a source of chromium with a source of carbon in a non-oxidizing environment until the carbon diffuses and reacts with the chromium;
 - B. comminuting the product formed in step A to a powder containing from about 0.2 wt % to about 5.4 wt % Carbon and wherein substantially every particle of said powder consists essentially of chromium and at least one chromium carbide taken from the class consisting of Cr₂₃C₆, Cr₇C₃ and Cr₃C₂.

3,901,690

WEAR RESISTANT ALLOY STEELS CONTAINING Cb AND ONE OF Ti, Hf OR Zr

Thoni V. Philip, Reading, Pa., and Douglas W. Dietrich, Wyomissing Hills, Pa., assignors to Carpenter Technology Corporation, Reading, Pa.

Continuation-in-part of Ser. No. 142,229, May 11, 1971, abandoned. This application Aug. 10, 1973, Ser. No. 387,534
Int. Cl. C22c 39/54

U.S. Cl. 75-123 H

28 Claims

1. Alloy steel consisting essentially by weight of about 0.2% to 2.5% carbon, up to about 2.5% manganese, up to about 2.5% silicon, up to about 1.5% aluminum, up to about 19% chromium, up to about 5% nickel, up to about 10.5% molybdenum, up to about 20% tungsten, up to about 6% vanadium, up to about 15% cobalt, up to about 4% copper, up to about 0.1% nitrogen, about 1.1% to 2.99% columbium, at least one element selected from the group consisting of 0.04% to 0.3% titanium, 0.05% to 0.5% zirconium and 0.03% to 0.5% hafnium, the balance iron and incidental impurities, the iron content being at least 65%, the amount of carbon being at least about 0.07% plus the amount required to combine with the columbium to form columbium carbide, and said one element being effective to increase the amount of idiomorphic columbium carbide formed whereby said steel has improved resistance to abrasive wear.

3,901,691

ALUMINUM-SILICON ALLOY

Robert N. Sanders, Baton Rouge, La., and Alex R. Valdo, Elgin, Ill., assignors to Ethyl Corporation, Richmond, Va.
Division of Ser. No. 219,523, Jan. 20, 1972. This application July 2, 1973, Ser. No. 375,505

Int. Cl. C22c 21/02

U.S. Cl. 75-142

2 Claims

1. An aluminum-silicon alloy consisting of elements in percent by weight of about as follows:

Silicon	19-21
Magnesium	4-8
Copper	2-4
Iron	1 Maximum
Titanium	0.3 Maximum
Manganese	0.5 Maximum
Zinc	0.5 Maximum
Aluminum	Balance.

3,901,692

CORROSION RESISTANT COPPER ALLOY AND THE METHOD OF FORMING THE ALLOY

Tsuneaki Mikawa, 11, 1-Chome, Nakadai-cho, Itabashi, Tokyo, Japan

Continuation of Ser. No. 171,354, Aug. 12, 1971, abandoned, which is a continuation-in-part of Ser. No. 67,999, Aug. 28, 1970, abandoned. This application Mar. 15, 1973, Ser. No. 341,685

Claims priority, application Japan, Aug. 29, 1969, 44-67930
Int. Cl. C22c 9/06

U.S. Cl. 75-159

4 Claims

1. A copper alloy having excellent corrosion resistance consisting essentially of, by weight:

- 6 to 7% aluminum
- 5 to 7% nickel
- 0.08 to 0.5% boron
- 3 to 4% iron
- 5 to 10% manganese

with remainder being essentially copper containing less than 0.001% impurities.

3,901,693

METHOD OF PREPARING DENTAL RESTORATIVE MATERIAL

Donald Timothy Wolf, Milford, Del., assignor to Dentsply Research & Development Corporation, Milford, Del.

Filed July 11, 1973, Ser. No. 378,360

Int. Cl. C22c 7/00

U.S. Cl. 75-169

10 Claims

1. A method of making a dental amalgam comprising the steps of:

- a. providing a plurality of silver-tin alloy spheres;
- b. coating the individual silver-tin alloy spheres completely with gold; and
- c. triturating the gold coated silver-tin alloy spheres with mercury to form an amalgam.

3,901,694

PROCESS FOR BLEACHING ELECTROPHOTOGRAPHIC PHOTOCENSITIVE LAYER

Satoru Honjo; Yasuo Tamai, and Masaaki Takimoto, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed July 31, 1970, Ser. No. 60,117

Claims priority, application Japan, July 31, 1969, 44-60617
Int. Cl. G03g 13/22

U.S. Cl. 96-1 R

15 Claims

1. A process for bleaching an electrophotographic photosensitive layer having an image thereon, said image containing a lake pigment soluble in an acid to obtain an improved color print which comprises treating at room temperature the col-

ored electrophotographic photosensitive layer composed of a dispersion comprising zinc oxide, resinous binder and a dye selected from the group consisting of triphenylmethane and xanthene dyes and p-dimethylaminobenzylidene rhodanine with a bleaching solution containing (I) 30 to 80% by weight of a solvent for said dye and (II) 0.01 to 20% by weight of an alkali hydroxide thereby changing said photosensitive layer substantially white, and then washing the thus treated layer with a washing liquid comprising at least one of said component (I) and (III) an organic solvent capable of dissolving or slightly swelling said resinous binder or with said washing liquid added with acid.

3,901,695

ELECTROPHOTOGRAPHIC PROCESS USING POLYAMIDE CONTAINING DEVELOPER

Loren E. Shelffo, Palatine, Ill., assignor to Addressograph Multigraph Corporation, Cleveland, Ohio

Division of Ser. No. 123,065, March 10, 1971, Pat. No. 3,764,538, which is a continuation of Ser. No. 692,732, Dec. 22, 1967, abandoned, which is a continuation-in-part of Ser. No. 357,743, April 6, 1964, abandoned. This application May 21, 1973, Ser. No. 362,410

Int. Cl.² G03G 9/02, 13/08, 13/22

U.S. Cl. 96-1 SD

16 Claims

1. The method of making an electrostatic copy on an electrostatic recording member comprising the steps of electrostatically charging said member in the dark, exposing the charged member to a light pattern to produce thereon an electrostatic charge image, developing said charge image by applying thereon an electroscopic powder, said electroscopic powder comprising a blend of infrangible, sharp-melting, thermoplastic polyamide resins and a sharp-melting highly frangible, thermoplastic resin, said blend being accomplished by melting the resin components together to form a miscible mixture, said infrangible resin component having a fracturing value of at least 1000 gram centimeters when measured by the falling ball method at 100° F. on a wafer of resin 3.75 centimeters in diameter and 0.5 centimeters in thickness, a melting range not greater than 8° F. being present in an amount ranging from 9 to 90% by weight of said granular powder, said highly frangible resin having a fracturing value not greater than 200 gram centimeters when measured by said falling ball method and a melting range not greater than 8° F. and thereafter fixing said developed charge image to form a permanent image on said recording member.

3,901,696

ELECTRODE-SHUNTING METHOD OF PRODUCING ELECTROPHOTOGRAPHIC PICTURES AND APPARATUS THEREFOR

Eugen Mohn, Egg, and Hansjurg Hermann, Herisau, both of Switzerland, assignors to Turlabor AG, Zumikon, Switzerland

Filed June 26, 1973, Ser. No. 373,823

Claims priority, application Switzerland, June 30, 1972, 009829/72

Int. Cl. G03g

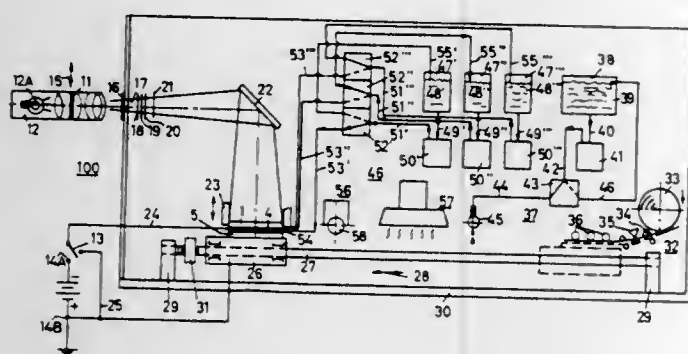
U.S. Cl. 96-1 PE

45 Claims

1. A method of producing images in accordance with a master, comprising the steps of:

- a. providing a photoconductive layer spaced from an image support adjacent thereto, and electrodes respectively associated therewith,
- b. bringing a dispersion of charged toner particles into the space between said layer and said support, while shunting the electrodes,
- c. exposing the photoconductive layer to a light image of the master, thereby producing with respect to said layer, a conductivity image corresponding to the master,
- d. applying an electric field across said space by means including the electrodes during at least part of the exposure, said field causing migration of the charged toner

particles in a first direction of the charged toner particles with change of toner particle charge as controlled by said conductivity image, and



e. again shunting the electrodes, whereby a further migration of toner particles occurs in a second direction to form a visible image of the master on the image support.

3,901,697

MANIFOLD IMAGING PROCESS USING ELECTRICALLY PHOTSENSITIVE MATERIAL SUBJECT TO LIGHT FATIGUE

Ivar T. Krohn; Ray H. Luebke, Jr.; Geoffrey A. Page, and Paul C. Swanton, all of Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 186,125, Oct. 4, 1971, abandoned, which is a continuation-in-part of Ser. No. 798,094, Feb. 10, 1969, abandoned. This application Nov. 28, 1973, Ser. No. 419,552

Int. Cl. G03g 13/14, 13/22

U.S. Cl. 96—1 M

10 Claims

1. An imaging method which comprises subjecting an electrically photosensitive imaging layer which exhibits light fatigue to an electrical field while sandwiched between a donor sheet and a receiver sheet said imaging layer comprising an electrically photosensitive material selected from the group consisting of 1-(2'-methoxy-5'-nitrophenylazo)-hydroxy-3''-nitro-3-naphthylidene, 2,9-dimethyl quinacridone and naphthal Red M. C. I. No. 12390, said layer being structurally fracturable in response to the combined effects of an electric field and exposure to electromagnetic radiation to which it is sensitive, and separating said sandwich while subject to the electrical field whereby said imaging layer fractures in image-wise configuration said imaging layer having been image-wise exposed to electromagnetic radiation to which the imaging layer is sensitive prior to being subjected to the electrical field.

3,901,698

METHOD OF REVERSAL DEVELOPMENT USING TWO ELECTROSTATIC DEVELOPERS

Osamu Fukushima, Tokyo; Sadao Osawa, Saitama; Takao Komaki, Saitama, and Masamichi Sato, Saitama, all of Japan, assignors to Rank Xerox Ltd., London, England

Continuation-in-part of Ser. No. 206,902, Dec. 10, 1971, abandoned. This application Dec. 20, 1973, Ser. No. 426,842

Int. Cl. G03g 13/06, 13/22

U.S. Cl. 96—1 R

8 Claims

1. Process for electrophotographic discharge area development consisting essentially of uniformly electrostatically charging a photoconductive insulating layer, exposing said photoconductive layer to an original image pattern of light and shadow, said photoconductive layer being discharged in areas corresponding to the light areas of the imaging pattern and retaining charge in areas corresponding to the shadow areas of the image pattern, said charged and discharged areas of said photoconductive layer resulting in the formation of an electrostatic latent image corresponding to the original image pattern, developing said electrostatic latent image with a first developer containing a toner which is substantially invisible when viewed against the photoconductive layer, said toner

having the same or opposite polarity as that of charged areas on the photoconductive layer and having insulating properties to prevent release of its charge to the photoconductive layer, whereby the toner preferentially adheres to areas of said layer wherein charged and discharged areas meet, such areas exhibiting an electric field gradient, thereafter, developing said electrostatic latent image with a second developer containing a colored toner which is visible when viewed against the photoconductive layer by contacting said layer with said second developer, said toner having the same polarity as that of the charged areas on the photoconductive layer, simultaneously establishing a potential between said second developer and the photoconductive layer, thereby depositing the color toner in the discharged areas of said layer forming a reversal image of the original image pattern.

3,901,699

MIGRATION AND AGGLOMERATION IMAGING METHOD

Joseph G. Sankus, Jr., McKinney, Tex., assignor to Xerox Corporation, Stamford, Conn.

Filed July 24, 1974, Ser. No. 491,578

Int. Cl. G03q 13/22

U.S. Cl. 96—1 PS

6 Claims

1. An imaging method comprising:
a. providing an imaging member comprising a substrate, a layer of electrically insulating softenable material overlying said substrate, said softenable material containing a layer of electrically photosensitive migration material contiguous the surface of said softenable material opposite said substrate and contacting said softenable material, said softenable material capable of being heated sufficiently to allow migration of said migration material in depth in said softenable material and an overlayer of material on said softenable layer comprising a partially esterified rosin polymer;
b. uniformly negative charging said member;
c. heating said member sufficiently to allow substantially all of the negative charge on the surface of said overlayer to migrate in depth in said overlayer but said heating not sufficient to allow migration of the migration material in depth in said softenable material;
d. after step (c), cooling said member to a temperature which will not allow migration of charge in depth in said overlayer;
e. after steps (b), (c) and (d), uniformly negatively charging said member;
f. image-wise exposing said member to activating electromagnetic radiation; and
g. heating said member sufficient to allow image-wise migration of the image-wise exposed migration material through the softenable material to the substrate and to allow simultaneous agglomeration and migration in depth in the softenable material of the unexposed migration material.

3,901,700

REPELLENT COMPOSITIONS OF FLUORINATED POLYMERS AND OILS IN ELECTROPHOTOGRAPHIC PROCESSES

William E. Yoerger, Rochester; John M. McCabe, Pittsford, and John F. Wright, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 361,370, May 17, 1973, Pat. No. 3,859,090. This application Aug. 13, 1974, Ser. No. 497,348

Int. Cl. G03g 16/00, 13/14

U.S. Cl. 96—1 R

6 Claims

1. An electrographic element having a conductive support bearing a repellent composition comprising from about 1 to

3,901,701

PHOTOELECTROPHORETIC IMAGING PROCESS USING PHOTOCONDUCTIVE ELECTRODE WHICH ALTERS SPECTRAL RESPONSE

Edward Forest, Rochester, and Paul C. Swanton, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

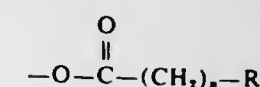
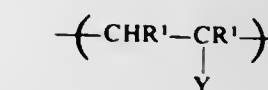
Continuation of Ser. No. 212,704, Dec. 27, 1971, abandoned, which is a continuation of Ser. No. 30,704, April 22, 1970, abandoned, which is a continuation-in-part of Ser. No. 521,059, Jan. 17, 1966, abandoned. This application Oct. 8, 1974, Ser. No. 513,182

Int. Cl. G03q 13/22

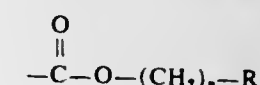
U.S. Cl. 96—1.2

3 Claims

wherein R¹ represent hydrogen or an alkyl having 1 to about 4 carbon atoms and wherein Y represents a moiety having one of the following formulas:

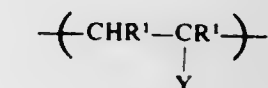


or

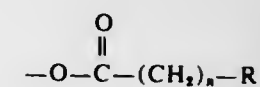


wherein R is a fluorinated alkyl or a fluoroalkoxy-substituted fluorinated alkyl having 1 to about 20 carbon atoms and n is 0 or 1.

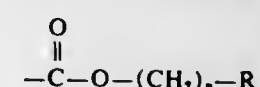
2. In an electrographic image transfer process wherein a liquid-developed toner particle image formed on a dielectric surface bearing an electrostatic charge pattern is transferred to a receiving sheet by (a) contacting together the toner image and receiving sheet while the toner image is wet with the electrically insulating carrier liquid of said liquid developer and (b) applying a transfer potential to the toner image during said contact, the improvement wherein the dielectric surface on which the toner image is developed is overcoated with a repellent composition comprising from about 2.5 to about 40 percent by weight of a fluorinated oil having a surface energy less than about 27 dynes/cm, from about 50 to about 80 percent by weight of a fluorinated hydrocarbon resinous binder, and from about 5 to about 30 percent by weight of a solid fluorinated polymer having repeating units of the following formula:



wherein R¹ represents hydrogen or an alkyl group having 1 to about 4 carbon atoms and wherein Y represents a moiety having one of the following formulas:



or



wherein R is a perfluorinated alkyl or a perfluoroalkoxy-substituted fluorinated alkyl having 1 to about 20 carbon atoms and n is 0 or 1.

3,901,702

IMAGING ELEMENT WITH ABSORBENT BLOTTER OVERLAYER MIGRATION

Joseph G. Sankus, Jr., Fairport, N.Y., and Nicholas L. Petruzzella, Columbus, Ohio, assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 872,282, Oct. 29, 1969, Pat. No. 3,753,706. This application Mar. 1, 1973, Ser. No. 337,242

Int. Cl. G03g 5/06, 5/08, 5/02

U.S. Cl. 96—1.5

3 Claims

1. A migration imaging member comprising a substrate, a layer of substantially electrically insulating softenable material overlying said substrate and a fracturable layer of electrically photosensitive migration marking material comprising selenium contacting said softenable layer and spaced apart from said substrate and a substantially electrically insulating non-image bearing absorbent blotter layer overlying the surface of the layer of softenable material.

3,901,703

XERORADIOGRAPHIC PLATE

Helmut Baum, Nurnberg, Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Jan. 23, 1974, Ser. No. 436,019

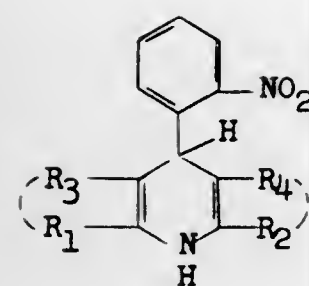
Claims priority, application Germany, Feb. 3, 1973, 2305407

Int. Cl. G03g 5/04

U.S. Cl. 96—1.5

2 Claims

1. A xeroradiographic element comprising:
an aluminum foil substrate having a thickness of 0.1 mm;
a layer of conductive lacquer of polyvinylacetal containing an addition of graphite on said foil substrate, said layer of conductive lacquer having a thickness of 0.5 to 2 microns;
a layer of pure selenium having a thickness of 1 to 20 microns on said layer of conductive lacquer;



in which

R_1 or R_2 represents hydrogen or alkyl;

R_3 or R_4 stands for cyano, acyl or the group COOR_5 in which R_5 represents a saturated aliphatic group which may be interrupted by hetero atoms selected from the group of oxygen and imino groups, olefinically or acetylenically unsaturated aliphatic groups; R_1 and R_3 or R_2 and R_4 may represent the ring members required for completing a 6-membered carbocyclic ring which contains a keto group

including a hydrophilic film forming polymer resin or colloid means for forming the supported layer comprising the light-sensitive 1,4-dihydropyridine derivative.

3,901,711

SILVER HALIDE PHOTOGRAPHIC EMULSION CONTAINING A GOLD SALT AND A POLYALKYLENE OXIDE

Katsuaki Iwaosa; Seigo Ebato, and Noboru Itoh, all of Kyoto, Japan, assignors to Mitsubishi Paper Mills, Ltd., Japan
Filed Aug. 17, 1973, Ser. No. 389,153

Claims priority, application Japan, Aug. 31, 1972, 47-87314

Int. Cl. G03c 1/06

U.S. Cl. 96—95

11 Claims

1. A silver halide photographic emulsion suitable for preventing high intensity reciprocity law failure consisting essentially of said emulsion and either (1) a gold salt in terms of gold atoms of 0.1 to 200 mg per mole of the silver halide and a polyalkylene oxide or condensation product thereof with water, aliphatic alcohol, glycol, fatty acid, aliphatic amine, or dehydrated cyclic hexitol compounds, the amount of polyalkylene oxide or condensation product being 0.1 to 50 grams per mole of silver halide or (2) a mixture of (1) and at least one soluble salt selected from the group consisting of halide, nitrate and sulfate salts of cadmium, zinc, cobalt, nickel, thallium, uranium, thorium, iridium and lead in an amount of 10 mg to 50 grams per mole of the silver halide.

3,901,712

LOW CONCENTRATION SENSITIZATION AND DEVELOPMENT ACCELERATION

Dorothy J. Beavers, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 11, 1974, Ser. No. 450,263

Int. Cl. G03L 1/06

U.S. Cl. 96—95

25 Claims

1. A photographic element comprising a support having coated thereon at least one layer comprising a photographic silver halide emulsion and in said layer or in a second layer coated adjacent thereto a ruthenium cationic complex including at least four ligands chosen from the class consisting of ammine and amine ligands, said ruthenium cationic complex being present in a concentration of at least 0.1 mg, but less than 1 gram per mole of silver.

3,901,713

PROCESS FOR THE MANUFACTURE OF SILVER HALIDE PHOTOGRAPHIC EMULSION CONTAINING IRIIDIUM AND RHODIUM

Koutarou Yamasue; Tatsuya Tajima, and Yoshinori Tsuchiya, all of Minami-Ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan

Continuation of Ser. No. 259,127, June 2, 1972, abandoned.

This application July 1, 1974, Ser. No. 485,035

Claims priority, application Japan, June 2, 1971, 46-38383

Int. Cl. G03c 1/28, 1/06

U.S. Cl. 96—95

21 Claims

1. In a negative-working silver halide photographic emulsion comprising an unfogged silver halide emulsion of silver halide particles dispersed in an aqueous emulsion of a hydrophilic colloid, the improvement comprising a combination of a rhodium compound and an iridium compound which have been added to said emulsion during the precipitation of the silver halide particles in an amount sufficient to produce a high contrast image with a minimum of latent image sensitization.

3,901,714

SILVER HALIDE EMULSIONS AND ELEMENTS INCLUDING SENSITIZERS OF ADAMANTANE STRUCTURE

Edwin N. Oftedahl, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

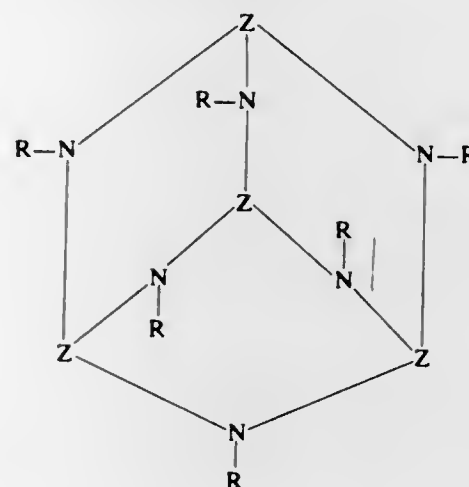
Filed July 29, 1974, Ser. No. 492,792

Int. Cl. G03c 1/28

U.S. Cl. 96—107

15 Claims

1. In a photographic silver halide emulsion the improvement comprising the incorporation of a sensitizing amount of a compound of the structural formula



wherein,

Z represents a Group VA element having an atomic number of from at least 15 inclusive and

R is hydrogen or a hydrocarbon containing 8 or fewer carbon atoms.

3,901,715

ANTISTATIC CARBOXYALKYLATED DIAMINES

John J. Callahan, Park Ridge, and Sydney H. Shapiro, Chicago, both of Ill., assignors to Akzona Incorporated, Asheville, N.C.

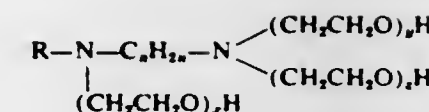
Filed Jan. 19, 1973, Ser. No. 324,916

Int. Cl. C09k 3/16

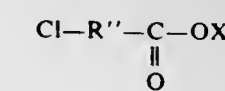
U.S. Cl. 106—2

2 Claims

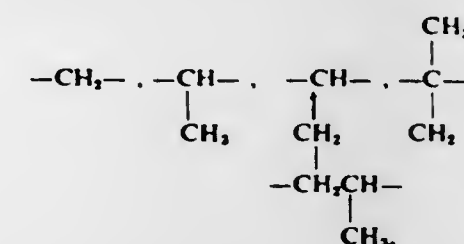
1. An antistatic composition for synthetic polyamide polymers consisting essentially of a mixture of O-carboxyalkylated and ethoxylated diamines prepared by reacting an ethoxylated diamine of the general formula:



wherein n is an integer from 2 to 6; the total of x , y and z is from about 20 to about 200; and R is an aliphatic hydrocarbon group having 6 to 22 carbon atoms; with sodium hydroxide or sodium alkoxide, and then reacting with an α -chloro-aliphatic carboxylic acid or its lower alkyl ester of the formula



wherein X is a member of the group consisting of hydrogen and alkyl of 1 to 3 carbon atoms; and R' is selected from the group consisting of:



$-\text{CH}_2-\text{CH}_2-$, $(\text{CH}_2)_3-$, and

said mixture containing at least one O-carboxylated diamine component.

3,901,716

MICRO-CRYSTALLINE MATERIAL AND METHOD OF PREPARATION

Philip Sydney Rogers; James Williamson, both of London, and Peter Edwin Johnson, East Barnet, all of England, assignors to National Research Development Corporation, London, England

Filed Jan. 22, 1974, Ser. No. 435,508

Claims priority, application United Kingdom, Feb. 2, 1973, 5408/73

Int. Cl. C03b 29/00

U.S. Cl. 106—39.6

15 Claims

1. A method of making a micro-crystalline material comprising the steps of

1. preparing a melt of a composition comprising a base glass composition consisting of from 0 to 30 weight percent MgO , from 5 to 35 weight percent Al_2O_3 , from 35 to 75 weight percent SiO_2 , and from 0 to 30 weight percent CaO ; from 0.5 to 3 parts by weight chromium oxide (expressed as Cr_2O_3) per 100 parts by weight of the base glass composition and from 0.5 to 10 parts by weight iron oxide (expressed as Fe_2O_3) per 100 parts by weight of the base glass composition, and

2. cooling the melt at such a rate that initially crystals of spinel, mostly less than $1\mu\text{m}$ in size, are formed within the melt and subsequently crystals of a silicate phase grow upon the spinel crystals to yield the micro-crystalline material.

8. A composition usable for preparing a microcrystalline material in accordance with the method of claim 1 comprising from 0 to 30 weight percent MgO , from 5 to 35 weight percent Al_2O_3 , from 35 to 75 weight percent SiO_2 , from 0 to 30 weight percent CaO , from 0.5 to 3 parts by weight chromium oxide (expressed as Cr_2O_3) per 100 parts by weight of the combined MgO , Al_2O_3 , SiO_2 and CaO , and from 0.5 to 10 parts by weight iron oxide (expressed as Fe_2O_3) per 100 parts by weight of the combined MgO , Al_2O_3 , SiO_2 and CaO .

3,901,717

HARD PRECIOUS MATERIAL

Francis Revaz, Le Locle, Switzerland, assignor to Les Fabriques d'Assortiments Reunies, Le Locle, Switzerland

Filed Dec. 5, 1972, Ser. No. 312,346

Claims priority, application Switzerland, Dec. 10, 1971, 18015/71

Int. Cl. C04B 35/00

U.S. Cl. 106—42

6 Claims

1. An article of jewelry comprising a hard precious material having a hardness exceeding 6 Mohs, said material comprising a precious metal selected from the group consisting of gold, platinum and silver distributed in a ceramic matrix of alumina, said metal occupying 7.7 to 70% by volume of said matrix.

3,901,718

ABSORPTIVE GLASS

Jimmy C. C. Wu, Southbridge, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Jan. 3, 1969, Ser. No. 790,512

Int. Cl. C03C 3/30

U.S. Cl. 106—47 R

8 Claims

1. An absorptive glass material of a composition consisting essentially of the following ingredients:

Percent by Weight

P_2O_5	14 to 44
V_2O_5	0 to 35
MoO_3	0 to 45
WO_3	0 to 30
CaO	0 to 7
BaO	0 to 15
Fe_2O_3	5 to 15
Co_2O_3	0 to 8
MnO_2	0 to 10
NiO	0 to 5
CuO	0 to 5
Cr_2O_3	0 to 3

said glass having a total integrated light transmission for the optical region of the spectrum of less than 1.0% in a thickness of 80 microns.

3,901,719

GLASSES AND GLASS-CERAMICS CONTAINING RUTILE FIBERS

William T. Brydges, III, and Dennis W. Smith, both of Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed May 22, 1974, Ser. No. 472,142

Int. Cl. C03c 3/14, 3/22

U.S. Cl. 106—47 R

5 Claims

1. A composite article consisting essentially of long single crystal rutile fibers of high aspect ratios contained within a quaternary $\text{RO-TiO}_2\text{-Al}_2\text{O}_3\text{-B}_2\text{O}_3$ glass matrix, said article exhibiting chemical durability and having an overall composition consisting essentially, by weight on the oxide basis, of about 45–65% B_2O_3 , 5–30% Al_2O_3 , 5–30% TiO_2 , and 3–30% RO , wherein RO consists of an alkaline earth metal oxide selected from the group MgO , CaO , SrO , and BaO .

3,901,720

GLASS FIBRES AND COMPOSITIONS CONTAINING GLASS FIBRES

Amalendu Jyoti Majumdar, Watford, England, assignor to National Research Development Corporation, London, England

Division of Ser. No. 127,361, March 23, 1971, Pat. No. 3,783,092, which is a continuation-in-part of Ser. No. 649,463, June 28, 1967, abandoned, and a continuation-in-part of Ser. No. 748,645, July 30, 1968, abandoned, and a continuation-in-part of Ser. No. 31,184, March 26, 1970, abandoned. This application Feb. 12, 1973, Ser. No. 331,583 Claims priority, application United Kingdom, July 11, 1966, 31025/66; Feb. 2, 1967, 5070/67; Aug. 4, 1967, 35901/67; Apr. 3, 1969, 17448/69

Int. Cl. C03c 13/00, 3/04

U.S. Cl. 106—50

6 Claims

1. An alkali-resistant glass fibre derived from a glass consisting essentially of, in percent by weight, 65–80% SiO_2 , 10–20% ZrO_2 , and 10–20% of at least one network modifier which is an alkali metal oxide, an alkaline earth metal oxide, or ZnO , said glass being one which has a tensile strength of at least 100,000 pounds per square inch as determined after contacting a fibre having a diameter from 0.4 to 1.0×10^{-3} inch and a length of $2\frac{1}{2}$ inches with a saturated $\text{Ca}(\text{OH})_2$ solution for 4 hours at 100°C ., removing the fibre from the solution and washing the fibre in sequence with a dilute solution of aqueous HCl , water, and acetone, and drying, the fibre experiencing not more than 10% reduction in diameter during said test.

3,901,721

DOLOMITE-MAGNESITE REFRACTORY AND BATCH THEREFOR

Robert C. Doman, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed May 13, 1974, Ser. No. 469,117

Int. Cl. C04b 35/04, 35/06

U.S. Cl. 106—58

14 Claims

1. A size-graded particulate batch for the production of basic refractory bodies and consisting essentially of, with percentages on the weight basis, 25–35% substantially –100 Tyler mesh fine dead-burned magnesite, 10–55% substantially –4+65 Tyler mesh coarse dead-burned magnesite, and 15–60% substantially –4+65 Tyler mesh coarse fused grain consisting essentially of, on the oxide basis, 50–65% CaO and 30–45% MgO .

3,901,722

METHOD FOR PRODUCING A HIGH STRENGTH CONCRETE

Toshiyuki Kitsuta, Morioka; Iwao Mino, Kamakura, and Koji Nakagawa, Asahi, all of Japan, assignors to Japanese National Railways and Denki Kagaku Kogyo Kabushiki Kaisha, both of Tokyo, Japan

Filed Sept. 27, 1973, Ser. No. 401,299

Claims priority, application Japan, Sept. 27, 1972, 47-96750

Int. Cl. C04B 7/02

U.S. Cl. 106—89

6 Claims

1. A method for producing a high compressive strength concrete having a high freezing and thawing resistance under the condition that the concrete is left to stand under atmosphere and a sufficient curing can not be effected, which comprises blending 2–13% by weight based on cement of (A) a mixture of $12\text{CaO} \cdot 7\text{Al}_2\text{O}_3$ not containing free- CaO and gypsum or (B) a product not containing free- CaO obtained by simultaneously burning a material to form $12\text{CaO} \cdot 7\text{Al}_2\text{O}_3$ and gypsum, to Portland cement in a unit cement amount of 500–700 Kg and a water cement ratio of 18–35%, the weight ratio of $12\text{CaO} \cdot 7\text{Al}_2\text{O}_3$ to gypsum being 1:0.8–5, the fineness

in Blaine value of the $12\text{CaO} \cdot 7\text{Al}_2\text{O}_3$ being 4,000–8,000 cm^2/g .

3,901,723

LASER WINDOW MATERIALS

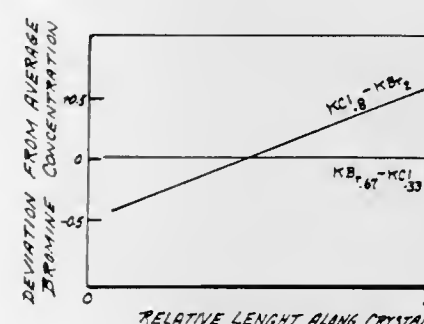
Alton F. Armstrong, Lexington, and Harold Posen, Brookline, both of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 24, 1973, Ser. No. 326,207

Int. Cl. C09K 3/00

U.S. Cl. 106—286

2 Claims



1. A method for growing a solid ternary solution in single crystal form used as a laser window material which comprises the steps of providing a liquid solution of two mutually compatible materials which react to produce a mixed crystalline body in single crystal form; crystallizing said liquid solution such that the compositional content comprising a ternary alkali halide single crystal having a uniform stoichiometric compositional content of from about 66 to 68 mol percent potassium bromide with the balance substantially all potassium chloride and represents a liquidus-solidus minima in its phase diagram.

3,901,724

INSTANTANEOUS DRY TO LIQUID SUGAR UNIT

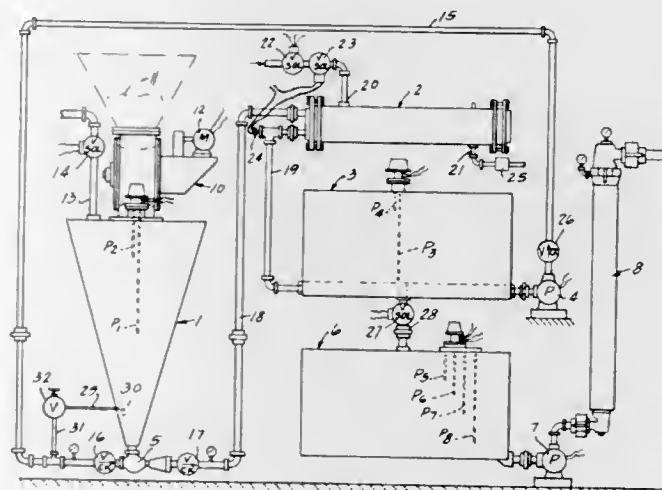
Donald R. White, 5218 Howard, Western Springs, Ill.

Filed Mar. 8, 1973, Ser. No. 339,420

Int. Cl. B01f 1/00

U.S. Cl. 127—22

29 Claims



1. Apparatus for the automatic supply, on demand, of a mixture in the form of a liquid, prepared in batch form from precise proportions of at least one dry component material and at least one liquid component material, comprising a first container of a size to hold the total of all the dry and liquid component materials to be employed in a batch, a first supply means for supplying a predetermined total quantity of said liquid component to the first container, a second supply means for supplying a predetermined total quantity of at least one dry component to said first container, a second container for the prepared mixture of a size to hold said predetermined quantities supplied to said first container, in addition thereto,

3,901,727

PROCESS AND COMPOSITION FOR CLEANING AND IMPARTING WATER AND OIL REPELLENCY AND STAIN RESISTANCE TO A SUBSTRATE

Basil L. Loudas, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 122,143, March 8, 1971, abandoned. This application Mar. 7, 1973, Ser. No. 338,935 Int. Cl. B08B 7/04; C11D 1/00; C09K 3/00

U.S. Cl. 134—4

9 Claims

1. A container-stable, water-dilutable, alkaline cleaning composition capable of removing soil and stains from a substrate and imparting water and oil repellency and stain resistance to such substrate, the composition consisting essentially of in an aqueous medium:

- a. one part by weight of at least one water-dispersible detergent which is capable of drying to a nonoily, nontacky residue,
- b. up to about 6.5 parts by weight of at least one water-dispersible organic carboxyl-containing material selected from the group consisting of:
 - i. water-dispersible mono-carboxylic acids having eight carbons or more, or alkali metal or ammonium salts thereof, and
 - ii. water-dispersible alkali metal or ammonium salts of polymers containing poly-carboxylic-acid functionality, said polymers having at least three carbons in the backbone chain per carboxyl group;
 said carboxyl-containing material being free of fluoroaliphatic radicals and being capable of forming solid, hydrophobic, water-insoluble zinc and zirconium salts below about pH 8,
- c. at least one water-dispersible Lewis base present in an amount sufficient to temporarily maintain said composition above about pH 8 when said composition is exposed to the atmosphere under conditions of use, said Lewis base being selected from the group consisting of ammonia, morpholine, and volatile alkylamines,
- d. at least one zinc or zirconium coordination complex which is water-dispersible above about pH 8 and which provides sufficient zinc or zirconium ions below about pH 8 which are capable of combining with substantially all of the acidic radicals present in said composition, and
- e. up to about 1.5 parts by weight of at least one fluorochemical compound having acid functionality, said fluorochemical compound having the formula: $(R_f)_a-X-(A)_b$, where R_f is a fluoroaliphatic radical, a is an integer of 1 or more, X is a linking group having a valence of a plus b and being less electronegative than a $-\text{CF}_2-$ group, A is an acid group, and b is an integer of 1 or more, said fluorochemical compound being capable of imparting water and oil repellency to a substrate.

3,901,728

DISHWARE HOLD DOWN PLATE AND METHOD

Jacques E. Opal, 759 E. Tenth St., Brooklyn, N.Y. 11230

Filed Nov. 21, 1973, Ser. No. 417,739

Int. Cl. B08B 3/02, 11/02; A47B 73/00; A47F 5/00

U.S. Cl. 134—25 A

29 Claims

1. The method of washing dishware in an automatic dishwasher, the dishwasher including a hold down disc, an upper rotatable rack having a central hub and adapted to receive inverted items of dishware around the central hub, the central hub being mounted to a support arm slidably supported within the dishwasher, and a water spray comprising the steps of inserting the central hub of the upper rack through the hold down disc to position the hold down disc with respect to dishware in the upper rack, holding inverted dishware in the upper rack in position under solely the force of gravity by contacting the dish-

a predetermined minimum quantity of prepared mixture, conduit means between the first and the second containers forming a closed path in which said minimum quantity of prepared mixture may be circulated, means operatively disposed in said path for effecting such circulation therein, means disposed in said path, operatively connected to said first container, for introducing the mixture therein into said path, and heating means operatively disposed in said path intermediate the point of introduction of said mixture and the return point of said path to the first container, and forming a part of said path, operative to supply sufficient heat to cause by undissolved dry components in said path to go completely into solution, said second container having an outlet therein from which the prepared mixture therein may be withdrawn for ultimate use.

3,901,725

SIZE CLASSIFIED CEREAL STARCH GRANULES

John L. Bond, Dublin; Saul Rogols, Circleville, and John W. Salter, Westerville, all of Ohio, assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

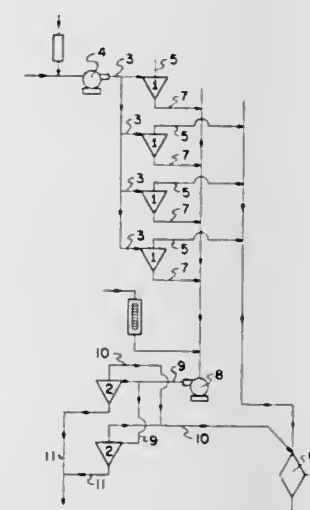
Continuation of Ser. No. 180,588, Sept. 15, 1971, abandoned.

This application June 12, 1974, Ser. No. 478,564

Int. Cl. C13L 1/08

U.S. Cl. 127—32

28 Claims



1. A large granule cereal starch product obtained by wet process separation from a native colloid slurry of bimodal granule starch selected from the group of wheat, barley and rye starches, at least about 22% of the total number of granules of said large granule cereal starch being at least 22 microns in size, about 99% by weight of the granules are at least 12 microns in size, said starch being substantially free of other matter, and having been obtained by hydrocyclone separation directly from native colloid starch slurry from which substantially all of gluten, fiber and other matter have been removed.

3,901,726

ULTRASONIC WATCH CLEANING METHOD

Grady K. Snearly, 1607 E. Main, El Dorado, Ark. 71730

Filed Apr. 9, 1974, Ser. No. 459,310

Int. Cl. B08b 7/02, 7/04; C11d 3/02

U.S. Cl. 134—1

4 Claims

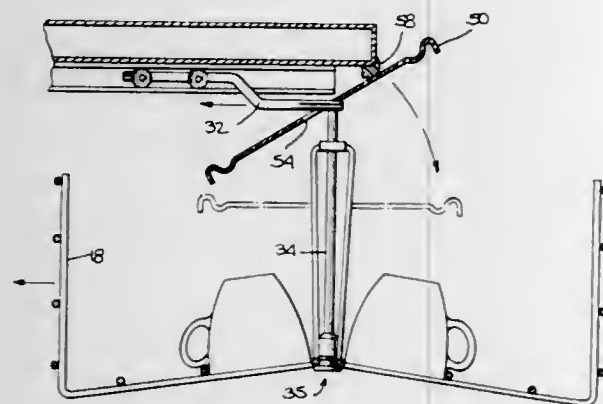
1. A process for the removal of foreign matter from a watch mechanism, comprising the steps of immersing a watch mechanism in a receptacle containing a liquid cleaning solution consisting essentially of a clear hydrocarbon distillate solvent anhydrous ammonia and a member selected from the group consisting of anionic, cationic and non-ionic detergents and subjecting said solution to ultrasonic waves.

ware with the disc to prevent dislocation of the dishware by the water spray during the washing cycle; washing the dishware;

after washing removing the hold down disc from contact with the dishware in upper rack to withdraw the central hub from the hold down disc by lifting the disc with respect to the central hub; and

supporting the hold down disc clear of the central hub and dishware in the upper rack to facilitate loading or unloading the upper rack by inserting the support arm through the hold down disc and resting the hold down disc on the support arm while loading or unloading the dishwasher.

15. In combination with an automatic dishwasher upper rack having an area around a central hub to receive inverted dishware items, the rack positioned in the path of an upward directed water spray and supported at the central hub by a support slidably mounted in a horizontal track fixed to the inside of the dishwasher having a top wall, a hold down plate comprising a major surface of a thermally resistant material for contacting the inverted dishware in the upper rack and having



a central bore of a diameter to fit freely over the central hub of the upper rack,

a gross weight which is sufficient to overcome by the force of gravity alone the lifting force of the water spray and a rigidity which is characterized by that degree of stiffness which is sufficient to permit the plate to retain its shape without distorting substantially as a result of operating conditions within the dishwasher whereby

whereby dishware spaced around the hub are held in position during the dishwashing process by the major surface and are prevented from being uprighed or damaged by the water spray, the plate having a thickness which is sufficient to permit the plate to be easily lifted upwardly with respect to the central hub and moved horizontally over the slidably mounted support so that a portion of the plate rests on the support and is between the support and the top wall of the dishwasher whereby the plate is easily positionable with respect to the rack for easy loading and unloading of the rack without interference with the plate.

3,901,729

METHOD AND APPARATUS FOR TERMINATING THE CHARGE OF STORAGE BATTERIES

Joseph C. Duddy, Trevoise, Pa., assignor to ESB Incorporated, Philadelphia, Pa.

Continuation-in-part of Ser. No. 184,570, Sept. 28, 1971, abandoned. This application Sept. 26, 1973, Ser. No. 401,055

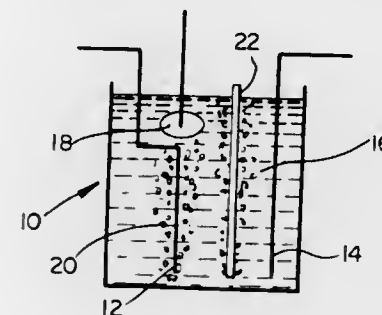
Int. Cl. H01m 1/08

U.S. Cl. 136—3

5 Claims

1. In a storage battery cell comprising a first plate species, a second plate species the two plate species submerged in an aqueous electrolyte and in ionic contact therewith, the storage battery cell being further characterized in that when the cell is fully charged and receives a charging current gas bubbles are evolved at the two electrode species in the electrolyte, the improvement which comprises:

a. a first means for segregating the gas bubbles evolved from at least a portion of the first plate species from gas bubbles evolved from the second plate species; and,



b. a first means for reacting gas from the gas bubbles and producing electric current thereby, the first means for reacting being submerged and so located in the cell electrolyte that segregated gas bubbles from at least a portion of the first plate species will impinge thereon.

3,901,730

CATHODE MIX FOR SOLID ELECTROLYTE DEVICE

Demetrios V. Louzos, Rocky River, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 384,302, July 31, 1973, abandoned, which is a continuation of Ser. No. 92,830, Nov. 25, 1970, abandoned. This application May 1, 1974, Ser. No. 465,993

Int. Cl. H01m 13/00

U.S. Cl. 136—83 R

5 Claims

1. A cathode mix for a solid electrolyte cell which mix contains finely divided electronically conductive material, comminuted ionically conductive cell electrolyte having a specific conductance of at least $1 \times 10^{-3} \text{ ohm}^{-1} \text{ cm}^{-1}$ at cell operating conditions, and, an active cathode material selected from the group consisting of the compounds I_2O_5 and CrO_3 .

3,901,731

THIN SHEET APPARATUS FOR SUPPLYING AND DRAINING LIQUID

Bernard Warszawski, Paris; Bernard Verger, Essonne, and Philippe Demange, Chatenay-Malabry, all of France, assignors to Societe Generale de Constructions Electriques et Mecaniques (ALSTHOM), Paris, France

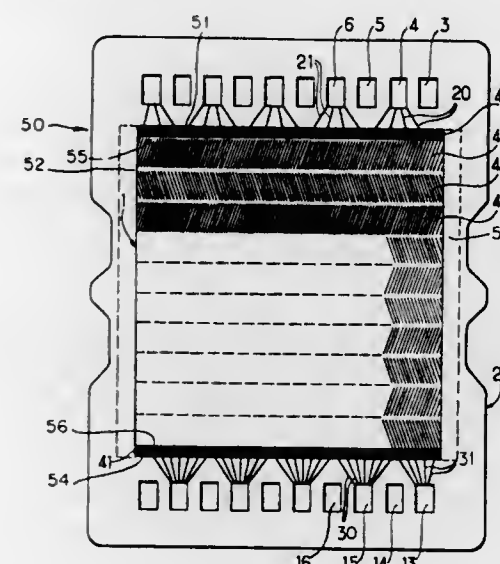
Division of Ser. No. 226,502, Feb. 15, 1972, Pat. No. 3,814,631. This application Jan. 4, 1974, Ser. No. 430,784

Claims priority, application France, Feb. 15, 1971, 71.5117

Int. Cl. H01m 27/00

U.S. Cl. 136—86 R

4 Claims



1. A thin sheet apparatus comprising a central area and a frame area around said central area,

said frame area containing supply orifices in one side thereof, and drainage orifices in the opposite side thereof, said frame area containing a plurality of micro-channels leading from each of said supply orifices toward said central area and adapted to supply liquid from said supply orifices to the surface of said central area,

the said plurality of micro-channels leading from each of said orifices comprising a group of micro-channels with the two micro-channels forming said group diverging from each other in the direction away from said orifice each of said micro-channels comprising the said plurality of micro-channels leading from each of said orifices having a cross-sectional area varying relative to the cross-sectional area of each of the other of said micro-channels in proportion to their respective lengths, and

said frame containing a fluid distribution area in said frame positioned between the supply micro-channels and the side of said electrode toward which said supply micro-channels lead and abutting said side of said electrode, said fluid distribution area having a plurality of spaced projections across the area thereof.

3,901,732

THIN FLAT CELL CONSTRUCTION HAVING A GAS-PERMEABLE COATED PERFORATED ANODE

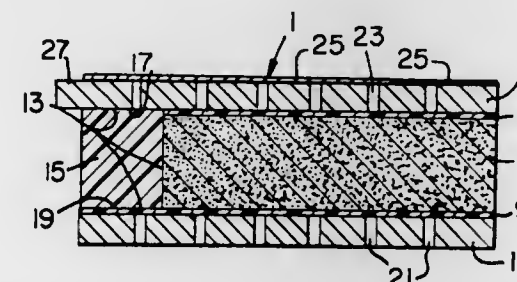
Tibor Kalnoki Kis, Westlake, and Thomas A. Reilly, Bay Village, both of Ohio, assignors to Union Carbide Corporation, New York, N.Y.

Filed July 18, 1974, Ser. No. 489,843

Int. Cl. H01m 21/04

U.S. Cl. 136—111

24 Claims



1. A thin, flat cell having a metal anode, a cathode of depolarizer mix, a separator between said anode and said cathode, an electrolyte in contact with said anode and said cathode, and a cathode collector; said anode having a plurality of openings for venting undesirable gases formed within the cell and having on its outer surface a substantially continuous layer of a gas-permeable, electrolyte-impermeable paint; and wherein said cathode, said separator and said electrolyte are within and bounded by a peripheral frame of electrolyte-impermeable sealing material, said frame being marginally adhered to said anode and said cathode collector.

3,901,733

THIN FILM SOLID ELECTROLYTE STRUCTURES AND PROCESS OF MAKING SAME

Albert Toy, Gardena; Neal A. Richardson, Palos Verdes Peninsula, and Robert Bromberg, Los Angeles, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Oct. 7, 1974, Ser. No. 512,750

Int. Cl. H01m 11/00; B01k 3/12

U.S. Cl. 136—153

19 Claims



1. A thin film solid electrolyte comprising:

A. a dense impermeable ionic conductive sodium polyaluminate film supported on
B. a porous ionic conductive sodium polyaluminate substrate sheet.

3,901,734

THERMOCOUPLE

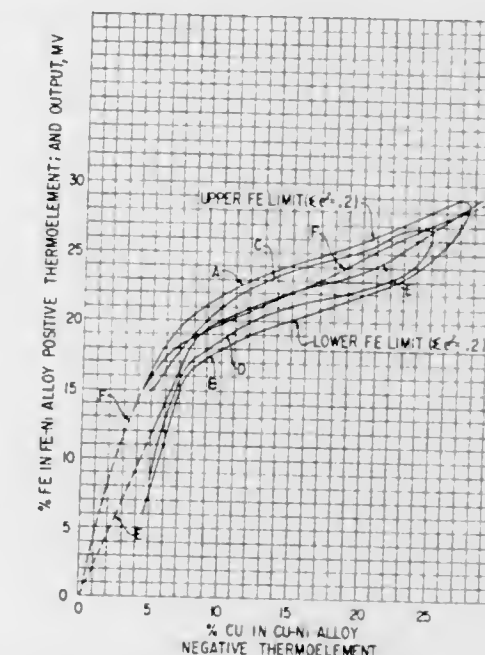
Forbes S. Sibley, Troy, and Robert J. Biermann, Sterling Heights, both of Mich., assignors to Hoskins Manufacturing Co., Detroit, Mich.

Filed Aug. 23, 1973, Ser. No. 390,850

Int. Cl. H01v 1/22

U.S. Cl. 136—241

25 Claims



1. A thermocouple having an electropositive element and an electronegative element, the compositions of said two elements falling within the range of coordinates lying between curves A and B in FIG. 1.

3,901,735

INTEGRATED CIRCUIT DEVICE AND METHOD UTILIZING ION IMPLANTED AND UP DIFFUSION FOR ISOLATED REGION

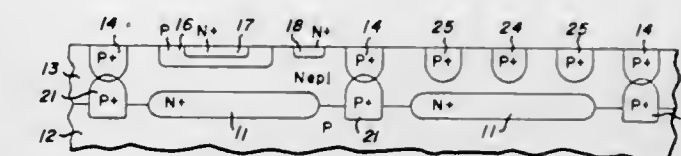
James L. Dunkley, Santa Clara, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Sept. 10, 1973, Ser. No. 395,574

Int. Cl. H01L 21/265

U.S. Cl. 148—1.5

19 Claims



1. The method for making a transistor in the semiconductor substrate of an integrated circuit device comprising the steps of

forming a first portion of an isolation region of a first conductivity type in a semiconductor substrate of said first conductivity type by the ion implantation of a dopant of said first conductivity type into the surface of the substrate,

growing an epitaxial layer of a second conductivity type on the surface of said substrate and over said ion implanted region,

forming a second portion of said isolation region in said epitaxial layer by the diffusion of a dopant of said first conductivity type down into the epitaxial layer, said ion implanted dopant diffusing from said substrate up into

said epitaxial layer until said down diffusion and said up diffusion overlap,
forming the base region of said transistor by diffusion of a dopant of said first conductivity type in said epitaxial layer, and
forming the emitter region of said transistor by the diffusion of a dopant of said second conductivity type into said base region.

3,901,736

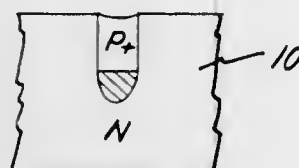
METHOD OF MAKING DEEP DIODE DEVICES

Thomas R. Anthony, and Harvey E. Cline, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 30, 1973, Ser. No. 411,150

Int. Cl. H01L 7/42

U.S. Cl. 148—1.5



1. The method of making a semiconductor device comprising a matrix body of semiconductor material of selected conductivity and selected resistivity and a plurality of separate and spaced recrystallized regions of different selected conductivity and selected resistivity extending into the interior of the matrix body in ordered array, which comprises the steps of providing a covering over a first substantially planar surface of the matrix body so that portions of the surface of said body are exposed in a predetermined pattern, removing portions of the said body so exposed to provide a plurality of separate and spaced recesses of depth less than about 30 microns in the said first surface in the desired ordered array, substantially filling each of the resulting recesses with a solid metallic material with which the matrix semiconductor material will form a solution of melting point temperature below that of the matrix semiconductor material, heating the matrix body and thereby forming in each of the recesses a liquid body of a solution of the matrix semiconductor material and the metallic material, establishing and maintaining a finite temperature gradient in a first direction through the matrix body with the said first substantially planar surface being at a temperature lower than that of a second surface, and migrating the liquid bodies into the interior of the matrix body.

3,901,737

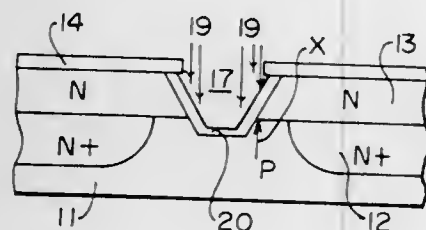
METHOD FOR FORMING A SEMICONDUCTOR STRUCTURE HAVING ISLANDS ISOLATED BY MOATS

Somanath Dash, Palo Alto, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.

Filed Feb. 15, 1974, Ser. No. 442,744

Int. Cl. H01L 7/54

U.S. Cl. 148—1.5



1. A method for forming a semiconductor structure comprising the following steps: providing a silicon semiconductor substrate of one conductivity type and having a surface; epitaxially depositing on said surface a layer of silicon semicon-

ductor material of an opposite conductivity type and having a top surface; forming an etch resistant mask on said top surface with a plurality of windows; forming by the use of an etch and the mask a plurality of moats extending downwardly from said top surface to said substrate said moats having walls at least portions of which are inclined and a substantially flat bottom; oxidizing said moats to form an oxide wall; and causing by ion implantation an impurity of said one conductivity type to enter said substrate through the bottom of said moats the energy of the ion implant being adjusted so as not to penetrate the effective thicker inclined side walls to form isolation regions limited to the area under said bottom of said moat and having an impurity concentration greater than that of the substrate.

3,901,738

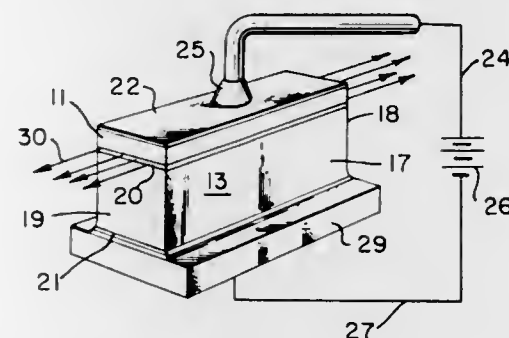
ION IMPLANTED JUNCTION LASER AND PROCESS FOR MAKING SAME

Robert G. Hunsperger, Malibu; Ogden J. Marsh, Woodland Hills, and Michael K. Barnoski, Pacific Palisades, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Continuation-in-part of Ser. No. 426,769, Dec. 20, 1974, abandoned. This application May 13, 1974, Ser. No. 469,137
Int. Cl. H01L 21/265

U.S. Cl. 148—1.5

16 Claims



1. In a semiconductor injection laser of the type having a p-n junction formed in a semiconductor body, means providing feedback of light emitted from said laser junction and means to supply pumping energy to said laser, said laser being further characterized by:

said p-n junction being formed by implanting dopant ions into a surface of said semiconductor body, forming a passivating layer on said surface and annealing said implanted body at a temperature and during a time preselected to diffuse said implanted ions to form a uniform planar junction at a predetermined depth below said surface.

3,901,739

METHOD OF MAKING LIGHT GAGE MEMBERS OF UNALLOYED LOW CARBON STEEL SHEETS

Andor Mandoki, Budapest, Hungary, assignor to "Licencia" Talalmanyokat Ertekesito Vallalat, Budapest, Hungary

Continuation of Ser. No. 815,889, April 14, 1969, abandoned.

This application Oct. 30, 1972, Ser. No. 301,814

Claims priority, application Hungary, Apr. 19, 1968, MA 1829

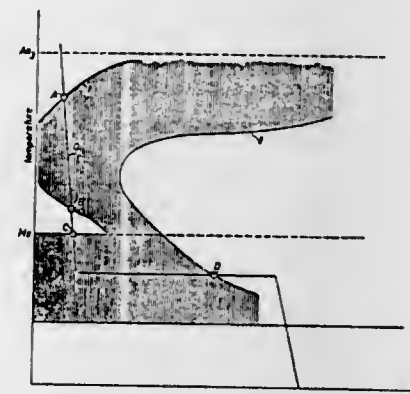
Int. Cl. C21d 9/46

U.S. Cl. 148—12.4

10 Claims

1. In a method of making light gage members of unalloyed low carbon steel sheets having a carbon content not greater than 0.50%, the steps of
heating a said member above the critical temperature thereby to form austenite,
thermally hardening the member by quenching the same from a temperature above the critical temperature to an intermediate temperature of substantially 150° to 470°

centigrade along a cooling line that crosses the nose of the time-temperature transformation curve, to convert only a portion of said austenite to pearlite and bainite,



and thereafter maintaining the quenched steel at this intermediate temperature for a time interval sufficient to obtain conversion of the remaining austenite to pure martensite characteristic of the temperature of heat treatment, and then cooling to room temperature.

3,901,740

NITRIDED BORON STEEL

Charles J. Anderson, Washington, and David S. Gould, Canton, both of Ill., assignors to Caterpillar Tractor Company, Peoria, Ill.

Continuation of Ser. No. 252,739, May 12, 1972, abandoned.

This application Mar. 18, 1974, Ser. No. 452,185

Int. Cl. C22c 39/50; C23c 11/16; C22c 39/54

U.S. Cl. 148—16.6

2 Claims

1. A method of economically producing steel parts having high case hardness and commensurate core properties, comprising the steps of forming the steel parts from steel consisting of about 0.25 to 0.50 percent of carbon, about 0.8 to 1.60 percent of manganese, normal impurities, about 0.0003 to 0.005 percent of boron, approximately 0.03 to 0.05 percent vanadium as a nitriding agent, and the balance iron, the boron and vanadium being present in uncombined form, preliminarily hardening the parts to develop core toughness, beam strength and depth hardness, and nitriding the steel parts to form a case having a minimum Knoop hardness of approximately 400 to a depth of approximately 0.012 inches.

3,901,741

PERMANENT MAGNETS OF COBALT, SAMARIUM, GADOLINIUM ALLOY

Mark G. Benz, Burnt Hills, and Donald L. Martin, Elnora, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 23, 1973, Ser. No. 390,722

Int. Cl. H01F 1/04

U.S. Cl. 148—31.57

1 Claim

1. A permanent magnet with substantially stable permanent magnet properties and characterized by significantly low or zero reversible magnetization temperature coefficient in air through a wide temperature range consisting essentially of a sintered product of compacted particulate ternary metal alloy consisting essentially of cobalt and rare earth component, said rare earth component ranging in amount from 16.6 atomic % to 20 atomic % of said ternary metal alloy and consisting essentially of samarium and gadolinium with the gadolinium atom fraction ranging from 0.12 to less than 0.5 of said rare earth component of said ternary alloy, said alloy consisting essentially of two phases with one of said phases being a Co₂GdSm alloy phase and the second of said phases being a CoGdSm alloy phase richer in rare earth content than said Co₂GdSm alloy phase, said sintered product having a density of at least 87 percent of theoretical and having pores which

are substantially non-interconnecting, and said permanent magnet having a reversible magnetization temperature coefficient in air ranging from -0.030% per °C to +0.015% per °C over the temperature range of -50°C to +300°C, a saturation magnetization 4πJ_s of at least 5 kilogauss and a coercive force H_c of at least -5,000 oersteds in said temperature range.

3,901,742

REMOVAL OF LUBRICANTS AND BINDERS FROM SINTERABLE POWDER COMPONENTS

George Facaros, Alma, Mich., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 11, 1974, Ser. No. 459,909

Int. Cl. H01F 1/02

U.S. Cl. 148—105

8 Claims

1. The method of preparing sintered powdered metal parts which comprises:
mixing powdered metal with an organic lubricant;
forming the mixture to a desired shape;
removing the lubricant from said formed shape by solvent extraction;
and sintering the shaped material.

3,901,743

PROCESSING FOR THE HIGH STRENGTH ALPHA-BETA TITANIUM ALLOYS

Robert A. Sprague, Kensington; Robert J. Henricks, Farmington; Duane L. Ruckle, Enfield, all of Conn.; Cyril M. Pierce, Dayton, and James A. Hall, Columbus, both of Ohio, assignors to United Aircraft Corporation, Hartford, Conn.

Continuation of Ser. No. 200,723, Nov. 22, 1971, abandoned.

This application Oct. 12, 1973, Ser. No. 405,976

Int. Cl. C22C 14/00; C22F 1/18

U.S. Cl. 148—133

2 Claims

1. The method of providing improved toughness to alloy forgings of a nominal composition consisting essentially of, by weight, 6 percent aluminum, 2 percent tin, 4 percent zirconium, 6 percent molybdenum, balance titanium, the forgings including portions of varying thickness which comprises:
solution heat treating the forgings at a temperature of 1600°-1700°F. for a minimum of about 1 hour, developing in the alloy about 5-30 volume percent of a globular alpha phase;
quenching the forging at a rate in excess of air cooling to ambient temperature;
reheating the forging to a temperature of about 1400°-1600°F. for 1-24 hours, providing growth of an acicular alpha phase therein for improved toughness;
and, after cooling, aging the alloy at a temperature of about 950°-1100°F. for at least about 2-8 hours for improved strength.

3,901,744

METHOD OF MAKING SEMICONDUCTOR DEVICES

Derek E. Bolger, and Martin Pion, both of Harlow, England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Jan. 24, 1974, Ser. No. 436,300

Claims priority, application United Kingdom, Feb. 6, 1973, 5779/73

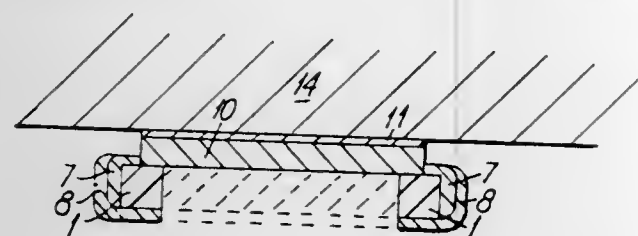
Int. Cl. H01L 7/38

U.S. Cl. 148—171

8 Claims

1. A method of manufacture of a semiconductor device from a slice of semiconductive material including the step of coating the slice with a layer of refractory masking material covering the two opposite faces and the sides of the slice, the step of etching away a central region of said refractory masking material on one of said faces to expose said central region of said one face and leave a peripheral region, the step of depositing first and second semiconductor layers in said exposed central region of said one face by liquid phase epitaxy, epitaxial growth at the sides and peripheral edges of the slice

being prevented by the masking material, and the step of etching away central regions of said refractory masking material on the other said face and of said slice to expose said first semiconductor layer.



material on the other said face and of said slice to expose said first semiconductor layer.

3,901,745

GALLIUM ARSENIDE PHOTOCATHODE

Martin Pion, Harlow, England, assignor to International Standard Electric Corporation, New York, N.Y.

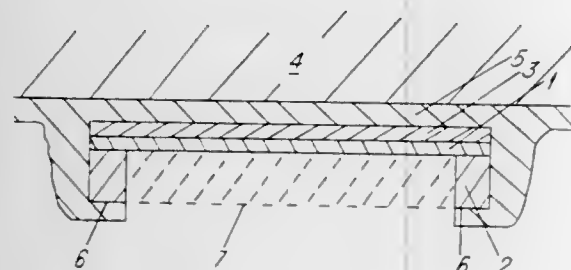
Filed Jan. 30, 1974, Ser. No. 438,139

Claims priority, application United Kingdom, Feb. 6, 1973, 5782

Int. Cl.² H01L 7/38

U.S. Cl. 148-171

4 Claims



1. A method of making a GaAs transmission type photocathode comprising the steps of growing an epitaxial layer of GaAlAs upon a GaAs substrate, growing an epitaxial layer of GaAs upon the layer of GaAlAs, coating the entire outer surface of the GaAs epitaxial layer with a layer of wax extending around the sides of the GaAs epitaxial and GaAlAs epitaxial layers and around the peripheral rim portion on the opposite surface of the GaAs substrate so that only the central region of the substrate is exposed, and removing the exposed central region of the GaAs substrate without penetrating through either of the epitaxial layers to form an apertured rim of GaAs supporting the periphery of the GaAlAs and GaAs layers.

3,901,746

METHOD AND DEVICE FOR THE DEPOSITION OF DOPED SEMICONDUCTORS

Andre Boucher, Sevres, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 1, 1971, Ser. No. 119,489

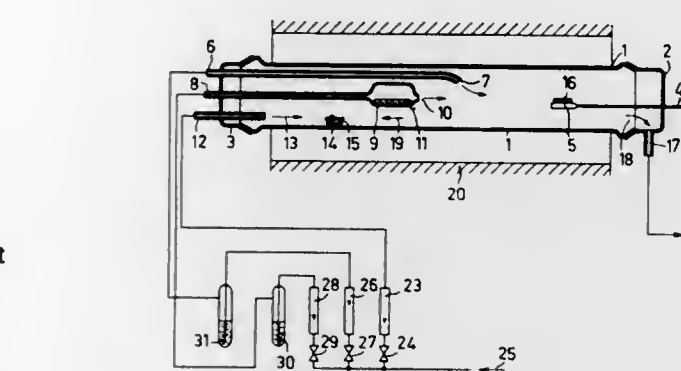
Claims priority, application France, Feb. 27, 1970, 70.07118

Int. Cl. H01L 7/34, 7/36; B01J 17/30

U.S. Cl. 148-175

10 Claims

1. In a method of depositing a doped semiconductor material by crystal growth on a substrate by causing reactive vapors containing the constituents of said semiconductor material and a given doping impurity, obtained from a dopant source, to be directed by a stream of a carrier gas to a substrate arranged in a reaction vessel, the improvement wherein the source of said doping impurity has a negligible vapor pressure at a temperature determined by its location in the reaction vessel during the deposition, said source is positioned upstream with respect to the inlet of reactive vapors in said vessel, said reactive vapors reach the dopant source by re-



non-reactive gas for said source is directed thereto and in the direction of said reactive gas vein.

3,901,747

PYROTECHNIC COMPOSITION WITH COMBINED BINDER-COOLANT

Eugene F. Garner, Saugus, Calif., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Sept. 10, 1973, Ser. No. 395,481

Int. Cl.² C06B 29/00

U.S. Cl. 149-42

9 Claims

1. A pyrotechnic composition adapted, upon combustion, for generating a low-flame temperature, non-toxic gas, said composition comprising:

- a fuel selected from the group consisting of a carbonaceous material, aluminum and magnesium;
- an inorganic oxidizer selected from the group consisting of a metal chlorate, a metal perchlorate, a metal nitrate, ammonium nitrate, ammonium chlorate, and ammonium perchlorate; and
- a combined binder and coolant selected from the group consisting of magnesium hydroxide and a mixture of magnesium hydroxide and magnesium carbonate.

3,901,748

METHOD OF TREATING PHOTOFLASH LAMP CONSTRUCTION

Edward M. Clausen, Eastlake, Ohio, and Robert G. Clemmer, Madison, Wis., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 308,425, Nov. 21, 1972, Pat. No. 3,813,205. This application Dec. 19, 1973, Ser. No. 426,165

Int. Cl.² C03C 15/00, 25/06

U.S. Cl. 156-25

9 Claims

1. A method of reducing thermal failure in a miniaturized photoflash lamp having a lamp envelope composed of a glass consisting essentially of the following constituents in about the ranges stated by weight of 60 to 75% SiO₂, 10 to 25% B₂O₃, 1 to 10% Al₂O₃, 4 to 10% total alkali oxides, and 0 to 5% BaO except for incidental impurities and residual fluxes and refining agents which comprises:

- a. contacting the glass envelope of the lamp before flashing with a liquid etching agent,
- b. applying ultrasonic energy to the liquid etching agent while in contact with the glass lamp envelope, and
- c. terminating contact between said liquid etching agent and the glass lamp envelope before a visible etch has been produced.

3,901,749
METHOD AND APPARATUS FOR FORMING AN ENDLESS RIBBON

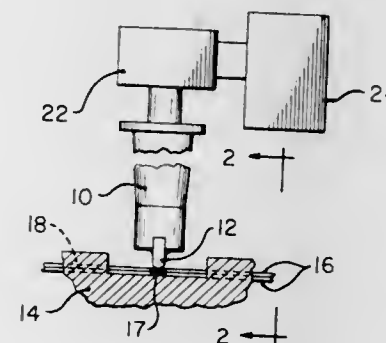
Richard E. H. Howells, West Carrollton, Ohio, assignor to NCR Corporation, Dayton, Ohio

Filed Aug. 27, 1974, Ser. No. 501,116

Int. Cl.² B32B 31/18, 31/20

U.S. Cl. 156-73.3

25 Claims



1. A method of bonding together two elements of sheet-like material comprising the steps of:

- A. superimposing one of said elements upon the other;
- B. subjecting a zone on said superimposed elements to compression and ultrasonic vibration to bond said elements together in the area of the zone and also to provide a cutting action, separating the bonded elements into joined pairs;
- C. selecting one of said joined pairs and spreading the joined elements of said selected pair; and
- D. subjecting the bonded zone of said selected pair of elements to further compression and ultrasonic vibration to flatten the bonded zone to substantially the same thickness as the elements.

3,901,750

METHOD OF BUILDING DUAL CHAMBERED TIRES

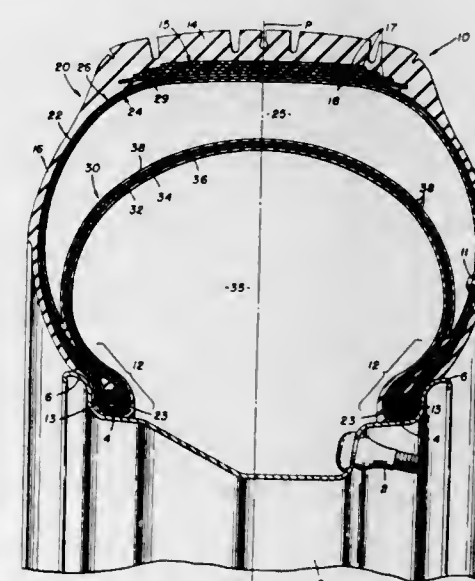
William Bezbatchenko, Cuyahoga Falls, Ohio, and Rollin H. Spelman, Hilton Head Island, S.C., assignors to The General Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 228,151, Feb. 2, 1972, abandoned, which is a division of Ser. No. 40,988, May 27, 1970, abandoned. This application Feb. 6, 1974, Ser. No. 440,207

Int. Cl.² B29H 15/02

U.S. Cl. 156-119

2 Claims



1. The process of building a dual chambered tire assembly on a substantially cylindrical drum rotatable about a horizontal axis said process comprising

- A. building an inner tire member on said drum including applying

1. an even number of elastomeric plies with substantially mutually parallel cords disposed at an acute angle relative to the axis of said drum. 10⁴

B. covering all but selected annular marginal areas of said inner tire member with an adhesion preventing material

C. placing selected components of said outer tire member of said drum over said inner tire member, said components including

1. at least one elastomeric ply with mutually parallel cords disposed substantially parallel to the axis of said drum and

2. a valve member such that the base thereof is situated between the inner surface of said outer tire member and the outer surface of said inner tire member and

D. turning the marginal edges of the assembly around common inextensible bead rings, positioned adjacent the axial ends of said drum, and

E. placing the outer tire member sidewall portions of said drum

F. inflating the assembly through said valve member such that said outer tire member is lifted away from said inner tire member

G. toroidally expanding said assembly such that said outer tire member is in position to engage a previously assembled belt assembly and tread.

3,901,751

METHOD OF MAKING RADIAL PLY TIRES

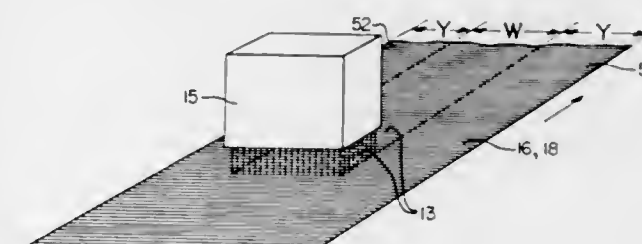
Melvin A. Wilson, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Apr. 6, 1973, Ser. No. 348,800

Int. Cl.² B29H 5/01, 5/26, 17/28

U.S. Cl. 156-133

7 Claims



1. A method of manufacturing a radial ply pneumatic tire comprising: preparing a carcass ply of cord reinforced elastomeric material; treating the portions of said carcass ply which are destined to be disposed beneath and between the shoulder portions of the tire with a dosage of electron radiation equal to between 1 and 5 megarads emitted from an electron accelerator at a voltage intensity such that substantially no energy passes through said carcass ply to increase the structural strength of the elastomeric material; wrapping the carcass ply circumferentially about a cylindrical tire building form; positioning two inextensible bead cores about said carcass ply with a predetermined axial spacing between said bead cores; turning each axially outer end of said carcass about an inextensible annular bead core; while the ply is in a substantially cylindrical configuration, wrapping at least one biased angled cord reinforced belt ply about the carcass ply; providing elastomeric tread rubber on said carcass, and after the belt ply has been applied to the carcass ply, shaping the tire to the form of a torus and heat curing the tire in a mold, said predetermined axial spacing being sufficiently small such that upon shaping of the tire to the form of a torus the cords in the carcass plies are subjected to tensions which effectively resist compression of the carcass ply cords beneath the belt structure caused by the pantographing of the belt cords during the shaping operation, thus preventing wrinkling of the carcass plies under the belt structure.

3,901,752

LAMINATING PROCESS UTILIZING MIXTURES OF PYROLYZABLE AND POLYMERIZABLE BINDERS

Lynn J. Taylor, Haslett, Mich., assignor to Owens-Illinois, Inc., Toledo, Ohio

Continuation-in-part of Ser. No. 189,449, Oct. 14, 1971, Pat. No. 3,816,162. This application Mar. 8, 1973, Ser. No. 339,166

Int. Cl.² B32B 31/20; C09J 5/06

U.S. Cl. 156—155

7 Claims

1. A process for bonding two or more surfaces together, which process comprises

applying to a first surface a composition which consists essentially of a solid pyrolyzable polymeric binder, a solvent for the binder, and at least one polymerizable organic member,

contacting the composition containing first surface with a second surface so as to form a laminate-like structure, and heating the structure so as to remove the pyrolyzable binder and synthesize in situ a polymeric material, said material acting as an adhesive such that the surfaces are bonded together.

3,901,753

BOOM AND METHOD OF MANUFACTURING THE SAME

Per Olof Öberg, Sollentuna, Sweden, assignor to Sanera Projekt Aktiebolag, Bromma, Sweden

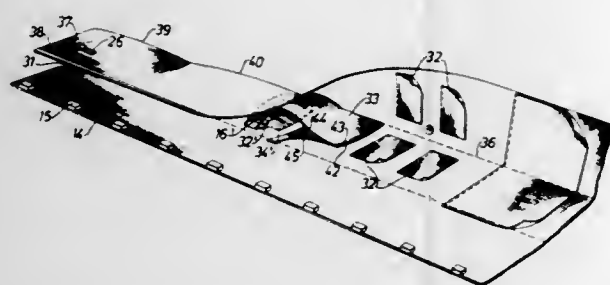
Division of Ser. No. 129,932, March 31, 1971, Pat. No. 3,798,911. This application Nov. 28, 1973, Ser. No. 419,677

Claims priority, application Sweden, Apr. 2, 1970, 4568/70; Aug. 4, 1970, 10704/70; Jan. 27, 1971, 979/71

Int. Cl.² A63B 39/00; B29C 17/04

U.S. Cl. 156—213

7 Claims



1. A method of producing a boom or similar bouyant body made of a material impermeable to water and air, for example rubber, plastic or impregnated fabric, and having a hoselike expandable upper portion and a curtainlike lower portion which depends into the water from the upper portion, comprising the steps of:

providing an elongated sheet of a flexible material which is impermeable to water and air, said sheet including first and second sheet portions disposed adjacent the opposite longitudinally extending edges of said sheet and extending longitudinally throughout said sheet, said sheet also including an intermediate sheet portion extending longitudinally of said sheet and disposed between said first and second sheet portions;

initially positioning said sheet so that at least the first and intermediate sheet portions are in a substantially unfolded condition;

mounting a plurality of expander devices on the intermediate sheet portion at longitudinally spaced intervals;

providing a plurality of flexible sheetlike pieces constructed from a material which is impermeable to water;

positioning said pieces at spaced intervals along said sheet so that the individual pieces extend transversely across said first and intermediate sheet portions;

sealing a transversely extending edge of said pieces to said first and intermediate sheet portions;

folding said first sheet portion, so that it overlaps said intermediate sheet portion, thereby enclosing said expander devices and said pieces, the folding of said first sheet

portion so as to overlap said intermediate sheet portion also causing a folding of the pieces;

sealing the free edges of the pieces to one another to form a liquid-tight partition which extends completely across the hoselike portion defined by the overlapping first and intermediate sheet portions;

sealing the first sheet portion adjacent the longitudinally extending edge thereof to said intermediate sheet portion in a liquid-tight manner so as to form a hoselike bouyant body containing therein said expander devices and said liquid-tight partitions; and

permitting the second sheet portion to project freely outwardly from the hoselike bouyant body to form a downwardly depending curtain when the boom is disposed in a body of water.

3,901,754

METHOD AND APPARATUS FOR FORMING INDIVIDUAL HEAT SEALED ARTICLES

Arthur William Simpson, Hemel Hempstead, and Frank William Pocock, East Harptree, both of England, assignors to Spacials Limited, Bristol, England

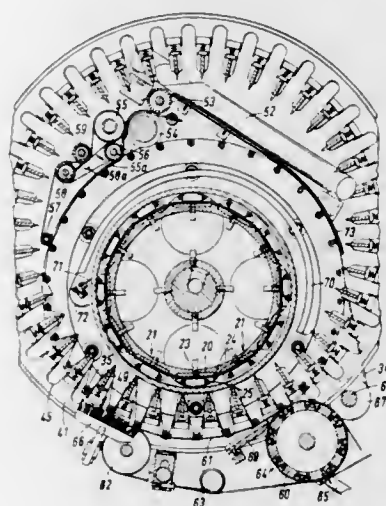
Filed Oct. 29, 1973, Ser. No. 410,416

Claims priority, application United Kingdom, Oct. 27, 1972, 49536/72

Int. Cl.² B32B 31/18, 31/20

U.S. Cl. 156—251

13 Claims



1. A method of forming individual heat sealed articles, e.g. tubes or bags, from a continuous strip of two superimposed layers of heat sealable material or of a material which is coated or impregnated with a heat sealable material, which method comprises:

engaging support members with opposite sides of said strip and at spaced transverse locations along said strip;

moving said strip in a zig-zag configuration with said support members supporting said strip along the transverse crests at both sides of said zig-zag configuration;

welding together the two layers of said strip along the transverse crests at one side of said zig-zag configuration, and separating the thus welded strip along said crests at said one side of said zig-zag configuration form individual tubes or bags;

when said bags reach a stationary removal position gripping the thus separated bags successively intermediate their width along the portions of said bags supported by the support members at the transverse crests on the other side of said zig-zag configuration, so that said bags are folded as they are removed; and

removing the thus folded bags from said support members on said other side of said zig-zag configuration with adjacent of said bags overlapping one another, for stacking.

3,901,755

BONDING OF POLYMERS BY SURFACE ACTIVATION

Wilhelm N. Martin, Montreal, and Werner Lichtenberger, Grand'Mere, both of Canada, assignors to Consolidated-Bathurst Limited, Montreal, Canada

Filed May 17, 1973, Ser. No. 361,381

Int. Cl. C09J 5/02

U.S. Cl. 156—308

25 Claims

1. A method suitable for producing a composite structure by bonding at least two elements together in which at least the surface of at least one of the elements consists of a non-cellulosic, synthetic polymeric material selected from the group consisting of polyesters, polyolefins and polyacrylics, which comprises treating at least said surface of at least said one element with a treatment member selected from the group consisting of chromo-sulfuric acid, chloro-sulfuric acid, sulfur trioxide and fuming sulfuric acid, removing substantially all of any of the unreacted treatment members from said treated surface, ensuring that water is present on said treated surface to act as a bonding agent, pressing the said treated surface into contact with the surface of at least one other of said elements at a temperature below the melting point of either of said contacting surfaces to bond said contacting surfaces together and form a composite structure.

23. A method suitable for manufacturing laminates in which at least one component thereof is selected from the group consisting of polyesters, polyolefins, and polyacrylics, comprising the steps of treating at least one surface of said one component with at least one member selected from the group consisting of chromo-sulfuric acid, fuming sulfuric acid, sulfur trioxide, and chloro-sulfuric acid, removing substantially all of any of the unreacted treatment members from the treated surface of said component, drying said treated surface, storing said one component, contacting said treated surface of said component with water in the liquid or gaseous state when it is desired to bond said one component to a further component, pressing said treated surface of said one component into contact with the surface of the other component at a temperature below the melting point of either of said components to bond said substances together and form a composite structure.

3,901,756

CLOSED LOOP LINE FOLLOWER

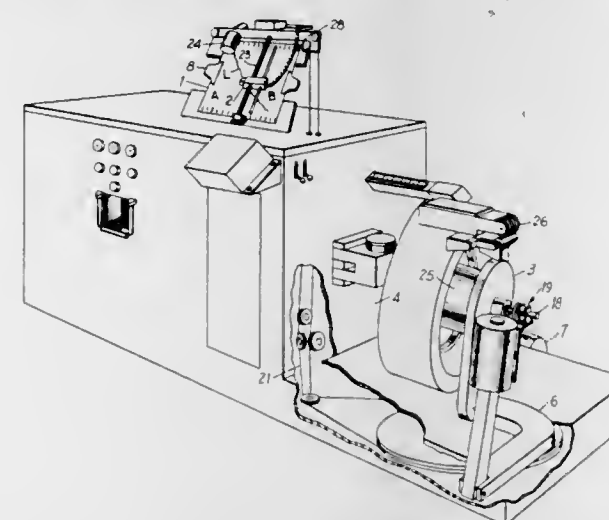
Jack Wireman, Yorba Linda, and Richard Dean Tellinghuisen, Fountain Valley, both of Calif., assignors to AMF Incorporated, White Plains, N.Y.

Filed Aug. 26, 1974, Ser. No. 500,273

Int. Cl.² B29H 17/02

U.S. Cl. 156—361

11 Claims



1. Method of controlling a deposition of elastomeric material in accordance with a pre-defined profile which corresponds to a tire tread contour, including the steps of: scribing a line on an electro-conductive paper which line represents tire tread contour in cross-section; positioning a sensing de-

vice in proximity to said line whereby said device being connected to supply means for providing said elastomeric material; generating an electrical signal in response to deviation by said sensing device from said scribed line causing the rate of supply of material to be deposited to advance in accordance with such electrical signal; directing the speed of rotation of a tire surface by energizing motor means by an electrical signal responsive to the position of said sensing device with respect to said scribed line; and continuously positioning said sensing device in the X-Y coordinates responsive to the disposition of freshly deposited elastomeric material with respect to adjacent layers of such deposited material.

3,901,757

ROLL TAPING MECHANISM

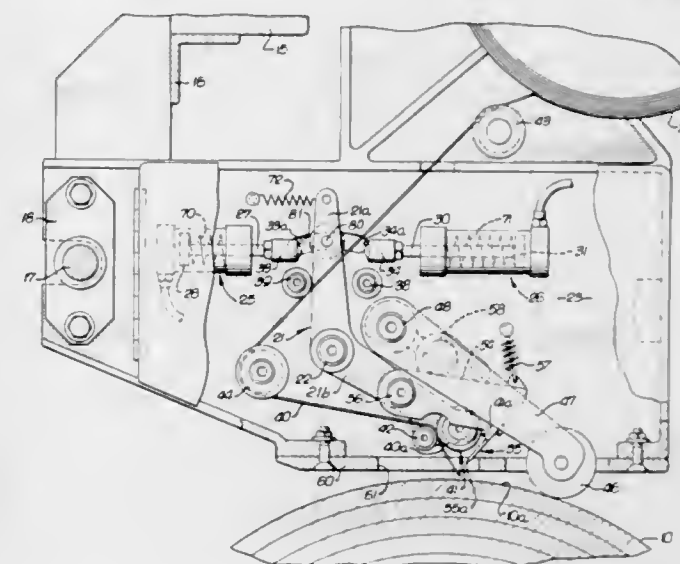
Robert Bruce Eglinton, South Pasadena, Calif., assignor to Chromalloy American Corporation, Gardena, Calif.

Filed Apr. 29, 1974, Ser. No. 464,761

Int. Cl.² B65C 31/12; B32B 31/00

U.S. Cl. 156—446

4 Claims



1. Apparatus operable to apply tape to the surface of a rotating roll, comprising a lever pivotally mounted for powered oscillation above the roll between first and second extreme positions past an intermediate position, tape feed means including a pressure roller carried by the lever for elevation above the roll surface at said intermediate position and for lowering to press the tape against the rotating roll surface by movement of the lever to said first of its extreme positions, and means including a knife and carrier connected to the lever and operable in response to its movement to said second position to sever the tape, said knife carrier being pivotally connected to said lower angular extent of the lever and is spring-biased away from the tape in said first and intermediate positions of the lever.

3,901,758

LAMINATING APPARATUS UTILIZING OFFSET ROLLERS

Donald N. Humphries, Oxford, Conn., assignor to Seal Incorporated, Derby, Conn.

Filed May 14, 1973, Ser. No. 359,668

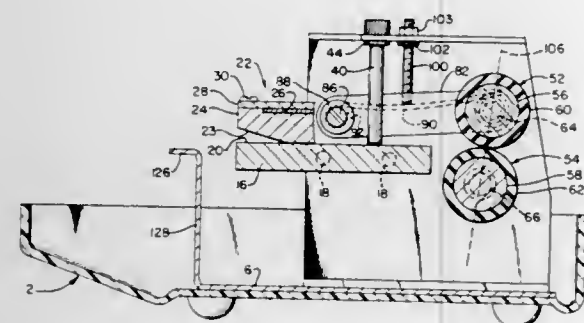
Int. Cl.² B30B 7/00, 15/34; B32B 31/20

U.S. Cl. 156—499

12 Claims

1. Plastic film laminating apparatus having a single pair of pressure rolls each mounted for rotation on its own axis and comprising: means resiliently biasing said rolls into pressure engagement with each other, a heating station comprising first and second heat conductive means positioned so as to guide a multi-sheet workpiece to be laminated into the nip formed by said rolls, said first and second means being disposed one above the other and having flat confronting surfaces that are in engagement with each other, means mounting said first and second means for relative separating movement of said con-

fronting surfaces so that a workpiece to be laminated may be inserted between them and positioned in the nip of said rolls, said mounting means including guide means for preventing horizontal movement of said first and second means, means for heating said first and second means, and drive means for rotating at least one of said rolls to draw said workpiece from said heating station through said rolls so that the sheets of said



workpiece are forced by said rolls into face-to-face pressurized contact, said rolls being disposed so that their axes of rotation are parallel to the planes of said confronting surfaces and lie in a common plane that extends at an acute angle to at least portions of the planes of said confronting surfaces, whereby the axis of one roll is offset with respect to the axis of the other roll.

3,901,759

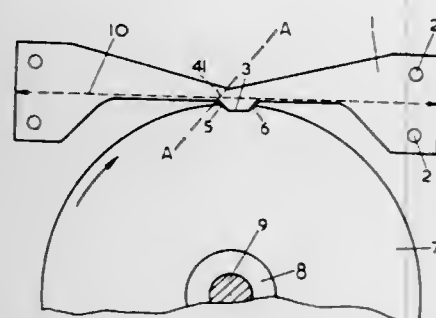
PLASTICS WEB SLITTING AND SEALING DEVICE
Peter Edward Highfield, and Gordon John Hill, both of Stevenage, England, assignors to British Visqueen Limited, London, England

Continuation of Ser. No. 287,697, Sept. 11, 1972, abandoned, which is a continuation of Ser. No. 65,584, Aug. 20, 1970, abandoned. This application June 18, 1974, Ser. No. 480,577
Claims priority, application United Kingdom, Sept. 8, 1969, 44341/69

Int. Cl.² B32B 31/00

U.S. Cl. 156—515

1 Claim



1. An apparatus for slitting and heat-sealing a plastics film and comprising in combination a rotatable roll having a peripheral groove and a resistance heating blade of substantially flat, elongated form parallel with said roll groove, said blade being provided on one of its longer edges with a projection having a leading edge, said blade being cut away behind said projection so as to have its smallest cross-sectional area in the vicinity of said projection, and so that a line passing through said blade and sectioning said blade at said smallest cross-sectional area intersects said leading edge of said projection at a certain point, and wherein said blade is positioned so that said projection enters said groove and so that said certain point is substantially level with the surface of said roll.

3,901,760 METHOD FOR THE AFTERTREATMENT OF PAPER OR NONWOVEN FABRICS MADE OF INCOMPLETELY REGENERATED VISCOSE FIBERS

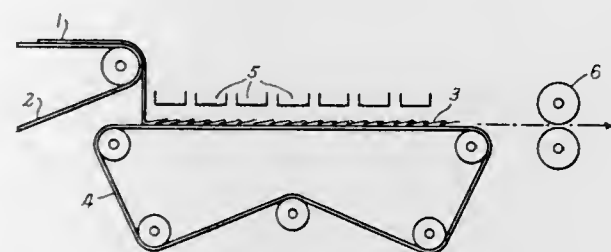
Yoshikazu Aoki, Otsu, Japan, assignor to Tachikawa Research Institute, Kyoto, Japan

Filed Dec. 7, 1973, Ser. No. 214,969

Int. Cl.² D21H 5/12

U.S. Cl. 162—157 C

1 Claim



1. In a process for manufacturing paper or nonwoven fabrics from incompletely regenerated viscose fibers which have been dispersed in water to form a slurry and subsequently formed into a wet sheet on a paper making machine, completely regenerating the fibers of the sheet on a regeneration net traveling the same running speed as said paper making machine, the improvement comprising the steps of desulphurizing and bleaching the completely regenerated sheet with desulphurizing and bleaching treating liquors respectively on a washing net having a running speed of from 1/3 to 1/50 of the speed of said regeneration net, the vertical distance between the regeneration net and the washing net being from 5 to 50 centimeters, and drying the desulphurized and bleached sheet in a drier, said drier including press rolls having the same running speed as said regeneration net.

3,901,761

NUCLEAR FUEL ELEMENT AND A METHOD OF MANUFACTURE THEREOF

James Clive Wood, Deep River, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Canada

Filed Aug. 17, 1973, Ser. No. 389,120

Claims priority, application Canada, Dec. 1, 1972, 158460

Int. Cl.² G21C 3/20

U.S. Cl. 176—82

6 Claims



1. A nuclear fuel element, comprising a nuclear fuel material, a fuel sheath containing the nuclear fuel material and of a material selected from the group consisting of zirconium and zirconium alloys, and a baked, cross-linked siloxane lacquer coating oxidative cleavage bonded to the inner surface of the fuel sheath by silicon-oxygen bonding electrons and separating the nuclear fuel material therefrom as a lubricating and corrosion resisting coating.

3,901,762 PROCESS FOR PRODUCTION OF A FERMENTATION PRODUCT

Junichi Yoshikawa, Takarazuka; Toyozoo Katsur, Toyonaka; Yoshikazu Fukita, Takarazuka; Hiroo Wada, Takatsuki, and Yukio Tanigawa, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan
Filed Jan. 17, 1974, Ser. No. 434,220

Claims priority, application Japan, Jan. 17, 1973, 48-8202

Int. Cl. C12b 1/00

U.S. Cl. 195—49

9 Claims

1. A process for producing a proteinous material which comprises cultivating a methanol-assimilable strain of *Pseudomonas utilis* (FERM-P No. 1690) or (FERM-P No. 1691) or *Pseudomonas inaudita* (FERM-P No. 1692), (FERM-P No. 1693) or (FERM-P No. 1694) in a nutrient medium containing methanol as a carbon source and recovering the accumulated proteinous material from the fermentation broth.

3,901,763

METHOD FOR THE PURIFICATION OF GLYCERO-LIPID-SPLITTING ENZYMES

Yoshifumi Horiuchi, and Shigeyuki Imamura, both of Shizuoka, Japan, assignors to Toyo Jozo Kabushiki Kaisha, Shizuoka, Japan

Filed Mar. 11, 1974, Ser. No. 450,083

Claims priority, application Japan, Mar. 10, 1973, 48-28425

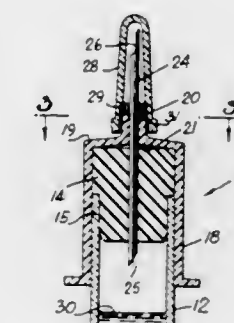
Int. Cl.² C07G 7/02

U.S. Cl. 195—66 R

1 Claim

1. A method for the purification of an enzyme having substrate specificity to glycerol-lipids selected from the group consisting of glycerides and glycerol-phosphatides, which comprises the steps of:

contacting an aqueous solution of a said enzyme with a carrier selected from the group consisting of fatty acid esters of water-insoluble polysaccharides and derivatives thereof containing hydroxyl groups, said fatty acid having at least 6 carbon atoms, and eluting the adsorbed enzyme with an aqueous solution of a surface active agent.



3,901,764

PROCESS FOR PRODUCING RIFAMYCIN SV

Marvin J. Weinstein; Gerald H. Wagman, both of East Brunswick; Mahesh G. Patel, Belleville, and Joseph A. Marquez, Montclair, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed May 15, 1974, Ser. No. 469,972

Int. Cl.² C12D 9/20

U.S. Cl. 195—96

5 Claims

1. A process for preparing rifamycin SV which comprises cultivating *Micromonospora ellipsospora* 71372, having the identifying characteristics of NRRL 8021, and the rifamycin SV producing mutants and variants thereof, in an aqueous nutrient medium under aerobic conditions until substantial antibiotic activity is imparted to the medium and isolating rifamycin SV from said medium.

3,901,765

METHOD FOR THE COLLECTION, CULTIVATION AND IDENTIFICATION OF MICROORGANISMS FROM BODY FLUID

Jack Judson Mehl, Landing, N.J., assignor to Becton, Dickinson and Company, East Rutherford, N.J.

Continuation-in-part of Ser. No. 215,730, Jan. 6, 1972, abandoned, Division of Ser. No. 342,086, March 16, 1973.

This application Feb. 11, 1974, Ser. No. 440,968

Int. Cl.² C12K 1/04

U.S. Cl. 195—103.5 R

3 Claims

1. The method of culturing, detecting and identifying microorganisms obtained from a specimen of body fluid, which comprises;

- providing an apparatus which comprises,
 - a container having at least one closed end and an open end;
 - resilient closure means closing said open end;
 - a nutrient medium partially filling said container and which is suitable for culturing microorganisms contained in said specimen;
 - a gaseous atmosphere filling the space above said nutrient medium; and
 - a venting assembly mounted on the container and having means for maintaining fluid communication between the outside atmosphere and the atmosphere within the container, said venting assembly comprising a tubular member passing through said resilient closure to provide fluid communication between said gaseous atmosphere above the nutrient medium and the atmosphere outside of said container, said venting assembly including a flexible body portion having a closed end and an open end so that the closure means fitted in the open end of the container is capped thereby, the closed end of the body portion being formed with a hub having an axial bore therethrough and said tubular member is a cannula rigidly mounted in the axial bore between the ends of said bore and wherein a shield is mounted on the hub to enclose the portion of the cannula extending outwardly from the closed end of the body portion, the shield being formed with a plurality of ribs which are

radially disposed around the inner surface thereof so that the shield when mounted on the hub forms a plurality of passageways for the circulation of microbial gases from the interior of the container to the outside atmosphere and for diffusion of atmospheric oxygen from the outside to the inside of the container, said passageways being of such small cross section as to constitute a microbial barrier;

- inoculating said culture medium with a specimen of said body fluid;
- incubating said inoculated culture within the vent assembly mounted container, under environmental conditions of temperature, gaseous atmosphere and for a requisite period of time to facilitate maximum growth of any organisms present in said inoculated culture, whereby simultaneously any aerobic microorganisms will grow and multiply in the top portion of said medium, any anaerobic microorganisms will grow and multiply in the bottom portion of said medium and any facultative and actively motile microorganisms will grow and multiply throughout said medium; and
- coupling the venting assembly to a gas analysis means whereby the composition of the gaseous atmosphere metabolized by said microorganisms while said microorganisms are being cultured may be determined and thereby provide an indication of the presence and identity of any microorganisms in said body fluid.

3,901,766

METHOD AND APPARATUS FOR PRODUCING CHARCOAL

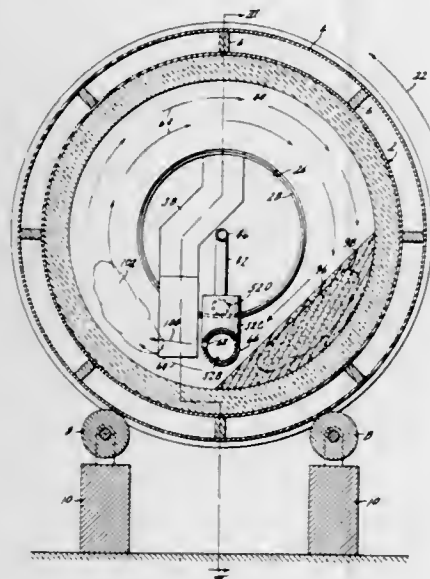
David E. Smith, Rt. 2, Rolla, Mo. 65401

Filed June 4, 1973, Ser. No. 366,785

Int. Cl.² C10B 47/20, 49/06, 49/18, 1/10

U.S. Cl. 201-32

2 Claims



1. A method of producing charcoal from wood or the like in small pieces consisting of the following steps:

- continuously introducing said wood into the higher end of an elongated, slightly inclined retort which is inclined downwardly toward its opposite or exit end,
- rotating the retort about its longitudinal axis, whereby the wood pieces are constantly tumbled and advanced toward the lower end of the retort along the length thereof, in the form of a bed only partially filling said retort,
- heating said wood by combustion of an external fuel long enough only to dry and initiate carbonization of a portion of said wood, whereby a combustible wood gas is driven from said wood, and
- introducing air tangentially into a peripheral portion of the retort not occupied by the wood bed, in a direction opposite to the rotation of the retort and at a point angularly remote from the bed, considered in the direction of circulation of the air, whereby wood gas driven off is entrained in the circulation, mixed with the air, and burned to the extent permitted by the available oxygen of the admitted air, before the circulating gases again engage said bed, the heat of said combustion serving to dry subsequently added wood and bring it to carbonization temperature, and the tumbling of the wood pieces in the bed serving to expose the entire mass of said bed to the heat of said combustion, and
- removing the resulting charcoal from the lower end of said retort.

3,901,767

DISTILLATION MECHANISM AND SYSTEM

Robert L. Williams, 1219 Northwood Dr., Commerce, Tex. 77203

Filed Apr. 23, 1973, Ser. No. 353,683

Int. Cl.² B01D 3/00; F28B 1/02; F28D 7/10, 7/00

U.S. Cl. 202-167

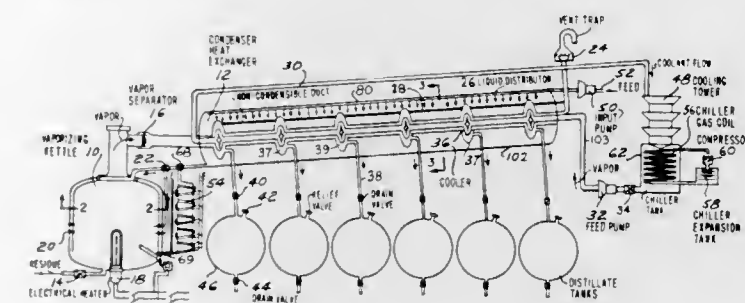
3 Claims

1. A distillation system comprising:

- a condenser-heat exchanger with separate first, second and third flow paths directed therethrough, the first flow path being traversed by liquid which is to be distilled, the second flow path being traversed by heated vapors which are to be condensed and the third flow path being traversed by a recycled coolant, the paths being concentric in the order named so directed that the vapors in the

second flow path lose their heat both to the liquid which is to be distilled and to the recycled coolant; means for recycling the coolant and removing heat that is transferred thereto;

a vaporizing kettle receiving liquid that has traversed the first flow path and has been heated therealong, the kettle vaporizing the liquid and directing it into the second flow path;



a plurality of tanks communicating with the second flow path along axially displaced points thereon to receive distillate condensed therein; and

a bypassable auxiliary boiler disposed between the condenser and kettle in the first flow path, the boiler having a plurality of chambers connected in series with one way check valves connected between successive chambers, and further having a like plurality of heaters, each heater heating a corresponding chamber.

3,901,768

DISTILLATION METHOD AND APPARATUS

Armando B. Steinbruchel, San Diego, Calif., assignor to Aqua-Chem, Inc., Milwaukee, Wis.

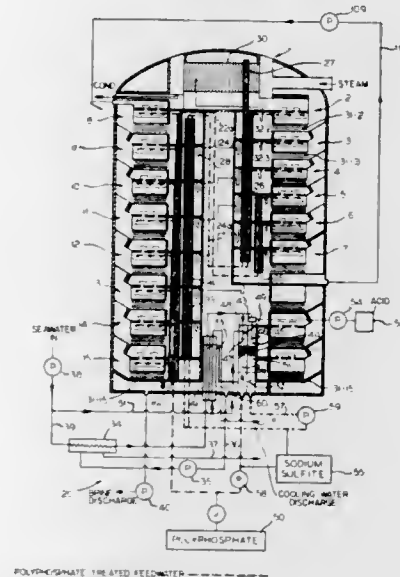
Continuation of Ser. No. 186,179, Oct. 4, 1971, abandoned.

This application Sept. 28, 1973, Ser. No. 401,182

Int. Cl. B01d 3/02, 1/26

U.S. Cl. 202-174

14 Claims



1. In a multi-effect film evaporator having a plurality of effects operable at successively lower temperatures and pressures with each effect including heat exchange tube means for passing a vapor and a feed liquid in heat exchange relation to vaporize at least a portion of the feed liquid and to condense at least a portion of the vapor, means for delivering the unevaporated liquid in each effect except the last to the heat exchange tube means of succeeding effects to comprise at least the portion of the feed liquid thereof and means for delivering the evaporated liquid in each effect except the last as the vapor to be condensed in the next succeeding lower temperature effect,

means for operating a first group of said effects at sequentially lower temperatures above a predetermined temperature and a second group of said effects at sequentially lower temperatures below said predetermined temperature, the improvement comprising:

first feed liquid delivery means coupled to the effects of said first group for delivering feed liquid thereto, a second feed liquid delivery means for delivering feed liquid to effect of said second group of effects, first chemical treating means including a source of a first material taken from the group consisting of acid and an acid salt, coupled to the first feed liquid delivery means for treating the feed liquid therein with said first material which is operable to prevent scale formation at temperatures above said predetermined temperature, second chemical treating means including a source of polyphosphate coupled to the second feed liquid delivery means for treating the feed liquid therein with said polyphosphate which is operable to prevent scale formation below said predetermined temperature, said polyphosphate being inoperative to prevent scale formation above said predetermined temperature, the flow paths of said feed liquid in said first and second feed liquid delivery means being isolated from each other between said first and second chemical treating means and said groups of corresponding effects.

3,901,769

IMAGE RECORDING MEMBER

Yasushi Takatori, Machida; Masahiro Haruta, Funabashi; Akemi Shimozawa, Tokyo, and Katsuhiko Nishide, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

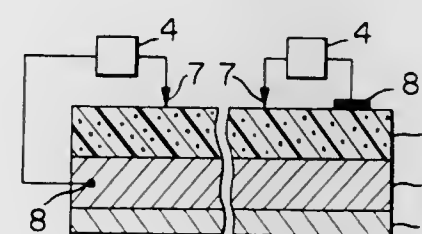
Filed June 21, 1974, Ser. No. 481,789

Claims priority, application Japan, July 6, 1973, 48-76708; July 6, 1973, 48-76707; June 25, 1973, 48-71888; June 25, 1973, 48-71887; June 22, 1973, 48-70557; June 22, 1973, 48-70556

Int. Cl.² B21H 1/20; B41C 3/08

U.S. Cl. 204-2

27 Claims



1. In an electrical recording member provided with a recording layer containing an image-forming agent, an electrically-conductive agent and a binder therefor, the improvement comprising said electrically-conductive agent comprising at least a porous compound containing therein a polar substance, wherein an image is formed on said recording layer by the application thereto of electrical current.

3,901,770

METHOD FOR THE PRODUCTION OF MICROSCOPICALLY SMALL METAL OR METAL ALLOY STRUCTURES

Burkhard Littwin, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Jan. 25, 1974, Ser. No. 436,513

Claims priority, application Germany, Jan. 31, 1973, 2304685

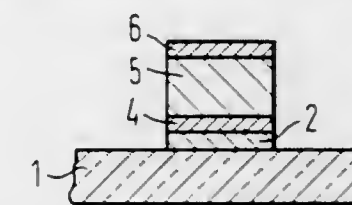
Int. Cl. C23b 5/48

U.S. Cl. 204-15

6 Claims

1. A method for the production of microscopically small metal or metal alloy structures comprising vapor depositing a thin continuous layer of metal or metal alloy on a substrate,

applying a photoresist layer over the thus deposited layer, forming channels in said photoresist layer corresponding to the desired pattern thereby exposing said continuous layer in the channels, galvanically depositing a thin gold layer on the



exposed portions of said layer, galvanically depositing a thicker metal or metal alloy on said thin gold layer, removing the remaining photoresist layer, treating the remaining thin metal or metal alloy to replace the metal or metal alloy layer with a gold layer, and etching away the last-named gold layer.

3,901,771 ONE-SIDE ELECTROCOATING

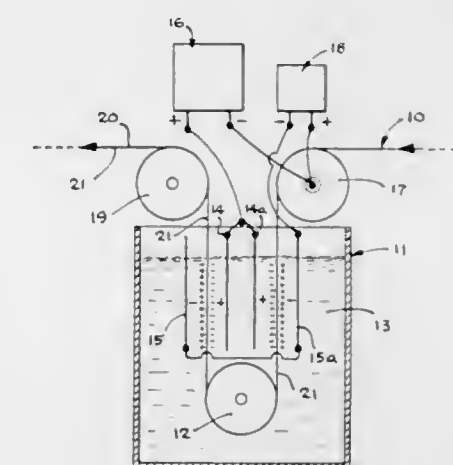
Griff W. Froman, Saint John, and Albert Ray Mullins, Portage, both of Ind., assignors to Inland Steel Company, Chicago, Ill.

Filed July 11, 1973, Ser. No. 378,206

Int. Cl. C23b 5/58

U.S. Cl. 204-28

5 Claims



1. In a process of continuously electrolytically depositing a coating material on only one lateral surface of a pre-formed elongated flexible metallic strip of electrically conductive material while preventing said coating material depositing on the other lateral surface of said strip as said strip is moved continuously through an electrolyte bath which circulates freely about all surfaces of said strip, the improvement which comprises:

- maintaining the one lateral surface of said strip to be electrolytically coated cathodic by electrically connecting said strip with a negative terminal of a plating rectifier providing a first source of direct electrical current and connecting the positive terminal of said plating rectifier with an anodic electrode immersed in said electrolyte bath and having said anodic electrode disposed in spaced relationship with and adjacent the said one lateral surface, and adjusting the electrical output of said plating rectifier to a current density level sufficient to maintain said one lateral surface completely cathodic and electrolytically deposit a coating of predetermined thickness on said one lateral surface while said strip remains immersed in said electrolyte bath; and
- maintaining the said other lateral surface of said strip anodic by electrically connecting a positive terminal of an etching rectifier providing a second source of direct electrical current with said strip and connecting the negative terminal of said etching rectifier with a cathodic electrode immersed in said electrolyte bath and having said cathodic electrode disposed in spaced relationship with

and adjacent said other lateral surface of the said sheet, and adjusting the electrical output of said etching rectifier to a current density level which is sufficient to maintain the said other lateral surface completely anodic and at a current density level below that of said plating rectifier; whereby said one lateral surface is electrolytically coated with said coating material and said other lateral surface remains electrolytically uncoated by said coating material during the electrodeposition process.

3,901,772

METHOD OF SEALING BY BRAZING OF A METAL PART ON A CERAMIC PART

Fernand Guillotin, St-Michel-sur-Orge, and Rene Cerutti, Bagnolet, both of France, assignors to Quartex Societe pour l'Application des Hautes Temperatures, Paris, France

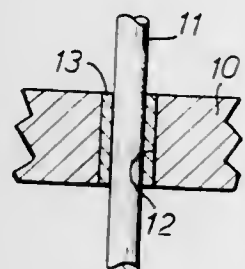
Filed Nov. 26, 1973, Ser. No. 419,056

Claims priority, application France, Dec. 1, 1972, 72.42740

Int. Cl. C23b 7/00, 5/60

U.S. Cl. 204-16

7 Claims



1. A method for sealing a metal part to a ceramic part comprising the consecutive steps of metalizing the ceramic part with metalizing material containing at least one metallic derivative, sintering the metalized ceramic part, then nickelizing the ceramic part first chemically in a reducing atmosphere at an elevated temperature and then electrolytically, the metalizing step comprising spreading the metalizing material on the ceramic part by reciprocating a substantially rigid applicator member in sliding contact with the ceramic part.

3,901,773

METHOD OF MAKING MICROCRACK CHROMIUM COATINGS

Ralf Ludwig, Neuss, Rhine, Germany, assignor to Langbein-Pfahner Werke AG, Neuss, Rhine, Germany

Filed July 30, 1973, Ser. No. 383,532

Claims priority, application Germany, Aug. 1, 1972, 2237807

Int. Cl. C23b 5/08, 5/32, 5/50

U.S. Cl. 204-41

5 Claims

1. A method of coating a metal substrate with microcrack chromium, comprising applying a first metallic layer to said substrate by electroplating nickel, cobalt or a combination of either with the other or with iron onto said substrate from an aqueous acidic electroplating bath containing the respective metal ions, ammonium ion and chloride ion together with a microcrack-increasing quantity of at least one pyridine derivative and thereafter electrodepositing a chromium layer upon said first layer to produce a microcrack coating, said pyridine derivative being selected from the group which consists of nicotinic acid and isonicotinic acid, isonicotinic acid hydrazide, pyridine-3-carbinol, pyridine-4-aldehyde, L-nicotine, 1-(3-pyridyl)-2-(4-pyridyl)-ethylene, 4-pyridylacrylic acid and pyridine-3-aldoxime and being present in said bath in a concentration between 0.1 and 5 g/l, said bath further containing 20 to 60 g/liter of phthalic acid.

3,901,774

METHOD OF ELECTROLYZING ALKALI METAL HALIDE SOLUTION AND APPARATUS THEREFOR

Kensuke Motani; Kinichi Yabuki; Shunji Matsuura, all of Tokuyama; Sunao Tomoguchi, Shinnanyo, and Yasuo Murata, Tokuyama, all of Japan, assignors to Tokuyama Soda Kabushiki Kaisha, Japan

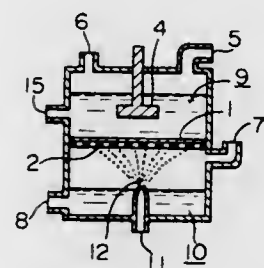
Filed Apr. 5, 1974, Ser. No. 458,344

Claims priority, application Japan, Apr. 10, 1973, 48-39976; Sept. 17, 1973, 48-103768

Int. Cl. C01d 1/06; C01b 7/06

U.S. Cl. 204-98

13 Claims



1. A method for electrolyzing an alkali metal halide solution using a horizontal diaphragm electrolytic cell, wherein a diaphragm having a water-permeability of not more than 0.02 ml/cm².cm H₂O.hr is used, and water or an electrolytic solution is supplied to the underside of the diaphragm during electrolysis.

3,901,775

METHOD OF OCEAN FLOOR NODULE TREATMENT AND ELECTROLYTIC RECOVERY OF METALS

William S. Kane, Newport News, and Paul H. Cardwell, Zanol, both of Va., assignors to Deepsea Ventures, Inc., Gloucester Point, Va.

Continuation of Ser. No. 40,590, May 26, 1970, abandoned, and a continuation-in-part of Ser. No. 40,564, May 26, 1970, abandoned. This application Dec. 18, 1972, Ser. No. 315,878

Int. Cl. C22d 1/24, 1/14, 1/16

U.S. Cl. 204-105 M

8 Claims

1. Method of ocean floor nodule treatment, comprising:
A. mixing said nodules with sulfuric acid and a chloride from the group consisting of those chlorides which react with sulfuric acid to form hydrogen chloride;
B. heating, so as to form as vaporized reaction products:
i. iron chloride;
ii. manganese chloride;
iii. nickel chloride;
iv. cobalt chloride;
v. copper chloride
C. flowing a carrier gas against the reaction mass, so as to remove said vaporized reaction products;
D. obtaining an aqueous, leach solution comprising dissolved, water-soluble chlorides of nickel, copper, manganese and cobalt, substantially free from iron, by the following steps carried out in any chronological order; (i) condensing said reaction products; (ii) converting the iron chloride to water-insoluble iron oxide; and (iii) leaching the metal chlorides with water to form an aqueous solution of the metal chlorides;
E. separating the aqueous solution from the insoluble iron oxide;
F. extracting said metal chlorides from the aqueous solution by liquid ion exchange reagent, and separately stripping individual metal chlorides;
G. cathodically electroplating to obtain said copper, cobalt and nickel values in separate aqueous electrolytic cells; and
H. drying the stripped manganese chloride, melting and electrowinning of said manganese values in a fused salt electrolytic cell.

3,901,776

PROCESS FOR THE RECOVERY OF COPPER FROM ITS SULFIDE ORES

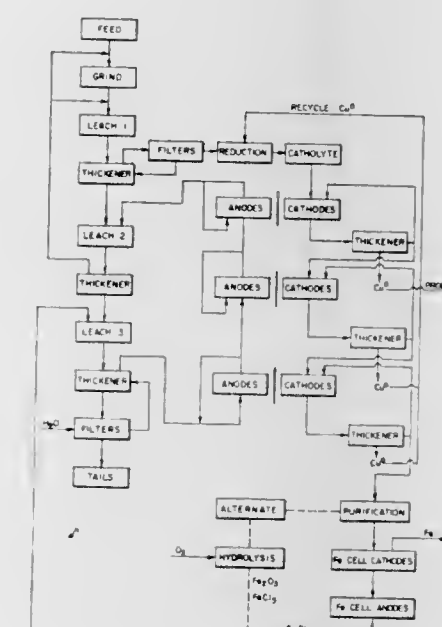
Paul R. Kruesi, and Duane N. Goens, both of Golden, Colo., assignors to Cyprus Metallurgical Processes Corporation, Los Angeles, Calif.

Filed Nov. 14, 1974, Ser. No. 523,588

Int. Cl. C22d 1/16

U.S. Cl. 204-107

10 Claims



8. In the process for recovering copper from copper sulfide ores or their concentrates in which the ore or concentrate is leached with cupric chloride and/or ferric chloride, the resulting solution and residue separated, substantially all of the copper chloride in the solution reduced to cuprous chloride, the resulting cuprous chloride solution electrolyzed to recover copper, and the ferric chloride in the spent electrolyte oxidized to ferric chloride which is recycled for leaching at least part of the chalcopirite residue, the improvement which comprises: conducting said electrolysis in an electrolytic cell having an anode and a cathode divided by a separator to keep ions of copper and iron from travelling from the cathode to the anode, to recover substantially all of the copper in solution at the cathode without the formation of cupric copper in the cell.

3,901,777

RECOVERY OF SILVER FROM USED PHOTOGRAPHIC SOLUTIONS

James Sidney Bentley, London, England, assignor to Photographic Silver Recovery Limited, London, England

Filed June 19, 1974, Ser. No. 480,828

Claims priority, application United Kingdom, June 27, 1973, 30650/73

Int. Cl. C25C 1/20

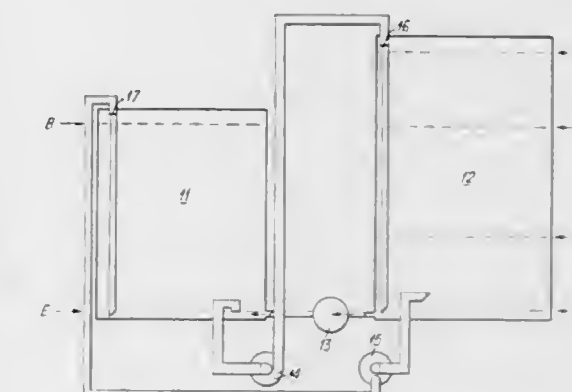
U.S. Cl. 204-109

3 Claims

1. A method for recovering silver from waste silver solutions, especially spent photographic processing liquids, said method utilizing: an electrically operated silver recovery machine of the type which includes an electrical supply for passing electric current between two electrodes, one of which is a self-draining cathode assembly, and through waste silver solution in said machine; a feed line via which waste silver solutions having predetermined average silver concentrations are supplied for processing; an auxiliary tank arranged to receive waste silver solutions from said feed line; and a pump arranged to deliver waste silver solutions from said auxiliary tank to said silver recovery machine; said method comprising the steps of: sensing the level of waste silver solutions in said auxiliary tank; operating said pump, in dependence on the level of waste silver solutions in said auxiliary tank, to deliver waste silver

solutions at a constant flow rate from said auxiliary tank to said silver recovery machine, said pump being rendered inoperative when the level of waste silver solutions in said auxiliary tank recedes below a specified level;

in substantial time coincidence with operation of said pump, operating said electrical supply at a constant current insufficient to produce silver sulfide in waste silver solutions having said predetermined average silver concentration, said electrical supply being rendered inoperative



when said pump is rendered inoperative whereby said recovery machine is operative substantially throughout times when said pump is operating but substantially not at other times; and

in substantial time coincidence with the rendering inoperative of said pump and said electrical supply, automatically separating the cathode assembly and the waste silver solution, whereby the cathode assembly is substantially only immersed in the solution when said recovery machine and said pump are operative.

3,901,778

NOVEL PROCESS FOR PREPARING CALCIUM SULFATE

Sueo Machi, Takasaki; Takayuki Shinano, Yokohama; Yasushi Matui, Saitama, and Yoshiharu Hibi, Yokohama, all of Japan, assignors to Japan Atomic Energy Research Institute, Minato; Maruzen Oil Company Ltd., Osaka and Mitsubishi Kakoki Kaisha Ltd., Chiyoda, all of Japan

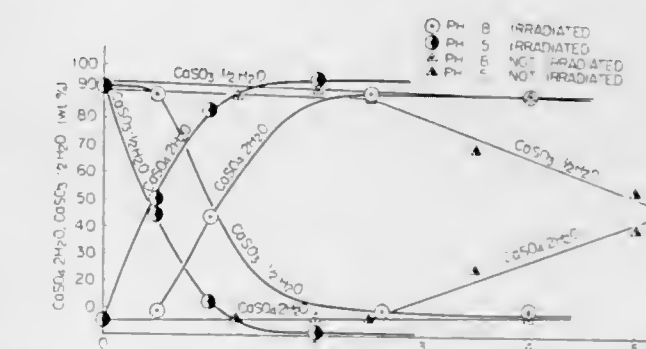
Filed Dec. 26, 1972, Ser. No. 318,216

Claims priority, application Japan, Dec. 24, 1971, 46-104702; Mar. 6, 1972, 47-22300

Int. Cl. B01j 1/10

U.S. Cl. 204-157.1 H

4 Claims



1. In a process for preparing calcium sulfate by oxidizing calcium sulfite in an aqueous system comprising said calcium sulfite and water, the improvement comprising adjusting the pH of said system to within the range of 3-6 and, at the same time, irradiating said system with an ionizing radiation selected from the group consisting of γ-rays, X-rays and electron beams at a dose rate in the region of 10³-10¹¹ rad/hr, thereby increasing the rate of said oxidizing reaction significantly.

3,901,779

VINYL ESTER RESIN AND PROCESS FOR CURING SAME WITH IONIZING RADIATION IN THE PRESENCE OF AMINES

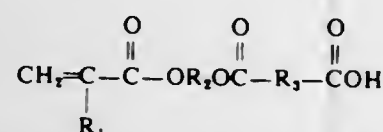
Inder Mani, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 143,268, May 13, 1971, Pat. No. 3,810,826. This application Aug. 27, 1973, Ser. No. 391,691
Int. Cl. C08d 1/00; C08f 1/00

U.S. Cl. 204—159.16

4 Claims

1. A process for curing a mixture of a polymerizable vinyl ester resin and a nonvolatile vinyl monomer selected from the group consisting of alkenyl aromatics, vinyl carboxylic acids, vinyl nitriles, vinyl amides, alkyl and hydroxyalkyl esters of vinyl carboxylic acids wherein the alkyl group contains from 1 to 8 carbons, and mixtures thereof, said process comprises exposing said thermosettable mixture in an inert atmosphere to ionizing radiation, said mixture having added thereto about 1.5 to 5 weight percent based on the weight of the mixture of an amine having the formula $R_1R_2R_3N$ where R_1 is an alkyl or aralkyl group, R_2 is hydrogen and R_3 may be hydrogen or an alkyl group or R_1 and R_3 together may be a cyclic alkylene radical or an oxydialkylene radical; and wherein said vinyl ester resin is prepared by reacting about equivalent amounts of a polyepoxide of a polyhydric phenol having more than one epoxide group per molecule with a dicarboxylic acid half ester having the formula



where R_1 is hydrogen or an alkyl group of 1 to 4 carbons, R_2 is an alkylene group of 2 to 6 carbons and R_3 is phenylene, cyclohexylene, alkylene or an unsaturated bivalent hydrocarbon radical.

3,901,780

ISOELECTRIC FOCUSING TECHNIQUES AND DEVICES

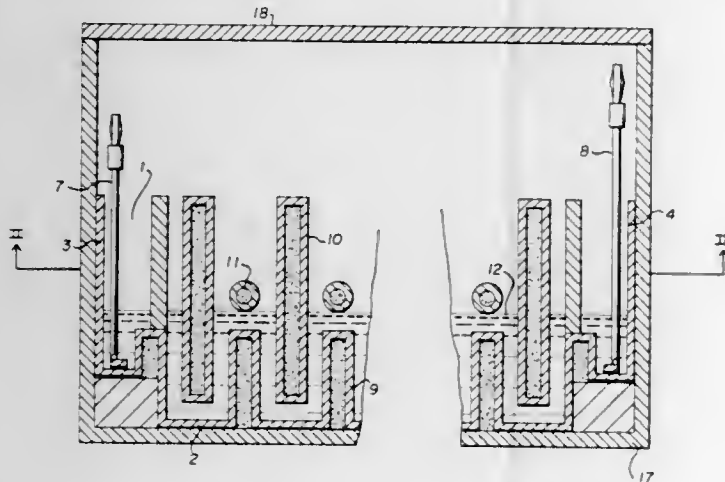
William Donner Denckla, Tenafly, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed July 10, 1974, Ser. No. 487,081

Int. Cl. B01K 5/00

U.S. Cl. 204—180 R

3 Claims



1. An improved method of preparative isoelectric focusing of the type utilizing passage of a direct current through an ampholyte solution, said ampholyte solution being comprised of a sample ampholyte mixture, a carrier ampholyte mixture and water, said carrier ampholyte mixture providing an artificial pH gradient, in a multi-chamber isoelectric focusing device, wherein the improvement comprises sequentially subjecting said ampholyte mixture, or desired portions thereof, to isoelectric focusing in a series of multi-chamber devices of

successively smaller volume, without substantial dilution of said ampholyte solution.

3,901,781

PROCESS FOR DEMINERALIZING WATER

Roberto Passino, and Gianfranco Boari, both of Rome, Italy, assignors to Consiglio Nazionale Delle Ricerche, Rome, Italy

Filed July 20, 1973, Ser. No. 381,245

Claims priority, application Italy, July 26, 1972, 51780/72
Int. Cl. B01d 13/02

U.S. Cl. 204—180 P

6 Claims

1. A process for demineralizing water comprising the combination of a pre-treatment of the water and an electro-dialysis process for demineralizing said pre-treated water, said pre-treatment comprising an ion exchange treatment using exchange resins of cationic type to replace in the water to be fed to the electro-dialysis device, the hard cations with H^+ ions and Na^+ ions, using H^+ ions to neutralize the HCO_3^- ions, said pre-treatment also comprising a regeneration of the exhausted ion exchange resins.

3,901,782

PROCESS FOR THE FRACTIONATION AND IDENTIFICATION OF PROTEINS BY STARCH GEL ELECTROPHORESIS

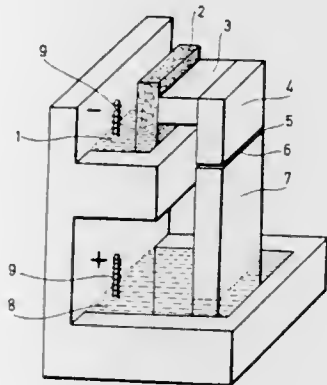
Gyorgy Vadasz, and Mihaly Parkany, both of Budapest, Hungary, assignors to Novex Co. Ltd., Budapest, Hungary

Filed Mar. 27, 1974, Ser. No. 455,232

Claims priority, application Austria, Apr. 5, 1973, 2991/73
Int. Cl. B01k 5/00

U.S. Cl. 204—180 G

5 Claims



1. Method for protein fractionation by starch gel electrophoresis, characterized by cooking the starch in a pressure vessel at a pressure of 1.0 to 1.3 atm, removing the air from the starch, pouring the starch in a mould independent of the electrophoresis cell, cutting the required size part off the gel block removed from the mould, cutting this part in two, placing the histological sample after freezing and thawing of the sample into a homogenization vessel, wherein a beater is placed, fitting this assembly into a vibrator, followed by the homogenization of the sample, fitting between the gel parts a carrier containing the sample, tightly compressing this medium with the block parts, dipping the gel block thus prepared in a buffer solution vessel containing a first electric contact, fitting a hygroscopic body immersed similarly in a buffer container equipped with a second electric contact, to the other end of the block, and supplying a D.C. potential between contacts.

3,901,783

METHOD OF PRODUCING SELENIUM CHARGE ELECTROPHOTOGRAPHIC RECORDING PLATES

Helmuth Räum, Nürnberg, and John E. Segain, Gunzenhausen, both of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Feb. 5, 1974, Ser. No. 439,807

Claims priority, application Germany, Feb. 9, 1973, 2306332; Feb. 9, 1973, 2306333

Int. Cl. C23c 15/00

U.S. Cl. 204—192

9 Claims

1. A method of preparing a selenium charge electrophotographic recording plate having a selenium layer deposited on a metal substrate comprising the steps of:
depositing selenium on a metal substrate by evaporation under vacuum to form a selenium layer;
depositing a thin coating of a semiconducting material selected from the group consisting of cadmium sulfide, zinc oxide and zinc sulfide on a metal plate;
thereafter sputtering a portion of said semiconducting material on said selenium layer by subjecting the selenium coated metal substrate and said metal plate to a glow discharge.

3,901,784

CYLINDRICAL RF SPUTTERING APPARATUS

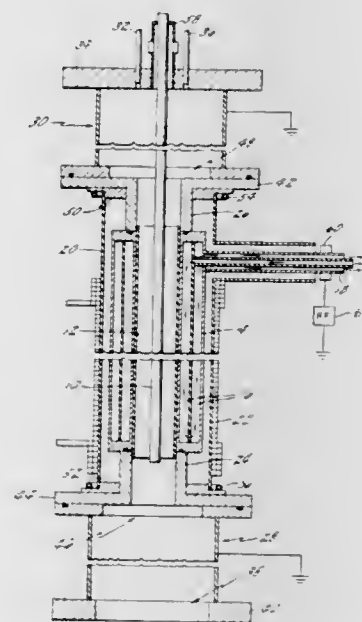
Daniel J. Quinn, Manchester, and Edouard L. Paradis, Willimantic, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Division of Ser. No. 416,318, Nov. 15, 1973, Pat. No. 3,855,110. This application June 19, 1974, Ser. No. 481,077

Int. Cl. C23C 15/00

U.S. Cl. 204—192

4 Claims



1. A method for uniformly coating a workpiece contained along the axis of a cylindrical workpiece chamber by sputtering onto said workpiece a coating from a target material, said workpiece chamber being defined by a cylindrical metal electrode adapted to support said target material on the inner circumference thereof, comprising the steps of
filling said workpiece chamber with a gas at a low pressure, applying a source of rf potential to said electrode to generate a plasma in said workpiece chamber, and reducing the plasma density gradient at the ends of said workpiece chamber by terminating each end of said workpiece chamber with an electrically grounded metal cylindrical termination chamber which is electrically insulated from said workpiece chamber and is of greater cross-sectional area than the cross-sectional area of said workpiece chamber, each said termination chamber hav-

ing an aperture therein aligned with said workpiece chamber to permit expansion of said plasma into said termination chamber.

3,901,785

APPARATUS FOR PRODUCING A METAL BAND

Antonina Vladimirovna Buzhinskaya, Murmansk proezd, 6, kv. 54; Leonid Alexandrovich Sergeev, prospekt Mira, 34, kv. 2; Vladimir Ivanovich Trofimov, Neglinnaya ulitsa, 17, kv. 29; Vyacheslav Borisovich Bobrov, Yaroslavskaya ulitsa, 1/9, kv. 30; Anna Ilinichna Migina, B. Spasskaya ulitsa, 36/2, kv. 5; Tatyana Fedorovna Pereyagina, Vorotnikovskiy pereulok, 11, kv. 31, all of Moscow, U.S.S.R.; Anatoly Borisovich Bobrov, deceased, late of Moscow, U.S.S.R.; by Evdokia Nikolaevna Bobrova, administrator, ulitsa Arbat, 51, kv. 117, and by Irina Maximovna Bobrova, administrator, Konkovo-Derevlevo, 1 mikrorayon, korpus 4, kv. 118, both of Moscow, U.S.S.R.

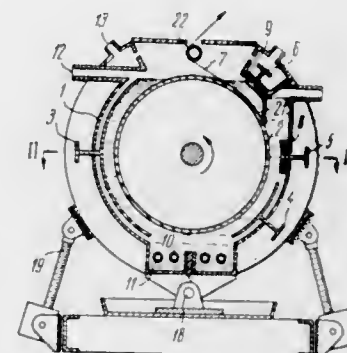
Division of Ser. No. 251,737, May 9, 1972, Pat. No. 3,799,847.

This application Jan. 3, 1974, Ser. No. 430,552

Int. Cl. B01k 3/02; C23b 7/02, 7/04

U.S. Cl. 204—208

4 Claims



1. Apparatus for production of a metal band comprising: a housing for holding an electrolytic solution; an inlet and outlet for the electrolytic solution mounted in said housing; air feed means disposed in the lower portion of said housing for agitating the electrolytic solution; a cathode drum mounted within said housing; a plurality of anodes disposed about the periphery of said cathode drum in said housing, said anodes being connected to individual sources of power, said anodes providing for electrodeposition on said cathode drum of a primary metal layer and a secondary metal layer having a roughened surface, the cathode current density opposite the anodes intended for the deposition of said secondary roughened metal layer onto said primary metal layer being higher than that opposite the anodes intended for the deposition of said primary metal layer; a partition engaging the periphery of the cathode drum for forming a chamber with a quiescent electrolyte zone created therein, said chamber accommodating an individual anode whereby onto said secondary roughened metal layer a dendritic metal layer having high bond strength is electrodeposited.

3,901,786

ELECTROLYTIC DISSOLVER

Earl J. Wheelwright, Richland, and Richard D. Fox, West Richland, both of Wash., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Apr. 10, 1974, Ser. No. 459,737

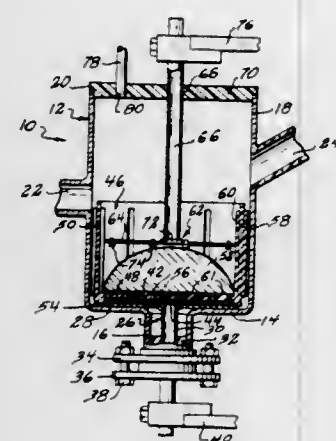
Int. Cl. B23p 1/14

U.S. Cl. 204—225

9 Claims

1. An electrolytic dissolver wherein dissolution occurs by solution contact comprising:
a. a vessel of electrically insulative material for containing an acid electrolyte and the material to be dissolved;

- b. a first fixed electrode in the vessel;
- c. a first means for electrically insulating the first electrode from the material to be dissolved while maintaining the material and the electrode in a closely spaced relation while allowing a free flow of electrolyte therebetween;
- d. a second movable electrode in the vessel opposite and facing the first electrode and separated from the first electrode by the material to be dissolved including means for electrically insulating the electrode from the material to be dissolved while maintaining the material and the electrode in a closely spaced relation while allowing a



3,901,788
CUP PLATING RACK
 Glenn R. Schaer, Columbus, Ohio, assignor to Dare Pafco Inc.,
 Urbana, Ohio

Filed Oct. 24, 1973, Ser. No. 409,044
 Int. Cl. B01k 1/00; C23b 5/70, 5/48

U.S. Cl. 204-297 W

9 Claims



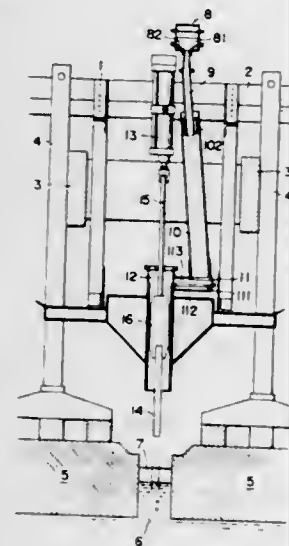
- free flow of electrolyte therebetween and including means for urging the second electrode toward the first electrode, said second electrode being adapted to rest on the material to be dissolved and to move with the material toward the first electrode as the material is dissolved, thereby maintaining the closely spaced relation between the first and second electrodes and the said material;
- e. means for passing a direct current between the first and second electrodes; and
- f. means for circulating a flow of electrolyte into the vessel between the first and second electrodes and the material to be dissolved.

3,901,787
ALUMINA FEEDER FOR ELECTROLYTIC CELLS
 Kinya Niihaki, Shizuoka Prefecture; Tohru Watanabe, Shimizu; Shoji Yamamoto, Tomakomai; Akihiro Takeuchi, Tomakomai, and Toichi Kubota, Tomakomai, all of Japan, assignors to Nippon Light Metal Company Limited, Tokyo, Japan

Filed Mar. 7, 1974, Ser. No. 449,098
 Int. Cl. C25C 3/00

U.S. Cl. 204-245

7 Claims



1. Mechanism for feeding alumina from a supply source to an electrolytic cell for making aluminum comprising an inclined generally V-shaped feeding trough receiving alumina from said source, said trough extending over the length of said

cell, a plurality of distribution conduits connected to the bottom of said trough at spaced points along its length and projecting downwardly therefrom, a metering receptacle at the lower end of each such conduit for collecting alumina gravitating down such conduit, and discharge means for each receptacle operable to empty alumina collected therein into said cell and comprising means for fluidizing the alumina in said receptacle adjacent the lower end thereof and for delivering the fluidized alumina into said cell.

1. A rack for supporting open mouthed recessed articles during electroplating of an interior surface comprising, in combination:

- a first elongated substantially planar frame;
- a second elongated substantially planar frame;
- at least two support members pivotally connected to each said frame member;
- at least one cross brace member connected at opposite ends to one support member to form a support frame which pivotally interconnects each said planar frame and permitting longitudinal movement of one frame with respect to the other frame, said cross brace member being connected to said support members in a manner so that each support member is electrically insulated from the other;
- at least one stop member mounted between said frames to limit the relative longitudinal movement allowable of one frame with respect to the other frame, the two limits of relative longitudinal movement of said frames define a plating position and a draining position;
- a plurality of spring clip members each shaped to fixedly support a recessed article by engagement with each article generally at the article base, each said spring clip member being formed of a flexible construction and mounted on one said support member pivotally connected to said first frame, said spring clip members being operative to support articles between said frames;
- a plurality of electrodes mounted on said support members pivotally connected to said second frame, each said electrode being disposed to extend through the mouth of and into an article supported by one said spring clip member; float means mounted on said second frame to displace said second frame upwardly with respect to said first frame when said rack is disposed in a plating solution, said relative upward movement being operative to position said frames at said plating position at which position each recessed article supported by a spring clip member is disposed with its mouth facing upwardly, the weight of said second frame being operative to displace said second frame downwardly with respect to said first frame to said

draining position when the rack is removed from the plating solution whereat each supported recessed article is positioned with its mouth facing downwardly to permit draining of plating solution therefrom.

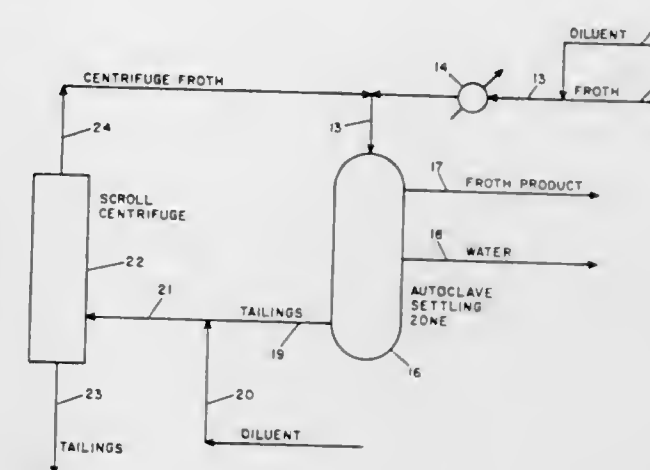
3,901,789
SOLVENT DEWAXING WITH OXIDIZED HIGH MOLECULAR WEIGHT ALPHA OLEFIN WAX AIDS
 Arthur Leroy Michael, Chicora, and John Joseph Kaufman, Parker, both of Pa., assignors to Witco Chemical Corporation, New York, N.Y.

Filed Aug. 20, 1973, Ser. No. 389,928
 Int. Cl. C10g 43/06, 43/08

U.S. Cl. 208-33

2 Claims

1. In the separation of wax from oil wherein a wax-oil mixture is dissolved in an organic solvent and cooled to a temperature at which the wax solidifies, the improvement of conducting the separation in the presence of a small amount of an oxidized high molecular weight alpha-olefin wax derived from a Ziegler type wax having from about 28-48 carbons, and mixtures thereof, said oxidized alpha-olefin wax having a melting point (ASTM D-127), in the range of about 140°-180°F. a penetration number at 77°F. of between 2-10 and a Saybolt viscosity at 210°F. of more than about 400 S.U.S.



3,901,790
CATALYTIC HYDROCRACKING WITH A MIXTURE OF METAL HALIDE AND ANHYDROUS PROTONIC ACID
 Michael Siskin, Maplewood; Jos P. Wristers, Elizabeth, and Joseph J. Porcelli, Scotch Plains, all of N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed Dec. 22, 1972, Ser. No. 317,610
 Int. Cl. C10g 13/08

U.S. Cl. 208-108

18 Claims

1. A process for hydrocracking a feedstock comprising gas oils, residual oils, cycle stocks, or mixtures thereof which comprises:

- 1. contacting said feedstock in the presence of hydrogen under hydrocracking conditions to effect both hydrogenation and cracking with a substantially liquid phase catalyst consisting essentially of (a) a metal halide wherein said metal is aluminum, gallium, tin, lead, vanadium, niobium, tantalum, arsenic, chromium, molybdenum, tungsten, rare earth and/or transuranium metal and said halide is fluoride, chloride, bromide and/or iodide, and (b) at least an equal molar amount, based on metal halide, of a protonic acid capable of being a proton donor to the system and further being characterized by the formula $HX, RaXbQOc$ or mixtures thereof where H is hydrogen; X is chlorine, bromine, fluorine and/or iodine; R is hydrogen, C_1-C_4 alkyl, C_5-C_{10} cycloalkyl and/or C_6-C_{10} aryl; Q is either phosphorus or sulfur; O is oxygen; a is an integer ranging from 1 to 4 and b and c are integers ranging from 0 to 6; and 2. recovering a product having an average molecular weight lower than the average molecular weight of the feedstock.

3,901,791
METHOD FOR UPGRADING BITUMEN FROTH
 Robert A. Baillie, West Chester, Pa., assignor to Great Canadian Oil Sands Limited, Toronto, Canada

Filed Aug. 12, 1974, Ser. No. 496,774
 Int. Cl. C10g 33/04

U.S. Cl. 208-188

3 Claims

1. A method for removing mineral matter and water from bituminous froth containing bitumen, mineral matter, and water which comprises:
- a. combining a raw bituminous froth containing substantial quantities of mineral matter and water with a hydrocarbon diluent boiling in the range of 350°-750°F.;

- b. heating said diluted froth from step (a) to a temperature in the range of 300°-1000°F.;
- c. combining said heated diluted froth with centrifugal froth hereinafter recovered via step (f);
- d. settling said combined diluted froth from step (c) in an autoclave settling zone at a temperature in the range of 300°-1000°F. at a pressure in the range of 0-1000 psig to provide an upper bitumen froth layer, a middle water layer containing minor quantities of bitumen and mineral matter, and a lower tailings layer comprised substantially of mineral matter with a minor quantity of bitumen;

- e. combining said lower tailings layer with a liquid hydrocarbon diluent boiling in the range of 350°-750°F. and transferring the diluted tailings to a centrifuging step;
- f. centrifuging said tailings to provide a centrifugal froth which is thereafter recycled and combined with said heated diluted froth in step (c); and
- g. recovering from the settling zone of step (d) said bitumen froth as product having substantially reduced mineral matter and water.

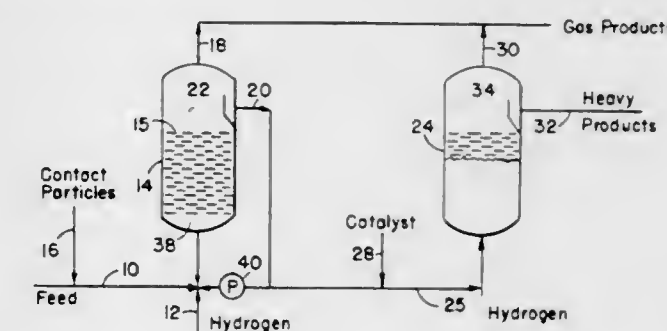
3,901,792
MULTI-ZONE METHOD FOR DEMETALLIZING AND DESULFURIZING CRUDE OIL OR ATMOSPHERIC RESIDUAL OIL

Ronald H. Wolk, Lawrence Twp., Mercer County, N.J.; Govannon Nongbri, Levittown, and William C. Rovesti, Newtown, both of Pa., assignors to Hydrocarbon Research, Inc., New York, N.Y.

Continuation of Ser. No. 255,452, May 22, 1972, abandoned.
 This application June 24, 1974, Ser. No. 482,322
 Int. Cl. C10g 23/02

U.S. Cl. 208-210

4 Claims



1. A multi-zone method for desulfurizing a crude petroleum charge or atmospheric residual charge containing at least 100 ppm of metals from the group consisting of vanadium and nickel wherein said charge, in liquid phase, is passed upwardly with hydrogen-rich gas through a first reaction zone containing a particulate contact material and the effluent from said first reaction zone is then passed with hydrogen-rich gas upwardly through a second reaction zone containing a particulate hydrosulfurization catalyst; under conditions in which

said contact material and said hydrosulfurization catalyst are maintained in random motion in the liquid, and wherein the temperature in said first reaction zone is maintained in the range of 730° to 825°F and the hydrogen partial pressure is in the range of 1000–2500 psi and space velocity in the order of 0.2–1.5 volume of feed/hr/volume of reaction zone, the improvement which comprises:

- a. maintaining porous alumina as said contact material in said first reaction zone, said alumina having a pore volume of more than 0.15 cc/gram of pores having a diameter in excess of 125A;
- b. maintaining reaction conditions in said second reaction zone substantially at the same pressure as in said first reaction zone with a maximum hydrogen rate of 5000 SCF/barrel, the temperature being between 700° and 800°F, the space velocity being between 0.3 and 1.5 volume of feed/hour/volume of reaction-space wherein no more than 20 ppm of vanadium is removed in said second zone while a desulfurization of at least 75 percent is achieved in said second zone, said catalyst in said second reaction zone comprising a Group VI-B metal and iron group metal on alumina, said catalyst having a pore structure with less than 0.10 cc/gram in pores larger than 125A.

3,901,793

PROCESS FOR THE PRECONCENTRATION OF ORES BY INDUCED MEASURE OF THE SUPERFICIAL CONTENTS

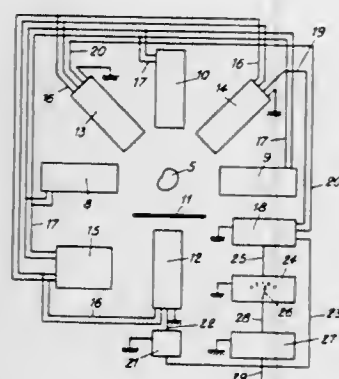
Pierre Charles Buchot, Versailles; Richard Cohen-Alloro, and Jean-Claude E. Robert, both of Orleans, all of France, assignors to Bureau de Recherches Geologiques et Minieres, Paris, France

Division of Ser. No. 237,312, March 23, 1972, Pat. No. 3,795,310. This application Sept. 19, 1973, Ser. No. 398,742 Claims priority, application France, Nov. 10, 1971, 71.40299

Int. Cl.² B03B 1/04

U.S. Cl. 209—1

11 Claims



1. In a process to effect a precise preconcentration of specific minerals disposed on the surface of blocks of ores, the said ores being washed and soaked in a selective collector substance and a fluorescent matter for rendering fluorescent any desired portion of the ore during irradiation of the blocks of ore by an ultraviolet radiation source having a narrow frequency band, the blocks of ore being sorted automatically as a result of the detection of the fluorescent radiation, the process being characterized by the selective action of the collector substance being reinforced either during the washing of the blocks of ore by a wetting and scouring substance selected from among an initial group of specific substances, or after the washing operation, with or without a wetting and scouring substance, by a known substance acting as an activating or depressing substance chosen from a second group; the determination of the fluorescent radiation R emitted by at least one third of the surface of the irradiated fragment as a result of the measurement of the radiation of a fluorescent screen emitting an amount proportional to (S-s) wherein S is a constant related to the surface area of the screen and s the cross-sectional area of the fragment; the calculation of an amount of specific mineral as a function of the mass content

of the block the display of at least one predetermined minimum content; the comparison of the calculated value of the amount of specific mineral with the displayed content; and the selection and sorting of the blocks of ores by the calculated content of which is less or greater than the displayed content.

3,901,794

CIRCULATORY AIR SIFTER

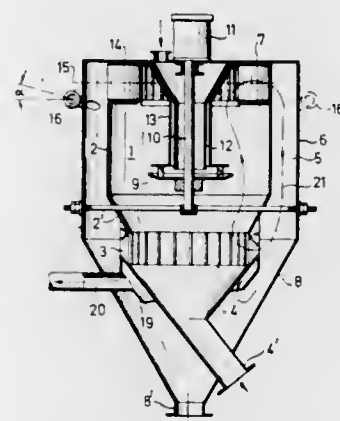
Heinrich Henne, and Norbert Vorloeper, both of Ennigerloh, Germany, assignors to Polysius AG, Neubeckum, Germany Filed June 25, 1973, Ser. No. 373,016

Claims priority, application Germany, July 21, 1972, 2235789

Int. Cl.² B07B 7/00

U.S. Cl. 209—11

6 Claims



1. A vertically axised circulatory air sifter construction comprising an inner cylindrical casing forming a sifting chamber; and outer cylindrical casing enclosing said inner casing and forming with the latter an annular separation chamber; means for introducing to said sifting chamber material to be sifted; for means rotatable in a horizontal plane for establishing a flow of air circumferentially and downwardly through said annular chamber and thence upwardly through said sifting chamber at least one tubular secondary air inlet member having its axis tangential to said annular chamber and opening directly into said annular chamber at a level below the plane of rotation of said fan means for introducing cooling air into said annular chamber in a direction corresponding to the circumferential direction of air flow through said annular chamber.

3,901,795

METHOD AND APPARATUS FOR SEPARATING MAGNETIC AND NON-MAGNETIC SUBSTANCES

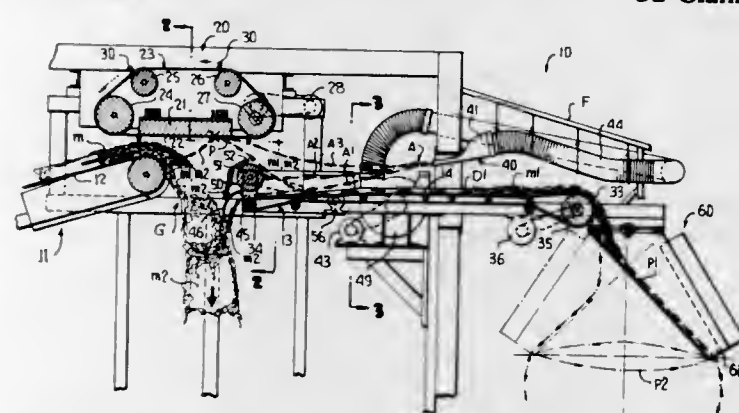
Milbourn L. Smith, Glenwood; Joseph Derencius, Chicago, and Robert E. Grisemer, Hinsdale, all of Ill., assignors to Continental Can Company, Inc., New York, N.Y.

Filed Nov. 10, 1972, Ser. No. 305,488

Int. Cl.² B03C 1/30

U.S. Cl. 209—39

32 Claims



1. Apparatus for separating magnetically attractive and magnetically nonattractive materials comprising first means for conveying said materials along a first path, second means

excluding magnetic means contiguous said first conveying means for conveying said materials along a second predetermined path generally inline with said first path, said first and second conveying means move said materials along said respective first and second paths in the generally same direction, magnetic means between said first and second conveying means for removing said magnetically attractive material along with minor amounts of said magnetically nonattractive material from said first conveying means and depositing the same upon said second conveying means, and second means for removing said minor amounts from said second conveying means.

3,901,796

METHOD AND APPARATUS FOR SORTING CARDS WITH CODED VERTICAL EDGE

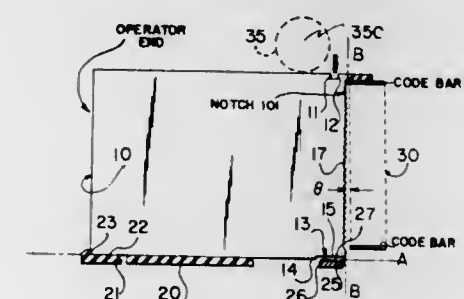
John H. Lanahan, Whitesboro, and William W. Abraham, Utica, both of N.Y., assignors to GAF Corporation, New York, N.Y.

Filed Nov. 30, 1973, Ser. No. 420,587

Int. Cl. B07c 5/00

U.S. Cl. 209—80.5

24 Claims



12. An apparatus for separating selected cards from a pack of cards containing a random collection of selected and remaining cards, comprising:

support means for supporting in a given position a pack of cards with an essentially vertical edge of all cards in alignment with each other, said vertical edges having distinguishing means for distinguishing selected cards from the remaining cards, selecting means for operating on said distinguishing means while the cards are in said given position for holding in position all but the selected cards, and means for effecting vertical movement of the selected cards from said given position relative to the remaining cards as the latter are held by the selecting means at said given position.

3,901,797

AUTOMATIC CONTINUOUS MAIL HANDLING SYSTEM

Anthony Storace, Tarrytown, N.Y., and Fredric E. Zucker, Stamford, Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.

Division of Ser. No. 476,618, June 5, 1974. This application Nov. 11, 1974, Ser. No. 522,720

Int. Cl.² B07C 5/16; G01G 23/38, 19/52

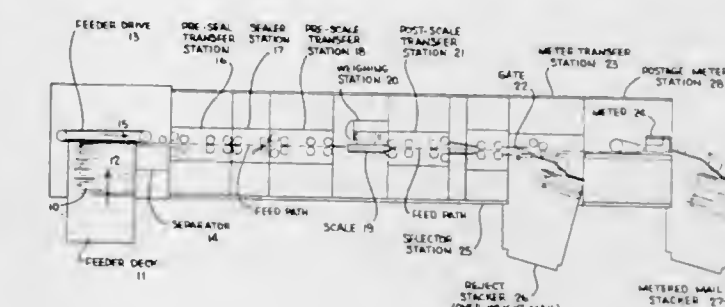
U.S. Cl. 209—121

2 Claims

1. A continuous automatic weighing and metering mail handling system for processing a large volume of mixed mail, said mail handling system automatically weighing and imprinting postage upon individual pieces of mail being continuously fed in seriatim which a substantially vertical orientation along a continuous feed path comprising a weighing station and a postage meter station, said weighing station automatically weighing each piece of mail and determining the amount of the postage to be imprinted thereon, the amount of postage to be imprinted by said postage meter station on each piece of mail being controlled to correspond to said determined amount, said mail handling system comprising:

means defining a continuous mail handling feed path wherein pieces of mail are transported with a substantially vertical orientation;

a weighing station comprising postage determining means, said weighing station disposed along said continuous feed path for measuring the weight of each piece of mail delivered to said weighing station and determining the amount of postage to be imprinted on each piece of mail which has been weighed, said weighing station having means for determining whether pieces of mail are over-weight, and reject means are provided along said feed path for rejecting over-weight pieces of mail, said reject means being operatively connected to said weighing station so as to be responsive to the over-weight determination for rejecting an over-weight piece of mail from said feed path;



a first automatic delivering means for continuously delivering in seriatim a plurality of individual pieces of mail along said continuous feed path to said weighing station; a postage meter station disposed along said continuous feed path for receiving said weighed mail from said weighing station, and imprinting postage upon the mail in accordance with the amount of postage determined by said weighing station;

a second automatic delivering means for continuously delivering in seriatim along said feed path the weighed pieces of mail from said weighing station to said postage meter station; and

control means operatively interconnected between said weighing station and said postage meter station, said control means being responsive to the postage amount determined by said weighing station for causing the imprinted postage amount of said postage meter station to correspond with said determined amount for each piece of mail.

3,901,798

AEROSOL CONCENTRATOR AND CLASSIFIER

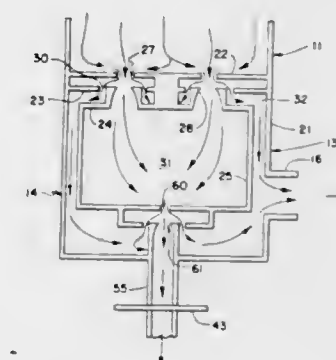
Carl M. Peterson, St. Paul, Minn., assignor to Environmental Research Corporation, St. Paul, Minn.

Filed Nov. 21, 1973, Ser. No. 417,886

Int. Cl.² B07B 7/00

U.S. Cl. 209—143

14 Claims



1. Apparatus for classifying airborne particles according to particle size which comprises:

a first plate defining a first orifice;
a second plate spaced from the first plate and defining a second orifice larger than and substantially concentrically disposed with respect to the first orifice;
tubular means defining a third orifice disposed substantially in the plane of the second orifice, directed toward, substantially the size of, and substantially concentrically disposed with respect to the first orifice, to thereby define an annular passage between the second orifice and the tubular means;
means for establishing communication between said first orifice, on the one hand, and said third orifice and said annular passage, on the other hand;
an outlet for returning air passing through said annular passage to the atmosphere;
means for establishing communication between said annular passage and said outlet; and
collecting means communicating with the third orifice for collecting the particles passing therethrough.

3,901,799

CYCLONE SEPARATOR

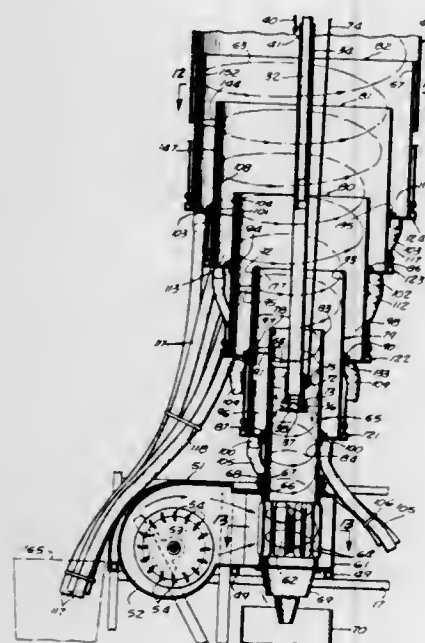
Maxie C. Adkison, 19500 Goldstream Way, Newhall, Calif. 91321

Filed Oct. 29, 1973, Ser. No. 410,627

Int. Cl.² B04C 3/00

U.S. Cl. 209-144

10 Claims



1. In a cyclone separator for classifying material, the combination comprising:

- a fixed upper cylinder;
- a fixed lower cylinder;
- a plurality of telescoping cylindrical chambers concentrically disposed between said fixed upper and lower cylinders;

each said telescoping chamber extending part way up into the next higher larger diameter chamber such that the opposing walls thereof define an annular cavity;

a hopper for the material to be treated disposed above said fixed upper cylinder;

a feed pipe extending down from said hopper with its lower discharge end located in said fixed lower cylinder;

means for directing a spiral whirling stream of air up into the fixed lower cylinder wherein the air picks up the material discharged from said feed pipe and carries it upwardly through the cyclone separator to cause particles of successively smaller specific gravity to be released by the combined action of gravity and the whirling action of the air into the respective annular cavities of the successive telescoping chambers;

means for individually vertically raising or lowering each of the telescoping chambers so as to vary the distance that

each extends up into the next higher larger diameter chamber, to thereby adjust the height of the wall of each of said chambers against which the particles are thrown by the whirling action of the air;
an outlet receptacle associated with each of said annular cavities; and
flexible conveying means connected to openings on the bottom of each of the annular cavities to convey the particles collected therein to the respective outlet receptacles.

3,901,800

SEPARATION OF STRENGTH-DEFLECTIVE REFRACTORY INORGANIC OXIDE PARTICLES

Valdimir Haensel, Hinsdale, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Apr. 19, 1974, Ser. No. 462,451

Int. Cl. B03d 1/00

U.S. Cl. 209-162

4 Claims

1. In the manufacture of refractory inorganic oxide catalyst support particles of a given average bulk density between 0.25 and 0.8 grams per cubic centimeter utilizing high temperature calcination, said manufacture producing particles of varying crush-strength, a method of removing those particles of a crush-strength below a preselected level which comprises:

- a. floating a plurality of particles selected from the particles of varying crush-strength on the surface of a given liquid;
- b. measuring the flotation times of the selected particles of step (a);
- c. measuring the crush-strength of the particles of step (a);
- d. determining the flotation time of the selected particles which possess a crush-strength of the preselected level;
- e. after determination of the flotation time of step (d), floating the particles of varying crush-strength on the surface of said liquid;
- f. separating the particles which sink below the surface of said liquid within the floating time determined in step (d) from the particles which do not sink within the floating time;
- g. removing the particles which sink in step (f) as the particles of crush-strength below the predetermined value.

3,901,801

INDUSTRIAL SCREEN

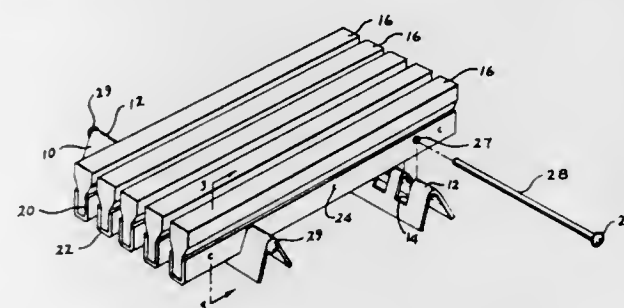
Leon C. Bixby, Clark's Green, Pa., assignor to Hendrick Manufacturing Company, Carbondale, Pa.

Filed June 17, 1974, Ser. No. 480,010

Int. Cl.² B07B 1/12

U.S. Cl. 209-395

9 Claims



1. In an industrial screen of the type comprising a plurality of elongate plastic profile bars and support means for securing said profile bars in relative arrangement to one another, the improvements wherein said profile bars each comprise an elongate profile section, each profile section having flange means depending therefrom, each profile bar further including metallic sheath means for reinforcing said flange means, said sheath means embracing said flange means, said support means comprising support members having notches receiving said flange means and said sheath means.

3,901,802

EXTRACTION OF HEAVY METALS FROM WASTES

Karel Peeters, Geel; Norbert Van de Voorde, and Paul Dejonghe, both of Mol, all of Belgium, assignors to Belgonucleaire, Brussels, Belgium

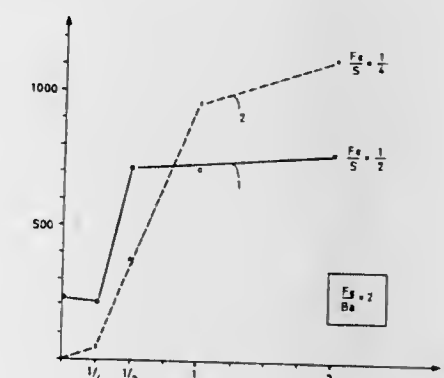
Filed Mar. 26, 1973, Ser. No. 345,235

Claims priority, application Belgium, Mar. 29, 1972, 14767

Int. Cl.² C02B 1/44

U.S. Cl. 210-38

10 Claims



1. Process for extracting small quantities of heavy metal ions selected from the group consisting of mercury, copper, lead, zinc, and cadmium from water, wherein the water is brought into contact with an insoluble mixed salt of iron sulfide and barium sulphate, containing a surplus of sulfide ions, wherein the molar ratio of iron/barium is between 1 and 3.

3,901,803

PROCESS FOR THE REMOVAL OF SUSPENDED GRAINS FROM SODIUM ALUMINATE LIQUOR

József Harsanyi, and Péter Nagy, both of Budapest, Hungary, assignors to Aluterv Alumíniumipari Tervező Vállalat, Budapest, Hungary

Filed May 1, 1973, Ser. No. 356,176

Claims priority, application Hungary, May 5, 1972, AU 273

Int. Cl.² C01F 7/46

U.S. Cl. 210-44

1 Claim

1. A process for the removal of suspended particles from sodium aluminate liquor, comprising subjecting sodium aluminate liquor containing about 30 to 50 mg/l. of suspended particles to a superatmospheric pressure of 1 to 5 atmospheres gauge, dissolving gas in said liquor under said superatmospheric pressure, then conducting said liquor to a closed tank, maintaining the top of said closed tank at a vacuum of at least 50 Torr thereby to induce the formation of tiny bubbles in said liquor which bubbles rise and float at least some of said particles to the top of the liquid in the tank thereby to form a foamy phase at the top of said tank, withdrawing said foamy phase through a vacuum pipe, and removing liquor depleted in said particles from adjacent the top of the liquid in said tank.

3,901,804

METHOD FOR PROCESSING SLUDGE

Motohiro Ohuchi; Tojiro Kitahori, both of Hyogo; Toshinari Maitoko, Yokohama, and Katuhiro Mizuguchi, Kanagawa, all of Japan, assignors to Kanzaki Paper Manufacturing Co., Ltd., Hyogo and Nūgata-Zimpro Limited, Tokyo, both of Japan

Claims priority, application Japan, Oct. 24, 1972, 47-10680

Int. Cl.² B01D 21/01; C02B 1/20

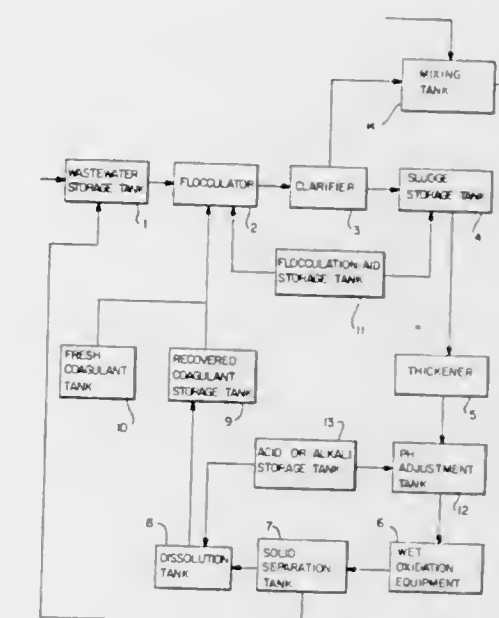
U.S. Cl. 210-50

10 Claims

1. In a method of treating wastewater wherein the wastewater is treated with a coagulant consisting essentially of a water-soluble aluminum compound and sludge resulting from such treatment is separated and subjected to a wet air oxidation treatment, the improvement comprising adjusting the pH of the sludge prior to said wet air oxidation treatment so that the sludge obtained therefrom has a pH value of less than about

1.5, whereby water-soluble aluminum compounds are formed in the oxidized sludge, and thereafter separating said water-soluble aluminum compounds from the sludge.

8. In a method of treating wastewater wherein the wastewater is treated with a coagulant consisting essentially of a water-soluble aluminum compound and sludge resulting from such



treatment is separated and subjected to a wet air oxidation treatment, the improvement comprising adjusting the pH of the sludge prior to said wet air oxidation treatment so that the sludge obtained therefrom has a pH value of greater than about 10.5 whereby water-soluble aluminum compounds are formed in the sludge, and thereafter separating said water-soluble aluminum compounds from the sludge.

3,901,805

REMOVING TOXIC CHROMIUM FROM INDUSTRIAL EFFLUENTS

Ronald Stewart, Williamsburg, Va., assignor to Dow Badische Company, Williamsburg, Va.

Continuation-in-part of Ser. No. 409,200, Oct. 24, 1973, abandoned, which is a continuation-in-part of Ser. No. 276,638, July 31, 1972, abandoned. This application Dec. 5, 1974, Ser. No. 529,865

Int. Cl.² C02C 5/02

U.S. Cl. 210-50

4 Claims

1. A process for removing soluble chromium (VI) from an aqueous industrial effluent, which process comprises:

- a. injecting a fluid acid and a fluid reducing agent into an essentially unimpeded stream of the effluent flowing through a simple conduit having no mixing or obstructive means located therein;
- b. effecting within the essentially unimpeded flowing stream of acidified effluent and reducing agent in the conduit a turbulent condition characterized by a Reynolds Number of at least about 5,000;
- c. providing a residence time of at least about 30 seconds for the turbulent stream of acidified effluent and reducing agent within the conduit; whereby substantially complete reduction of chromium (VI) to chromium (III) is accomplished within the conduit; and
- d. neutralizing the effluent to precipitate the chromium (III) as $\text{Cr}(\text{OH})_3$, and separating the chromium-free supernatant from the precipitate.

3,901,806

TREATMENT OF AQUEOUS LIQUORS WITH URANYL IONS

Craig B. Murchison, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Feb. 4, 1974, Ser. No. 439,452

Int. Cl. C02b 3/08

U.S. Cl. 210—63

4 Claims

1. A process for oxidizing organic compounds in an aqueous liquor wherein at least CO₂ is produced and wherein said organic compound contains an electron donating atom which comprises: mixing gaseous oxygen with the aqueous liquor while the pH of said liquor is maintained in the range of 3 to 4.5 in the presence of a catalytic quantity of uranyl ions of at least about 20 ppm while said liquor is subjected to light waves ranging in length from about 5800 to about 2000 Å at a temperature ranging from the freezing point to the boiling point of said aqueous liquor at atmospheric pressure and removing at least a major portion of said produced CO₂ thereby reducing the TOC of said liquor.

3,901,807

HIGH ENERGY ELECTRON TREATMENT OF WATER

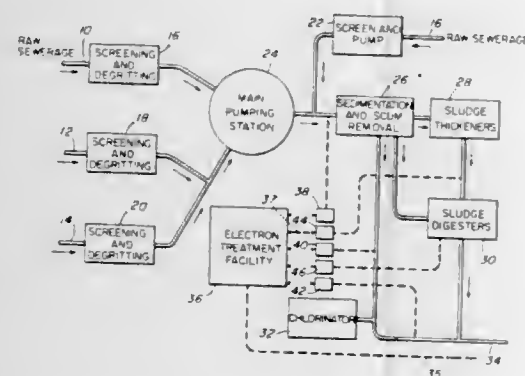
John G. Trump, Winchester, Mass., assignor to High Voltage Engineering Corporation, Burlington, Mass.

Filed June 27, 1973, Ser. No. 374,000

Int. Cl. A611 3/00; C02b 1/34, 3/08

U.S. Cl. 210—198

6 Claims



1. An apparatus for increasing the thickness of water and water-borne sludge which may be penetrated by electrons of a given energy and for the optimization of the radio-chemical and radio-biological effects of such penetration by such electrons on such water and water-borne sludge, including at least one machine source of a continuous beam of electrons, a metal enclosed region adapted to receive the water and water-borne sludge and transit the water and water-borne sludge therefrom, means for injecting an oxygen containing gas into the metal enclosed region at a rate sufficient to diminish the average density of the water and water-borne sludge by at least a factor of two and to augment that percentage of the total chemical oxygen demand of the water and water-borne sludge present in the water and water-borne sludge mixture which is supplied by available oxygen, a constricted region whose cross-section perpendicular to the direction of water flow is generally a narrow but extended rectangle, at least one extended side thereof being formed of a thin metal wall, the non-extended sides thereof being of a length less than the maximum range of the electrons emitted by the machine source in the gas containing water, and means for injecting the high energy electrons through the thin walled regions substantially uniformly along the length dimension thereof and into the gas containing water, the penetration of the electrons into said gas containing water being increased by at least a factor of two over that possible in the water alone, the geometry of the constricted region and the distribution and energy of the injected electrons being such that the absorbed energy throughout the gas containing water is within a factor of two of the average absorbed energy, and the radiation effect of the

electrons being optimized by the presence of sufficient oxygen.

3,901,808

BLOOD FILTER

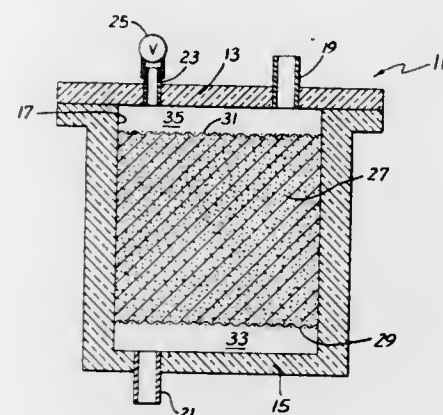
Jack C. Bokros, San Diego, Calif., assignor to General Atomic Company, San Diego, Calif.

Filed Feb. 25, 1974, Ser. No. 445,112

Int. Cl. B01d 23/14

U.S. Cl. 210—263

11 Claims



1. A device for treating human blood prior to its return to a living human body, which device comprises a housing having a chamber formed therein, entrance means and exit means communicating with said chamber, and a bed of particles disposed in said chamber so that a liquid must pass through said bed in order to travel from said entrance to said exit, said particle bed being made up of individual particles between about 50 and 1,000 microns in size, the outer surface of said particles being smooth and formed of impermeable carbon having a density equal to at least about 70 percent of its theoretical maximum density.

3,901,809

ROTARY FILTER APPARATUS HAVING CONTINUOUS WEB SUPPORTING A SHEET FILTER MEDIA

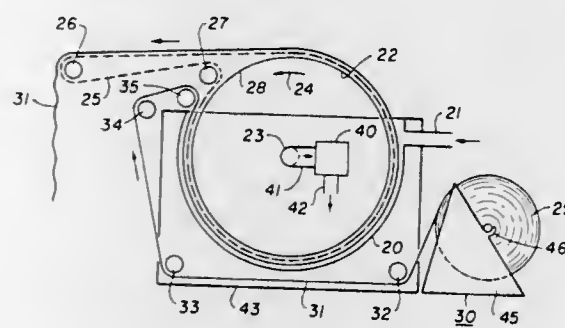
Harry Ball, Piscataway, and Henry A. Steward, Califon, both of N.J., assignors to Technical Fabricators, Inc., Piscataway, N.J.

Filed June 10, 1974, Ser. No. 477,812 The portion of the term of this patent subsequent to Feb. 12, 1991, has been disclaimed.

Int. Cl. B01d 33/12

U.S. Cl. 210—387

11 Claims



1. A filter apparatus for separating solids from a slurry, comprising a tank having an inlet and an outlet for said slurry, a rotary drum having a substantially horizontal axis and extending into said tank for partial immersion into the slurry, the drum having a cylindrical peripheral wall with perforations therein, the peripheral wall defining the outer wall of a suction chamber in the drum, an endless carrier web, carrier and guide means mounted above said tank and comprising a plurality of rollers positioned to guide said endless carrier web to surround a substantial portion of the peripheral wall of the drum and to extend substantially horizontally from the upper portion of said drum to a position remote from said drum, whereby only a small exposed portion of the drum is uncov-

ered by the carrier web in a region above the slurry, a supply means including a roll of a disposable filter media, means continuously feeding the disposable filter means from said roll to overlie the carrier web around said substantial portion of the peripheral wall of the drum so that the filter media overlies the web on the drum at least in the part thereof immersed in the slurry and overlies said web on a horizontal portion thereof extending from said drum to said remote position, said feeding means comprising roll means positioned to continuously hold said filter media away from contact with the outside of said tank, suction means continuously operable within said suction chamber to keep the filter media and web wrapped therearound pressed against said peripheral wall and to cause the solids from the slurry to separate onto the filter media as the liquid of the slurry passes through the filter media and carrier web and through said perforations for discharge from the drum, and means for inhibiting loss of vacuum in the drum by way of said exposed portion of the drum.

3,901,810

ULTRAFILTRATION MEMBRANES

Thomas William Brooks, McMurray; David William Gaefke, Coraopolis, and Lawrence James Guilbault, McMurray, all of Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

Filed Sept. 21, 1972, Ser. No. 290,850

Int. Cl. B01D 33/00, 13/00

U.S. Cl. 210—500 M

9 Claims

1. A semipermeable membrane comprising a segmented polymer of chemically bonded hydrophilic segments and hydrophobic segments wherein the hydrophilic segments consist essentially of a copolymer of polyvinyl pyrrolidone which has been prepared in non-aqueous medium and at least about 5 mole percent of graft-reactive site containing hydrophilic monomer consisting essentially of N-methacryloyl-D-glucosamine; and wherein the hydrophobic segments consist essentially of polymethyl methacrylate chemically bonded to the N-methacryloyl-D-glucosamine.

3,901,811

LIQUID SKIMMER METHOD AND APPARATUS

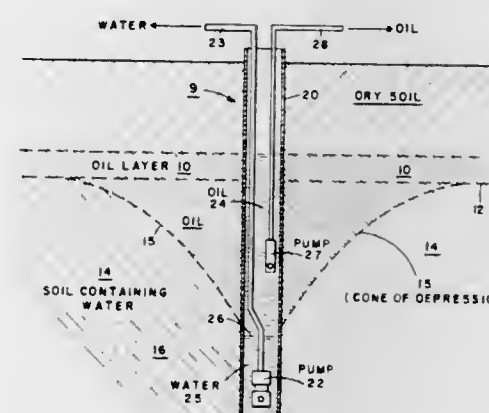
William C. Finch, Houston, Tex., assignor to William C. Finch and Michael P. Breston, both of Houston, Tex., a part interest to each

Filed Jan. 17, 1973, Ser. No. 324,461

Int. Cl. B01D 23/00, 17/02; F28D 15/00

U.S. Cl. 210—538

1 Claim



1. A skimmer apparatus for removing an overlying liquid from underlying liquid in an underground well containing a two-liquid body comprising:

a skimmer pipe adapted to be lowered into said well, said pipe having a closed lower end and an upper end and said pipe being provided between its ends with at least one port, said port extending above the potential level for the underlying liquid;

an outer slotted casing substantially concentrically positioned in said well with respect to said skimmer pipe,

said pipe defining below said port a reservoir of sufficient volume to contain therein an appreciable amount of the skimmed off overlying liquid; and means for removing the liquid collected in said reservoir.

3,901,812

VISIBILITY METER USING MULTIPLE LIGHT BEAMS

Hans Lennart Hallengren, Lidingo, Sweden, assignor to Satt Elektronik AB, Stockholm, Sweden

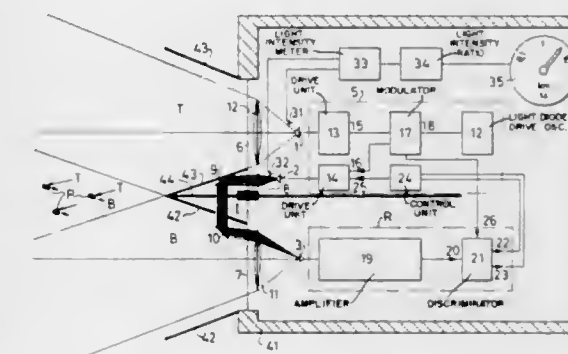
Filed Jan. 17, 1974, Ser. No. 434,099

Claims priority, application Sweden, Jan. 18, 1973, 7300716

Int. Cl. G01n 21/26

U.S. Cl. 250—565

2 Claims



1. A visibility meter comprising: a first light source for transmitting modulated light radiation into an atmosphere in the form of a main beam of light, a second light source for generating a radiation intensity reference beam, a first light radiation sensing means for receiving said reference beam and for receiving reflected radiation constituting part of the radiation transmitted into said atmosphere by means of said main beam after reflection of such part in said atmosphere, comparison means connected to said first radiation sensing means for comparing the intensity of said main beam radiation received by said sensing means after reflection in said atmosphere and the intensity of said reference beam, control means for changing the intensity of radiation of at least one of said first and said second light sources in dependence of the variation of the ratio of the intensity of said main beam reflected radiation and the intensity of said reference beam from a predetermined ratio value to restore said ratio to said predetermined value, second light radiation sensing means for determining the intensity of radiation emitted by said first light source, third light radiation sensing means for determining the intensity of radiation emitted by said second light source and means connected to said second and third radiation sensing means for indicating visibility in dependence of the ratio of said measured radiation intensities of said first and said second light sources.

3,901,813

LIGHT RESPONSIVE SWITCHING CIRCUIT

Michael A. Potopinski, Brookline, N.H., assignor to Arthur D. Little, Inc., Cambridge, Mass.

Filed July 12, 1974, Ser. No. 488,114

Int. Cl. H01J 39/12

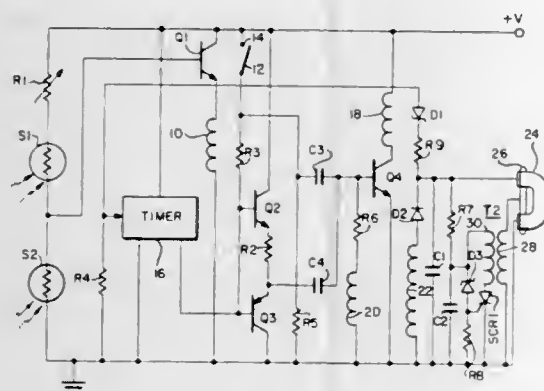
U.S. Cl. 250—209

9 Claims

1. A light responsive switching circuit comprising: first and second photosensors connected in series and each disposed to receive light from a respective source; said first photosensor being operative to provide a switching signal in response to received light having an intensity above a predetermined level, said second photosensor being operative to provide an enable signal in response to received light having an intensity below a predetermined level;

a first transistor switch coupled to said first and second photosensors and being switchable to a conducting state

in response to said enable signal from said second photo-sensor and said switching signal from said first photo-sensor;
switch means operative when said first transistor switch is in a conducting state to provide a conduction path;
a second transistor switch conductive during conductive operation of said switch means and providing a charging current;



charge storage means operative in response to said charging current to store at least one selected charge;
pulse generating means operative in response to a predetermined voltage of said charge storage means to provide at least one output pulse; and
output means including a flash tube operative in response to said at least one output pulse to provide a burst of illumination.

3,901,814

METHOD AND APPARATUS FOR DETECTING A REGISTRATION MARK ON A TARGET SUCH AS A SEMICONDUCTOR WAFER

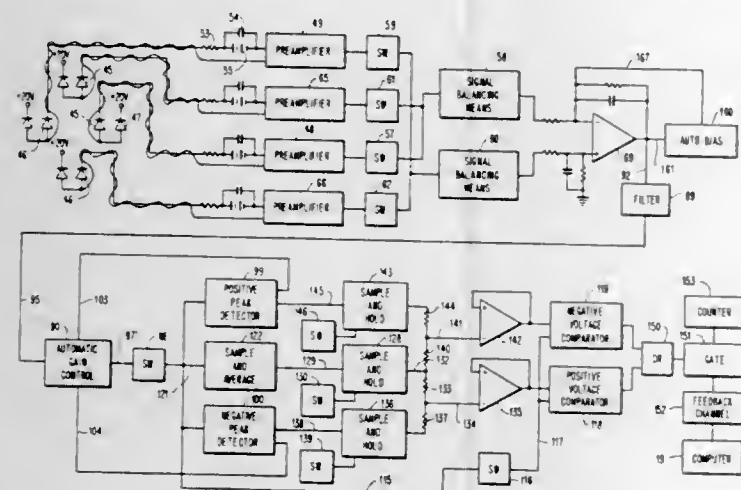
Donald E. Davis, Wappingers Falls; Millard A. Habegger, Poughkeepsie; Richard D. Moore, Hopewell Junction; Edward V. Weber, and Ollie C. Woodard, both of Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 27, 1974, Ser. No. 483,509

Int. Cl.² H01J 37/00

U.S. Cl. 250—492 A

32 Claims



1. An apparatus for determining the location of a registration mark on a target including:
means to sense the beginning and the end of the registration mark when the registration mark is scanned by a beam of charged particles during a plurality of scans;
said sensing means includes means disposed on opposite sides of the registration mark, each of said disposed means producing a first peak electrical signal at the beginning of the registration mark and a second peak electrical signal at the end of the registration mark with the two peak electrical signals from each of said disposed means being of opposite polarity, each of said disposed

means producing peak electrical signals of opposite polarity at the same time;
means to balance the peak electrical signals from said disposed means to cause the signals from each of said disposed means to have substantially the same amplitude irrespective of the location of one of said disposed means relative to the registration mark in comparison with the location of the other of said disposed means relative to the registration mark;
means to obtain the difference of the signals from said disposed means to produce a first peak electrical signal designating the beginning of the registration mark and a second peak electrical signal designating the end of the registration mark;
first means to produce a first threshold signal correlated to one of the peak electrical signals from said obtaining means and to a baseline voltage determined by the surface of the target in the area having the registration mark;
second means to produce a second threshold signal correlated to the other of the peak electrical signals from said obtaining means and to the baseline voltage determined by the surface of the target in the area having the registration mark;
third means to produce a first signal when one of the peak electrical signals from said obtaining means crosses the first threshold signal;
fourth means to produce a second signal when the other of the peak electrical signals from said obtaining means crosses the second threshold signal;
and means to determine the positions of the beginning and end of the registration mark in accordance with the positions of the beam when the first signal from said third means and the second signal from said fourth means are produced.

3,901,815

SYNTHETIC AIRCRAFT TURBINE OIL

John Reale, Jr., Wappingers Falls, N.Y., assignor to Texaco Inc., New York, N.Y.

Filed June 5, 1974, Ser. No. 476,625

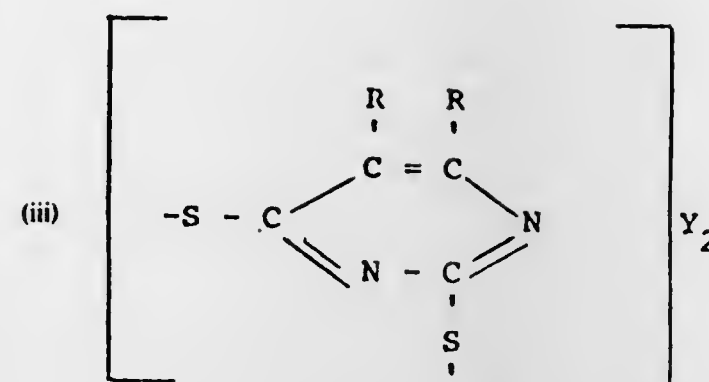
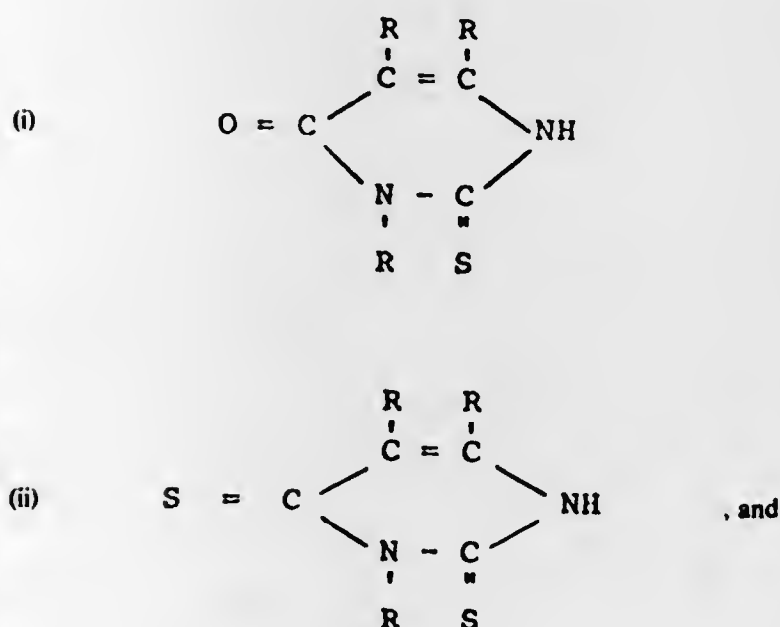
Int. Cl. C10m 1/48

U.S. Cl. 252—46.7

9 Claims

1. A synthetic lubricating oil composition comprising a major portion of an aliphatic ester base oil having lubricating properties formed from the reaction of a pentaerythritol or trimethylolpropane and a saturated hydrocarbyl monocarboxylic acid having from about 2 to 18 carbon atoms per molecule, containing

A. From about 0.005 to 0.5 weight percent of a thiouracil compound represented by the formula selected from the group consisting of



wherein R is hydrogen or a hydrocarbyl radical having from one to about 30 carbon atoms and Y is hydrogen or an ammonium radical having the formula $\text{H}_3\text{NR}'$ in which R' is a hydrocarbyl radical having from one to 24 carbon atoms, at least one Y being said ammonium radical.

B. From about 0.3 to 5 percent by weight of the lubricating oil composition of an alkyl or alkaryl phenyl naphthylamine in which the alkyl radical has from three to 12 carbon atoms,
C. From about 0.3 to 5 percent of a dialkyldiphenylamine in which the alkyl radicals have from four to 12 carbon atoms, and
D. From about 0.25 to 10 percent of a trihydrocarbyl phosphate in which said hydrocarbyl radicals contain from about two to 12 carbon atoms.

3,901,816

MAGNETIC TAPE COATING

Mary R. Thomas; Robert H. Lalk; Syamalarao Evani, and Donald L. Schmidt, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed June 17, 1974, Ser. No. 479,958

Int. Cl. H01f 1/11, 1/28, 10/00

U.S. Cl. 252—62.54

6 Claims

1. The composition for coating magnetic tapes comprising an aqueous dispersion of magnetic particles having dissolved therein monomeric cyclic sulfonium zwitterions in an amount sufficient, when polymerized, to constitute a binder for the magnetic particles and, together with the particles, to constitute a firmly adherent, flexible magnetic coating for said tape.

3,901,817

HALOCARBON COMPOSITIONS

Kevin P. Murphy, Orchard Park, N.Y., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Apr. 22, 1974, Ser. No. 463,009

Int. Cl.² C09K 5/04

U.S. Cl. 252—67

7 Claims

1. The process of producing refrigeration which comprises condensing a mixture consisting essentially of monochlorotrifluoromethane and methyl fluoride and possessing a boiling point lower than the boiling point of monochlorotrifluoromethane and thereafter evaporating said mixture in the vicinity of a body to be cooled.

4. Low-boiling mixtures consisting essentially of monochlorotrifluoromethane and methyl fluoride which possess boiling points lower than the boiling point of monochlorotrifluoromethane.

3,901,818 HYDROCARBON BINDING COMPLEX AND PROCESS FOR ITS PREPARATION

Gilbert Durand; Alain Pareilleux; Gérard Goma, and Pierre Monsan, all of Toulouse, France, assignors to Creusot-Loire, Paris, France

Continuation-in-part of Ser. No. 228,721, Feb. 23, 1972, abandoned. This application Nov. 16, 1973, Ser. No. 416,575

Claims priority, application France, Mar. 1, 1971, 71.07851

Int. Cl.² C01B 31/16; B01J 31/22

U.S. Cl. 252—184

23 Claims

1. Solid complex usable for binding hydrocarbons and other organic materials, consisting essentially of a solid substrate bearing free hydroxyl groups activated with 0.01 to 10 parts by weight of an acid halide per one part of said substrate, and to which is covalently bound from 0.01 to 10 parts by weight of an amine selected from the primary aliphatic amines having from 6 to 20 carbon atoms and the primary aromatic amines having, attached to a phenyl ring, a linear hydrocarbon chain of 1 to 10 carbon atoms bearing the amine group.

3,901,819

COMPOSITIONS FOR ACTIVATING AN INORGANIC PEROXIDE BLEACHING AGENT

Yunosuke Nakagawa, Koshigaya; Koitsu Sato, and Shori Hakozaki, both of Funabashi, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Sept. 7, 1973, Ser. No. 395,264

Claims priority, application Japan, Sept. 14, 1972, 47-92265

Int. Cl.² C11D 7/54, 7/18

U.S. Cl. 252—186

7 Claims

1. An activating agent composition for activating an inorganic peroxide bleaching agent, consisting essentially of
A. acetic acid ester of a substance selected from the group consisting of a monosaccharide, a disaccharide, a sugar alcohol, an internal anhydride of a sugar alcohol, erythritol and mixtures thereof, said ester having at least two ester groups on adjacent carbon atoms of said substance, and
B. acetic acid ester of polyhydric alcohol having a melting point not higher than about 30°C, the weight ratio of A:B being from 1:9 to 9:1.

3,901,820

PRESSURE MODULATED GAS MEASURING METHOD AND APPARATUS

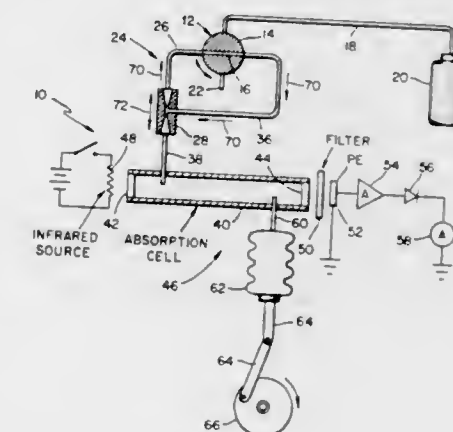
Rex Chester Wood, New Brighton, Minn., assignor to Modern Controls, Inc., Minneapolis, Minn.

Filed Apr. 12, 1974, Ser. No. 460,445

Int. Cl.² G01N 21/24

U.S. Cl. 250—343

3 Claims



1. Apparatus for detecting the presence of a gas comprising an absorption cell for containing at least a portion of said gas, means for pressure modulating the gas contained in said cell, a source of infrared energy at one end of said cell, a photocell

at the other end of said absorption cell for providing a fluctuating signal in accordance with the degree said infrared energy is modulated by said pressure modulating means when said gas is capable of absorbing some of said infrared energy, an interference filter between said absorption cell and said photocell for transmitting infrared energy in a narrow band containing the wavelength at which said gas is capable of absorbing infrared energy, a metering device, and a Venturi device connected between said metering device and said absorption cell.

3,901,821

MULTI-COMPONENT CATALYST

William B. Retallick, West Chester, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Mar. 18, 1974, Ser. No. 452,417

Int. Cl. B01J 11/06

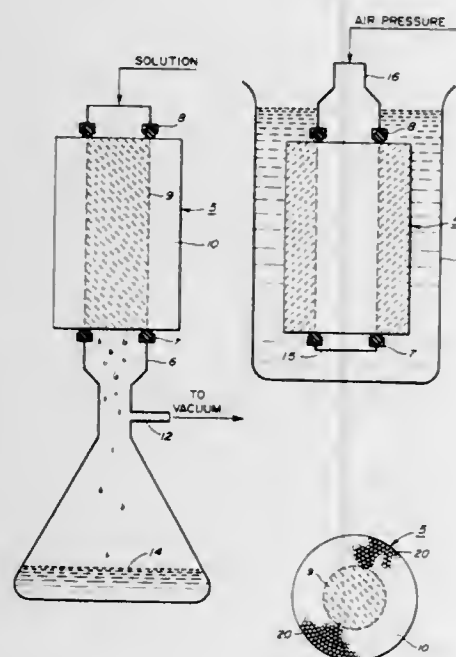
U.S. Cl. 252-410

14 Claims

9. The method of producing a catalyst unit having a porous body structure, a first catalytically active component selectively incorporated within a central core of such unit and a second catalytically active component selectively incorporated within the peripheral wall of said unit, which method comprises:

temporarily sealing a confined zone at one axial end of said unit by firm contact with a sealing ring pressed against said end, the outer edge of said ring being spaced inwardly from the lateral periphery of said unit at said end; temporarily sealing a confined zone at the opposite axial end of said unit with a sealing ring pressed thereagainst, the outer edge of said ring being spaced inwardly from the lateral periphery of said unit at that end;

arranging one of the aforesaid sealed axial ends of said unit to place said core in peripherally sealed flow communication with a vacuum line, thereby creating flow of sur-



rounding gas into said core and axially through said core; placing the opposite sealed end portion of said unit in peripherally sealed flow communication with a supply of first impregnating liquid containing said first catalytically active component, whereby said liquid is caused selectively to impregnate the core portion of said unit; discontinuing supply of said first impregnating liquid and thereafter discontinuing flow communication with said vacuum line;

introducing a gas stream under positive pressure at one peripherally confined end of said core portion, whereby said gas stream leaks transversely out of said core portion into the surrounding outer region of said unit and is dissipated within said outer region; and

during flow of said gas stream contacting the peripheral surface of said unit with a liquid containing said second catalytically active component, thereby selectively depos-

iting said second component within the outer peripheral portion of said unit surrounding said core portion.

11. The method as defined in claim 10 wherein said core portion is impregnated with catalyst component active in reduction of nitrogen oxide gases.

12. The method as defined in claim 10 wherein said outer portion is impregnated with catalyst component active in oxidation of carbon monoxide.

3,901,822

PROCESS OF REGENERATING A NOBLE METAL HYDROGENATION CATALYST USED IN HYDROGEN PEROXIDE PRODUCTION BY THE ANTHRAQUINONE PROCESS

Jhonce N. Browning, So. Charleston, W. Va.; Nathan D. Lee, Lambertville, N.J., and George H. Smee, So. Charleston, W. Va., assignors to FMC Corporation, New York, N.Y.

Filed Nov. 14, 1973, Ser. No. 415,631

Int. Cl. B01J 11/18, 11/14

U.S. Cl. 252-412

13 Claims

1. Process of regenerating a deactivated noble metal hydrogenation catalyst used in the process of producing hydrogen peroxide, wherein said catalyst contacts an anthraquinone working compound dissolved in a working solution during hydrogenation of said compound, which comprises:

contacting said deactivated catalyst with a polar organic solvent containing 1 to 5 carbon atoms for about 0.1 to about 48 hours to remove associated working solution and separating the treated catalyst from the solvent;

contacting the solvent-treated catalyst with at least a 1% aqueous ammonium hydroxide solution for about 0.1 to about 48 hours at about 0° to about 200°C and separating the catalyst from the ammonium hydroxide solution; and contacting the ammonium hydroxide-treated catalyst with steam and an oxygen-containing gas at temperatures from about 250°C to the transition temperature of the catalyst crystal structure for about 1 to about 72 hours whereby the catalytic activity of said catalyst is improved.

12. The process of claim 1 in which the ammonium hydroxide-treated catalyst is contacted with steam and an inert gas at temperatures from about 250°C to the transition temperature of the catalyst crystal structure for about 0.1 to about 48 hours prior to contacting the catalyst with said steam and an oxygen-containing gas.

3,901,823

AGGLOMERATING ACTIVATED CARBON

Mitchell S. Dimitri, and Albert J. Repik, both of Charleston, S.C., assignors to Westvaco Corporation, New York, N.Y.

Filed Nov. 18, 1971, Ser. No. 200,240

Int. Cl. B01J 21/18; C09C 1/58

U.S. Cl. 252-428

6 Claims

1. Activated powdered carbon particles agglomerated with a water-insoluble ammonium salt of alkali lignin in an amount of 2 to 25% by weight based on the carbon.

5. A method of producing activated carbon particles which comprises;

a. adding powdered activated carbon particles to water containing from 2 to 25% by weight of said powdered carbon of the ammonium salt of an alkali lignin, said water being at least 70% by weight based on said lignin and said carbon together;

b. intimately mixing said powdered carbon particles, ammonium salt of alkali lignin and water to coat each powdered carbon particle with said ammonium salt of alkali lignin, c. continuing said mixing until said powdered carbon particles form agglomerates of about 1/16 to 1/4 inch diameter spheres, and

d. evaporating the water from said agglomerates at a temperature below the decomposition temperature of said ammonium salt of alkali lignin.

3,901,824

NEW CATALYST IN THE DIRECT SYNTHESIS OF DIMETHYL TIN DICHLORIDE

Vasilije Knezevic, Brooklyn, N.Y.; Mark W. Pollock, Teaneck, N.J.; Koei-Liang Liauw, Parsippany, N.J., and Gerald Spiegelman, Wayne, N.J., assignors to Witco Chemical Corporation, New York, N.Y.

Filed Aug. 3, 1973, Ser. No. 385,524

Int. Cl. B01J 11/78

U.S. Cl. 252-429 R

5 Claims

1. A catalyst, for preparing dimethyltin dichloride by heating tin metal with methyl chloride, consisting essentially of tin tetrachloride and at least one organic compound selected from the group consisting of tributylamine, methyl tributyl phosphonium chloride and methyl tributyl ammonium chloride wherein said organic compound to tin tetrachloride is within a molar ratio of 1:4 to 2:1.

3,901,825

CHROME CATALYST

Jeffrey G. Meyer, and Glennis L. Phipps, both of Adrian, Mich., assignors to Anderson Development Company, Adrian, Mich.

Filed Mar. 29, 1974, Ser. No. 456,123

Int. Cl. B01J 11/82

U.S. Cl. 252-431 P

4 Claims

1. A composition formed by mixing (A) a chromium tris-diorgano-orthophosphate of the formula $\text{Cr}(\text{OP}(\text{O})(\text{OR})_2)_3$ in which each R is selected from the class consisting of alkyl, cycloalkyl, alkoxyalkyl, chlorinated derivatives thereof and brominated derivatives thereof, said alkyl and cycloalkyl containing one to eight carbon atoms and said alkoxyalkyl containing three to six carbon atoms, (B) an alkyl aluminum of the general formula $\text{R}_2\text{R}'\text{Al}$ in which each R' is an alkyl group of 1 to 6 carbon atoms and each R'' is selected from the group consisting of alkyl groups of 1 to 6 carbon atoms and hydrogen atoms, and (C) a halogenated olefin of from four to about eight carbon atoms, said olefin containing at least four halogen atoms at least two of which are attached to olefinic carbon atoms, there being at least one olefinic bond in conjugation with another double bond or at least one halogen atom attached to a carbon atom alpha to an olefinic double bond, the mole ratio of (A) to (B) to (C) being in the range of 0.001-1:1:1-10.

3,901,826

ACID TREATED, THREE-SHEET MINERAL ABSORBENTS AND METHOD FOR PREPARING SAME

Carl-Ernst Hofstadt, Munich; Rudolf Fahn, Gammelsdorf, and Anton Wirzmueller, Moosburg, all of Germany, assignors to Sud-Chemie AG, Munich, Germany

Filed Sept. 25, 1973, Ser. No. 400,596

Claims priority, application Germany, Sept. 28, 1972, 2247530

Int. Cl. B01J 11/32, 11/58, 11/60

U.S. Cl. 252-450

4 Claims

1. Absorbent for the treatment of aqueous acid solutions, especially beverages, comprising three-sheet minerals having a SiO_2 content of at least 80% by weight and a crystal lattice that is substantially X-ray amorphous produced by treating three-sheet minerals with mineral acid until an SiO_2 content of at least 80 percent, based on the dry final product, is obtained and until the original crystal lattice has substantially become X-ray amorphous by the removal of the octahedral sheet that is predominantly built up of iron and aluminum ions and thereafter separating the acid treatment solution from the resulting adsorbent, said crystal lattice preventing the release of appreciable amounts of iron and aluminum ions into solution and preventing the adsorption of iron and aluminum hydroxide deposits from washing water.

3,901,827

MULTIMETALLIC CATALYSTS

John H. Sinfelt, Berkeley Heights, and James A. Cusumano, Rahway, both of N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed Sept. 27, 1972, Ser. No. 292,767

Int. Cl. B01J 11/08, 11/12, 11/20

U.S. Cl. 252-455 R

8 Claims

1. A catalyst consisting essentially of, as metals, platinum and iridium in combination with a metal selected from the group consisting of copper and gold on a refractory support wherein the total content of the metals comprises from about 0.05 to 5 weight percent of the total catalyst and wherein the iridium comprises from 0.01 to 3 weight percent, platinum comprises from 0.01 to 3 weight percent, and copper or gold comprises from 0.01 to 3 weight percent of the total catalyst.

3,901,828

OXIDATION CATALYST FOR COMBUSTIBLES IN GAS MIXTURES

Gerhard Mai, Bruchkobel; Reiner Siepmann, Rodenbach, and Franz Kummer, Rosdorf, all of Germany, assignors to W. C. Heraeus GmbH, Hanau, Germany

Continuation-in-part of Ser. No. 294,705, Oct. 3, 1972, abandoned, which is a continuation-in-part of Ser. No.

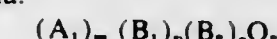
295,790, Oct. 6, 1972, abandoned, which is a continuation-in-part of Ser. No. 284,323, Aug. 28, 1972, abandoned. This application Sept. 7, 1973, Ser. No. 395,089 Claims priority, application Germany, Nov. 8, 1971, 2155338

Int. Cl. B01J 23/10

U.S. Cl. 252-462

11 Claims

1. Catalyst composition for the oxidation of combustible gaseous components of gas mixtures of carbon monoxide or gaseous organic substances or mixtures of carbon monoxide and gaseous organic substances in automotive exhausts comprising the formula:



wherein

m is 1, and p and q, respectively, have values greater than 0 but less than 1, and $p + q = 1$; and

A₁ is at least one trivalent cation of metals selected from the group consisting of the rare earth metals;

B₁ is at least one divalent cation of metals selected from the group consisting of Ni, Co, Fe and Cu;

B₂ is at least one tetravalent cation of metals selected from the group consisting of Ru, Os, Ir, Pt, Ti, Mo, Mn and V; with the proviso that when B₁ is Cu, B₂ is only Mn, and the further proviso that $(m \cdot a_1) + (p \cdot b_1) + (q \cdot b_2)$ equals 6 such that a neutrality of charge exists, wherein a₁ = the valency of A₁

b₁ = the valency of B₁ and

b₂ = the valency of B₂.

3,901,829

METHOD OF MAKING RADIOGRAPHICALLY OPAQUE PLASTIC TUBING

Eugene L. Slingluff, East Troy, and Eli Ostoich, Milwaukee, both of Wis., assignors to Sunlite Plastics, Inc., Milwaukee, Wis.

Division of Ser. No. 222,983, Feb. 2, 1972, Pat. No. 3,749,134.

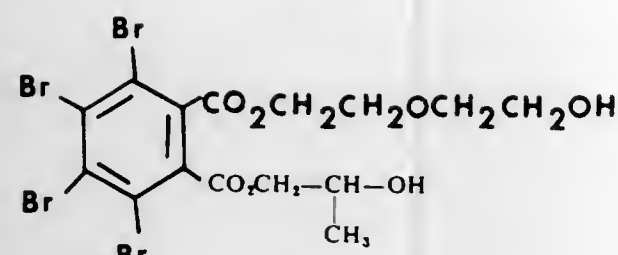
This application July 19, 1973, Ser. No. 380,727

Int. Cl. G21f 1/10

U.S. Cl. 252-478

4 Claims

1. A method of rendering a thermoplastic composition radiographically opaque, comprising the step of incorporating with the thermoplastic composition a material having the following formula:



3,901,830

ALKYL DIACETOXY-DIMETHYL-RING SUBSTITUTED-ENZOATES

Kurt Kulka, New York, N.Y., assignor to Fritzsche Dodge & Olcott Inc., New York, N.Y.

Filed June 10, 1974, Ser. No. 478,063

Int. Cl.² C11B 9/00; C07C 69/78

U.S. Cl. 252-522

7 Claims

1. A perfume composition comprising at least 1% by weight of an alkyl diacetoxymethyl-substituted-benzoate and 1-99% by weight of an odorous perfume component, said alkyl diacetoxymethyl-substituted-benzoate being selected from the class consisting of methyl 2,4-diacetoxy-3,6-dimethyl-benzoate, ethyl 2,4-diacetoxy-3,6-dimethyl-benzoate, methyl 2,6-diacetoxy-4,5-dimethyl-benzoate, ethyl 2,6-diacetoxy-4,5-dimethyl-benzoate, methyl 2,6-diacetoxy-3,5-dimethyl-benzoate, ethyl 2,6-diacetoxy-3,5-dimethyl-benzoate, methyl 4,6-diacetoxy-2,3-dimethyl-benzoate and ethyl 4,6-diacetoxy-2,3-dimethyl-benzoate.

3,901,831

METHOD OF MAKING DENSE DETERGENT GRANULES

Chung Y. Shen, and Clayton F. Callis, both of St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Aug. 24, 1973, Ser. No. 391,367

Int. Cl.² C11D 3/066, 3/107

U.S. Cl. 252-527

6 Claims

1. A method of making composite detergent additive granules containing from 3% to 20% alkali metal nitrilotriacetate the balance of said granules being an inorganic salt selected from the group consisting of sodium metasilicate, sodium carbonate, sodium sulfate, mixtures thereof, STP and mixtures of STP and sodium sulfate, said method comprising adding aqueous alkali metal nitrilotriacetate, containing from about 40% to about 70% by weight alkali metal nitrilotriacetate and having a temperature of from about 0°C to about 120°C, to an agitated bed of the inorganic salt, having an initial temperature of from about 300°C to about 550°C; sufficient aqueous nitrilotriacetate being added to cool the bed below about 300°C prior to dehydration of the bed and the addition of aqueous nitrilotriacetate and dehydration of the bed being complete at a bed temperature of at least about 160°C when STP is present or about 120°C when STP is not present.

3,901,832

DETERGENT CAKE CONTAINING MONOALKYLSULFOSUCCINATE AND PREPARATION

Bernard Baron Dugan, Bryanston, and Coenraad Jacobus Beukes Scholtz, Kempton Park, both of South Africa, assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 14,765, Feb. 26, 1970, abandoned, which is a continuation-in-part of Ser. No. 568,107, July 27, 1966, abandoned. This application Oct. 10, 1972, Ser. No. 296,414

Claims priority, application South Africa, Aug. 24, 1965, 64/4601

Int. Cl. C11D 1/12

U.S. Cl. 252-557

9 Claims

1. A cleansing bar comprising from about 40 to 95% by weight of substantially neutral water soluble alkali metal,

alkaline earth metal or ammonium di-salts of sulfosuccinate mono esters and from about 5 to 60% by weight of a normally solid non-volatile organic plasticizer, said plasticizer having a melting point such that it is molten at about 95°C and is chosen from the group consisting of fatty acid esters of polyhydric alcohols, said esters being the reaction product of a reactant having therein (1) a reactive hydroxyl group and, (2) an acyclic chain having from 12 to 18 carbon atoms wherein between 20 and 100% of said chains are alkyl chains having a chain length of 12 carbon atoms, with an alkali metal, alkaline earth metal or ammonium sulfite, said reaction product being produced in a reaction medium including said plasticizer.

5. A process for the production of cleansing cakes comprising; reacting an alcohol having an acyclic chain of from 12 to 18 carbon atoms wherein between 20 and 100% of said chains are alkyl chains having a chain length of 12 carbon atoms with a reactant chosen from the group consisting of maleic acid, butenedioic acid and fumaric acid to form a monoalkyl ester, reacting said monoalkyl ester with an alkali metal, alkaline earth metal or ammonium sulphite in the presence of about 5 to 10 percent water and a molten plasticizer chosen from the group consisting of fatty acid esters of polyhydric alcohols to form a water soluble di-salt of monoalkylsulfosuccinate; cooling the resulting product, and forming the cooled product into cakes containing between about 40 and 95% by weight of said monoalkylsulfosuccinate and from about 5 to 60% by weight of said plasticizer which plasticizes said monoalkylsulfosuccinate salt.

3,901,833

HARDENABLE EPOXY RESIN COMPOSITIONS AND PROCESS FOR MAKING THE SAME

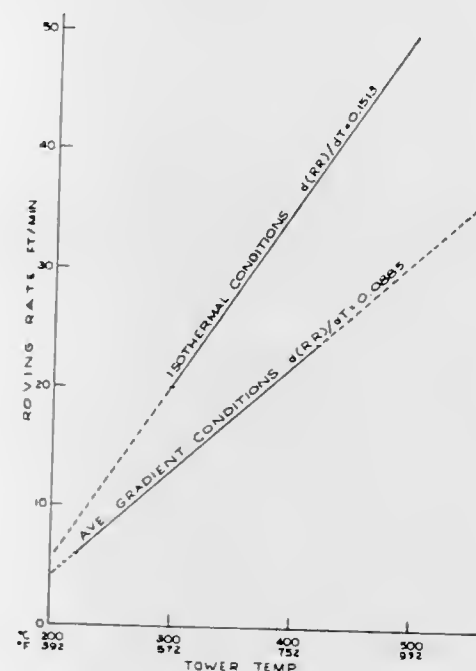
Robert Flynn, Toms River, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 83,626, Oct. 23, 1970, Pat. No. 3,679,465, which is a continuation-in-part of Ser. No. 877,477, Nov. 17, 1969, abandoned. This application July 14, 1972, Ser. No. 271,872

Int. Cl. C08g 53/00; G08g 53/02

U.S. Cl. 260-2 EP

5 Claims



1. A method for making an epoxy composition which comprises dissolving an 1,2-epoxy resin containing two or more epoxy groups and a conventional curing agent therefor in a non-reactive solvent boiling at from 30° to about 100°C and thereafter exposing the mixture to a temperature of from 400° to 950°F to evaporate the solvent, the condition of temperature and time of exposure being so adjusted and controlled

that the resulting composition has a retained solvent level below about 0.5%, and is substantially uncured.

3,901,834

FLAME RETARDANT POLYURETHANE FOAMS

David R. Brackenridge, Royal Oak, Mich., assignor to Ethyl Corporation, Richmond, Va.

Filed Mar. 26, 1973, Ser. No. 344,527

Int. Cl. C08g 22/44, 51/58

U.S. Cl. 260-2.5 AJ

6 Claims

1. A polyurethane foam produced by reaction of an organic polyisocyanate and a polymer selected from the class consisting of hydroxyl-terminated polyethers and hydroxy-terminated polyesters and having incorporated therein a flame retardant amount of a tetrabrominated xylene of the formula



3,901,835

PROCESS FOR OBTAINING A FOAMED ETHYLENE POLYMER AND PRODUCT OBTAINED THEREBY

Roberto Palella, and Giampaolo Giuliani, both of San Donato Milanese, Italy, assignors to Snam Progetti S.p.A., San Donato Milanese, Italy

Filed Sept. 10, 1973, Ser. No. 395,734

Claims priority, application Italy, Sept. 18, 1972, 29239/72

Int. Cl. C08f 47/10

U.S. Cl. 260-2.5 HA

5 Claims

1. A process for the production of a foamed ethylene polymer which comprises:

- forming a mixture of:
 - a copolymer of ethylene and from 0.1 to 10% by weight of a polycyclic polyene having at least three double bonds in the molecule;
 - a sulfur based vulcanizing system; and
 - a foaming agent;
- and foaming said mixture to form said foamed polyethylene.

3,901,836

RUST PREVENTATIVE COATING FOR METALLIC SURFACES CONSISTING OF WATER-SOLUBLE RESIN AND SODIUM BENZOATE-POTASSIUM TRIPOLYPHOSPHATE RUST INHIBITOR

John A. Kader, Cleveland, Ohio, assignor to Chem-Paint Specialties, Inc., Cleveland, Ohio

Filed Oct. 4, 1973, Ser. No. 403,629

Int. Cl.² C09D 5/08

U.S. Cl. 260-17 R

12 Claims

1. A rust preventative for metallic surfaces comprising by weight from about 15 to about 75% of phosphoric acid (85% grade), from about 5 to about 25% of a water soluble resin selected from the class consisting of hydroxymethylcellulose, methylcellulose, polyvinyl alcohol, and polyacrylamide, from about 5 to about 20% of a rust inhibitor, said rust inhibitor containing from about 25 to about 95% by weight of sodium benzoate and from about 5 to about 75% by weight of potassium tripolyphosphate, from about 1 to about 10% of a wetting agent and an amount of water to bring the total amount of ingredients to 100%.

3,901,837

METAL SALT SOLUTIONS AND SURFACE-COATING COMPOSITIONS CONTAINING SAME

Roy T. Gottesman, Glen Rock; George M. Kagan, Edison, and Joseph Fath, Princeton, all of N.J., assignors to Tenneco Chemicals, Inc., Saddle Brook, N.J.

Filed Jan. 21, 1974, Ser. No. 435,075

Int. Cl.² C08L 91/00

U.S. Cl. 260-22 R

18 Claims

1. A surface-coating composition having improved resistance to loss of drying rate on aging that comprises an oxidizable, organic, film-forming resinous vehicle and from 2 to 5 percent, based on the weight of the vehicle, of a loss-of-dry inhibitor, said loss-of-dry inhibitor being a metal salt solution that contains 0.05 to 1.5 percent by weight of cobalt, 0.5 to 3.5 percent by weight of calcium, and 0.5 to 5.0 percent by weight of zinc or zirconium, the cobalt, calcium, zinc, and zirconium being present as salts of acids selected from the group consisting of branched-chain aliphatic monocarboxylic acids having 6 to 14 carbon atoms, cycloaliphatic monocarboxylic acids having 6 to 10 carbon atoms, and mixtures thereof.

3,901,838

ENVIRONMENTALLY DEGRADABLE BIODEGRADABLE BLENDS OF A DIALKANOYL POLYMER AND AN ENVIRONMENTALLY DEGRADABLE ETHYLENE POLYMER

Robert A. Clendinning, New Providence; James E. Potts, Millington, and Stephen W. Cornell, Dunellen, all of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 275,971, July 28, 1972, Pat. No. 3,867,324. This application July 15, 1974, Ser. No. 488,496

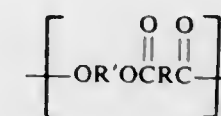
Int. Cl. C09f 29/12

U.S. Cl. 260-23 H

21 Claims

1. A biodegradable-environmentally degradable blend comprising

- from about 5 to about 95 weight percent of biodegradable thermoplastic polymer, said polymer having a reduced viscosity value of at least about 0.1 and upwards to about 12 and being further characterized in that at least about 10 weight percent of said biodegradable thermoplastic polymer is attributable to recurring dialkanoil units of the formula



wherein R represents a divalent aliphatic hydrocarbon radical; and wherein R' is of the group consisting of divalent aliphatic hydrocarbon radicals and divalent aliphatic oxahydrocarbon radicals; and

- from about 95 to about 5 weight percent of an environmentally degradable ethylene polymer based composition comprised of

- at least about 70 weight percent of normally-solid thermoplastic ethylene polymers of the group consisting of (a) polyethylene, (b) copolymers containing a major amount by weight of ethylene and a minor amount by weight of unsaturated monomers copolymerizable therewith, and (c) mixtures thereof; and
- at least one polyvalent transition metal salt in which said metal has an atomic number of from 21 to 30, 39 to 48, and 57 to 71.

3,901,839

VINYL HALIDE RESIN COMPOSITIONS HAVING HIGH FLEX ENDURANCE

Thor J. G. Lonning, Suffield, Conn., assignor to Monsanto Company, St. Louis, Mo.

Filed July 27, 1972, Ser. No. 275,503

Int. Cl. C08f 29/24

U.S. Cl. 260—23.7 N

4 Claims

1. In an improved semi-rigid vinyl halide resin based polyblend comprising on a 100 weight percent total polyblend composition basis

a. from about 1 to 10 weight percent of a stabilizer system for said polyblend, said stabilizer system being adapted to substantially prevent thermal degradation in said polyblend at temperatures in the range of from about 120° to 215°C., at inverse times of from about 30 minutes to 10 minutes,

b. up to about 50 weight percent of a plasticizer system, the amount of plasticizer in any given polyblend being sufficient to produce in said polyblend after such is heat fused at a temperature in the range of from about 120° to 215°C., a stiffness in flexure E value in the range of from about 20,000 to 200,000 psi, and

c. from about 0.2 to 2.5 weight percent of a lubricant system adapted to permit release of said polyblend from a heated solid surface after said polyblend has been heat fused at a temperature in the range of from about 120° to 215°C.,

in combination on a 100 weight percent basis:

A. from about 20 to 76 weight percent of vinyl halide polymer selected from the group consisting of homopolyvinyl chloride and vinyl chloride copolymers comprising at least about 85 weight percent vinyl chloride monomer with the balance up to 100 weight percent of any given such copolymer being another ethylenically unsaturated monomer copolymerized with said vinyl chloride monomer, said vinyl halide polymer being itself characterized by having an inherent viscosity of from about 0.70 through 1.5 in a 0.2 weight percent cyclohexanone solution at about 25° to 30°C.,

B. from about 20 to 55 weight percent of a graft copolymer comprising:

1. a substrate comprising on a 100 weight percent total substrate basis:

a. at least about 50 weight percent of a combined conjugated alkadiene containing from 4 through 6 carbon atoms per molecule

b. not more than about 50 weight percent of a combined monovinyl aromatic compound containing from 8 through 10 carbon atoms per molecule, and

c. not more than about 25 weight percent of a combined alkene nitrile containing from 3 through 5 carbon atoms per molecule,

2. said substrate being further characterized by having

a. a glass phase transition temperature below about 0° C., and

b. A Young's Modulus of less than about 40,000 p.s.i.,

3. a superstrate comprising on a 100 weight percent total superstrate basis:

a. from about 15 to 50 weight percent of a combined alkene nitrile containing from 3 through 5 carbon atoms per molecule, and

b. from about 50 to 85 weight percent of a combined monovinyl aromatic compound containing from 8 through 10 carbon atoms per molecule,

4. said superstrate being grafted to said substrate, and

C. from about 4 to 25 weight percent of a polymethylmethacrylate having a weight average molecular weight of at least about 200,000,

the improvement which comprises, said vinyl halide based polyblend wherein: said substrate is further characterized by having a dispersed particle size distribution such that at least about 95 weight percent thereof

is in the form of particles ranging from about 0.7 to 15 microns in diameter and said superstrate being grafted to said substrate to the extent of about 70 to 150 parts by weight per 100 parts by weight of substrate.

3,901,840

THERMOSETTING ACRYLIC ENAMEL CONTAINING AN ACRYLIC POLYMER AND BUTYLATED MELAMINE FORMALDEHYDE RESIN

Robert A. Irvin, Silver Springs, Md., and William H. Meredith, Flint, Mich., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 241,442, April 5, 1972, abandoned. This application Sept. 26, 1973, Ser. No. 401,071

Int. Cl. C08L 25/14

U.S. Cl. 260—29.1 R

4 Claims

1. A thermosetting acrylic enamel coating composition comprising 10–50% by weight of film-forming constituents and correspondingly 90–50% by weight of a solvent for the film-forming constituents; wherein the film-forming constituents consist essentially of an incompatible blend of

1. 50–85% by weight, based on the weight of the film-forming constituents, of an acrylic polymer consisting essentially of

a. 30% by weight, based on the weight of the acrylic polymer, of styrene,

b. 22% by weight, based on the weight of the acrylic polymer, of methyl methacrylate,

c. 37% by weight, based on the weight of the acrylic polymer, of butyl acrylate,

d. 10% by weight, based on the weight of the acrylic polymer, of a hydroxy ethyl acrylate,

e. 1% by weight, based on the weight of the acrylic polymer, of acrylic acid, wherein the acrylic polymer has an acid number of about 1–16 and a relative viscosity of about 1.04–1.10 measured at 25°C. in dichloroethane according to ASTM-D-445-46 T, Method B; and

2. 15–50% by weight, based on the weight of the film-forming constituents, of a butylated melamine formaldehyde resin in which the molar ratio of melamine/formaldehyde/butanol is ¼–6/1–3 and having a viscosity of 300–800 centistokes measured at 25°C. according to ASTM-D-1545-63.

3,901,841

VINYL ACETATE-FUMARIC ACID MIXED DIESTER COPOLYMER DISPERSION PAINT COMPOSITION

Gundolf Fuchs, Rehkamp; Dietrich Pirck, Fasanenstieg, both of Germany, and Orville W. Rigdon, Groves, Tex., assignors to Deutsche Texaco Aktiengesellschaft, Hamburg, Germany

Filed July 5, 1973, Ser. No. 376,502

Int. Cl. C08f 45/24

U.S. Cl. 260—29.6 T

2 Claims

1. Dispersion paint consisting essentially of the composition prepared by the aqueous emulsion copolymerization of a monomer mixture consisting essentially of from about 20 to 60 weight percent basis monomers of vinyl acetate and at least 40 to 80 weight percent of a fumaric acid diester selected from the group consisting of:

a. at least one fumaric acid diester of a secondary aliphatic alcohol having from 2 to 8 carbon atoms and at least one fumaric acid diester of an ether alcohol having from 2 to 8 carbon atoms selected from the group consisting of dibutoxyethyl fumarate, diethoxyethyl fumarate, isopropylbutoxyethyl fumarate, and diglycolbutylether fumarate;

b. and a mixture of (a) and a mixed fumaric acid diester of an aliphatic alcohol having from 2 to 8 carbon atoms; wherein the content of said ether alcohol component of said fumaric acid diester is at least 8 mole percent, based on the total amount of fumaric acid diesters.

3,901,842

DEWATERING OF POLY(VINYL CHLORIDE)

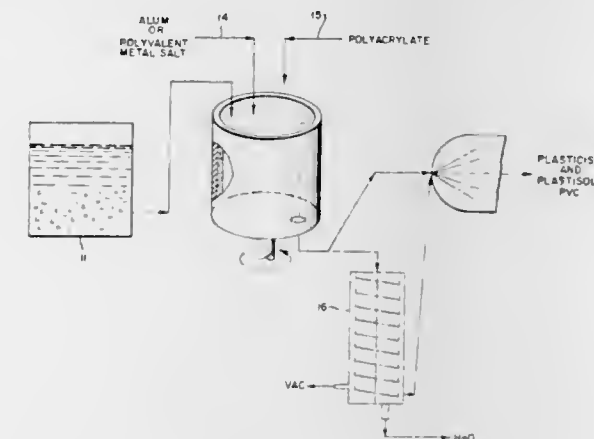
Ronald J. Dembowski, Calumet City, Ill., assignor to Nalco Chemical Company, Oak Brook, Ill.

Filed Jan. 24, 1974, Ser. No. 436,228

Int. Cl. C08f 3/30

U.S. Cl. 260—29.6 RW

8 Claims



1. In the emulsion polymerization of vinyl chloride comprising (a) polymerizing monomeric vinyl chloride in the presence of an emulsifier to produce particles of poly(vinyl chloride) (PVC) ranging in size between 1–2 microns followed by (b) centrifuging in the presence of a polyvalent metal salt emulsifier coagulant to produce a cake and (c) subsequently spray drying to produce a final solids content of about 70 percent, the step which consists of adding to said cake at least 700 to 8,000 ppm of a polyacrylate based on the PVC polymer, said polyacrylate having a molecular weight of 800–100,000.

3,901,843

SYNTHETIC RESIN BINDER COMPOSITIONS FROM ACRYLIC ACID ESTERS

Michael R. Fehillas, New Brunswick, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Division of Ser. No. 311,036, Nov. 30, 1972, Pat. No.

3,836,514, and Ser. No. 195,373, Nov. 3, 1971, Pat. No.

3,732,139. This application Mar. 11, 1974, Ser. No. 450,140

Int. Cl. C08f 45/24, 29/46

U.S. Cl. 260—29.6 TA

7 Claims

1. An aqueous synthetic resin binder composition for bonding porous, absorbent, fibrous, nonwoven fabrics comprising from about 10 percent to about 50 percent by weight of a polymodal synthetic acrylic acid ester resin in which from about 10 percent to about 40 percent by weight has a molecular weight in the range of from about 300 to about 2,000 and in which from about 90 percent to about 60 percent by weight has a molecular weight in the range of from about 4,000 to about 600,000 said polymodal synthetic acrylic acid ester resin having a swell index in tetrahydrofuran of from about 50 to about 200 and containing from about 50 percent to about 90 percent by weight of insolubles in tetrahydrofuran.

3. An aqueous synthetic resin binder composition as defined in claim 1, wherein said polymodal synthetic acrylic acid ester resin is a cross-linked copolymer of ethyl acrylate and butyl acrylate.

4. An aqueous synthetic resin binder composition as defined in claim 1, wherein said polymodal synthetic acrylic acid ester resin is an N-methylol acrylamide cross-linked copolymer of ethyl acrylate and butyl acrylate.

3,901,844

POLYCARBONATE PLASTICS HAVING IMPROVED TRACKING RESISTANCE

Paul Schiller, Krefeld-Uerdingen; Josef Merten, Korschbroich, and Hugo Vernaleken, Krefeld-Bockum, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

Filed Mar. 28, 1974, Ser. No. 455,843

Claims priority, application Germany, Mar. 30, 1973, 2315887

Int. Cl. C08G 51/04

U.S. Cl. 260—37 PC

6 Claims

1. A high molecular weight, thermoplastic, aromatic polycarbonate composition adapted for the manufacture of moldings for electrical insulation which are electrical resistant to tracking, said polycarbonate composition comprising from about 10 to about 50 per cent by weight, based on the total weight of the composition, of hydrophobic TiO₂ or Cr₂O₃ which are inert towards the polycarbonate.

3,901,845

FILLED AND REINFORCED POLYAMIDE MOLDING COMPOSITIONS

John Newbould, Sterling Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.

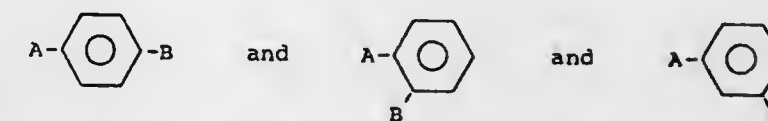
Filed Apr. 1, 1974, Ser. No. 456,664

Int. Cl. C08K 9/04

U.S. Cl. 260—37 N

4 Claims

1. A filled and reinforced polyamide molding composition, in which a mineral filler is chemically coupled to said polyamide, comprising, by weight, 100 parts of a polyamide resin and from 5 to 220 parts of a finely divided mineral filler uniformly dispersed throughout said resin, the surfaces of said filler particles having reactive hydroxyl functionalities, wherein said composition the particles of said filler are coated with and chemically coupled to said polyamide by from 0.1% to about 5% by weight, based on said filler, of an aromatic coupling agent selected from the group consisting of those compounds described by the following formulae:



wherein said A group is a carboxyl functionality (—COOH), and said B group is selected from the group consisting of a hydroxyl functionality (—OH) and an amine functionality (—NH₂) wherein said composition the chemical bond between said coupling agent and said polyamide matrix is a hydrogen bond.

3,901,846

THERMOPLASTIC POLYOXYMETHYLENE MOLDING RESINS

William T. Freed, Madison, N.J., assignor to Celanese Corporation, New York, N.Y.

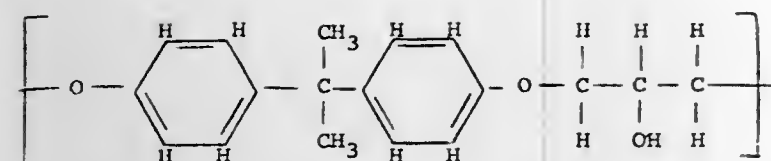
Filed Aug. 12, 1974, Ser. No. 496,606

Int. Cl. C08L 71/02

U.S. Cl. 260—37 AL

10 Claims

1. An improved thermoplastic molding resin comprising a normally solid oxymethylene polymer having an inherent viscosity of at least 1.0 (measured at 60°C. in a 0.1 weight percent solution in p-chlorophenol containing 2 weight percent of alpha-pinene), a molecular weight of at least 10,000 and a melting point of at least 150°C.; reinforcing agents intimately mixed with said polymer; and from about 0.1 to about 8 weight percent of a thermoplastic phenoxy resin having a repeating structure:



and an average molecular weight range from about 15,000 to about 75,000.

3,901,847

FLAME RETARDANT POLYMER COMPOSITION

Burnett H. Johnson, Baytown, Tex., and Edward F. Johnson, Towa City, Iowa, assignors to Exxon Research and Engineering Company, Linden, N.J.

Continuation of Ser. No. 284,321, Aug. 28, 1972, abandoned.

This application Feb. 4, 1974, Ser. No. 439,179

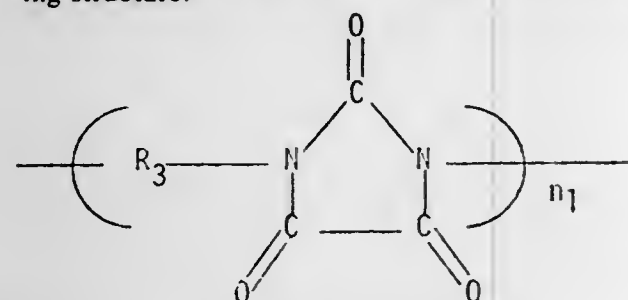
Int. Cl. C09k 3/28

U.S. Cl. 260—45.7 PS

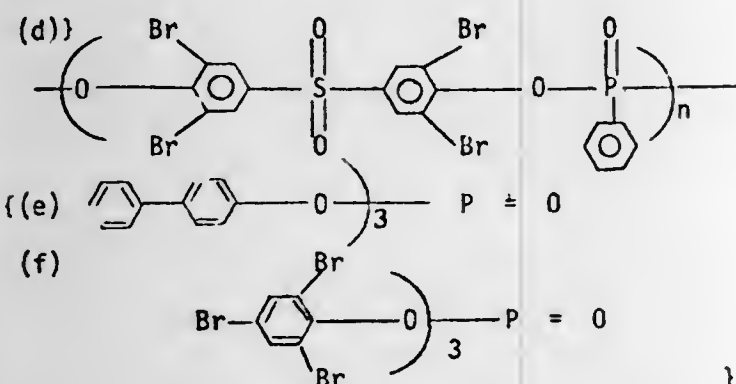
6 Claims

1. A flame retardant composition comprising:

A major amount of a polymer selected from the group of poly (1,3-imidazolidine-2,4,5-triones) having the following structure:



where $n_1 > 10$ and R_3 = a hydrocarbon or substituted hydrocarbon group and a minor amount effective to improve the flame retardancy of said polymer, but insufficient to cause embrittlement of said polymer, of



wherein n is an integer equal to or greater than 1, which is poly oxy(2,6-dibromo-1,4-phenylene)-sulfonyl (2,6-dibromo-1,4-phenylene) (phenyl phosphonylidene) when n is greater than 1.

3,901,848

STABILIZER SYSTEM OF METAL HYDROXYALKYL PHOSPHONIC ACID, UV ABSORBER AND BENZOATE

Anthony Dominic Dibattista, Eastchester, and John Denon Spivack, Spring Valley, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 210,610, Dec. 21, 1971, abandoned.

This application May 31, 1973, Ser. No. 365,802

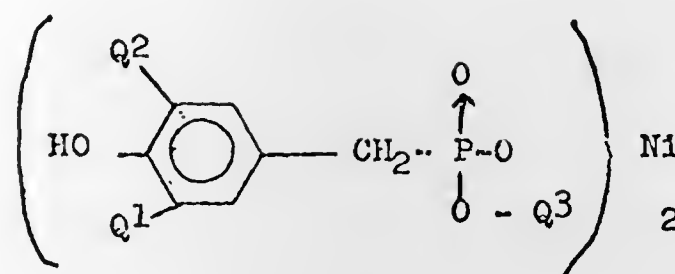
Int. Cl. C08f 45/62

U.S. Cl. 260—45.8 N

9 Claims

1. A stabilizing composition consisting essentially of

a. from 1 to 40 parts by weight of nickel hydroxyalkyl phosphonate having the formula



wherein

Q^1 is lower alkyl or cycloalkyl

Q^2 is hydrogen, lower alkyl or cycloalkyl; and

Q^3 is lower alkyl

b. from 1 to 60 parts by weight of benzotriazole having the formula



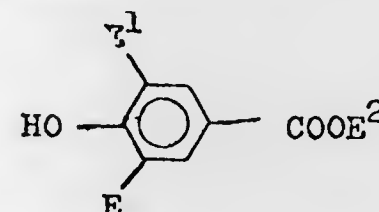
wherein

R^3 is hydrogen, halogen or lower alkyl

R^4 is hydrogen, chloride, lower alkyl, cycloalkyl or phenyl lower alkyl,

R^5 is alkyl from 1 to 12 carbon atoms, cycloalkyl or phenyl lower alkyl such that the sum of the atomic weights of the atoms contained in groups R^3 , R^4 and R^5 is at least 107; and

c. from 1 to 40 parts by weight of p-hydroxy-benzoate having the formula



wherein

E is lower alkyl or cycloalkyl group,

E^1 is hydrogen, lower alkyl or cycloalkyl group, and

E^2 is alkyl from 1 to 20 carbon atoms, phenyl, lower alkyl substituted phenyl, benzyl or lower alkyl substituted benzyl groups, such that no more than two lower alkyl substituents are present on said phenyl or benzyl groups.

3,901,849

STABILIZED POLYOLEFIN COMPOSITIONS

Daniel P. Dodson, and James E. Baird, both of Longview, Tex., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 9, 1974, Ser. No. 468,308

Int. Cl. C08f 45/60

U.S. Cl. 260—45.8 NW

12 Claims

1. Polyolefin compositions having improved resistance to degradation which contain about 0.6 to about 5 weight percent of a stabilizing combination comprising tetrakis[methylene(3,5-di-t-butyl-4-hydroxyhydrocinamate)]methane and polymerized 1,2-dihydroxy-2,2,4-trimethylquinoline wherein the ratio of tetrakis [methylene (3,5-di-t-butyl-4-hydroxyhydrocinamate)]-methane to polymerized 1,2-dihydroxy-2,2,4-trimethylquinoline is from 1.0:1.2 to 1.0: 2.5.

3,901,850

VINYL CHLORIDE POLYMERS CONTAINING ZINC TUNGSTATE

Donald M. Kurtz, Akron, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

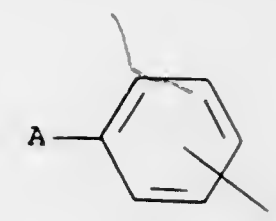
Filed Aug. 1, 1974, Ser. No. 493,722

Int. Cl. C08f 45/56

U.S. Cl. 260—45.75 W

4 Claims

1. A composition comprising a vinyl chloride polymer and zinc tungstate present in amounts from about 0.01 to about 10 weight parts per 100 weight parts of vinyl chloride polymer.



wherein

A represents a member selected from the class consisting of HOCH_2- , $\text{HOCH}_2\text{CH}_2\text{O}-$, and $\text{HOCH}_2\text{CH}_2\text{OCH}_2-$, and (3) mixtures thereof;

characterized in that the above reactants are employed in such proportions as to satisfy both of the following equations:

$$\begin{aligned} \text{(a)} \quad & \frac{\text{wt. of polyethylene glycol}}{\text{wt. of extender} + \text{wt. of diisocyanate}} = 1 \pm 0.1 \\ \text{(b)} \quad & \frac{\text{Equivs. of diisocyanate}}{\text{Equivs. of (extender + polyethylene glycol)}} = 0.99 \text{ to } 1.05. \end{aligned}$$

3,901,851

STRENGTHENED FILMS AND METHOD FOR PRODUCING SAME

Mitsuo Kohno, Moriyama; Minoru Nomura, Yokohama; Akio Shibasaki, Tokyo; Takeo Yuasa, Asaka, and Yoshihiko Mutoh, Moriyama, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Oct. 4, 1973, Ser. No. 403,486

Claims priority, application Japan, Oct. 9, 1972, 47-100610

Int. Cl. B29D 7/24; B32B 27/36; C08G 63/02

U.S. Cl. 260—47 C

6 Claims

1. A biaxially stretched film suitable for use as a tape for magnetic recording which is a biaxially stretched polyethylene-1,2-diphenoxyethane-4,4'-dicarboxylate homopolymer film having a longitudinal F-5 value of 20 Kg/mm² to 50 Kg/mm², a longitudinal tensile strength of 30 Kg/mm² to 65 Kg/mm², a longitudinal initial modulus of elasticity of 800 Kg/mm² to 1500 Kg/mm², a transversal tensile strength of 8 Kg/mm² to 20 Kg/mm² and an unevenness of thickness of 5% or less, which is produced by first stretching at a temperature in the range of 70°-100°C a substantially amorphous polyethylene-1,2-diphenoxyethane-4,4'-dicarboxylate layer whereby there is produced an orientation at least in the direction perpendicular to the extrusion direction and a film density after stretching in the range of 1.315 to 1.335 in said first stretching, and thereafter subjecting the thus-treated film to a second stretching step in the extrusion direction at a temperature of 100°C to 100°C to yield a total stretching ratio of 5 to 8 times the original length in said second stretching step.

6. A method for producing strengthened polyethylene-1,2-diphenoxyethane-4,4'-dicarboxylate films which comprises stretching at a temperature in the range of 70°-100°C a substantially amorphous polyethylene-1,2-diphenoxyethane-4,4'-dicarboxylate layer to give an orientation at least in the direction perpendicular to the extrusion direction a stretching ratio in the range of 2-4 times the original width and a film density after stretching of 1.335 or less in the first step stretching, and then stretching in the extrusion direction at a temperature of 100°C to 200°C to give a total stretching ratio of 5 - 8 times the original length in the second step stretching.

3,901,852

THERMOPLASTIC POLYURETHANES PREPARED FROM 4,4'-METHYLENEBIS (PHENYL ISOCYANATE)

Tilak M. Shah, North Haven, Conn., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed July 29, 1974, Ser. No. 492,464

Int. Cl. C08G 18/65

U.S. Cl. 260—47 CB

4 Claims

1. A thermoplastic polyurethane elastomer having a hardness within the range of about Shore A 70 to Shore D 80 which elastomer comprises the reaction product of

- 4,4'-methylenebis(phenyl isocyanate);
- a polyethylene glycol having a molecular weight within the range of about 600 to about 3000; and
- an extender selected from the class consisting of (1) aliphatic straight chain diols from 3 to 6 carbon atoms, inclusive, (2) dihydroxyalkylated aromatic compounds having the formula

3,901,854

TWO STAGE PROCESS FOR PREPARING AROMATIC POLYAMIDES

Rufus S. Jones, Dover, N.J., assignor to Celanese Corporation, NY, N.Y.

Continuation-in-part of Ser. No. 206,491, Dec. 9, 1971, Pat. No. 3,753,957. This application May 14, 1973, Ser. No. 359,924

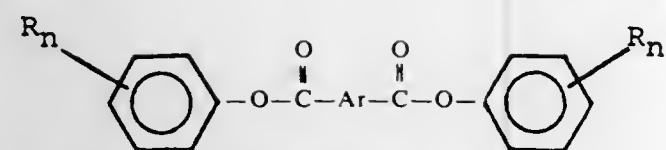
Int. Cl. C08g 20/20

U.S. Cl. 260—78 R

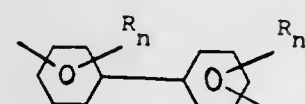
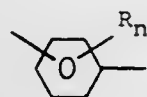
12 Claims

1. A method for preparing high molecular weight aromatic polyamides comprising

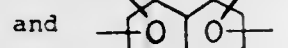
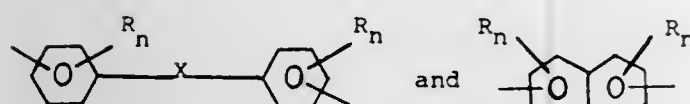
- heating at a temperature between 100° and about 345°C. in the presence of an inert liquid diluent and in about a mole to mole ratio a monomeric diester compound corresponding to the formula



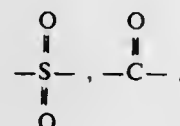
and a diamine of the formula
 $\text{H}_2\text{N}-\text{Ar}-\text{NH}_2$
 wherein Ar is selected from the group consisting of



[and]



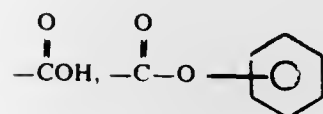
and mixtures thereof,
 wherein R is a monofunctional substituent inert under the
 reaction conditions,
 wherein X is oxygen,



and Tos represents RSO_2 with R being an aromatic, aliphatic
 or cycloaliphatic radical, and an aromatic dicarboxylic acid or
 derivative thereof having the formula:



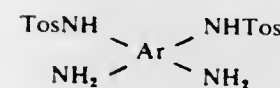
wherein X is



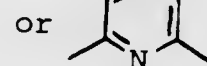
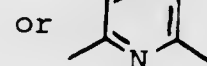
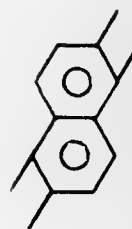
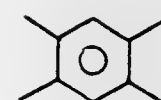
—CN, or —CONH₂ and Ar' is an aromatic radical.

cycloalkylidene of up to 8 carbon atoms or CY_2
 wherein C is carbon and Y is hydrogen, mononuclear
 aryl or alkyl of 1 to 6 carbon atoms, and
 wherein n is an integer of 0 to 4,
 said heating being in the substantial absence of oxygen to
 form an oligomer having an inherent viscosity of about
 0.1 to about 0.4, as measured in a solution of 0.4 grams
 of oligomer per 100 milliliters of concentrated aqueous
 sulfuric acid, 97–99% by weight, at 25°C., and
 b. subsequently increasing said temperature to a range of
 from 400° to about 470°C. thereby volatilizing mono-
 meric by-products and continuing said heating for a time
 sufficient to form an aromatic polyamide having an inher-
 ent viscosity of 1.0 to 5.0, as measured in a solution of 0.4
 grams of said aromatic polyamide product per 100 milli-
 liters of concentrated aqueous sulfuric acid, 97–99% by
 weight, at 25°C.

3,901,855
PREPARATION OF POLYBENZIMIDAZOLES
 Fred E. Arnold, Centerville, Ohio, assignor to The United
 States of America as represented by the Secretary of the Air
 Force, Washington, D.C.
 Filed Aug. 7, 1974, Ser. No. 495,452
 Int. Cl.² C08F 18/16
 U.S. Cl. 260—78.4 R 5 Claims
 1. A process for preparing polybenzimidazoles which com-
 prises reacting in polyphosphoric acid a mixture of an aro-
 matic bis-orthoaminosulfonamide having the formula:



wherein Ar is



U.S. Cl. 260—79.3 MU 5 Claims
 1. In a method for the polymerization of acrylonitrile or the

copolymerization of acrylonitrile and vinyl monomers copoly-
 merizable therewith in the presence of a redox catalyst system
 comprised of (i) nitrous acid or water soluble salts thereof and
 (ii) a reducing sulfox compound, the amount of reducing
 sulfox compound in terms of sodium bisulfite being from 1 to
 20% based on the weight of monomer and the amount of
 nitrous acid or water soluble salts thereof in terms of sodium
 nitrite being from 1/100 to 1/2 of the sodium bisulfite, the
 improvement wherein

a. at least part of the components (i) and (ii) are continu-
 ously reacted with each other under such conditions that
 a pH of the reaction system is within the range of 1.0 to
 7.0 and the residence time is substantially constant; and
 b. thereafter continuously feeding the resultant catalyst
 system into a polymerization vessel during said polymeri-
 zation or copolymerization.

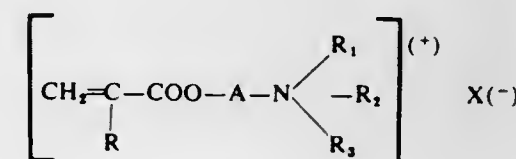
3,901,857
PROCESS FOR THE PRODUCTION OF HIGH
MOLECULAR WEIGHT CATIONIC ACRYLAMIDE
COPOLYMERS

Gunter Sackman, Opladen; Gerhard Balle, Cologne; Gunter
 Kolb, Leverkusen, and Friedhelm Muller, Odenthal, all of
 Germany, assignors to Bayer Aktiengesellschaft, Leverk-
 usen, Germany

Filed Nov. 7, 1973, Ser. No. 413,646
 Claims priority, application Germany, Nov. 11, 1972,
 2255391

Int. Cl. C08f 15/02
 U.S. Cl. 260—79.3 M 3 Claims

1. A process for the production of high molecular weight
 cationic copolymers which comprises copolymerizing an oxy-
 gen-free aqueous solution containing 1 to less than 10% by
 weight of a monomer mixture in the presence of a Redox
 catalyst system of from 0.005 to 0.1% by weight of a water-
 soluble percompound and of from 0.005 to 0.1% by weight of
 at least one compound selected from the group consisting of
 diethylene triamine, triethylene tetramine, methylamine, n-
 butylamine, isobutylamine, cyclohexylamine, p-toluidine,
 water-soluble salts of the aforesaid amines and aminoethyl-
 methacrylate hydrochloride at a temperature of from 10° to
 40°C., said monomer mixture comprising 70 to 95% by weight
 of acrylamide or methacrylamide and 5 to 30% by weight of
 a compound of the formula



wherein R is hydrogen or methyl, R₁ is hydrogen or alkyl
 having 1 to 4 carbon atoms, R₂ and R₃ are each, independently
 of the other, alkyl having 1 to 4 carbon atoms, A is a linear or
 branched aliphatic radical having from 2 to 4 carbon atoms
 and X⁽⁻⁾ is a member selected from the group consisting of
 halide, acetate methosulphate and tolyl sulphonate.

3,901,858
TWO-COMPONENT COMPOSITION
 Iwakichi Sugiyama, Narashino, and Kiyoshi Endo, Ichikawa,
 both of Japan, assignors to Matsumoto Seiyaku Kogyo Kabu-
 shiki Kaisha, Chiba, Japan
 Continuation of Ser. No. 203,874, Dec. 1, 1971, abandoned.
 This application Feb. 26, 1974, Ser. No. 446,106
 Claims priority, application Japan, Dec. 4, 1970, 45-107438
 Int. Cl.² C08F 15/16

U.S. Cl. 260—80.72 8 Claims
 1. A two-component system which comprises a first compo-
 nent and a second component stored separately and which is
 to be hardened when the two components are mixed in ap-
 proximately equal amounts:

said first component being a composition comprising 100
 parts by weight of a monomeric base material consisting
 essentially of at least one member selected from the
 group of vinyl compounds consisting of glycol diacrylates,
 glycol dimethacrylates, trimethylol propane trimethacry-
 late, pentaerythritol tetramethacrylate, dimethacrylate
 bis (ethylene glycol) phthalate, 2-hydroxyethyl methacry-
 late, and a urethane acrylate monomer having a urethane
 linkage prepared by the reaction of toluene diisocyanate
 and 2-hydroxyethyl methacrylate, 0.001 to 5 parts by
 weight of a metal chelate compound selected from the
 group consisting of β-diketone chelates and ketoester
 chelates of metals of the class consisting of titanium,
 vanadium, chromium, manganese, iron, cobalt and
 nickel, and 0.001 to 0.5 parts by weight of a stabilizer
 adapted to maintain the first composition stable; and
 said second component being a composition comprising
 100 parts by weight of a monomeric base material con-
 sisting essentially of at least one of said group of vinyl
 compounds, 0.01 to 10 parts by weight of a peroxide
 selected from the group consisting of organic hydroper-
 oxides, ketone peroxides, alkyl peroxides, and alkyl per-
 esters, and 0.001 to 0.2 parts by weight of a stabilizer
 adapted to maintain the second composition stable.

3,901,859
PROCESS FOR PREVENTING DISCOLORATION OF
OLEFINIC POLYMERS CONTAINING VANADIUM
CATALYST RESIDUES

Alberto Alberti; Sergio Bacciarrelli, and Giuliano Ballini, all of
 Ferrara, Italy, assignors to The B. F. Goodrich Company,
 Akron, Ohio

Filed Jan. 4, 1974, Ser. No. 430,613
 Claims priority, application Italy, Jan. 4, 1973, 19035/73
 Int. Cl.² C08F 6/26

U.S. Cl. 260—80.78 10 Claims
 1. A process for preventing the discoloring of olefinic poly-
 mers containing greater than about 20 parts per million of
 vanadium catalyst residue comprising adding to said polymers
 in a solid state, in the substantial absence of liquids, at least
 one compound selected from the group consisting of (1)
 polycarboxylic acids and salts thereof, and (2) polyalcohols,
 said polycarboxylic acids and polyalcohols containing 2 to 8
 carbon atoms and at least two hydroxyl or two carboxyl
 groups with a total of three such groups, (3) hydroxylamine
 and (4) boric acid.

3,901,860

FUNCTIONALLY SUBSTITUTED TERPOLYMERS AND TETRAPOLYMERS OF α -OLEFINS AND PROCESS FOR MANUFACTURING FUNCTIONAL SUBSTITUTED COPOLYMERS

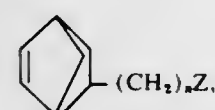
John Wilfred Collette; Rolland Shih-Yuan Ro, and Fred Max Sonnenberg, all of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 355,011, April 27, 1973, abandoned, which is a division of Ser. No. 829,758, June 2, 1969, abandoned. This application Sept. 27, 1974, Ser. No. 509,896
Int. Cl. C08f 15/40

U.S. Cl. 260—80.78

2 Claims

1. An elastomeric addition copolymer consisting essentially of (1) ethylene, (2) propylene, and (3) an unsaturated functional monomer of the formula



wherein Z is



and n is 0-20.

3,901,861

MOLECULAR WEIGHT JUMPING OF ELASTOMERIC POLYMERS

Frederick Charles Loveless, Cheshire, Conn., assignor to Uniroyal, Inc., New York, N.Y.

Filed Nov. 7, 1973, Ser. No. 413,750

Int. Cl. C08d 5/04

U.S. Cl. 260—83.7

12 Claims

1. The method which comprises treating an elastomeric unsaturated hydrocarbon polymer in fluid form and under substantially anhydrous conditions with a catalyst system comprising: (1) an organic peroxy acid which is boron trifluoride complexed with an oxygen-containing compound, and (2) an inorganic Lewis acid which is boron trifluoride complexed with an oxygen-containing compound, said catalyst system being of such composition and being employed in an amount and under such conditions as to cause jumping of the molecular weight of said polymer without causing gelation of said polymer, thereafter rendering said catalyst system ineffective, and recovering the polymer contained in the resulting mixture, the recovered polymer having a jumped molecular weight, being free from gel, being completely soluble in benzene, and being vulcanizable.

3,901,862

PROCESS FOR THE PREPARATION OF ETHYLENE-BUTADIENE COPOLYMERS

Salvatore Cucinella, and Alessandro Mazzei, both of San Donato Milanese, Italy, assignors to Snam Progetti S.p.A., San Donato Milanese, Italy

Filed Dec. 14, 1973, Ser. No. 424,718

Claims priority, application Italy, Dec. 20, 1972, 33277/72; Oct. 16, 1973, 30155/73

Int. Cl. C08d 3/06; C08f 15/04

U.S. Cl. 260—85.3 R

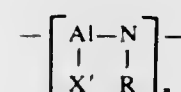
7 Claims

1. Process for the preparation of ethylene-butadiene copolymers containing from 0.1 to 95% by moles of butadiene units, wherein the polymerization reaction is carried out in the presence of a ternary catalyst system consisting essentially of a. vanadium or vanadyl chloride

b. an aluminum compound represented by the formula AlR_xX_{3-x} wherein R is alkyl, aryl, alicyclic or hydrogen, x is a halogen and $1 \leq x \leq 2$, and

c. an aluminum compound containing aluminum-nitrogen bonds selected from the groups consisting of: aluminum triamides having the general formula $Al(NR_2)_3$ wherein R has the aforesaid meaning; $AlH_x(NR_2)_{3-x}$ wherein R and x have the aforesaid meanings;

aluminum polymeric compounds having the formula



wherein R is a hydrocarbon radical selected from the aforementioned ones, X' is hydrogen or halogen; the halogen atom number is 0 or is lower than n, the balance to n being constituted by hydrogen atoms; n is from 2 to 50.

3,901,863

POLYMERIZATION OF OLEFINS

Eugene Berger, and Jean-Louis Derroitte, both of Brussels, Belgium, assignors to Solvay & Cie, Brussels, Belgium

Filed Dec. 6, 1972, Ser. No. 312,744

Claims priority, application Luxembourg, Dec. 8, 1971, 64420; June 1, 1972, 65445

Int. Cl. C08f 1/42

U.S. Cl. 260—88.2 R

15 Claims

1. A process for the polymerization and copolymerization of α -olefins which comprises conducting the polymerization or copolymerization in the presence of a catalyst composition comprising

A. the solid reaction product of (1) at least one non-halide containing organic oxygenated compound of a metal selected from the metals of Groups Ia, IIa, IIb, IIIb, IVb, VIIa, and VIII of the Periodic Table, with (2) at least one non-halide containing organic oxygenated transition compound of a transition metal selected from the metals of Groups IVa, Va, and VIa of the Periodic Table, and with (3) an organo aluminum halide having the general formula $AlR_nR'_{3-n}$ in which R is a hydrocarbon radical containing 1 to 20 carbon atoms, R' is a halide and n is any number such that $1 \leq n \leq 2$; and

B. an organo-metallic compound selected from the organic derivatives of metals of Groups Ia, IIa, IIb, IIIb and IVb of the Periodic Table.

3,901,864

POLYMERIZATION PRODUCTS OF PERFLUOROALKYLALKYLMONOCARBOXYLIC ACID ESTERS

Horst Jäger, Bettingen, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

Division of Ser. No. 112,445, Feb. 3, 1971, Pat. No. 3,825,575.

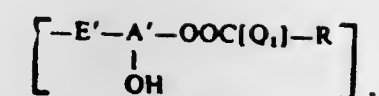
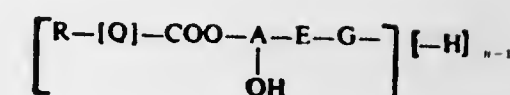
This application Dec. 20, 1973, Ser. No. 427,277

Int. Cl. C08f 3/52, 3/62, 3/64

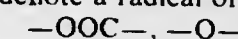
U.S. Cl. 260—89.5 H

14 Claims

1. Polymerisation products consisting of homopolymers of at least one perfluoroalkylalkylmonocarboxylic acid esters of the formula



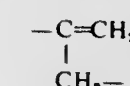
wherein R and R' each denote a perfluoroalkyl radical with 4 to 14 carbon atoms, Q and Q₁ each denote an acyclic alkylene radical with 1 to 10 carbon atoms or a cycloalkylene radical with 5 or 6 ring carbon atoms, A and A' each denote an alkylene radical with 2 to 18 carbon atoms, E and E' each denote a radical of the formula



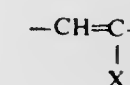
or



wherein Y represents a hydrogen atom or a lower alkyl radical, G denotes a radical of the formula



or



wherein X represents a hydrogen atom or a methyl radical, and n denotes 1 or 2, and the hydroxyl group is in the 2-position relative to the R-Q-COO- or R'-Q₁-COO- group.

3,901,865

POLYMERIZATION OF CONJUGATED DIENE COMPOUNDS

Toyosuke Tanaka, Yono; Isamu Okuzumi, Toda; Tsuneo Matsuda, Urawa, and Katsunori Kimijima, Yono, all of Japan, assignors to Saitama University, Saitama, Japan

Filed Nov. 16, 1973, Ser. No. 416,665

Claims priority, application Japan, Nov. 21, 1972, 47-116412

Int. Cl. C08d 3/04, 3/06, 1/14

U.S. Cl. 260—93.1

9 Claims

1. A method of polymerizing conjugated diene compounds which comprises contacting a monomeric conjugated diene compound in a liquid organic medium at a temperature in the range of -10° to 100°C. with a polymerization initiator which is the solid reaction product formed by mixing aluminum borohydride component with a titanium halide component in a molar ratio ranging from 0.2:1 to 2:1.

3,901,866

POLYPENTENAMERS

Günther Lehnert; Gottfried Pampus, and Dieter Maertens, all of Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Germany

Division of Ser. No. 316,055, Dec. 18, 1972, abandoned. This application Feb. 28, 1974, Ser. No. 446,963

Claims priority, application Germany, Dec. 21, 1971, 2163395

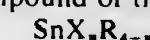
Int. Cl. C08f 1/32

U.S. Cl. 260—93.1

6 Claims

1. A process for preparing polypentenamers in which at least 80% of the double bonds have the cis-configuration which comprises polymerizing cyclopentene at a temperature of -100 to -10°C. in the presence of a catalyst comprising

a. at least one halide or oxyhalide of tungsten, b. an organo tin compound of the formula



wherein R is alkyl, cycloalkyl, aryl or alkaryl, X is hydrogen, halogen or alkoxy and n is 0, 1 or 2 and

c. a boron halide or its etherate, the molar ratio of (a):(b) being from 1:0.1 to 1:10 and the molar ratio of (a):(c) being from 1:0.01 to 1:10.

3,901,867

NUCLEATION OF ISOTACTIC POLYSTYRENE

Henry Nelson Beck, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 293,823, Oct. 2, 1972, Pat. No. 3,817,966.

This application Mar. 21, 1974, Ser. No. 453,467

Int. Cl. C08F 7/04, 33/02

U.S. Cl. 260—93.5 A

1 Claim

1. An isotactic polystyrene composition, the composition consisting essentially of in intimate admixture from about 99.995 to about 95 parts by weight of isotactic polystyrene and from about 0.005 to about 5 parts by weight of oxamide.

3,901,868

PROCESS FOR PRODUCING BUTADIENE POLYMERS

Haruo Ueno, Chiba; Kyohei Oizumi, Ichihara; Hideo Ishikawa, Ichihara; Hisawaki Hamada, Ichihara, and Hideyuki Aikawa, Ichihara, all of Japan, assignors to Ube Industries, Ltd., Japan

Filed Sept. 20, 1974, Ser. No. 507,867

Claims priority, application Japan, Sept. 27, 1973, 48-107985; Mar. 12, 1974, 49-27679; Mar. 12, 1974, 49-27680

Int. Cl. C08D 1/14, 1/34, 3/06

U.S. Cl. 260—94.3

46 Claims

1. A process for producing a butadiene polymer composed essentially of 1,2-structure, comprising the steps of:

A. preparing a catalyst component solution by dissolving, in an inert organic solvent containing 1,3-butadiene, (a) at least one cobalt compound selected from the group consisting of (i) β -diketone complexes of cobalt, (ii) β -keto acid ester complexes of cobalt, (iii) cobalt salts of organic carboxylic acids having 6 to 15 carbon atoms, and (iv) complexes of halogenated cobalt compounds of the formula CoX_n , wherein X represents a halogen atom and n represents 2 or 3, with an organic compound selected from the group consisting of tertiary amines alcohols, tertiary phosphines, ketones and N,N-dialkyl-amides, and (b) at least one organoaluminum compound of the formula AlR_3 , wherein R represents a hydrocarbon radical of 1 to 6 carbon atoms;

B. preparing a catalyst composition by mixing said catalyst component solution with (c) at least one organic compound selected from the group consisting of alcohol compounds having 1 to 25 carbon atoms, ketone compounds having 3 to 20 carbon atoms and aldehyde compounds having 1 to 20 carbon atoms and (d) carbon disulfide;

C. providing a polymerization mixture containing desired amounts of 1,3-butadiene, said catalyst composition and an inert organic solvent, and;

D. polymerizing said 1,3-butadiene in said polymerization mixture at a temperature of -20° to 80°C.

3,901,869

ACIDIFICATION OF TALL OIL SOAP

Alan M. Bills, Summerville, S.C., assignor to Westvaco Corporation, New York, N.Y.

Filed Jan. 11, 1974, Ser. No. 432,561

Int. Cl. C09F 1/00

U.S. Cl. 260—97.5

8 Claims

1. A process for acidification of tall oil soaps which comprises, acidifying tall oil soaps containing from 75% to 200% by weight of water per part of tall oil soaps with an amount of carbon dioxide sufficient to lower the pH to between 7-8 at a temperature from ambient to 120°F., allowing said acidified

tall oil soap to settle into a soap-acid layer and a bicarbonate brine layer.

3,901,870

DERIVATIVE OF ALPHA₁-FETOSPECIFIC SERUM PROTEIN AND PROCESS FOR ITS MANUFACTURE
Heinz Haupt, Marburg an der Lahn, and Siegfried Baudner, Marbach near Marburg and der Lahn, both of Germany, assignors to Behringwerke Aktiengesellschaft, Marburg an der Lahn, Germany

Filed Mar. 12, 1974, Ser. No. 450,403

Int. Cl. C12d 1/00

U.S. Cl. 260—112 R

7 Claims

1. A derivative of the alpha₁-fetospecific serum protein, which
- is formed by the action of the enzyme neuraminidase on the alpha₁-fetospecific serum protein,
 - is precipitated by an antiserum acting against the alpha₁-fetospecific serum protein, and
 - upon injection in vertebrates, causes the formation of antibodies which are specific against both the alpha₁-fetospecific protein and against said derivative.

3,901,871

PROCESS OF PREPARING ALPHA-L-ASPARTYL-L-PHENYLALANINE METHYL ESTER

George Washington Anderson, Upper Saddle River, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Sept. 21, 1973, Ser. No. 399,650

Int. Cl. C07C 103/52; A23L 1/22

U.S. Cl. 260—112.5

2 Claims

1. In a method of preparing α-L-aspartyl-L-phenylalanine methyl ester by contacting methyl-L-phenylalanine and aspartic anhydride hydrochloride in the presence of carbon dioxide and ethylene dichloride at a temperature below 0°C. the steps which comprise adding a small amount of water, separating the product as a precipitate, slurrying the precipitate with isopropanol, removing the product from the slurry and crystallizing the said product from a mixture of isopropanol and water.

3,901,872

P-GLU-HIS-TRP-SER-TYR-D-PGL-LEU-ARG-PRO-GLY-NH₂ AND INTERMEDIATES

Wayne A. McKinley, Wallingford, and Dimitrios Sarantakis, Audubon, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Mar. 13, 1974, Ser. No. 450,909

Int. Cl. C07C 103/52; A61K 37/26

U.S. Cl. 260—112.5

5 Claims

1. A compound selected from the class consisting of L-p-Glu-L-His-L-Trp-L-Ser-L-Tyr-D-Pgl-L-Leu-L-Arg-L-Pro-Gly-NH₂ (I)

and

R⁴-L-p-Glu-L-His(N¹, R⁵)-L-Trp-L-Ser(R³)-L-Tyr(R²)-D-Pgl-L-Leu-L-Arg(N⁶, R¹)-L-Pro-Gly-X (II)

and its non-toxic salts; wherein

R¹ is a protecting group for the N⁶, N¹ and N² nitrogen atoms of arginine selected from the group consisting of nitro, tosyl, benzyloxycarbonyl, adamantyloxycarbonyl and tert-butyloxycarbonyl or R¹ is hydrogen;

R² is a protecting group for the phenolic hydroxyl group of tyrosine selected from the group consisting of acetyl, tosyl, benzoyl, tert-butyl, tetrahydropyranyl, trityl, benzyl, 2,6-dichlorobenzyl, p-bromobenzyloxycarbonyl and benzyloxycarbonyl or R² is hydrogen;

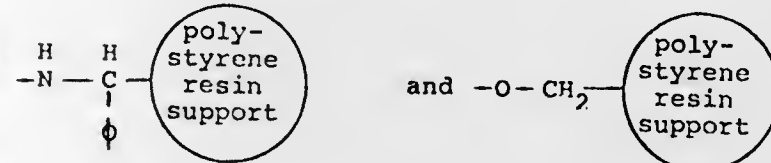
R³ is a protecting group for the alcoholic hydroxyl group of serine and is selected from the group consisting of acetyl, benzoyl, tetrahydropyranyl, tert-butyl, trityl, 2,6-

dichlorobenzyl and benzyl or R³ is hydrogen;

R⁴ is selected from the group consisting of hydrogen or an α-amino protecting group;

R⁵ is a protecting group selected from the group consisting of tosyl, benzyl, trityl, 2,4-dinitrothiophenyl, 2,2,2-trifluoro-1-benzyloxycarbonylaminoethyl and 2,2,2-trifluoro-1-butyloxycarbonylaminoethyl; and

X is selected from the group consisting of NH₂, OH, O-(lower)alkyl, O-benzyl and an anchoring bond linked to a solid polystyrene resin represented by one of the formula



wherein said polystyrene resin is cross linked through the phenyl group on each second carbon atom of the alkyl chain of said polystyrene, with the proviso that at least one of R¹, R², R³ and R⁵ is other than hydrogen and wherein Pgl means phenylglycyl.

3,901,873

PROCESS FOR THE PRODUCTION OF AGAR FROM A RED ALGA

Shuji Doi, Chigasaki; Tomiji Saito, Kawasaki, and Shigenobu Tozaki, Fujisawa, all of Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan

Filed Feb. 8, 1973, Ser. No. 330,688

Claims priority, application Japan, Feb. 14, 1972, 47-14788

Int. Cl. C07g 3/00

U.S. Cl. 260—209 R

12 Claims

1. A process for the production of agar from an agar-yielding red alga which is selected from the group consisting of *Gelidium subcostatum*, *Gracilaria verrucosa*, *Chondrus crispus*, *Chondrus ocellata* or *Gigartina stellata*, comprising pre-treating said alga by subjecting it to the action of a screw-type extruder in the presence of added water to break the structure in the red alga tissue to render strongly bonded agar substance in the tissue more easily extractable with water, and then extracting the pre-treated alga with water.

3,901,874

MODIFICATION OF CARBOHYDRATES

William H. Hill, St. Paul, Minn., assignor to Peter, Strong Research and Development Co., Inc., Port Chester, N.Y.

Continuation-in-part of Ser. No. 342,393, March 19, 1973, abandoned, which is a continuation of Ser. No. 260,521, June 7, 1972, abandoned, which is a continuation of Ser. No. 39,601, May 22, 1970, abandoned. This application Nov. 20, 1973, Ser. No. 417,553

Int. Cl. C08b 19/12

U.S. Cl. 260—209.5

3 Claims

1. A process of depolymerizing a carbohydrate comprising mixing a carbohydrate selected from a group consisting of starch, cellulose, hemicellulose, and natural plant hydrocolloid, and nonporous particles of colloidal, pyrogenic silica coated with a surfactant, organic acid selected from a group consisting of sulfonic acid having an alkyl radical with 10 to 20 carbon atoms, and sulfonic acid having an alkylbenzene group in which the alkyl group has ten to twenty carbon atoms, the coated particles having from two parts by weight of the said acid and one part by weight of said silica to one part by weight of said acid and two parts by weight of said silica, and the said acid being present in the resulting mix to the extent of 0.1% to about 10% by weight, the said mix being heated in the range of about 50°C. to about 120°C., whereby the said carbohydrate is depolymerized.

3,901,875

EXTRACTION OF GINSENG SAPONIN

Woo Chang Park, Seoul, South Korea, assignor to Pacific Chemical Industrial Co., Ltd., Seoul, South Korea

Filed Mar. 26, 1973, Ser. No. 345,243

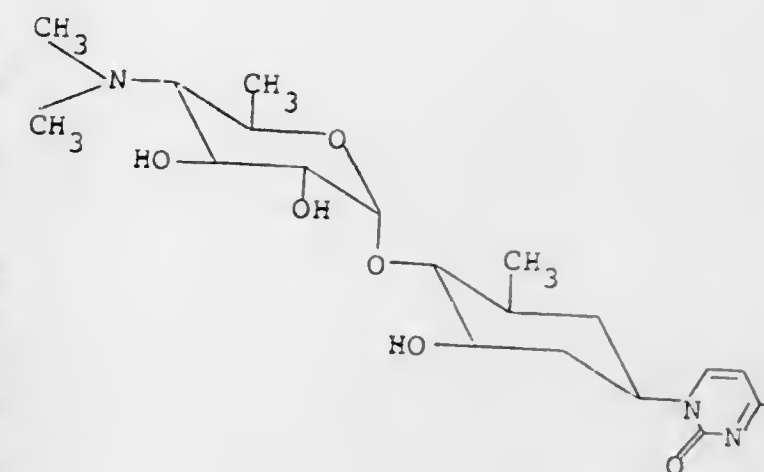
Claims priority, application South Korea, Mar. 31, 1972, 492/1972

Int. Cl. C07J 167/40

U.S. Cl. 260—210.5

12 Claims

1. A process for the extraction of total ginseng saponin from crude ginseng leaves and flowers consisting essentially of contacting said crude ginseng with an alcohol, separating said alcohol from the extracted residue, contacting said extracted residue with a first solvent comprising benzene, chloroform or ether as a primary solvent, separating said first solvent to leave a solvent residue, contacting said solvent residue with a second solvent comprising butanol or amyl alcohol to form a solution, passing said solution through an acidic alumina column, and separating said second solvent from said ginseng saponin.



3,901,876

ADENOSINE DERIVATIVES

Helmut Vorbruggen; Rudolf Kopp; Reinhard Horowski; Gert Paschelke, and Dieter Palenschat, all of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Germany

Filed Sept. 14, 1972, Ser. No. 288,973

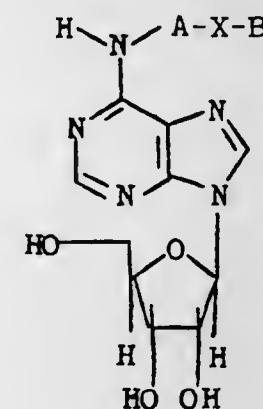
Claims priority, application Germany, Sept. 18, 1971, 2147314

Int. Cl. C07d 51/54

U.S. Cl. 260—211.5 R

15 Claims

1. Adenosine derivatives of the formula



3,901,878

ACID TREATED CATIONIC STARCH IN THE FLOCCULATION AND DEWATERING OF SLUDGE
Walter G. Hunt, Bridgeton, and Ray J. Belz, Mehlville, both of Mo., assignors to Anheuser-Busch, Incorporated, St. Louis, Mo.

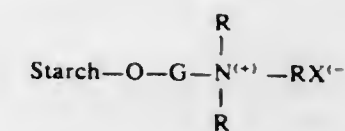
Filed Jan. 21, 1974, Ser. No. 434,998

Int. Cl. C08B 31/12

U.S. Cl. 260—233.3 R

6 Claims

1. A method of making a gelatinized cationic starch ether comprising the steps of
- gelatinizing an acid-treated starch having a degree of fluidity of about 30 to about 50 ml.,
 - reacting the gelatinized starch with an amine butene halide, and
 - recovering a product having a degree of substitution of about 0.15 to about 0.25 and a formula as follows:



wherein X is halide, R is methyl or ethyl, and G is alkenylene of 2 to 4 carbons.

3,901,879

2-(2-HYDROXYETHYLTHIO)-2,3-DIHYDRO-5-PHENYL-H-1,4-BENZODIAZEPINES

David Llewellyn Coffen, Glenridge, and Rodney I. Fryer, North Caldwell, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 383,362, July 27, 1973, Pat. No. 3,850,948. This application Aug. 28, 1974, Ser. No. 501,316

Int. Cl. C07D 243/22

U.S. Cl. 260—239 BD

2 Claims

1. A compound of the formula

3,901,877

OXAMICETIN AND PROCESS FOR ITS PRODUCTION
Hiroshi Kawaguchi, Tokyo; Masataka Konishi, Yokohama, and Koji Tomita, Kawasaki, all of Japan, assignors to Bristol-Myers Company, New York, N.Y.

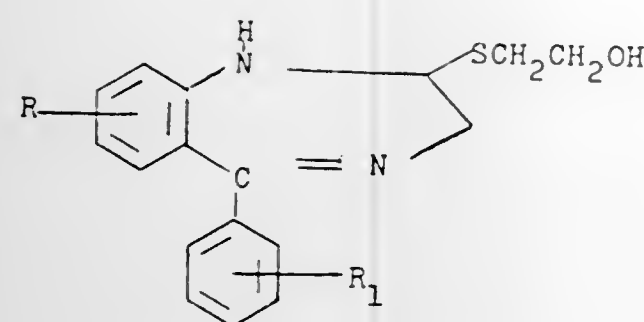
Continuation of Ser. No. 265,402, June 22, 1972, Pat. No. 3,843,449. This application Feb. 28, 1974, Ser. No. 446,846

Int. Cl. C07H 19/06

U.S. Cl. 260—211.5 AB

1 Claim

1. The compound oxamicetin characterized by the structure



wherein R is selected from the group consisting of hydrogen, halogen, lower alkyl, trifluoromethyl, nitro, cyano, lower alkoxy and lower alkylthio; R₁ signifies hydrogen or halogen and the pharmaceutically acceptable acid addition salts thereof.

3,901,880

(S)-ALANYL-3-[(S)-CHLORO-3-(S)-HYDROXY-2-OXO-ZETIDINYL METHYL]-(S)-ALANINE

James P. Scannell; David L. Pruess, both of North Caldwell, and Thomas C. Demny, Livingston, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

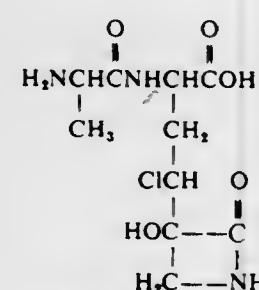
Filed Sept. 11, 1974, Ser. No. 504,936

Int. Cl.² C07D 205/08

U.S. Cl. 260-239 A

2 Claims

1. A compound selected from the group consisting of a compound of the formula:



and its pharmaceutically acceptable salts, wherein all the optically active sites are in the (S) configuration.

3,901,881

2-THIOXO-1H-1,4-BENZODIAZEPINE-1-ACETIC ACID ALKYL ESTERS

Jacob Szmuskovicz, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 215,118, Jan. 3, 1972, Pat. No. 3,818,003.

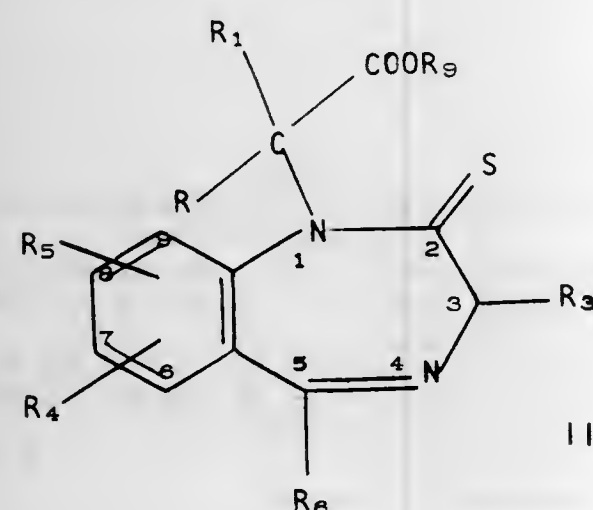
This application Nov. 5, 1973, Ser. No. 412,551

Int. Cl.² C07D 243/22

U.S. Cl. 260-239.3 D

4 Claims

1. A compound of the formula



wherein R and R₁ are each selected from the group consisting of hydrogen and alkyl of 1 to 3 carbon atoms, inclusive; R₂ is selected from the group consisting of hydrogen, alkyl of 1 to 3 carbon atoms, inclusive, hydroxy, acetoxy and propionyl-oxy; R₃ and R₄ are each selected from the group consisting of hydrogen, alkyl of 1 to 3 carbon atoms, inclusive, halogen, nitro, cyano, amino, trifluoromethyl, alkoxy, alkylthio, alkyl-sulfinyl, alkylsulfonyl, alkanoylamino and dialkylamino in which the carbon chain moieties are of 1 to 3 carbon atoms, inclusive; R₅ is selected from the group consisting of pyridyl, 2-pyrimidinyl, furyl, pyrrolyl, thienyl, cycloalkyl of 5 to 7 carbon atoms, inclusive, cycloalkenyl of 5 to 7 carbon atoms, inclusive, and a phenyl radical of the formula



in which R₇ and R₈ each have the same meanings as given above for R₃ and R₄; and R₉ is alkyl of 1 to 3 carbon atoms, inclusive.

3,901,882

3-AMINO CARDENOLIDES AND BUFADIENOLIDES, DERIVATIVES AND SALTS THEREOF

Kuno Meyer, Basel, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 162,030, July 9, 1971, abandoned. This application Oct. 4, 1972, Ser. No. 295,043

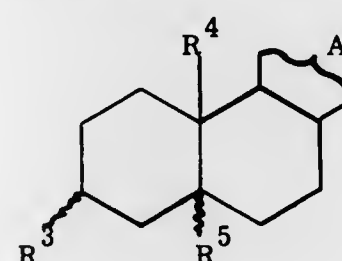
Claims priority, application Switzerland, July 24, 1970, 11238/70

Int. Cl.² C07J 19/00

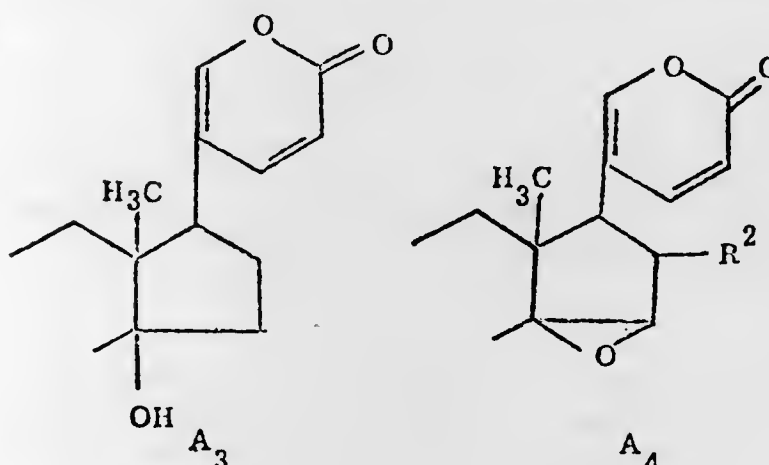
U.S. Cl. 260-239.57

24 Claims

1. Compounds of the general formula



wherein A is selected from a grouping of the formula A₃ or A₄



R² is hydroxy or acetoxy; R³ is a primary, secondary or tertiary amino group or a 2-oxo-3-oxazolidinyl or ureido group; R⁴ is a methyl group or a beta-hydrogen atom, and acid addition salts thereof.

3,901,883

AZOLE COMPOUNDS

Peter Liechti, Arisdorf, and Hans Schläpfer, Basel, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland
Filed Mar. 1, 1973, Ser. No. 337,026

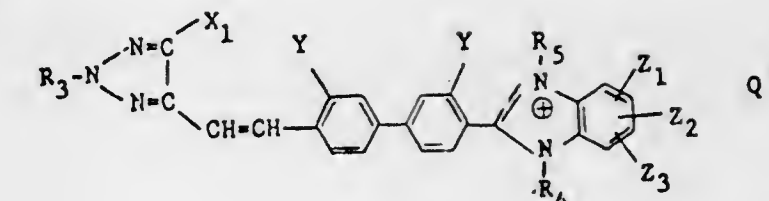
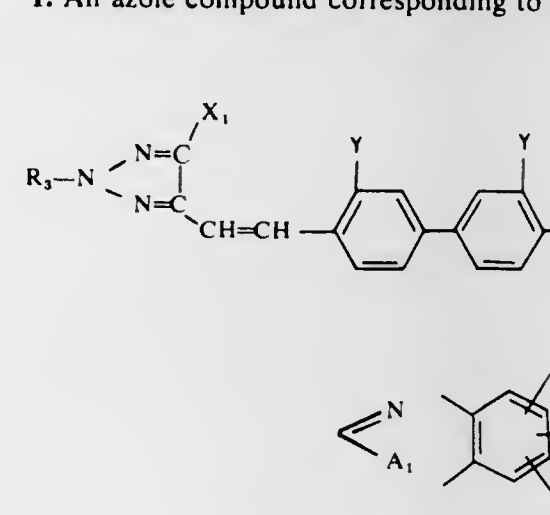
Claims priority, application Switzerland, Mar. 8, 1972, 3366/72

Int. Cl. C09b 23/14

U.S. Cl. 260-240 D

8 Claims

1. An azole compound corresponding to the formula



in which R₃, R₄, X₁, Y, Z₁, Z₂ and Z₃ have the abovementioned meaning, R₃ represents alkyl with one to 12 carbon atoms unsubstituted or substituted by hydroxyl or alkoxy with one to four carbon atoms, phenylalkyl with one to four carbon atoms in the alkyl part, unsubstituted or ring-substituted by halogen, alkyl with one to four carbon atoms or alkoxy with one to four carbon atoms, or alkyl with one to four carbon atoms which is substituted by nitrile, carbamoyl or carbalkoxy with two to five carbon atoms and Q represents halogen, an alkylsulphuric acid radical with one to four carbon atoms, an alkanesulphonic acid radical with one to four carbon atoms, a benzene-sulphonic acid radical or the radical SO₃^{2-/2}.

wherein R₃ denotes phenyl unsubstituted or substituted by sulpho groups or their salts, halogen, alkyl with one to four carbon atoms, alkenyloxy with three or four carbon atoms, phenyl, alkoxy with one to eight carbon atoms or benzyloxy, X₁ represents hydrogen, halogen, alkyl with one to four carbon atoms or phenyl unsubstituted or substituted by halogen, alkyl with one to four carbon atoms or alkoxy with one to four carbon atoms or the sulpho group or its salts, Y represents hydrogen, halogen, alkyl with one to four carbon atoms or alkoxy with one to four carbon atoms, Z₁ and Z₂ independently of one another represent hydrogen, halogen, alkyl with one to 18 carbon atoms unsubstituted or substituted by carboxyl, carbalkoxy with two to nine carbon atoms, carbamoyl, carbamoyl substituted at the nitrogen by alkyl possessing one to 12 carbon atoms or by hydroxyalkyl, or nitrile, alkoxy with one to 18 carbon atoms, phenyl or phenoxy both unsubstituted or substituted by halogen, alkyl with one to four carbon atoms or alkoxy with one to four carbon atoms, alkenyl with three or four carbon atoms, cyclopentyl, cyclohexyl, phenylalkyl or phenylalkoxy with one to four carbon atoms in the alkyl or alkoxy part, both unsubstituted or ring-substituted by halogen, alkyl with one to four carbon atoms or alkoxy with one to four carbon atoms, carboxyl, carbalkoxy with two to nine carbon atoms, carbamoyl, carbamoyl substituted at the nitrogen by alkyl or hydroxyalkyl with one to 12 carbon atoms, nitrile, alkylsulphonyl or alkoxy sulphonyl with one to 12 carbon atoms, phenylsulphonyl or phenoxy sulphonyl both unsubstituted or substituted by halogen, alkyl with one to four carbon atoms or alkoxy with one to four carbon atoms, sulphamoyl, sulphamoyl substituted at the nitrogen by alkyl or hydroxyalkyl with one to 12 carbon atoms, the sulpho group or its salts or Z₁ and Z₂ in the o-position to one another jointly represent a fused benzene radical, tetramethylene, trimethylene or methylenedioxy, Z₃ represents hydrogen, halogen, alkyl with one to four carbon atoms or alkoxy with one to four carbon atoms and A₁ represents oxygen or >N-R₄, wherein R₄ represents hydrogen, alkyl with one to 12 carbon atoms unsubstituted or substituted by hydroxyl, alkoxy with one to four carbon atoms, carboxyl, carbalkoxy with two to five carbon atoms, nitrile, the sulpho group or its salts or alkylsulphonyl with one to four carbon atoms, phenyl or phenyl substituted by halogen, alkyl with one to four carbon atoms or alkoxy with one to four carbon atoms, phenylalkyl, with one to four carbon atoms in the alkyl part, unsubstituted or ring-substituted by halogen, alkyl with one to four carbon atoms or alkoxy with one to four carbon atoms, or cyclohexyl,

3,901,884

BASES AND SALTS OF

2-AMINOMETHYL-4,4-DIALKYL-4H-1,3-BENZOXAZINES AND METHOD FOR PREPARING SAME

Vladimir Alexeevich Zagorevsky, ulitsa Obrucheva, 14, kv. 76; Sergei Mikhailovich Kljuev, ulitsa Udaltsova, 14, kv. 195; Eduard Alexandrovich Bendikov, 1 Mosfilmovskiy pereulok, 4 "a", kv. 34, and Klara Ivanovna Lopatina, Profsojuznaya ulitsa, 36/9 kv. 81, all of Moscow, U.S.S.R.

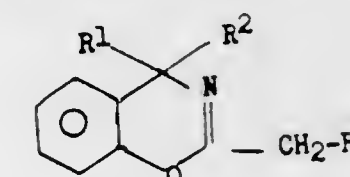
Filed Apr. 25, 1973, Ser. No. 354,502

Int. Cl. C07d 87/20

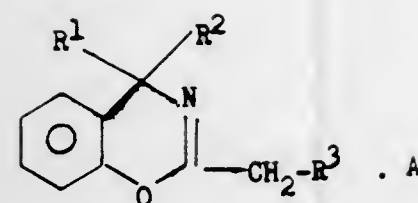
U.S. Cl. 260-244 R

4 Claims

1. A 2-aminomethyl-4,4-dialkyl-4H-1,3-benzoxazine in the form of a base having the formula



or in the form of a salt having the formula



where R^1 and R^2 are ethyl and R^3 is diethylamino and A is an acid selected from the group consisting of hydrochloric, sulfuric, tartaric, oxalic, maleic, picric, lactic and naphthalene-1,5-disulfonic acids.

3,901,885

CERTAIN DERIVATIVES OF 5,6-DIPHENYL PYRAZINYLMALONATES AND PYRAZINEACETIC ACIDS

Norman Schwartz, Philadelphia, and Richard J. Mohrbacher, Fort Washington, both of Pa., assignors to McNeil Laboratories, Incorporated, Fort Washington, Pa.

Division of Ser. No. 774,486, Nov. 8, 1968, Pat. No. 3,761,477.

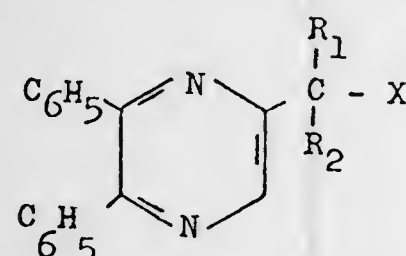
This application Nov. 17, 1972, Ser. No. 307,681

Int. Cl.² C07D 241/02

U.S. Cl. 260—250 B

5 Claims

1. A member selected from the group consisting of a compound of the formula



wherein R_1 is a member selected from the group consisting of hydrogen and loweralkyl; R_2 is a member selected from the group consisting of hydrogen, loweralkyl, loweralkyl carboxylate ester, and sodium, calcium, and ammonium carboxylate salts; X is a member selected from the group consisting of loweralkyl carboxylate ester, carboxylic acid, carboxamide, and sodium, calcium, and ammonium carboxylate salts; and wherein when R_2 is respectively loweralkyl carboxylate ester or carboxylate salt, X is also respectively loweralkyl carboxylate ester or carboxylate salt.

3,901,886

CERTAIN DERIVATIVES OF PYRAZINYLMALONATES

Norman Schwartz, Philadelphia, and Richard J. Mohrbacher, Fort Washington, both of Pa., assignors to McNeil Laboratories, Incorporated, Fort Washington, Pa.

Division of Ser. No. 774,486, Nov. 8, 1968, Pat. No. 3,761,477.

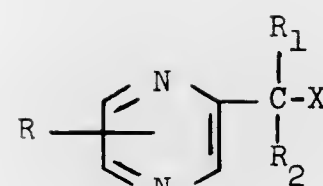
This application Nov. 17, 1972, Ser. No. 307,683

Int. Cl.² C07D 241/02

U.S. Cl. 260—250 B

5 Claims

1. A member selected from the group consisting of a compound of the formula:



wherein R is a member selected from the group consisting of phenyl, chlorophenyl, dichlorophenyl, fluorophenyl, trifluoromethylphenyl, loweralkoxyphenyl, diloweralkoxyphenyl, loweralkylphenyl, diloweralkylphenyl, cyclohexyl and cyclopentyl; R_1 is a member selected from the group consisting of hydrogen and loweralkyl; R_2 is a member selected from the group consisting of loweralkyl carboxylate ester, and sodium calcium and ammonium carboxylate salts; and X is a member selected from the group consisting of loweralkyl carboxylate ester, and sodium, calcium and ammonium carboxylate salts;

3,901,887

(2-PYRIMIDINYLTIO) ALKANOIC ACIDS, ESTERS, AMIDES AND HYDRAZIDES

Arthur A. Santilli, Havertown; Anthony C. Scotese, King of Prussia, and Rudolph M. Tomarelli, Phoenixville, all of Pa., assignors to American Home Products Corporation, New York, N.Y.

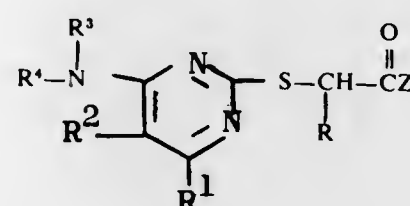
Division of Ser. No. 240,266, March 31, 1972, Pat. No. 3,814,761. This application Oct. 24, 1973, Ser. No. 409,345

Int. Cl.² C07D 239/00

U.S. Cl. 260—256.5 R

6 Claims

1. A compound of the formula:



in which

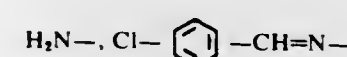
R and R^2 are members independently selected from the group consisting of hydrogen and lower alkyl;

R^1 is a member selected from the group consisting of hydrogen, halo and lower alkoxy;

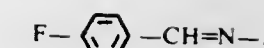
Z is a member selected from the group consisting of hydroxy, lower alkoxy, —OM and —(NH)_pNH₂, wherein p is 0 or 1, and M is an alkali metal cation or the ammonium ion;

R^3 is a member selected from the group consisting of hydrogen and lower alkyl and

R^4 is a member selected from the group consisting of hydrogen,



and



providing that when R^3 and R^4 are hydrogen, R^1 is halo or lower alkoxy.

3,901,888

PROCESS FOR THE PREPARATION OF 4-AMINO-2-METHYLPYRIMIDINE 5-CARBOXAMIDE

Willy Leimgruber, Montclair, and Manfred Weigle, North Caldwell, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

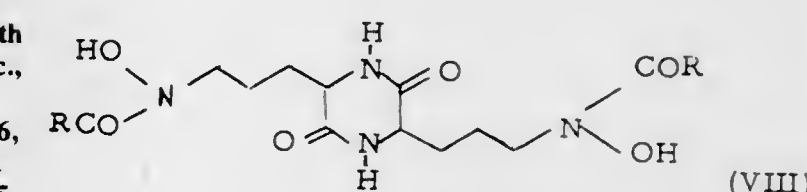
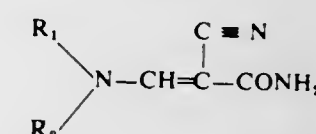
Division of Ser. No. 223,703, Feb. 4, 1972, Pat. No. 3,792,076, which is a division of Ser. No. 56,715, Aug. 7, 1970, Pat. No. 3,689,498. This application Nov. 7, 1973, Ser. No. 413,735

Int. Cl.² C07D 239/42

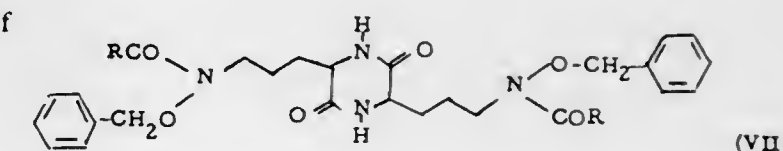
U.S. Cl. 260—256.4 N

3 Claims

1. A process for producing 4-amino-2-methylpyrimidine-5-carboxamide comprising the steps of reacting 3-di(lower alkyl)amino-2-cyanoacrylamide of the formula:



wherein R represents a lower alkyl group having 1 to 4 carbon atoms, inclusive, which comprises the step of catalytically reducing an alkanoyl compound of the formula



1,2-BIS-(4-PHENYL-1-PIPERAZINYL)-ETHANES

Emile Bouchara, 75 bis, Ave. Foch, 75 Paris, France

Filed May 29, 1973, Ser. No. 364,328

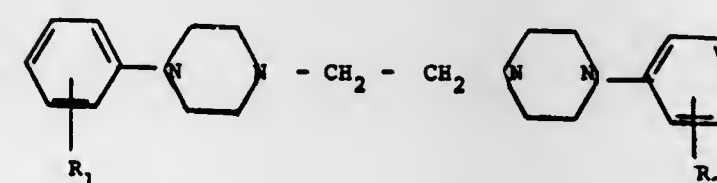
Claims priority, application France, June 2, 1972, 72.19903

Int. Cl.² C07D 295/06

U.S. Cl. 260—268 PH

7 Claims

1. A compound of the formula:



in which R_1 and R_2 represent independently from each other a radical selected from the group consisting of chloro, fluoro, trifluoromethyl and methyl and their addition salts with therapeutically acceptable acids.

3,901,891

13-BROMOLYSERGIC ACID COMPOUNDS

Theodor Fehr, Dornach, and Hartmut Hauth, Riehen, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Filed Sept. 20, 1973, Ser. No. 399,167

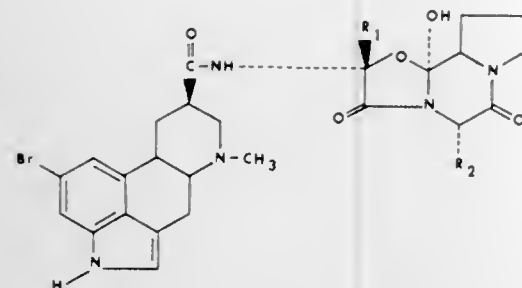
Claims priority, application Switzerland, Sept. 26, 1972, 14032/72; Sept. 26, 1972, 14033/72

Int. Cl. C07d 51/72

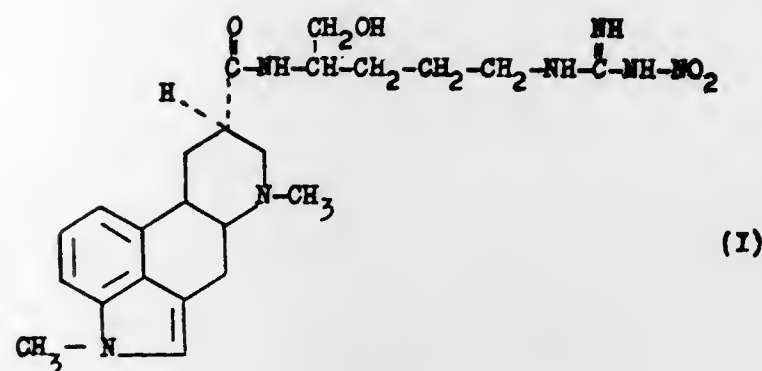
U.S. Cl. 260—268 PE

7 Claims

1. A compound of the formula,



wherein R_1 is methyl or isopropyl, and R_2 is isopropyl, 1-methylpropyl, 2-methylpropyl or benzyl, or a pharmaceutically acceptable acid addition salt thereof.



(I)

or its acid addition salts formed with pharmaceutically acceptable acids.

3,901,892

1,3-ETHANOINDENO[2,1-C]-PYRIDINES AND 1,3-ETHANOBENZ[G]ISOQUINOLINES

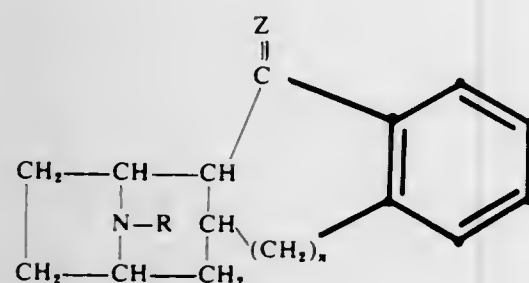
Robert L. Clarke, Bethlehem, and Sol J. Daum, Albany, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.
Filed Dec. 14, 1973, Ser. No. 424,882

Int. Cl.² C07D 451/02

U.S. Cl. 260—283 R

30 Claims

1. A compound selected from the group consisting of (A) a compound of the formula



wherein:

R is hydrogen, lower-alkyl, lower-alkanoyl, lower-alkoxycarbonyl, cycloalkylcarbonyl, cycloalkyl-lower-alkyl, phenyl-lower-alkyl or hydroxy-lower-alkyl, cycloalkyl, each instance, having from three to six ring members and a total carbon content of from three to ten carbon atoms; $C=Z$ is $C=O$, CH_2 , $CH(OH)$ or $CH(O\text{-lower-alkanoyl})$; n is 0 or 1;

and the phenyl ring is unsubstituted or substituted by from one to two substituents selected from the group consisting of lower-alkyl, lower-alkoxy, fluoro, chloro and hydroxy; and (B) a medicinally acceptable acid-addition salt of a compound under (A) above.

3,901,893

NEW DIHYDRO-LYSERGIC ACID DERIVATIVE

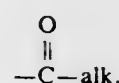
Erzsebet Magó né Karácsony; József Borsi; Tibor Balogh, and Lajos Wolf, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt. Budapest, Hungary
Continuation-in-part of Ser. No. 142,535, May 12, 1971, abandoned. This application June 1, 1973, Ser. No. 366,241
Claims priority, application Hungary, May 18, 1970, GO 1135

Int. Cl.² C07D 519/02

U.S. Cl. 260—285.5

1 Claim

1. A compound of the formula



phenyl, or alk;
 R' is H, Cl, or Br;
alk is C_1 – C_3 alkyl; and

R'' and R''' when taken singly are H; and, when taken together with the carbon atoms to which they are attached, form a double bond or a non-toxic, pharmaceutically-acceptable acid addition salt thereof.

3,901,894

8-THIOMETHYLERGOLINES

Edmund C. Kornfeld, and Nicholas J. Bach, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

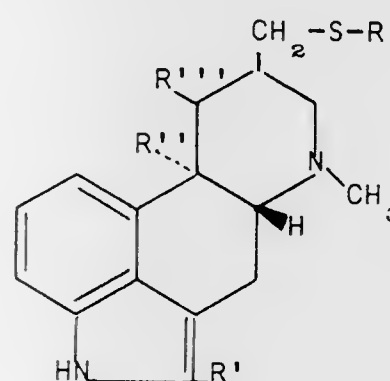
Filed June 6, 1974, Ser. No. 477,136

Int. Cl. C07d 43/20

U.S. Cl. 260—285.5

6 Claims

1. A compound of the formula:



wherein

R is H, CN,

3,901,895

CYCLOPENTENOQUINOLONE COMPOUNDS AND THERAPEUTIC COMPOSITIONS

Alfred Rhombert, Mannheim-Neustheim; Herbert Berger, Mannheim-Kafertal; Kurt Stach, Mannheim-Waldhof; Wolfgang Vomel, Mannheim, and Winfriede Sauer, Mannheim-Wallstadt, all of Germany, assignors to Boehringer Mannheim G.m.b.H., Mannheim, Germany

Filed Apr. 10, 1973, Ser. No. 349,898

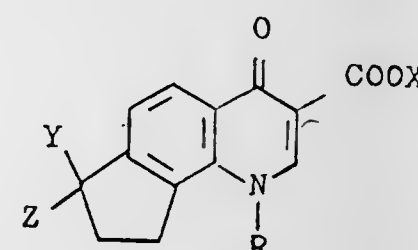
Claims priority, application Germany, May 10, 1972, 2222833

Int. Cl. C07d 33/48.

U.S. Cl. 260—287 R

17 Claims

1. Cyclopentenoquinolone compounds of the formula:



(I)

wherein Z is selected from the group consisting of phenyl and substituted phenyl wherein said phenyl substituent is selected from the group consisting of lower alkyl of 1 to 8 carbons, methoxy, nitro, cyano, halogen, and trifluoromethyl; R_1 is selected from the group consisting of hydrogen, lower alkyl of 1 to 8 carbons, and benzyl; and R is selected from the group consisting of hydrogen, lower alkyl of 1 to 8 carbons, phenyl and benzyl; and pharmaceutically acceptable acid addition salts thereof.

3,901,898

8-AROYLALKYL-1,3,8-TRIAZASPIRO [4,5] DECANES

Hisao Yamamoto, Nishinomiya; Masaru Nakao; Kikuo Sasajima, Toyonaka; Isamu Maruyama, Minoo, and Shigenari Katayama, Takarazuka, all of Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

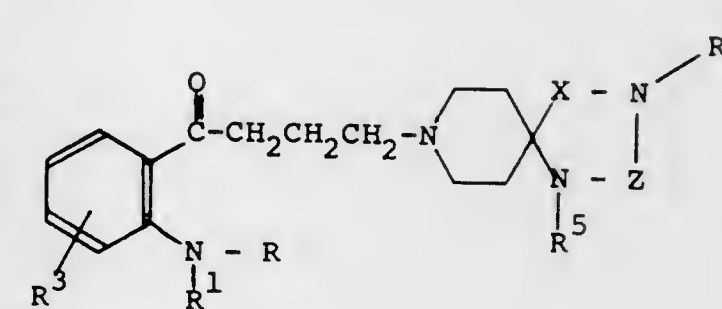
Continuation-in-part of Ser. No. 242,759, April 10, 1972, abandoned. This application Nov. 15, 1973, Ser. No. 416,120
Claims priority, application Japan, Apr. 15, 1971, 46-24376; Apr. 15, 1971, 46-24373

Int. Cl.² C07D 211/26

U.S. Cl. 260—293.66

15 Claims

1. A compound of the formula,



3,901,896 PROCESS OF OXIDATION OF PRIMARY AND SECONDARY ALCOHOLS TO THE CORRESPONDING CARBONYL DERIVATIVES

Jay Donald Albright, Nanuet, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Filed July 27, 1973, Ser. No. 383,418

Int. Cl. C07c 35/34

U.S. Cl. 260—288 B

11 Claims

1. An improved method for oxidizing primary and secondary alcohols to the corresponding carbonyl compounds which comprises the steps of reacting said alcohols with a lower C_1 – C_4 dialkylsulfoxide and a member selected from the group consisting of aroyl C_7 – C_8 halides, haloaroyl C_7 – C_8 halides, lower alkyl C_1 – C_4 sulfonyl halides, aryl C_7 – C_8 sulfonyl halides, lower alkyl C_1 – C_4 sulfonic anhydrides, tolylsulfonic anhydrides, methoxyphenylsulfonic anhydrides, phalophenylsulfonic anhydrides, and cyanuric chloride in the presence of a solvent for the reactants at a temperature of about -10°C . to -50°C . and recovering said carbonyl compound therefrom.

3,901,897

1,2,3,4,4A,5,6,7-OCTAHYDRO-7-ARYL-ISOQUINOLINES AND DERIVATIVES THEREOF

Frederic Peter Hauck, Somerville, and Joseph E. Sundeen, Trenton, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Oct. 5, 1972, Ser. No. 295,385

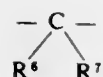
Int. Cl. C07d 33/50

U.S. Cl. 260—288 R

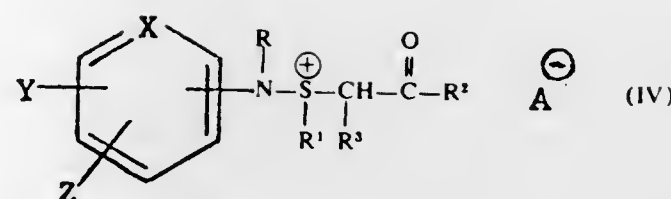
3 Claims

1. A compound of the formula:

wherein R^1 is hydrogen, C_1 – C_4 alkyl or phenyl optionally substituted by one or two substituents selected from the group consisting of halogen, C_1 – C_4 alkyl, C_1 – C_4 alkoxy and trifluoromethyl; R is hydrogen or a group having the formula, $-\text{CO}-$ R^2 (wherein R^2 is hydrogen, C_1 – C_4 alkyl or phenyl optionally substituted by one or two substituents selected from the group consisting of halogen, C_1 – C_4 alkyl, C_1 – C_4 alkoxy and trifluoromethyl; R^3 is hydrogen, halogen, C_1 – C_4 alkyl, C_1 – C_4 alkoxy or trifluoromethyl; R^4 is hydrogen, C_1 – C_4 alkyl or C_1 – C_4 alkanoyl; R^5 is C_1 – C_4 alkyl or phenyl optionally substituted by one or two substituents selected from the group consisting of halogen, C_1 – C_4 alkyl, C_1 – C_4 alkoxy and trifluoromethyl; X is carbonyl or methylene; and Z is a group having the formula



(wherein R⁶ and R⁷ are each hydrogen, C₁-C₄ alkyl, phenyl optionally substituted by one or two substituents selected from the group consisting of halogen, C₁-C₄ alkyl, C₁-C₄ alkoxy and trifluoromethyl or benzyl or phenethyl optionally substituted on the benzene ring by one or two substituents selected from the group consisting of halogen, C₁-C₄ alkoxy and trifluoromethyl and R⁶ and R⁷ may form bivalent C₂-C₃ alkylene), or a pharmaceutically acceptable acid addition salt thereof.



wherein X, Y, Z, R, R¹, R², R³, and A are as defined above.

3,901,900

PROCESS FOR VAPOR PHASE AMMOXIDATION

Howard P. Angstadt, Media, and Carl H. Blackburn, Ridley Park, both of Pa., assignors to Sun Research and Development Co., Philadelphia, Pa.

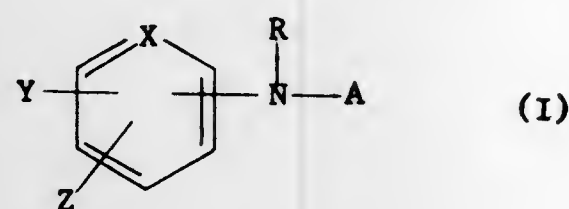
Continuation-in-part of Ser. No. 92,173, Nov. 23, 1970, abandoned. This application Oct. 1, 1971, Ser. No. 185,883

Int. Cl. C07d 31/46

U.S. Cl. 260—294.9

5 Claims

1. In the vapor phase ammoxidation process of an organic reactant to form nitriles where a reactant stream consisting essentially of ammonia and a heterocyclic organic reactant is passed over catalyst, the improvement which comprises pre-treating the catalyst with vapors consisting of an inert gas and at least 1% to about 10% by volume of the organic reactant at reaction conditions before admitting the reactant stream to the reaction system.



(I)

wherein

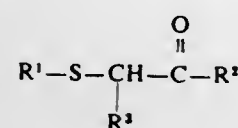
X is —CH= or —N=;

R is hydrogen or a hydrocarbon radical free of aliphatic unsaturation and containing from 1 to 8 carbon atoms;

A is chlorine or bromine;

each of Y and Z is hydrogen or a substituent which does not donate electrons any more strongly than m-methoxy, m-hydroxy, or p-acetoxy, and not more than one of Y and Z is ortho to the —N(R)A group position on the ring;

the —N(R)A group position on the ring having at least one ring carbon atom ortho thereto in an unsubstituted state; with a sulfide compound having the formula

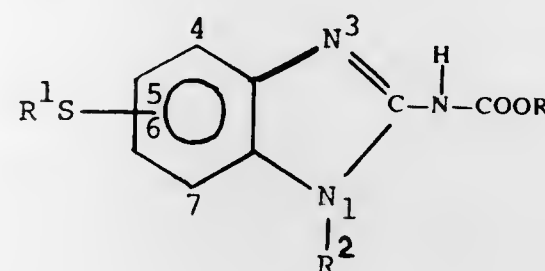


(II)

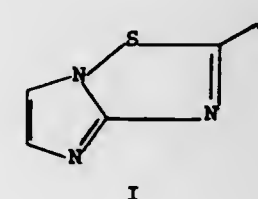
wherein

R¹ is lower alkyl, or phenyl;R² is hydrogen, lower alkyl, or phenyl;R³ is hydrogen, lower alkyl, phenyl or benzyl;R² can be attached to R³ as part of a cyclic ring system containing 5 to 8 carbon atoms;

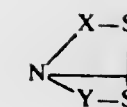
for a time sufficient to form an azasulfonium salt having the formula



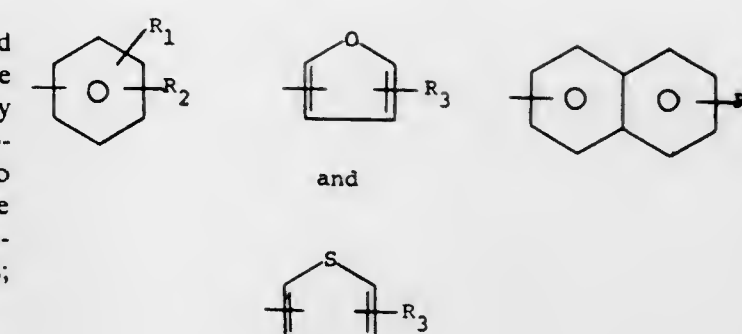
where R is a lower alkyl group having 1 to 4 carbon atoms; R¹ is a fused, bicyclic heterocyclic ring moiety represented by the formula:



I



wherein R is



where X and y are independently —C—C— or —C=C—, said heterocyclic ring moiety being optionally substituted with one or more alkyl having 1 to 4 carbon atoms, phenyl, alkoxy having 1 to 4 carbon atoms, or hydroxy radicals; R² is hydrogen, acyl having 1 to 6 carbon atoms, carbalkoxy having 2 to 7 carbon atoms, carbamoyl, or alkylcarbamoyl wherein the alkyl portion thereof has 1 to 4 carbon atoms; the R¹ substitution being at the 5(6)-position of the benzimidazole nucleus; and the pharmaceutically acceptable salts thereof.

3,901,902

HETEROCYCLIC THIADIAZOLYLUREAS

John Krenzer, Oak Park, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

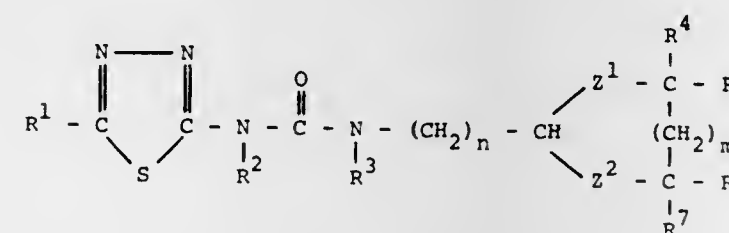
Filed Aug. 9, 1973, Ser. No. 387,051

Int. Cl. C07d 91/62

U.S. Cl. 260—306.8 D

6 Claims

1. A compound of the formula



wherein R¹ is selected from the group consisting of lower alkyl, lower alkenyl, lower chloroalkyl, lower bromoalkyl, trifluoromethyl, cycloalkyl of from 3 to 7 carbon atoms, lower alkoxy, lower alkylthio, lower alkylsulfonyl and lower alkylsulfenyl; Z¹ and Z² are independently selected from the group consisting of oxygen and sulfur; R², R³, R⁴, R⁵, R⁶ and R⁷ are each selected from the group consisting of hydrogen and lower alkyl, m is an integer from 0 to 2, and n is the integer 1 or 2.

3,901,904
CERTAIN THIADIAZOLYL IMIDAZOLIDINONES
John Krenzer, Oak Park, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

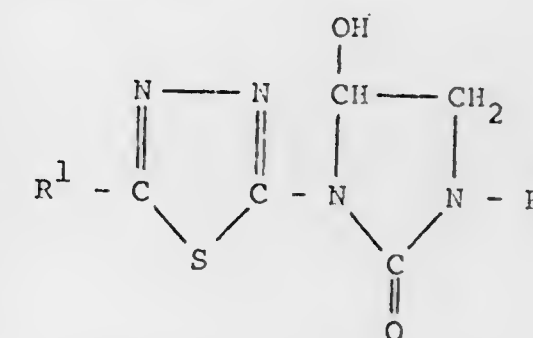
Continuation-in-part of Ser. No. 388,005, Aug. 13, 1973, abandoned. This application Feb. 11, 1974, Ser. No. 441,682

Int. Cl. C07D 417/04

U.S. Cl. 260—306.8 D

6 Claims

1. A compound of the formula



wherein R¹ is selected from the group consisting of alkyl of up to 3 carbon atoms, lower alkenyl, lower chloroalkyl, lower alkoxy, lower alkylthio, lower alkylsulfonyl and lower alkylsulfenyl; and R² is lower alkyl.

3,901,903
CERTAIN IMIDAZO[1,2-b]-1,2,4-THIADIAZOLE COMPOUNDS

Colin C. Beard, Palo Alto, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

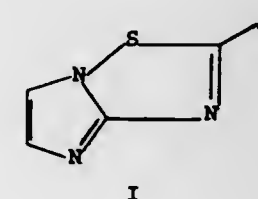
Filed Oct. 4, 1973, Ser. No. 403,473

Int. Cl. C07D 513/04

U.S. Cl. 260—306.8 F

15 Claims

1. A compound represented by the formula:



I

3,901,905
1-THIADIAZOLYL-3-ALKYL-5-ALKOXYIMIDAZOLIDINONES

John Krenzer, Oak Park, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

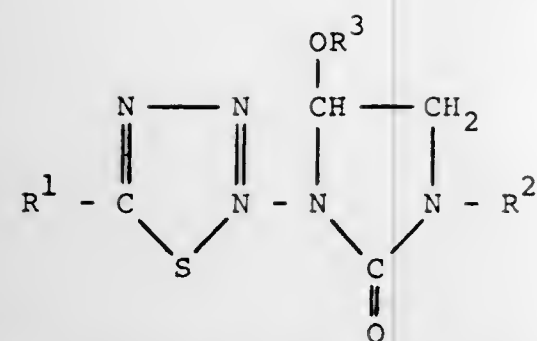
Filed Mar. 18, 1974, Ser. No. 452,021 The portion of the term of this patent subsequent to Aug. 26, 1992, has been disclaimed.

Int. Cl. C07D 417/404

U.S. Cl. 260—306.8 D

6 Claims

1. A compound of the formula



wherein R^1 is selected from the group consisting of lower alkyl, lower alkenyl, lower chloroalkyl, trifluoromethyl, lower alkoxy, lower alkylthio, lower alkylsulfonyl, lower alkylsulfinyl and cycloalkyl of from 3 to 7 carbon atoms optionally substituted with from 1 to 2 substituents selected from the group consisting of lower alkyl, lower alkoxy, chlorine, bromine and fluorine; R^2 is lower alkyl; and R^3 is an alkyl group of up to 20 carbon atoms.

3,901,906

2-(1-(2-FLUORO-4-BIPHENYL)ETHYL)-2-OXAZOLINE

Antonin Kozlik, Clifton Grove, England, assignor to The Boots Company Limited, Nottingham, England

Filed Aug. 21, 1972, Ser. No. 282,509

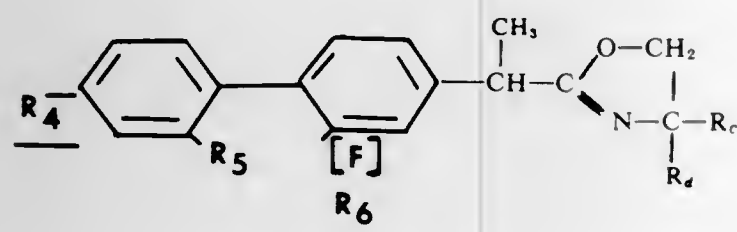
Claims priority, application United Kingdom, Aug. 25, 1971, 39939/71

Int. Cl. C07d 263/10

U.S. Cl. 260—307 F

4 Claims

1. Compounds having the formula



in which R_4 is hydrogen, R_5 is hydrogen or fluorine, R_6 is fluorine and R_7 and R_8 are the same or different and are C_1-C_7 alkyl.

3,901,907

PROCESS FOR PREPARING TRIAZOLOBENZODIAZEPINES

Rodney Ian Fryer, North Caldwell, and Armin Walser, West Caldwell, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

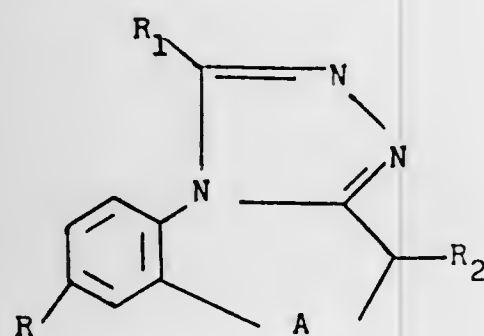
Continuation-in-part of Ser. No. 408,245, Oct. 19, 1973, Pat. No. 3,864,328. This application Aug. 28, 1974, Ser. No. 501,312

Int. Cl. C07D 487/04

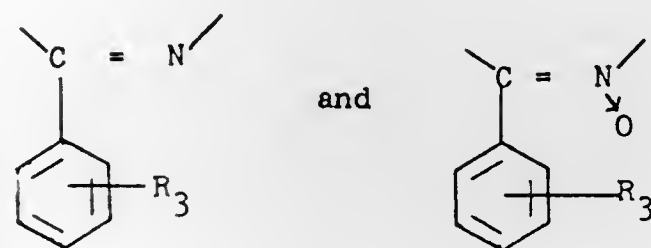
U.S. Cl. 260—308 R

1 Claim

1. A process for the preparation of a triazolo-benzodiazepine of the formula

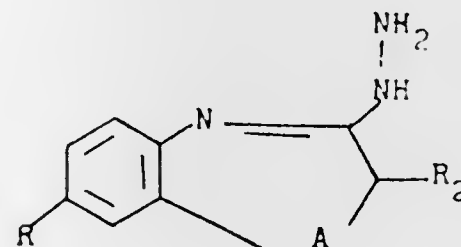


wherein A is selected from the group consisting of

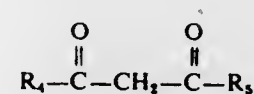


R is selected from the group consisting of hydrogen, halogen, nitro, trifluoromethyl, lower alkyl and lower alkoxy; R_1 signifies hydrogen or lower alkyl; R_2 signifies hydrogen or lower alkyl; and R_3 signifies hydrogen or halogen which comprises:

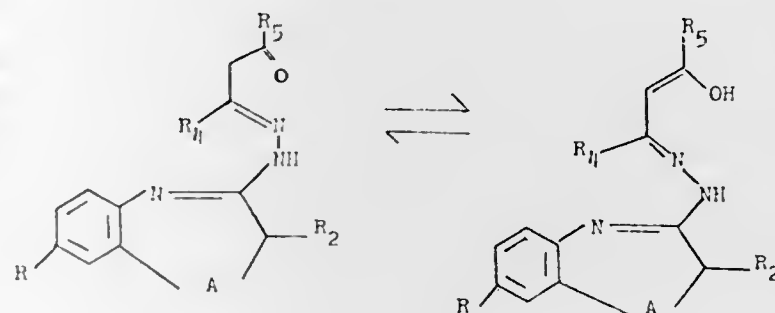
a. condensing in the presence of an inert organic solvent a compound of the formula



wherein R, R_2 and A are as described above with a dione of the formula



wherein R_4 and R_5 are individually hydrogen or lower alkyl, at least one of R_4 or R_5 being lower alkyl to yield a tautomeric mixture comprising compounds of the formula



wherein R, R_2 , R_4 , R_5 and A are as described above; b. cyclizing the so-obtained condensation product, with

or without isolation, by the thermal treatment thereof to yield the triazolo-benzodiazepine end product.

3,901,908

2-ALKYL- AND

2-CYCLOALKYL-4,5-BIS-PHENYL-IMIDAZOLES

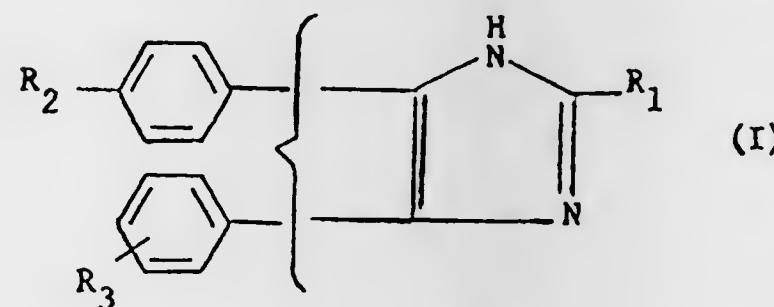
Konrad Fitzi, Neuchâtel, and Rudolf Pfister, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 102,131, Dec. 28, 1970, abandoned. This application July 5, 1973, Ser. No. 376,760 Int. Cl. C07d 49/36

U.S. Cl. 260—309

13 Claims

1. A compound of the formula



wherein

R_1 is alkyl of 2 to 6 carbon atoms or cycloalkyl of 3 to 6 carbon atoms,

R_2 methoxy, is methoxy methyl, hydroxy or methylsulfonyl, and R_3 is methoxy, methyl, hydrogen or chloro, or a pharmaceutically acceptable acid addition salt thereof.

3,901,909

MERCAPTOBENZIMIDAZOLYL UREAS AND THIUREAS

Venkatachala Lakshmi Narayanan, Hightstown, and Rudiger Dieter Haugwitz, Titusville, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

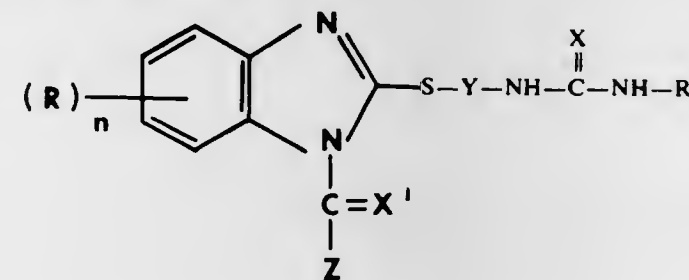
Continuation-in-part of Ser. No. 312,004, Dec. 4, 1972, abandoned, which is a continuation-in-part of Ser. No. 136,197, April 21, 1971, Pat. No. 3,718,662. This application Jan. 18, 1974, Ser. No. 434,714

Int. Cl. C07D 235/28

U.S. Cl. 260—309.2

10 Claims

1. A compound of the formula:



wherein R is selected from the group consisting of hydrogen, lower alkyl, lower alkoxy, lower alkylthio, phenyl, substituted phenyl wherein said substituent is halogen, nitro, or lower alkyl, benzyl, benzoyl, lower alkylcarbonyl, phenoxy-carbonyl, phenylcarbonyl, lower alkoxy-carbonyl, trifluoromethyl, nitro, halogen, cyano, thiocyno, lower alkylcarbonylamido, lower alkoxy-carbonylamido, phenylcarbonylamido, phenoxy-carbonylamido, lower alkylamino, and di-lower alkylamino; n is an integer selected from 0, 1 or 2; R_1 is selected from the group consisting of lower alkyl, cycloalkyl of 3 to 7 carbons, phenyl, substituted phenyl wherein said substituent is nitro, halogen, or lower alkyl, lower alkylcarbonyl, and benzoyl; Z is selected from the group consisting of lower alkyl, loweralk-

oxy, phenyl, phenoxy, substituted phenyl and phenoxy wherein said substituent is halogen, nitro, or lower alkyl, lower alkylamino, cycloalkylamino of 3 to 7 carbons, anilino, benzylamino, substituted anilino wherein said substituent is halogen, nitro, or lower alkoxy, lower alkylcarbonylamido, and phenylcarbonylamido; Y is straight chain alkylene of 1 to 6 carbons which may or may not be substituted by one or two alkyl groups of from 1 to 4 carbons; X is selected from the group consisting of oxygen and sulfur; and X' is oxygen when Z is lower alkyl, lower alkoxy, phenyl, phenoxy, substituted phenyl, or substituted phenoxy and X' is selected from the group consisting of oxygen and sulfur when Z is lower alkylamino, cycloalkylamino of 3 to 7 carbons, anilino, benzylamino, substituted anilino, lower alkylcarbonylamido, or phenylcarbonylamido.

3,901,910

5-TRIFLUOROMETHYL-7-AMINO-BENZIMIDAZOLES

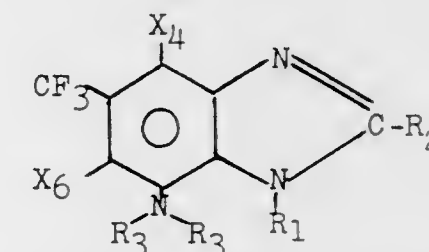
Don L. Hunter; Robert A. Smith, both of Anaheim, and Wayne S. Belles, Orange, all of Calif., assignors to United States Borax & Chemical Corporation, Los Angeles, Calif.

Continuation-in-part of Ser. No. 333,902, Feb. 20, 1973, abandoned. This application June 3, 1974, Ser. No. 476,018 Int. Cl. C07d 49/38

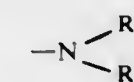
U.S. Cl. 260—309.2

14 Claims

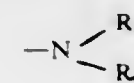
1. A compound of the formula



in which R_1 represents hydrogen, lower alkyl, halo-substituted lower alkyl, lower cycloalkyl, halo-substituted lower cycloalkyl, hydroxy-substituted lower alkyl, lower alkoxy-substituted lower alkyl or di-lower alkylamino, R_2 represents hydrogen, lower alkyl, lower cycloalkyl, hydroxy-substituted lower alkyl, lower alkoxy-substituted lower alkyl, halo, or di-lower alkylamino, each R_3 is selected from the group consisting of hydrogen and lower alkyl, and each of X_4 and X_6 represents hydrogen, halo, lower alkoxy or amino of the formula



and in which not more than one of said R_1 and R_2 represents hydrogen and not more than one of said X_4 and X_6 represents



3,901,911

PYRROLO[1,2-C]IMIDAZOLE-1-ONE DERIVATIVES

Luigi Fontanella, Milan, and Emilio Occelli, Parabiago, both of Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy

Filed Oct. 26, 1973, Ser. No. 409,985

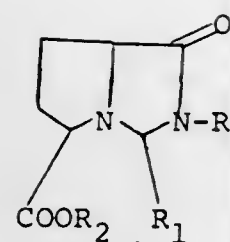
Claims priority, application Italy, Nov. 3, 1972, 31275/72

Int. Cl. C07D 49/34

U.S. Cl. 260—309.7

6 Claims

1. A compound represented by the formula



wherein R is selected from the group consisting of a lower alkyl, a phenyl and a benzyl radical, R₁ is selected from the group consisting of hydrogen, a lower alkyl and a phenyl radical, wherein the phenyl and benzyl radicals of R and R₁ may be substituted by one or two lower alkoxy groups, and R₂ is selected from the group consisting of a hydrogen atom and a lower alkyl radical.

3,901,912

3,3-BIS-(P-PHOSPHONOXY- AND P-SULPHOXY-PHENYL)-2-INDOLINONES

Tiberio Bruzzese, Giuseppe Ghelmetti, and Rodolfo Ferrari, all of Milan, Italy, assignors to SPA-Societa Prodotti Antibiotici S.p.A., Milan, Italy

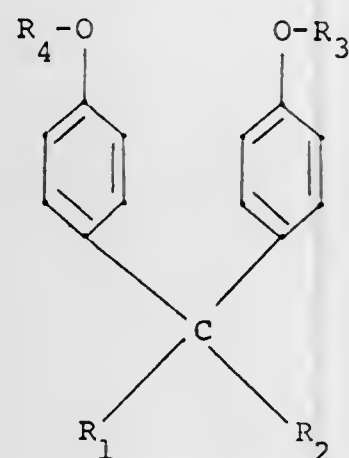
Division of Ser. No. 153,434, June 15, 1971, abandoned. This application May 16, 1973, Ser. No. 360,942

Claims priority, application United Kingdom, June 16, 1970, 29047/70

Int. Cl. C07d 27/40

U.S. Cl. 260—325 R

1. An ester of the formula



wherein R₁ and R₂, together with the carbon atom to which they are attached, form an unsubstituted 3-(2-oxo)-indolenyl radical, and R₃ and R₄ are the same and each is the residue of sulphuric or phosphoric acid, and non-toxic salts thereof.

3,901,913

IMIDOORGANOSILICON COMPOUNDS

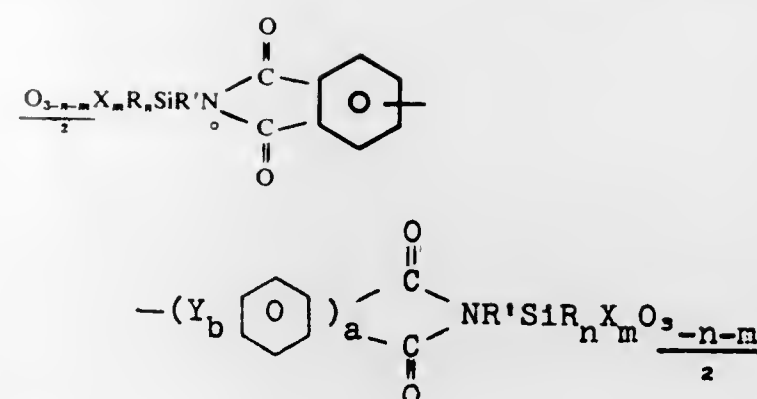
Yung K. Kim, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed June 7, 1974, Ser. No. 477,379

Int. Cl. C07D 209/32

U.S. Cl. 260—326 E

1. A composition of matter consisting essentially of organo-silicon compounds of the formula



in which

X is OH, alkoxy, or beta-alkoxyalkoxy.

R is lower alkyl, vinyl, phenyl or CF₃CH₂CH₂—.

R' is phenylene or divalent saturated aliphatic hydrocarbon of 1 to 6 carbon atoms,

Y is a linking radical of the group consisting of O, CH₂ and SO₂.

m is 0 to 3,

n is 0 to 1,

the sum of m + n being no more than 3 and a and b are each 0 to 1, the two phenyl rings being fused when a is 1 and b is 0.

3,901,914

1-[SUBSTITUTED PHOSPHINOTHIOYL, PHOSPHINYL OR PHOSPHINO]-SUBSTITUTED INDOLE-3-ACETIC ACIDS

John Hannah, Matawan, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

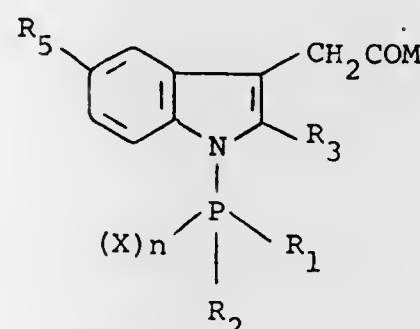
Filed Nov. 1, 1973, Ser. No. 411,856

Int. Cl. C07D 209/18, 209/20; A61K 31/675

U.S. Cl. 260—326.12 R

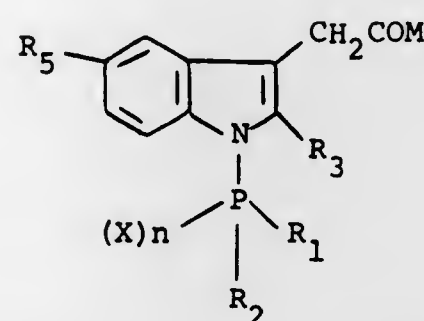
6 Claims

1. A compound of formula



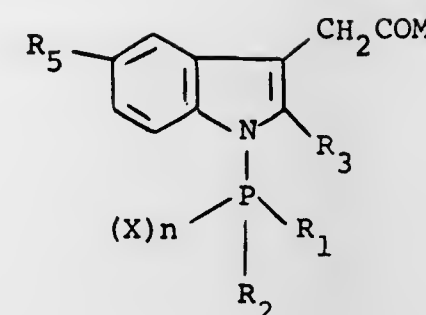
wherein R₁ is alkoxy, R₂ is haloaryl, R₃ is alkyl, R₄ is alkoxy, M is hydroxy, X is oxygen, and n is 1.

3. A compound of formula



wherein R₁ is alkoxy, R₂ is haloaryl, R₃ is alkyl, R₄ is alkoxy, M is hydroxy, X is sulfur and n is 1.

5. A compound of formula:



wherein R₁ is alkoxy, R₂ is haloaryl, R₃ is alkyl, R₄ is alkoxy, M is hydroxy, and n is 0.

3,901,915

OPTICAL RESOLUTION OF ORGANIC CARBOXYLIC ACIDS

Clark William Perry, Saddle River, and Sidney Teitel, Clifton, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Oct. 10, 1973, Ser. No. 404,951

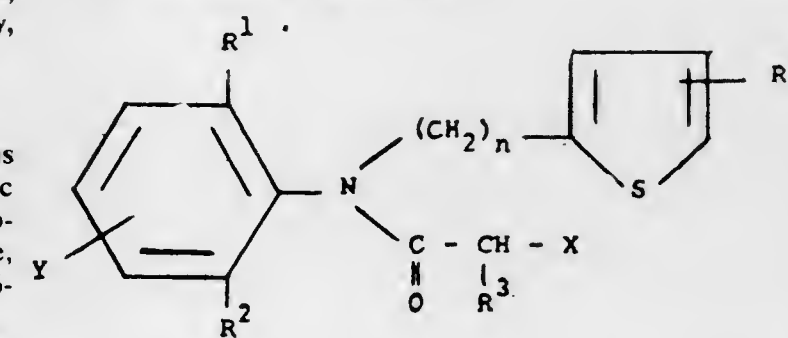
Int. Cl. C07D 209/26, 307/32, 303/38

U.S. Cl. 260—326.14 T

6 Claims

1. A process for the optical resolution of a racemic organic carboxylic acid selected from the group consisting of threo-epoxyaconitic acid, threo-hydroxycitric acid, gamma-lactone, N-benzoyl-6-chlorotryptophan and N-lower alkanoyl-6-chlorotryptophan which comprises:

- contacting said acid with an optical antipode of α-methyl-p-nitrobenzylamine in an inert solvent medium to form a mixture of diastereomeric salts, and
- separating said salts by fractional crystallization.



wherein R¹ is lower alkyl; R² is selected from the group consisting of hydrogen, lower alkyl and lower alkoxy; Y is selected from the group consisting of hydrogen, lower alkyl and halogen; R³ and R⁴ are independently selected from the group consisting of hydrogen and lower alkyl; n is the integer 1 or 2; and X is halogen.

3,901,916

CERTAIN SPIRO-PYRROLIDINES

Jean-Michel Bastian, Therwil; Klaus Hasspacher, Riehen, and Michael Strasser, Basel, all of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Continuation-in-part of Ser. No. 282,609, Aug. 21, 1972, abandoned. This application Nov. 28, 1973, Ser. No. 419,670

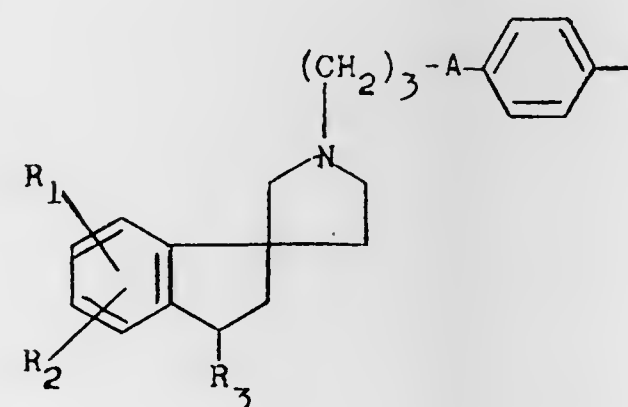
Claims priority, application Switzerland, Aug. 23, 1971, 12318/71; Nov. 28, 1972, 17291/72

Int. Cl. C07D 205/00

U.S. Cl. 260—326.38

72 Claims

1. A compound of the formula:



3,901,918

FLUORAN COMPOUNDS

Koichi Koga, Toyonaka, and Yukiaki Ito, Minoo, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Oct. 27, 1972, Ser. No. 301,490

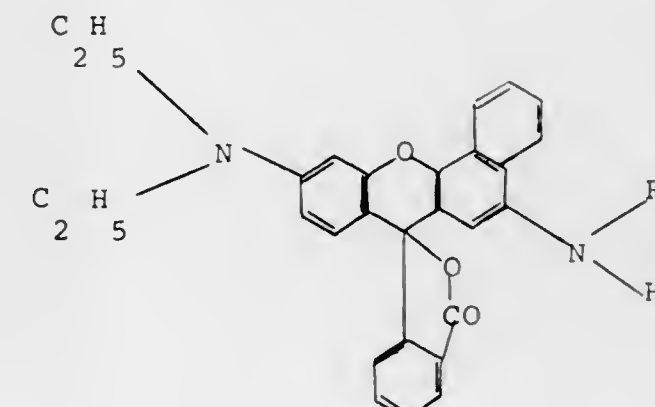
Claims priority, application Japan, Oct. 29, 1971, 46-86643; Dec. 27, 1971, 46-1074; Feb. 10, 1972, 47-14663; Feb. 24, 1972, 47-19187; Apr. 13, 1972, 47-37433; May 17, 1972, 47-49375; June 22, 1972, 47-63031; July 17, 1972, 47-71844; July 17, 1972, 47-17845; July 28, 1972, 47-76199; July 28, 1972, 47-76198

Int. Cl. C07D 311/96

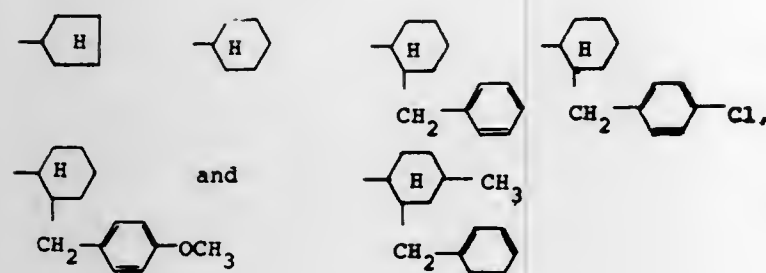
U.S. Cl. 260—335

3 Claims

1. A compound of the formula



wherein R₂ is selected from the group consisting of



3,901,919

BICYCLONONANE DIOL AND ESTERS

Robert Burns Woodward, Cambridge, Mass., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 2, 1973, Ser. No. 329,252

Claims priority, application Switzerland, Feb. 10, 1972, 001944/72

Int. Cl.² C07D 319/08

U.S. Cl. 260—340.7

6 Claims

1. 3-hydroxymethyl-2,4-dioxabicyclo[3,3,1]nonan-7-ol.

3,901,920

1,5-DIOXASPIRO[5.5]UNDECANES

George Y. Leshner, Schodack; Karl O. Gelotte, Nassau, and Alexander R. Surrey, Albany, all of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

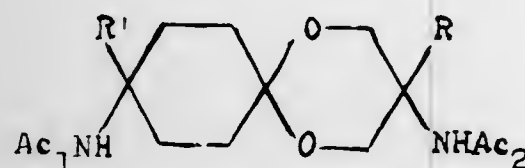
Filed Apr. 19, 1974, Ser. No. 462,388

Int. Cl.² C07D 319/06; A01N 9/28

U.S. Cl. 260—340.7

14 Claims

1. A compound of the formula



wherein

R' and R are each hydrogen or lower-alkyl; Ac₁ is lower-alkanoyl and 4-Q₁-benzoyl where Q₁ is lower-alkoxy or polyhalo-lower-alkoxy; and, Ac₂ is 4-Q₂-benzoyl where Q₂ is lower-alkoxy or polyhalo-lower-alkoxy.

10. A compound of the formula



where

R' and R are each hydrogen or lower alkyl, Ac₃ is 4-Q₁-benzoyl, Q₁ is lower-alkoxy or polyhalo-lower-alkoxy, and Z is NO₂ or NH₂.

3,901,921 SYNTHESIS OF ZEARALANES AND RELATED COMPOUNDS AND INTERMEDIATES USEFUL IN THE SYNTHESIS THEREOF

Wilbert Herbert Urry, Chicago, Ill., and Guy Towns Mullenbach, Berkeley, Calif., assignors to Commercial Solvents Corporation, Terre Haute, Ind.

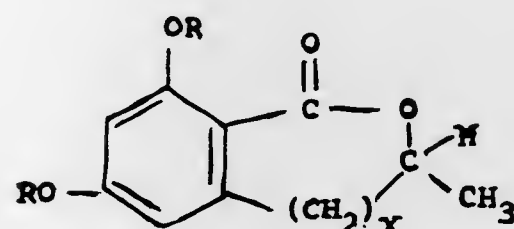
Filed Apr. 25, 1972, Ser. No. 247,342

Int. Cl. C07d 7/26, 9/00

U.S. Cl. 260—343.2 R

11 Claims

1. A compound of the formula



wherein X is an integer from 0 to 7 or 10 to 12 and R is —CH₂—C₆H₅ or H.

3,901,922

SYNTHESIS OF ZEARALANONE AND RELATED COMPOUNDS AND INTERMEDIATES USEFUL IN THEIR SYNTHESIS

Wilbert Herbert Urry, Chicago, Ill., and Guy Towns Mullenbach, Berkeley, Calif., assignors to Commercial Solvents Corporation, Terre Haute, Ind.

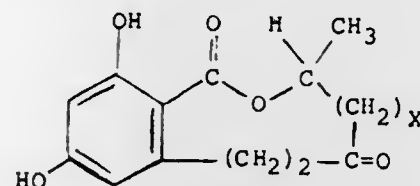
Division of Ser. No. 247,344, April 25, 1972, Pat. No. 3,810,918. This application Mar. 27, 1974, Ser. No. 455,409

Int. Cl. C07d 9/00

U.S. Cl. 260—343.2 F

7 Claims

1. A compound of the formula



wherein X is an integer having a value of from 2 to 6.

3,901,923

ACYLATED BICYCLIC LACTONES

Udo F. Axen, Comstock, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

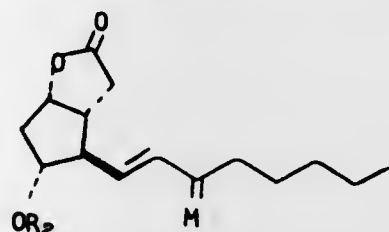
Division of Ser. No. 127,346, March 23, 1971, Pat. No. 3,778,450. This application Mar. 15, 1973, Ser. No. 341,679

Int. Cl.² C07D 307/77

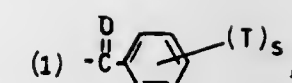
U.S. Cl. 260—343.3

5 Claims

1. An optically active compound of the formula



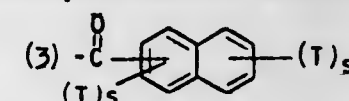
or a racemic compound of that formula and the mirror image thereof, wherein R₂ is



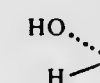
wherein T is alkyl of one to 4 carbon atoms, inclusive, phenyl-alkyl of 7 to 10 carbon atoms, inclusive, or nitro, and s is zero to 5, inclusive, provided that not more than two T's are other than alkyl, and that the total number of carbon atoms in the T's does not exceed 10 carbon atoms; (2)



wherein R₃ is alkyl of one to 4 carbon atoms, inclusive; or



wherein T and s are as defined above; and M is O =, or



3,901,924

1,1-DIALKYL NAPHTHOPYRANS

Bernard Auger, Grasse; Pierre Resnelle, Le Cannet, and Paul Jose Teisseire, Grasse, all of France, assignors to Societe Anonyme des Etablissements Roure-Bertrand Fils & Justin Dupont, Paris, France

Filed Feb. 2, 1973, Ser. No. 328,928

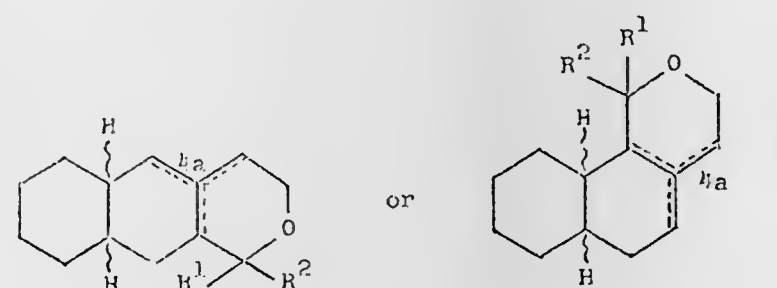
Claims priority, application France, Feb. 16, 1972, 72.5139

Int. Cl. C07d 311/02

U.S. Cl. 260—345.2

14 Claims

1. Naphthopyrans of the formula



wherein R¹ and R² each represent lower alkyl having from 1 to 4 carbon atoms and the dotted lines indicate an optional double bond emanating from the carbon atom in the 4a position, and mixtures thereof.

3,901,925

2-CARBOXY-4-OXO-4H,10H-(2)-BENZOPYRANO-[4,3-G]-(1)-BENZOPYRANS AND SALTS THEREOF

John Devlin, Pierrefonds; Patrick Brian Stewart, St. Andrews East, and Kurt Freter, Beaconsfield, all of Canada, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhine, Germany

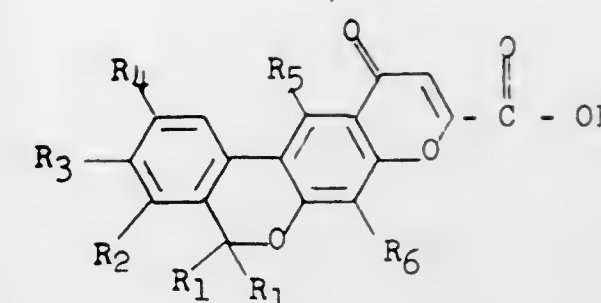
Filed Aug. 28, 1973, Ser. No. 392,182

Claims priority, application Austria, Aug. 29, 1972, 7425/72

Int. Cl.² C07D 311/78

U.S. Cl. 260—345.3

1. A compound of the formula



wherein

R₁ is hydrogen or lower alkyl, R₂, R₄ and R₅ are each hydrogen, lower alkyl, hydroxyl, lower alkoxy, lower alkanoyloxy, halogen, nitro or —SO₃H, and R₃ and R₆ are each hydrogen, lower alkyl, hydroxyl, lower alkoxy, lower alkanoyloxy, halogen, nitro, —SO₃H, hydroxycarbonyl-methoxy, β-hydroxy-ethoxy or β-amino-ethoxy, or a salt thereof.

3,901,926

ALKYLPHENYL BENZOPYRANS

Martin Winn, Deerfield; Kathleen Riley Lynn, Gurnff, and Yvonne Connolly Martin, Waukegan, all of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

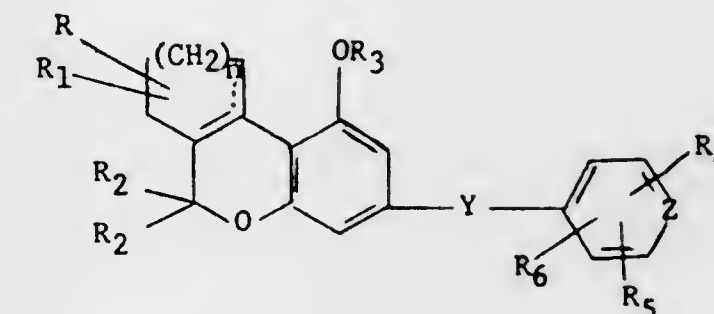
Continuation-in-part of Ser. No. 345,944, April 2, 1973, abandoned. This application Feb. 13, 1974, Ser. No. 442,034

Int. Cl.² C07D 307/83

U.S. Cl. 260—345.3

6 Claims

1. A compound of the formula



wherein n is 2; R and R₁ each are the same or different members of the group consisting of hydrogen and loweralkyl; R₂ is loweralkyl; R₃ is hydrogen; Y is a straight or branched chain alkylene group having from one to ten carbon atoms; and each R₄ and R₅ and R₆ are the same or different members of the group consisting of loweralkenyl, hydrogen, halo, trifluoromethyl, loweralkyl, and Z is C and the pharmaceutically acceptable salts thereof.

3,901,927

2-(4-BIPHENYLYL)-TETRAHYDROFURANS

Ernst Seeger; Helmut Teufel; Wolfhard Engel, and Josef Nickl, all of Biberach an der Riss, Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhine, Germany

Filed Aug. 13, 1973, Ser. No. 387,803

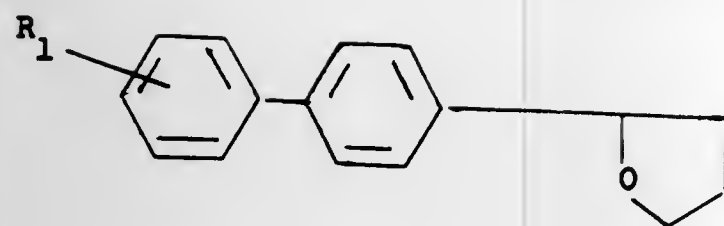
Claims priority, application Germany, Aug. 17, 1972, 2240438

Int. Cl. C07d 5/04

U.S. Cl. 260—346.1 R

4 Claims

1. a compound of the formula



wherein R_1 represents a member selected from the group consisting of hydrogen and halogen.

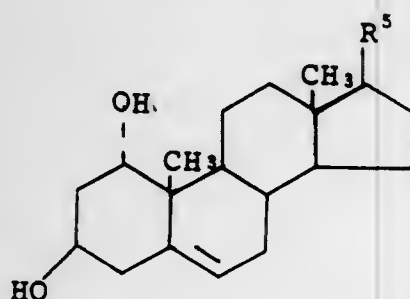
3,901,928

1 α ,3 β -DIHYDROXY STEROID-5-ENES METHOD OF PREPARING SAME AND THEIR USE FOR PREPARING 1 α -HYDROXY-25-HYDROGEN VITAMIN D COMPOUNDS
Robert Henry Hesse; Ezio Rizzardo, both of 49 Amherst St., Cambridge, Mass. 02142, and Derek Harold Richard Barton, 47 Onslow Sq., London S.W. 7, England
Continuation-in-part of Ser. No. 322,462, Jan. 10, 1973, abandoned. This application May 21, 1973, Ser. No. 362,339
Int. Cl.² C07C 169/52

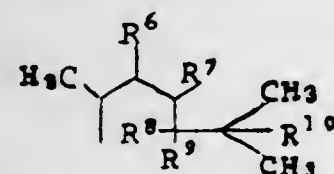
U.S. Cl. 260—397.2

6 Claims

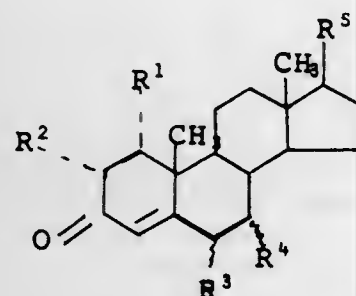
1. A process for the preparation of a compound of the formula



wherein R^5 represents a group of the formula



wherein R^6 and R^7 are each $-H$ or $-OH$ or together form a carbon-carbon bond or epoxy group, R^8 and R^{10} are each $-H$ or $-OH$, and R^9 is H , $-CH_3$ or $-C_2H_5$, comprising treating with a reagent selected from the group consisting of an alkali metal/liquid ammonia and an alkali metal/liquid amine reducing agent in the presence of a proton source a compound of the formula



wherein R^1 is $-OH$ and R^2 is $-H$ or R^1 and R^2 together form an epoxide group, R^3 represents a reductively eliminatable atom or group and R^4 is $-H$ or R^3 and R^4 together from a carbon-carbon bond and R^5 is as defined above.

3,901,929

WET PROCESSING OF LEATHER

Gerald M. Cote, Holland, Pa., assignor to Thermanil Chemical Company, Incorporated, Croyden, Pa.

Filed Sept. 27, 1972, Ser. No. 292,710

Int. Cl.² A23J 7/00; C07F 9/02; C14C 9/00

U.S. Cl. 260—403

9 Claims

1. A tanning agent for leather comprising an organic salt of a phosphorated ethoxylated saturated fatty acid ester, the saturated fatty acid having from 12 to 20 carbon atoms and said salt being the neutralization product of said ester with an organic base.

3,901,930

HYDROPHILIC AND DIFFICULTY VOLATILE BIOCIDAL TRIORGANOLEAD COMPOUNDS

Hermann Otto Wirth; Hans Joachim Lorenz, both of Bensheim-Auerbach, and Hans-Helmut Friedrich, Philippstaal, all of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed July 25, 1973, Ser. No. 382,633

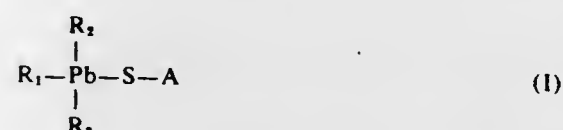
Claims priority, application Germany, Aug. 4, 1972, 2238360; July 6, 1973, 2334383

Int. Cl.² C07F 7/24

U.S. Cl. 260—437 R

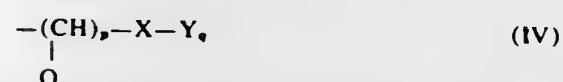
23 Claims

1. Triorganolead compounds of the general formula I



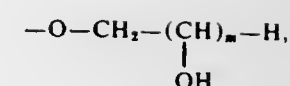
wherein R_1 , R_2 , and R_3 each independently represents a linear or branched aliphatic group with 1 to 16 carbon atoms, which can be saturated or singly olefinically unsaturated, the cyclopentyl-, cyclohexyl-, or phenyl group, the sum of the carbon atoms of the substituents R_1 , R_2 , and R_3 being at most 18, and A represents a strongly hydrophilic residue selected from the group consisting of

- polyethylene oxides with 2 to 15 ethylene oxide units,
- carboxylates or sulphonates of the general formula IV

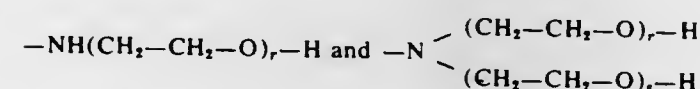


wherein Q represents hydrogen or the hydroxyl group, p is a whole number from 1 to 6, X is $-CO_2-$, $-SO_3-$, the succinic acid radical, the p-phenyl sulphonic acid radical or the m-benzoic acid radical and Y represents an once or twice charged cation with $q=1$ in the first case and $q=1/2$ in the second case,

c. a carboxylic acid ester or a carboxylic acid amide of the formula IV, wherein Q and p have the same meaning given hereinbefore, X is $-CO-$, q is 1 and Y represents for the ester a polyethylene oxide radical of the formula $-O-(CH_2-CH_2-O)_n-H$, in which n is 2 to 15, a polyhydroxyalkyl radical of the formula

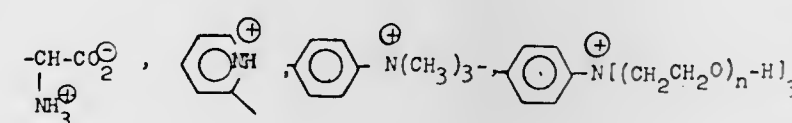


in which m is 2 to 6, or radicals of glycerine pentaerythritol, dipentaerythritol or trimethylolpropane, and for the amide the radical of primary or secondary amine-polyethylene adducts of the formulae



wherein r is in the first case 1 to 15 and r and s in the second case are numbers which are the same or different, the sum of r and s being 2 to 15, and

d. an ammonium salt of the formula IV, wherein Q and p have the meanings given hereinbefore and p is 2, X represents a radical of the formulae



wherein n is 1 to 6, or NZ_3^+ , wherein Z represents lower alkyl groups, which are the same or different, polyethylene oxide radicals with 2 to 6 ethylene oxide units, β -hydroxyethyl and/or hydrogen and Y represents a monovalent or divalent negative counterion, wherein in the first case $q=1$ and the second case $q=1/2$.

3,901,932

NOVEL SULFUR-CONTAINING ORGANIC PHOSPHORUS COMPOUNDS AND THEIR PRODUCTION AND USE

Fusao Tada; Tadashi Koga, both of Osaka; Shizuo Inaba, Yokohama; Keiji Sakata, Osaka; Tutomu Hatanaka, Osaka, and Shoji Nobata, Osaka, all of Japan, assignors to Sakai Chemical Industry Co. Ltd., Sakai and Showa Oil Company, Ltd., Tokyo, both of Japan

Filed Apr. 11, 1974, Ser. No. 459,985

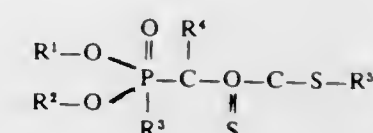
Claims priority, application Japan, Apr. 11, 1973, 48-041734

Int. Cl.² C07C 154/00

U.S. Cl. 260—455 P

19 Claims

1. A sulfur-containing organic phosphorus compound of the formula:



wherein R^1 , R^2 and R^3 are each a hydrocarbon group and R^4 and R^5 are each a hydrogen atom or a hydrocarbon group having not more than 12 carbon atoms.

3,901,933

PRODUCTION OF NITRILES BY AMMOXIDATION

Richard V. Norton, Wilmington, Del., assignor to Sun Research and Development Co., Marcus Hook, Pa.

Filed June 20, 1973, Ser. No. 371,907

Int. Cl.² C07C 120/14

U.S. Cl. 260—465 C

5 Claims

1. In the vapor phase ammoxidation of organic compounds to form nitriles where a reactant stream of ammonia and a lower alkyl substituted aromatic hydrocarbon is passed over a supported vanadium oxide catalyst in the absence of added oxygen, the improvement which comprises pretreating the catalyst under ammoxidation reaction conditions of about 300° to about 600°C. and at a pressure of from atmospheric to about 100 psig. with from about 0.1 to no more than 1 mole of carbon monoxide per mole of vanadium oxide catalyst before admitting the reactant stream to the reaction system, whereby the conversion to nitriles is significantly increased.

3,901,931

NICKEL STABILISERS FOR SYNTHETIC POLYMERS

Michael Rasberger, Allschwil; Johann Rody, Basel; Paul Moser, Riehen, and Helmut Muller, Binningen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed June 14, 1973, Ser. No. 370,180

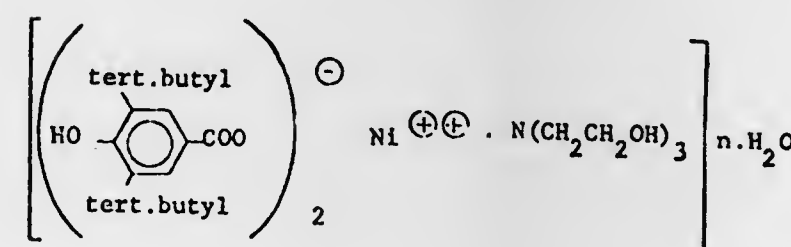
Claims priority, application Switzerland, June 21, 1972, 9333/72

Int. Cl. C07J 15/04

U.S. Cl. 260—439 R

3 Claims

1. Compound of the formula



wherein n is 0.47.

3,901,934

SUBSTITUTED SALICYLONITRILES

John Henry Gorvin, London, England, assignor to Burroughs Wellcome & Co. (U.S.A.) Inc., Research Triangle Park, N.C.

Division of Ser. No. 255,186, May 19, 1972, abandoned. This application Feb. 15, 1974, Ser. No. 442,816

Claims priority, application United Kingdom, May 21, 1971, 16197/71

Int. Cl.² C07C 121/52

U.S. Cl. 260—465 F

4 Claims

1. 5-p-Methoxybenzoylsalicylonitrile.

3,901,935

CYANOPHENYL SULFOXIDES AND SULFONES

Penelope B. Domenico, Fairfax, Va., assignor to The Dow Chemical Company, Midland, Mich.

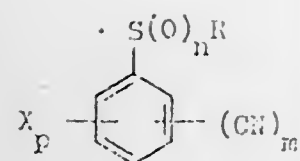
Filed Feb. 19, 1974, Ser. No. 443,593

Int. Cl.² C07C 121/52, 121/56

U.S. Cl. 260—465 G

10 Claims

1. A compound of the formula



wherein R is an alkyl or alkenyl group having from one to four carbons and substituted with from zero to two —Br, —Cl or —F radicals; *m* is 1 or 2; *n* is 1 or 2; *p* is 2, 3 or 4; and X is —Br or —Cl, independently, in each occurrence.

3,901,936

PROCESS FOR THE PREPARATION OF N-CARBAMOYLOXYPHENYL CARBAMATES

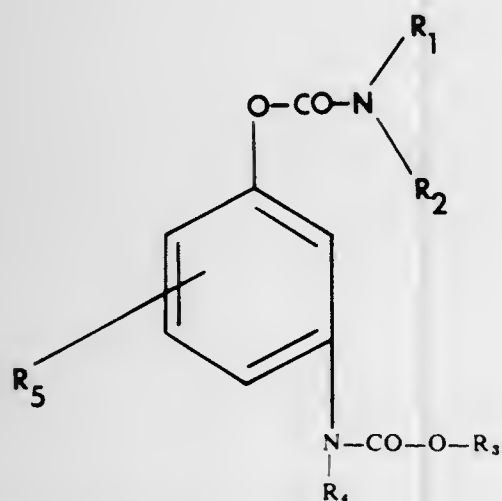
Gerhard Boroschewski, Berlin, Germany, assignor to Schering Aktiengesellschaft, Bergkamen, Germany
Continuation-in-part of Ser. No. 669,697, Sept. 22, 1967, abandoned. This application Mar. 12, 1973, Ser. No. 339,977
Claims priority, application Germany, Oct. 15, 1966, 3967812

Int. Cl.² C07C 125/06

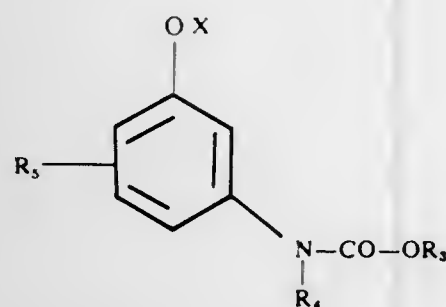
U.S. Cl. 260—471 C

2 Claims

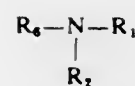
1. A process for preparing N-carbamoyloxyphenyl carbamates of the formula



wherein R₁ and R₂ can be hydrogen, lower alkyl, lower haloalkyl, aromatic, or alkaryl; R₃ can be lower alkyl, phenyl, or allyl; R₄ and R₅ can be hydrogen or lower alkyl; and R₆ can be hydrogen or lower alkyl which comprises direct reaction without recovery of intermediates, of phosgene, an N-hydroxyphenyl urethane of the structure



wherein X can be hydrogen or an alkali metal and R₃, R₄, and R₅ are as defined above with an amine of the formula



wherein R₁, R₂, and R₄ are as defined above; in an organic solvent at a temperature between 0° C and about 100° C.

3,901,937

QUATERNARY CARBAMATES

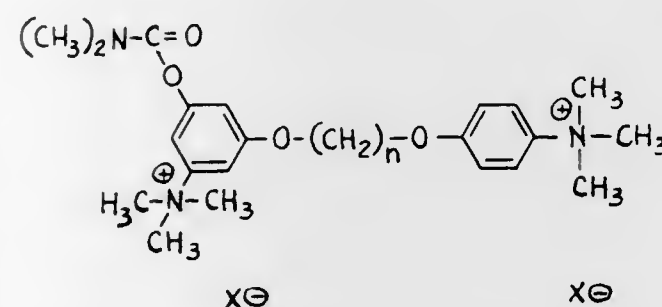
Harold Z. Sommer, Havre De Grace, Md., and John Krenzer, Chicago, Ill., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed May 8, 1967, Ser. No. 638,694

Int. Cl.² C07C 125/00

U.S. Cl. 260—482 C

3 Claims

1. New chemical compounds having the generic formula:



wherein *n* is an integer selected from 2–7 inclusive and wherein X is one equivalent of an anion selected from the group consisting of monovalent and polyvalent anions, said anions being selected from the group consisting of halide, hydrogen oxalate, perchlorate, hydrogen sulfate, and tetraphenylboronate.

3,901,938

PROCESS FOR THE AMMOXIDATION OF PROPYLENE

Vittorio Fattore, and Bruno Notari, both of San Donato Milanese, Italy, assignors to Snam Progetti S.p.A., San Donato Milanese, Italy
Filed Feb. 28, 1973, Ser. No. 336,703

Claims priority, application Italy, Mar. 1, 1972, 21248/72

Int. Cl.² C07C 120/14

U.S. Cl. 260—465.3

7 Claims

1. A process for the ammoxidation of propylene to acrylonitrile characterized in that the reaction is carried out in the presence of a catalyst $\text{TeTi}_n\text{Mo}_p\text{P}_q\text{X}_m\text{O}_n$ which consists essentially of the reaction product of (1) a member selected from the group consisting of telluric acid, metallic tellurium, and telluric oxide; (2) a member selected from the group consisting of titanium dioxide, titanium trichloride and titanium tetrachloride; (3) a member selected from the group consisting of ammonium molybdate and ammonium paramolybdate; (4) phosphoric acid; and (5) wherein X is a member selected from the group consisting of the nitrates, acetates, carbonates and bicarbonates of silver, zinc, cadmium, aluminum, cerium, lanthanum, zirconium, manganese, iron, cobalt and nickel and *m* is between 0 and 0.3, *n* is between 1 and 15, *p* is between 0.05 and 0.4, *q* is between 0 and 0.3 and *r* has the value necessary for satisfying the valence with which the various elements are present in the formula, with the proviso that

when *q* or *m* or *q* and *m* are zero the corresponding phosphoric acid or X member or phosphoric acid and X member, respectively, are omitted, said reaction product being obtained by first admixing the components in water and thereafter drying the mixture to obtain the reaction product.

3,901,939

PROCESS FOR THE PREPARATION OF ORGANIC COMPOUNDS

Carlo Neri, and Emilio Perrotti, both of San Donato Milanese, Italy, assignors to Snam Progetti S.p.A., Milan, Italy
Continuation of Ser. No. 102,976, Dec. 30, 1970, abandoned.

This application Sept. 26, 1973, Ser. No. 400,791

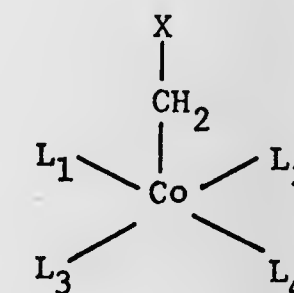
Claims priority, application Italy, Dec. 10, 1969, 26426/69

Int. Cl.² C07C 120/00, 76/02, 49/04, 47/02

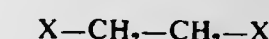
U.S. Cl. 260—465.8 R

9 Claims

1. A process for the homolytic scission of trivalent cobalt complexes into useful dimerization products which comprises heating a trivalent cobalt complex having the formula:



wherein L₁, L₂, L₃ and L₄, when taken together, derive from a tetradentate ligand selected from bis-(diacetylmonoximeimino) propane, bis-(salicyl aldehyde) ethylenediamine or bis-(acetylacetone) ethylenediamine; and X is NO₂, CN, CH₃CO or CHO; in an inert atmosphere at a temperature of from 120°C to 200°C to produce compounds of the formula:



wherein X is as defined above.

3,901,941

NEW OXYACETIC ETHER DERIVATIVES OF ORTHO-THYMOTIC ESTERS

Albert Rene Castaigne, Toulouse, France, assignor to Centre d'Etudes pour l'Industrie Pharmaceutique, Toulouse, France
Filed July 6, 1973, Ser. No. 377,030

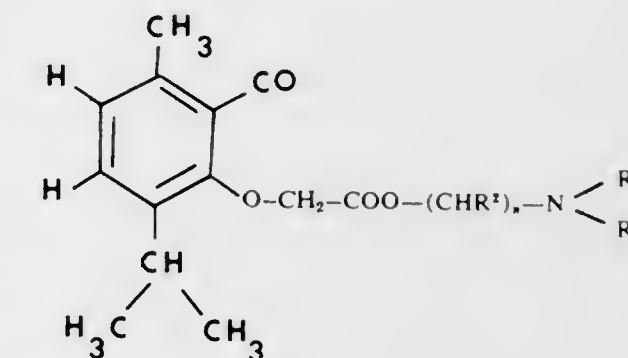
Claims priority, application France, July 20, 1972, 72.26160

Int. Cl.² C07C 101/42

U.S. Cl. 260—472

6 Claims

1. A compound selected from the oxyacetic ether derivatives of ortho-thymotic esters of the formula:



(1)

in which R is a lower alkyl having 1–4 carbon atoms; *n* is an integer from 1 to 4; R² considered individually in each radical —(CHR²)— is selected from hydrogen and the lower alkyl radicals having 1–6 carbon atoms; R³ and R⁴ are individually selected from hydrogen and the lower alkyl radicals having 1–6 carbon atoms; and their pharmaceutically acceptable acid addition salts.

3,901,942

TETRACYCLINE DERIVATIVES SUBSTITUTED IN THE 9 POSITION AND PROCESS FOR PREPARING THE SAME

Luigi Bernardi; Vincenzo Colonna; Roberto De Castiglione, and Paolo Masi, all of Milan, Italy, assignors to Societa' Farmaceutici Italia S.p.A., Milan, Italy

Filed Sept. 17, 1973, Ser. No. 397,691

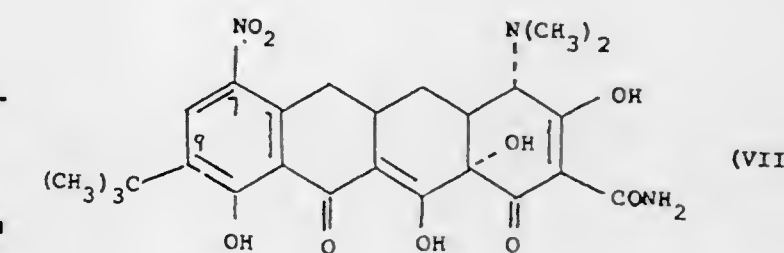
Claims priority, application Italy, Sept. 18, 1972, 29328/72

Int. Cl.² C07C 103/19

U.S. Cl. 260—559 AT

5 Claims

1. A process for the preparation of a compound of the formula (VII)



(VII)

3,901,940

UNSYM P-PHENYLENE-DICARBAMATE

Mike Mehadi Fooladi, Apt. 4-B, Oakmont Manor Apts., Vicksburg, Miss. 39180

Filed Oct. 29, 1974, Ser. No. 518,805

Int. Cl.² C07C 125/06

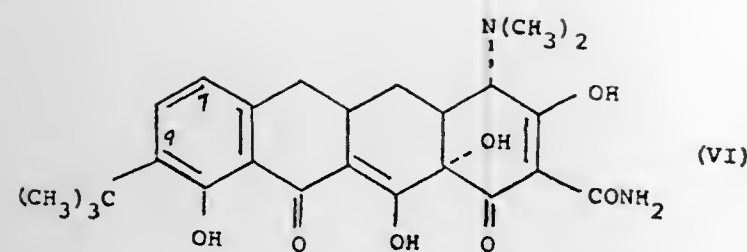
U.S. Cl. 260—471 C

1 Claim

1. Dicarbamate acid ester compound having the formula

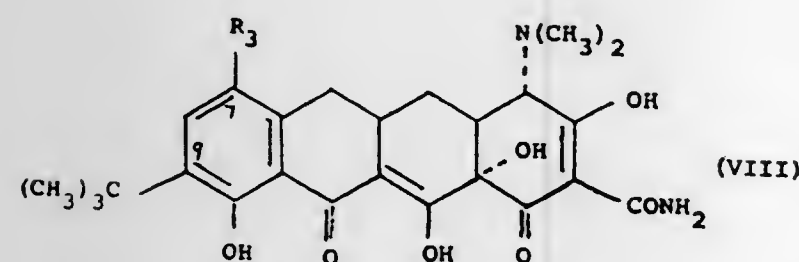


said process comprising selectively alkylating 6-demethyl-6-deoxytetracycline in the 9 position by treatment at about room temperature with a compound selected from the group consisting of t-butanol and isobutylene in the presence of a methansulfonic acid, to form a compound of the formula (VI)

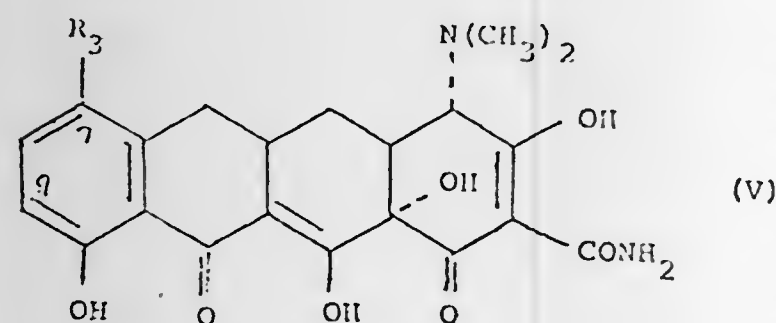


and nitrating said compound (VI) in the presence of a strong acid to form the corresponding 7-nitro-derivative of the formula (VII).

2. The process of claim 1 further comprising dissolving said compound (VII) in a solvent, effecting catalytic reduction in the presence of an aldehyde and a ketone having from 1 to 4 carbon atoms to form a compound of the formula (VIII)



wherein R_3 is monoalkylamino or dialkylamino, wherein the alkyl moiety contains from 1 to 4 carbon atoms, and treating said compound (VIII) with a methansulfonic acid to eliminate the t-butyl group to thereby form a compound of the formula (V)



wherein R_3 is as defined above.

3,901,943

PROCESS FOR MAKING ACRYLAMIDE

Darrell L. Werges, Park Forest, Ill., assignor to Nalco Chemical Company, Chicago, Ill.

Filed Dec. 3, 1973, Ser. No. 421,117

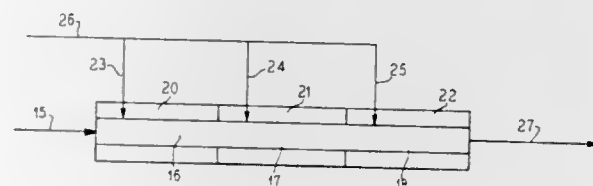
Int. Cl. C07c 103/08

U.S. Cl. 260—561 N

39 Claims

1. A continuous process for catalytically hydrolyzing acrylonitrile to acrylamide comprising the steps of

- A. continuously moving water under liquid phase conditions through at least one elongated substantially plug flow reaction zone,
 - B. adding to the liquid in said zone or zones at no less than two locations along said zone or zones acrylonitrile, there being at least one such addition location immediately before or within each of said zones if more than one zone is present, the rate of such addition being such that the total weight percent of water in said liquid in said zone or zones declines from a maximum to a minimum between the first and the last of such locations after mixing, the calculated weight ratio of total acrylonitrile charged to total water charged ranging from about 1:3 to 3:1, each one of said reaction zones
 - a. containing a fixed catalyst bed,
 - b. the catalyst comprising each of said beds being characterized by having an initial activity of at least about 0.25 based upon a starting feed composition of 35 wt. % acrylonitrile and 65 wt. % water, total composition basis, using an arithmetic mean catalyst bed temperature of 210°F., a catalyst bed volume of about 50 cubic inches and an evaluation weight hourly space velocity which is sufficient to produce 80% conversion of acrylonitrile to acrylamide, said process
 - a'. being conducted substantially isothermally at individual reaction zone temperatures each being in the range of from about 100° to 300°F.,
 - b'. having a system weight hourly space velocity in the range of from about 0.1 to 10 hours⁻¹.
38. In an improved process for hydrolyzing with a fixed bed catalyst acrylonitrile to acrylamide of the type employing



- three tubular reaction zones through which in normal process operation a reactant composition comprising acrylonitrile and water is passed sequentially, substantially isothermally, and under liquid phase conditions, such reactant composition being achieved by feeding substantially all of the water to the first of such reaction zones and by feeding incrementally to each such zone from about 0.2 to 0.5 times the total quantity of acrylonitrile charged to all such zones, each of said zones containing a fixed bed of Raney copper catalyst which has an initial catalytic activity of at least about 0.25 based upon a starting feed composition of 35 weight percent acrylonitrile and 65 weight percent water, total composition basis and using an arithmetic mean catalyst bed temperature of 210°F., a catalyst bed volume of about 50 cubic inches and an evaluation weight hourly space velocity which is sufficient to produce 80% conversion of acrylonitrile to acrylamide, the improvement which comprises the steps of
- a. removing from service one of said three tubular reaction zones,
 - b. passing such reactant composition sequentially, substantially isothermally, and under liquid phase conditions through the remaining two of said three tubular reaction zones at a system weight hourly space velocity in the range from about 0.1 to 10 hours⁻¹ which maintaining the first of said remaining two reaction zones at a temperature ranging from about 100° to 300°F. and the second of said remaining two reaction zones at a temperature ranging from about 100° to 300°F., the cumulative conversion of starting acrylonitrile to acrylamide after passing through both of said remaining two reaction zones being in the range from about 60 to 99% based on total added acrylonitrile in each such zone and all prior zones.

3,901,944

1,3-BIS(SUBSTITUTED BENZYLIDENEAMINO)GUANIDINES

Andrew Stephen Tomcufcik, Old Tappan, N.J., assignor to American Cyanamid Company, Stamford, Conn.

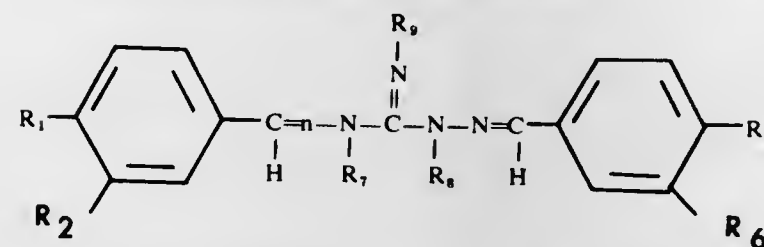
Continuation-in-part of Ser. No. 251,096, May 8, 1972, abandoned, which is a continuation-in-part of Ser. No. 94,591, Dec. 2, 1970, Pat. No. 3,769,432, which is a continuation-in-part of Ser. No. 833,167, June 13, 1969, abandoned, which is a continuation-in-part of Ser. No. 741,247, July 1, 1968, abandoned. This application July 27, 1973, Ser. No. 383,419

Int. Cl. C07c 133/10

U.S. Cl. 260—564 F

7 Claims

1. A substituted guanidine of the formula:



wherein R_1 and R_5 are halogen, trifluoromethyl or cyano, R_2 and R_6 are hydrogen or halogen, R_7 and R_8 are hydrogen or lower alkyl and R_9 is hydrogen or lower alkanoyl or a salt thereof with a pharmaceutically acceptable acid.

3,901,945

1,1A,6,10B-TETRAHYDRODIBENZO (A,E) CYCLOPROPA (C) CYCLOHEPTEN-6-IMINES

Roy Teruyuki Uyeda, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

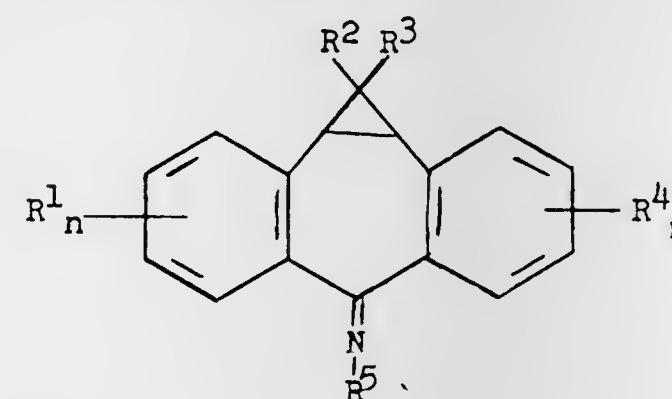
Continuation-in-part of Ser. No. 294,796, Sept. 28, 1972, abandoned. This application Aug. 21, 1973, Ser. No. 389,629

Int. Cl. C07c 119/00

U.S. Cl. 260—566 R

9 Claims

1. A compound of the formula



wherein

- R^1 and R^4 , alike or different, are selected from F, Cl, Br, alkyl and alkoxy of 1 through 4 carbon atoms, hydroxy, trifluoromethyl, methylthio, N,N-dimethylsulfonamido and methylsulfonyl;
 m and n are 0, 1 or 2;
 R^2 and R^3 , alike or different, are selected from H, F, Cl, and Br; and
 R^5 is aminoalkyl of the formula $-(CH_2)_pNR^6R^7$ in which p is 1 through 5, and
 R^6 and R^7 , are individually selected from H, alkyl, alkenyl and hydroxyalkyl, or together with the nitrogen, form a 4- to 9-membered ring having up to one additional heteroatom N, O or S, with the proviso that the sum of R^6 and R^7 does not total more than 8 carbon atoms.

3,901,946

METHOD FOR THE CONTINUOUS MANUFACTURE OF ORTHOFORMIC ACID ALKYL ESTERS

Arnold Lenz, Koln-Stammheim; Otto Ackermann, Troisdorf-Sieglar, and Otto Bleh, Troisdorf, Bergheim, all of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Continuation of Ser. No. 216,781, Jan. 10, 1972, abandoned.

This application Apr. 18, 1974, Ser. No. 462,163

Claims priority, application Germany, Jan. 29, 1971, 2104206

Int. Cl. C07 43/32

U.S. Cl. 260—615 A

4 Claims

1. A process for the continuous production of orthoformic acid trimethyl or triethyl ester comprising:
- a. simultaneously and continuously introducing a stoichiometric amount of an alkali metal ethylate or alkali metal methylate and chloroform into a reaction zone, said alkali metal methylate of alkali metal ethylate being introduced in the form of a solution with methanol or ethanol;
 - b. contacting said methylate or ethylate with said chloroform under conditions of agitation whereby the mixture is stirred at a rate of between 100 and 1,000 rpm in the absence of water and the exclusion of oxygen, at a temperature of from 60° to 100°C and at a pressure of from about 1 to 8 atmospheres;
 - c. withdrawing the reaction mixtures from said reaction zone; passing the reaction products to at least one additional zone also maintained at a temperature of from 60° to 100°C; and
 - d. continuously separating under anhydrous conditions the alkali metal chloride formed in the reaction.

3,901,947

PRODUCTION OF 2,6-XYLENOL

Saburo Enomoto, and Masami Inoue, both of Toyama, Japan, assignors to Arakawa Rinsan Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Oct. 1, 1969, Ser. No. 862,925

Claims priority, application Japan, Oct. 28, 1968, 43-78746

Int. Cl. C07c 37/16

U.S. Cl. 260—621 R

4 Claims

1. A process for the production of 2,6-xyleneol which comprises reacting at a temperature of between 300°C. to 550°C. at least one reactant selected from the group consisting of phenol and ortho-cresol with methanol in the vapor phase in the presence of a catalyst system which is a calcined mixture of cerium oxide, manganese oxide and magnesium oxide in the ratio of 1:0.05:0.1 to 1:10:10 by weight, the space velocity of the reactants being in the range of 100 to 800 cc. of reactants per hour per cc. of catalyst and the molar ratio of the reactants being in the range 1:2 to 1:10 of phenol to methanol when methanol is reacted with phenol and in the range of 1:1 to 1:6 of ortho-cresol to methanol when methanol is reacted with ortho-cresol.

3,901,948

NEW FLUORINATED DIENES AND PROCESS FOR PREPARING SAME

Jean G. Riess; Maurice LeBlanc; Georges Santini, and Jacky Guion, all of Nice, France, assignors to Produits Chimiques Ugine Kuhlmann, Paris, France

Filed Feb. 26, 1974, Ser. No. 446,101

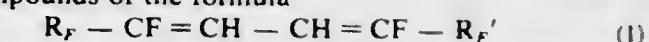
Claims priority, application France, Feb. 28, 1973, 73.07107

Int. Cl. C07c 21/18, 21/20, 17/28

U.S. Cl. 260—653.3

9 Claims

1. Compounds of the formula



in which R_F and R_F' are the same or different and each represents a fluorocarbon radical containing one to 20 carbon atoms.

3. A process for the preparation of the compounds according to claim 1, which comprises reacting a compound of the formula $R_F - CF_2 - CH = CH_2$ and a compound of the formula $R_F' - CF_2 - I$ in molar excess of approximately 5 to 100%, wherein R_F and R_F' are the same or different and each represents a fluorocarbon radical containing one to 20 carbon atoms, in the presence of approximately 2 to 5 gram atoms of copper per mole of the compound $R_F' - CF_2 - I$ and in a solvent at a temperature between about 120°C and 150°C for a period of time to produce exclusively or substantially exclusively the compounds of formula I.

8. A process for the preparation of tetrafluorobutadiene, which comprises reacting the compound of the formula $H - CF_2 - CH = CH_2$ and the compound CF_3I in a molar excess of approximately 5 to 100%, in the presence of approximately 2 to 5 gram atoms of copper per mole of the compound CF_3I , in a solvent at a temperature of between about 120°C and about 150°C for a time to produce exclusively or substantially exclusively tetrafluorobutadiene.

3,901,949

PROCESS FOR THE MANUFACTURE OF VINYLIDENE CHLORIDE AND/OR METHYLCHLOROFORM

Kiyonori Shinoda; Tadashi Nakamura; Masayuki Funabashi, and Azuma Okubo, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo K.K., Tokyo, Japan

Continuation of Ser. No. 106,421, Jan. 14, 1971, abandoned.

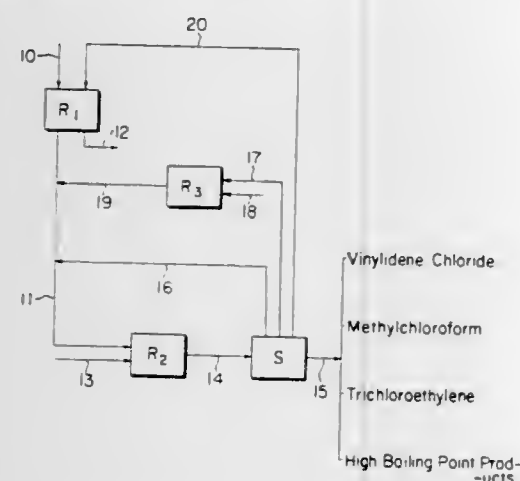
This application June 15, 1973, Ser. No. 370,570

Claims priority, application Japan, Jan. 14, 1970, 45-4152; Jan. 14, 1970, 45-4153; July 15, 1970, 45-61941

Int. Cl. C07c 21/08

U.S. Cl. 260-654 H

2 Claims



1. A process for the simultaneous manufacture of vinylidene chloride and methylchloroform comprising:

1. reacting in the liquid phase vinyl chloride with hydrogen chloride to form a reaction product containing ethylidene chloride;

2. thermally chlorinating at a temperature between 450° to 500°C said ethylidene chloride obtained in step (1) and the reaction product mixture containing ethylidene chloride and 1,1,2,2-tetrachloroethane produced in step (4) and fed from step (5) in the presence of from 0.6 to 1.0 mol of chlorine per mol of ethylidene chloride to form a reaction product mixture containing vinylidene chloride and methylchloroform;

3. distilling said reaction product mixture of step (2) to obtain said vinylidene chloride, to obtain said methyl chloroform, to produce a stream comprising trichloroethylene, a stream containing a mixture of vinyl chloride and hydrogen chloride, a stream containing a mixture of 1,2-dichloroethylene and unreacted ethylidene chloride, and a stream containing a mixture of 1,1,2-trichloroethane, tetrachloroethane, and other high boiling point products;

4. reacting in the liquid phase at a low temperature or room temperature said mixture of 1,2-dichloroethylene and

ethylidene chloride as produced in step (3) with chlorine to obtain a chlorinated reaction product mixture containing unreacted ethylidene chloride and 1,1,2,2-tetrachloroethane formed by the chlorination of said 1,2-dichloroethylene; and

5. recycling said stream containing hydrogen chloride and vinyl chloride as produced in step (3) to step (1) and feeding the reaction product mixture containing ethylidene chloride and 1,1,2,2-tetrachloroethane as obtained in step (4) to step (2).

3,901,950

PROCESS FOR THE CHLORINATION OF TRANS-1,4-DICHLORO-2-BUTENE TO MESO-1,2,3,4-TETRACHLOROBUTANE

John H. Richards, Bradbury, Calif., and Clare A. Stewart, Jr., Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 4, 1972, Ser. No. 294,987

Int. Cl. C07C 17/04

U.S. Cl. 260-658 R

10 Claims

1. A process for the preparation of meso-1,2,3,4-tetrachlorobutane in high yield by chlorination of trans-1,4-dichloro-2-butene, said process comprising contacting trans-1,4-dichloro-2-butene with elemental chlorine at about 0°-120°C. with efficient agitation and in the presence of oxygen at a partial gas pressure of at least 1 mm. of mercury and of at least 1×10^{-3} gram formula weight of dissolved chloride ion per kilogram of reactor solution; said chloride ion being supplied by a compound selected from the group consisting of quaternary ammonium chloride, quaternary phosphonium chloride, tertiary sulfonium chloride, primary amine hydrochloride, secondary amine hydrochloride and tertiary.

3,901,951

METHOD FOR TREATING WASTE PLASTICS

Hiroki Nishizaki, Sapporo, Japan, assignor to Director-General of the Agency of Industrial Science and Technology, Tokyo, Japan

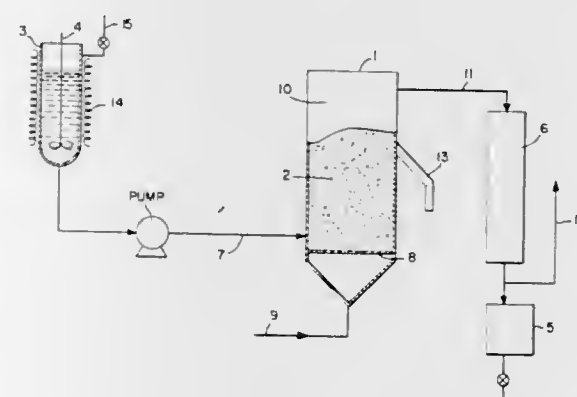
Filed Mar. 26, 1973, Ser. No. 344,633

Claims priority, application Japan, Mar. 27, 1972, 47-30494

Int. Cl. C07c 3/26, 15/10

U.S. Cl. 260-669 R

4 Claims



1. A method for recovering useful components from waste plastic derived from at least one monomer selected from aliphatic and aromatic unsaturated hydrocarbons, characterized by melting the waste plastic, bringing the melt into contact with a particulate solid heat medium in fluidized state maintained at a temperature of 350°-550°C to effect pyrolysis of the melt, and thereafter collecting and condensing the resultant gaseous product to recover a mixture of liquid hydrocarbons.

3,901,952

POLYMERIC THERMO-DETECTIVE MATERIAL

Yoshio Kishimoto, Hirakata, and Kazumasa Yamamoto, Toyonaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Dec. 11, 1972, Ser. No. 313,796

Claims priority, application Japan, Dec. 14, 1971, 46-101589; Mar. 31, 1972, 47-32902

Int. Cl. C08G 41/04, 37/16

U.S. Cl. 260-841

7 Claims

1. A polymeric material used for flexible thermosensitive wire comprising nylon 11, nylon 12, or a mixture thereof and an acid-catalyzed condensation product of a compound having at least one phenolic hydroxyl group and an aldehyde having a degree of polymerization of 20 or less, said acid-catalyzed condensation product being present in an amount of 5 to 30 parts by weight per 100 parts by weight of the nylon.

3,901,953

PROCESS FOR MANUFACTURING UNSATURATED POLYESTER RESINS

Takeyoshi Watanabe; Morimasa Sato, and Wataru Koga, all of Hitachi, Japan, assignors to Director-General (Mr. Keishin Matsumoto) Agency of Industrial Science & Technology, Tokyo, Japan

Filed Aug. 30, 1973, Ser. No. 393,211

Claims priority, application Japan, Aug. 31, 1972, 47-86603

Int. Cl. C08f 21/00; C08g 17/10, 51/58

U.S. Cl. 260-865

9 Claims

1. A process for manufacturing unsaturated polyester resins which comprises (A) reacting in a first stage a dialkyl terephthalate with a polyhydric alcohol in the presence of an interesterification reaction catalyst, (B) reacting in a second stage the reaction product of stage (A) with an unsaturated dicarboxylic acid and at least one polyhydric alcohol to produce an unsaturated alkyd resin and (C) finally dissolving the unsaturated alkyd resin obtained from stage (B) in a vinyl monomer, characterized in that the reaction of stage (A) or (B) is carried out in the concurrent presence of a hydroquinone and an alkyl or aryl phosphite.

3,901,954

GRAFT COPOLYMERS

Heinrich Alberts, Cologne, and Herbert Bartl, Odenthal-Hahnenberg, both of Germany, assignors to Bayer Aktiengesellschaft, Germany

Filed Mar. 26, 1973, Ser. No. 345,221

Claims priority, application Germany, Mar. 30, 1972, 2215604

Int. Cl. C08f 15/00

U.S. Cl. 260-878 R

7 Claims

1. A process for the production of a graft polymer from a homopolymer of ethylene and olefinically unsaturated monomers in the presence of a radical former in organic or aqueous medium, wherein a mixture of acrylonitrile, methacrylonitrile or a mixture thereof, at least one aromatic monovinyl compound, at least one monoolefin containing 2 to 18 carbon atoms, 0-30% by weight of another vinyl compound selected from the group consisting of acrylic acid esters and methacrylic acid esters with 1 to 8 carbon atoms in the alcohol component, acrylamide, methacrylamide, acrylic acid, methacrylic acid, vinyl esters of organic saturated monocarboxylic acids containing 2 to 18 carbon atoms and mixtures thereof and 0-15% by weight of an allyl compound selected from the group consisting of allyl alcohol, allyl acetate, isobutene diacetate and mixtures thereof is polymerized in the presence of said ethylene homopolymer.

3,901,955

REACTION PRODUCTS OF PHENOLS WITH PHOSPHOROUS TRICHLORIDES

Kurt Hofer, Munchenstein, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Continuation-in-part of Ser. No. 851,721, Aug. 20, 1969, Pat. No. 3,707,565. This application Dec. 15, 1972, Ser. No. 315,452

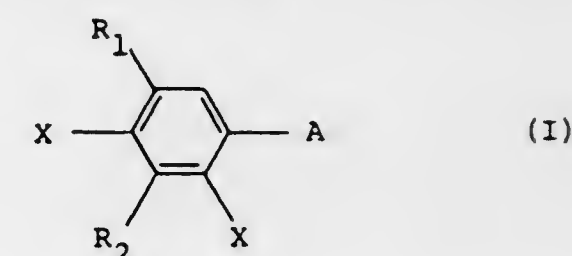
Claims priority, application Switzerland, Aug. 28, 1968, 12899/68

Int. Cl. C07F 9/08

U.S. Cl. 260-927 R

10 Claims

1. A mixture of compounds produced by reacting a first mixture of compounds of the formula



in which

one X is a hydroxyl group and the other X is selected from hydrogen atoms and tertiary butyl radicals,

each of R_1 and R_2 is independently selected from hydrogen atoms and tertiary butyl radicals,

A is selected from phenyl radicals and phenyl radicals substituted by up to 2 tertiary butyl radicals,

with the proviso that at least one of R_1 and R_2 must be a tertiary butyl radical and with the further proviso that at most 3 tertiary butyl radicals may be present per molecule, said first mixture being produced by reacting 2- or 4-hydroxydiphenyl with 1 to 3 mols of a tertiary butylating agent, with phosphorus trichloride and then reacting any chlorine atoms which may be left on the phosphorus atom with water or with a compound selected from the group consisting of alkanols of 1 to 18 carbon atoms, cyclohexanol, methylcyclohexanol, glycols of 2 to 6 carbon atoms, glycerine, pentaerythritol, phenol, alkylphenol in which the alkyl group contains 1 to 18 carbon atoms, resorcinol, hydroquinone, 4,4'-dihydroxydiphenyl and 4,4'-dihydroxydiphenyl propane.

3,901,956

DICHLOROVINYL THIONOPHOSPHORIC ACID DIESTER AMIDES

Reimer Colln, Wuppertal; Wilhelm Sirrenberg, Sprockhovel; Wolfgang Behrenz, Cologne, and Ingeborg Hamann, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 17, 1973, Ser. No. 324,254

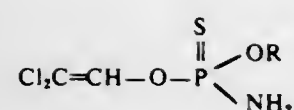
Claims priority, application Germany, Jan. 21, 1972, 2202855

Int. Cl. A01n 9/36; C07F 9/24

U.S. Cl. 260-957

8 Claims

1. A dichlorovinylthionophosphoric acid diester amide of the formula



in which

R is alkyl of 1 to 8 carbon atoms or lower alkoxy-lower alkyl.

3,901,957

HEAT EXCHANGER EMPLOYING CONDENSATION
Claude Isaac Levy, Paris, France, assignor to L'Industrielle de Chauffage, Boulogne-Billancourt, France

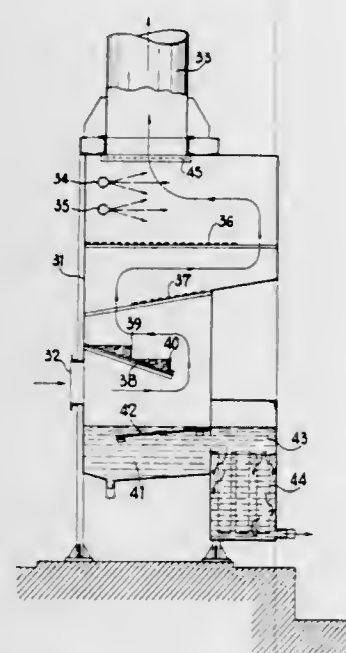
Filed Oct. 15, 1973, Ser. No. 406,222

Claims priority, application France, Oct. 19, 1972, 72.37038

Int. Cl. B01d 47/00; F22d 1/28

U.S. Cl. 261-6

4 Claims



1. A heat exchanger comprising a tower, lower inlet means and upper outlet means for hot gases of combustion, and upper cold fluid spraying means whereby the hot gases and cold fluid flow in a counter-current manner in the tower, means for recovering the fluid in the lower part of the tower wherein the means for recovering the fluid comprise a decantation pan disposed in the lower part of the tower and a pan disposed laterally of the decantation pan and comprising a filtering unit, said decantation pan overflowing into said filtering pan, and means for conducting the fluid to a circuit of utilization, perforated baffle means extending partially across the top of the tower to direct hot gases in a back and forth movement an inclined solid nonperforated baffle located in the lower part of the tower above the inlet of the gases of combustion and having a lower part positioned to be licked by the gases of combustion and an upper part, and cups carried by the upper part of the solid baffle for maintaining the exchange fluid throughout substantially the whole of the surface area of said upper part.

3,901,958

METHOD AND APPARATUS FOR FORMING FOAMED PLASTIC ARTICLES

Gregory W. Doll, Patterson, N.C., assignor to Cellu Products Company, Patterson, N.C.

Filed Mar. 23, 1973, Ser. No. 344,337

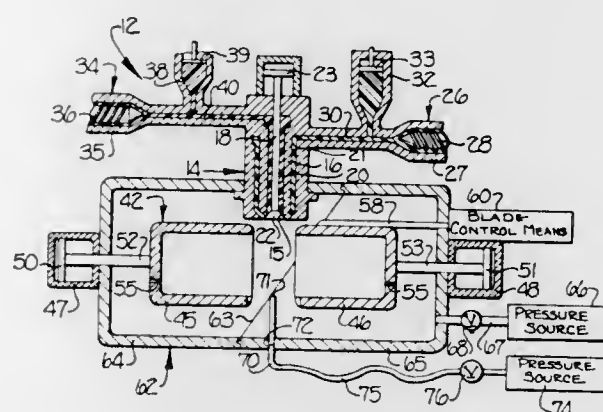
Int. Cl. B29d 27/00

U.S. Cl. 264-45.5

13 Claims

1. A method for molding plastic articles comprising the steps of
extruding a hot foamable plastic material through an annular orifice to form a tubular parison while maintaining the

plastic material under sufficient positive pressure to prevent the foaming thereof,
enclosing the parison within a mold while continuing to maintain the plastic material under sufficient positive pressure to prevent the foaming thereof,



blow molding the parison against the walls of the enclosing mold to form the plastic material into a desired configuration while continuing to maintain the plastic material under sufficient positive pressure to prevent the foaming thereof, then
releasing the positive pressure to cause the plastic material to foam, and
opening the mold to release the molded plastic article.

3,901,959

POLYMERIC MATERIALS

Dennis Charlton Allport, and Graham Briggs, both of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Jan. 14, 1974, Ser. No. 433,404

Claims priority, application United Kingdom, Jan. 19, 1973, 2788/73

Int. Cl. B29G 7/02; C08G 18/10, 18/32, 18/66

U.S. Cl. 264-51

1 Claim

1. A process for the manufacture of cellular polyurethanes which comprises intimately mixing:

- a prepolymer having an NCO content of 15-21% by weight prepared by the reaction of a polyester polyol having from two to four hydroxyl groups per molecule and a hydroxyl number of from 50 to 60 with an excess of diphenylmethane diisocyanate, and
- a mixture containing a polyoxypropylene or poly(oxypropylene-oxyethylene)polyol having from two to four hydroxyl groups per molecule and a hydroxyl number of from 30 to 60, 18.5 to 28%, based on the weight of said mixture of 1,4-butanediol, a blowing agent, a catalyst and a surface active agent,

the ratio of isocyanate groups in component (a) to active hydrogen atoms in component (b) being substantially within the range of 0.95:1 to 1.2:1, introducing into a closed mold a quantity of the resultant mixture sufficient to produce a cellular polyurethane whose volume is at least 1.1 times the volume of the mold if said quantity were allowed to react and rise freely, and foaming said mixture in said closed mold.

3,901,960

METHOD OF MANUFACTURING BATTERY PLATE GRIDS

Frank Raymond Holloway, Sutton Coldfield, and James Michael Farley, Birmingham, both of England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England
Continuation-in-part of Ser. No. 80,471, Oct. 13, 1970, abandoned. This application Nov. 9, 1972, Ser. No. 304,972
Claims priority, application United Kingdom, Oct. 13, 1969, 50181/69

Int. Cl. C04B 35/00

U.S. Cl. 264-104

10 Claims

1. A method of manufacturing a battery plate grid comprising:

- applying a layer of graphite having a particle size in the range of 2 to 20 microns onto the surface of a mold;
- placing a conductive battery plate lug having an integral extension into said mold, the lug making electrical contact with said graphite;
- introducing sinterable particulate thermoplastic synthetic resin over said layer of graphite, the resin covering said extension;
- heating said resin in said mold at a temperature sufficient to sinter said resin and trap said extension within the sintered resin, the heating being continued until the resin is fully sintered into a substantially non-porous mass and the graphite is firmly adhered to the surface of said mass presented to the mold as a continuous conducting layer;
- cooling said mass in said mold until the resin hardens; and
- removing the battery plate grid from the mold, said graphite acting as a release agent to prevent the grid from sticking to the mold.

3,901,961

METHOD FOR THE FABRICATION OF A MOLDED ARTICLE FORMED FROM ORIENTED FIBER REINFORCED MATERIAL

Werner Görtler, Baden; Erich Kresta, Perchtoldsdorf, and Horst Stumpf, Baden, all of Austria, assignors to Sempert AG, Vienna, Austria

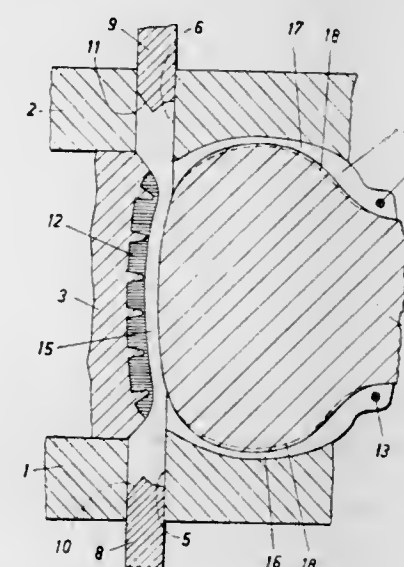
Division of Ser. No. 167,768, July 30, 1971, Pat. No.

3,837,986. This application June 6, 1973, Ser. No. 367,473
Claims priority, application Austria, Aug. 5, 1970, 007107/70

Int. Cl. B29d 3/02; B29h 5/02

U.S. Cl. 264-108

3 Claims



1. The method of making a tire having a tread portion, sidewall portions and bead portions and formed of elastomeric material having embedded therein essentially oriented fibers, the direction of orientation in one section of the tire being different than the direction of orientation of another section of the tire, comprising the steps of:

providing a vulcanizable web material having discrete fibers substantially uniformly distributed therein in oriented relation;
positioning said web such that a first portion thereof is located in the tread portion of a tire mold with the fibers in substantially parallel orientation to the periphery of the tire; and
displacing further portions of said web material by flowing said web material into the sidewall portions of said tire mold to reorient the direction of fiber orientation in these further portions of the web with respect to the direction of fiber orientation in the first portion of said web, such that said fibers positioned in the sidewall portions of said tire are disposed in a radial direction with respect to the tire axis and said fibers in the tread portion of said tire remain disposed substantially parallel to the tire periphery.

3,901,962

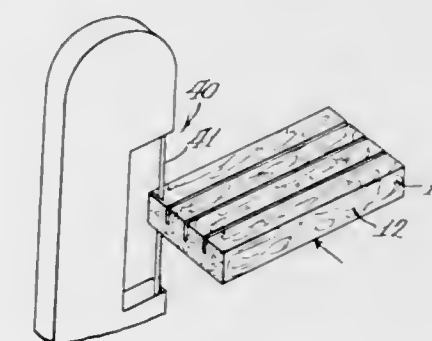
METHOD OF MAKING EXPANDED POLYSTYRENE PARTITION STRUCTURE

Louis G. Kuchuris, Chicago, and Stanley Gembicki, Des Plaines, both of Ill., assignors to Cutting Equipment Leasing, Inc., Chicago, Ill.

Division of Ser. No. 254,749, May 18, 1972, Pat. No. 3,837,560. This application Feb. 6, 1974, Ser. No. 440,256
Int. Cl. B29h 3/06; B31d 3/04

U.S. Cl. 264-154

5 Claims



1. A method of forming a partition strip of expanded polystyrene comprising the steps of: shaping a block of polystyrene to a width and height equal to the desired length and height of a partition strip by hot wire cutting along the top, bottom and sides of the block; forming a series of spaced slots extending lengthwise of the block by hot wire forming to a depth sufficient to provide for subsequent interlocking with other strips; and sawing said block along a line transverse to the length thereof in successive cuts to form individual partition strips with relative soft planar faces for contact with a product while the entire exposed edge of the strip including said slots and the bottom thereof has a higher surface density resulting from the hot wire cutting to provide added physical strength to the partition strip.

3,901,963

REINFORCEMENT FOR PIPE COATINGS

Arthur D. Werner, 6303 Kury, Houston, Tex. 77008

Continuation-in-part of Ser. No. 140,655, May 6, 1971, Pat. No. 3,761,557. This application July 26, 1973, Ser. No. 383,032 The portion of the term of this patent subsequent to Sept. 23, 1990, has been disclaimed.

Int. Cl. B28B 1/32

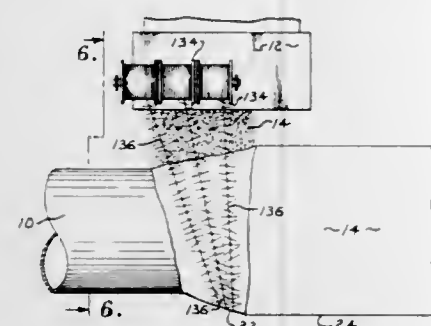
U.S. Cl. 264-228

3 Claims

1. A method of reinforcing a coating on the outer surface of a pipe, utilizing a reinforcing material comprising a single continuous length of unitary strand material having transversely extending elongated strand projections extending outwardly therefrom in random directions at intervals along the length of the strand material, each of said projections being secured to said material at a point intermediate the ends

of the strands, with said ends being unattached, said method comprising the steps of:

- directing a coating material onto the outer surface of the pipe in a manner to build up a unitary layer of coating material while the latter assumes a frustoconical configuration at the area of application to the pipe surface;
- winding said unitary strand material around the coating material at the area of application of the latter to the pipe whereby said strand projections rest on said coating material in random directions in a plane generally parallel to the frustoconical surface presented by the coating material,



- spacing the convolutions of said strand material so as to place at least some of said strand projections of one convolution in overlying relationship to a next adjacent convolution;
- said directing and winding steps being performed simultaneously; and
- tensioning said strand to draw the latter taut around the coated pipe whereby said reinforcing material at least partially supports said coating material on the surface of the pipe.

3,901,964

METHOD OF MAKING A PLASTIC BUTTERFLY VALVE VANE WITH PERIPHERAL SEAL

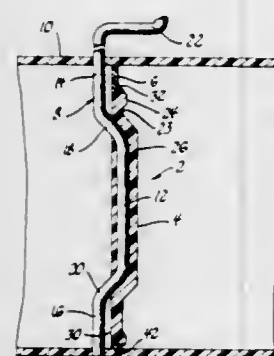
Phillip L. Rubright, Berkley, Mich., assignor to Arco Industries Corporation, Detroit, Mich.

Division of Ser. No. 146,369, May 24, 1971. This application Sept. 8, 1972, Ser. No. 287,293

Int. Cl.² B29C 5/00, 5/12; B29D 3/00

U.S. Cl. 264—255

6 Claims



1. A method of making a vane for a butterfly valve or the like wherein the vane has a relatively rigid main body portion and a resilient sealing portion on the periphery of said body portion, said method comprising the steps of: heating a removable mold member to a temperature at or above the temperature required to cause liquid elastomeric material to become solid upon contact therewith; placing the heated mold member into the cavity of a mold having an edge surface for defining the outer periphery of a first mold portion with the periphery of the heated mold member spaced from the edge surface to define the inner periphery of said first mold portion, said first mold portion having a configuration corresponding to the configuration of said sealing portion; pouring liquid elastomeric material into the first mold portion; partially curing the elastomeric material in the first mold portion until it becomes

non-liquid and hence non-flowable; removing the heated mold member to form a second cavity in said mold surrounded by the partially cured elastomeric material; pouring liquid thermosetting plastic material into the second cavity of the mold such that the liquid thermosetting plastic material flows into contact with the inner periphery of the elastomeric material, placing a pivot rod on the mold in such a manner that the rod extends transversely of the mold and a portion thereof is immersed only in the liquid thermosetting plastic material; exposing the mold with the partially cured elastomeric material, liquid thermosetting plastic material, and pivot rod therein to curing temperature to solidify the thermosetting plastic material with the pivot rod embedded therein and to complete curing of the elastomeric material.

3,901,965

METHOD OF MAKING AN INFLATABLE CATHETER

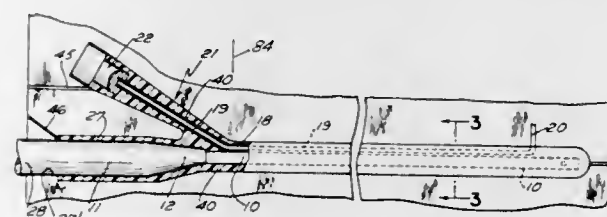
Henry W. Honeyman, III, 161 Harbor Rd., Swansea, Mass. 02777

Continuation-in-part of Ser. No. 225,974, Feb. 14, 1972, abandoned. This application Sept. 25, 1973, Ser. No. 400,558

Int. Cl. B29c 1/06

U.S. Cl. 264—328

5 Claims



1. In the method of forming an inflatable catheter of extended length having two lumens, each extending substantially the length of the catheter, the steps of positioning an extended length form longitudinally of the catheter to provide one of the lumens, positioning a core of an extended length with a lateral arm at its end longitudinally of the catheter in adjacency and spaced from said form so the core and form are generally coextensive, positioning means at intervals between said core and form along their lengths to space the core and form a distance sufficient to provide a wall between them of sufficient thickness to prevent collapsing under inflation pressure of the catheter, providing a mold with a mold cavity of extended length which cavity has an end wall, locating said core and form in spaced relation to said end wall and the longitudinal walls of the cavity and with said lateral arm at one end of said core positioned in a recess in said mold outside said cavity, providing means at the other end of said core to snugly fit the cavity, said form having its end distant from the end wall of the cavity extending outside said cavity, injecting material in a single step into the cavity about the entire length of said core and form to provide a body and also provide between said core and form a wall and then withdrawing said core and form from the molded material to provide two lumens with a wall between them.

3,901,966

SUSTAINED RELEASE OF METHANTHELIN

James S. Y. Sim; Maurice H. Van Horn; Arthur I. Cohen; Stanley E. Gordesky, and Stanley I. Gordon, all of Rochester, N.Y., assignors to Union Corporation, Verona, Pa.

Filed Sept. 10, 1973, Ser. No. 395,695

Int. Cl.² A61K 27/12

U.S. Cl. 424—22

17 Claims

1. A sustained release 864 hour after administration methantheline eluting multibarrier pharmaceutical composition comprising:
 - A. a polymerized and cured outer matrix of a water-insoluble but water-swellaable hydrophilic polymer of a monomer mixture containing:

1. polymerizable monoester of a member selected from the group consisting of acrylic acid, methacrylic acid, and mixtures thereof; and a polyhydric alcohol;
2. polymerizable diester of a member selected from the group consisting of acrylic acid, methacrylic acid, and mixtures thereof; and a polyhydric alcohol; and wherein the monomer mixture contains from about 70 to about 35% by weight of (A)(1); and from about 15 to about 49.8% by weight of (A)(2) based upon the total weight of (A)(1) and (A)(2) in the monomer mixture;
- B. a polymerized and cured inner matrix within said outer matrix and being a water-insoluble but water swellaable hydrophilic polymer of a monomer mixture containing:
 1. polymerizable monoester of a member selected from the group consisting of acrylic acid, methacrylic acid, and mixtures thereof; and a polyhydric alcohol;
 2. a polymerizable sulfur-containing material selected from the group consisting of vinyl sulfonic acid, vinylpropane sulfonic acid, and p-vinylbenzene sulfonic acid, and ammonium salts thereof; alkali metal salts thereof; and mixtures thereof; and
 3. polymerizable diester of a member selected from the group consisting of acrylic acid, methacrylic acid, and mixtures thereof; and a polyhydric alcohol; and wherein the monomer mixture contains from about 25 to about 44.4% by weight of (B)(1); from about 5 to about 30% by weight of (B)(2); and from about 5 to about 25.2% by weight of (B)(3) based upon the total weight of (B)(1), (B)(2), and (B)(3) in the monomer mixture; and
- C. said polymerized and cured matrix having been soaked for about 12 hours in isotonic saline solution containing per 5 ml of isotonic saline solution at least about 100 mg of methantheline bromide in an amount at least sufficient for the total dosage requirement adapted to gradually elute, upon administration during 864 hours of a treatment period; and thereby entrapping the methantheline in said inner matrix.

3,901,967

SUSTAINED RELEASE OF ATROPINE

Arthur I. Cohen; James S. Y. Sim; Maurice H. Van Horn; Stanley E. Gordesky, and Stanley I. Gordon, all of Rochester, N.Y., assignors to Union Corporation, Verona, Pa.

Filed Sept. 10, 1973, Ser. No. 395,691

Int. Cl. A61k 27/12

U.S. Cl. 424—22

16 Claims

1. A sustained release oral ingestion 24 hour atropine eluting pharmaceutical composition comprising:
 - A. a polymerized and cured matrix of water-insoluble but water-swellaable hydrophilic polymer of a monomer mixture containing:
 1. polymerizable monoester of a member selected from the group consisting of acrylic acid, methacrylic acid, and mixtures thereof; and a polyhydric alcohol;
 2. a polymerizable sulfur containing material selected from the group consisting of vinyl sulfonic acid, vinylpropane sulfonic acid, styrene sulfonic acids; alkali metal salts thereof; ammonium salts thereof; and mixtures thereof; and
 3. polymerizable diester of a member selected from the group consisting of acrylic acid, methacrylic acid, and mixtures thereof; and a polyhydric alcohol; and wherein the monomer mixture contains from about 25 to about 44.4% by weight of (1); from about 5 to about 30% by weight of (2); and from about 0.5 to about 25.2% by weight of (3) based upon the total weight of (1), (2), and (3) in the monomer mixture; and
 - B. said polymerized and cured matrix having been soaked for about 12 hours in isotonic saline solution containing per 5 ml of isotonic saline solution at least about 90.4 mg of atropine sulfate in an amount sufficient for the total dosage requirement adapted to gradually elute atropine upon oral ingestion during 24 hours of a treatment per-

iod; and thereby the atropine sulfate being entrapped in said matrix.

3,901,968

SUSTAINED RELEASE OF METHANTHELIN

Arthur I. Cohen; James S. Y. Sim; Maurice H. Van Horn; Stanley E. Gordesky, and Stanley I. Gordon, all of Rochester, N.Y., assignors to Union Corporation, Verona, Pa.

Filed Sept. 10, 1973, Ser. No. 395,492

Int. Cl. A61k 27/12

U.S. Cl. 424—22

15 Claims

1. A sustained release oral ingestion 24 hour methantheline eluting pharmaceutical composition comprising:
 - A. polymerized and cured matrix of water-insoluble but water-swellaable hydrophilic polymer of a monomer mixture containing:
 1. polymerizable monoester of a member selected from the group consisting of acrylic acid, methacrylic acid, and mixtures thereof; and a polyhydric alcohol;
 2. a polymerizable sulfur containing material selected from the group consisting of vinyl sulfonic acid, vinylpropane sulfonic acid, styrene sulfonic acids; alkali metal salts thereof; ammonium salts thereof; and mixtures thereof; and
 3. polymerizable diester of a member selected from the group consisting of acrylic acid, methacrylic acid, and mixtures thereof; and a polyhydric alcohol; and wherein the monomer mixture contains from about 25 to about 44.4% by weight of (1); from about 5 to about 30% by weight of (2); and from about 0.5 to about 25.2% by weight of (3) based upon the total weight of (1), (2), and (3) in the monomer mixture; and
 - B. said polymerized and cured matrix having been soaked for about 12 hours in isotonic saline solution containing per 5 ml of isotonic saline solution at least about 100.5 mg of methantheline bromide in an amount sufficient for the total dosage requirement adapted to gradually elute methantheline upon oral ingestion during 24 hours of a treatment period; and thereby the methantheline bromide being entrapped in said matrix.

3,901,969

SUSTAINED RELEASE OF METHANTHELIN

Arthur I. Cohen; James S. Y. Sim; Maurice H. Van Horn; Stanley E. Gordesky, and Stanley I. Gordon, all of Rochester, N.Y., assignors to Union Corporation, Verona, Pa.

Filed Sept. 10, 1973, Ser. No. 395,669

Int. Cl. A61k 27/12

U.S. Cl. 424—22

11 Claims

1. A sustained release oral ingestion 26 hour methantheline eluting pharmaceutical composition comprising:
 - A. a polymerized and cured matrix of a water-insoluble but water-swellaable hydrophilic polymer of a monomer mixture consisting essentially of:
 1. polymerizable monoester of:
 - a. an acid selected from the group consisting of acrylic acid, methacrylic acid, and mixtures thereof; and
 - b. a polyhydric alcohol selected from the group consisting of ethylene glycol, 1,3-propanediol, diethylene glycol, dipropylene glycol, polyethylene glycol, polypropylene glycol, 1,6-hexamethylene glycol, 1,4-butanediol, glycerol, trimethylol propane, trimethylol-ethane, pentaerythritol, mannitol, sorbitol, and mixtures thereof;
 2. polymerizable ethylenically unsaturated amino containing monomer selected from the group consisting of diacetone acrylamide, hydroxy methylated diacetone acrylamide, and mixtures thereof;
 3. ethylenically unsaturated acid selected from the group of acrylic acid, methacrylic acid, crotonic acid, and mixtures thereof; and
 4. polymerizable diester selected from the group consisting of ethylene glycol diacrylate, ethylene glycol di-

methacrylate, 1,2-butylene dimethacrylate, 1,3-butylene dimethacrylate, 1,4-butylene dimethacrylate, propylene glycol diacrylate, propylene glycol dimethacrylate, diethylene glycol dimethacrylate, dipropylene glycol dimethacrylate, diethylene glycol diacrylate, dipropylene glycol diacrylate, tetraethylene glycol dimethacrylate, tetraethylene glycol diacrylate, and mixtures thereof;

wherein the monomer mixture contains from about 30 to about 80% by weight of (1); from about 30 to about 60% by weight of (2); from about 0.5 to about 2% by weight of (3); and from about 0.5 to about 7.5% by weight of (4) based upon the total weight of (1), (2), (3), and (4) in the monomer mixture;

B. said polymerized and cured matrix having been soaked for about 12 hours in isotonic saline solution containing per 5 ml of isotonic saline solution at least about 100 mg of methantheline bromide in an amount at least sufficient for the total dosage requirement adapted to gradually elute, upon oral ingestion during 26 hours of a treatment period; and thereby entrapping the methantheline bromide in said matrix.

3,901,970

SUSTAINED RELEASE OF DEXAMETHASONE

Arthur I. Cohen; James S. Y. Slim; Maurice H. Van Horn; Stanley E. Gordesky, and Stanley I. Gordon, all of Rochester, N.Y., assignors to Union Corporation, Verona, Pa.

Filed Sept. 10, 1973, Ser. No. 395,688

Int. Cl.² A61K 27/12

U.S. Cl. 424—22

18 Claims

1. A sustained release after administration 22 hour dexamethasone eluting pharmaceutical composition comprising:

A. a polymerized and cured matrix of a water-insoluble but water-swallowable hydrophilic polymer of a monomer mixture containing:

1. polymerizable monoester of a member selected from the group consisting of acrylic acid, methacrylic acid, and mixtures thereof; and a polyhydric alcohol;

2. a polymerizable sulfur containing material selected from the group consisting of vinyl sulfonic acid, vinylpropane sulfonic acid, styrene sulfonic acids; alkali metal salts thereof; ammonium salts thereof; and mixtures thereof; and

3. polymerizable diester of a member selected from the group consisting of acrylic acid, methacrylic acid, and mixtures thereof; and a polyhydric alcohol; and

wherein the monomer mixture contains from about 25 to about 73.6% by weight of (1); from about 5 to about 20% by weight of (2); and from about 0.5 to about 6% by weight of (3) based upon the total weight of (1), (2), and (3) in the monomer mixture; and

B. said polymerized and cured matrix having been soaked for about 12 hours in methanol solution containing per 5 ml of methanol solution at least about 17.8 mg of dexamethasone in an amount at least sufficient for the total dosage requirement adapted to gradually elute, upon administration during 22 hours of a treatment period; and thereby entrapping the dexamethasone in said matrix.

3,901,971

SUSTAINED RELEASE OF HYDROCHLOROTHIAZIDE

Arthur I. Cohen; James S. Y. Slim; Maurice H. Van Horn; Stanley E. Gordesky, and Stanley I. Gordon, all of Rochester, N.Y., assignors to Union Corporation, Verona, Pa.

Filed Sept. 10, 1973, Ser. No. 395,689

Int. Cl. A61k 27/12

U.S. Cl. 424—22

18 Claims

1. A sustained release oral ingestion 23 hour hydrochlorothiazide eluting pharmaceutical composition comprising:

A. a polymerized and cured matrix of water-insoluble but water-swallowable hydrophilic polymer of a monomer mixture containing:

1. polymerizable monoester of a member selected from the group consisting of acrylic acid, methacrylic acid, and mixtures thereof; and a polyhydric alcohol;

2. a polymerizable sulfur containing material selected from the group consisting of vinyl sulfonic acid, vinylpropane sulfonic acid, styrene sulfonic acids; alkali metal salts thereof; ammonium salts thereof; and mixtures thereof; and

3. polymerizable diester of a member selected from the group consisting of acrylic acid, methacrylic acid, and mixtures thereof; and a polyhydric alcohol; and

wherein the monomer mixture contains from about 25 to about 73.6% by weight of (1); from about 5 to about 20% by weight of (2); and from about 0.5 to about 6% by weight of (3) based upon the total weight of (1), (2), and (3) in the monomer mixture; and

B. said polymerized and cured matrix having been soaked for about 12 hours in methanol solution containing per 5 ml of methanol solution at least about 96.2 mg of hydrochlorothiazide in an amount sufficient for the total dosage requirement adapted to gradually elute hydrochlorothiazide upon oral ingestion during 23 hours of a treatment period; and thereby the hydrochlorothiazide being entrapped in said matrix.

3,901,972

ANTIBIOTIC XK-33-F₂ AND PROCESS FOR PRODUCING SAME

Takashi Nara, Tokyo; Seigo Takasawa, Kawasaki; Ryo Okachi, Machida; Isao Kawamoto, Machida; Masaru Kumakawa, Machida; Mitsuyoshi Yamamoto, Machida, and Selji Sato, Machida, all of Japan, assignors to Abbott Laboratories, North Chicago, Ill.

Continuation-in-part of Ser. No. 212,620, Dec. 27, 1971, abandoned. This application Dec. 26, 1972, Ser. No. 318,337

Int. Cl. A61k 21/00

U.S. Cl. 424—116

2 Claims

1. An antibiotic XK-33-F₂ produced by the fermentation of *Streptomyces olivoreticuli* var. *cellulophilus* in a nutrient medium, said antibiotic being characterized by an elementary analysis of its hydrochloride of C: 33.28%, H: 5.51%, N: 21.73% and a specific rotation $[\alpha]_D^{25}$ of -12.4° (C=1, H₂O), and having an infra-red absorption spectrum according to FIG. 2 of the drawings.

3,901,973

ANTIBIOTIC EVERNINOMICIN I

Howard E. Harris, deceased, late of Bloomfield, N.J.; by Elfriede A. Harris, executrix, Bloomfield, N.J., and Carl J. Miskowicz, Garwood, N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed Nov. 5, 1973, Ser. No. 413,111

Int. Cl.² A61K 35/00

U.S. Cl. 424—118

3 Claims

1. A compound selected from the group consisting of a composition of matter identified as everninomicin I, the pharmaceutically acceptable mono-cationic salts and the N-methyl glucamine acid addition salt thereof, said everninomicin I having a phenol substituent, and being an organic substance effective in inhibiting the growth of grampositive bacteria and having the following physical characteristics: elemental analysis: 50.36, 50.77%; H=6.50, 6.68%; C=4.7%, N=none; that has a neutralization equivalent equal to 1587 with a pKa of 7.4; that has a specific optical rotation of -28.5° as measured in dioxane at 1% concentration by the D-line of sodium at 25°C; is soluble in tetrahydrofuran, acetonitrile, acetone, dimethylformamide, benzene; is insoluble in water, hexane; that has an Rf value of 0.79 in a 60% acetone 40% benzene system when chromatographed on a thin layer plate having 2000 μ silica gel; that has an ultraviolet absorption maximum at 293 m μ with E_{1%} in methanol equal to about 43.7 and has an ultraviolet absorption maximum at 295 m μ with E_{1%} in methanolic sodium hydroxide equal to about 139; has an

infra-red absorption spectrum when dissolved in chloroform substantially as shown in FIG. 3; has a nuclear magnetic resonance when dissolved in chloroform substantially as shown in FIG. 4; has a melting point of about 150°–160°C when measured on a Kofler block; and has an antibacterial spectrum including the bacteria enumerated as set forth in Table I; and said pharmaceutically acceptable salts being salts of the phenol substituent in everninomicin I.

3,901,974

ANTIBIOTIC AND FUNGICIDAL AGENTS

Marvin H. Gold, Sacramento, and Henry J. Marcus, West Covina, both of Calif., assignors to Aerojet-General Corporation, El Monte, Calif.

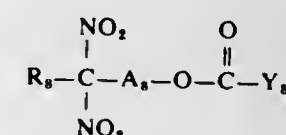
Division of Ser. No. 487,942, May 20, 1965, Pat. No. 3,513,243, which is a division of Ser. No. 326,286, Nov. 26, 1963, Pat. No. 3,359,334. This application Mar. 2, 1970, Ser. No. 15,942

Int. Cl. A01n 9/12, 9/24

U.S. Cl. 424—301

3 Claims

1. A process for controlling the growth of fungus comprising applying to said fungus a compound of the formula:



wherein A₈ is lower alkylene, R₆ is lower alkyl and Y₈ is selected from the group consisting of hydrogen and methoxy in an amount effective to inhibit fungus growth.

3,901,975

PROCESS FOR THE PREPARATION OF A FROZEN DOUGH FOR BAKERY PRODUCTS

Keizaburo Taguchi, Fukuoka; Hltomi Tabata, Ranzan, and Tomozo Yoshizaki, Tokyo, all of Japan, assignors to Nisshin Flour Milling Co., Ltd., Tokyo, Japan

Filed Sept. 25, 1973, Ser. No. 400,543

Claims priority, application Japan, Oct. 6, 1972, 47-99895

Int. Cl. A21d 2/24

U.S. Cl. 426—23

9 Claims

1. In a process for preparing a frozen dough by fermenting a dough composition comprising flour, yeast and water and freezing the resultant fermented dough for subsequent baking, the improvement which comprises: freezing a dough composition containing an additive consisting essentially of 0.1–1% by weight, based on the weight of said flour, of at least one linear α -aminodicarboxylic acid selected from the group consisting of glutamic acid and aspartic acid admixed therein.

3,901,976

THIXOTROPIC LIQUID FEED SUPPLEMENTS FOR RUMINANTS OF CARBOHYDRATES, NPN AND CLAY
Harold H. Roth, Bay City; Frank L. Saunders, and Hamish Small, both of Midland, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 236,182, March 20, 1972, abandoned. This application Apr. 2, 1973, Ser. No. 348,015

Int. Cl.² A23K 1/02, 1/18, 1/22

U.S. Cl. 426—69

26 Claims

1. A thixotropic liquid animal feed supplement comprising water, a liquid feed supplement medium selected from the group consisting of molasses and a carbohydrate solution selected from the group consisting of starches, dextrins, pectins and sugars and containing at least about 0.5% by weight of a soluble acid or at least about 0.01% by weight of a polyvalent cation source, and from about 0.5 to about 5.0 percent by weight of a dispersant-treated clay, said clay being selected from the group consisting of bentonite, attapulgite and sepiolite clays and said dispersant being employed in amounts of

from about 1 to about 20 percent by weight based on the clay and being selected from the group consisting of sodium, potassium and ammonium tripolyphosphate, pyrophosphate and polyphosphate and the sodium salt of polymeric carboxylic acids.

3,901,977

STORABLE HIGH PROTEIN CHOCOLATE SNACKS

Arnold Rebanc, Villa Park, Ill., assignor to Sandoz Inc., E. Hanover, N.J.

Continuation-in-part of Ser. No. 257,770, May 30, 1972, abandoned. This application Mar. 22, 1974, Ser. No. 453,883

Int. Cl.² A23G 3/00, 1/00

U.S. Cl. 426—631

17 Claims

1. A method of preparing a nutritious, uniform, high protein chocolate snack containing 30 to 50 percent by weight of chocolate and 15 to 30 percent by weight of protein which retains its flavor and texture during storage, which comprises adding to a uniform mixture which contains by weight, based on the final weight of the snack, 15 to 25 percent milk chocolate, 15 to 25 percent dark chocolate and 5 to 15 percent cocoa butter at a temperature between 80° to 100°F, 0.5 to 2.5 percent by weight based on the final weight of the snack of calcium caseinate, 10 to 20 percent by weight of sodium caseinate based on the final weight of the snack and 15 to 20 percent by weight of peanut butter based on the final weight of the snack and stirring the mixture until uniform while maintaining the temperature between 80° to 100°F.

3,901,978

SOYBEAN BEVERAGE AND PROCESS

Alvin I. Nelson; Marvin P. Steinberg, both of Champaign, and Lun-Shin Wei, Urbana, all of Ill., assignors to The University of Illinois Foundation, Urbana, Ill.

Continuation-in-part of Ser. No. 282,499, Aug. 21, 1972, abandoned. This application July 6, 1973, Ser. No. 374,581

Int. Cl.² A23L 2/02

U.S. Cl. 426—565

34 Claims

1. Process for preparing a bland, stable aqueous dispersion of whole soybeans comprising:

- tenderizing intact soybean cotyledons until the soybeans exhibit a tenderometer value of between about 16 and about 300 pounds/100 gms of soybeans;
- heating the intact soybean cotyledons sufficiently to inactivate the lipoxidase enzyme contained therein;
- forming a slurry of the soybeans and water, said slurry having a soybean concentration of less than about 20 percent by weight;
- homogenizing said slurry in at least one pass through a homogenization zone at a pressure between about 1,000 and 10,000 psi. at a temperature between about 32°F. and the boiling point of the slurry at the pressure within the homogenizing zone; and,
- recovering a bland, stable aqueous dispersion of whole soybeans.

3,901,979

PROCESS FOR PREPARING A LOW SODIUM INFANT FORMULA MIXTURE

Taro Nagasawa; Mamoru Tomita; Tadashi Watanabe, and Tomokazu Obayashi, all of Tokyo, Japan, assignors to Morinaga Milk Industry Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 250,499, May 5, 1972, abandoned. This application Jan. 3, 1974, Ser. No. 430,258

Int. Cl. A23c 1/100

U.S. Cl. 426—613

6 Claims

1. A process for preparing a low sodium infant formula mixture which easily sinks in water and which reproduces a casein micelle liquid of a turbidity and heat stability similar to cow's milk, which comprises:

dissolving a potassium salt of an organic acid selected from the group consisting of citric acid, tartaric acid, succinic acid, and lactic acid and/or potassium polyphosphate selected from the group consisting of poly-metaphosphate and tetra-phosphate in an amount as determined by the formula:

$$\log y = 0.0384x + 0.70 \pm 0.25$$

wherein y is the mg number of said potassium salt of said organic acid and/or potassium polyphosphate per 1 g of casein protein and x is the mg number of said calcium ion per 1 g of casein protein, into a casein solution of 5 to 12% protein concentration obtained by dissolving an acid casein in an alkali solution containing potassium but substantially no sodium, mixing therewith a calcium salt solution with a concentration of 10 to 30 mg of calcium ion per 1 ml in an amount such that the quantity of calcium ion is 20 to 40 mg per 1 g of casein protein at a temperature of below 50°C, adjusting the pH of the resulting mixed solution to a value from 6.2 to 6.8 after subsequent preheating, gradually preheating the solution to a temperature of at least 65°C while stirring to form a casein micelle and adding an animal or vegetable fat, an emulsifier in amounts of 0.5 to 5% based on the higher content of either the protein or the fat in the final product and selected from the group consisting of glycerine fatty acid ester, sucrose fatty acid ester, sorbitan fatty acid ester, propylene glycol fatty acid ester, and soybean lecithin, and a carbohydrate selected from the group consisting of lactose, sucrose, malt dextrin, and mixtures thereof to the casein micelle liquid in amounts such that the sodium content of the final product does not exceed 100 mg per 100 g of final product, homogenizing pasteurizing, and concentrating the casein micelle liquid.

3,901,980

MANUFACTURE OF CURED MEAT PRODUCT

Francis Glenn Connick, Downers Grove, Ill., and Waldemar Veazle, Jr., Woods Hole, Mass., assignors to Swift & Company, Chicago, Ill.

Filed Sept. 10, 1973, Ser. No. 395,395

Int. Cl.² G01N 33/12

U.S. Cl. 426—231

2 Claims

1. An improved process for manufacturing food patties from cured ham trimmings, said process comprising: collecting quantities of cured ham trimmings and storing same at 26°–28°F.; grinding the collected trimmings through a three-sixteenths inch plate; analyzing the ground trimmings for fat content; adjusting the fat content of the ground trimmings by adding relatively fat and lean ground trimmings to a level of 28–30%; placing the adjusted ground trimmings in a vacuum mixer; adding to the adjusted ground trimmings a sufficient quantity of soft dry ice nuggets to reduce the temperature of said trimmings to about 18°F.; agitating said trimmings and dry ice for a first period while drawing air through the mixer so as to purge the material of gaseous CO₂; agitating said trimmings for a second period under vacuum; emptying said mixed trimmings from said mixer and holding same at a temperature of 18°–20°F. for a period sufficient to permit final dissipation of residual dry ice; and thereafter molding the mixed ground trimmings into uniform patties while said mixed ground trimmings does not exceed 24°F.

2. An improved process for manufacturing food patties from cured ham trimmings, said process comprising: collecting quantities of cured ham trimmings and storing same at 26°–28°F.; grinding the collected trimmings; analyzing the ground trimmings for fat content; adjusting the fat content of the ground trimmings by adding relatively fat and lean ground trimmings to a desired fat-lean ratio; placing the adjusted ground trimmings in a vacuum mixer; adding to the adjusted ground trimmings a sufficient quantity of a volatile cooling agent to reduce the temperature of said trimmings to about 18°F.; agitating said trimmings and cooling agent for a first period while drawing air through the mixer so as to purge the material of gaseous agent; agitating said trim-

mings for a second period under vacuum; emptying said mixed trimmings from said mixer and holding same at a temperature of 18°–20°F. for a period sufficient to permit final dissipation of residual cooling agent; and thereafter molding the mixed ground trimmings into uniform patties while said mixed ground trimmings remains chilled.

3,901,981

PROCESS FOR MANUFACTURING BACON

Howard Ned Draudt, Ft. Wayne, Ind., assignor to Peter Eckrich & Sons, Inc., Ft. Wayne, Ind.

Filed Nov. 28, 1973, Ser. No. 419,765

Int. Cl.² A23B 4/02

U.S. Cl. 426—266

7 Claims

1. A method of manufacturing bacon that may be subsequently fried with a minimum of formation of nitrosamines during frying, comprising the steps of:

- curing a pork belly prior to the slicing thereof;
- applying a smoky flavoring material to the pork belly while maintaining the pork belly at a temperature of 125°F. or less;
- fixing the color of the pork belly by heating the same at a temperature insufficient to cook the pork belly, said heating temperature further being sufficiently low as to preclude the action of enzymes on the collagen in the pork belly; and
- thereafter chilling and slicing the pork belly.

3,901,982

METHOD OF MAKING PASTRY CUPS AND THE LIKE

Arthur J. Griner, Wyckoff, and Daniel Anthony Koppa, Bloomfield, both of N.J., assignors to Nabisco, Inc., New York, N.Y.

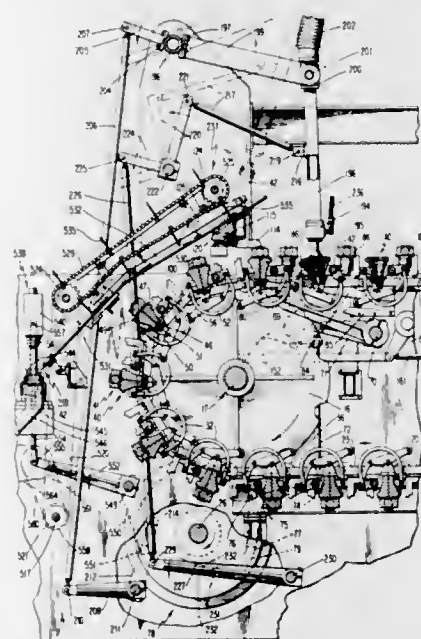
Division of Ser. No. 103,707, Jan. 4, 1971. This application

May 1, 1973, Ser. No. 356,209

Int. Cl. A23I 1/12

U.S. Cl. 426—391

12 Claims



1. A method of producing baked pastry products comprising the steps of moving a plurality of longitudinally spaced molds and interfitted cores successively through a baking zone on a conveyor, removing the core from the product in each mold and from the conveyor after the emergence of the mold from the baking zone and temporarily storing each removed core on the conveyor between successive molds, lifting the product from each mold after removal of the core therefrom, charging each emptied mold with batter, and successively removing the stored cores from the conveyor and inserting them in the charged molds.

3,901,983

PROCESS FOR MAKING DEFATTED PEANUT FLOUR

Akihiro Matsunaga, 32-4, Higashi-Ikebukuro, 2-chome, Toshima-ku, Tokyo, Japan

Filed Feb. 13, 1974, Ser. No. 442,241

Int. Cl.² A21D 6/00

U.S. Cl. 426—427

4 Claims

1. A process for the manufacture of defatted peanut flour comprising treating skinned peanuts in a substantially saturated saline solution at a temperature and for a period of time to remove tannin and the odor associated with peanuts and thereafter treatment said peanuts in water at a temperature of about 100°C to 120°C for 15 to 45 minutes, and thereafter extracting the oil from said peanuts by a crushing of said peanuts, separating the resulting solid phase comprising crushed peanut meats from the resulting oil and water phases, forming a slurry of peanuts in a colloid mill in order that said peanuts will pass through a 400 mesh screen, and then spray drying the peanuts to thereby obtain a free-flowing defatted peanut flour.

3,901,984

SOLVENT VAPOR FIBERSET PROCESS FOR DURABLE PRESS FINISHING OF CELLULOSIC FABRICS

Norton A. Cashen, Metairie; Robert M. Reinhardt, and John D. Reid, both of New Orleans, all of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed June 20, 1973, Ser. No. 371,642

Int. Cl.² D06M 15/12

U.S. Cl. 427—335

6 Claims

6. A process for imparting durable press properties with improved strength to cellulosic textiles, the process comprising:

- impregnating a cellulosic textile with an aqueous solution containing about 14 percent of a methylated methylol-melamine prepolymer, and about 14 percent of dimethyloldihydroxyethyleneurea, the solution adjusted to a pH of 2,
- partially drying the impregnated textile at 60°C to obtain a water content of about 60 percent,
- exposing the textile of (b) to the vapors of boiling trichloroethylene for about 5 to 15 minutes, to remove water azeotropically to a water content of about from 5 to 7 percent,
- washing and drying the textile of (c),
- impregnating the dry textile with an aqueous solution containing 0.6 percent zinc nitrate hexahydrate, and 0 percent to 3.0 percent polyurethane softener, to a wet pickup of about 90 percent, and
- curing the textile for about 3 to 5 minutes at about 160°C.

3,901,985

PROCESS FOR THE MANUFACTURE OF CONDENSATION PRODUCTS CONTAINING PHOSPHORUS, THE PRODUCTS AND THEIR USE AS FLAMEPROOFING AGENTS

Hermann Nachbur, Dornach, and Arthur Maeder, Therwil, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Aug. 31, 1972, Ser. No. 285,174

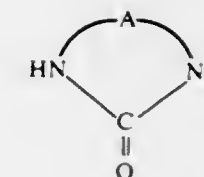
Claims priority, application Switzerland, Sept. 10, 1971, 13308/71; Jan. 14, 1972, 517/72

Int. Cl. C09d 1/00

U.S. Cl. 427—390

14 Claims

1. A process for flameproofing organic fiber material of a blend of polyester-cellulose, comprising the sequential steps of treating the material with an aqueous preparation which consists essentially of (1) a water-soluble condensation product obtained by condensing a tetrakis-(hydroxymethyl)-phosphonium salt or hydroxide at 40 to 120°C with 0.02 to 0.5 molar equivalent of a cyclic urea of the formula:



wherein

A is a radical of the formula $-\text{CH}_2\text{CH}_2-$, $-\text{CH}_2\text{CH}_2\text{C}(\text{H}_2)-$, $-\text{CHOH}-\text{CHOH}-$, $-\text{CHOX}-\text{CYZ}-\text{CH}_2-$, $-\text{CH}_2-\text{NR}-\text{CH}_2-$ or $-\text{CH}-\text{NH}-\text{CO}-\text{NH}-\text{CH}-$

wherein

X denotes hydrogen, alkyl with 1 to 4 carbon atoms, hydroxyalkyl with 2 to 4 carbon atoms or alkoxyalkyl with 1 to 4 carbon atoms in the alkoxy part and 2 to 4 carbon atoms in the alkyl part, Y and Z each denote alkyl with 1 to 4 carbon atoms and R denotes alkyl or hydroxyalkyl with 1 to 4 carbon atoms; and (2) a polyfunctional amino-plast precondensate, and curing the treated material by heating the treated material for about 30 seconds to about 10 minutes, at a temperature in the range of about 100°C to 200°C after a drying step.

3,901,986

INK SUPPLY TRANSFER MEDIUM

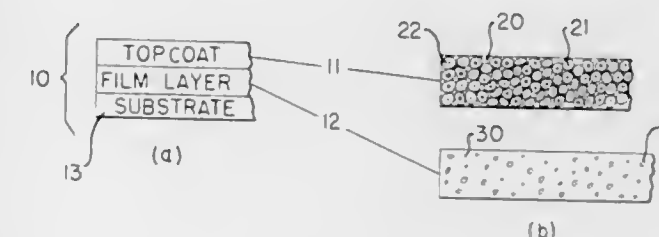
Bruce W. Brockett, and Robert E. Miller, both of Appleton, Wis., assignors to NCR Corporation, Dayton, Ohio

Filed Jan. 28, 1974, Ser. No. 437,431

Int. Cl.² B41C 1/08

U.S. Cl. 428—411

10 Claims



1. A pressure-sensitive ink supply transfer medium comprising:

- substrate of flexible, pressure conductive, material;
- film layer, on the substrate, of
 - continuous polymeric matrix binder and
 - dye decoloring material in the amount of between about 5–75 percent, by weight, of the film layer
- topcoat, on the film layer, of
 - microcapsules containing a chromogenic material and
 - microcapsules containing a dye coreactant.

3,901,987

SLIP RESISTANT COMPOSITION FOR PAPER COATING

Charles C. Payne, Chicago, and Peter H. Vosses, Lisle, both of Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

Division of Ser. No. 248,462, April 28, 1972, Pat. No. 3,860,431.

This application July 5, 1974, Ser. No. 485,856

July 5, 1974, Ser. No. 485,856

Int. Cl.² D21H 1/40; B32B 5/16, 19/00

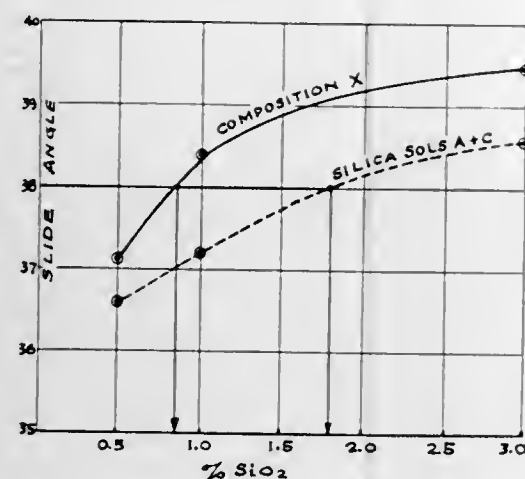
U.S. Cl. 428—219

1 Claim

1. A cellulosic material having a surface coated with a dried coating of a composition consisting essentially of:

- from 2 to 20 percent by weight of an aqueous colloidal anionic silica sol, the silica particles in said colloidal silica sol having an average diameter within the range of 4 to 40 millimicrons;
- from 70 to 88 percent by weight of an aqueous colloidal anionic silica sol, the silica particles in said colloidal silica sol having an average diameter within the range of 60 to 120 millimicrons;
- from 0.25 to 3.0 percent by weight of a water-dispersible, polymeric flocculating agent;

D. from 6 to 10 percent by weight of a polyhydric alcohol; and



E. from 0 to 0.5 percent of a biocide; said coating to be applied at the rate of 0.05 to 5 pounds per 1000 feet square of said surface, expressed as SiO₂.

3,901,988

INFLATABLE TRUNK FOR AIR CUSHION SUPPORTED VEHICLES

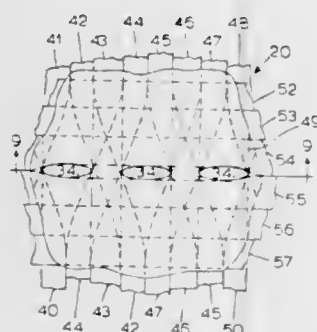
Alan V. Coles, Williamsville, and Lawrence H. Kocher, Tonawanda, both of N.Y., assignors to Textron, Inc., Providence, R.I.

Filed Dec. 3, 1973, Ser. No. 421,335

Int. Cl.² B32B 3/10

U.S. Cl. 428—231

8 Claims



1. In an air cushion vehicle having a body presenting a bottom surface, an inflatable trunk secured marginally thereof to said bottom surface normally to lie in contiguous relation thereto, and means associated with said vehicle for inflating said trunk causing it to bulge away from said bottom surface and circumscribe an air cushion space, the improvement wherein said trunk comprises a sheet of material which is relatively inelastic in one direction and is relatively elastic in a second direction essentially transverse to said one direction, said sheet comprising:

a first series of tapes associated with said sheet and disposed in side-by-side relation and running in said one direction, each tape of said first series including a matrix and a plurality of relatively inelastic tension cords embedded in and running lengthwise of such tapes, at least one pair of adjacent tapes of said first series having their adjacent side edges separated for a distance in said one direction by a first spacing in said second direction;

a second series of tapes associated with said sheet and running in said second direction, each tape of said second series including a matrix and a plurality of relatively elastic tension cords embedded in and running lengthwise of such tapes, there being a first separated pair of said tapes of the second series which are parallel and are separated by a second spacing which is greater than said first spacing whereby said first spacing defines the minor axis of an ellipse and said second spacing defines the major axis of such ellipse, said adjacent pair of tapes of

the first series being separated in said one direction by at least said second spacing and said separated pair of said tapes of the second series crossing said adjacent pair such that said sheet has an elliptical opening therethrough delineated by said minor and major axes, there being a second pair of tapes of said second series disposed on opposite sides of one of said tapes of the first separated pair, said second pair of tapes criss-crossing each other and said one tape of the first separated pair at one end of said opening, there being a third pair of tapes of said second series disposed on opposite sides of the other of said tapes of the first separated pair, said third pair of tapes criss-crossing each other and said other tape of the first separated pair at the other end of said opening whereby when said trunk is uninflated said opening is elliptical whereas when said trunk is inflated said opening will assume a generally circular shape.

3,901,989

COMPOSITE FILAMENT

Hisao Hokonoki; Tatsuo Ishikawa; Masahira Sakashita; Tet-suhiro Kusunose, and Noboru Fukuma, all of Nobeoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

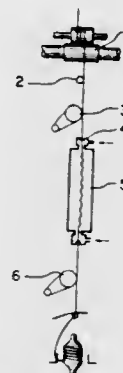
Filed July 20, 1973, Ser. No. 381,320

Claims priority, application Japan, July 27, 1972, 47-74664

Int. Cl. D02g 3/00

U.S. Cl. 428—373

9 Claims



1. A crimpable partially heat relaxed composite nylon filament comprising eccentrically arranged homopolyamide and random copolyamide components, the homopolyamide component being selected from the group consisting of nylon 6, nylon 11, nylon 12, nylon 66, nylon 610 and nylon 612, the random copolyamide component being non-crystalline and being made up of monomeric units of

- nylon 6 and nylon 66 containing 30 to 60 weight percent of nylon 6,
- nylon 6, nylon 66 and nylon 6T of a composition falling within the shaded area of FIG. 3,
- nylon 6, nylon 66 and nylon 610 of a composition falling within the shaded area of FIG. 4,
- nylon 6, nylon 66 and nylon 612 of a composition falling within the shaded area of FIG. 5,
- nylon 66, nylon 6T and nylon 610 of a composition falling within the shaded area of FIG. 6, or
- nylon 66, nylon 6T and nylon 612 of a composition falling within the shaded area of FIG. 7.

3,901,990

METHOD FOR APPLYING PATTERN TO CANDLES

Arieh Solomon, 38 Hasharsheret St., Afeka, Tel Aviv, Israel Division of Ser. No. 261,337, June 9, 1972, Pat. No. 3,839,119.

This application July 8, 1974, Ser. No. 486,641

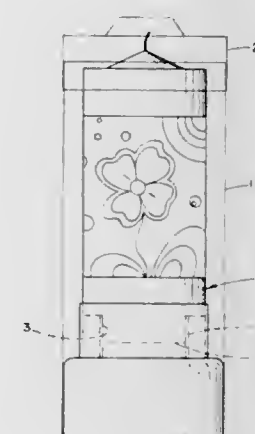
Int. Cl.² B44C 1/24

U.S. Cl. 428—400

4 Claims

1. An ornamented candle comprising a candle having affixed thereto an ornamental pattern made by the steps of:

coating the candles successively with a liquid promoting the adherence of an ornamental transfer pattern thereto; advancing the candles successively to an ornamenting station; advancing to the ornamenting station a transfer web carrying on one face thereof ornamental heat transfer means; rotating each candle in the ornamenting sta-



tion to roll its slide along and in direct contact with ornamental heat transfer pattern carried on the one face of the web; pressing a heated platen against the opposite face of the web to effect a transfer of an ornamental transfer pattern to each candle as it rolls along the transfer pattern on the web; and applying a protective coating over the transferred ornamental pattern.

3,901,991

NON-COMBUSTIBLE SHAPED ARTICLES AND PROCESS FOR THE PREPARATION THEREOF

Harutoshi Ueda, Osaka; Naoyuki Suzuki, Nara; Masami Nagao, Takatsuki; Satoshi Shiroza, Ibaraki, and Hiroshi Hayashi, Kyoto, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Dec. 28, 1971, Ser. No. 213,224

Claims priority, application Japan, Dec. 29, 1970, 46-124124

Int. Cl. B32b 13/00

U.S. Cl. 428—446

17 Claims

- A non-combustible shaped article composed of
 - a hydraulic inorganic base material shaped from an inorganic composition consisting essentially of (a) a water-insoluble inorganic substance composed predominantly of silica selected from the group consisting of siliceous sand, aplite, pottery stone, silicate terra abla, paigite, diatomaceous earth, perlite and fly ash, and (b) an inorganic substance composed predominantly of calcium oxide selected from the group consisting of, slaked lime, quick lime, calcium carbonate and gypsum, components (a) and (b) being present in such amounts that the mol ratio of calcium oxide to silica is in the range of 0.5 to 2.0, and (c) mineral fibers present in an amount of 10-200 parts by weight per 100 parts by weight of the total amount of components (a) and (b), and (d) water; and
 - a surface material integrally bound to at least one surface of said base material, which is applied to said surface as an aqueous dispersion of a hydraulic inorganic composition consisting essentially of a water-insoluble inorganic mixture composed of (e) a water-insoluble inorganic substance composed predominantly of silica selected from the group consisting of siliceous sand, aplite, pottery stone, silicate terra abla, paigite, diatomaceous earth, perlite and fly ash and (f) an inorganic substance composed predominantly of calcium oxide selected from the group consisting of, slaked lime, quick lime, calcium carbonate and gypsum, components (e) and (f) being present in such amounts that the mol ratio of calcium

oxide to silica is in the range of 0.8 to 4.0 with at least one member selected from the group consisting of a water-soluble silicate compound, a zirconium compound and an alkali metal hydroxide;

said non-combustible shaped article being hardened under heating at a temperature not lower than 50°C to form an integral structure, the latter temperature being the lowest temperature at which the shaped article can be hardened.

8. The non-combustible shaped article of claim 1, which further has an organic or inorganic paint layer formed on the surface of the surface material.

3,901,992

FABRIC FOR CARPET AND LIKE MATERIALS CONTAINING A COATING OF COLLOIDAL SILICA WITH A LAYER OF ALUMINA

Charles C. Payne, Chicago; Richard E. Bloemke, River Grove, and David P. Schaefer, Hinsdale, all of Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

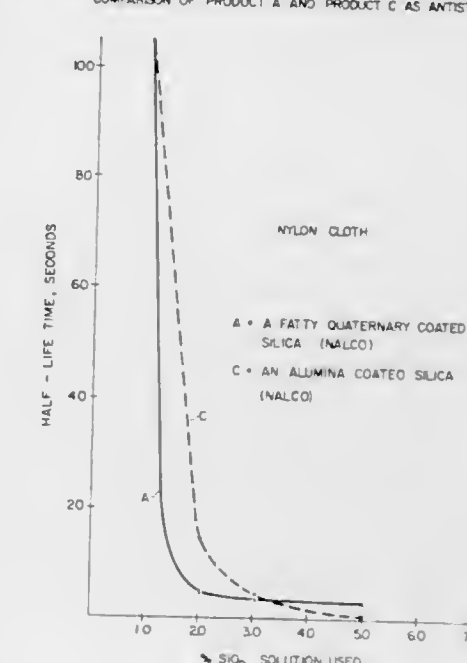
Filed Oct. 31, 1973, Ser. No. 411,549

Int. Cl.² B32B 27/16; D06M 11/00

U.S. Cl. 428—96

3 Claims

COMPARISON OF PRODUCT A AND PRODUCT C AS ANTISTATS



1. A soft material consisting of at least one fabric of carpets, wall coverings, draperies or car interiors having improved antistat and antisoil characteristics obtained by applying from about .5 to 4% SiO₂ based on the dry weight of said fabric wherein said SiO₂ is in the form of a silica aquasol having a coating of alumina on each silica particle and where the ratio of alumina to silica is in the range of 0.1 to 1.0.

3,901,993

NON-SKID BRIDGING PLATE LAMINATE ASSEMBLY

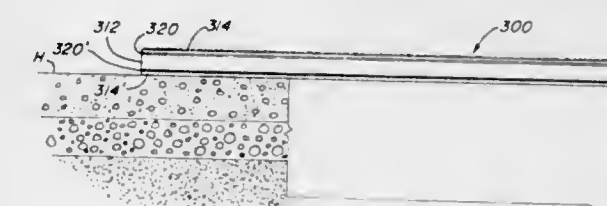
Jacque R. Phillips, Jr., 2 St. Elmo Ct., Apt. 2, Cockeysville, Md. 21030

Filed Dec. 17, 1973, Ser. No. 425,677

Int. Cl.² E01C 11/24; B32B 5/16, 15/08

U.S. Cl. 428—148

4 Claims



1. A bridging plate comprising: a metallic load plate, a metallic anti-skid (friction) sheet having abrasive particles

embedded in a surface thereof, a resilient rubber sheet between the load plate and the anti-skid sheet, and adhesive means connecting the load plate and the (friction) anti-skid sheet to the resilient rubber sheet, the anti-skid sheet flexibly complying to the load plate contour with the abrasive-particle embedded surface thereof outward.

2. A bridging plate as recited in claim 1, wherein a second metallic anti-skid sheet having abrasive particles embedded in a surface thereof is provided; wherein a second resilient rubber sheet is provided, the same being between the load plate and the second metallic anti-skid sheet, and adhesive means connecting the second resilient rubber sheet between the load plate and the second anti-skid sheet, the second anti-skid sheet flexibly complying to the load plate contour with the abrasive-particle embedded surface thereof outward.

3,901,994

METALLIZED VIDEO DISC HAVING A DIELECTRIC COATING THEREON

Robert Michael Mehals, Trenton, and Grzegorz Kaganowicz, Princeton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Feb. 4, 1974, Ser. No. 439,582

Int. Cl.² G11B 3/70, 25/04

U.S. Cl. 428—163

4 Claims

1. An information storage means of the type wherein capacitance variations are provided to a playback system and said storage means includes a conductive disc having information recorded in the form of geometric variations in the surface thereof, wherein the improvement comprises:

a dielectric coating of hardened poly-p-xylylene on said conductive disc, said coating hardened by exposure to a glow discharge to crosslink said poly-p-xylylene after said coating has been completely deposited on said conductive disc, said coating being conformal with said geometric variations.

3,901,995

EDGE PROTECTION DEVICE

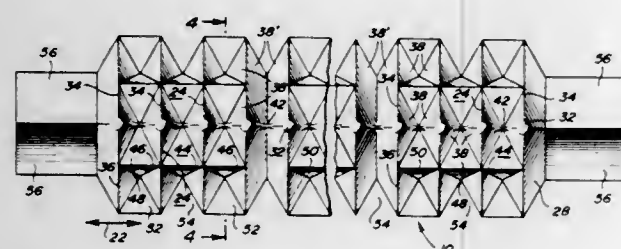
William Conlon, Huntington, N.Y., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Nov. 2, 1973, Ser. No. 412,301

Int. Cl.² B32B 1/00, 3/00

U.S. Cl. 428—174

7 Claims



1. A thermoplastic article protection device being formed in a one piece unitary construction for being interposed between inner walls of a container and an edge of an article to be protected and comprising:

a set of fluted members joined each to the other in a longitudinal direction,
each of said fluted members having a first rib element and a second rib element,
each of said first and second rib elements of each of said fluted members including opposing sidewalls which interface with the corresponding sidewalls of a next consecutively space fluted member being positionally located in a plane substantially normal to said longitudinal direction, and extending in continuous relation each to the other from a base plane to form an apex at the intersection of said first rib elements with said second rib element,

each apex of each of said fluted members being joined to a next consecutive fluted member in continuous relation to form an undulating line envelop contour extending in a longitudinal direction, and

a structural member integrally formed with at least two consecutively positioned fluted members and passing in said longitudinal direction in a discontinuous fashion along the edge of the article being protected, said structural member including an upper surface, a lower surface and a longitudinally extending apex, each of said upper and lower surfaces being connected to an adjacent sidewall of each of said consecutively positioned fluted members, being triangularly contoured and being formed in an inclined manner with respect to said base plane.

3,901,996

PROCESS FOR PREPARING A CHALCOGENIDE GLASS HAVING SILICON CONTAINING LAYER AND PRODUCT

Yasushi Hasegawa, and Hideo Tagai, both of Sakura-Mura, Japan, assignors to National Institute for Researches in Inorganic Materials, Ibaraki, Japan

Filed Oct. 2, 1973, Ser. No. 402,797

Claims priority, application Japan, Oct. 11, 1972, 47-10171; Apr. 10, 1973, 48-41152

Int. Cl. B32b 17/06; C03c 17/00

U.S. Cl. 428—426

6 Claims

1. A process for preparing a chalcogenide glass having a silicon-containing layer, which comprises melting a mixture of arsenic and a chalcogen of sulfur or selenium; contacting the molten chalcogenide glass with a silica glass surface in an atmosphere essentially free of oxygen whereby the silica glass surface reacts with said molten chalcogenide glass to deposit a film of silica metal thereon; and solidifying said molten chalcogenide glass by cooling.

3,901,997

HEAT-REFLECTING GLASS SHEETS

Rolf Groth, Witten, Germany, assignor to Flachglas Aktiengesellschaft Delog-Detag, Furth Bavaria, Germany

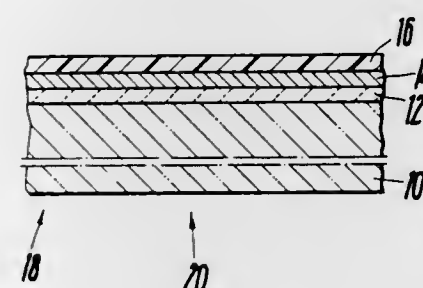
Filed Jan. 22, 1973, Ser. No. 325,873

Claims priority, application Germany, Jan. 28, 1972, 2203943

Int. Cl.² C03C 17/22; G02B 1/10; B32B 17/06, 15/00

U.S. Cl. 428—428

4 Claims



1. A heat-reflecting glass sheet, comprising:

a glass sheet;
a zinc sulphide anti-reflection layer which is vacuum-coated onto the glass sheet in a thickness of 200 to 600 Å; and
a metal layer of high infrared reflection capacity which is vacuum-coated onto the anti-reflection layer and having a thickness of 150 to 500 Å;
wherein the improvement comprises;

a dielectric intermediate layer which is substantially absorption-free for visible light and consists essentially of a member of the group consisting of silicon monoxide and silicon dioxide with a refractive index corresponding substantially to that of the glass sheet;
the said intermediate layer being vacuum-coated between the glass sheet and the zinc sulphide anti-reflection layer and having a thickness of 30 to 100 Å.

3,901,998

HIGHLY FLUORINATED DERIVATIVES OF COPOLYMERS OF FLUOROALKYL ETHERS AND MALEIC ANHYDRIDE

William L. Wasley, Berkeley, and Allen G. Bittman, El Cerrito, both of Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 380,648, July 19, 1973, Pat. No. 3,876,589, which is a continuation-in-part of Ser. No. 271,894, July 14, 1972, Pat. No. 3,773,728, which is a division of Ser. No. 117,777, Feb. 22, 1971, Pat. No. 3,706,594. This application Aug. 22, 1974, Ser. No. 499,811

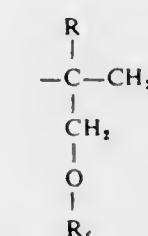
Int. Cl.² D06M 15/16

U.S. Cl. 428—507

14 Claim:

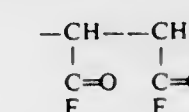
1. A process for modifying a fibrous substrate, which comprises:

A. depositing on the fibrous substrate an addition copolymer which contains
a. recurring units of the structure



wherein R is a member of the group consisting of H and CH₃, and R_f is a fluoroalkyl radical which contains a terminal perfluoroalkyl group having 3 to 18 perfluorinated carbon atoms, and

b. recurring units of the structure



the aforesaid units a and b being in a 1:1 mole ratio;
B. the said copolymer being deposited as a dispersion in a volatile liquid carrier; and
C. curing the so-treated fibrous substrate by heating it at a temperature about from 50° to 150° C.

3,901,999

LIFT SWING FURNACE

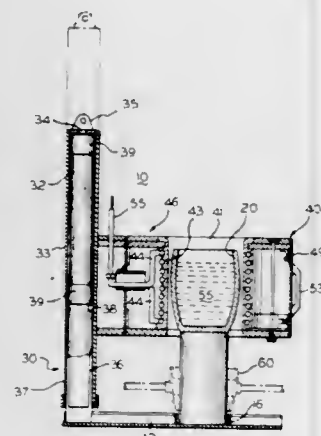
James P. Landis, Wauwatosa, Wis., and Robert O. Williams, Grosse Point, Mich., assignors to Pillar Corporation, Milwaukee, Wis.

Filed June 6, 1974, Ser. No. 476,853

Int. Cl. H05b 5/00

U.S. Cl. 13-26

9 Claims



1. An induction furnace including an open-ended electromagnetic coil, at least two container means disposed in horizontal spaced relation, support means, said coil being mounted on said support means for generally vertical movement between first position in surrounding relation to one of said containers to a second position vertically above said one container, said support means including translating means for moving said furnace to a third position above the other container, said support means being operative to permit said coil to be lowered into surrounding relation with said other container when in its third position.

3,902,000

TERMINATION FOR SUPERCONDUCTING POWER TRANSMISSION SYSTEMS

Eric B. Forsyth, and Jack E. Jensen, both of Brookhaven, N.Y., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Nov. 12, 1974, Ser. No. 523,182

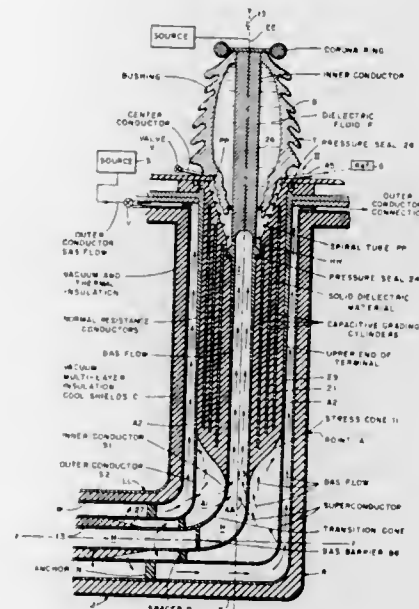
Int. Cl. H02G 15/22

U.S. Cl. 174-15 BH

10 Claims

1. Cold, electrical gradient, terminal apparatus for use with a source of cryogenic cooling fluid under pressure in a gas pressure insulated, superconducting transmission line having electrical and thermal gradient sections in series comprising:
 - a. first, stabilized, cylindrical superconducting means;
 - b. second, stabilized, cylindrical superconducting means that is co-axial with the first superconducting means and forms an annulus of increasing diameter therebetween; and
 - c. first, pressurized, terminal, thermal gradient, electrical insulating means in said annulus forming a tapered, terminal, electrical gradient, stress cone that extends longitudinally in the annulus between the first and second superconducting means having
 - d. flowing cryogenic cooling fluid under pressure in the annulus between the first and second superconducting means along the electrical gradient stress cone for providing a terminal cold electrical insulator between the first and second superconducting means;
 - e. the thermal gradient electrical insulation means having outlet means for the cryogenic cooling fluid for circulating the same through the annulus and along the stress

cone at a substantially constant pressure and at a temperature below the critical temperature of the first and second



3,902,001

FLOATING CORONA SHIELD

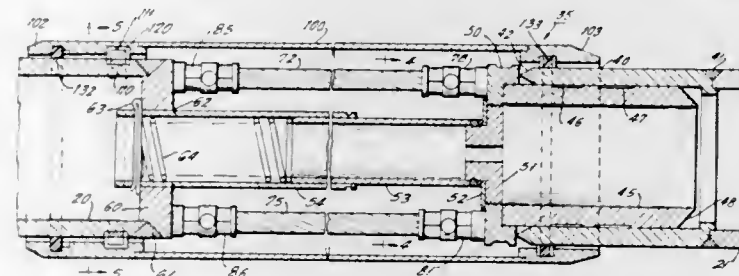
James C. Cron, New Stanton, Pa., assignor to I-T-E Imperial Corporation, Spring House, Pa.

Filed Aug. 28, 1974, Ser. No. 501,152

Int. Cl. H02g 15/24

U.S. Cl. 174-21 C

7 Claims



1. A corona shield for covering the connection between first and second elongated high voltage conductor members; said first and second elongated conductor members comprising elongated conductive cylinders with smooth outer surfaces and having joint contact means at their ends; said joint contact means of said first and second elongated conductor members being connected to one another; said corona shield comprising a hollow conductive cylinder having smoothly curved ends surrounding said connected joint contact means and connection means for flexibly connecting said corona shield to said first conductor member; said connection means comprising an undulating metallic strip formed in a band and being formed of a material which is capable of elastic radial deflection; the interior diameter of said corona shield near one end thereof having a first annular channel therein; said first conductor member having a second annular channel therein which confronts said first annular channel in said corona shield; said undulating strip being flexibly disposed in the annular volume formed between said first and second annular channels, thereby to flexibly secure said corona shield on said first conductor member.

3,902,002

GROUNDING ATTACHMENT FOR NON-METALLIC ENCLOSURES

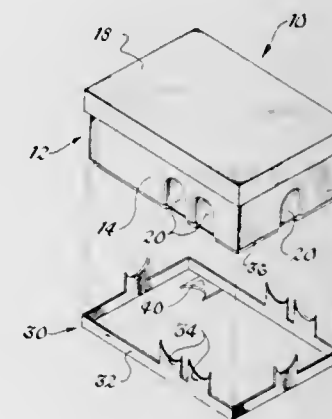
James I. Smith, Bristol, Conn., assignor to General Electric Company, New York, N.Y.

Filed Feb. 13, 1974, Ser. No. 441,959

Int. Cl. H02G 3/08

U.S. Cl. 174-51

4 Claims



1. An enclosure for electrical equipment, said enclosure comprising, in combination:
 - A. an integral box-like housing formed of non-metallic material having sidewalls, a backwall, and an open front;
 - B. a cover on said housing closing off said open front thereof;
 - C. knockouts formed in at least one of said housing walls, said knockouts being removable to provide openings in said wall admitting metallic sheathed electrical conductors; and
 - D. electrically conductive grounding means including
 1. a unitary frame fitted to said housing adjacent the junction of said sidewalls and backwall, and
 2. projections extending from said frame partially over each of said knockouts,
 3. whereby upon removal of selected knockouts, the free ends of said projections thereat are exposed in the created wall openings for electrical connection with the metallic sheaths of the conductors when admitted therethrough.

3,902,003

ELECTRICAL DEVICE WITH ELECTRODE CONNECTIONS

Clark Ramsey Wheeler, Somerville, and Raymond Karl Reusch, Basking Ridge, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed May 20, 1974, Ser. No. 471,554

Int. Cl. H01J 61/66, 63/02

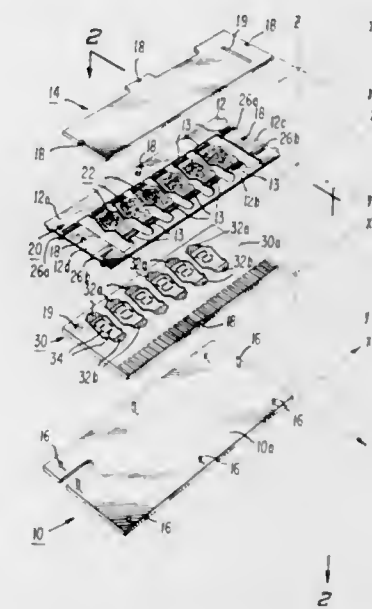
U.S. Cl. 174-68.5

6 Claims

5. An electrode plate for mounting a plurality of electrodes and for retaining said electrodes in aligned relation during mounting of said electrodes to a surface of a base member comprising:

- a. a single metallic plate including:
 - a. a frame portion;
 - b. a series of distinct electrode portions surrounded by said frame portion and extending between common opposing sides of said frame portion, each one of said electrode portions being retained in aligned relation to each of the other ones of the series by physical connection to said common opposing sides of said frame portion,
 - c. a plurality of channel-shaped depressions each having a substantially U-shaped cross-section, said channel-shaped depressions extending across said electrode portions and frame portion, and located at least at opposing ends of each one of said series of electrode portions most proximate to said common opposing sides of said frame portion, said channel-shaped depressions including a mounting pad opposite its lowest depression for each of said

electrode portions, each of said mounting pads including major exposed surfaces located in substantially fixed spaced-apart depressed locations from corresponding major exposed surfaces of each of said electrode portions



- by a distance corresponding to the depth of the channel-shaped depression;
- d. regions of weakness along the common opposing sides of said frame portion between which said electrode portions are retained.

3,902,004

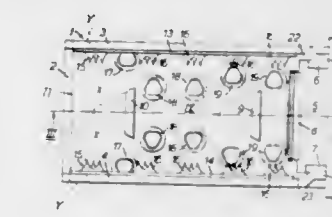
CLIPS

John Patrick Harding, Bushey; David Sydney Butler, Hassocks, and Frank James Lee, Devon, all of England, assignors to The Post Office, London, England
Division of Ser. No. 216,410, Jan. 10, 1972, Pat. No. 3,798,347. This application Jan. 7, 1974, Ser. No. 431,372
Claims priority, application United Kingdom, Jan. 11, 1971, 1192/71

Int. Cl. H02G 15/08

U.S. Cl. 174-84 C

11 Claims



1. A crimping clip for electrically connecting together two or more electrical conductors comprising
 - a. an open-ended, trough-shaped member having a base member and two upstanding wall members of equal height,
 - b. at least two upstanding members located in longitudinal alignment with the confines of said base member whereby said base member is divided into longitudinal conductor receiving locations,
 - c. a liner located within and in contact with the trough-shaped member, the liner having a base portion whose thickness is less than that of said base member,
 - d. a plurality of upstanding tangs formed in the base portion of said liner, said tangs being of maximum wall thickness less than the thickness of said base member and being located within said conductor receiving locations, and

e. a central opening in said base member of said trough-shaped member, edges to said opening lying transversely of the length of said clip, said edges being inclined towards the inside of said clip, tangs in the said base portion of said liner adjacent said transverse edges, and a central opening in said base portion of said liner coincident with said opening in said base member of said trough-shaped member.

3,902,005

SCREW-ON ELECTRICAL CONNECTOR

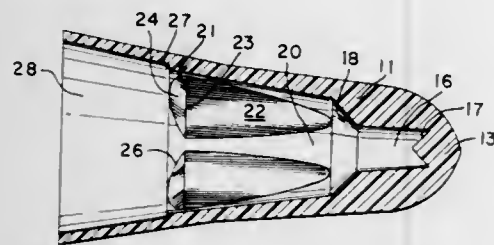
Alexander R. Norden, New York, N.Y., assignor to I-T-E Imperial Corporation, East Farmingdale, N.Y.

Filed Mar. 4, 1974, Ser. No. 447,803

Int. Cl. H02g 15/08

U.S. Cl. 174-87

10 Claims



1. A screw type wire connector comprising a tubular shell formed of a deformable insulating material and being closed at its distal end and provided with an enlarged opening at its proximal end and having an axial bore including a distal section of reduced width and a proximal section of increased width and of non-circular transverse cross section and whose minimum width is greater than the width of said distal section, said proximal bore section having at least three longitudinally extending substantial flattened surfaces, said flattened surfaces facing said bore and substantially defining the periphery of a transverse cross section of said proximal bore section, and an elongated helical wire coil housed in said bore and having a distal end and a proximal end, said coil tapering inwardly from its proximal end toward its distal end, the proximal end of said coil having a diameter between the maximum and minimum widths of said proximal bore section and faces of said proximal bore section being distorted by said coil proximal portion.

3,902,006

JUNCTION BOX

Bernard Gouteron, Decines; Pierre Jay, St. Didier au Mont d'Or, and Jean-Philippe Rieux, Decines, all of France, assignors to Rhone-Progil, Paris, France

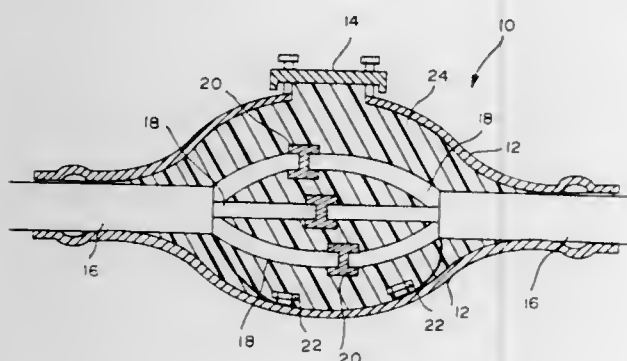
Filed Nov. 15, 1972, Ser. No. 306,831

Claims priority, application France, Nov. 19, 1971, 71.42333

Int. Cl. H02g 15/10; B44d 1/42

U.S. Cl. 174-88 R

4 Claims



1. An electrical network junction box comprising an electrical juncture surrounded with a hardened easily frangible protective dielectric insulating potting composition, wherein the

improvement comprises said easily frangible protective potting composition consisting essentially of a cross-linked mixture of a cross-linkable resin, a reactive diluent, a hardening agent and coal tar pitch, said coal tar pitch constituting at least about 50 percent of the total weight of the mixture and said cross-linkable resin constituting 10-30 percent of the total weight of the mixture.

3,902,007

AUDIO AND VIDEO PLURAL SOURCE TIME DIVISION MULTIPLEX FOR AN EDUCATIONAL TV SYSTEM

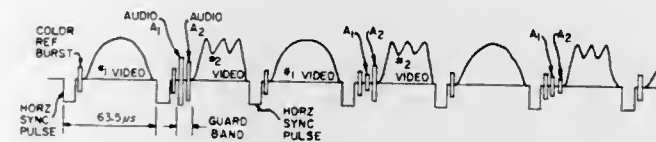
James W. H. Justice, Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 26, 1973, Ser. No. 373,727

Int. Cl. H04N 7/08

U.S. Cl. 178-5.8 R

23 Claims



1. In a television branching system, a method of transmitting within a single television channel one or more audio signals along with two or more separate and branched video pictures on the same video subcarrier, said method including the steps of:

forming fields of a video signal consisting of selected scan lines from two or more separate video pictures by selecting for transmission a horizontal scan line corresponding to a first video picture and then selecting the next horizontal scan line for transmission from a second picture which is then succeeded by selecting for transmission a subsequent occurring horizontal scan line from said first picture;

providing at least two audio signal lines; continuously sampling the audio signal in each of said audio signal lines to form audio bursts thereof at a rate less than the occurring rate of selected horizontal scan lines forming the fields of video signal;

combining the audio bursts from the two audio signal lines to form a time-separated train of audio bursts in such a manner so that the formed train of audio bursts occur only during the horizontal scan lines selected for transmitting at least one and less than all of the video pictures; generating a blanked guard-band interval in the horizontal scan lines forming the video signal frames of at least one and less than all of said two or more pictures and at a time apart from the horizontal retrace period including occurring horizontal sync pulses in such a manner that a displayed image of at least one but less than all of the pictures will include blanked video intelligence corresponding to the blanked guard-band interval; and modulating the selected lines of said video pictures onto a video subcarrier while modulating said train of audio bursts onto the same video subcarrier during the generated blanked guard-band interval in the video signal portion of horizontal scan lines selected for transmitting at least one and less than all of the separate video pictures.

7. In a television branching system, the method of recovering from a video subcarrier within a single channel frequency in a receiver at least one audio signal transmitted along with at least one and less than all of two or more separate and branched video pictures, said audio signals being transmitted in the form of a plurality of audio bursts during a blanked guard-band interval which occurs within the video intelligence portion of the horizontal scan lines selected to transmit at least one and less than all of two or more separate and branched video pictures, said method including the steps of:

receiving said video subcarrier modulated with said two or more separate and branched video pictures of which at least one and less than all contain a blanked band in the

video when displayed on the face of a television display tube, said blanked band corresponding to said blanked guard-band interval;

selecting a video signal from said video subcarrier corresponding to horizontal scan lines forming only the separate and branched video pictures which when displayed include said blanked band and thereby selecting only the horizontal scan lines including said plurality of audio bursts during the blanked guard-band interval within the video intelligence portion of the scan lines;

branching the signal path of the selected signal which includes said plurality of audio bursts during the blanked guard-band interval;

time delaying the selected signal in one of the branched signal paths;

gating the signals corresponding to both the delayed and undelayed signals in the branched signal path to recover said plurality of audio bursts from the blanked guard-band intervals therein;

detecting the gated audio bursts to form an audio signal; and amplifying the formed audio signal to drive a sound transducer.

3,902,009

MULTI APERTURE SCANNING AND PRINTING FOR FACSIMILE LINE SKIPPING

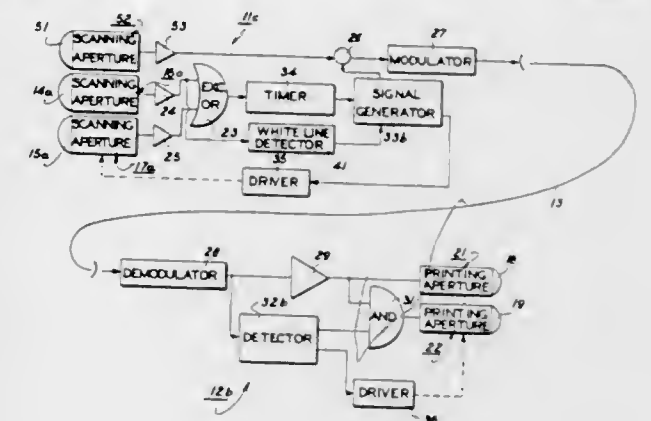
Donald Arthur Perreault, Dallas, Tex., assignor to Xerox Corporation, Stamford, Conn.

Filed June 17, 1974, Ser. No. 480,198

Int. Cl. H04n 1/24

U.S. Cl. 178-6

26 Claims



26. A method for generating a facsimile of a subject copy comprising the steps of comparing video signals representing information appearing on said subject copy along different scan lines serially for successive sets of scan lines; and printing corresponding lines of said facsimile in response to a video signal serially representing the information appearing along a predetermined one of the scan lines of each of said sets, using a block format to simultaneously print all of the lines of any redundant set of lines and a line-by-line format to individually print any non-redundant lines.

3,902,008

DATA TRANSMISSION SYSTEM

Mutsuo Ogawa, Tokyo, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

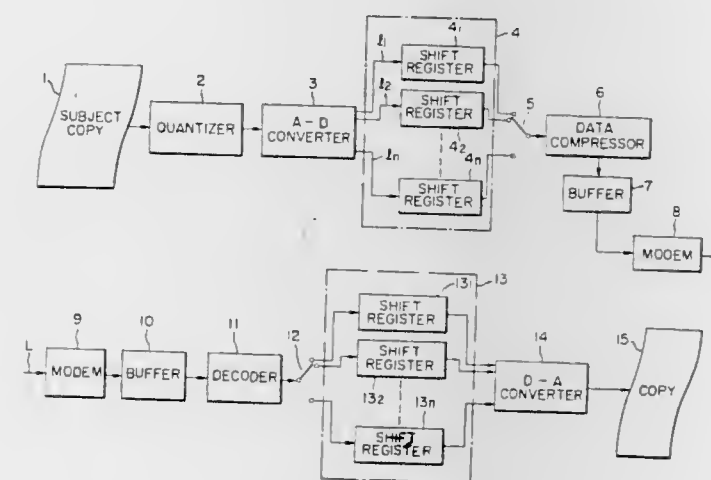
Filed Oct. 4, 1973, Ser. No. 403,660

Claims priority, application Japan, Oct. 4, 1972, 47-99605

Int. Cl. H04n 5/78

U.S. Cl. 178-6

12 Claims



1. A data transmission system comprising means for quantizing each of a succession of analog input signals into a quantized signal, means for converting each of said quantized signals into a digital coded signal comprising a set of parallel bits, a plurality of storage means equal in number to the plurality of bits forming said digital coded signal, each storage means associated with a different order bit for storing therein the corresponding order bits of a succession of said digital coded signals, means for reading the bits stored in each of said plurality of storage means serially by storage means and serially by bit within each individual storage means and for carrying out data compression of the bit string read out of the storage means to provide a corresponding compressed data bit string, and means for transmitting the compressed data bit string.

3,902,010

INFORMATION RECORDING DEVICE WITH RECORD HAVING LAYERS WITH DIFFERENT INTENSITY SENSITIVITY

Takeshi Goshima, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

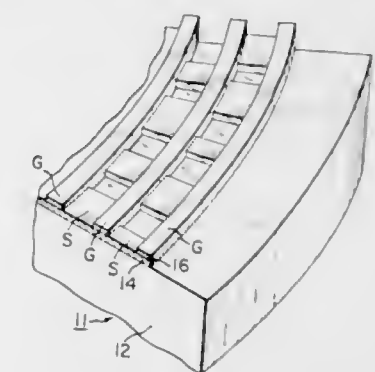
Filed Feb. 14, 1973, Ser. No. 332,482

Claims priority, application Japan, Feb. 15, 1972, 47-15888; June 2, 1972, 47-54947

Int. Cl. H04N 5/84; G11B 11/12, 3/80

U.S. Cl. 178-6.7 A

10 Claims



1. In an information recording device for forming an information recording portion and a guide portion on a recording medium having a beam-sensitive member by scanning with a beam modulated by recording signals and a steady beam having a constant intensity, said beams being emitted from beam source means; said recording medium comprising a substrate, a first beam-sensitive layer on said substrate, said first layer having a sensitivity to a beam of an intensity over a predetermined value, and a second beam-sensitive layer on said first beam-sensitive layer, said second layer having a sensitivity to a beam of an intensity different from that of said

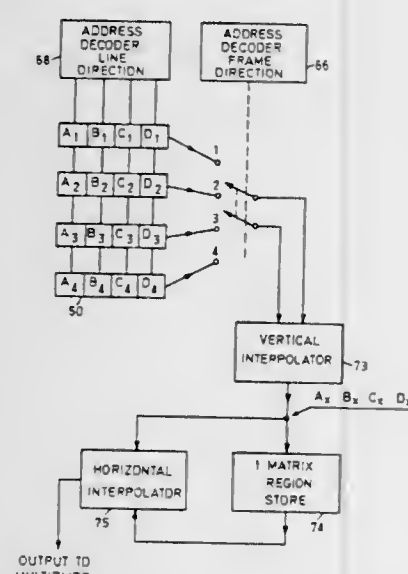
first layer, and one of said beam-sensitive layers being sensitive to one of said beams and said first and second layers being sensitive to the other beam, thereby to form said guide portion across said first and second beam-sensitive layers while forming said information recording portion in one of said beam-sensitive layers.

3,902,011 IMAGE ANALYSING

Leon Andre Pieters, Cambridge, and James Frank Wren, Wrestlingworth, both of England, assignors to Meldreth Electronics Limited, Cambridge, England
Continuation of Ser. No. 88,543, Nov. 12, 1970, Pat. No. 3,743,772. This application May 9, 1973, Ser. No. 358,580 The portion of the term of this patent subsequent to July 3, 1990, has been disclaimed.
Int. Cl.² H04N 5/38

U.S. Cl. 178—7.2

9 Claims



1. A method of generating and storing information signals in a memory which on subsequent address can be used to control the amplitude of a video signal so as to correct for shading in each of plurality of separate regions which together make up the scanned region of a source of video signal, each said region being substantially larger in area than the area of a scanning spot, comprising, in combination the steps of, subjecting the scanned region to uniform illumination, for each said region comparing with a constant reference voltage having an amplitude other than zero the video signal amplitude from said source at only a single selected point in that region, generating a correction signal in response to this comparison, the correction signal being such as to produce a given amplitude level of the video signal if the latter is then modified by said correction signal, and loading the correction signals corresponding to said selected points into a memory in spatial correspondence with the position of said points in said scanned region.

3,902,012 COLOR DEFORMOGRAPHIC STORAGE TARGET

John J. Dalton, Rhinebeck, and Neil M. Poley, Kingston, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed July 16, 1973, Ser. No. 379,672

Int. Cl.² H01J 31/48, 29/12; G01B 9/02; G02F 1/21

U.S. Cl. 178—7.5 D

2 Claims

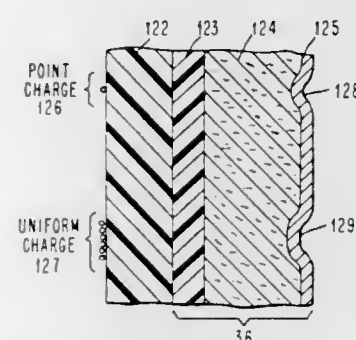
1. In a deformographic storage/display tube wherein a modulated electron beam deposits information on a target assembly and wherein light is passed through or reflected from said target assembly to project said information for visual display, a target assembly comprising

a dielectric target for receiving electrons from said electron beam and providing a surface for electrostatic charge build-up in accordance with beam modulation, said di-

electric target retaining said charge build-up after said beam is removed,

a dielectric mirror comprising optically a quarter wavelength stack of an odd number of alternating layers of material said dielectric mirror deposited on a second surface of said target opposite to the target surface upon which an electrostatic charge is built-up,

a deformographic material deposited on the surface of said dielectric mirror to a thickness which is an even number of half wavelengths,



a semi-transparent mirror and ground plan deposited on the surface of said deformographic material to a thickness sufficient to provide reflectivity for optical interference purposes and sufficiently thin to provide an acceptably low level of hindrance to the deformation of the deformographic material, so that when a light beam is transmitted through or reflected from said target, the deformographic material sandwiched between the two mirrors acts as a type of Fabry-Perot interference filter to provide a base color for projection and a different color for the light projected through the deformed areas of the deformographic material.

3,902,013 FREQUENCY SYNTHESIS CONTROL FOR A FREQUENCY-MODULATED TELEGRAPHIC TRANSMITTER

Roger Charbonnier, Meudon, France, assignor to Adret-Electronic, Trappes, France

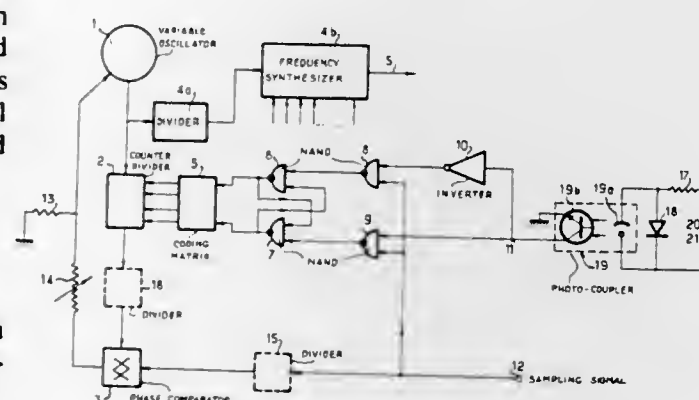
Continuation-in-part of Ser. No. 318,923, Dec. 27, 1972, abandoned. This application June 24, 1974, Ser. No. 482,730

Claims priority, application France, Jan. 4, 1972, 72.00091

Int. Cl. H04L 27/00

U.S. Cl. 178—66 A

7 Claims



1. A device for controlling the frequency of a frequency modulated telegraphic transmitter as a function of the telegraphic signal amplitude, said device comprising a variable oscillator and a phase lock loop for controlling the variable oscillator's frequency, said phase lock loop comprising a counter-divider connected at the oscillator output and programmable by an instruction number and a phase comparator having two inputs respectively connected to the counter-divider output and to a source of a two level standard fre-

quency signal, said phase comparator having an output connected to a frequency control input of the variable oscillator, characterized by a coding matrix, means connected to said matrix for applying thereto a two level control signal derived from the telegraphic signal, said matrix being connected to the counter-divider for applying thereto first and second values of the said instruction number, when the said control signal is at, respectively, its first and second levels.

3,902,014 CIRCUIT ARRANGEMENT FOR REGENERATING THE MODULATION TIMING OF A LINE SIGNAL IN A DATA TRANSMISSION EQUIPMENT

Key Ake Lindell, Skarholmen, and Goran Karl Arvid Pettersson, Stockholm, both of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

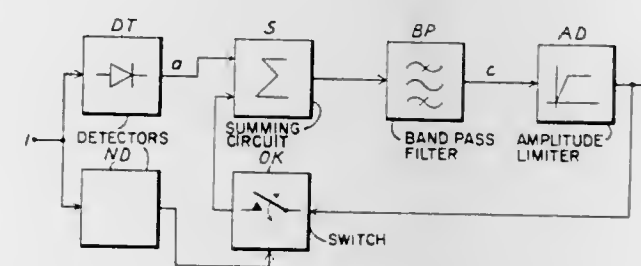
Filed Aug. 15, 1973, Ser. No. 388,607

Claims priority, application Sweden, Sept. 12, 1972, 11726/72

Int. Cl.² H04L 7/00

U.S. Cl. 178—69.5 R

3 Claims



1. In the receiver of a digital data transmission system, apparatus for regenerating the modulation timing of received line signals which are binarily modulated comprising: a band pass filter having an input and an output and having a center frequency generally equal to a frequency corresponding to the modulation timing; a timing signal output; means for connecting said timing signal output to the output of said band pass filter; a signal summing means having first and second inputs and an output for the analog addition of the amplitudes of the signals present at said first and second inputs; means for connecting the output of said signal summing means to the input of said band pass filter; a detector means having an input adapted to receive the line signals and an output for transmitting from the output thereof a signal representing at least one border of the envelope of a line signal received at the input thereof; means for connecting the output of said detector means to the first input of said summing means; a controllable switch means having a signal input connected to said timing signal output, a signal output connected to the second input of said signal summing means, and a control input, said switch being open until the receipt of a signal at said control input; and a signal level detector having an input adapted to receive a line signal and an output connected to the control input of said switch, said signal level detector emitting a signal from the output thereof when the signal present at the input thereof exceeds a given amplitude.

3,902,015 ROTARY HORN TREMOLO UNIT

John W. Edwards, Lake Zurich, and Robert G. Mathias, Brookfield, both of Ill., assignors to Hammond Corporation, Chicago, Ill.

Continuation of Ser. No. 277,098, Aug. 1, 1972, abandoned. This application Apr. 10, 1974, Ser. No. 459,752

Int. Cl.² H04R 1/02

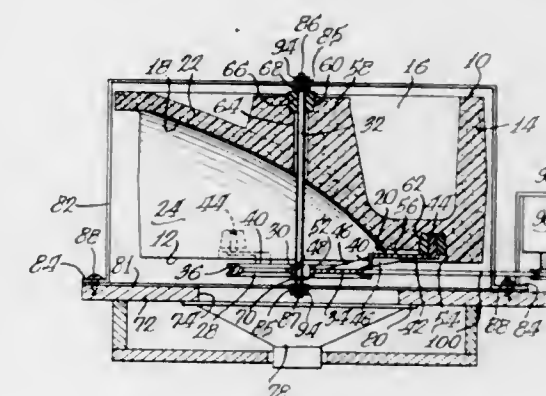
U.S. Cl. 179—1 J

1. A rotary horn tremolo assembly comprising:

a generally cylindrical body of material defining a sound-deflecting horn surface extending between one face and a peripheral surface thereof;

a support structure;

a metal shaft rotatably mounted on said support structure; a plastic pulley comprising a hub portion having a hole therethrough receiving said metal shaft in a press fitting manner, a rim, at least three spokes extending between said hub and said rim with a plurality of slots each extending from said hole into one of said spokes to define flexible legs over a portion of the length of each spoke to accommodate an oversize of said shaft relative to said



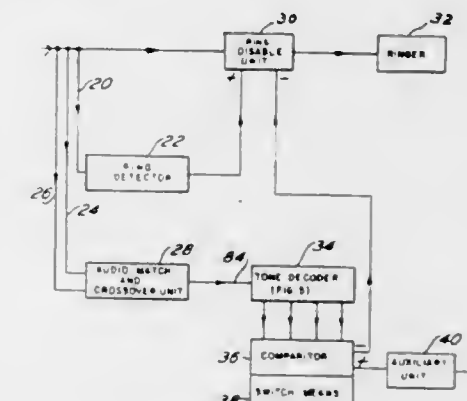
hole and the differential thermal expansion between said metal shaft and said plastic pulley without breakage of said plastic pulley, and an integral support spider formed on said spokes with support legs extending outwardly from said hub in a plane spaced from the plane of said spokes with the free ends of said legs adapted to engage said body in a combined supporting and driving arrangement;

at least three vibration cushioning elements mounted between said free ends of said legs and said body to inhibit transmission of vibration therebetween, and means for driving said pulley.

3,902,016
RINGER BLOCKING ATTACHMENT FOR TELEPHONES
Roger D. Blouch, Willow Grove, Pa., assignor to International Mobile Machines Corporation, Philadelphia, Pa.
Continuation-in-part of Ser. No. 359,966, May 14, 1973, Pat. No. 3,829,616. This application July 1, 1974, Ser. No. 484,676 The portion of the term of this patent subsequent to Aug. 13, 1991, has been disclaimed.
Int. Cl.² H04M 3/42

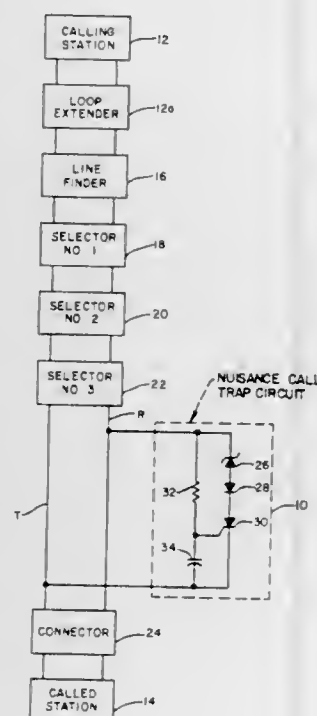
U.S. Cl. 179—2 A

6 Claims



1. In a telephone system comprising a sender and a receiver, there being audio and ringer circuits between said sender and said receiver, said receiver having a ringer therein, an auxiliary network comprising a ring detector to selectively inhibit said ringer means, a ring disable means coupled to said ring detector means and a ring activator means coupled to said ring disable means, said ring detector means being adapted to

age, means for connecting said voltage responsive means and said switching means in series between said terminals, and



means for connecting said timing means to said terminals and to said switching means.

3,902,022

MULTIPLEX SYSTEM FOR PAGING TERMINALS AND METHOD

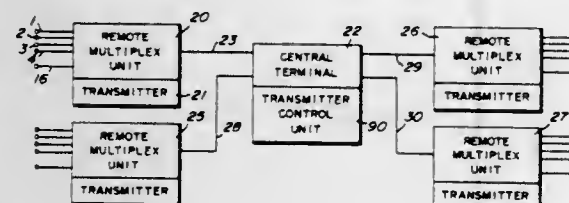
Robert L. Breeden, Pompano Beach, and James H. Stangel, Ft. Lauderdale, both of Fla., assignors to Motorola, Inc., Chicago, Ill.

Filed Sept. 19, 1973, Ser. No. 398,619

Int. Cl.² H04Q 7/00

U.S. Cl. 179—41 A

7 Claims



I. A multiplex system for paging terminals comprising:

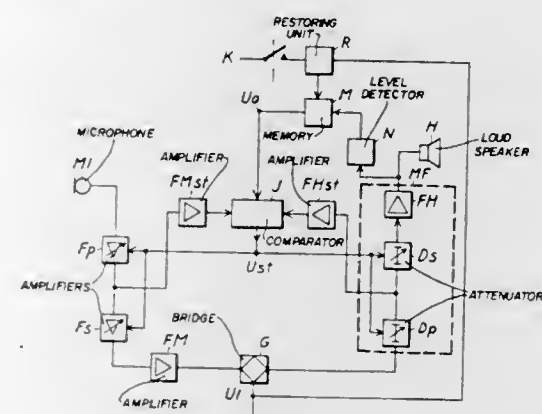
- a. a remote multiplex unit associated with a transmitter for communicating with portable pagers, said multiplex unit having a plurality of input telephone lines, each having data storage means associated therewith, and an output telephone line connected thereto, said multiplex unit further including switching means for sequentially sampling each of the data storage means associated with an input telephone line and connecting data storage means containing stored data to the output telephone line; and
- b. a central terminal connected to the output telephone line and including transmitter control means for controlling the transmitter in the remote multiplex unit to communicate with the portable pagers during the periodic coupling of the output telephone line to the transmitter.

3,902,023
LOUD SPEAKING TELEPHONE SET
Owe Gunnar Lindgren, Farsta, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden
Filed Nov. 23, 1973, Ser. No. 419,705
Claims priority, application Sweden, Dec. 18, 1972, 16533/72

Int. Cl.² H04M 1/00

U.S. Cl. 179—81 B

5 Claims



1. In a loud speaking telephone set connected to a line and having a transmitter channel including amplification means and microphone and a receiver channel including attenuation means and a loud speaker, the set being in a transmitting mode when the signal level of the transmitter channel is greater than the signal level of the receiver channel and being in a receiving mode when the signal level of the receiver channel is greater than the signal level of the transmitter channel, a comparator means comparing the signal levels present in the transmitter and receiver channels for generating a mode control signal whose amplitude is a function of the operating mode of the set, amplification means in the transmitter channel and responsive to an output control signal for amplifying signals therein as a given function of the amplitude of the output control signal, and attenuator means in the receiver channel and responsive to the output control signal for attenuating signals therein in accordance with the given function of the amplitude of the output control signal so that there is a constant amplification from the speaker to the microphone to prevent feedback therebetween, the improvement comprising level detector means for generating an indicating signal as long as the signal in the receiver channel exceeds a given level, an analog memory means connected to said level detector means for storing an analog value related to the duration of the indicating signal and for transmitting a quiescent level indicating signal related to said analog value, and means connecting said analog memory means to the comparator means for superimposing the quiescent level indicating signal on to the mode control signal to form said output control signal whereby quiescent levels of amplification in the transmitter channel and attenuation in the receiver channel are obtained which are then changed in accordance with the operating mode of the telephone set.

3,902,024
ORIGINATING NUMBER CONTROL SYSTEM FOR KEY TELEPHONE SYSTEMS

Tokuhiya Hijikata, Ome, and Toshiichi Takano, Mitaka, both of Japan, assignors to Iwatsu Electric Co., Ltd., Tokyo, Japan

Filed Apr. 13, 1973, Ser. No. 351,095

Claims priority, application Japan, Apr. 19, 1972, 47-39438; Apr. 19, 1972, 47-39439

Int. Cl. H04m 1/00

U.S. Cl. 179—99

9 Claims

1. In a key telephone system connected to at least one office line wherein a talking line and a control line are associated with a main control device, and a specific key telephone set and at least one receiving alone key telephone set are con-

nected to said talking and control lines, an originating number control system for controlling access to an office line by said sets via said talking line comprising an originating number control circuit operable by an operator of said specific key telephone set, a busy discriminating circuit which is operated while any one of said key telephone sets is seizing an office line, means for maintaining said originating number control circuit in operated condition if operated while an office line is seized by said busy discriminating circuit, polarity transfer

said arms substantially aligning with said downwardly extending stabilizing members, said downwardly extending stabilizing members and said U-shaped clamp cooperating to define tripod means.

3,902,026

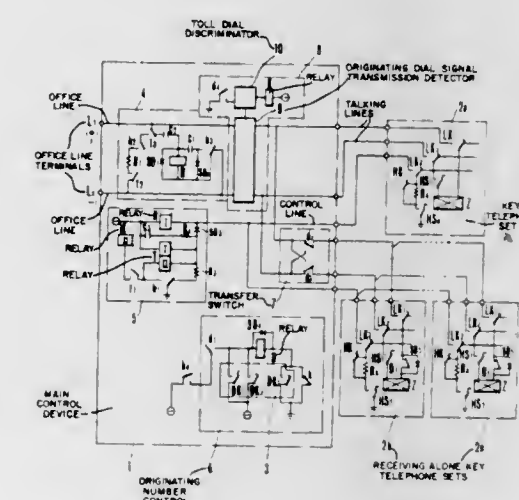
METHOD AND APPARATUS FOR IDENTIFYING WIRES
Sidney Rogers; Barry N. Rogers, and Robert E. Petre, all of Toledo, Ohio, assignors to Electronic Control Systems, Inc., Toledo, Ohio

Filed Jan. 18, 1974, Ser. No. 434,390

Int. Cl.² H04M 3/22

U.S. Cl. 179—175.3 A

17 Claims



means responsive to the operation of said originating number control circuit for reversing the polarity of the talking line for said receiving alone key telephone set, and a diode connected to short circuit the dial signal transmission circuit of said receiving alone key telephone set when said originating number control circuit is not operated, whereby said receiving alone key telephone set can transmit an originating number signal only when said originating number control circuit is operated.

3,902,025

PORTABLE TELEPHONE APPARATUS

Minnie B. Lewis, 5423 S. Harper, Chicago, Ill. 60615

Filed Jan. 14, 1974, Ser. No. 433,246

Int. Cl. H04m 1/04

U.S. Cl. 179—157

3 Claims



1. In a portable telephone unit having a receiver, transmitter, dial, ringer and disconnect, an improved housing comprising in combination:

- a substantially U-shaped, shoulder-engaging portion including a pair of downwardly extending stabilizing members;
- a substantially upright hollow portion rigidly secured to said U-shaped, shoulder-engaging portion including a first half member and a second half member, said shoulder-engaging portion and said substantially upright hollow portion cooperating to define a cavity wherein said receiver, transmitter, dial, ringer, and disconnect are secured; and
- means for standing said improved housing in an upright position on a flat surface, said standing means including a U-shaped clamp member having arms hingedly secured to said improved housing near the junction of said shoulder-engaging portion and said upright hollow portion,

1. A method for identifying individual wires of a plurality of wires extending between first and second locations comprising the steps of: connecting a plurality of said wires at said first location to individual addressable locations in a matrix; sequentially applying to at least some wires at said second location different signals indicative of a predetermined identification for each such wire; for each wire to which a signal is applied at said second location and having a connection to said matrix, storing in a memory connected to said matrix manifestations of the wire identification and of the matrix address of such wire; and identifying wires connected to said matrix at said first location from such stored manifestations.

3,902,027

MOTOR VEHICLE EQUIPMENT

Jesse R. Hollins, 40 Stoner Ave., Great Neck, N.Y. 11021

Division of Ser. No. 318,377, Dec. 26, 1972. This application

Feb. 25, 1974, Ser. No. 445,122The portion of the term of this patent subsequent to Jan. 1, 1991, has been disclaimed.

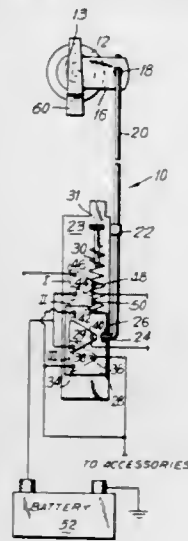
Int. Cl.² H01H 9/28

U.S. Cl. 200—44

2 Claims

1. Motor vehicle equipment comprising an ignition key receiving lock cylinder, a conducting arm, a conducting arm mover element, a switch first contact, a switch second contact, said conducting arm biased to touch said switch second contact, means for moving said conducting arm mover element so that said conducting arm is in circuit with said switch first contact when an ignition key is in said ignition key receiving lock cylinder, an ignition ON contact, a source of electrical power, means for selectively connecting said source of electrical power to said ignition ON contact and to said switch second contact, a passenger protector element, means for guiding said passenger protector element for movement between an extended position wherein said passenger protector element is located adjacent passengers sitting on the front seat

of the vehicle and a retracted position wherein said passenger protector element is spaced from passengers sitting on the front seat of the motor vehicle, an electric motor, means linking said electric motor to said passenger protector element for moving said passenger protector element to its extended position and to its retracted position, said motor having a first contact and a second contact, first motor control switch means having an open and closed condition and in circuit with said first motor first contact, second motor control switch



means having an open and closed condition and in circuit with said motor second contact, said second motor control switch means being in circuit with said ignition ON contact, and means moving with said passenger protector element for opening said second motor control switch means when said passenger protector element is in its extended position and for opening said first motor control switch means when said passenger protector element is in its retracted position, said first and second motor control switch means being closed absent said moving means opening said motor control switch means.

3,902,028

PRESSURE RESPONSIVE SWITCH

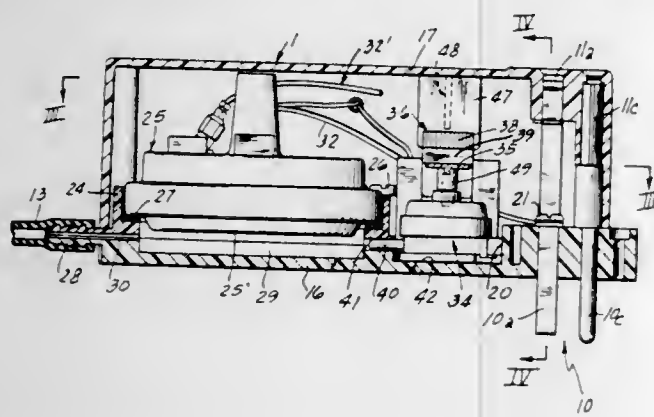
David L. Tremain, Sterling, Ill., assignor to Houdaille Industries, Inc., Buffalo, N.Y.

Filed Mar. 13, 1974, Ser. No. 450,787

Int. Cl.² H01H 35/24

U.S. Cl. 200—81 R

10 Claims



1. A control switch mechanism for controlling a sump pump having no integrally associated control mechanism, comprising a housing structure having electrical plug-in contacts extending therefrom, and inserted in an electrical power outlet, with the housing supported from such an outlet, an electrical outlet socket structure carried by said housing, into which the electrical connecting cord of a sump pump to be controlled is to be inserted, means, including a pressure responsive switch, disposed in said housing for selectively completing operative connection between said electrical plug-in contacts and cooperable electrical outlet socket, a self-contained electrical air pump disposed in said housing, said pump having an

air inlet, and an air outlet operatively connected to the actuating pressure-side of said pressure switch, with said air pump being operative to discharge air at a pressure sufficient to actuate said pressure switch, said housing having an air vent port operatively communicating with the actuating pressure side of said switch, of a size to accommodate unrestricted flow of sufficient air to reduce the air pressure at said switch, resulting from the operation of said air pump, to below that required to actuate said switch, and tubular means operatively connected to said air vent port, said tubular means having a relatively open free end and being of a size to permit such unrestricted air flow through said air vent port, the open end of said tubular means being adapted to be so disposed with respect to the liquid to be pumped by said sump pump that such liquid will exert a pressure in said tube opposing the flow of air therethrough, whereby the liquid pressure at a predetermined liquid level will sufficiently restrict such air flow through said vent port that sufficient air pressure will exist at said pressure responsive switch to effect actuation thereof.

3,902,029

MAT SWITCH WITH CLEANING OIL FILM

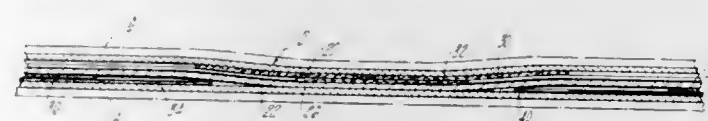
Andrew P. Molava, Wethersfield, Conn., assignor to The Stanley Works, New Britain, Conn.

Filed Oct. 29, 1973, Ser. No. 410,614

Int. Cl. H01h 3/14, 1/60

U.S. Cl. 200—86 R

6 Claims



1. An electric mat switch comprised of a multi-layer structure including a plurality of spaced metal contact plates having confronting contact surfaces subject to the formation during use of granular metal oxide particles that can reduce the pressure sensitivity of the plates, thin spacer means between the plates for normally maintaining said surfaces in closely spaced-apart relationship while permitting flexible movement into electrical engagement upon the application of pressure to the multi-layer structure, said flexible movement being sufficient to cause said granular particles to become loosened from the contact surfaces, and a layer of nonconductive nonvolatile fluid on at least one of said confronting surfaces, said fluid layer being firmly adhered to the contact surface and uniformly suspending said loosened granular particles and imparting mobility thereto, said layer permitting electrical contact between said contact plates when said surfaces are moved into intimate engagement and maintaining a stabilized pressure sensitivity in the switch over a prolonged period of use.

3,902,030

DIVERTER SWITCH FOR ON-LOAD CHANGERS

Laurentiv Popa, 267 Townsend St., Apt. No. 2, Sydney, Nova Scotia, Canada

Filed Aug. 31, 1973, Ser. No. 393,392

Int. Cl.² H01H 19/38, 3/32

U.S. Cl. 200—11 TC

4 Claims

1. A switch comprising:

3,902,031

PUFFER INTERRUPTER OPERATING MECHANISM WITH MAGNETIC ASSIST AND ARCLESS AND SWITCHLESS COIL CUT-IN

Lorne D. McConnell, Chalfont, Pa., assignor to I-T-E Imperial Corporation, Spring House, Pa.

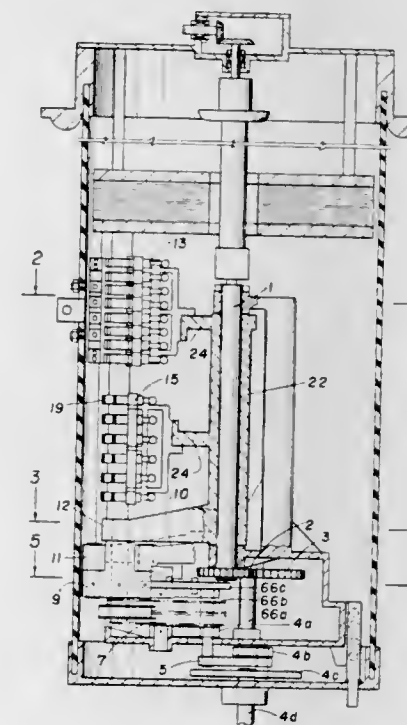
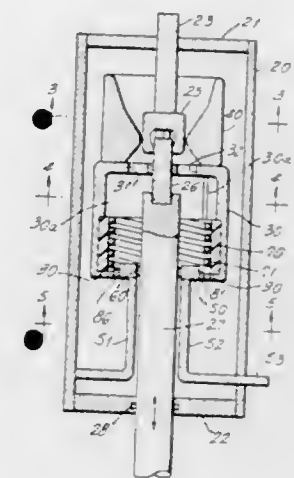
Filed July 17, 1974, Ser. No. 489,181

Int. Cl.² H01H 33/70

U.S. Cl. 200—148 A

13 Claims

first and second fixed contacts disposed in spaced apart position along a first circular arc;
third and fourth fixed contacts disposed in spaced apart position along a second like circular arc;
fifth and sixth mobile electrically interconnected contacts disposed between the first and second contacts, the fifth and sixth contacts having a first position at which the fifth contact engages the first contact with the sixth contact spaced from the second contact and having a second position at which the sixth contact engages the second contact with the fifth contact spaced from the first contact;
seventh and eighth mobile electrically interconnected contacts disposed between the third and fourth contacts, the seventh and eighth contacts having a first position at which the seventh contact engages the third contact with the eighth contact spaced from the fourth contact and having a second position at which the eighth contact engages the fourth contact with the seventh contact spaced from the third contact;
a vertical hollow sleeve having three vertically spaced horizontal arms, the first arm being connected to the fifth and sixth contacts, the second arm being connected to the



seventh and eighth contacts, the sleeve being vertically rotatable about its axis between a first position at which the mobile contacts are in the first position and a second position at which the mobile contacts are in the second position, the third arm having a longitudinally extending slot adjacent a free end;

a linkage and cam structure having a first vertical pin extending through the slot in the third arm and having a second and spaced vertical pin, said structure having a first pin position at which the sleeve is rotated to its first sleeve position and a second pin position at which the sleeve is rotated to its second sleeve position;
a vertical shaft extending through the sleeve and being independently rotatable between a first shaft position and a second shaft position; and
a crank mechanism responsive to the shaft rotation and having a horizontally elongated reciprocable member, said member having a first opening through which the second pin extends, said mechanism, when the shaft is in the first shaft position, causing the structure to be placed in the first pin position, said mechanism, when the shaft is in the second shaft position, causing the structure to be placed in the second pin position.

1. A puffer circuit interrupter having an electromagnetic force assist operating means; said puffer circuit interrupter comprising first and second contacts movable between an engaged and disengaged position; first and second terminals for said first and second contacts respectively; a movable operating rod connected to at least said first contact for moving said contacts between their said engaged and disengaged positions; puffer means positioned adjacent said first and second contacts and including a relatively movable piston and cylinder connected to said operating rod and operated thereby to produce a blast of dielectric fluid through said contacts as said contacts move to their said disengaged position; a conductive winding fixed relative to one of said first and second contacts and having an axis substantially parallel to the direction of relative movement between said first and second contacts; a first cylindrical conductive contact ring fixed relative to the other of said first and second contacts and being coaxial with said winding; at least one peripheral surface of said winding and at least one peripheral surface of said first contact ring being exposed for sliding electrical contact with respect to one another, whereby said first contact ring and said winding experience relative axial movement where said operating rod is operated; said first terminal being directly electrically connected to said first contact; said second terminal being directly connected to said first contact ring at least when said first and second contacts are in said engaged position; one end of said winding being connected to said cylindrical contact ring, at least when said first and second contacts are in said engaged position; and a second contact ring fixed relative to said one of said first and second contacts and concentric with said first cylindrical contact ring and slidably engaging said first cylindrical contact ring when said first and second contacts are engaged; said second contact ring connected to said first contact at least when said first and second contacts are in said engaged position, whereby, when said first and second contacts are disengaged, said first cylindrical contact ring is continuously connected in series with increasing portions of said winding, and whereby circulating current is induced in said first contact ring, thereby to produce a repulsive electrodynamic force which tends to move said operating rod in the direction to disengage said first and second contacts.

3,902,032

ELECTRICAL SWITCH WITH IMPROVED CONTACT STRUCTURE

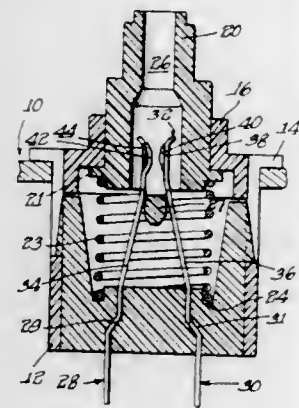
John A. Koepke, Des Plaines, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed June 7, 1974, Ser. No. 477,219

Int. Cl. H01h 13/52, 1/26

U.S. Cl. 200—153 M

1 Claim



1. In an electrical switch comprising a housing, a depressible plunger, means for biasing the plunger to its undepressed state and a separator member which is depressible when said plunger is depressed; an improved contact structure comprising first and second contacts secured in said housing each of which comprise an angled section which provides a bias on said contacts that tends to force said contacts towards each other, and a bifurcated contact portion consisting of a first arm on each contact having an arcuate curved contact surface and a second arm on each contact having a substantially flat contact surface wherein the curved contact surface of said first arm of said first contact is positioned so as to engage the flat contact surface of said second arm of said second contact and the curved contact surface of said first arm of said second contact is positioned so as to engage the flat contact surface of said second arm of said first contact when said first and second contacts are closed by movement of said separator member due to depression of said plunger to a position where it no longer separates said first and second contact members from each other.

3,902,033

MOMENTARY SWITCH

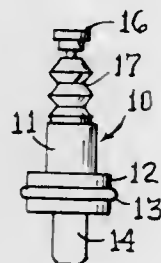
Wesley C. Jones, Waukegan, Ill., assignor to Cherry Electrical Products Corporation, Waukegan, Ill.

Filed Sept. 27, 1974, Ser. No. 509,799

Int. Cl. H01H 13/50

U.S. Cl. 200—160

4 Claims



1. A momentary push button electrical switch having a housing for the switch components comprising

- a fixed contact-bearing terminal and a spring-biased contact-bearing switch blade extending in spaced parallel relation within the housing;
- an elongated actuator having a portion disposed within the housing and adapted to be reciprocally moved therein;
- a switch blade trip lever carried by said actuator and having end portions extending beyond opposite longitudinal

edges of said actuator and reciprocally movable in a linear path therewith within the housing.

- means pivotally connecting said trip lever to said actuator with said end portions thereof normally extending beyond opposite longitudinal edges of said actuator;
- means on the switch blade and spaced beyond one longitudinal edge of said actuator and in the path of movement of one end portion of said trip lever so as to be spring-biased into contact with said fixed contact-bearing terminal during continuous linear movement in one direction of said trip lever by said actuator;
- means on said one end portion of said trip lever contacting said means on said switch blade when said trip lever is moved in an opposite linear direction by said actuator so as to pivot said trip lever in a direction opposite to the linear movement of said trip lever without spring-biasing said switch blade out of its spaced relation with said fixed terminal; and
- means on the other end portion of said trip lever for pivoting said trip lever in an opposite direction after said one end portion of said trip lever has passed beyond said means on said switch blade.

3,902,034

ADJUSTABLE KEYBOARD

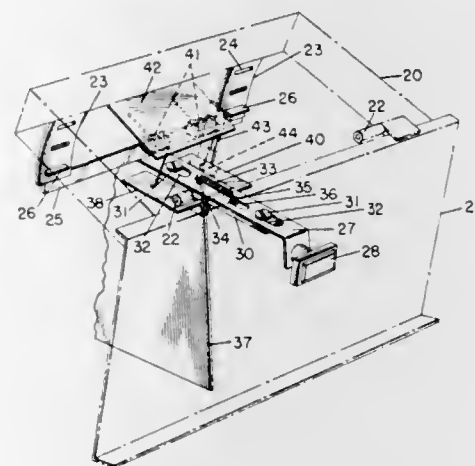
Hiromi Isozaki, Kanagawa, Japan, assignor to NCR Corporation, Dayton, Ohio

Filed Apr. 3, 1974, Ser. No. 457,513

Int. Cl. H01H 9/02; B41J 5/08

U.S. Cl. 200—239

1 Claim



1. A data terminal device comprising

- a housing having a front panel extending generally in a vertical direction;
- a keyboard pivotally mounted to the top edge of said front panel for rotational movement around said panel to a plurality of adjusted operating positions;
- a first support member positioned adjacent to and intermediate the top and bottom edges of said front panel;
- a pair of torsion springs mounted between said first support member and the lower portion of said keyboard for normally urging said keyboard to a first adjusted position;
- a plurality of depending support arms secured to the lower portion of the keyboard, each of said support arms having control surfaces which are arranged on said support arms in the same direction as the rotation of said keyboard;
- a locking assembly slidably mounted on said first support member for movement in a direction to engage and lock said support arms in a plurality of adjusted positions including a second support member slidably mounted on said first support member and extending to a position adjacent the front panel of the terminal device;
- a push button member secured to one end of said second support member and extending through said front panel to a position for selective movement by the operator of the terminal device;

- a detent member secured to the other end of said second support member, said detent member having a plurality of upstanding hook portions each positioned adjacent the control surfaces of a corresponding support arm;
- and an extension spring mounted between said first support member and said second support member for normally moving the second support member in a direction to move the hook portions of said detent member into engagement with one of the control surfaces of said support arms thereby locking the keyboard in an adjusted position, said second support member being moved by movement of said push button in a direction against the action of said extension spring to disengage the hook portions of said detent member from said arm members whereby the keyboard can be moved against the action of said torsion springs to another adjusted operating position.

3,902,035

APPARATUS AND METHOD FOR ARC WORKING WORK-PIECES WITH A ROTATING ARC

Johannus J. Broodman, Breskens, Netherlands, assignor to B.V. Koninklijke Maatschappij "De Schelde", Vlissingen, Netherlands

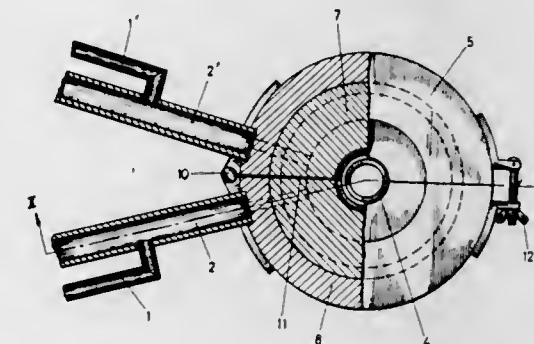
Filed Nov. 30, 1973, Ser. No. 420,435

Claims priority, application Netherlands, Dec. 1, 1972, 72116360

Int. Cl. H05B 31/28

U.S. Cl. 219—121 P

11 Claims



1. A plasma arc welding apparatus, which comprises means defining a generally annular slot nozzle disposed in circumferentially opposed, spaced-apart relation to a closed curve weld path on a work piece, said nozzle communicating with a gas supply for blowing pressurized gas as a gas jet through said slot to said weld path; a generally ring-shaped electrode positioned within said nozzle defining means in circumferentially opposed, spaced-apart relation to said slot and said weld path, said electrode and said workpiece being disposed for connection to a source of electric energy to establish a plasma arc between said electrode and weld path on said workpiece by interaction of said arc and said gas jet blowing through said slot reducing the cross section of the arc with respect to a free burning arc; and means establishing a magnetic field interacting with said plasma arc and causing said arc to travel around said weld path, to perform welding therealong.

3,902,036

CONTROL SYSTEM USING MULTIPLEXED LASER BEAMS

Vincent Joseph Zaleckas, Union Twp., Union County, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed May 2, 1974, Ser. No. 466,313

Int. Cl. B23K 27/00

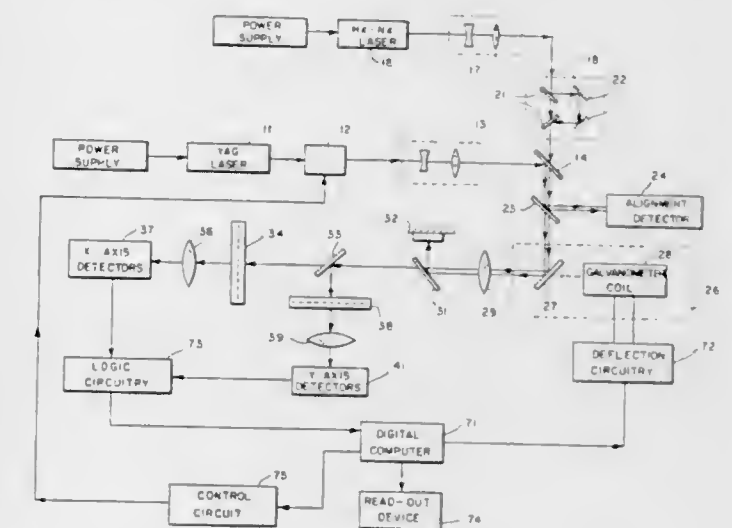
U.S. Cl. 219—121 L

19 Claims

1. In apparatus of the type wherein an intermittently energizable first beam of radiant energy is deflected by deflection

apparatus to impinge upon a selected location on a workpiece, the improvement which comprises:

- means for predicting where said beam will impinge upon said workpiece, when said beam is next energized, said means comprising:
- a source of a continuously energized second beam of radiant energy;
- means, positioned in the optical paths of said first and said second beams, upstream of said deflection apparatus, for multiplexing said second beam onto the optical path of said first beam;



a beam splitter, positioned downstream of said deflection apparatus, for separating the optical paths of said first and second beams, the optical path of said first beam thereafter impinging upon said workpiece; and

means, positioned in the optical path of said second beam, for determining the degree of deflection experienced by said second beam, relative to some arbitrary reference point, thereby predicting the degree of deflection that said first beam will undergo when next energized and thus determining, prior to the energization thereof, whether or not said first beam will impinge upon said selected location.

3,902,037

DC ARC WELDING APPARATUS BY HIGH-FREQUENCY PULSE CURRENT

Toru Goto, Kasugai, and Yukio Kajino, Nagoya, both of Japan, assignors to Mitsubishi Kenki Kabushiki Kaisha, Tokyo, Japan

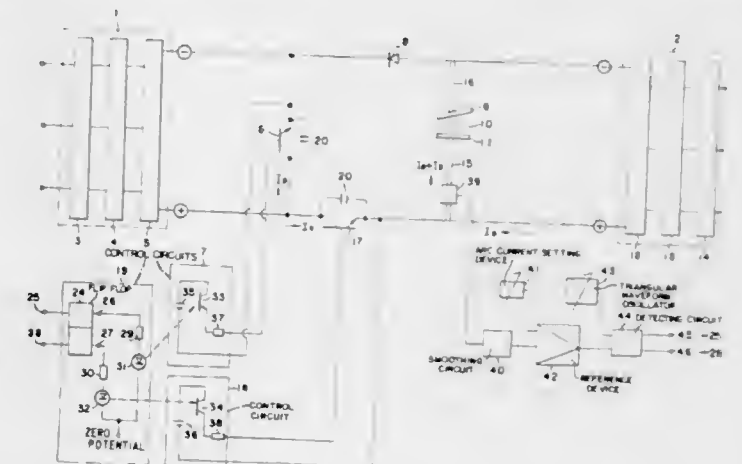
Filed Mar. 8, 1974, Ser. No. 449,337

Claims priority, application Japan, Mar. 12, 1973, 48-28745

Int. Cl. B23k 9/10

U.S. Cl. 219—135

6 Claims



1. A DC arc welding apparatus using a high frequency pulse current comprising:

a DC power source,
an electrode,
a workpiece disposed opposite to said electrode to form an arc therebetween,
a first switching element;
a first control circuit to control the first switching element;
a second switching element;
a second control circuit to control the second switching element;
a third control circuit to control the first and second control circuits;
means connecting the first switching element in parallel with the DC power source,
means connecting the first control circuit to the first switching circuit to turn the first switching circuit on and off,
means connecting the second switching element, the electrode and the workpiece in a series circuit;
means connecting the series circuit in parallel with the DC power source,
means connecting the second control circuit to the second switching circuit to turn the second switching circuit on and off;
means connecting the third control circuit to the first control circuit and the second control circuit;
the third control circuit comprising means to turn on the first switching element through the first control circuit while it turns off the second switching element through the second control circuit, means to turn on the second switching element through the second control circuit while it turns off the first switching element through the first control circuit;
whereby a large difference is obtained between the maximum peak value and the minimum peak value of the high frequency pulse current between the electrode and the workpiece.

3,902,038

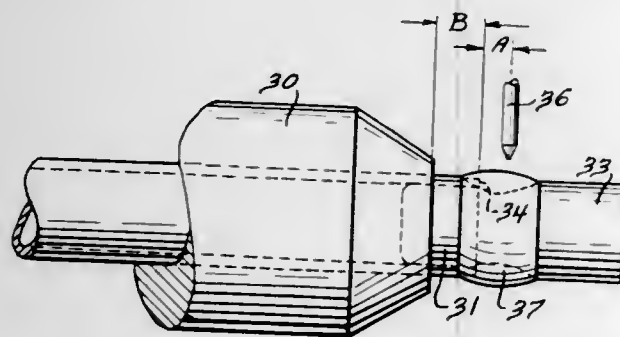
DISPLACED ELECTRODE PROCESS FOR WELDING

Lawrence J. Heichel, West Mifflin, Pa., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Continuation of Ser. No. 395,218, Sept. 7, 1973, abandoned.
This application July 22, 1974, Ser. No. 490,446
Int. Cl.² B23K 31/06

U.S. Cl. 219-137

4 Claims



1. A method for butt-welding a relatively low-mass thin-wall tube to a relatively heavy-mass end block inserted in the tube, including the steps of:

- positioning a welding electrode in a fixed relationship with the seam between said end block and said tube with said electrode being displaced from said seam toward said end block a distance within the range of $\frac{1}{4}$ to $2\frac{1}{4}$ times the wall thickness of said tube,
- providing a chill block which completely surrounds said tube and which is in close contact therewith with said chill block being displaced from said seam away from said end block a distance within the range of 1.7 to 2.9 times the wall thickness of said tube, and

c. supplying a welding current to said electrode of a magnitude so that the top surface of the weld nugget extends down the tube substantially $1\frac{1}{2}$ times the wall thickness of said tube.

3,902,039

FERRITIC STEEL WELDING MATERIAL

Francis Harold Lang, Oakland, N.J., assignor to The International Nickel Company, Inc., New York, N.Y.

Division of Ser. No. 11,298, Feb. 13, 1970. This application May 28, 1974, Ser. No. 473,669

Int. Cl.² B23K 35/22

U.S. Cl. 219-145

3 Claims

1. In the welding of cryogenic nickel steels by a gas-shielded arc-welding process wherein filler material is supplied to the arc during welding, the improvement which comprises employing as a filler material in said process, a ferritic nickel steel composition consisting of, by weight, about 7% to about 13 percent nickel, not more than 0.45 percent manganese, not more than 0.09 percent carbon, not more than 0.15 percent silicon, not more than 0.05 percent aluminum, up to about 0.1 percent titanium, up to about 0.1 percent columbium, not more than 0.01 percent phosphorus, not more than 0.01 percent sulfur, not more than 0.015 percent oxygen, not more than 0.006 percent nitrogen, not more than 0.0003 percent hydrogen, and the balance essentially iron, with the proviso that the content of said carbon is at least about 0.05 percent when said manganese exceeds about 0.3 percent.

3,902,040

TEMPERATURE COMPENSATING VEHICLE WINDOW HEATING SYSTEM

Tsutomu Ikeda, Tokyo; Masamitsu Nakano, Yokohama, and Kazuyoshi Tokuda, Tokyo, all of Japan, assignors to Central Glass Co., Ltd., Yamaguchi and Niles Parts Co., Ltd., Tokyo, both of Japan

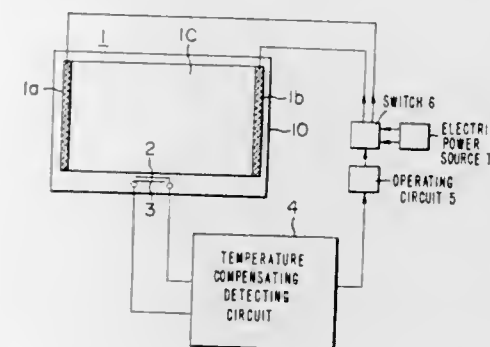
Filed Jan. 30, 1974, Ser. No. 437,979

Claims priority, application Japan, Feb. 7, 1973, 48-14799

Int. Cl.² H05B 1/02; E06B 7/12

U.S. Cl. 219-203

3 Claims



1. A moisture preventive device for a window glass of an automobile, which device has a pair of dew drop detecting electrodes mounted on the surface of glass, a circuit for detecting the variation in impedance between said electrodes and a moisture preventive means operating by means of the output from said detecting circuit, wherein the improvement comprises:

- said dew drop detecting electrodes including a pair of electrodes extending in parallel with each other and mounted in a position on the window glass of an automobile which will not hinder the field of view of a driver;
said detecting circuit being provided with a resistor bridge circuit which incorporates said detecting electrodes therein, and a differential amplifying circuit, one of whose input terminals is directly connected to one of the detecting terminals of said bridge circuit and the other of which input terminals is connected to the other of said detecting terminals by way of a temperature sensitive semiconductor diode exposed to the same ambient temperature as are the detecting electrodes such that the

variation in resistance of said diode cancels out the variation in resistance between the detecting electrodes caused by ambient temperature variation;
means for impressing A.C. voltage on said bridge circuit; and
said moisture preventive means being provided with heating means for heating said window glass, switch means for connecting an electric power source or said heating means and operating circuit means for closing or opening said switch means by the output from a differential amplifier.

3,902,041

DRY FILM PROCESSING APPARATUS

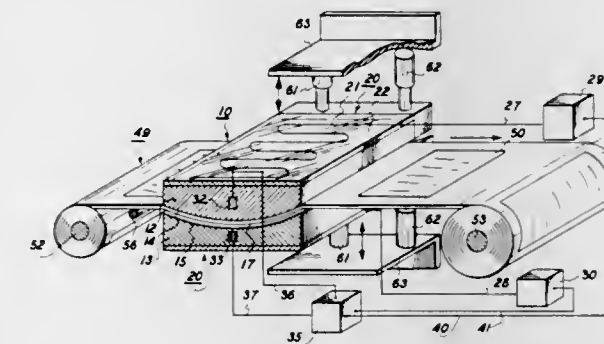
Joseph N. May, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed July 9, 1973, Ser. No. 377,887

Int. Cl. H05b 1/00; G03g 15/00

U.S. Cl. 219-216

5 Claims



1. Developing apparatus for processing exposed dry film having a heat developable emulsion placed upon a support material including

- a substantially enclosed cavity for encompassing an exposed film to be developed being formed of two plates spaced apart a distance greater than the thickness of the film, means to hold the non-emulsion side of the film in contact with one of said plates with the emulsion side of the film in non-contiguous relation of said other plate
means to heat the two plates uniformly to the same temperature, said temperature being at or above the developing threshold temperature of the film
wherein each plate comprises a material having a relatively high coefficient of thermal conductivity and having heating means associated therewith for heating said plate to a uniform temperature.

3,902,042

ELECTRICALLY HEATED TOOL FOR CUTTING DESIGNS IN A SURFACE

Adolph E. Goldfarb, Tarzana; Erwin Benkoe, Encino; Ronald F. Chesley, La Crescenta; Delmar K. Everitt, Woodland Hills, and Richard D. Friedrich, Canoga Park, all of Calif., assignors to Adolph E. Goldfarb and Erwin Benkoe, Northridge, Calif.

Continuation-in-part of Ser. No. 334,444, Feb. 21, 1973, abandoned. This application Aug. 15, 1973, Ser. No. 388,574

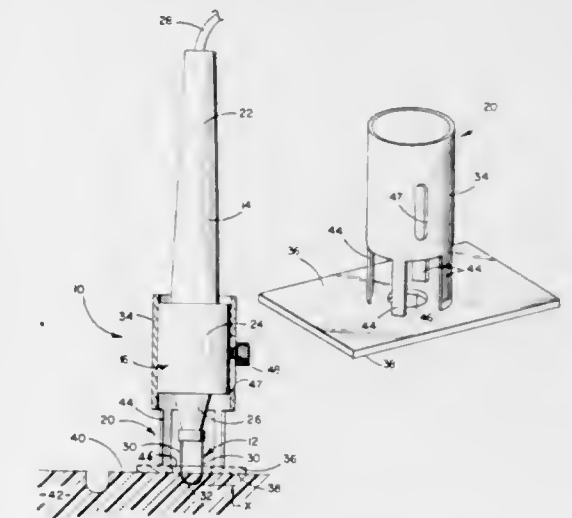
Int. Cl. H05b 1/00; B26d 7/10

U.S. Cl. 219-233

5 Claims

1. A device for forming designs in a workpiece of foam plastic material having a work surface comprising:
a readily heatable, relatively thin, generally U-shaped cutting element,
said cutting element having a pair of spaced apart legs connected by a light portion and presenting a pair of opposed cutting edges,
a support for supporting said cutting element with a portion of the cutting element engaging said workpiece and with the legs of said element extending generally normal to the work surface of the workpiece,

means operatively associated with said cutting element for heating said element to a temperature sufficient for at least partially melting the portions of the foam plastic material contacted thereby,
adjustment means operatively associated with said support and said cutting element for variably setting the depth of penetration of said element below the work surface of said workpiece,
releasable locking means for retaining said cutting element at the depth of penetration set by said adjustment means, a relatively transparent plate member operatively at-



tached to said support and extending generally normal to said cutting element legs for providing a workpiece engaging surface in juxtaposition to and adapted to move easily over said workpiece surface, said plate member having an aperture therein through which the cutting element extends, and
a handle attached to said support and extending generally parallel with said legs for use in manually sliding said plate member over the surface of the workpiece whereby said cutting element cuts an incision from said workpiece in accordance with the movement of said plate member.

3,902,043

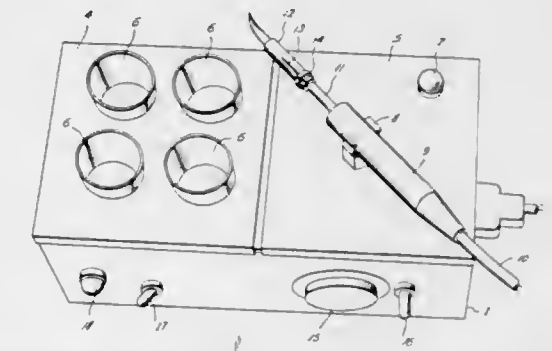
APPLIANCE FOR HEATING AND APPLYING DENTAL WAX

Virgil Kenneth Rogan, 1500 Nevada, Baytown, Tex. 77520
Filed July 19, 1973, Ser. No. 380,855

Int. Cl.² H05B 1/00; A61C 9/00; F27B 14/06

U.S. Cl. 219-242

1 Claim



1. In a dental tool, a cabinet having electrical power supply means associated therewith, two separate compartments in said cabinet, an electrical circuit in each of said compartments connected with the power supply means in the cabinet, a cover on said cabinet covering each of said compartments, an electrically heated wax applicator tool having detachable tips, means on said cabinet for selectively activating each circuit, one circuit associated with one compartment providing controlled current flow to the applicator tool for heating a tip detachably mounted on said applicator tool and the circuit

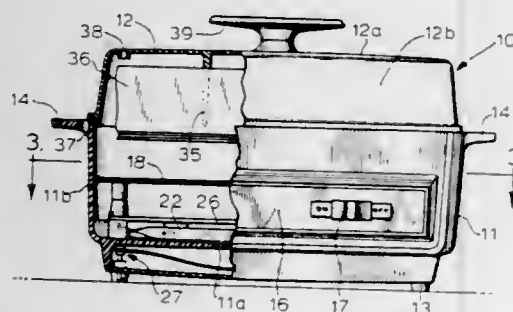
associated with said other compartment providing controlled current flow to an electrical heater associated with wax containing pots mounted in the cover of said other compartment, said other compartment housing the heating element associated with said pots, a thermostat incorporated in said other circuit for controlling the temperature of said pots, a tool holder mounted on the cover over said one compartment and adapted to receive and hold the applicator tool, said wax containing pots mounted in the cover over said other compartment extending therethrough into said other compartment, and signal lights on said cabinet and connected in each of the respective circuits to indicate that the applicator is energized and that the heater for the wax containers has been energized, respectively.

3,902,044

ELECTRICALLY HEATED TOWEL STEAMING APPLIANCE

Edward J. Doyle, Hatboro, and Robert S. Waters, Lancaster, both of Pa., assignors to Schick Incorporated, Lancaster, Pa. Continuation of Ser. No. 307,850, Nov. 20, 1972, abandoned. This application Mar. 18, 1974, Ser. No. 452,206 Int. Cl.² H05B 1/00; A61L 3/00 U.S. Cl. 219—284

3 Claims



1. An appliance for heating and serving towels, comprising, in combination:

a base having a bottom plate, a plurality of side walls extending upwardly from said bottom plate, and a perforated tray extending between said side walls above said bottom plate;

a cover for said base having a top plate and a plurality of side walls extending downwardly from said top plate into engagement with respective ones of said upwardly extending side walls from said bottom plate, said cover being removably received on said base and defining when received thereon a steam chest;

steam generating means within said base between said bottom plate and said perforated tray for producing a steam atmosphere within said steam chest;

means comprising a handle disposed substantially centrally on the outside surface of the top plate of said cover, said handle having a planar top surface for supporting said cover when inverted such that said top plate is spaced from an underlying supporting surface;

means comprising a plurality of fasteners integrally molded into said top plate and projecting from the inside surface of said cover into said steam chest for suspending a plurality of towels in said steam atmosphere when said cover is closed, and for supporting said towels in an ordered arrangement when said cover is removed and inverted for serving;

means comprising at least one aperture through said top plate at a location remote from said handle for relieving pressure within said steam chest when said cover is closed; and

means on the inside surface of said top plate comprising a standpipe communicating with said at least one aperture for raising the inside terminus of said aperture above the inside surface of said top plate to prevent condensate on said inside surface from escaping through the aperture when said cover is removed and inverted.

3,902,045

ELECTRIC CONVECTION HEATER HAVING A FRICTION-TYPE BLOWER

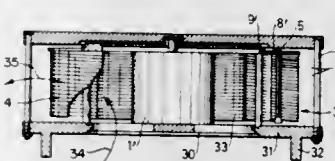
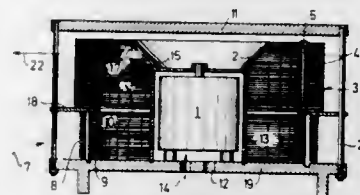
Ingeborg Laing, Hofener Weg 35 bis 37, 7141 Aldingen near Stuttgart, Germany

Filed Feb. 21, 1973, Ser. No. 334,446

Claims priority, application Austria, Mar. 2, 1972, 1724/72 Int. Cl. H05b 1/00; F24h 3/04; F01d 1/36

U.S. Cl. 219—371

14 Claims



1. An electrical resistance convection heater having a friction-type blower rotor comprising a plurality of axially spaced annular fins in the form of a helix of substantially flat laminar material where the pitch of the helix is so small that each turn of the helix approaches a laminar annulus and where the annular interior forms an axial interior air inlet whereby when said rotor is rotated air enters the interior of the rotor in an axial direction and flows to the exterior of the rotor in a radial direction through the spaces between the axially spaced fins, a motor for rotating the rotor, and a stationary annular heating element mounted coaxially with respect to the rotor and located upstream of the rotor with respect to the direction of air flow through the rotor.

3,902,046

HEAT TREATMENT APPARATUS FOR SYNTHETIC YARN

Shigeo Oi, 929-4, Nakahigano, Inazato-machi, Nagano, Japan

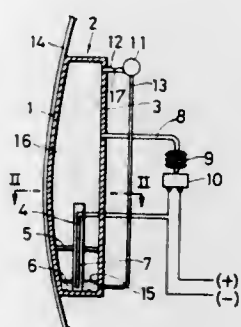
Filed May 6, 1974, Ser. No. 467,011

Claims priority, application Japan, May 16, 1973, 48-54273

Int. Cl. F27b 9/06

U.S. Cl. 219—388

3 Claims



1. Heat treatment apparatus for synthetic yarn having an elongate closed evacuated vessel having a heat exchange surface at its outside face, said closed vessel being filled for a small portion of its height with heat medium liquid, and a heat medium vapor chamber formed on and above the free surface of the heat medium liquid, said apparatus comprising:

A. an elongate porous wire substance supported and extending in the elongate closed vessel, the major upper part of which is exposed to the vapor chamber above the free surface of the heat medium liquid, and the lower part of which is submerged in the heat medium liquid;

B. an elongate electric heater provided in and in contact with said porous substance in the elongate closed vessel, throughout substantially the full height of said porous substance;

C. a header upon the exterior of said vessel adjacent its upper portion and communicating therewith;

D. a conduit depending from said header and connected to said vessel below the level of said heat medium liquid;

E. there being a throttle in the connection between said vessel and header;

F. said vessel having a plain heat exchange surface.

3,902,047

LABEL READER WITH ROTATABLE TELEVISION SCAN

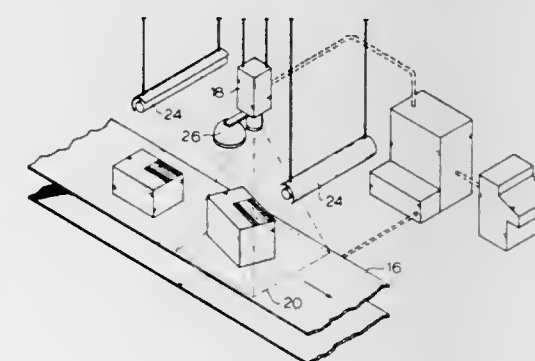
Anton Roy Tyler; Vickram Sondhi, both of Toronto, and Ralph Sherwill Cass, Weston, all of Canada, assignors to Ferranti-Packard Limited, Toronto, Canada

Filed Aug. 31, 1973, Ser. No. 393,552

Int. Cl.² G06K 7/10

U.S. Cl. 235—61.11 E

14 Claims



1. In a method of extracting information encoded on a surface, movable along a locus relative to a television camera, wherein location marks indicating orientation contrast with said background,

providing a television camera constructed and designed to scan the image formed therein, in a raster with a predetermined orientation,

said television camera being designed to provide a video scan output signal and being designed to scan in accord with horizontal and vertical deflection signals, moving said surface along a locus through the field of view of said camera,

causing said camera to alternately scan in rasters whose orientations are more nearly perpendicular than parallel, analyzing the video output signal resulting from said alternating rasters to obtain a measure of the angle of said location marks relative to each raster.

3,902,048

OMNIDIRECTIONAL OPTOMECHANICAL SCANNING APPARATUS

John Martin Fleischer, San Jose, and David Harwood McMurry, Portola Valley, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed July 11, 1974, Ser. No. 487,473

Int. Cl. G06k 7/10; G08c 9/06

U.S. Cl. 235—61.11 E

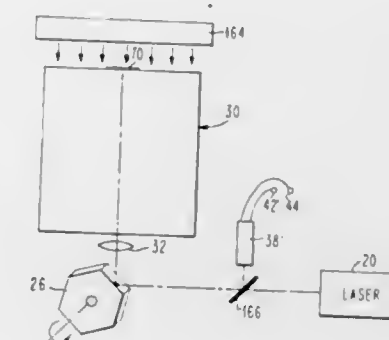
14 Claims

1. Omnidirectional optomechanical scanning apparatus for scanning bar coded labels, comprising a scanning window at which said labels are presented in random orientation,

means for generating a beam of light,

optical means optically coupled to said generating means for deflecting said beam of light in a line in a given plane, optical means interposed between said deflecting means and said scanning window for reflecting said deflected beam of light into scanning lines intersecting the plane of said scanning window at predetermined angles for pro-

ducing a progression of crossed scans across said scanning window, photosensitive means,



optical means interposed between said light beam generating means and said optical deflecting means for passing said beam onto said deflecting means and directing any light beam returning from said deflecting means onto said photosensitive means.

3,902,049

BINARY BAR CODE READER CAPABLE OF READING SKEWED LINES

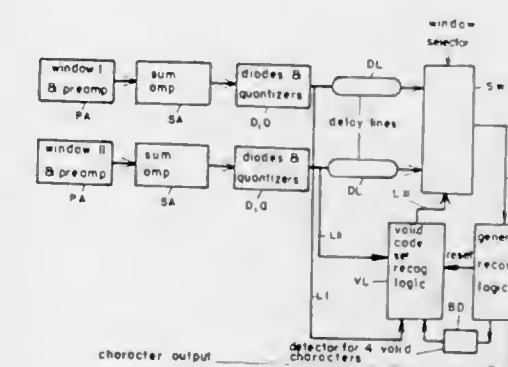
Leland J. Hanchett, Jr., Winchester, Mass., assignor to Taplin Business Machines Incorporated, Burlington, Mass.

Filed Feb. 25, 1974, Ser. No. 445,191

Int. Cl.² G06K 7/00

U.S. Cl. 235—61.11 E

8 Claims



1. An optical character reader comprising

a. a linear array of photosensors;

b. a first channel including a first group of summing amplifiers carrying signals which are a combination formed by said first group of summing amplifiers of the outputs of a first portion of the constituent photosensors of said array;

c. a second channel including a second group of summing amplifiers carrying signals which are a combination formed by said second group of summing amplifiers of the outputs of a second portion of the constituent photosensor of said array;

d. a dual state change-over selector switch means having a first input derived from said first channel and having a second input derived from said second channel and having an output derived selectively from said first channel and from said second channel;

e. character recognition circuitry having an input formed by the output of said selector switch means;

f. a detector under the control of said character recognition circuitry for detecting a predetermined number of successive valid characters within a given scan;

g. additional recognition circuitry under the control of said detector for controlling the state of said change-over switch means in accordance with the truth table

3,902,056

INTERIOR LIGHTING FIXTURE

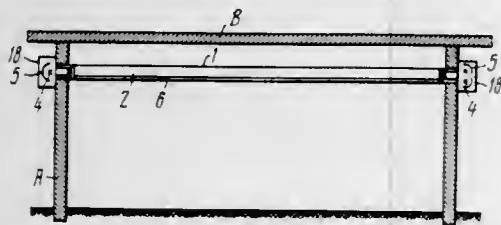
Julian Borisovich Aizenberg, ulitsa Koroleva, 3a, kv. 4, Moscow; Genokh Borukhovich Bukhman, Volgogradskaya ulitsa, 31, kv. 151, and Vladimir Ignatievich Andreenko, ulitsa Entuziastov, 29, kv. 15, both of Kiev, U.S.S.R.

Filed May 15, 1974, Ser. No. 470,288

Int. Cl. F21

U.S. Cl. 240—1 LP

13 Claims



1. An interior lighting fixture comprising a light guide installed in a building with at least a part of the surface of the light guide casing covered throughout its length with a layer reflecting luminous radiation, said casing being made of an elastic transparent film; a light source with optical means for admitting light into said light guide; and means for imparting a preset shape to the light guide installed in the building.

3,902,057

SUBMERSIBLE TRAILER LIGHT

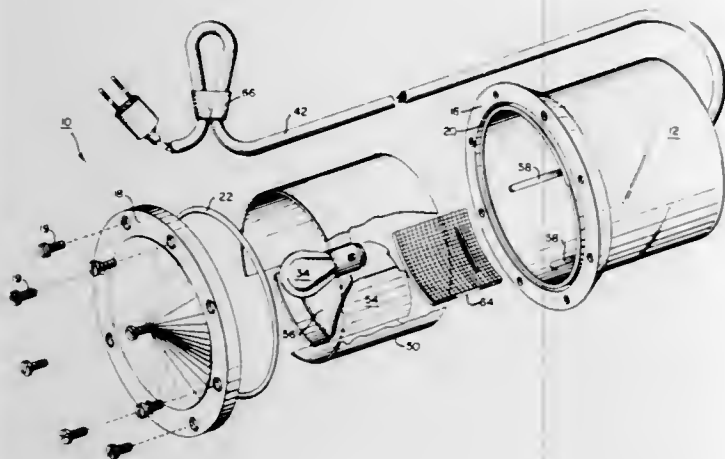
Paul A. La Violette, North Haven, Conn., assignor to Paul Spinnato, Branford, Conn., a part interest

Filed Oct. 9, 1973, Ser. No. 404,239

Int. Cl.² B60Q 1/30, 1/56

U.S. Cl. 240—8.3

3 Claims



1. In a submersible trailer light a cup-shaped casing formed of molded clear transparent material and having a closed bottom and a flange surrounding the open mouth of the cup, a lens plate of translucent material covering said mouth, and means for securing said lens plate to said flange to form a watertight joint about the mouth of said casing; said casing having a pair of mounting posts projecting upwardly from the bottom wall thereof, and a pair of terminal bosses of lesser height than said posts, each of said posts being formed with an axial hole which passes through the bottom wall, each of said bosses having a spring contact strip mounted thereon to project outwardly therefrom generally parallel to the bottom wall of said casing in spaced relation thereto; said casing being formed exteriorly on its bottom wall with a nipple, and a bore passing through said nipple into said casing; a base plate received within said casing and supported on said mounting posts generally parallel to but spaced from

said bottom wall and said spring strips, screws passing through said base plate and the axial holes in said posts to secure said plate in said casing and form external mounting means for said light, gasket means forming a water-tight fit between said screws, base plate and posts; said base plate having a pair of sockets for receiving and removably retaining lamp bulbs therein, each of said sockets overlying at least one of said spring contact strips; electrical conductor means interconnecting said lamp sockets and at least one of said mounting screws, and other conductor means connected to each of said spring contact strips and passing outwardly through said nipple for an extended length, and a flexible tubing enclosing said other conductor means throughout its length, the near end of said tubing being received on said nipple and forming a water-tight joint therewith;

a removable flexible sheet mask positioned on the inner periphery of the casing wall to blank out transmission of light through any selected arc of the casing side wall;

an opaque shroud member of generally semicylindrical shape, open at its axially inner and closed at its axially outer ends, respectively, said shroud member being retained in said casing adjacent the side wall thereof with its open end abutting said base plate to encompass one of said lamp sockets, whereby to form an enclosure with the unmasked arc of said case side wall.

3,902,058

POCKET FLASHLIGHT

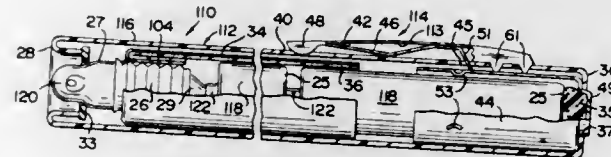
Richard N. Naylor, 1007 Pine Brook Dr.; David E. Staub, 461 Palm Island, both of Clearwater, Fla. 33515, and Terry F. Tanner, 323 Snell Isle Blvd., St. Petersburg, Fla. 33704

Continuation-in-part of Ser. No. 347,639, April 4, 1973, abandoned. This application May 7, 1974, Ser. No. 467,784

Int. Cl. F21L 7/00; H01R 25/08

U.S. Cl. 240—10.66

5 Claims



1. A flashlight structure comprising: an outer casing, power source means mounted on the interior of said outer casing, a light bulb disposed at least partially in said housing in electrical contact with said power source, switch means mounted on said casing and including a clip element, said switch means further including conductive switch bias means connected to said clip element and disposed between said clip element and said outer casing and in engagement with said outer casing so as to bias said clip element outwardly from and in spaced relation to said outer casing, primary conductor means engaging said light bulb and disposed in communicating relation with said switch means; switch engagement means interconnecting between said power source means and said switch means; said switch means further comprising a first contact element formed on said switch bias means and disposed in slidable engagement with said switch engagement means, said switch means comprises a second contact element electrically connected to said switch bias means, said second contact element being formed on said clip and disposed in movable, spaced relation from said primary conductor means, whereby the disposition of said switch bias means to said outer casing and said clip element serves to dispose said second contact element outwardly relative to said outer casing.

3,902,059

LIGHT REFLECTOR SYSTEM

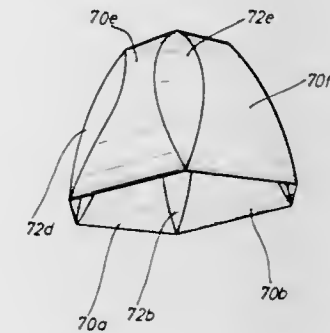
Albert C. McNamara, Jr., Houston, Tex., assignor to Esquire, Inc., New York, N.Y.

Filed Feb. 15, 1974, Ser. No. 443,018

Int. Cl.² F21V 7/09

U.S. Cl. 240—103 R

12 Claims



1. A light reflector for carrying a mounted light source therein and having a light emission opening through which light from the source is emitted, comprising:

first and second curved side reflectors oriented to cause at least some primary reflections of the source to be emitted through the opening,

said curved side reflectors meeting at least at a point defining a first corner at the opening, the primary reflection exit pupil rays of said light source to said curved side reflectors defining curved edges of said curved side reflectors, and

a curved corner reflector being defined within said curved edges of said side reflectors and being oriented relative to said light source to cause at least some primary reflections of said light source to be emitted through the opening without further reflection.

3,902,060

SELF-OPTIMIZING BIASING FEEDBACK FOR PHOTO-ELECTRIC TRANSMISSION SYSTEMS

James A. Neuner; Maurizio Traversi, both of Pittsburgh, Pa., and Dean C. Santis, Fairborn, Ohio, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 4, 1972, Ser. No. 241,048

Int. Cl. H04b 9/00

U.S. Cl. 250—199

7 Claims

1. A photo-electric transmission system including: a light responsive sensor having an electrical current output; a transistor amplifier having an emitter, base and collector with the base connected to the sensor in a manner to receive a current input from the sensor in response to light impinging on the sensor, the output of the amplifier appearing across the collector-emitter junction; and non-linear negative feedback means electrically coupled between the base and collector of the transistor amplifier for controlling the base current of the transistor amplifier in a manner to prevent the transistor amplifier from being biased past the threshold saturation state independent of the intensity of light impinging on the sensor.

3,902,061

DIGITAL OPTICAL COMPUTER TECHNIQUES

Ellis D. Harris, Claremont, Calif., assignor to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 396,941, Sept. 12, 1973, abandoned.

This application Aug. 9, 1974, Ser. No. 495,939

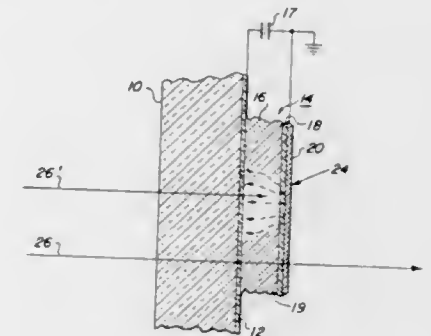
Int. Cl. H01J 31/50; H03K 3/42, 19/14

U.S. Cl. 250—213 A

26 Claims

6. An optical gate comprising: a semiconductor material having a predetermined bandgap energy and a corresponding absorption band edge energy level,

means for irradiating said semiconductor with radiation having a wavelength approximating the absorption band edge energy level of said semiconductor material whereby said radiation is transmitted through said semiconductor material, and



means for applying a potential across said semiconductor material of a magnitude sufficient to shift said absorption band edge energy level whereby said radiation is substantially absorbed in said semiconductor material.

3,902,062

REVERSE PATH IMAGING AND TRANSFIXING COPYING METHOD

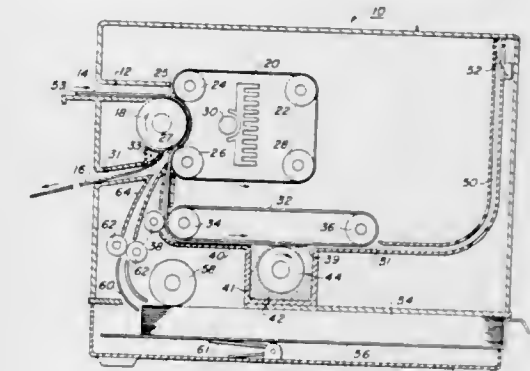
Roger H. Eichorn, deceased, late of Rochester, N.Y. (by Lincoln First Bank of Rochester, executor), assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 27, 1973, Ser. No. 428,934

Int. Cl. H01J 37/26

U.S. Cl. 250—318

8 Claims



1. A thermographic copying method comprising the steps of bringing a cut sheet of heat sensitive material into contact with an original bearing an image, to form a sandwich; moving the sandwich in a first direction along a predetermined path extending through a first station and a remotely spaced development station; exposing said sandwich at said first station to radiation from a radiant source to thermally impart said image to said sheet; separating said original from said sheet at a point between said first station and said development station; passing said sheet through said development station to at least partially develop said image while continuing to move said sheet in said first direction along said path; moving said sheet in the opposite direction along said path back through said development station and said first station; and re-exposing said sheet at said first station to radiation from said source to fix said image.

3,902,063

ADJUSTMENT OF PHASE DETECTION IN PHOTOELECTRIC SENSOR HEAD

Kurt Oelsch, Glockenstrabe, and Klaus-Dieter Schulz, Leinesstrabe, both of Germany, assignors to Fernsteuergerate, Kurt Oelsch KG, Berlin, Germany

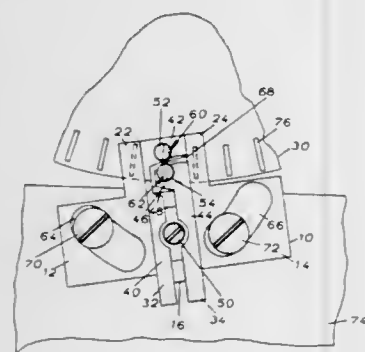
Filed Aug. 5, 1974, Ser. No. 495,033

Claims priority, application Germany, Aug. 7, 1973, 23398745

Int. Cl.² G01D 5/36

U.S. Cl. 250-233

7 Claims



1. In a photoelectric sensor head for an incremental angular position pick-off including a pair of sensors, each sensor including a light source and a photoelectric detector, said detector and light source being positioned to define a space therebetween, a rotatable disc having an edge portion positioned in the space between the light sources and the detectors, said edge portion having light modulating means whereby each detector produces an electrical pulse train as said disc rotates, said sensors being arranged so that said pulse trains are out of phase with respect to each other, the improvement comprising:

- a common support for said sensors; and
- means mounting said support for movement in an arcuate path about a pivot point between the sensors and for releasably affixing said support at desired locations in said path;
- said light modulating means comprising a pattern of straight, radial transparent areas having radially inner portions and radially outer portions;
- one of said sensors being positioned with its space coincident with the inner portions and the other of said sensors being positioned with its space coincident with the outer portions.

3,902,064

ION MOBILITY MASS SPECTROMETER

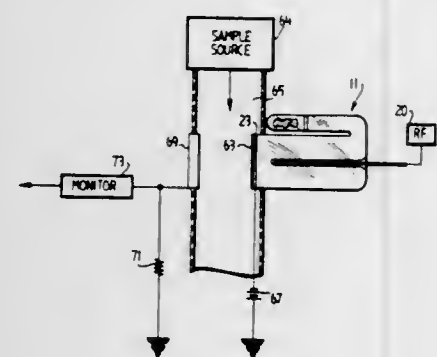
Robert A. Young, R.R. No. 2, Loretto, Ontario, Canada

Filed July 12, 1974, Ser. No. 488,188

Int. Cl.² B01D 59/44; H01J 27/00

U.S. Cl. 250-287

4 Claims



1. An ion mobility mass spectrometer for helium doped gases comprising

a helium resonance lamp having an emission at 584A;
a window in said lamp partially transparent to radiation at 584A;
a channel of non-conductive material containing said window through which said gases pass;
a collector plate in said channel opposite said window; means for maintaining said window at a negative potential relative to said collector plate; and
means for measuring an induced voltage resulting from ion movement within said gases between said window and said collector plate.

3,902,065

SCANNER FOR THE RECORDING OF RADIOACTIVITY DISTRIBUTION

Uwe Seebeck, Hamburg, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

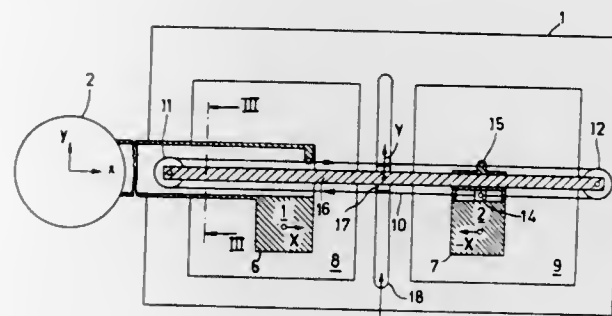
Filed Aug. 3, 1973, Ser. No. 385,538

Claims priority, application Germany, Aug. 23, 1972, 2241373

Int. Cl. G01t 1/20, 1/36

U.S. Cl. 250-327

3 Claims



1. In radio diagnostic scanning apparatus having two oppositely rigidly coupled radio detectors free to move in two orthogonal directions for simultaneous mechanical scanning of opposite sides of a body, an improved coupling arrangement for simultaneous mechanical driving of two corresponding writing heads, comprising:

- a wheel free to rotate about its axis;
- a straight guide track positioned in a first direction orthogonal to said wheel axis;
- means slidable along said track supporting said wheel and limiting translational movement of said wheel to a direction parallel to said first direction;
- two mechanical linkage elements engaging the periphery of said wheel and extending tangentially from opposite points on the circumference of said wheel in a parallel straight relationship in a second direction orthogonal to both the axis of said wheel and said first direction, said mechanical linkage elements having opposing motion in said second direction and being free to move in said first direction with said wheel;
- means mechanically coupling said radio detectors to one of said mechanical linkage elements, whereby movement of said detectors in one of said orthogonal directions moves said one linkage element in said first direction and movement of said detectors in the other of said orthogonal directions moves said one linkage element in said second direction causing rotation of said wheel and movement of the other of said linkage elements in opposition thereto;
- means mechanically linking one of said writing heads to one of said linkage elements; and
- means for selectively mechanically linking the other of said writing heads to either of said linkage elements, the resulting motion of said writing heads being either the same as each other or a mirror image of each other depending upon the linkage element to which said other of said writing heads is linked.

3,902,066

SCHOTTKY BARRIER INFRARED DETECTOR ARRAYS WITH CHARGE COUPLED DEVICE READOUT

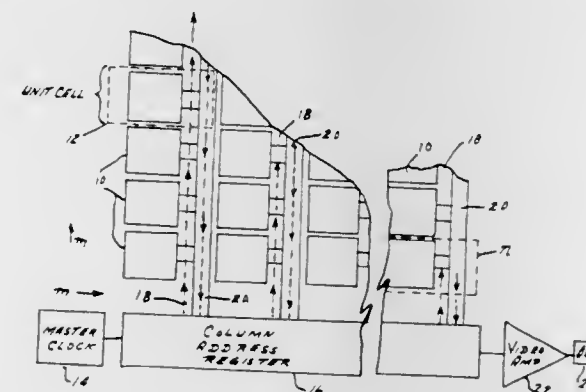
Sven A. Roosild, Framingham; Freeman D. Shepherd, Jr., Chelmsford; Andrew C. Yang, Concord, and Walter M. Shedd, Acton, all of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 18, 1974, Ser. No. 452,039

Int. Cl.² H01J 31/49

U.S. Cl. 250-332

4 Claims



1. An infrared detector array comprising: a plurality of infrared radiation sensing means arranged in an orderly two dimensional pattern; electrical means connecting each of the sensing means; register means connected to the sensing means through the said electrical means; clock means connected to the register means whereby each sensing means is controlled in time and sequence; an amplifier connected to the output of the register means, and an output display means connected to the amplifier means for providing an indication of sensed infrared radiation.

3,902,067

RADIOMETRIC APPARATUS

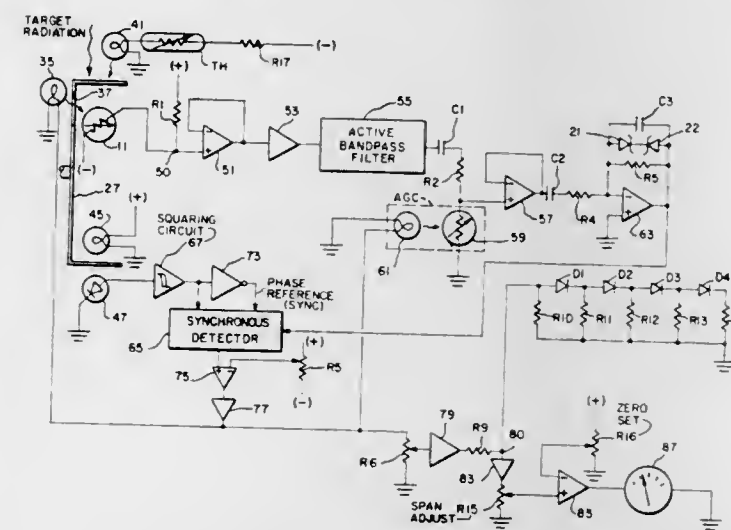
Alan S. Anderson, Littleton, Mass., assignor to Williamson Corporation, Concord, Mass.

Filed Feb. 22, 1974, Ser. No. 444,783

Int. Cl.² G01J 1/00

U.S. Cl. 250-342

9 Claims



1. Radiometric apparatus responsive to target temperatures approaching ambient, said apparatus comprising:
a detector element providing a signal which varies as a function of incident radiant energy;
an optical system for coupling radiation between a target and said detector element;
means for chopping radiation energy between said target and said detector element;
in the same portion of the field of view of said detector element as said target, a controllable radiation source energized at a predetermined level to provide to said detector a component of energy above the ambient radia-

tion level in said apparatus, said component being chopped in synchronism with any energy received from said target;
a second controllable radiation source for providing radiation energy incident on said detector, said chopping means including means for chopping radiation from said second source out-of-phase with the chopping of radiation from said target; and
servo loop means for controlling the energization of said second source as a function of the signal provided by said detector element to minimize the a.c. component of said signal at the chopping frequency, the energization of said second source being indicative of the sum of the radiation from said target and the first said source.

3,902,068

METHOD AND APPARATUS FOR MEASURING THE GAS TRANSMISSION THROUGH PACKAGING MATERIALS

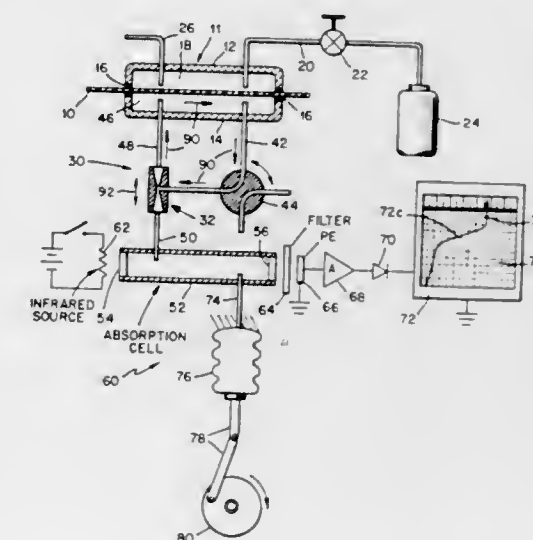
Rex C. Wood, New Brighton, Minn., assignor to Modern Controls, Inc., Minneapolis, Minn.

Filed Apr. 10, 1974, Ser. No. 459,668

Int. Cl.² G01N 21/26

U.S. Cl. 250-343

18 Claims



1. A method of detecting the passage of gas through a barrier comprising the steps of subjecting one side of the barrier to a gas, repeatedly compressing at least a portion of any gas that has passed through said barrier, transmitting radiant energy through said repeatedly compressed portion of gas, and determining the presence of any modulation of the radiant energy transmitted through said repeatedly compressed portion of gas, whereby the presence of any such modulation is indicative of gas passage through the barrier when said gas possesses the capability of absorbing at least some of said radiant energy.

3,902,069

SERVICING DESK FOR AN X-RAY DIAGNOSING DEVICE

Peter Skarke, Uttenreuth, and Hans Wichert, Erlangen, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Dec. 28, 1973, Ser. No. 429,136

Claims priority, application Germany, Jan. 9, 1973, 2300920

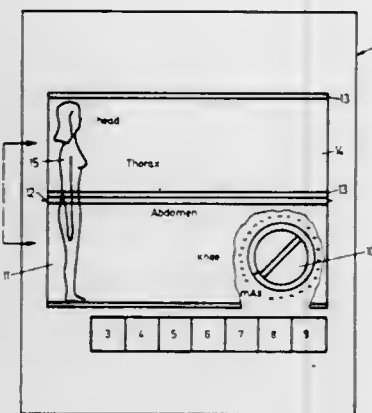
Int. Cl. G03b 41/16

U.S. Cl. 250-402

4 Claims

1. A control desk for an X-ray diagnosing device having an X-ray power supply and an X-ray tube connected with said X-ray power supply, said desk comprising a cover swingable from an open position to a closed position and vice versa, a plurality of keys carried by said desk for setting programmed operational values including the X-ray tube high voltage and an X-ray exposure time, at least one control for an individual setting of at least one operational value, first switching means connected with said keys, said control and said X-ray power

supply for setting of the operational values, second switching means actuable by said cover for switching on said control for an individual setting of an operational value at said X-ray power supply when it is in its open position and for switching on all contacts of said keys when it is in its closed position, said



second switching means switching off said control when said cover is in its closed position and switching off at least a part of the contacts of said keys when said cover is in its open position, said cover being adapted to cover the control in its closed position.

3,902,070

SUPPORT SYSTEM FOR X-RAY APPARATUS

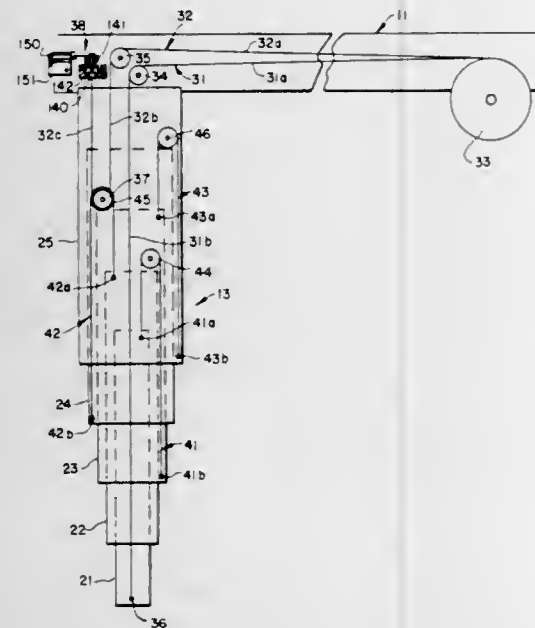
William H. Amor, Jr., Auburn, and Thomas Di Franco, Mayfield Heights, both of Ohio, assignors to Picker Corporation, Cleveland, Ohio

Filed Nov. 21, 1973, Ser. No. 418,051

Int. Cl. G01n 23/00

U.S. Cl. 250-525

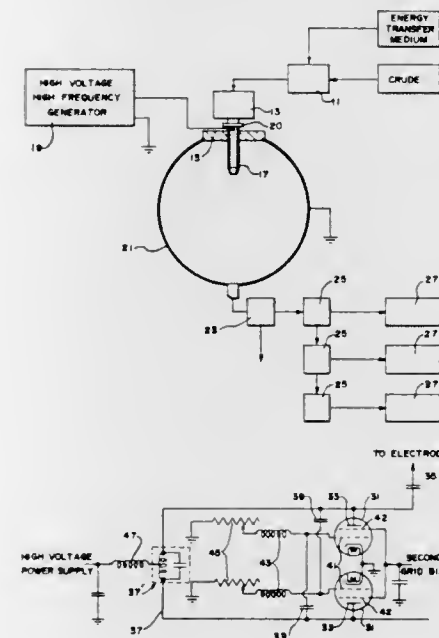
23 Claims



1. In an X-ray apparatus of the type including an X-ray source carried on an extensible column depending from a mount, the improvement of a counterbalance system for supporting the column, comprising:

- a counterbalance means for producing a force which will offset the weight of the column and the X-ray source;
- a pair of cables each operably connecting said counterbalance means to said column and each being capable of carrying such weight;
- sensing means for sensing failure of one of said cables; and
- locking means connected to said sensing means for arresting the movement of the other of said cables when failure of said one cable is sensed.

3,902,071
APPARATUS FOR ELECTRICALLY CRACKING
PETROLEUM CRUDE
Martin Horowitz, 2750 Dwight Way, Berkeley, Calif. 94704
Filed Dec. 18, 1973, Ser. No. 425,713
Int. Cl. B01K 1/00; C10G 9/00
U.S. Cl. 250-543 6 Claims



- An apparatus for cracking petroleum crude oil comprising:
 - a generally spherical copper cracking chamber having at least two openings,
 - an insulator having a center bore hermetically sealed in one of said openings in said cracking chamber,
 - a generally cylindrical hollow electrode disposed through and hermetically sealed in the bore in said insulator and extending into the cracking chamber, said hollow electrode forming an injection nozzle through which the crude oil is introduced into the cracking chamber,
 - means for mixing an energy transfer medium with the crude oil before it is injected into the cracking chamber,
 - means for supplying a generally constant voltage to said hollow electrode at a frequency generally between 50MHz and 150MHz whereby an electrical discharge occurs between the hollow electrode and the energy transfer medium,
 - means for continuously removing the mixture of cracked crude and the energy transfer medium from the cracking chamber through the other of said openings,
 - means for separating the energy transfer medium from the fractions of cracked crude, and
 - means for separating the fractions of the cracked crude for storage.

3,902,072

WIND TURBINE

Paul J. Quinn, 633 S.W. 5th St., Boca Raton, Fla. 33432

Filed Feb. 19, 1974, Ser. No. 443,276

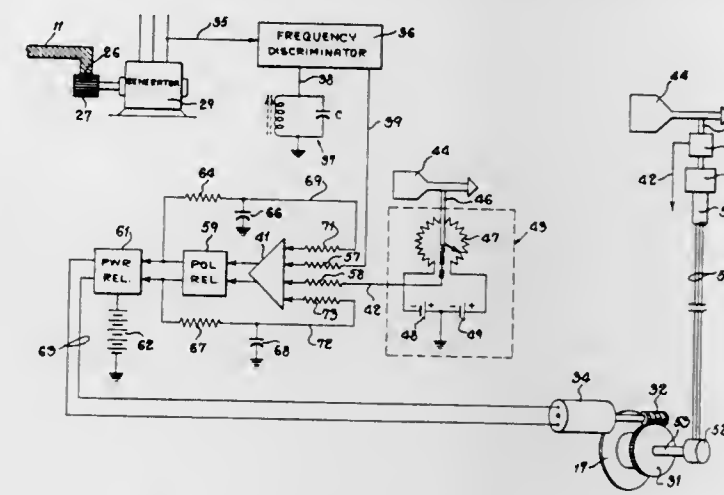
Int. Cl. F03D 9/00

U.S. Cl. 290-44

10 Claims

- A wind turbine comprising, in combination, a platform; a plurality of vertical blades rotatably carried upon said platform; a vertical, central sleeve for carrying said platform; means for rotatably supporting said sleeve and, in turn, said platform, said blades being responsive to wind pressure for revolving said platform; gear means including a ring gear and a stub gear journaled around said sleeve; said stub gear being rigidly coupled to said ring gear, a transmission for coupling each of said blades to said gear means for providing a predetermined rotation of each blade with respect to rotation of

said platform; means including a weather vane responsive to wind direction, a shaft connected at one end to said weather vane, electronic means connected at the other end of said shaft, said electronic means being responsive to movement of



said weather vane, second gear means responsive to said electronic means, said second gear means being coupled to said ring gear for orienting said blades at optimal angles for power absorption from the wind; and means responsive to rotation of the platform for generating power.

3,902,073

STARTER GENERATOR ELECTRICAL SYSTEM
UTILIZING PHASE CONTROLLED RECTIFIERS TO
DRIVE A DYNAMOELECTRIC MACHINE AS A
BRUSHLESS DC MOTOR IN THE STARTER MODE AND
TO PROVIDE FREQUENCY CONVERSION FOR A
CONSTANT FREQUENCY OUTPUT IN THE
GENERATING MODE

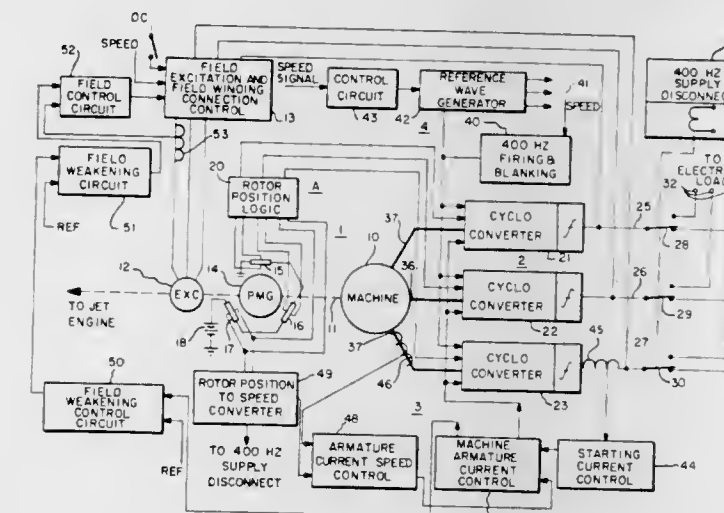
David Logan Lafuze, Fairview, Pa., assignor to General Electric Company, Wilmington, Mass.

Filed Feb. 7, 1974, Ser. No. 440,322

Int. Cl. F02N 11/04; H02K 23/52; H02P 9/04

U.S. Cl. 290-46

14 Claims



- In a starter-generator system, the combination of:
 - a dynamoelectric machine for operation both as a brushless DC motor and as an AC generator,
 - cycloconverter means coupled to said machine for selectively supplying current to the machine armature windings during motor operation and for converting the frequency of the output from the machine to provide a constant frequency output from the machine during generator operation, said cycloconverter means including banks of oppositely poled, phase controlled, gated switching devices,
 - means to operate said dynamoelectric machine as a brushless DC motor including:
 - a source of polyphase alternating supply voltage coupled to said banks of switching devices to drive current selectively through said gated switching devices,

- means for sensing the rotor position of said dynamoelectric machine and for gating selected ones of said switching devices in sequence to permit current flow in selected armature windings as a function of rotor position so that current flow is in the armature winding having high flux associated therewith to produce positive torque,
- means responsive to the phase of the supply voltage for producing gating signals which have durations that are respectively proportional to the intervals that the supply voltage phases are positive and negative relative to the preceding phase in the polyphase supply voltage sequence for gating selected ones of said switching devices in sequence only if the phase of the alternating polyphase supply voltage is proper and the rotor position is proper,
- a source of constant frequency reference waves,
- comparator means for comparing the reference frequency waves with the output voltage from said dynamoelectric machine,
- means for converting the system from the motoring to the generating mode including:
 - means responsive to the speed of the dynamoelectric machine for disconnecting the supply voltage, the rotor position and supply phase gating means from the banks of switching devices of said cycloconverters when the machine reaches a predetermined speed at which the machine is to operate as a generator,
 - means responsive to the speed of the dynamoelectric machine for coupling the output from said comparator means to the banks of switching devices for said cycloconverter means at said predetermined speed to gate said switching means and to control the point in the phase of the output voltage from the dynamoelectric machine at which the switching devices conduct in response both to the output voltage from said dynamoelectric machine and said reference wave signal to supply a constant frequency alternating output from the system when the system is converted to the generating mode.

3,902,074

ENGINE INTERLOCKING DEVICE

Kosaku Uota, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

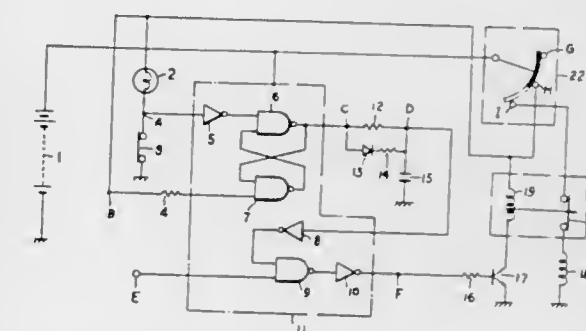
Filed Dec. 19, 1973, Ser. No. 426,080

Claims priority, application Japan, Dec. 19, 1972, 47-127497

Int. Cl. B60r 21/10

U.S. Cl. 307-10 SB

2 Claims



- An engine interlocking device, which comprises:
 - a starter switch coil connected through an ignition switch to a power source,
 - a first inverter circuit whose input terminal is connected through said ignition switch to said power source and is connected through a switch which responds to the starting or stopping of said engine to ground;
 - a flip-flop circuit comprising a first NAND circuit having an input terminal connected through said ignition switch to said power source and second NAND circuit having an

input terminal connected to the output terminal of said first inverter circuit;
 a timing circuit comprising a condenser connected to the output terminal of said second NAND circuit of said flip-flop circuit;
 a second inverter circuit whose input terminal is connected to the output terminal of said timing circuit;
 a third NAND circuit having one input terminal for receiving a signal in response to the condition of connection of a seat belt and whose other input terminal is connected to the output terminal of said second inverter circuit;
 a third inverter circuit connected to the output terminal of said third NAND circuit;
 a switching element controlled by the output of said third inverter circuit; and
 a relay for opening an excitation circuit of said starter switch coil by actuating at the time said switching element is turned on said relay being connected through said ignition switch to said power source; whereby said engine may be started after it stops provided said ignition switch is turned off and then on after a predetermined interval.

3,902,075

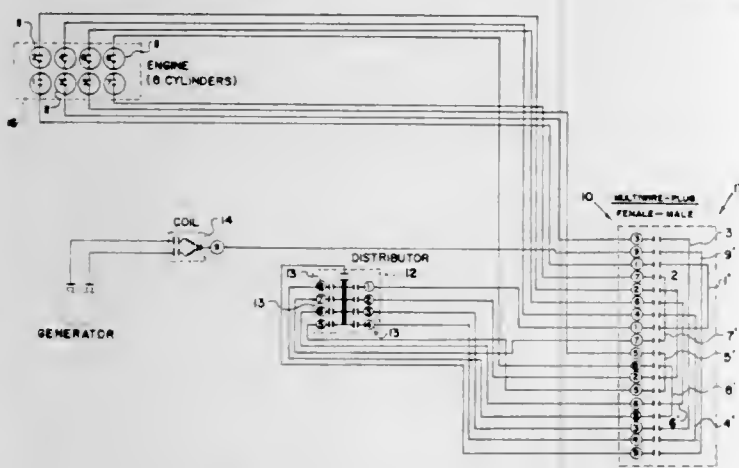
CAR ANTI-THEFT DEVICE

Stefan Oros, 755 Anderson Ave., Cliffside Park, N.J. 07010
 Continuation of Ser. No. 259,917, June 5, 1972, abandoned,
 which is a continuation-in-part of Ser. No. 225,446, Feb. 11,
 1972. This application Dec. 20, 1973, Ser. No. 426,447

Int. Cl. H02g 3/00

U.S. Cl. 307-10 AT

23 Claims



1. An automobile anti-theft device operable within the high voltage circuitry of an automobile ignition system comprising, said ignition system including high voltage output means, at least one fuel ignition means and at least one lead between said high voltage output means and at least one said fuel ignition means, a female receptacle including no less than four recessed openings, at least one of said leads between said high voltage output means and said fuel ignition means severed, said severed portions engaged in at least two optionally selected said female openings each opening including one part of one of said severed high voltage output means to fuel ignition means, and a male plug including no less than four pins, at least four of said pins in pairs including a contact lead to a second of said paired pins, said male pins interfitable with said female openings, said pins contactable with high voltage including insulation along its length to expose only a small portion to make contact with a lead in said female opening.

3,902,076

GENERATOR MONITORING CIRCUIT

Elwood J. Meyers, and George H. Anderson, both of Rockford, Ill., assignors to Barber-Colman Company, Rockford, Ill.
 Filed Aug. 12, 1974, Ser. No. 496,521

Int. Cl. H02j 3/38

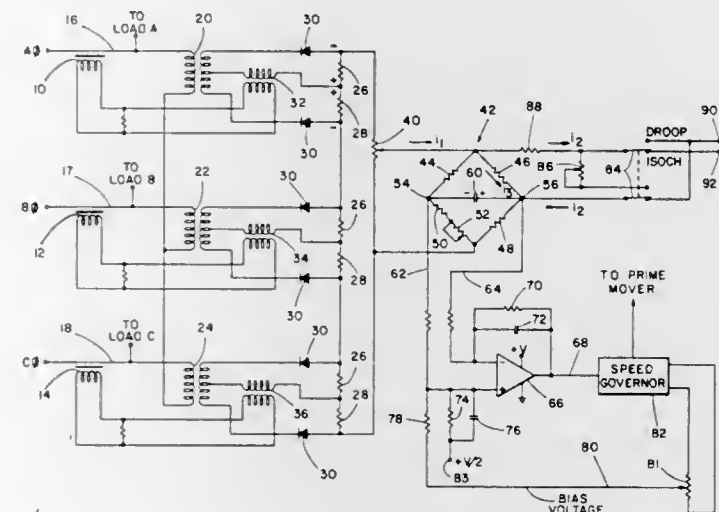
U.S. Cl. 307-57

4 Claims

1. A system for maintaining substantially equal loads on a plurality of power generators, said system including a separate

speed governor for controlling each of said generators; a monitoring circuit for each of said generators including a current sensing transformer network; and a bridge network to which the transformer network is connected to produce an output representative of the current from each generator; the improvement comprising for each of said generators:

- a. means preset to a particular reference voltage level associated with a particular type speed governor receiving the



output from said bridge network for producing and applying a control signal to said particular type speed governor at substantially said particular reference voltage level; and

- b. means for interconnecting said bridge networks so that a voltage change on a first bridge produces a compensating voltage change on the remaining bridges so as to maintain substantially equal loads.

3,902,077

VARIABLE ATTENUATING CIRCUIT

Takehide Takemura, and Shunzo Oka, both of Hirakata, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

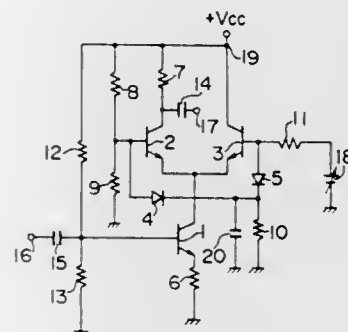
Filed June 18, 1974, Ser. No. 480,386

Claims priority, application Japan, June 21, 1973, 48-70190

Int. Cl. H03F 3/45; H03G 3/10

U.S. Cl. 307-237

5 Claims



1. A variable attenuating circuit comprising a differential section including a first transistor and a second transistor parallel with each other, a constant bias voltage being applied to the base of said first transistor, a constant-current circuit consisting of a third transistor whose collector being connected to the emitters of said first and second transistors in said differential section, and diodes individually connected in forward polarity between the respective bases of said first and second transistors and a grounded common resistor, an input signal being coupled to the base of said third transistor, the base bias voltage on said second transistor being controlled to obtain an attenuated output signal from an output terminal connected to said first transistor.

3,902,078

ANALOG SWITCH

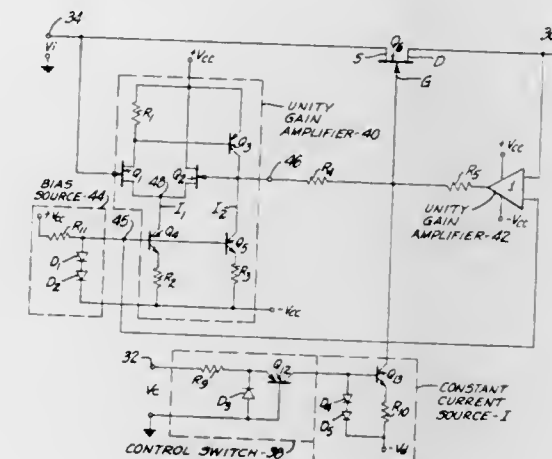
Dean E. Peterson, Tujunga, Calif., assignor to Crystal Industries, Inc., Hollywood, Calif.

Filed Apr. 1, 1974, Ser. No. 456,533

Int. Cl. H03K 17/60, 17/16, 3/353; H04B 1/10

U.S. Cl. 307-251

8 Claims



1. An analog switch comprising:
 a FET having an input for receiving an analog input signal and an output for an analog signal, with the source electrode of said FET connected to said input;
 current source means for applying a constant current to the gate electrode of said FET to turn off said FET;
 control switch means for activating said current source;
 first constant resistance means and a first operational unity gain amplifier directly connected in series between the junction of said current source and gate electrode and said source electrode, with said source electrode connected to the first amplifier input and the first amplifier output connected to said first resistance means, and with the potential at said gate electrode varying as a function of the potential at said FET input when said FET is turned off, and with said first amplifier having a high input impedance and a low bias current for isolating said source electrode from said gate electrode; and
 second constant resistance means connected between the junction of said current source and gate electrode and the drain electrode of said FET.

3,902,079

SWITCHING CIRCUIT HAVING MULTIPLE OPERATING MODES

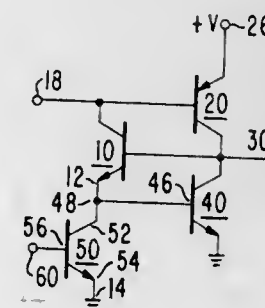
Adel Abdel Aziz Ahmed, Annandale, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 21, 1974, Ser. No. 435,161

Int. Cl. H03K 17/00

U.S. Cl. 307-255

9 Claims



1. A switching circuit having multiple operating modes comprising:
 first and second circuit points for receiving a signal thereacross to be switched;

a third circuit point;
 switch means connected between said first and third circuit points, said switch means having a trigger electrode responsive to a trigger signal for placing said switch means in a conductive state and having also a regenerative feedback path for maintaining said switch means in said conductive state;

first variable impedance means having a controllable current path connected between a point in said regenerative feedback path and said second circuit point, said first variable impedance means having a control electrode connected to said third circuit point for controlling the impedance of said current path;

second variable impedance means having a conduction path connected between said second and third circuit points and a control electrode for controlling the conduction thereof; a first circuit control terminal connected to said control electrode of said second variable impedance means for receiving a circuit operating mode control signal; and a second circuit control terminal connected to said trigger electrode of said switch means for initially receiving said trigger signal and applying said trigger signal to said trigger electrode.

3,902,080

SWITCHING DEVICE

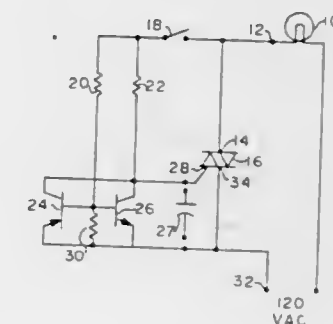
Raymond Edward St. Clair, Rt. 2, Box 154, and Melvin A. Hughes, Rt. 2, Box 95, both of New Market, Ala. 35761

Filed June 26, 1974, Ser. No. 483,286

Int. Cl. H03k 17/72

U.S. Cl. 307-252 B

9 Claims



1. An electrical switching assembly comprising:
 first and second electrical terminals to be selectively opened and closed;
 a solid state 'A.C. switch having a gate lead and first and second controlled leads;
 a PNP transistor and NPN transistor with emitters and collectors commonly connected in parallel between said gate lead and said first controlled lead, respectively;
 a control switch having an input terminal connected to said second controlled lead and an output terminal;
 a current-limiting resistor connected between said switch output terminal and said gate lead and collector leads of said transistors;
 a voltage divider comprising a first resistor and second resistor, wherein said first resistor has a resistance value substantially greater than said second resistor;
 a first terminal of said first resistor being connected to said output terminal of said control switch, a second terminal of said first resistor being connected to a first terminal of said second resistor and to the bases of said transistors, and a second terminal of said second resistor being connected to said emitters to said transistors and to said first controlled lead and to said second electrical terminal;

whereby upon the application of an A.C. potential through a load across said first and second electrical terminals, switching operation occurs upon the closing of said control switch with said solid state A.C. switch providing a closed circuit in the event that closure of said control switch occurs when a source switching potential is below a selected discrete

voltage, and when said control switch is closed when said source voltage is above a selected discrete voltage, one of said transistors turns on before said solid state A.C. switch can turn on, applying initially a reduced current flow through a said load.

3,902,081

PHASE SPLITTER CIRCUIT

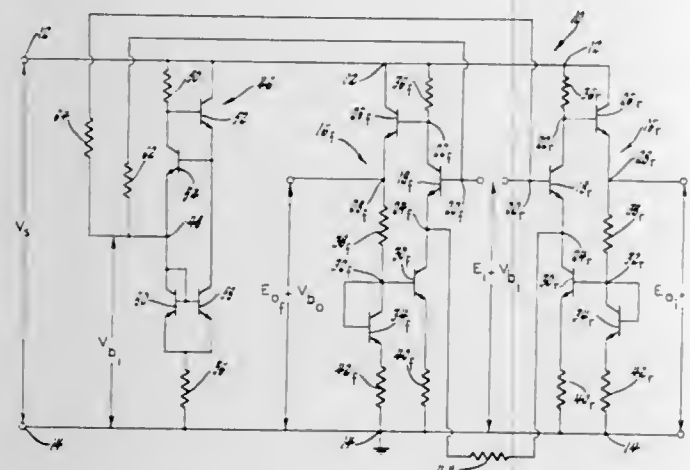
Burtron D. Schertz, Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed July 11, 1974, Ser. No. 487,774

Int. Cl.² H03H 7/18

U.S. Cl. 307-262

2 Claims



1. A phase splitter circuit for developing left and right output signals E_{of} and E_{or} of equal magnitude and opposite phase between corresponding ones of left and right output nodes and a reference node in response to the application of a single input signal E_i between one of left and right input nodes and the reference node when a supply voltage V_{cc} is applied between a supply node and the reference node and when a suitable input bias voltage V_{bi} is applied between each of the left and right input nodes and the reference node, comprising: left and right first transistors each having a base electrode connected to a corresponding one of left and right input nodes, each having an emitter electrode connected to a corresponding one of left and right feedback nodes and each having a collector electrode connected to a corresponding one of left and right load nodes; left and right second transistors each having a base electrode connected to a corresponding one of the left and right input nodes and the reference node, each having a collector electrode connected to a single supply node, and each exhibiting a characteristic base-emitter junction voltage V_{be} ; left and right third transistors each having a base electrode connected to a corresponding one of left and right bias nodes, each having a collector electrode connected to a corresponding one of the left and right feedback nodes, each having an emitter electrode, and each exhibiting a characteristic base-emitter junction voltage V_{be} ; left and right fourth transistors each having a base electrode connected to a corresponding one of the left and right bias nodes, each having a collector electrode connected to a corresponding one of the left and right bias nodes, each having an emitter electrode, and each exhibiting a characteristic base-emitter junction voltage V_{be} ; left and right first resistors each exhibiting a resistance R_1 and each connected between a corresponding one of the left and right load nodes and the supply node; left and right second resistors each exhibiting a resistance R_2 and each connected between a corresponding one of the left and right output nodes and a corresponding one of the left and right bias nodes; left and right third resistors each exhibiting a resistance R_3 and each connected between the emitter electrode of a corresponding one of the left and right third transistors and the reference node; left and right fourth resistors each exhibiting a resistance R_4 and each connected between the emitter electrode of a corresponding one of the left and right fourth transistors and the reference node;

and a fifth resistor connected between the left and right feedback nodes; whereby the left and right output signals E_{of} and E_{or} ride upon an output bias voltage V_{bi} which is equal to one-half of the supply voltage V_{cc} when the following criteria are satisfied:

$$\begin{aligned} V_{be} &= V_{be} = V_{be} \\ R_1 &= R_2 + R_4 \\ R_3 &= R_4 \end{aligned}$$

3,902,082

DYNAMIC DATA INPUT LATCH AND DECODER

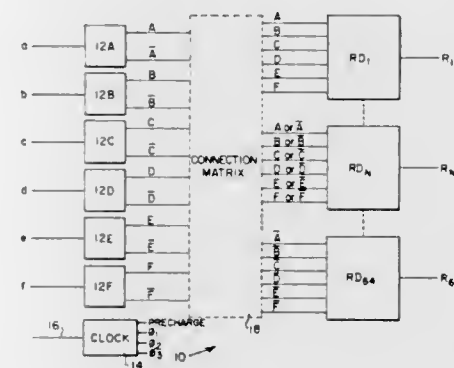
Robert James Proebsting, and Robert Sherman Green, both of Richardson, Tex., assignors to Mostek Corporation, Carrollton, Tex.

Filed Feb. 11, 1974, Ser. No. 441,500

Int. Cl.² H03K 3/286, 3/33; G11C 8/00, 7/00

U.S. Cl. 307-279

7 Claims



7. An address decoder comprising a plurality of input latches each having at least one logic input and true and complement logic outputs, said latch including means for producing a logic 0 level on both logic outputs during a static period then producing a logic 1 level on one of the logic outputs and a logic zero on the other in response to a logic level on the logic input during a predetermined period of a dynamic period, each input latch comprising first and second transistors the channels of which are connected in series between a second clock node and a source voltage node and which form a first output node between the two transistors, third and fourth field effect transistors the channels of which are connected in series between the second clock node and the source voltage node and which form a second output node between the two transistors, the gate nodes of the first and fourth transistors being cross-coupled and electrically common, the gate nodes of the second and third transistors being cross-coupled and electrically common, first and second charging circuit means for applying pre-charged voltages to the cross-coupled gate nodes of the first and fourth transistors and to the cross-coupled gate nodes of the second and third transistors, respectively, during a precharge period, first and second capacitive loads coupled to the first and second output nodes, respectively, first discharge circuit means responsive to a logic input signal for discharging the cross-coupled gate nodes of the first and fourth transistors in response to a first clock pulse if the logic input signal is a first binary logic level, second discharge circuit means responsive to a voltage on the first output node including a control transistor for discharging the cross-coupled gate nodes of the second and third transistors when the voltage on the first output node exceeds the threshold of the control transistor, and control circuit means for sequentially (a) precharging the cross-coupled gate nodes of the first and fourth transistors and the cross-coupled gate nodes of the second

and third transistors to predetermined voltage levels through the first and second precharging circuit means, respectively, (b) applying the first clock pulse to the first discharge circuit means, and (c) applying the second clock pulse to the second clock node, the transconductance of the first, second, third and fourth transistors, the values of the load capacitors, and the relative values of the precharge voltage level applied to the respective cross-coupled gate nodes being such that the voltage of the first output node rises at a faster rate than the voltage of the second output node in response to the second clock pulse whereby the second discharge circuit means will discharge the voltage from the cross-coupled gate nodes of the second and third transistors when the logic input signal is the other binary logic level,

a plurality of address line drivers each comprising a drive transistor the channel of which connects a pulse source to an address line, a precharge node connected to the gate of the driver transistors, precharge circuit means for precharging the precharge node to a predetermined voltage level during the precharge period, a plurality of transistors the channels of which connect the precharged node to ground, the gate of each transistor being connected to one logic output node of one of the input latches, a transistor the channel of which connects the precharge node to the gate node of the driver transistor and the gate of which is connected to a voltage supply node, and a bootstrap capacitor connecting the address line to the gate node of the driver transistor.

3,902,083

PULSED DROPLET EJECTING SYSTEM

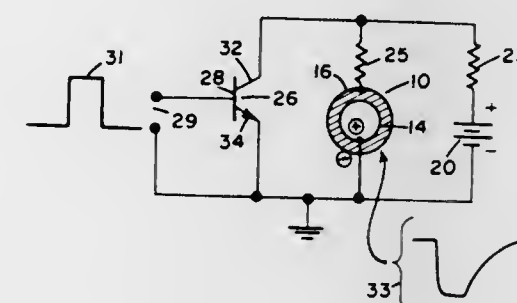
Steven I. Zoltan, Shaker Heights, Ohio, assignor to Gould Inc., Chicago, Ill.

Division of Ser. No. 260,013, June 5, 1972, which is a division of Ser. No. 70,838, Sept. 9, 1970, Pat. No. 3,683,212. This application Oct. 12, 1973, Ser. No. 462,156

Int. Cl.² H01L 41/10

U.S. Cl. 310-8.1

6 Claims



I. A system adapted upon pulsing to expel a small quantity or a succession of small quantities of liquid in controlled manner, comprising:

- a reservoir containing said liquid;
- a conduit connected to said reservoir and communicating with the liquid therein and filled with said liquid under small or zero static pressure, said conduit having an exit orifice which is sufficiently small that surface tension in the absence of pulsing prevents said liquid from flowing therefrom;
- a piezoelectric transducer having electrical terminals and having electrical capacitance measured between said terminals, said transducer being coupled to the liquid in said conduit and adapted to apply a pressure pulse to said liquid in response to an electrical pulse applied to said terminals to displace a small quantity of said liquid overcoming said surface tension to expel a small quantity of said liquid through said orifice;

a first circuit connected between said terminals including a normally open switch and having relatively low resistance when said switch is closed;

a second circuit connected between said terminals having relatively high resistance;

a dc voltage source connected in series in one of said circuits;

pulse means for closing said switch for a predetermined short time interval whereby a voltage pulse is applied to said transducer to cause the ejection of a droplet from said orifice;

the resistance between said transducer terminals when said switch is open being sufficiently high compared with the resistance between said terminals when said switch is closed that the said voltage pulse applied to said transducer has decay time which is at least four times the rise time of said pulse.

3,902,084

PIEZOELECTRIC ELECTROMECHANICAL TRANSLATION APPARATUS

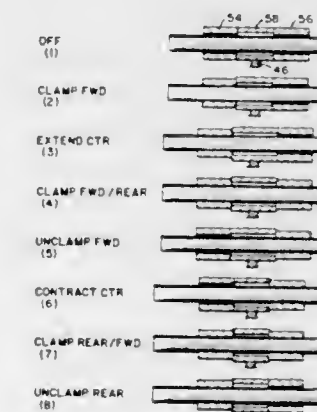
William G. May, Jr., Penfield, N.Y., assignor to Burleigh Instruments, Inc., East Rochester, N.Y.

Filed May 30, 1974, Ser. No. 474,831

Int. Cl.² H01L 41/10

U.S. Cl. 310-8.1

17 Claims



1. Electromechanical translation apparatus which comprises:

- a. a housing,
- b. a body movable with respect to said housing,
- c. a piezoelectric driver in said housing and attached thereto, said driver having a plurality of sections disposed in end to end relationship, at least one of said sections being in juxtaposition to said body and another of said sections being spaced from said body, only said other section being referenced to said housing by being attached thereto, and
- d. means for applying voltage to said one section to bring said one section into engagement with said body and for also applying voltage to said other section for changing the length thereof whereby to apply force to said body for translating said body with respect to said housing.

3,902,085

ELECTROMECHANICAL TRANSLATION APPARATUS

Richard A. Bizzigotti, Walworth, N.Y., assignor to Burleigh Instruments, Inc., East Rochester, N.Y.

Filed Nov. 25, 1974, Ser. No. 526,500

Int. Cl.² H01L 41/10

U.S. Cl. 310-8.3

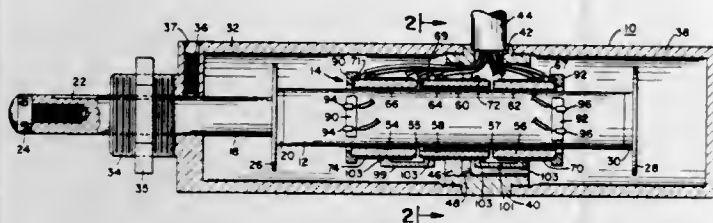
10 Claims

1. Electromechanical translational apparatus which comprises:

- a housing,
- a shaft axially movable with respect to said housing,
- a piezoelectric driver attached to said housing, said driver having a plurality of sections, each having side surfaces and end surfaces,

said sections being disposed adjacent to each other in end-to-end relationship axially of said shaft with the end surfaces of said adjacent ones of said sections opposed to and spaced from each other.

At least one of said sections having one of its side surfaces facing and in juxtaposition with said shaft, another of said sections having one of its side surfaces facing and laterally spaced from said shaft, members disposed in bridging relationship with the opposed ends of the adjacent sections and the space therebetween,



said members being connected to the side surfaces of said sections opposite to the side surfaces thereof which face said shaft so as to join said adjacent sections together with the center of said one section being connected to said members, and

means for applying voltage to said one section to bring said one section into engagement with said shaft and for also applying voltage to said other section to change the length thereof whereby to apply force to said shaft to translate said shaft with respect to said housing.

3,902,086

COMPOSITE MACHINE FOR SUPPLYING SPEED AND CONTROL SIGNALS TO A SPEED CONTROLLABLE CONVERTER MACHINE ASSEMBLY

Ulrich Schüler, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

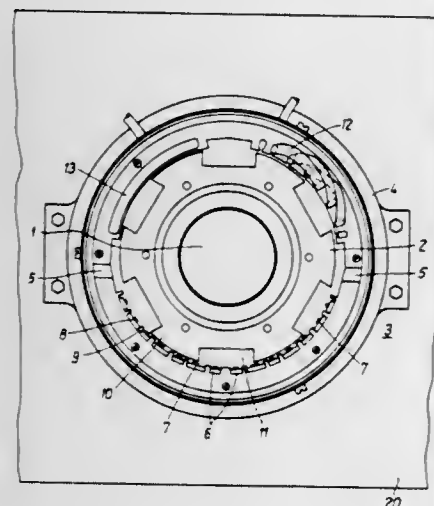
Filed Mar. 7, 1974, Ser. No. 449,005

Claims priority, application Germany, Mar. 8, 1973, 2311954

Int. Cl. H02k 19/34

U.S. Cl. 310-112

5 Claims



1. A composite machine for supplying speed and control signals to a speed-controllable converter machine assembly equipped with thyristors, the composite machine comprising: a slotted stator sub-divided into at least two sections along its circumference; an inductive pulse generator including primary and secondary windings arranged in one of said sections; tachometer means including excitation winding means and alternating-current winding means, both of said winding means of said tachometer means being disposed in the other one of said sections; a toothed rotor connected to the shaft of the converter machine and rotatably mounted in said stator to coact with the windings of said pulse generator to generate

control signals for the thyristors and to coact with the winding means of said tachometer means to provide an electrical quantity indicative of the rotational speed of the machine; and damper winding means mounted between said sections.

3,902,087

ROTOR FOR SQUIRREL-CAGE INDUCTION MOTOR

Takeshi Hakamada; Ikushi Kanoh, and Toshikazu Narahara, all of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

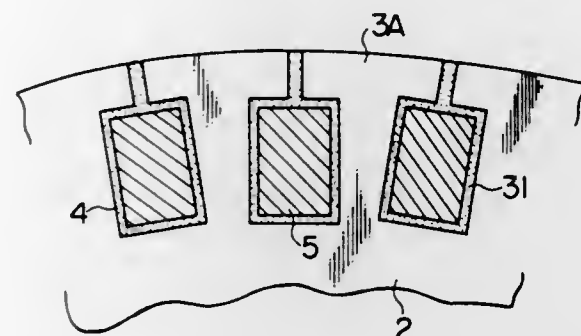
Filed Sept. 30, 1974, Ser. No. 510,743

Claims priority, application Japan, Oct. 1, 1973, 48-109355

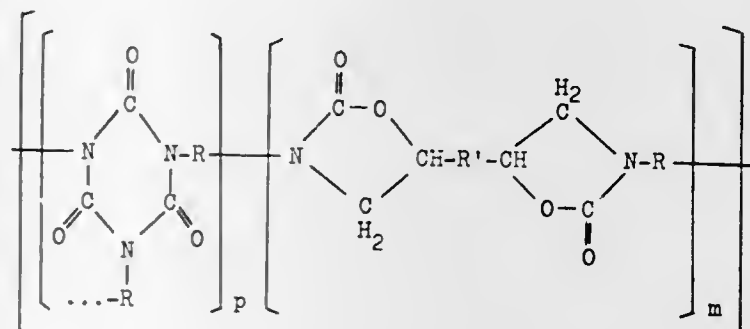
Int. Cl. F16c 33/00

U.S. Cl. 310-211

3 Claims



1. A rotor for a squirrel-cage induction motor in which a resin containing as a recurring unit at least two isocyanurate rings bonded directly to one another through an isocyanate residue and two oxazolidone rings bonded directly to each other through an epoxy residue and represented by the formula,



wherein R is an isocyanate residue, R' is an epoxy residue, p is an integer of at least 2, and m and r each are integers of at least 1, has been impregnated into a gap between the slot of a rotor iron core formed by laminating silicon steel plates and a rotor bar inserted into said slot to bond the rotor bar to the slot.

3,902,088

BRUSH HOLDER DEVICES

Jean Guglielmo, Caluire, France, assignor to Lucien Ferraz & Cie., Lyon, France

Filed Jan. 25, 1974, Ser. No. 436,636

Claims priority, application France, Feb. 8, 1973, 73.05256

Int. Cl. H02K 13/00

U.S. Cl. 310-246

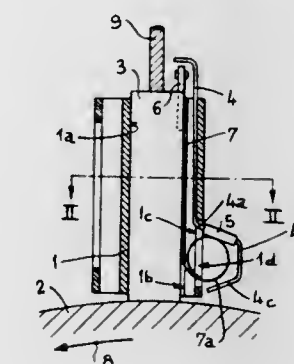
7 Claims

1. A brush holder device for a rotary electric machine having a current collecting member which rotates about an axis, said device comprising:

a casing having an inner end and an outer end with said inner end being disposed adjacent said rotating member, said casing being formed with brush guiding means extending between said outer end and said inner end along a longitudinal guiding axis;

a brush slidably disposed in said guiding means to electrically cooperate with said rotating member, said brush having an inner end and an outer end with said inner end engaging said rotating member;

a spring acting on said brush to urge the inner end thereof against said rotating member, said spring comprising a resilient self-coiling ribbon having an inner end and an outer end with said outer end being secured to the outer end of said brush, and said spring including a substantially straight uncoiled portion extending along a side surface of said brush in said guiding means in a plane substantially parallel to the axis of said rotating member and further including a substantially circular coiled portion disposed adjacent said inner end of said casing;



and means carried by said casing near the inner end thereof to form a resting surface against which said coiled portion of said spring bears so that the spring exerts pressure against said resting surface and said side surface of the brush near its inner end by virtue of the self-coiling reaction of said spring whereby the outer end of the spring urges said outer end of said brush towards said inner end of said casing, said resting surface being disposed at such an angle to the longitudinal axis of said guiding means as to provide a lateral component of force which deflects said coiled portion against said side surface of the brush in the vicinity of said inner end of said casing.

3,902,089

CHANNEL PLATE MATRIX OF TUBES HAVING TWISTED SEPTA

Robert Malcolm Beasley, and Derek Washington, both of Salfords, near Redhill, England, assignors to U.S. Philips Corporation, New York, N.Y.

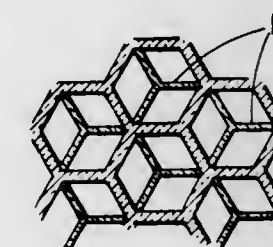
Filed June 28, 1972, Ser. No. 267,111

Claims priority, application United Kingdom, July 8, 1971, 32171/71

Int. Cl. H01j 43/22; N01j 29/41

U.S. Cl. 313-105

1 Claim



1. An improved matrix for a channel plate electron multiplier having improved image resolution, comprising: a side by side stacked array of substantially identical tubes, each tube having an interior surface and a substantially geometrically centered longitudinal axis thereof, each tube having an identical number of substantially equally spaced septa extending from said axis to said interior surface, said septa spiralling about each other in the longitudinal direction to define within each of said tubes the same number of substantially identical longitudinal channels spiralling about each other, said number

of channels being within the range of three to six inclusive, the inside surfaces of said defined channels being at least slightly conductive and secondary emissive, said septa being set back from the end of said tubes intended to be the input end and spiralling through an angle of substantially 360° or an integer multiple thereof, whereby the ends of said defined channels are in the same relative position with respect to adjacent tubes on both sides of said stacked array thereby improving the image resolution of said array.

3,902,090

SHORT-ARC GAS DISCHARGE LAMP

Tjepke Hendrik Ekkelboom, and Wubbe Vrieze, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

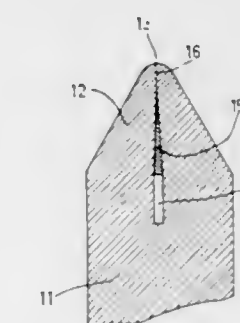
Filed Feb. 21, 1973, Ser. No. 334,466

Claims priority, application Netherlands, Mar. 18, 1972, 7203663

Int. Cl. H01j 1/14, 1/28

U.S. Cl. 313-217

6 Claims



6. A short-arc gas discharge lamp comprising a discharge vessel provided with a gas filling in which the discharge takes place and with two electrodes of a high melting point metal facing each other, the end of at least one of the electrodes facing the discharge being conical and having a narrow recess located on the axis of the cone, the apex of said cone being closed, said recess accommodating a quantity of thorium metal, said recess extending axially from the closed cone a distance such that during operation of the lamp transport of thorium metal to the cone apex is mainly effected by means of diffusion through the electrode material said recess has the shape of a narrow slot of which a section at right angles to the axis of the cone is substantially rectangular, which slot is in communication with the surface of the cone.

3,902,091

INCANDESCENT LAMP

David Robert Mason; Susan Margaret Cole, both of Runcorn; John Michael Rees, and James Richard Coaton, both of London, all of England, assignors to Thorn Lighting Limited, London, England

Filed Jan. 18, 1974, Ser. No. 434,381

Claims priority, application United Kingdom, Jan. 19, 1973, 2952/73

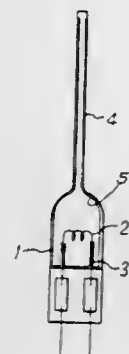
Int. Cl. H01j 61/06, 61/30

U.S. Cl. 313-221

6 Claims

1. A tungsten-halogen lamp comprising: a light-transmitting envelope; internal components including a tungsten filament and supports therefor sealed within said envelope; electrical leads for said filament sealed into said envelope; a gaseous fill including halogen in said envelope; and a homogeneous, defect-free protective coating of a metal phosphate or arsenate glass on at least the internal

surface of the envelope and the exposed surfaces of internal components other than incandescent portions of said



filament which tend to react with said halogen during operation of the lamp.

3,902,092

VIBRATION RESISTANT GEIGER-MUELLER TUBE

James Clark, Den Haag, Netherlands, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 11, 1974, Ser. No. 460,229

Int. Cl. H01J 1/18, 19/12

U.S. Cl. 313-269

5 Claims



1. The improvement in a Geiger-Mueller tube having an electrically conductive tubular glass anode of determined length and outside diameter, an electrically conductive, radiation permeable thin cylindrical shell cathode, a gaseous mixture including a halogen gas contained between the said anode and cathode, and means for making electrical connections to the said anode and to the said cathode, the said improvement comprising:

- a first and a second anode support member each having a bore of determined diameter larger than the said outside diameter of the said anode and each having a determined length of bore greater than the said outside diameter of the said anode; and
- means cooperating with the said support members for loosely positioning the said anode in the said first and second support members providing axial confinement of the said anode in the said support members with substantially free radial movement of the said anode throughout the length of the said support members.

3,902,093 CATHODE HEATER ELEMENT WITH A DARK HEAT RADIATING COATING AND METHOD OF PRODUCING SUCH

Eberhard Weiss, Stuttgart, Germany, assignor to International Standard Electric Corporation, New York, N.Y.

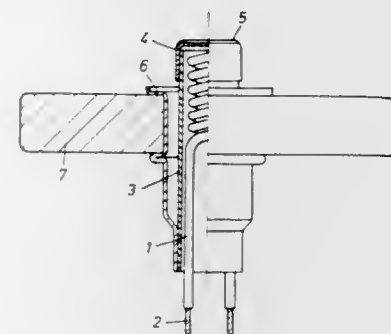
Filed Nov. 12, 1973, Ser. No. 415,256

Claims priority, application Germany, Apr. 6, 1973, 2317446

Int. Cl. H01J 1/14, 19/10

U.S. Cl. 313-345

1 Claim



1. A cathode heater element comprising a conductive filament having a coating of a dark colored heat radiating insulating material, said coating being porous throughout and including a non-emissive homogeneous dark colored sintered crystalline mixture of aluminum oxide and tungsten.

3,902,094

VANE GRID STRUCTURES AND METHOD OF MAKING SAME

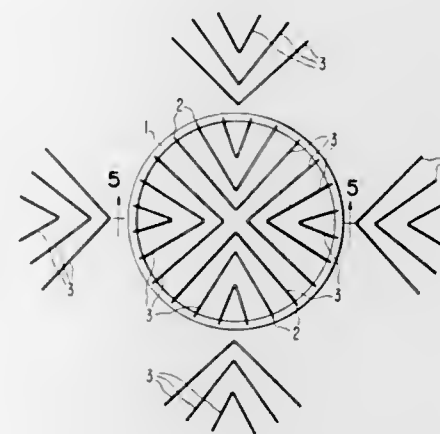
Russell F. Scott, Jr., Palo Alto, Calif., assignor to Varian Associates, Palo Alto, Calif.

Division of Ser. No. 306,963, Nov. 13, 1972, Pat. No. 3,832,760, which is a division of Ser. No. 69,677, Feb. 4, 1970, abandoned, which is a continuation-in-part of Ser. No. 58,422, July 27, 1970. This application June 24, 1974, Ser. No. 482,738

Int. Cl. H01J 1/46, 1/52, 17/04, 17/12

U.S. Cl. 313-348

5 Claims



1. A vane grid structure comprising a centrally apertured metallic ring, the inner peripheral surface of said ring defining a series of peripherally spaced slots, a plurality of metallic ribbon vane members radially projecting inwardly from said inner peripheral surface of said ring, each of said vane members comprising a pair of leg portions joined at one end, the radially outer ends of said leg portions forming root portions, the root portion of each of said vane members being disposed in said slots, said vane members being so shaped and dimensioned with respect to the dimensions of said ring and said slots as to cause, when said vane members are mounted in said ring, a stress to exist in said vane members in a sense to force said leg portions thereof against the sides of said slots.

3,902,095 ELECTRON BEAM SEMICONDUCTOR AMPLIFIER WITH SHIELDED DIODE JUNCTIONS

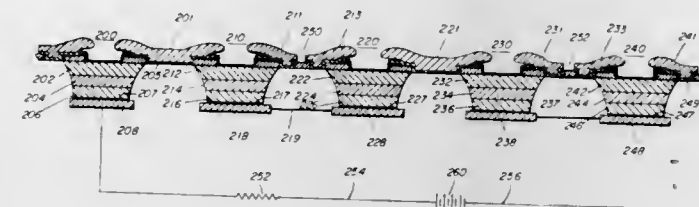
Robert W. Bierig, Sudbury, and Robert L. Mozzi, Lincoln, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Oct. 9, 1973, Ser. No. 404,521

Int. Cl. H01J 31/00

U.S. Cl. 313-367

17 Claims



1. In combination:
means for providing a beam of electrons;
a target comprising a two-dimensional array of semiconductor diodes, each of said diodes having a substantially planar junction, the planes of said junctions being substantially parallel to the plane of said array, said beam of electrons being directed substantially normal to said plane of said array; and
conductive shielding means directly connected to each of said diodes for shielding peripheral portions of each of said diodes from said electron beam.

3,902,096

METHOD OF AND APPARATUS FOR EXCITING LUMINESCENCE IN A CATHODE RAY TUBE HAVING AN IMAGE SCREEN COMPOSED OF A MATERIAL THAT IS BOTH CATHODOCHROMIC AND CATHODOLUMINESCENT

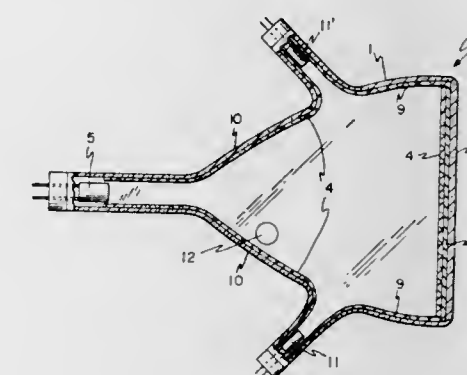
Lee T. Todd, Jr., Lexington, Ky., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Apr. 1, 1974, Ser. No. 457,112

Int. Cl. H01J 29/12, 29/50

U.S. Cl. 313-398

10 Claims



1. A cathode ray tube that comprises: an envelope having a faceplate; an image screen in said envelope, said image screen comprising a material that has a coloration or F-center as well as a luminescent or fluorescent center so that said material is cathodochromic and is also cathodoluminescent, the cathodochromic coloration lifetime being at least 1 month, the coloration or F-center absorption band of said material occurring very close to the emission band of the luminescent or fluorescent center; and means for producing an electron beam for writing on the image screen by exciting the coloration or F-center and for exciting the cathodoluminescence in the image screen by exciting the luminescent or fluorescent center.

3,902,097 DEFLECTOR HORN FOR HIGH-INTENSITY ELECTRON BEAMS

Bernd-Peter Offermann, Hamburg, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

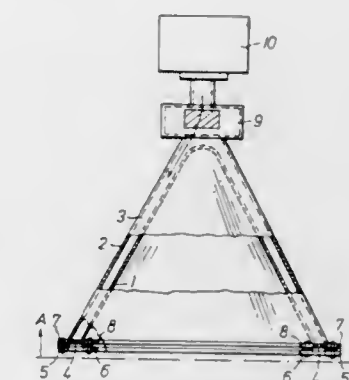
Filed Aug. 24, 1973, Ser. No. 391,055

Claims priority, application Germany, Aug. 24, 1972, 2241552; Aug. 24, 1972, 7231279

Int. Cl. H01J 29/00, 31/00, 29/86

U.S. Cl. 313-420

6 Claims



1. An electron deflector horn for high-intensity electron beams, having an electron source; an electron deflector; an electron accelerator; a horn body extending away from the electron source and defining a vacuum chamber for providing a path for the electrons emitted by the electron source and accelerated by the electron accelerator; an electron outlet window at an end of the vacuum chamber remote from the electron source, the electron outlet window separating the vacuum chamber from the ambient atmosphere; comprising in combination:

- a means defining an annular circular area of said electron outlet window, said area being exposed to the electrons travelling through said vacuum chamber;
- an outlet portion forming part of said horn body and bounding the external circumference of said annular circular area;
- an inner portion forming part of said horn body and bounding the internal circumference of said annular circular area; and
- mechanical means for directly securing said electron outlet window to said horn body, said mechanical means constituting the sole support and positioning means for said electron outlet window, said mechanical means being disposed entirely externally of said area for being clear of the electron path leading to said area.

3,902,098

LINEAR BEAM MICROWAVE TUBE HAVING MEANS COUPLED TO THE BEAM UPSTREAM OF INPUT COUPLER AND/OR DOWNSTREAM OF OUTPUT COUPLER FOR VARYING AMPLITUDE AND/OR PHASE OF R.F. COMPONENT IN THE BEAM

Hiroshi Tanaka; Hisaaki Sato, and Isao Ueda, all of Tokyo, Japan, assignors to Nippon Electric Company Limited, Tokyo, Japan

Filed June 14, 1974, Ser. No. 479,286

Claims priority, application Japan, June 22, 1973, 48-71128; June 22, 1973, 48-71129; June 22, 1973, 48-74599; June 22, 1973, 48-74600

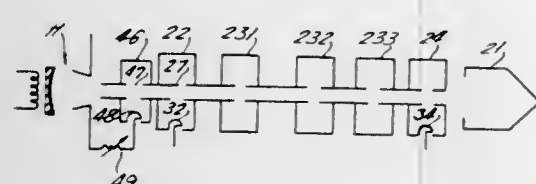
Int. Cl. H01J 25/10

U.S. Cl. 315-5.39

11 Claims

1. A microwave tube including an electron gun, an input coupler, an output coupler, a collector, and means for directing an electron beam flow from said gun toward said collector successively through said input and output couplers, said input coupler being adapted to couple r.f. input power to said beam to eventually produce an r.f. component in said beam at said output coupler, said output coupler being adapted to derive

r.f. output power from said r.f. component, wherein the improvement comprises circuit element means coupled to said beam in at least one of regions between said gun and said input



coupler and between said output coupler and said collector for varying at least one of the amplitude and the phase of said r.f. component.

3,902,099

ENERGIZING CIRCUIT FOR MAGNETRON USING PARALLEL TRANSFORMERS

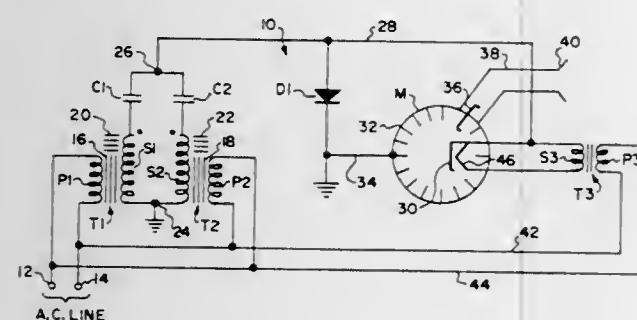
Albert E. Feinberg, Chicago, Ill., assignor to Advance Transformer Company, Chicago, Ill.

Filed Sept. 24, 1973, Ser. No. 400,352

Int. Cl. H02j 3/24

U.S. Cl. 315-105

11 Claims



1. An operating circuit for energizing a magnetron from an a.c. line of relatively low voltage and low frequency which comprises

- a magnetron having an anode and a cathode;
- a generally constant current transformer and condenser means combination which comprises
 - two step-up transformers each having a primary winding connected to said a.c. line;
 - each transformer having a secondary winding isolated from its primary winding but coupled in high leakage reactance operating relation to its respective primary winding, the secondary windings each having a first terminal at the same instantaneous polarity connected to a common juncture; and
 - paired condenser means with one terminal of each pair connected in series with one of the respective secondary windings, and with a common midpoint,
- the anode and cathode of the magnetron being connected to the combination to be subjected to the output voltage thereof; and
- rectifier means connected to the common midpoint of said paired capacitor means providing in-phase return paths for current through the condenser means on alternate half-cycles of the voltage output, said current from each secondary winding being additive in total pulse magnitude the capacitive reactance of the condenser means being sized with respect to the inductive reactance in said transformer and condenser means combination so as to provide a leading current in the secondary circuit including both secondary windings to provide good regulation notwithstanding normal variations of the line voltage.

3,902,100

DYNAMIC CONVERGENCE CIRCUIT

Yutaka Nakagawa; Yoshio Shibata, both of Tokyo, and Hajime Yoneta, Yokohama, all of Japan, assignors to Sony Corporation, Tokyo, Japan

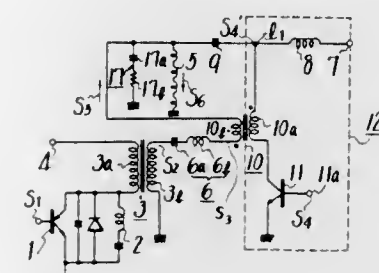
Filed Mar. 26, 1974, Ser. No. 454,932

Claims priority, application Japan, Mar. 30, 1973, 48-38419

Int. Cl.² H01J 29/56, 29/70, 29/76

U.S. Cl. 315-371

6 Claims



1. A dynamic convergence circuit comprising:

- pulse producing means for generating a pulse train having a period of the line interval of a television signal,
- a dynamic convergence coil,
- converting means connected between said pulse producing means and said coil for converting said pulse train to a voltage waveform so as to supply a parabolic current having a period of the line interval to said coil,
- parabolic voltage producing means for generating a parabolic voltage having a period of the field interval of the television signal,
- modulating means connected to both a path of said parabolic current and said parabolic voltage producing means for modulating in amplitude said parabolic current in response to said parabolic voltage, and
- voltage supplying means for supplying said parabolic voltage to said coil to further modulate in amplitude the modulated parabolic current by said parabolic voltage.

3,902,101

TELEPHONE SWITCHING SYSTEM TRUNK AND SERVICE CIRCUITS

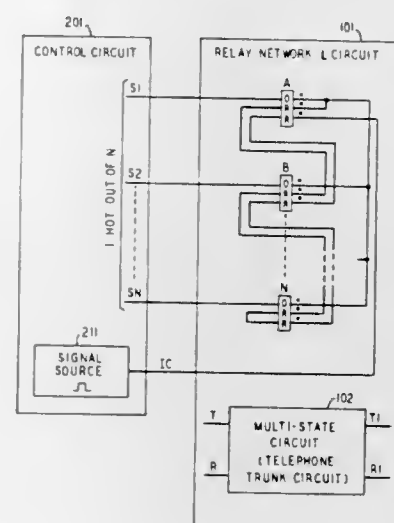
Ronald Joseph Angner, Freehold; Alexander Feiner, Rumson, and Merle Victor Olsen, Lincroft, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 23, 1973, Ser. No. 382,028 The portion of the term of this patent subsequent to Feb. 19, 1991, has been disclaimed.

Int. Cl.² H01H 47/00

U.S. Cl. 317-137

6 Claims

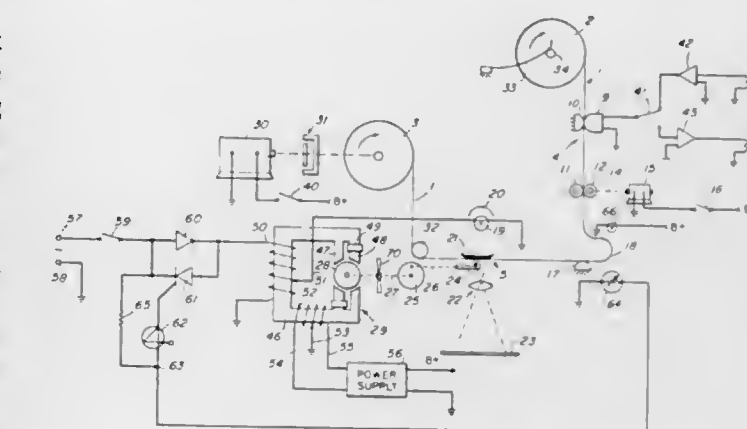


1. A multistate circuit arranged for connection between a telephone switching network and a telephone station, each

state of said circuit arranged to provide a unique logical function with respect to an established communication connection between said switching network and said telephone station; and said circuit comprising a plurality of relays, each relay comprising:

- first means operable upon the application of a current pulse for enabling an electrical circuit path therethrough, and
 - second means operable upon the application of a current pulse for releasing said electrical circuit path, said multistate circuit comprising
 - selective means for directing a current pulse to said first means of a selected one of said relays so as to enable said selected relay, said selective means including means for directing said current pulse to said second means of all said relays so as to release any enabled one of said relays other than said selected relay;
- each said relay including at least one pair of make contacts, said second means of each relay including a pair of windings with one winding being wound in conjunction with a first one of said contacts of said contact pair and the other winding being wound in conjunction with the second one of said contacts of said contact pair, and
- said first means of each relay including a winding wound in conjunction with one of said windings of said second means.

winding adapted to be energized with alternating current and a winding adapted to be connected to an external load, comprising a rectifier connected in series with said winding to admit half cycles of an applied alternating current of a first polarity to said winding, and electronic switch connected in parallel with said rectifier, and adjustable voltage responsive means connected to said switch for closing said switch to



admit a portion of half cycles of an applied alternating current to said winding when the voltage of said applied current reaches a predetermined value with a polarity opposite said first polarity, said voltage responsive means being limited in its adjustment to limit said predetermined value to a range which occurs within ten electrical degrees of the zero crossing of said applied current so that the speed regulation effected will not appreciably vary the effective value of the current.

3,902,102

CERAMIC CAPACITOR WITH BASE METAL ELECTRODES

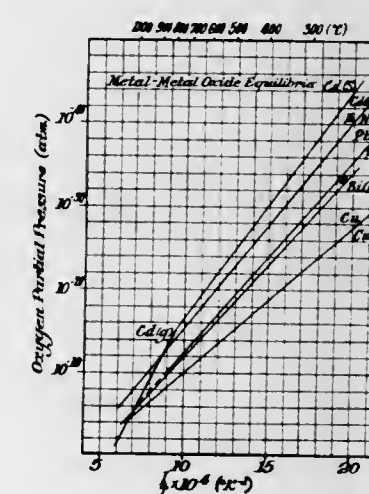
Ian Burn, Williamstown, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Filed Apr. 1, 1974, Ser. No. 457,042

Int. Cl.² H01G 1/01

U.S. Cl. 317-258

10 Claims



1. The ceramic capacitor comprising a dielectric ceramic body, said body being of a reduction resistant ceramic dielectric material; and two solderable terminations each adhering to a separate surface region of said body, each said termination comprising a sponge-like network of sintered oxide-free base-metal particles and a reduction resistant type glass filling said sponge-like metal network, said base metal being selected from copper and nickel, said reduction resistant glass being a barium borate.

3,902,103

FILM SPEED CONTROL FOR SOUND MOTION PICTURE PROJECTOR

Thomas A. O. Gross, Lincoln, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 374,638, June 28, 1973. This application Mar. 13, 1974, Ser. No. 450,554

Int. Cl. H02p 3/20

U.S. Cl. 318-227

15 Claims

1. A speed control circuit for regulating the shaft speed of a combination induction motor and transformer having a

1. A hoist control system comprising:

- a motor for operating the hoist;
- motor control means, mounted proximately to the hoist, for operating said motor of said hoist in response to a control signal to said motor control means;
- pendant control means, remotely mounted from the hoist, for establishing a reference signal indicative of desired hoist motor operation;
- control signal means associated with said motor control means for establishing said control signal in said motor control means in response to the reference signal in said pendant control;
- connecting line means for electrically connecting said remotely mounted pendant control means to the hoist; and
- photocoupling means mounted proximately to the hoist and connected to said connecting line means and to said control signal means to prevent any noise and interfer-

ence signals picked up by said connecting line means from being transmitted to said control signal means.

3,902,105

THYRISTOR MOTOR CONTROL CIRCUIT

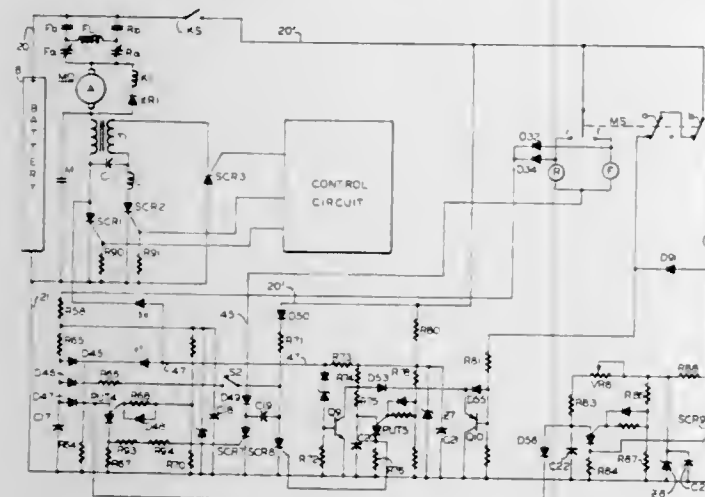
Michael J. Delaney, Greene, and John W. Ames, Whitney Point, both of N.Y., assignors to The Raymond Corporation, Greene, N.Y.

Filed Dec. 26, 1973, Ser. No. 430,917

Int. Cl. H02h 7/08

U.S. Cl. 318-341

17 Claims



1. A control system for an electric traction motor of a battery-powered vehicle, comprising, in combination: a first thyristor connected in series with said motor and contacts of a first contactor means across a battery; means for controlling the duty cycle of said first thyristor; first timing circuit means responsive to a first enabling signal and operative to provide an output pulse after a predetermined time delay; operator-controlled switch means for connecting an operating coil of said first contactor means in series with a second thyristor across said battery and for applying said first enabling signal to said first timing circuit, said output pulse from said first timing circuit being connected to turn on said second thyristor; and detection circuit means connected between said first thyristor and said first timing circuit for preventing said timing circuit from responding to said enabling signal if said first thyristor is shorted.

3,902,106

INTERMITTENT WINDSHIELD WIPER CONTROL DEVICE

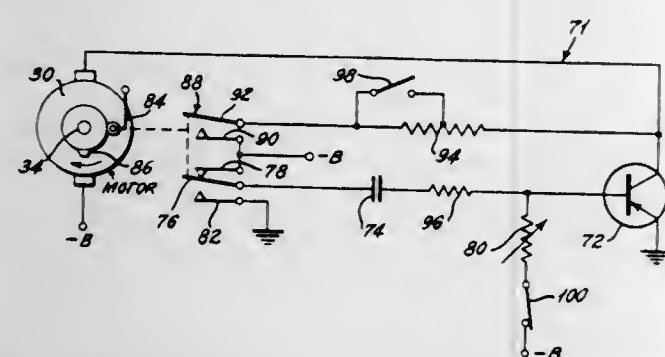
Robert W. Kearns, Detroit, Mich., assignor to Tann Co., Detroit, Mich.

Division of Ser. No. 669,616, Sept. 21, 1967, Pat. No. 3,564,374, which is a division of Ser. No. 414,973, Dec. 1, 1964, Pat. No. 3,351,836. This application Nov. 7, 1969, Ser. No. 874,884. The portion of the term of this patent subsequent to Nov. 7, 1984, has been disclaimed.

Int. Cl. H02p 1/04

U.S. Cl. 318-443

18 Claims



1. In a windshield wiper cleaning system, a wiper motor unit for driving said system through repeating wiping cycles, and control means for activating said wiper motor unit intermittently with a dwell period at the end of each wiping cycle

which dwell period varies in accordance with the load on said wiper motor unit, said control means comprising means for deenergizing said wiper motor unit at the end of each wiping cycle, and timing means for energizing said wiper motor unit after said dwell period to start another wiping cycle, said timing means including means for measuring the integral of the load on said wiper motor unit over at least a portion of a wiping cycle and setting the dwell period in accordance with the integral measured during the wiping cycle.

3,902,107

CIRCUIT FOR PROTECTING SERIES-CONNECTED SWITCHES

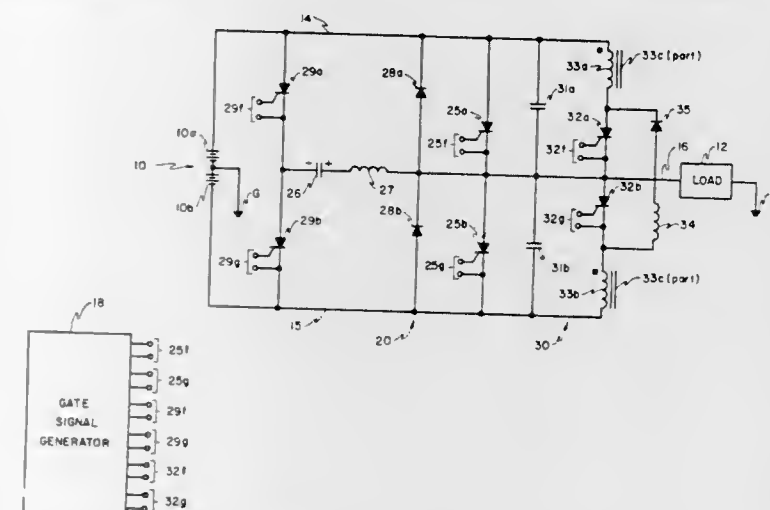
Harold J. Brown, Lorain, Ohio, assignor to Lorain Products Corporation, Lorain, Ohio

Filed Sept. 26, 1974, Ser. No. 509,422

Int. Cl. H02M 1/18, 7/515

U.S. Cl. 321-12

17 Claims



1. In a circuit for preventing the rate of rise of voltage across each of first and second series-connected, alternately-conducting power switches from exceeding a predetermined value, the combination of:

- first and second capacitance means for limiting the rate of rise of voltage across each power switch;
- means for connecting the first capacitance means across the first power switch;
- means for connecting the second capacitance means across the second power switch;
- voltage shifting means for transferring the charge on the first capacitance means to the second capacitance means when both power switches are non-conducting as a result of the turn-off of the second power switch and for transferring the charge on the second capacitance means to the first capacitance means when both power switches are non-conducting as a result of the turn-off of the first power switch.

3,902,108

VOLTAGE MULTIPLIER

Daniel Sion, 19 Ave. Dubonnet, 92401-Courbevoie, France

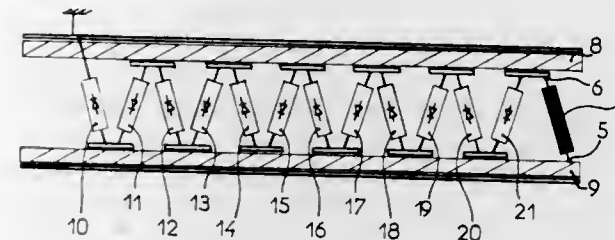
Filed Jan. 30, 1974, Ser. No. 437,797

Claims priority, application France, Feb. 1, 1973, 73.04029; Feb. 27, 1973, 73.07427

Int. Cl. H02M 7/00

U.S. Cl. 321-15

10 Claims



1. A cascade voltage multiplier device comprising, in combination:

a pair of electrically conductive surfaces in spaced apart relationship with each other;

a series of combination diodes interposed between the surfaces in electrically conductive relationship therewith, each of the combination diodes comprising a plurality of elementary diodes and being oriented to pass current in a direction substantially perpendicular to at least one of the surfaces; and

means for applying a voltage across the surfaces, each of the combination diodes being spaced from the surfaces by a distance sufficient to prevent undue breakdown of the elementary diodes and to subject the elementary diodes to substantially the same instantaneous reverse voltage.

3,902,109

DEVICE FOR THE REGULATION OF A CONVERTER OVER A FULL RANGE OF OPERATION INCLUDING OPERATION IN A PULSATING MODE

Winfried Speth; Klaus Böhm, and Walter Dreiseitl, all of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

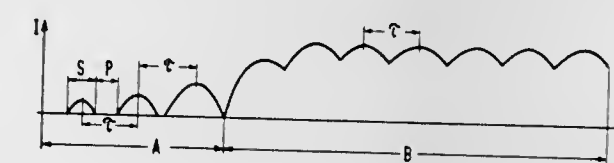
Filed July 25, 1974, Ser. No. 491,664

Claims priority, application Germany, July 30, 1973, 2338630

Int. Cl. H02p 13/24

U.S. Cl. 321-18

18 Claims



1. In a converter having current dependent control loop parameter variations and including a current controller, a device for gap current adapted current control comprising:

- a. a proportional element having variable gain and a delay element inserted in the control loop; and
- b. means for varying the gain of said proportional element and for activating said delay element in the gapping range.

3,902,110

CHOPPER DUTY MAXIMIZATION CIRCUIT

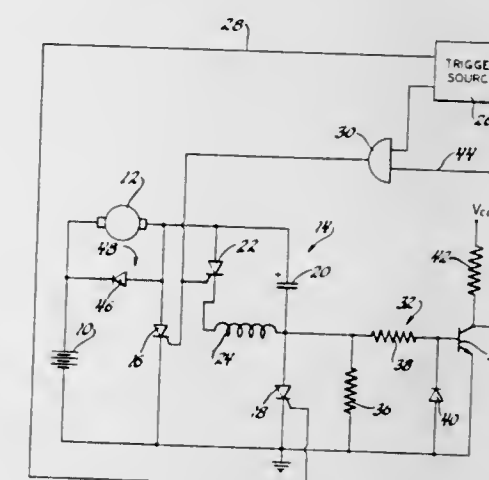
Alby M. Berman, 14800 Borgman, Oak Park, Mich. 48237

Filed Dec. 1, 1972, Ser. No. 311,183

Int. Cl. H02m 3/14

U.S. Cl. 321-43

10 Claims



1. In a switching circuit including a power controlled switch, a shut-off controlled switch, a shut-off capacitor, a recharge controlled switch, and trigger circuitry for controllably switching each of said controlled switches to the conductive state, the improvement comprising a control circuit monitoring the

conduction of said shut-off controlled switch, said control circuit being connected to said trigger circuitry to prevent said trigger circuitry from switching said recharge controlled switch to the conductive state when said shut-off controlled switch is in the conductive state thereby obviating simultaneous conduction by said recharge controlled switch and said shut-off controlled switch.

3,902,111

CONTROLLER OUTPUT CIRCUIT

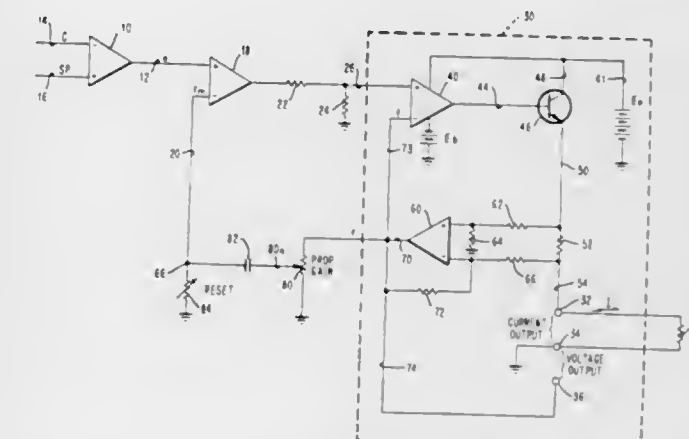
George J. Pfisterer, Jr., Philadelphia, Pa., assignor to Leeds & Northrup Company, North Wales, Pa.

Filed May 31, 1974, Ser. No. 475,221

Int. Cl. G05F 1/56

U.S. Cl. 323-19

3 Claims



1. A control circuit for producing in response to a control signal a proportional grounded voltage and grounded current output from a grounded power source comprising:

- a differential output amplifier system for producing an output responsive to the difference between a control signal in the form of a varying voltage indicative of the desired voltage output signal and a feedback signal corresponding to the actual voltage output,
- a grounded power source connected to supply said amplifier system,
- a voltage dropping resistor having one end connected to receive the output from said amplifying system,
- a pair of current output terminals, one of said terminals being connected to the other end of said resistor and the other terminal being connected to ground so that any current load connected across said terminals is in series with said resistor, and
- a differential feedback amplifier circuit having negative feedback, said feedback amplifier being connected across said dropping resistor by a resistor network so that the feedback amplifier produces the actual voltage output in a predetermined relationship to the current output.

3,902,112

FREQUENCY CONVERTER FOR POWER SUPPLY TO VARIABLE SPEED SYNCHROUS MACHINES

Jean-Pierre Jules Cordier, Montigny Le Tilluel, Belgium, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 29, 1974, Ser. No. 456,422

Claims priority, application Belgium, Apr. 2, 1973, 797646

Int. Cl. H02p 9/42; H02m 5/44

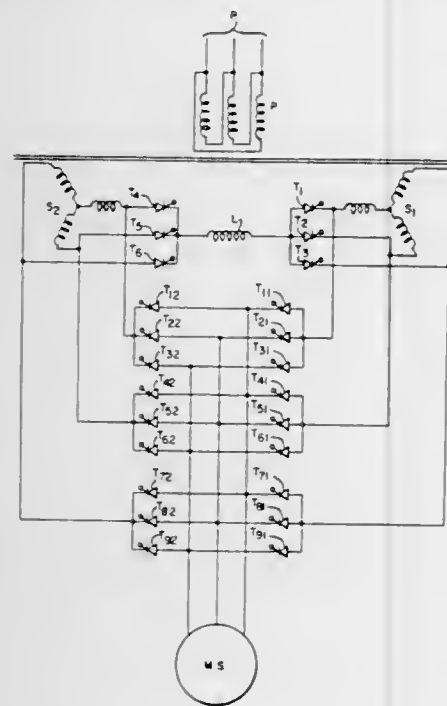
U.S. Cl. 321-66

4 Claims

1. A frequency converter for energizing variable speed synchronous machines having three groups of thyristors, each group consisting of three parallel branches of two series-connected thyristors, the arrangement being such that the points common to said two series connected thyristors are connected with the homologous points in the three groups and with the terminals of the synchronous machine to be energized, comprising

- a three-phase power transformer having its primary connected to a power supply and two separate secondary

windings, the three output terminals of each secondary including a thyristor in each phase and being respectively connected to one of the extremities of said three groups, the phase thyristors having a conduction direction oppo-



site to that of the thyristors in the aforesaid three groups, these phase thyristors respectively having a common point, the two such common points for each secondary being connected to the terminals of a direct current smoothing reactor.

3,902,113

MEANS AND METHOD FOR INDUCING ELECTRICAL POLARIZATION OF AN EARTH FORMATION AND FOR MEASURING THE INDUCED ELECTRICAL POLARIZATION AND FOR PROVIDING SPONTANEOUS POTENTIAL CORRECTION

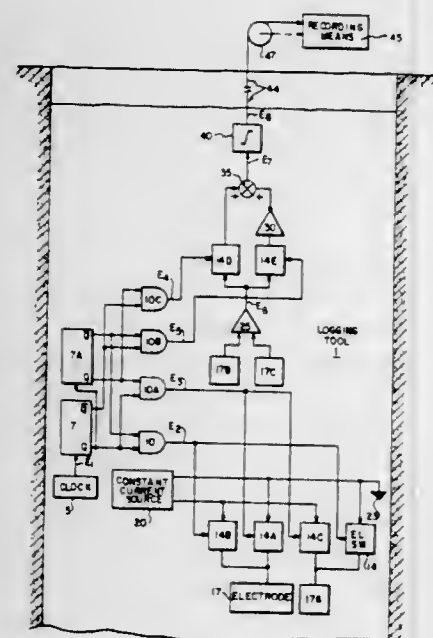
James R. Bridges, and Donald J. Dowling, both of Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Filed Mar. 14, 1974, Ser. No. 450,958

Int. Cl. G01v 3/18

U.S. Cl. 324-10

15 Claims



1. Apparatus adapted to be passed through a borehole in an earth formation for inducing electrical polarization of the earth formation and for providing an output corresponding to

the induced electrical polarization, comprising means for controlling the apparatus so that each cycle of operation covers at least four time intervals, means connected to the control means for inducing electrical polarization of the earth's formation of one polarity during a first time interval of each cycle and of an opposite polarity during a third time interval of each cycle, means for measuring the induced electrical potential and providing a measurement signal during a second and a fourth time interval of each cycle corresponding to the measured induced electrical polarization, means connected to the measuring means for inverting the measurement signal during one time interval of each cycle, the inverting time interval being either the second or fourth time interval, and output means connected to the measuring means and to the inverting means for integrating the measurement signal during those time intervals when the measurement signal is not being inverted and for integrating the inverted measurement signal during those time intervals when the measurement signal is being inverted to provide the output corresponding to the induced electrical polarization of the earth formation.

3,902,114

METHOD OF AND APPARATUS FOR MEASURING THE DISTANCE BETWEEN COOPERATING ROLLERS OF A ROLLING MILL

Günther Alich, Zeltstrasse 160, 8134 Adliswil, Switzerland

Continuation-in-part of Ser. No. 67,386, Aug. 27, 1970, abandoned, which is a continuation-in-part of Ser. No.

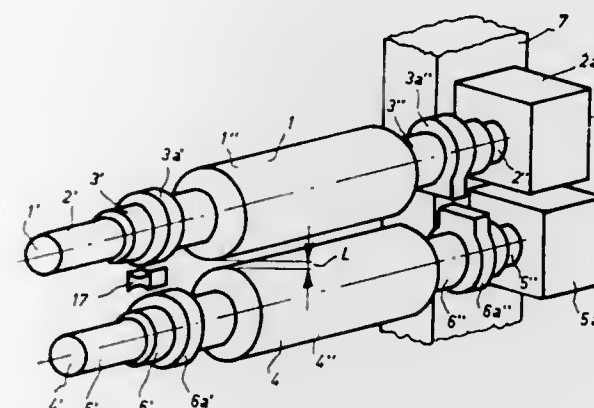
769,258, Oct. 21, 1968, abandoned. This application June 18, 1973, Ser. No. 370,822

Claims priority, application Germany, Oct. 20, 1967, 1623127

Int. Cl. G01r 33/00

U.S. Cl. 324-34 D

12 Claims



1. A method of measuring the distance between cooperating rolls each having a roll neck of a rolling mill to thereby determine the size of the roller gap and the thickness of rolled sheet-like stock, comprising the steps of directly mounting a respective measuring probe at the roll neck of each of the cooperating rolls, fixedly mounting one of the measuring probes in a first housing on one of the roll necks and displaceably mounting the other of the measuring probes in a second housing on the other of the roll necks, introducing between both probes spacer elements during calibration of the probes for rolling foils, advancing the rolls towards one another and bringing such rolls into contact with one another with a predetermined contact pressure so as to produce a null roller gap, displacing the displaceable probe into its housing during contact of the rolls so that the displaceable and fixed probes bear against the space elements and upon contact with the spacer elements the displaceable probe assumes a defined reference position with respect to the fixed probe for the null roller gap, positionally fixing the displaceable probe, removing the spacer elements out of the operable region of the probes following the calibration operation, continuously measuring the changes in the spacing between the lengthwise axes of the cooperating rolls by means of the measuring probes, deriving from the measuring operation the distance between such

cooperating rolls and in turn obtaining a measure of the thickness of the stock as it is rolled between such cooperating rolls at the rolling mill.

3,902,115

SELF-CLEANING APERTURE TUBE FOR COULTER STUDY APPARATUS AND ELECTROLYTE SUPPLY SYSTEM THEREFOR

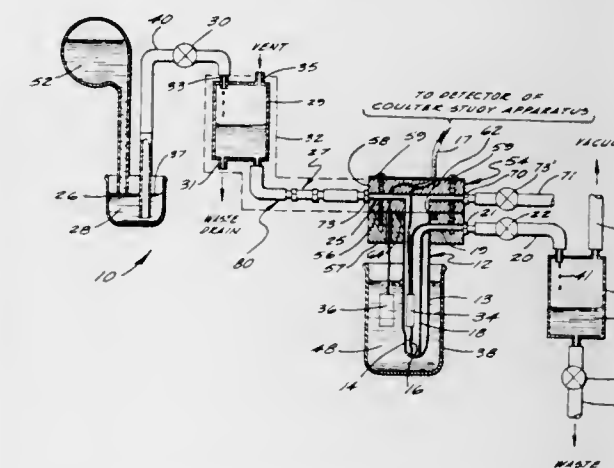
Walter R. Hogg, Miami Lakes; Wallace H. Coulter, Miami Springs; Guenter Ginsberg, Miami; Oscar Proni, and Thomas J. Godin, both of Hollywood, all of Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Filed Sept. 26, 1973, Ser. No. 400,986

Int. Cl. G01n 27/00

U.S. Cl. 324-71 CP

32 Claims



28. A system as claimed in claim 27 in which the second electrode is the signal electrode for the particle measuring apparatus, the system including an electrolyte drip chamber and supply conduit interposed between the reservoir and inlet chamber, the drip chamber and conduit being shielded with an electrical insulating member.

3,902,116

QUADRATURE ELECTRONIC TACHOMETER

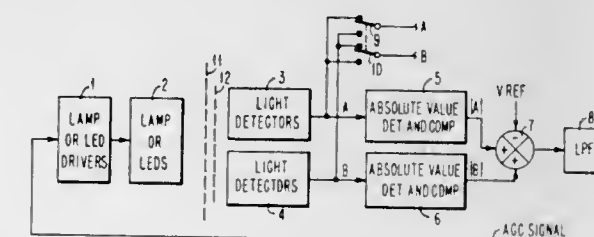
Ronald S. Palmer, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 10, 1974, Ser. No. 459,762

Int. Cl. G01P 3/36; G06G 7/00

U.S. Cl. 324-175

17 Claims



1. An electronic tachometer for generating a continuous output velocity signal comprising:

generating means for generating two continuous and periodic quadrature signals, the slopes of each of said quadrature signals during each cycle containing the intelligence as to the value of the velocity being measured, said two quadrature signals being 90° out of phase with respect to each other;

timing means connected to said generating means for generating a plurality of timing signals from said two quadrature signals to control the timing of the electronic tachometer;

processing means for generating a plurality of velocity signals from said two quadrature signals and for generating a plurality of comparison signals, said comparison signals being indicative of the relative size between selected ones of said velocity signals;

selection means connected to said timing means and said processing means for generating a plurality of selection signals from said comparison signals and timing signals; and combination means for selecting specific portions of each of said velocity signals by gating said velocity signals by said selection signals, said gated portions of said velocity signals being combined to form a continuous output velocity signal.

3,902,117

PCM ERROR DETECTION

David Sheppard, Benfleet, England, assignor to International Standard Electric Corporation, New York, N.Y.

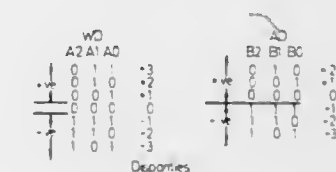
Filed Jan. 24, 1974, Ser. No. 436,301

Claims priority, application United Kingdom, Feb. 8, 1973, 6211/73

Int. Cl. H04L 3/00

U.S. Cl. 325-38 A

6 Claims



1. An error detection arrangement for a receive translator employed in a PCM system in which, for transmission, digital words having one word disparity polarity are transmitted when the accumulated disparity of a transmitted code signal is of the opposite polarity, and vice versa, said arrangement comprising first means for deriving at the conclusion of each digital word in said transmitted signal the polarity of the accumulated disparity of said transmitted signal;

second means coupled to the output of said first means for temporarily storing the polarity of the accumulated disparity derived in said first means;

third means coupled to the output of said first means for providing at the conclusion of each digital word in said transmitted signal the polarity of the word disparity of that word; and

logic means coupled to said first means, said second means and said third means, said logic means being responsive to the output of said first and third means to detect when the polarity of the disparity for a digital word is the same as the polarity of the accumulated disparity for said transmitted signal at the conclusion of the previous digital word, to generate an error output signal when the two polarities are detected to be the same and to couple said error output signal to said second means when said error output signal is generated.

3,902,118

BODY-COUPLED PORTABLE TRANSMITTER

Kurt Ikrath, Elberon, and William Kennebeck, Eatontown, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 4, 1974, Ser. No. 457,869

Int. Cl. H04B 1/034; H01Q 1/12

U.S. Cl. 325-118

3 Claims

1. In combination, a compact portable radio transmitter operable in at least a segment of the frequency range between 3 MHz and 40 MHz and at average power output of about 1 watt when operated continuously for a long period of time, a stretchable resilient open coil coupled to the output of the

transmitter and physically attached to the ends of the coil, the coil having a mean coil diameter of about 6.5 cm and being of an unstretched length on the order of 90 cm whereby when a person wears the coil on one shoulder and it extends across the front and back of the person with the transmitter depending from the ends of the coil, the coil is stretched by the weight



of the transmitter and conforms to the front and back of the person and the transmitter is at about the waist level at his other side, and capacitor means coupled to the coil for tuning the coil when the coil and transmitter are worn by the person and the transmitter is in operation in a selected segment of the frequency range.

3,902,119

DIVERSE SIGNAL COMBINING ARRANGEMENTS

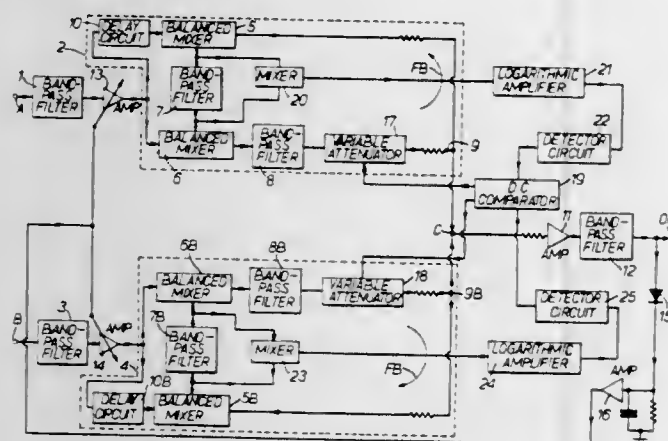
Brian Stanley Skingley, Chelmsford, England, assignor to The Marconi Company Limited, Chelmsford, England
Filed Mar. 27, 1974, Ser. No. 455,076

Claims priority, application United Kingdom, Mar. 27, 1973, 14574/73

Int. Cl.² H04B 7/08

U.S. Cl. 325—305

4 Claims



1. A diversity combining arrangement comprising a plurality of signal handling arrangements, one for each diverse channel to be combined, each having means for connecting an individual diverse signal channel thereto and each comprising two balanced mixers, means for applying input signals in parallel to both mixers, which input signals contain intermodulation product signals, means for deriving a second input for one of said mixers from the output of the other via band pass filter means adapted to pass signals in one of the side bands of the output from said other mixer, further band pass filter means connected to apply output from said one mixer as second input for said other mixer, output means for taking output signals from the output of said first mentioned band pass filter means, means being provided for combining the output signals appearing at the output means of each signal handling circuit under the control of comparator means con-

nected to derive inputs from intermodulation product signal detecting means provided one for each signal handling arrangement and each comprising a third mixer connected to derive one input from the output of the said one mixer and a second input from the output of said further band pass filter means in the respective signal handling circuit, whereby the contribution from each channel to the combined output signal is related to the degree of intermodulation present in that channel.

3,902,120

COMBINATION RADIO RECEIVER AND STEREO HEADPHONES

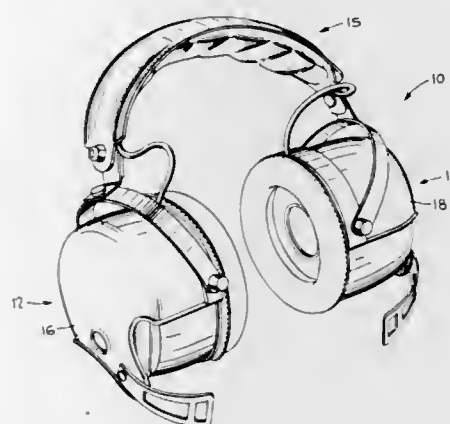
Charles Dascal, and Jack De Laster, both of Miami, Fla., assignors to Dyn Electronics, Inc., Miami, Fla.

Filed May 20, 1974, Ser. No. 471,817

Int. Cl.² H04B 1/08

U.S. Cl. 325—310

14 Claims



8. An entertainment unit comprising in combination: a set of headphones including first and second speakers; a radio receiver contained in said set of headphones for driving said speakers, one of said headphones having an outer surface with a cavity formed therein for receiving a battery for powering the receiver; a cover for at least partially enclosing said outer surface of said one headphone; and latching means for releasably securing said cover to said one headphone, wherein said latching means includes a lug mounted to said cover, and said outer surface includes an aperture, said lug and aperture being relatively positioned for mutual engagement, said lug being selectively engageable and disengageable with said aperture; and spacing means for maintaining a portion of said cover spaced apart a predetermined distance from said outer surface outside of said one headphone when said lug is engaged with said aperture.

3,902,121

AUTOMATIC TUNER

Hirokazu Yoshino, Katano; Tetsuo Yamaguchi, Hirakata, and Eiichi Tsuboka, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Dec. 5, 1972, Ser. No. 312,326

Claims priority, application Japan, Dec. 8, 1971, 46-99746; Nov. 17, 1972, 47-11586

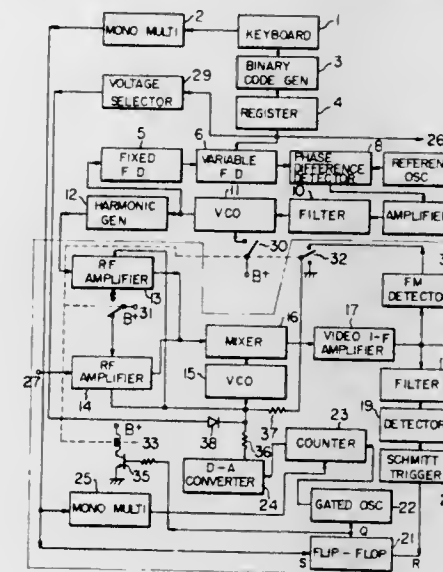
Int. Cl. H04b 1/36

U.S. Cl. 325—335

11 Claims

1. Automatic tuning apparatus, comprising: means for selecting a desired channel to be tuned and for generating an output signal corresponding to said desired channel; first oscillator means for generating a local oscillation signal having a frequency corresponding to said desired channel to be tuned, including: a variable frequency divider coupled to the output of said channel selecting means and having a frequency divi-

sion ratio which varies according to the output of said channel selecting means, a reference frequency oscillator for generating a reference frequency signal, means coupled to said variable frequency divider and to said reference frequency oscillator for comparing the phase of said reference frequency signal with that of the output signal of said variable frequency divider and for generating an output signal corresponding to the phase difference between said reference frequency and variable divider signals, first and second voltage control oscillators coupled to the output of said phase comparison means, the oscillation frequencies of said voltage controlled oscillators being controlled by the output of said phase comparison



means, said first and second voltage controlled oscillators producing different oscillation frequencies relative to each other, means for generating an n -th harmonic wave (n being a natural number not less than 2) coupled to the output of said first voltage controlled oscillator, second oscillator means for generating a swept frequency output signal, first means for mixing the output of said harmonic wave generating means with the output of said swept frequency oscillator means to produce a beat frequency output signal, detecting means for detecting said beat frequency signal produced by said first mixing means and for generating an output control signal when said beat signal reaches a predetermined frequency, stop and hold means coupling the output of said detecting means to said swept frequency oscillator means to stop the frequency sweeping action thereof when said detecting means generates said output control signal and to hold said swept frequency oscillator means locked to its last generated output frequency, second means for mixing the output of said swept frequency oscillator means with an antenna input signal having a first frequency band to produce a first intermediate frequency signal, third means for mixing the output of said second voltage controlled oscillator with an antenna input signal having a second frequency band different from said first frequency band to produce a second intermediate frequency signal, first switching means coupled to said detecting means for switching between said first and second mixing means as a function of the output signal generated by said detecting means, and second switching means coupled to said channel selecting means for switching between said second and third mixing means as a function of the output signal from said channel selecting means.

3,902,122
APPARATUS FOR SPEEDING-UP THE ATTACK TIME OF A TONE-CODED RADIO RECEIVER

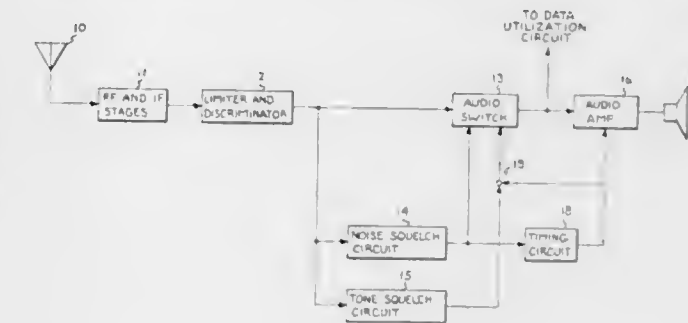
Ronald C. Sisson, and Frederick E. Spangler, both of Lynchburg, Va., assignors to General Electric Company

Filed July 10, 1974, Ser. No. 487,147

Int. Cl.² H04B 1/06

U.S. Cl. 325—466

3 Claims



1. In a tone-coded radio receiver adapted to produce only those transmissions having a tone of selected frequency, said receiver having: a radio frequency circuit; a demodulator coupled to said radio frequency circuit; a control circuit having a signal path input coupled to said demodulator, a signal path output, and a control input; a tone filter having an input coupled to said demodulator and an output coupled to said control circuit control input for permitting signals to pass through said control circuit signal path in response to a demodulated tone of selected frequency; and a carrier detector coupled to said demodulator for detecting the presence of a received carrier; an improved circuit for speeding-up the response time of said radio receiver comprising:

- a timing circuit having an input for detected carrier signals and an output or producing a signal of predetermined time duration in response to a detected carrier signal applied to said timing circuit input;
- means connected to said timing circuit input and adapted to be connected to said carrier detector for supplying detected carrier signals to said timing circuit;
- and means connected to said timing circuit output and adapted to be connected to said control circuit control input for permitting said control circuit signal path to pass signals in response to each of said signals of said predetermined time duration, thereby permitting said receiver to produce signals without delay by said tone filter.

3,902,123

DIGITAL CIRCUIT FOR DETERMINING IF SIGNAL SOURCE CONSISTS PRIMARILY OF NOISE OR CONTAINS INFORMATION

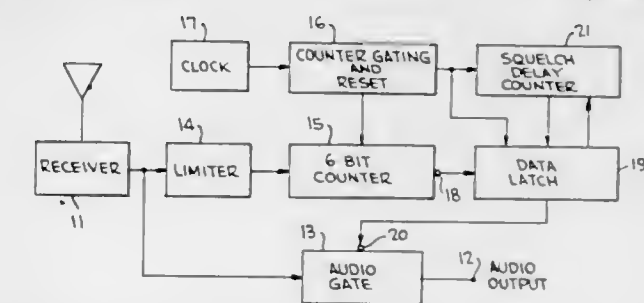
Johannes A. F. Oomen, Rotterdam, Netherlands, assignor to Cincinnati Electronics Corporation, Cincinnati, Ohio

Filed Nov. 30, 1973, Ser. No. 420,544

Int. Cl. H04b 1/16

U.S. Cl. 325—478

8 Claims



1. A digital squelch circuit responsive to a band limited audio output signal of a radio receiver comprising first counter means advanced in response to the signal to repeatedly count the number of cycles of the source in successive time periods having predetermined durations and for deriving an output signal each time the count in one of the periods exceeds a

predetermined value indicative of no information signal being derived from the receiver, second counter means advanced once each of the time periods, means for resetting the second counter means each time no signal is derived from the first counter means during a time period, the second counter means deriving an output signal in response to a predetermined number of the time periods occurring prior to resetting of the second counter means, the time interval of the predetermined number of periods being slightly greater than the typical time interval between word utterances of a speaker, a latching circuit respectively driven to first and second states in response to (a) no signal being derived from the first counter means during a time interval and (b) the output signal of the second counter means, and a gate circuit responsive to the receiver output signal and an output signal of the latching circuit for respectively enabling and disabling coupling of the receiver output signal to an output terminal in response to the latching circuit being in the first and second states.

3,902,124

STABLE AMPLITUDE SINE WAVE GENERATOR

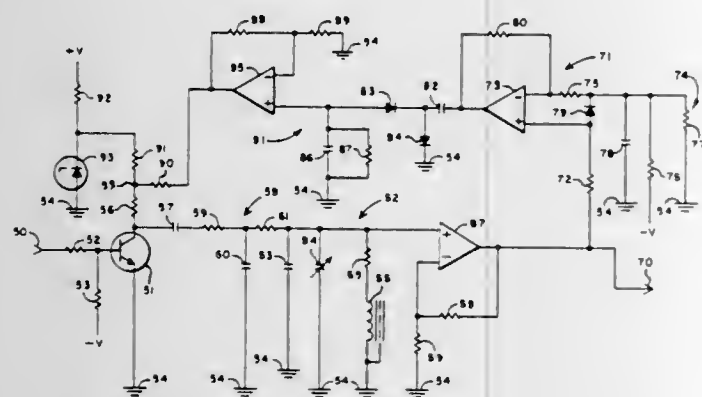
John C. Freeborn, Los Angeles, Calif., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 30, 1974, Ser. No. 438,172

Int. Cl.² H03K 5/08

U.S. Cl. 328-27

8 Claims



1. In a stable amplitude sine wave generator of the type wherein a resonant circuit produces an oscillating output signal which is sampled to provide an amplitude correction signal, improved feedback circuitry which comprises:

input circuit means for supplying a square wave signal having a repetition rate corresponding to the desired frequency of the oscillating output signal and a variable amplitude depending on the amplitude correction signal; reference voltage means for providing a reference voltage of a given polarity relative to ground potential, the magnitude of the reference voltage being indicative of desired amplitude of the oscillating output signal;

signal blocking means for receiving the oscillating output signal and the reference voltage and transmitting only the portion of the output signal whose voltage amplitude in the given polarity exceeds the reference voltage;

integrating means for integrating the signal transmitted by said signal blocking means; and

correction circuit means for receiving the signal from said integrating means supplying a signal indicative thereof to said input circuit means as the amplitude correction signal.

3,902,125

SYMMETRIC OUTPUT, DIGITAL BY THREE COUNTER

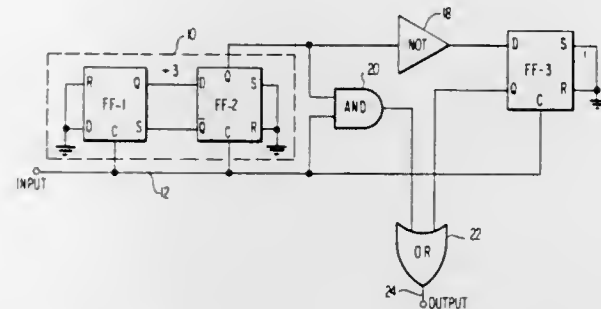
George R. Oliva, Jr., Eatontown, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 18, 1974, Ser. No. 480,320

Int. Cl.² H03K 21/00

U.S. Cl. 328-39

10 Claims



1. A digital divide by three counter circuit providing a symmetrical output, comprising in combination:

input means adapted to receive a binary input signal; a divide by three counter circuit coupled to said input means, being operable to provide a first binary divide by three output signal;

a first logic circuit comprising a coincidence logic gate having two inputs respectively coupled to said input means and to said counter circuit and being responsive to said binary input signal and said first binary divide by three output signal to provide a first intermediate output signal comprising one and a half cycles of said input signal;

a logic inverter circuit coupled to said counter circuit for providing a complementary first binary divide by three output signal;

a bistable device having one input coupled to said input means and another input to the output of said logic inverter circuit, being responsive to said input signal and said complementary first divide by three output signal to provide a second intermediate output signal comprising a time delay version of said complementary first divide by three output signal; and

a second logic circuit comprising a noncoincidence logic gate having two inputs respectively coupled to said bistable device and said first logic circuit and being responsive to said first and second intermediate output signals to provide a composite output signal which is a symmetrical divide by three output signal.

3,902,126

SINGLE SIDEBAND GENERATOR

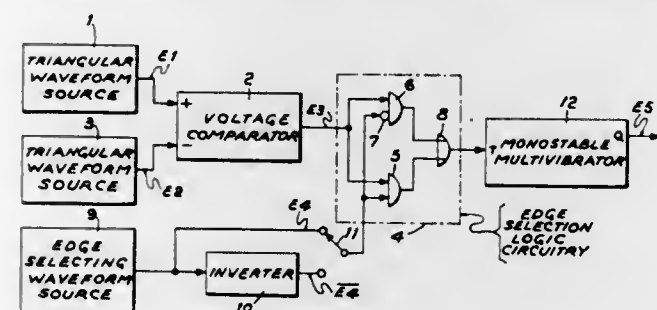
Marvin Lawrence Sassler, Wayne, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed May 29, 1974, Ser. No. 474,291

Int. Cl.² H03K 1/00, 1/16; G01R 11/02

U.S. Cl. 328-61

10 Claims



1. A single sideband generator to generate a selected one of the upper sideband and the lower sideband and to reject the carrier and the unselected sideband comprising:

a first source of a first linear triangular waveform having a first given frequency,

a given peak-to-peak amplitude, a positive slope and a negative slope;

a second source of a second linear triangular waveform having a second given frequency greater than said first given frequency, a peak-to-peak amplitude equal to said given amplitude, a positive slope and a negative slope;

first means coupled to said first and second sources to compare the amplitudes of said first and second triangular waveforms and to produce a first pulse train of linearly increasing and then linearly decreasing duty cycle, each pulse of said first pulse train having a rising edge and a falling edge;

second means coupled to said first means to select one of said rising edge and said falling edge of said pulses of said first pulse train during said positive slope of said first triangular waveform and to select the other of said rising and falling edges of said pulses of said first pulse train during said negative slope of said first triangular waveform; and

a monostable device coupled to said second means to provide a second pulse train having a repetition frequency equal to only one of said upper and lower sidebands depending upon said edges selected by said second means during said positive and negative slopes of said first triangular waveform.

3,902,127

ELECTRONIC CIRCUIT AND TECHNIQUE FOR EXTRACTING A VIDEO SIGNAL FROM AN ARRAY OF PHOTODETECTORS

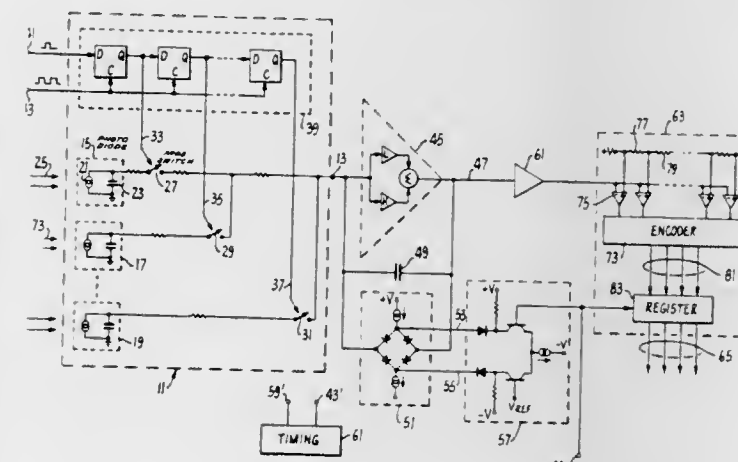
Rosser S. Wilson, Berkeley, Calif., assignor to Ball Computer Products, Inc., Oakland, Calif.

Filed Nov. 29, 1973, Ser. No. 420,320

Int. Cl. G06g 7/18

U.S. Cl. 328-127

7 Claims



1. A video signal extraction circuit for use with a photodetector device having an array of individual photodetectors that are each connected to a common video output line through an individual semi-conductor element that is switchable from a normal non-conductive state to a conductive state for the duration of a gate signal and means applying the gate signal to each of said semi-conductor elements one at a time to render them each conductive for prescribed intervals with time therebetween when none of the semi-conductor elements are conductive, said video extraction circuit comprising:

an integrator circuit having an input receiving a signal from the common video output line and an output, and

means for resetting the integrator circuit during each period wherein none of the semi-conductor elements is conductive, in a manner that the integrator circuit is operative for a time between reset pulses that extends throughout each of said gate signals from an instant before to an instant after each of said gate signals.

3,902,128

FREQUENCY/PHASE COMPARATOR

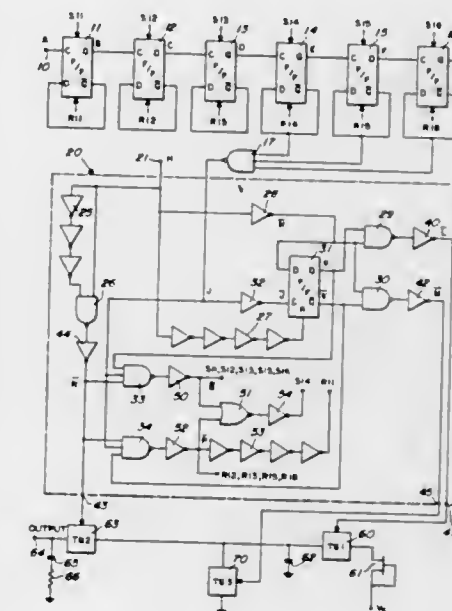
Thomas H. Perszyk, Margate, Fla., assignor to Motorola, Inc., Chicago, Ill.

Filed Aug. 5, 1974, Ser. No. 492,953

Int. Cl.² H03B 3/04

U.S. Cl. 328-134

8 Claims



1. A frequency/phase comparator comprising:

a. first input means for receiving a reference signal having a predetermined frequency;

b. second input means for receiving a variable frequency signal having a center frequency generally the same as the predetermined frequency;

c. logic circuitry connected to said first and second input means and providing first, second and third trains of pulses in response to the reference and variable frequency signals;

d. first, second and third gating means connected to said logic circuitry for operation in response to pulses in the first, second and third trains of pulses, respectively;

e. voltage storage means connected through said first gating means to voltage supply input means, said pulses in the first train each operating said first gating means to connect said voltage storage means to said voltage supply means for a period of time proportional to the amount the reference signal leads the variable frequency signal in phase;

f. said second gating means being connected to said voltage storage means and operating in response to the pulses in the second train to sample the amplitude of voltage stored in said voltage storage means; and

g. said third gating means being connected to said voltage storage means and operating in response to the pulses in the third train to remove the voltage stored in the voltage storage means.

3,902,129

DEMODULATING CIRCUITRY FOR PULSE RATE MODULATION DATA REPRODUCTION

William Arnold Boothroyd, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 287,132, Sept. 7, 1972. This

application Apr. 19, 1974, Ser. No. 462,562

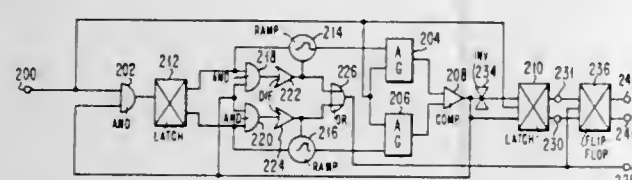
Int. Cl.² H03K 9/06

U.S. Cl. 329-107

20 Claims

1. Demodulating circuitry for decoding information conveyed by a train of signal manifestations of nominally equally spaced timing manifestations and other signal manifestations representing data of one nature by the presence thereof intermediate the timing manifestations and representing data

of another nature by the absence of any signal manifestations intermediate of said timing manifestations, comprising an input terminal to which electric manifestations of pulse rate modulated rate are applied, a data output terminal at which electric manifestations of demodulated data are delivered, measuring circuitry coupled to said input terminal for producing an interval manifestation representative of the interval between successive signal manifestations while storing at least one associated reference manifestation representative of the interval between preceding signal manifestations,



comparing circuitry coupled to said measuring circuitry for comparing each interval manifestation with at least one associated reference manifestation, for thereby decoding said information as timing information on data of said one nature, circuit connections between said comparing circuitry and said data output terminal, and circuitry connected between said comparing circuitry and said measuring circuitry for determining intervals between timing manifestations only regardless of the presence or absence of other manifestations intermediate thereof.

3,902,130

IMPROVED APPARATUS FOR LENGTHENING LASER OUTPUT PULSE DURATION

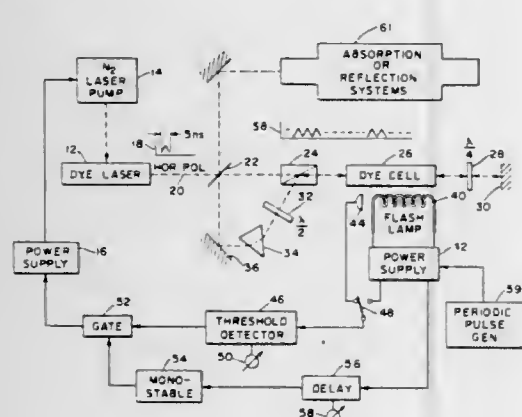
Charles T. Pike, Lexington, Mass., assignor to Jersey Nuclear-Avco Isotopes, Inc., Bellevue, Wash.

Filed May 14, 1973, Ser. No. 360,176

Int. Cl. H01s 3/10

U.S. Cl. 330-4.3

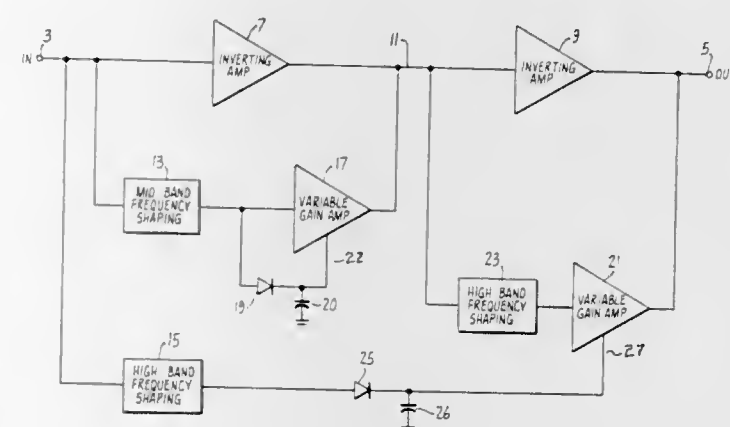
21 Claims



1. A system for lengthening the output pulse of a laser radiation source comprising:
means for providing a laser radiation pulse;
means for amplifying the laser radiation pulse and including means for energizing the laser amplifying means to an amplifying condition;
means for applying the laser radiation pulse from said pulse providing means to said amplifying means and producing a plurality of passes for radiation from said pulse providing means through said amplifying means to provide an amplified pulse of laser radiation;
means for extracting the amplified pulse from said laser amplifying means in isolation from the laser radiation pulse applied to said laser amplifying means; and
means for reapplying a portion of the amplified pulse to said laser amplifying means thereby to generate a sequence of amplified pulses.

3,902,131
TANDEM AUDIO DYNAMIC RANGE EXPANDER
Louis Dorren, San Mateo, Calif., assignor to Quadracast Systems, Inc., San Mateo, Calif.
Filed Sept. 6, 1974, Ser. No. 503,716
Int. Cl. H03G 7/00, 7/06; H04B 1/64
U.S. Cl. 330-126

2 Claims



1. An audio expander for increasing the dynamic range of an audio signal, which has been compressed in amplitude at a high band frequency and at a mid band frequency, to restore the signal to its original dynamic range, comprising in combination:

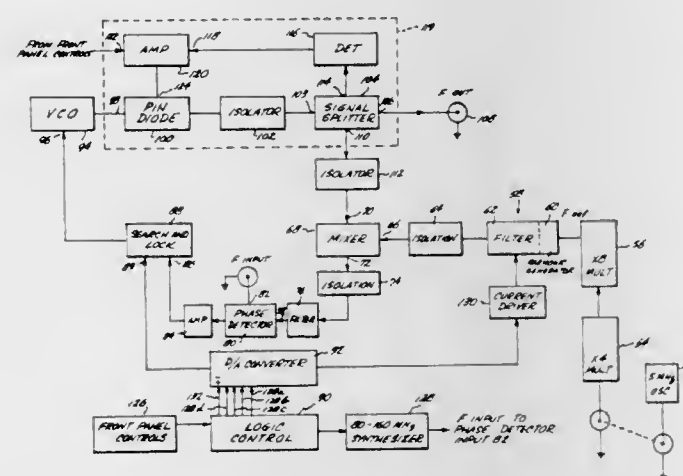
- means for receiving an incoming audio signal and dividing said signal into three paths,
- passing a first path signal through a first inverting amplifier to produce an output signal having substantially the same amplitude as the incoming signal and inverted 180°,
- passing a second path signal through mid band frequency shaping means, said means having an output representing the unattenuated mid band frequency wherein higher and lower frequencies are attenuated,
- passing a portion of the output of said mid band means through a rectifier to obtain a DC control voltage,
- passing another portion of the output of said mid band means through a first variable gain amplifier wherein the variable gain of said amplifier is determined by said DC control voltage, the gain of said amplifier being inversely proportional to the control voltage,
- combining the output of said first variable gain amplifier with said inverted output of first inverting amplifier whereby the outputs of the two amplifiers subtract,
- passing the thus produced combined signal to a second inverting amplifier wherein said amplifier has an output 180° out of phase with its input and in phase with the initial signal,
- passing a third path input signal through a high band frequency shaping means and a rectifier to derive a second control voltage,
- passing a portion of the signal representing the output of the first inverting amplifier and the first variable gain amplifier to a second high band frequency shaping means, said means having an output representing the unattenuated high band frequency wherein higher and lower frequencies are attenuated,
- passing said output from said second high band frequency shaping means to the input of a second variable gain amplifier,
- passing said second control voltage to said second variable gain amplifier, and
- adding the output of the second inverting amplifier to the output of the second variable gain amplifier to derive an audio signal expanded in dynamic range.

3,902,132 CLOSED LOOP VARIABLE FREQUENCY SIGNAL GENERATOR

Raymond L. Fried, Lynnwood, Wash., assignor to John Fluke Mfg. Co., Inc., Mountlake Terrace, Wash.
Continuation-in-part of Ser. No. 329,621, Feb. 5, 1973, abandoned. This application Apr. 15, 1974, Ser. No. 460,739
Int. Cl. H03B 3/02, 3/04

U.S. Cl. 331-15

14 Claims



1. A variable frequency signal generator, comprising:
closed loop circuit means operable to produce a circuit output signal of controllable frequency over an output frequency range, said closed loop circuit means including a signal generator means producing an output signal which is said circuit output signal, said signal generator including a control input for control of the frequency of said circuit output signal, said closed loop circuit means further including a first signal mixing means having first and second inputs;
first signal source means operable to produce a stepping signal of selectively variable frequency over a first frequency range;
means applying said circuit output signal to said first input of said first signal mixing means;
means applying said stepping signal to said second input of said first signal mixing means, said first signal mixing means operable in response to said circuit output signal and said stepping signal to produce an output signal having sum and difference frequencies;
second signal source means operable to produce an input signal of selectively variable frequency over a second frequency range;
detector means in said closed loop circuit means responsive to said difference signal from said first signal mixing means and said input signal from said second signal source means for generating a control signal when said circuit output signal applied to said first signal mixing means is higher in frequency than said stepping signal applied to said first signal mixing means, and also when said circuit output signal applied to said first signal mixing means is lower in frequency than said stepping signal applied to said first signal mixing means, said closed loop circuit being stabilized when the frequency of said input signal is equal to said difference frequency;
means applying said control signal to said control input of said signal generator means to adjust the output frequency of said circuit output signal, until said closed loop circuit means is stabilized, said closed loop circuit means capable of stabilizing at first and second output frequencies, respectively, with one input signal frequency and one stepping signal frequency, said first and second output frequencies being above and below, respectively, the frequency of said one stepping signal frequency by the amount of the frequency of said one input signal frequency;

means for selecting a desired output frequency from said output frequency range;
control means responsive to said selecting means for controlling the frequencies of said first and second signal source means, respectively, and for partially controlling the frequency of said circuit output signal such that said closed loop circuit means tends to stabilize at a selected one of said first and second output frequencies.

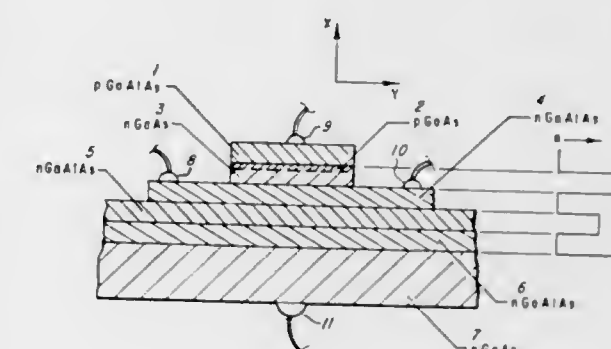
3,902,133
MONOLITHIC SOURCE FOR INTEGRATED OPTICS
Roderick Kent Watts, Dallas, Tex., assignor to Texas Instruments, Incorporated, Dallas, Tex.

Filed Sept. 24, 1973, Ser. No. 400,072

Int. Cl. H01s 3/00

U.S. Cl. 331-94.5 H

5 Claims



1. A monolithic semiconductor structure comprising:
a semiconductor substrate,
first and second layers of semiconductor material, said first layer of semiconductor material being disposed in intimate contact with the surface of said semiconductor substrate and said second layer of semiconductor material being disposed atop said first layer of semiconductor material in intimate contact therewith,
a semiconductor laser mounted on said second layer of semiconductor material and including a base layer of semiconductor material disposed in intimate contact with said second layer of semiconductor material and third and fourth layers of semiconductor material of opposite conductivity types disposed on said base layer of semiconductor material, said third and fourth layers of semiconductor material defining a p-n junction therebetween and comprising the laser cavity of said semiconductor laser,
said first and base layers of semiconductor material having substantially the same index of refraction and said second layer of semiconductor material sandwiched therebetween having a higher index of refraction relative to the index of refraction of said first and base layers of semiconductor material and comprising a semiconductor waveguide, and
said semiconductor laser being optically coupled to said semiconductor waveguide by evanescent fields through said base layer for transferring radiation from said semiconductor laser into said semiconductor waveguide.

3,902,134 ENERGY-STATE-SELECTED CESIUM BEAM INTENSIFIER

James George, Swampscott, Mass., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 21, 1974, Ser. No. 499,255

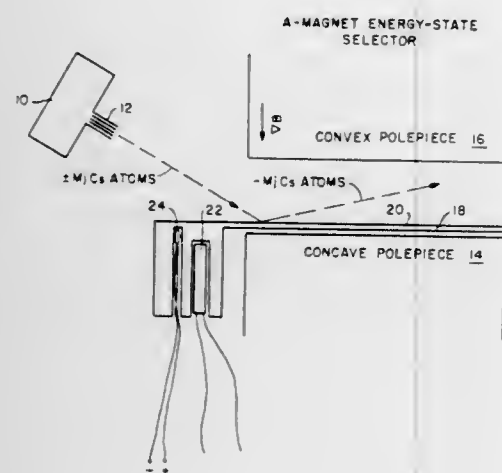
Int. Cl. H01s 1/00

U.S. Cl. 331-94

4 Claims

1. In a cesium-beam resonator including a cesium atom source, a cesium beam effuser and a magnet energy-state-selector means having a concave polepiece and a convey

polepiece, means for reflecting the cesium-atom beam from the effuser.



said reflecting means being located adjacent said concave polepiece and having a surface from which said beam is reflected.

3,902,135

LASER OSCILLATOR WITH A WAVELENGTH STABILIZING DEVICE

Toru Terada, and Isao Yamaguchi, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Japan

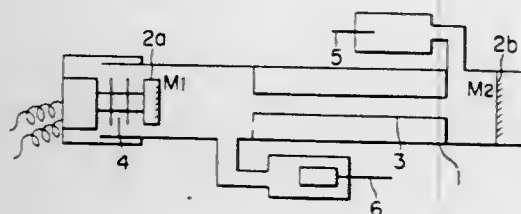
Continuation of Ser. No. 291,773, Sept. 25, 1972, abandoned.

This application Feb. 25, 1974, Ser. No. 445,437

Int. Cl.² H01S 3/08

U.S. Cl. 331-94.5 S

7 Claims



1. In a laser tube, providing a laser beam with a constantly uniform wavelength, of the type having a capillary tube therein, an anode and cathode operable to impress an operating voltage on the capillary tube, a pair of mirror members each positioned in the laser tube adjacent a respective end of the capillary tube in alignment with the axis thereof, and means mounting at least one of the mirror members for movement parallel to the axis relative to the other mirror: the improvement comprising, in combination, an armature of magnetic material secured to said one mirror member for movement therewith; said mounting means including a non-magnetic member closing the adjacent end of said laser tube and elastic means supporting said armature from said non-magnetic member within said laser tube, for movement parallel to said axis in opposite axial directions and normally biasing said armature to a preset intermediate position; an electromagnetic means, external to said laser tube, axially aligned with and facing said armature but separated from said armature by said non-magnetic member, and including an energizing winding; and means operable to supply current to said winding to adjust and control the axial distance between said mirror members by adjusting the magnitude and direction of the current supplied to said winding.

3,902,136 ROTATING BLADEROW AERODYNAMIC WINDOW FOR HIGH POWER PULSED GASEOUS LASERS

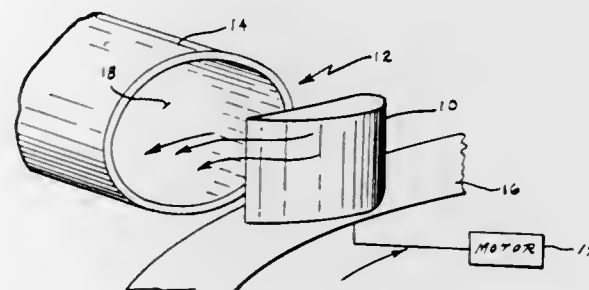
David Finkleman, Silver Spring, Md., and Robert F. Weber, Albuquerque, N. Mex., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 30, 1974, Ser. No. 474,559

Int. Cl.² H01S 3/22; G02B 5/00

U.S. Cl. 331-94.5 G

7 Claims



1. In combination with a gaseous laser having an aperture therein, a plurality of spaced blades located adjacent said aperture forming an aerodynamic window in front of said aperture and means operably connected to said blades for moving said blades in front of said aperture at a predetermined speed.

3,902,137

ELECTRO-OPTIC DIFFRACTION GRATING TUNED LASER

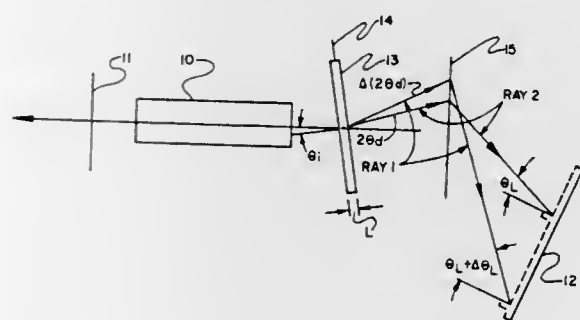
Richard Swart Hughes, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 29, 1974, Ser. No. 518,313

Int. Cl.² H01S 3/10

U.S. Cl. 331-94.5 C

5 Claims



1. A wavelength tuned laser comprising: an active laser medium, means for pumping said medium for producing a population inversion therein; resonator means positioned about said medium for stimulating a beam of radiation from said medium, said resonator means comprising a partially reflective output coupling reflector located adjacent one end of said medium and a diffractive retroreflector adjacent the opposite end of said medium, an electro-optic diffraction means positioned between said diffractive retroreflector and said medium, modulating means coupled to said electro-optic means for setting up a diffraction pattern therein for deflecting said beam across the face of said diffractive retroreflector.

3,902,138 TEMPERATURE STABILIZED COAXIAL CAVITY MICROWAVE OSCILLATOR

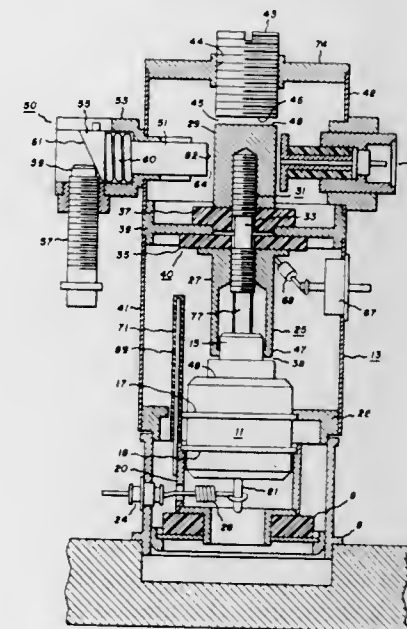
Claude Hopper, Jr., Owensboro, Ky., assignor to General Electric Company, Owensboro, Ky.

Filed July 22, 1974, Ser. No. 490,896

Int. Cl.² H03B 5/04, 5/18

U.S. Cl. 331-98

9 Claims



1. A microwave one-half wave cavity oscillator comprising: a. a tubular cavity body; b. a controlled charge carrier device mounted at a first end of said body, said device comprising a first electrode terminal; c. a conductive line connected to said terminal, said line extending coaxially of the longitudinal axis of said body and forming a coaxial one-half wave resonant cavity with said body, said line having a surface adjacent the second end of said body and transverse to said axis; d. an electrically conductive member connected to said body and having a face disposed opposite to and spaced from said surface thereby to form a capacitive relationship between said face and said surface; e. said body and said line comprising means varying the spacing between said face and said surface responsive to operating temperature variations, thereby to minimize frequency deviations caused by operating temperature variations.

3,902,139

TEMPERATURE COMPENSATED PULSE GENERATOR

John W. Harrell, Duncanville, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

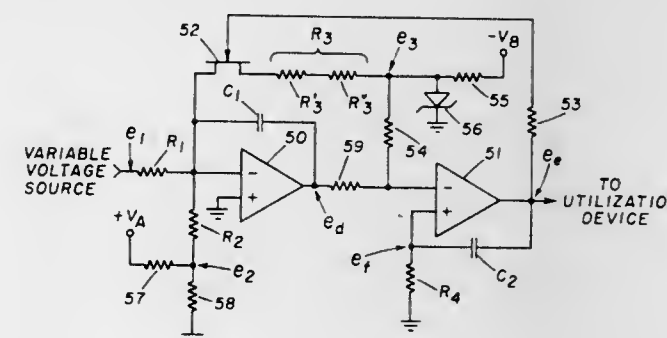
Filed Jan. 14, 1974, Ser. No. 433,028

Int. Cl. H03b 5/12, 3/00; H03k 1/10; 331 108

D:135;143;176;177 R

U.S. Cl. 331-108 D

2 Claims



1. A pulse generator comprising:

a. a summing integrator, b. means for providing a reference current to the input of said summing integrator, c. means for providing a variable current to the input of said summing integrator, whereby the output of said integrator ramps in a first direction at a rate proportional to the summation of said reference and variable currents at its input, d. means responsive to the ramping output of said integrator for providing a pulse when said output reaches a first predetermined voltage level, and e. means responsive to said pulse for providing a third current to the input of said integrator opposite in direction to said reference and variable currents and sufficiently greater than the summation of said reference and variable currents such that the output of said integrator ramps in a second direction opposite to that of said first direction at a rate proportional to said third current, said means varying said third current linearly with temperature variations to change the rate at which said integrator ramps in said second direction, thereby compensating for drifts in the frequency of said pulses under temperature variations.

3,902,140

DIGITALLY CONTROLLED OSCILLATOR

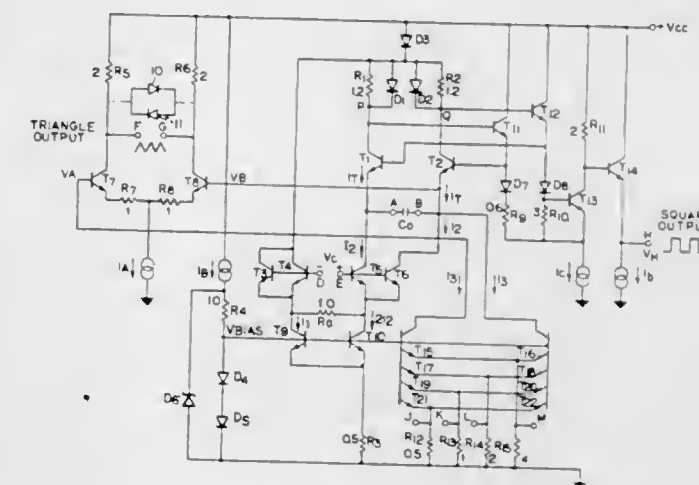
Alan B. Grebene, 19095 Saratoga Glen Pl., Saratoga, Calif. 95070

Filed Oct. 18, 1972, Ser. No. 298,466

Int. Cl. H03k 3/282

U.S. Cl. 331-113 R

1 Claim



1. An analog and digitally controlled integrated circuit oscillator responsive to either a digital or analog input signal for producing an output signal having a frequency related to said input signal including a multivibrator having first and second transistors and timing capacitor means connected between said transistors, the charging and discharging of said capacitor means determining the frequency of oscillation of said output signal of said oscillator and including analog current source means responsive to said analog input signal to vary the amount of current produced by said current source means to vary said output signal the level of said current determining said frequency of oscillation, said analog current source means including three legs, two of the legs being coupled to said first and second transistors of said multivibrator and a third leg carrying the remainder of current of such source, said analog current source means also including means responsive to said analog input signal for varying the current in said two legs in an opposite sense relative to said variation of current in said third leg, wherein the improvement comprises: digital current source means for digitally varying said current level including a plurality of constant current source pairs each of said pairs producing a current level related to the relative positional weights of a digital binary input signal, each current source of one of said pair being connected to one of said two legs and similarly each current source of the other of said pair being connected to the other of said two legs said

current source pairs being selectively activated by a predetermined binary logic level to provide varying current levels to said capacitor means; said analog current source including common current source means for receiving currents from said three legs and including at least one transistor and said current source pairs each including at least a pair of transistors and means for biasing all of such transistors of said common current source of said analog current source and said transistors of said current source pairs including a source of biasing voltage connected in common to all of such transistors.

3,902,141

QUARTZ OSCILLATOR HAVING VERY LOW POWER CONSUMPTION

Jean-Claude Berney, Lausanne, Switzerland, assignor to Bernard Golay S.A., Lausanne, Switzerland

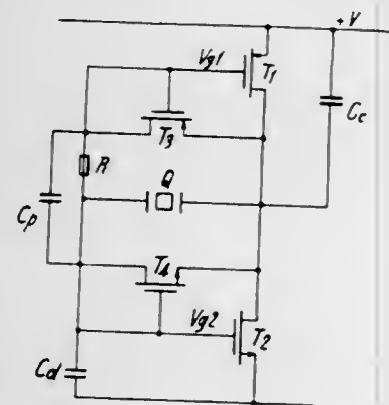
Filed June 19, 1974, Ser. No. 480,876

Claims priority, application Switzerland, June 20, 1973, 8933/73

Int. Cl.² H03B 5/36

U.S. Cl. 331-116 R

3 Claims



1. A quartz oscillator having low power consumption comprising an amplifier formed by two complementary semi-conductor elements having sources, gates and drains respectively connected to one another in parallel arrangement with regard to a power supply, a quartz crystal connected between the drains and the gates, a detection capacitor connected between the gates and the sources of the respective semi-conductor elements, a charge capacitor connected between the sources and the drains, and polarization means including an integration capacitor connecting the respective gates of the semi-conductor elements for effecting continuous polarization of the semi-conductor elements by the charge of said integration capacitor such that when the oscillation amplitude is low, the amplifier operates in class A, said semi-conductor elements each having a threshold voltage between its drain and gate which is no greater than that when it becomes conductive when the drain-source voltage of said semi-conductor element tends towards zero, to modify the charge of the polarization capacitor and thereby, the polarization of the amplifier which passes from class A to class B, then to class C when the amplitude of oscillation increases.

3,902,142

LASER BEAM CONTROL APPARATUS

Max van den Berg, Hochetetten, Germany, assignor to European Atomic Energy Community (Euratom), Kirchberg, Luxemburg

Continuation of Ser. No. 220,670, Jan. 25, 1972, abandoned. This application Jan. 2, 1974, Ser. No. 429,810

Claims priority, application Luxemburg, Feb. 18, 1971, 62630

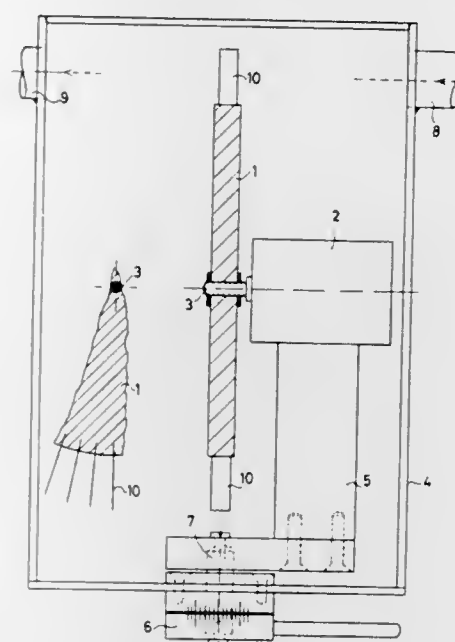
Int. Cl. H01s 3/10

U.S. Cl. 332-7.51

5 Claims

1. Apparatus for providing continuous intensity modulation of a laser beam, comprising a bladed wheel, means for driving said wheel at a constant rotational speed, the blades of said

bladed wheel being fixed to said wheel and being constructed as smooth sheet metal strips with a surface orientation perpendicular to the circumferential orientation, and means supporting said bladed wheel for pivotal movement about an axis



disposed in the wheel surface and extending through the wheel axis in a casing which surrounds the bladed wheel, the casing having laser beam inlet and laser beam outlet apertures at positions at which the line connecting the two apertures perpendicularly intersects the pivoting axis in the blade zone.

3,902,143

REFRIGERATED COAXIAL COUPLING

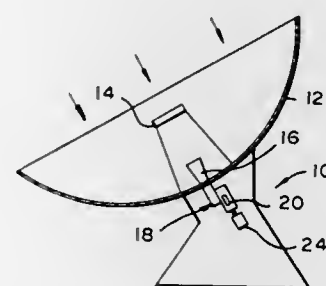
James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Ervin R. Wiebe, and Robert C. Clauss, both of Panorama City, Calif.

Filed June 27, 1974, Ser. No. 483,852

Int. Cl.² H01P 1/16, 5/08

U.S. Cl. 333-21 R

7 Claims



1. Microwave processing apparatus comprising: walls defining a housing; amplifying means disposed in said housing; a waveguide extending to said housing, said waveguide having walls with a hole; a coaxial line extending from said amplifier means to said waveguide at said hole thereof; a refrigerator coupled to said coaxial line to cool it; said coaxial line including a tubular outer coaxial conductor electrically coupled to the walls of said waveguide, and an inner coaxial conductor with an inner end coupled to said amplifier means and an outer end projecting through said hole in said waveguide; and a cover of dielectric material disposed in said waveguide over said outer end of said central conductor and sealing the outer end of coaxial line around said hole; the space between said central and outer conductors being evacuated to form a vacuum, and said refrigerator being thermally coupled to said inner end of said coaxial conductor.

3,902,144

RESILIENT MOUNTING ARRANGEMENT FOR THE NON-MOVABLE MAGNETIC MEMBER OF AN ELECTROMAGNETIC SWITCHING APPARATUS

Gert Fischer; Siegfried Seidel, and Fritz Pöhlmann, all of Amberg, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

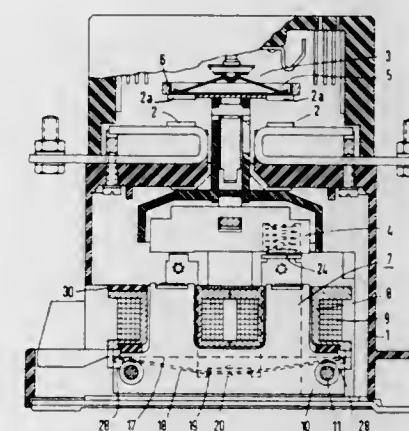
Filed Apr. 25, 1974, Ser. No. 464,198

Claims priority, application Germany, Apr. 26, 1973, 2321178

Int. Cl. H01h 3/60

U.S. Cl. 335-193

7 Claims



1. In an electromagnetic switching apparatus including a housing, stationary and movable electrical contacts disposed therein, a movable magnetic member disposed with the movable electrical contacts on a carrier bridge, a U-shaped non-movable magnetic member on which the excitation coil and coil form of the apparatus are disposed, and elongated support rods having resilient grommets disposed thereon for mounting the non-movable magnetic member in the apparatus housing, the improvement comprising, mounting members, integrally formed with and extending laterally outward from opposing sides of said non-movable magnetic member beyond the base thereof, said mounting members comprising part of said non-movable magnetic member and including elongated apertures extending longitudinally therethrough in which said grommets are inserted for resiliently mounting said non-movable magnetic member in said housing.

3,902,145

MAGNETIC CORRECTION DEVICE FOR A CATHODE RAY TUBE

Antonie Slavenburg; Johannes van den Boogert, and Antoon Swart, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

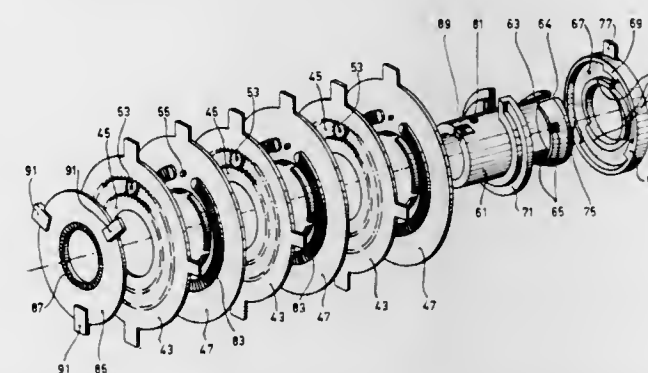
Filed Apr. 3, 1974, Ser. No. 457,562

Claims priority, application Netherlands, Apr. 9, 1973, 7304887

Int. Cl. H01f 7/00

U.S. Cl. 335-212

13 Claims



1. Magnetic correction device for influencing the paths of electron beams produced in a cathode ray tube, which device

comprises at least one support made of a non-magnetic material, securing means for securing the support to the neck of a cathode ray tube, and at least one pair of coaxial rings having magnetic poles distributed about their peripheries, which rings are mounted on the support and are rotatable about their axes in opposite relative directions, characterized in that one of the two rings of a pair has an inner diameter which is greater than the outer diameter of the other ring, the smaller ring being mounted within the larger ring, whilst the outer ring has teeth on its inner periphery and the inner ring has teeth on its outer periphery, at least one pinion, which is rotatable about a spindle secured to the support and extending parallel to the axis of the ring pair, being located in the space between the two rings and meshing with the said teeth.

3,902,146

TRANSFORMER WITH IMPROVED LIQUID COOLED DISC WINDING

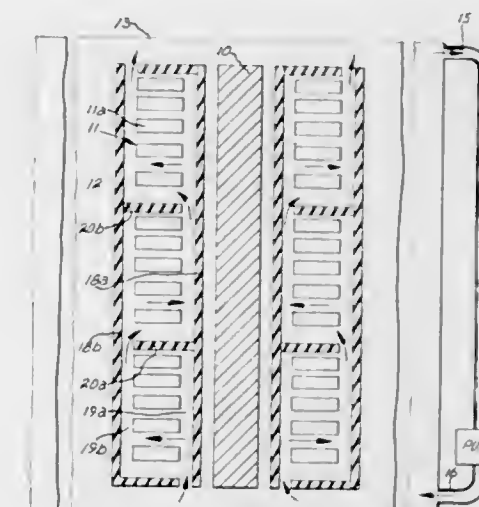
Ramachandran Muralidharan, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 27, 1974, Ser. No. 527,549

Int. Cl. H01f 27/08

U.S. Cl. 336-57

4 Claims



1. A force cooled electrical transformer comprising a tank containing liquid insulating coolant in which is immersed at least one vertically oriented magnetic core element and associated surrounding flat coil winding, said flat coil winding being comprised by a stack of approximately equal sized flat coils grouped into a plurality of coil sections, each coil section comprising several of said flat coils unequally vertically spaced from one another with a graduated coil spacing which decreases in the direction from the lowermost to the uppermost flat coil in each section, to thereby obtain a relatively uniform velocity of coolant flow between said coils, a pair of continuous duct walls respectively mounted inside and outside said flat coil winding to define inner and outer vertical cooling ducts, and staggered horizontal baffle means alternately completely blocking said inner and outer vertical cooling ducts between said coil sections, and means for recirculating and pumping said coolant to flow upwardly through said vertical cooling ducts and horizontally between the several unequally spaced flat coils in each coil section respectively inwardly and outwardly in successive coil sections as directed by said staggered horizontal baffle means.

3,902,147

AIR CORE DUPLEX REACTOR

Anthony B. Trench, Thornhill, Canada, assignor to Trench Electric Limited, Scarborough, Canada

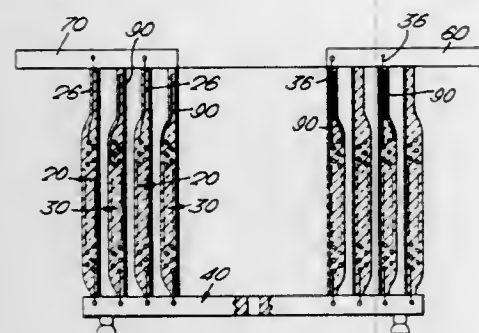
Filed Dec. 21, 1973, Ser. No. 427,218

Claims priority, application Canada, Dec. 28, 1972, 160059

Int. Cl.² H01F 15/02, 27/06

U.S. Cl. 336-65

6 Claims



1. An air core duplex reactor comprising two or more cylindrical coil assemblies disposed in concentric, radially spaced relation with an air space therebetween, each said coil assembly comprising one or more conductors helically wound and embedded in a resinous material providing a rigid, longitudinally extending sleeve-like member having a coil winding therein, said coil winding being helically wound from adjacent one end of said sleeve-like member in a direction toward the opposite end and extending only along a portion of the axial length thereof whereby the sleeve at such other end projects beyond the helical winding a substantially greater distance than at said one end, film insulation embedded in said projecting portion of the sleeve and overlapping a portion of the helical winding, means at said one end electrically connecting all of said coils in parallel and terminal means at said opposite end of the sleeve assemblies and connected to respective ones of the coil windings providing individual connections therefor.

3,902,148

SEMICONDUCTOR LEAD STRUCTURE AND ASSEMBLY AND METHOD FOR FABRICATING SAME

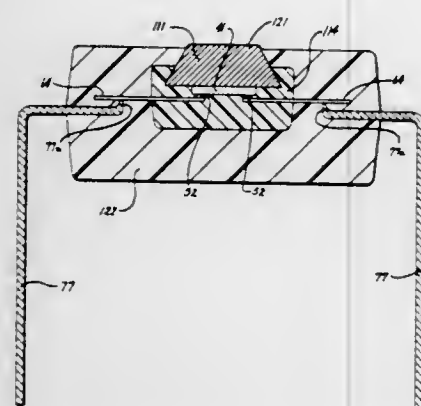
Joseph M. Drees, Saratoga, and Fritz W. Beyerlein, Sunnyvale, both of Calif., assignors to Signetics Corporation, Sunnyvale, Calif.

Continuation-in-part of Ser. No. 93,092, Nov. 27, 1970, abandoned. This application Oct. 2, 1972, Ser. No. 293,929

Int. Cl.² H01L 29/52

U.S. Cl. 357-70

37 Claims



7. In a semiconductor assembly for use with a lead frame having a plurality of leads having free inner extremities arranged in a predetermined pattern, a semiconductor body having at least a portion of an electrical circuit formed therein and with contact pads in a predetermined pattern carried by the body and lying in a common plane and a sheet of electrically conducting material having a plurality of lead arrays formed therein, each of said lead arrays comprising a plurality of spaced leads formed from the sheet material in one region thereof and being formed integral therewith, each of said leads

being cantilevered and extending inwardly, the inner ends of said leads conforming to the pattern of the pads, and means forming a bond between the inner ends of each lead array and the contact pads of a semiconductor body, portions of said leads remote from the inner ends of the leads being arranged in a pattern which corresponds to the predetermined pattern of the lead frame, each of said lead arrays including a support tab formed from the sheet material and being integral with the sheet material, said support tab being cantilevered and extending inwardly into a region which is spaced from the inner ends of the leads.

3,902,149

MOTOR PROTECTOR APPARATUS

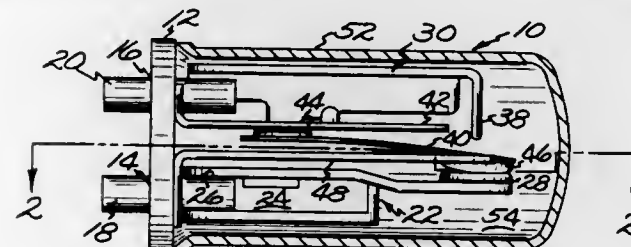
Ronald E. Senior, Norton, Mass., assignor to Texas Instruments, Incorporated, Dallas, Tex.

Filed Oct. 7, 1974, Ser. No. 512,816

Int. Cl. H01h 61/01

U.S. Cl. 337-110

7 Claims



1. A motor protector comprising an electrically conductive header member having a plurality of portions including a metal plate part and at least one terminal means, said header portions each being mounted in electrically insulated relation to each other, a rigid electrically conducting contact arm and a rigid electrically conductive heater element secured to respective portions of said header in electrically insulated relation to each other to extend in cantilever relation from said header, a fixed contact mounted at the distal end of said arm, an electrically conductive thermally responsive snap-acting member secured at one end in electrically conductive relation to said element and having a movable contact secured at an opposite end of said member, said thermally responsive member being of a dish configuration and being adapted to move to an inverted dish configuration when subjected to a selected temperature for moving said movable contact into and out of engagement with said fixed contact, and a grid member mounted on said header to extend in cantilever relation therefrom in spaced relation to said arm and said thermally responsive member to shield said thermally-responsive member from electrical arcs occurring between said contacts during movement of said movable contact.

3,902,150

SELF-RESTORING TYPE CURRENT LIMITING DEVICE

Yuichi Wada; Teijiro Mori, and Suenobu Hamano, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed May 31, 1974, Ser. No. 475,252

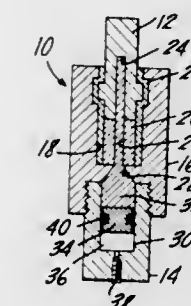
Int. Cl. H01h 87/00

U.S. Cl. 337-116

4 Claims

1. A self-restoring type current limiting device comprising at least one part of self-restoring type current limiting elements each including a pair of terminal members and a vein of electrically conductive material disposed therein to electrically interconnect said pair of terminal members, said electrically conductive material being responsive to a flow of over-current therethrough to be evaporated, one communication tube filled with said electrically conductive material to connect each of said terminal member of each of said current limiting elements to a corresponding terminal member of the other current limiting element to permit the electrically conductive material in each of said current limiting elements to

communicate with that in the other current limiting element via said communication tubes, and cooling means disposed on



each of said communication tubes to cool said electrically conductive material.

3,902,151

SWITCHING DEVICE FOR OPERATING A PLURALITY OF SWITCHES IN SEQUENCES WITH AMBIENT TEMPERATURE COMPENSATION

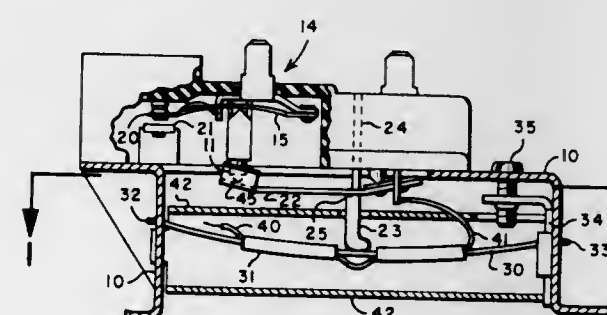
Thomas E. Hall, Anoka, and William W. Bassett, Wayzata, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 29, 1974, Ser. No. 456,092

Int. Cl.² H01H 37/52

U.S. Cl. 337-340

4 Claims



1. In an improved switching device of the type having one or more switch means each having an operator to which a force is applied to operate said switch means, having thermal operator means having an output member for providing a force when said operator means is energized, and having bimetal ambient temperature responsive means connecting the output member of said thermal operator means to said switch means operators for applying a force to each of said operators for operating said switch means in sequence; the improvement residing in the ambient temperature responsive means and comprising: T-shaped bimetal ambient temperature responsive means comprising two elongated rectangular strips of bimetal rigidly fastened together in the form of a T whereby said force of said output member of said operator means is applied at a point of contact between the points of contact on said T of said operators of said switch means.

3,902,152

ELECTRICAL CONTROL HAVING AN INSULATED SHAFT EXTENSION

John D. Van Benthuyzen, Elkhart, Ind., assignor to CTS Corporation, Elkhart, Ind.

Continuation-in-part of Ser. No. 859,074, Sept. 18, 1969, abandoned. This application Mar. 19, 1973, Ser. No. 342,862

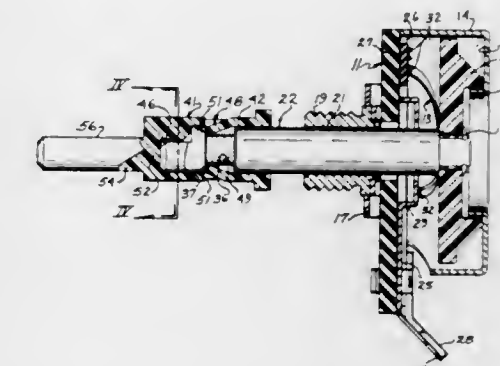
Int. Cl.² H01C 10/32

U.S. Cl. 338-162

6 Claims

1. An electrical control comprising a base, a resistance path secured to the base, a driver of insulating material, a contactor constrained to move with the driver for making wiping contact with the resistance path, a metal shaft extending from said

driver, a shoulder on a portion of said metal shaft and extending perpendicularly from the longitudinal axis of the shaft, an insulated shaft extension of deformable material and directly secured to said metal shaft, said insulated shaft extension comprising a hollow portion in telescopic relation with the portion of said metal shaft provided with the shoulder, external alignment means on the metal shaft cooperating with internal alignment means on the shaft extension, said means



3,902,153

CIRCUIT BOARD SOCKET

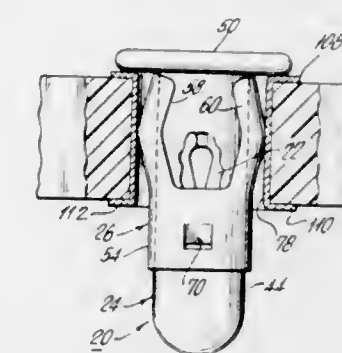
Ronald S. Narozny, Panorama City, Calif., assignor to Thomas & Betts Corporation, Elizabeth, N.J.

Filed Sept. 23, 1974, Ser. No. 508,036

Int. Cl.² H01R 13/42

U.S. Cl. 339-214 R

10 Claims



1. A circuit board socket comprising, in combination: a resilient tubular inner spring means having converging leg portions adjacent one end thereof and outwardly extending tab means adjacent the other end thereof, said inner spring means being arranged to resiliently engage a terminal pin inserted therewithin; an elongate tubular housing closed at one end and having a flared portion adjacent the other end, said inner spring means being telescopically disposed within said housing, said inner spring means tab means being coupled to said housing flared portion to provide electrical engagement therebetween; and a discrete outer spring means having a hollow sleeve portion and diverging resilient finger portions extending outwardly from said sleeve portion adjacent one end thereof, said outer spring means sleeve portion being telescopically disposed about the exterior of said housing and tightly fitted thereabout, said finger portions being arranged to engage the inner surface of a socket receiving aperture in a circuit board to support said socket therewithin.

3,902,154 STRAIN RELIEF

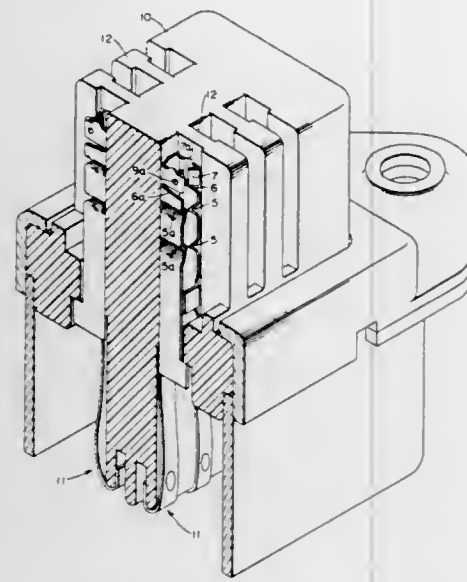
William H. McKee, West Covina, Calif., assignor to TRW Inc.,
Cleveland, Ohio

Filed Feb. 19, 1974, Ser. No. 443,730

Int. Cl.² H01R 15/12

U.S. Cl. 339—223 R

13 Claims



1. In an electrical termination system having a termination means for receiving and maintaining a wire in electrical contact;

- a strain relief as an integral part of the termination system comprising,
- spaced apart facing sides defining a wire receiving channel rearward of the termination means;
- a wire passing means extending from the upper portion of at least one of the sides, defining a wire passing space effective to resiliently permit passage through it by movement transverse to its axis, of a wire having a diameter greater than the wire passing space and the wire passing means also defining a wire restraining space below it in the channel for restraining movement out of the channel of a wire inserted in the wire restraining space.

3,902,155 SUBMARINE OBJECT LOCATER

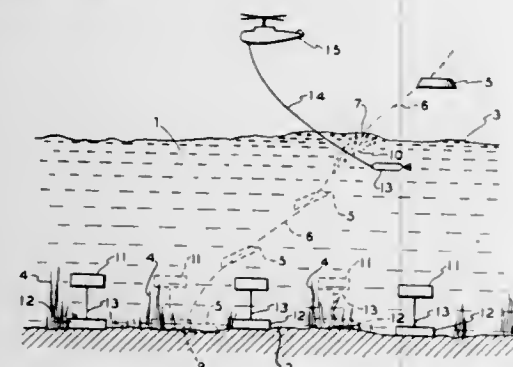
Clinton J. T. Young, Alexandria, Va., assignor to Melpar, Inc.,
Alexandria, Va.

Filed Aug. 29, 1952, Ser. No. 307,135

Int. Cl. H04b 11/00

U.S. Cl. 340—5 R

8 Claims



1. A system for detecting a mine comprising a buoyant underwater detector, a casing for said detector, means anchoring said detector at a predetermined level and location in a body of water, a normally de-energized underwater sonic transmitter in said casing, said detector including means responsive only to the sonic signature of a mine produced by passage of the mine into and through a body of water for producing a sonic control signal, means responsive to said sonic control signal for energizing said normally de-energized

sonic transmitter, and an underwater detecting unit for said sonic control signal, said underwater detecting unit depending from a navigable craft.

3,902,156 MULTI-CHANNEL AC CONFLICT MONITOR

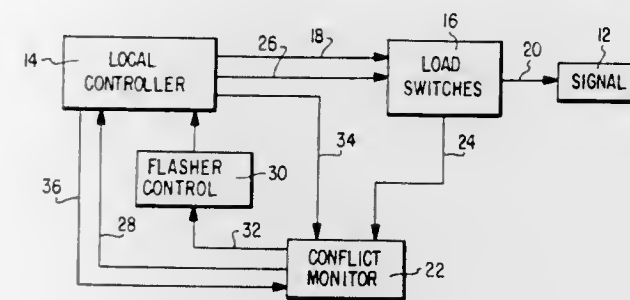
Frank W. Hill, Moline, Ill., assignor to Gulf & Western Industries, Inc., New York, N.Y.

Filed Oct. 7, 1974, Ser. No. 512,874

Int. Cl.² G08G 1/08

U.S. Cl. 340—41 R

15 Claims



1. In a traffic control system for controlling traffic movement over a plurality of traffic flow paths at least certain of which conflict with one another and having a traffic signal providing right-of-way and stop indications to each traffic flow path and a controller actuating said traffic signal; a conflict monitor, comprising:

- a plurality of detector circuits, each detector circuit being associated with a different one of said traffic flow paths and producing an output signal during the time interval in which said traffic signal displays a right-of-way indication to said traffic flow path;
- a plurality of first logic elements, each first logic element being connected to two of said detector circuits to receive the output signals therefrom, the detector circuits connected to any one of said first logic elements being associated with conflicting traffic flow paths, each first logic element producing an output signal whenever both detector circuits connected thereto produce output signals;
- a logic network connected to all of said detector circuits to receive the output signals therefrom, said network producing an output signal whenever an output signal is received from at least one detector circuit of a first group of detector circuits and an output signal is received from at least one detector circuit of a second group of detector circuits, each detector circuit of the first group being associated with a traffic flow path which conflicts with each traffic flow path with which the detectors of the second group are associated; and
- circuit means for interrupting normal operation of said traffic signal, said circuit means being responsive to the output signals of each of said first logic elements and of said logic network.

3,902,157 WORN BRAKE LINING DETECTOR

Yasuo Kita, and Masachika Yamamoto, both of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed June 1, 1973, Ser. No. 365,947

Claims priority, application Japan, July 17, 1972, 47-71927

Int. Cl.² B60T 17/22; G08B 21/00

U.S. Cl. 340—52 A

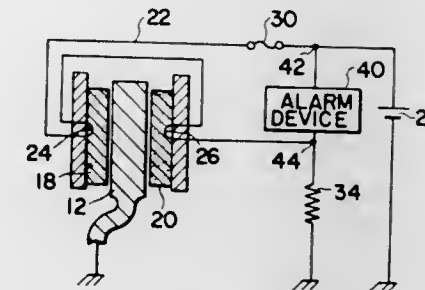
8 Claims

1. In a worn brake-lining detector circuit of the type in which an electrical conductor embedded in the lining electrically contacts a rotating braking member when the lining is worn down beyond a predetermined working limit to energize an alarm, an improved alarm circuit comprising:

- a. a series circuit including a circuit breaker means connected in series with said electrical conductor and opera-

- tive to interrupt said circuit in response to an overcurrent caused by electrical contact between said conductor and said braking member,
- b. a single electric power source coupled to said series circuit and said braking member so that electric current from said single power source normally flows through said series circuit, and

of said detection switch means will cause said control device to operate said warning device.



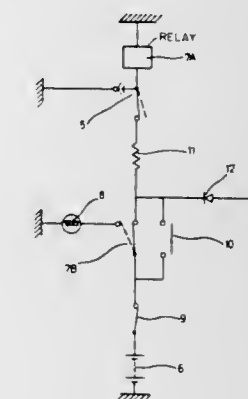
- c. a normally de-energized alarm device connected in a circuit parallel with said series circuit, said parallel circuit being connected to said single power source and normally having a higher impedance than said series circuit so that interruption of said series circuit causes sufficient current to flow from said single power source and through said alarm device to energize it.

3,902,158
ELECTRICAL DEVICE FOR DETECTING OR
INDICATING VEHICLE BRAKE LINING WEAR
Nils Goran Dahlkvist, Durham, England, assignor to SAB
Brake Regulator Co. Ltd., Durham, England
Filed Apr. 3, 1974, Ser. No. 457,419
Claims priority, application United Kingdom, Apr. 28, 1973,
20330/73

Int. Cl. B60t 17/22

U.S. Cl. 340—52 A

4 Claims



1. An electrical device for indicating the brake lining wear in a vehicle having brake linings and an electrically earthed conductive circuit comprising in combination, a voltage source with one pole connected to said earthed circuit, two terminal electrically operable relay control means having a control circuit, and warning switch means operated by said control means responsive to different electrical conditions in said control circuit to energize said control means in one position as holding means, detection switch means located in said brake lining comprising a normally closed conductive circuit which becomes ruptured and opened in response to brake lining wear exceeding a predetermined limit, a circuit connecting said voltage source temporarily to operate said control means in a first holding condition through said detection switch means with one control means terminal earthed and said detection switch means connected serially with the other terminal to said unearched voltage source pole, and a warning device operated by said control means through said warning switch means when said detection switch means is opened to release said holding means, whereby any earthing

1. Switching apparatus for controlling warning signals such as flashing lights on school buses and the like, comprising a first operator-actuated switch including an electromagnet winding and a cooperating armature movable to close a first set of contacts in response to operator actuation thereof and maintaining closure of said contacts only so long as said winding is energized, a second switch including a second set of contacts and an armature for closing and opening said second set of contacts in response to movements of said armature in alternate directions, said second switch including means for changing the continuity condition of said second set of contacts between electrically closed and opened conditions transiently only during travel of said armature in one of said directions, means for moving said armature in said alternate directions in response to movements of a part of a vehicle such as a door or the like, warning-signal means, means energizing said warning-signal means from a source through said first set of contacts, and means responsive to the continuity condition between said second set of contacts for energizing said winding from said source and through said first set of contacts, whereby actuation of said first switch results in excitation of said warning signal means until said first switch is automatically opened upon occurrence of movement of said armature of said second switch in both of its alternate directions of movement.

3,902,159 VEHICLE WARNING SIGNAL SWITCHING APPARATUS INCLUDING CIRCUIT MOMENTARILY INTERRUPTED ONLY IN RESPONSE TO MOVEMENT IN ONE OR AN OPPOSED PAIR OF DIRECTIONS

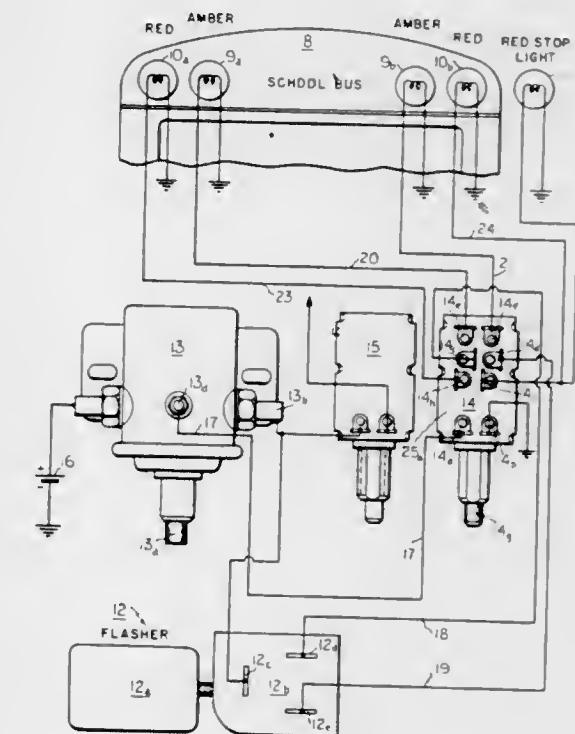
John J. Parolin, Boston, Mass., assignor to Cole-Hersee Company, South Boston, Mass.

Filed Feb. 26, 1973, Ser. No. 335,779

Int. Cl. B60q 1/46

U.S. Cl. 340—72

7 Claims



3,902,160

PATTERN RECOGNITION SYSTEM

Ryuichi Kawa, Yokohama, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

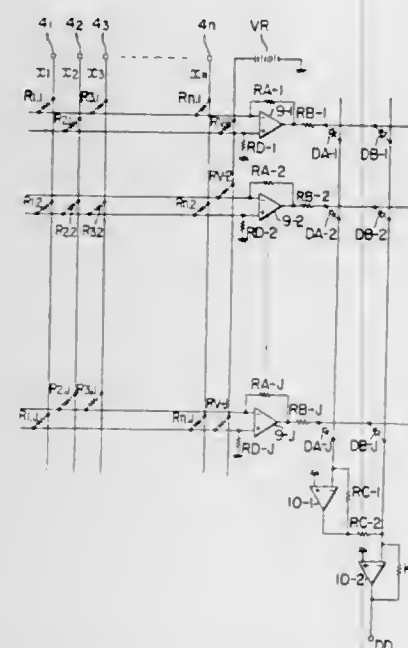
Filed Dec. 28, 1973, Ser. No. 429,181

Claims priority, application Japan, Dec. 31, 1972, 47-309

Int. Cl.² G06K 9/10

U.S. Cl. 340—146.3 AQ

6 Claims



1. A pattern recognition system including means for converting an input pattern into corresponding electrical signals defining a point X in N-dimensional space, and comprising:

means for obtaining signals representing each of the distances DD(k) between said point X and each of a plurality of point Y(k) in the same space (where $k=1, 2, \dots, K$) by summing, for each point Y(k), the ratios between the absolute values of signals D(i) each representing the projection of said point X on the corresponding axis R(i) originating at the point Y(k) and corresponding signals q(i) each representing the standard deviation along the corresponding axis R(i) of the electrical signals corresponding to each of a plurality of patterns classified in the category of a single standard pattern (where $i=1, 2, \dots, J$), each single standard pattern corresponding to a different point Y(k); and

means for comparing the signals representing the distances DD(k) to find the least distance DD(k), said least distance indicating the correspondence between the input pattern and the standard pattern of the corresponding point Y(k).

3,902,161

DIGITAL SYNCHRONIZER SYSTEM FOR REMOTELY SYNCHRONIZING OPERATION OF MULTIPLE ENERGY SOURCES AND THE LIKE

John W. Kiowski, and John T. Bobbitt, both of Houston, Tex., assignors to Petty-Ray Geophysical, Inc., Houston, Tex.

Continuation of Ser. No. 175,471, Aug. 27, 1971. This

application July 15, 1974, Ser. No. 488,553

Int. Cl.² H04Q 9/00; H04B 7/00

U.S. Cl. 340—147 SY

6 Claims

1. A method of synchronizing the operation of a plurality of remotely-located, electrically-operable devices utilizing digital techniques comprising:

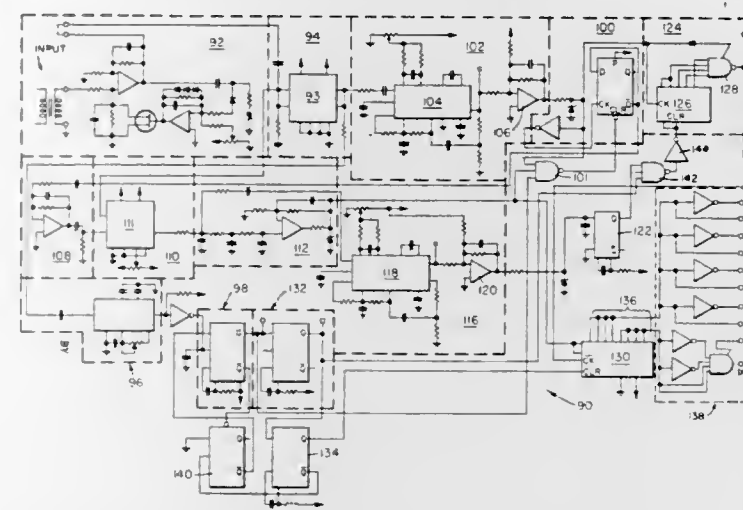
generating from at least one source a carrier tone of a single, selected frequency for transmission to said remote devices;

activating the timing circuitry within said devices in response to the detection by said devices of said carrier tone, thereby enabling said timing circuitry to process command signals;

modulating the carrier tone as it is being transmitted according to a multiple bit binary code so as to encode on said carrier tone a sequence of binary code command

signals representing the synchronizing and control timing states respectively of operation of said remote device timing circuitry;

demodulating the carrier tone at said remote devices to reconstitute within said timing circuitry the synchronizing and control code binary command signals;



phase locking each device to the carrier tone in response to the synchronizing command signal in order to synchronize the subsequent operation of said timing circuitry; and

comparing the control code with a preselected synchronization address code to provide time zero signals when the codes match.

3,902,162

DATA COMMUNICATION SYSTEM INCORPORATING PROGRAMMABLE FRONT END PROCESSOR HAVING MULTIPLE PERIPHERAL UNITS

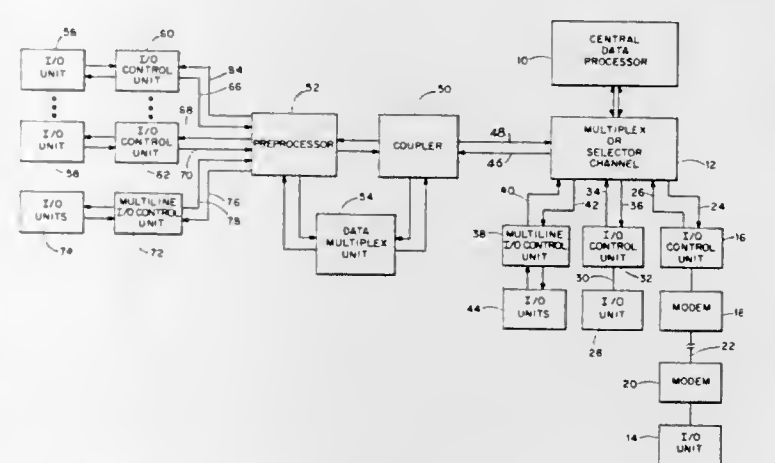
Kelvin L. Parkinson, Bolton, and Robert J. Houde, Worcester, both of Mass., assignors to Honeywell Information Systems, Inc., Waltham, Mass.

Filed Nov. 24, 1972, Ser. No. 309,587

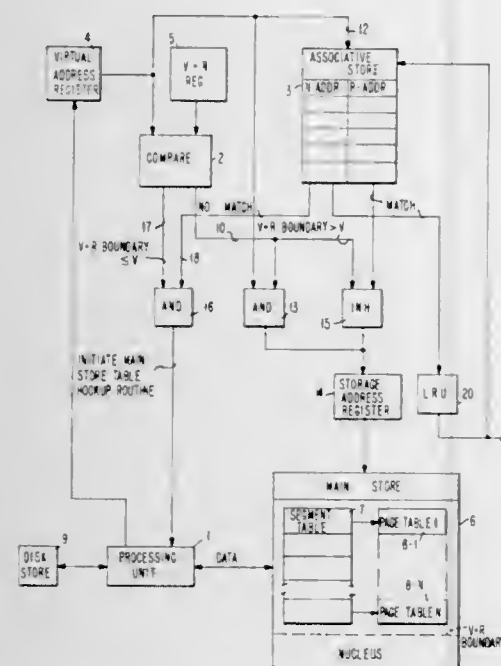
Int. Cl.² G06F 3/00

U.S. Cl. 340—172.5

9 Claims



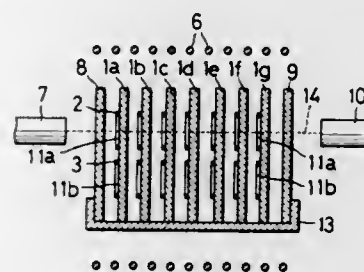
directly using a particular address provided by the processor to address main store when the comparison means



3,902,165
HIGH-SPEED PCM DATA-TRANSMISSION SYSTEM
Auro Artom, Torino, Italy, assignor to CSELT Centro Studi e Laboratori Telecomunicazioni, Torino, Italy
Filed Apr. 29, 1974, Ser. No. 465,282
Claims priority, application Italy, Apr. 30, 1973, 68195/73
Int. Cl. H04j 3/12
U.S. Cl. 340—172.5 12 Claims

1. A data-transmission system comprising:
a central office provided with signal-receiving means and signal-transmitting means;
a plurality of outlying stations each provided with data-communication equipment and with a two-way signal path having an outgoing branch and an incoming branch extending from said equipment to said central office, the transmission paths associated with at least some of said stations having substantially different impedance criteria;
a PCM terminal at said central office coupled to said signal-receiving and signal-transmitting means for establishing data links between stations;
routing means at said central office operable to connect the outgoing and incoming branches of any signal path to said signal-transmitting and signal-receiving means, respectively, preparatorily to the establishment of a data link between a first station associated with the signal path and a second station reachable through said PCM terminal, said routing means including an equalization network with a plurality of filter circuits selectively insertable in series with said outgoing branch, said filter circuits substantially conforming to impedance criteria of different signal paths to minimize distortion; and
processing means at said central office responsive to an identification signal from said first station to operate said routing means for insertion of a conforming filter circuit prior to inception of data transmission between said first and second stations.

3,902,166
MEMORY APPARATUS USING CYLINDRICAL MAGNETIC DOMAIN MATERIALS
Zeniti Kiyasu, Tokyo, and Homare Tsuruhara, Hino, both of Japan, assignors to Iwatsu Electric Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 212,205, Dec. 27, 1971. This application Sept. 17, 1973, Ser. No. 397,519
Claims priority, application Japan, Dec. 28, 1970, 46-127738; Dec. 28, 1970, 46-127739
Int. Cl. G11c 11/14
U.S. Cl. 340—174 YC 10 Claims



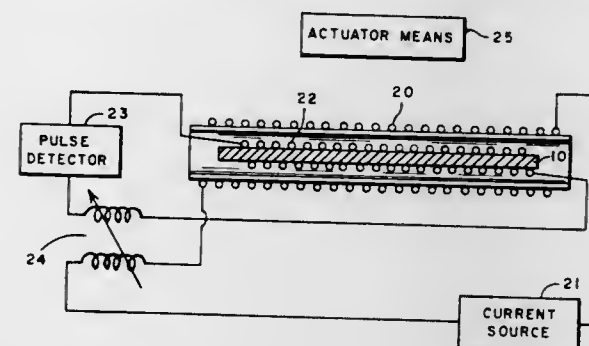
1. An electric apparatus using magnetic materials comprising:
a plurality of magnetic thin platelets arranged along a single central axis so as to form a stack;
means for producing cylindrical magnetic domains on each of said platelets;
pairs of conductive loop circuits carried by each of said platelets so as to form rows of paired regions in a matrix extending in an X direction;
other conductive loop circuits carried by each of said platelets so as to form rows of regions in a matrix extending in a Y direction, said regions in said Y-rows being respectively aligned with each of said paired regions in said X-rows;
said pairs of conductive loop circuits forming regions in said X-rows and said other conductive loop circuits forming regions in said Y-rows for selectively moving said domains to and positioning said domains in a set of aligned regions including a predetermined one of said paired regions from another set of aligned regions including another one of said pairs by applying a current to the one of said pairs of conductive loop circuits forming said one region while simultaneously applying current to one of said other conductive loop circuits forming the region axially aligned with said one of said paired regions;
means for irradiating each of said platelets with polarized light passing through each of said regions in a direction generally parallel to said axis; and
means for detecting the presence of said domains in said regions on each of said platelets by detecting the rotation of the angle of the plane of polarization of polarized light passing through said regions on each of said platelets.

3,902,167
MAGNETIC THIN FILM SWITCH
Olin S. Lutes, Bloomington; James O. Holmen, Minnetonka, and Richard L. Kooyer, Minneapolis, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.
Filed Feb. 25, 1974, Ser. No. 445,189
Int. Cl. G11C 11/155
U.S. Cl. 340—174 PW 30 Claims

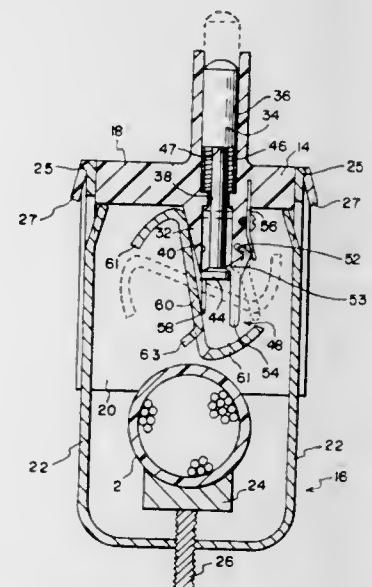
1. A magnetically actuated switch comprising: a wire substrate;
an anisotropic, essentially zeromagnetostriuctive magnetic film covering the wire substrate, the magnetic film having an easy axis of magnetization oriented at an angle with respect to the circumferential direction;
actuator means for applying an external magnetic field with a component along the axis of the wire substrate suffi-

cient to change the state of the magnetically actuated switch from a first state to a second state; and

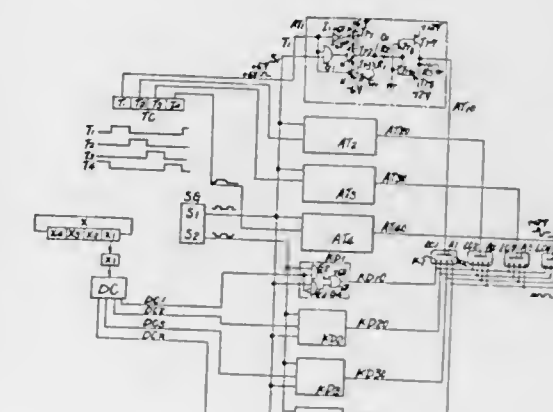
passage of a surge current through said cable and said plunger will be moved to said extended position.



3,902,168
SURGE CURRENT INDICATOR
Frank Peter Dola, Port Richey, Fla., assignor to AMP Incorporated, Harrisburg, Pa.
Filed May 28, 1974, Ser. No. 473,842
Int. Cl. G08B 21/00
U.S. Cl. 340—253 P 7 Claims

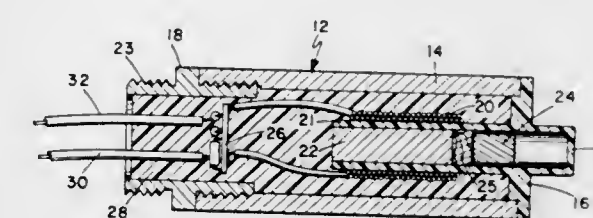


3,902,169
DRIVE SYSTEM FOR LIQUID CRYSTAL DISPLAY UNITS
Isamu Washizuka, Kyoto, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Sept. 19, 1973, Ser. No. 398,850
Claims priority, application Japan, Sept. 19, 1972, 47-95606; Apr. 3, 1973, 48-38474
Int. Cl. 350 160 LC; G08b 5/36
U.S. Cl. 340—336 7 Claims



1. A drive system for driving a liquid crystal unit having a given threshold voltage value which initiates a change in the optical characteristics of said liquid crystal unit, said drive system comprising
means for applying an alternating polarity voltage lower than the threshold value to the liquid crystal unit when it is not desired to be ON.

3,902,170
FAULT INDICATOR FOR ELECTRICAL CIRCUITS
Ralph D. McElroy, 402 63rd St., 142, San Diego, Calif. 92114
Filed Feb. 20, 1974, Ser. No. 444,033
Int. Cl. G08B 5/00
U.S. Cl. 340—373 7 Claims



1. An indicating device for indicating the passage of a surge current through an electrical power cable, said device comprising:
housing means,
mounting means for mounting said device on said cable with portions of said housing means adjacent to, and spaced from, said cable,
an indicator plunger slidably mounted in wall portions of said housing means, said indicator plunger being movable between a retracted position and an extended position, outer end portions of said plunger extending externally of said housing when said plunger is in said extended position, inner end portions of said plunger being within said housing when said plunger is in said retracted position,
resilient means interposed between said plunger and said housing means, said resilient means normally biasing said plunger to said extended position,
disengageable latch means in said housing means, said latch means being effective, in its latched condition, to hold said plunger in said retracted position against the biasing force of said resilient means, and
magnetically responsive delatching means in said housing means, said magnetically responsive means being movable under the influence of a magnetic field into engagement with said latch means to disengage
said latch means from said plunger whereby, upon mounting said device on said cable and latching said plunger in said retracted position, said plunger will be unlatched upon

1. A device for displaying an indication of a sensed malfunction as detected from at least a momentary opening of an electrical circuit wherein the improvement comprises:
an indicator body,
a DC magnet coil in said body,
a permanent magnet pole piece of magnetic materials carried within said body,
guide means within said body for guiding said pole piece in translational movement between a first position in proximity to said coil and a second indicating position spaced from said coil,
viewing port means for displaying said pole piece in said second position.

3,902,171

ACCUMULATOR RADAR ECHO DETECTOR

Peter Toth, Kloten, Switzerland, assignor to Contraves AG, Zurich, Switzerland

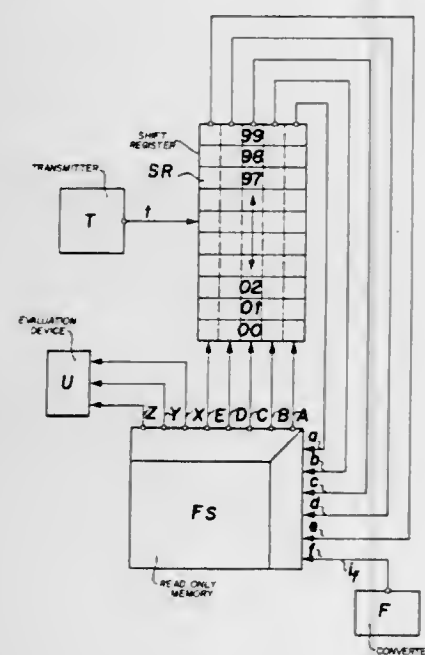
Filed Oct. 1, 1973, Ser. No. 402,186

Claims priority, application Switzerland, Oct. 12, 1972, 14950/72

Int. Cl.² G01S 9/02

U.S. Cl. 343—5 DP

2 Claims



1. An accumulator radar echo detector for generating continuous target indication signals at associated range rings of a PPI-radar screen comprising a quantizing echo signal converter for transforming each input pulse which exceeds a reference peak into impact signals prolonged for a predetermined duration, a timing signal generator having an output, register means coupled to said timing signal generator, responsive to timing signals from its output, and having an input stage and an output stage, and means which in dependency upon whether a stored summation value supplied to inputs thereof from said output stage is or is not supplemented by an impact signal supplied to another of its inputs from said quantizing echo converter increases by a number of units the stored summation value or reduces such by a unit and which upon exceeding a predetermined minimum summation value produces a target presence signal on at least one of its outputs and upon subsequent dropping below such minimum summation value resets the stored summation value to the starting value null, said means being a fixed programmed read only memory which in accordance with a predetermined assignment table for each possible total condition combinations at its said inputs generates a respective predetermined total condition combination at its output, a partial combination at this output being coupled to said input stage of said register means as sole input to said register means other than that from said timing signal generator.

3,902,172

INFRARED GATED RADIO FUZING SYSTEM

Albert Weiss, and Daniel D. Holmes, both of Riverside, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 29, 1962, Ser. No. 183,681

Int. Cl.² F42C 13/04

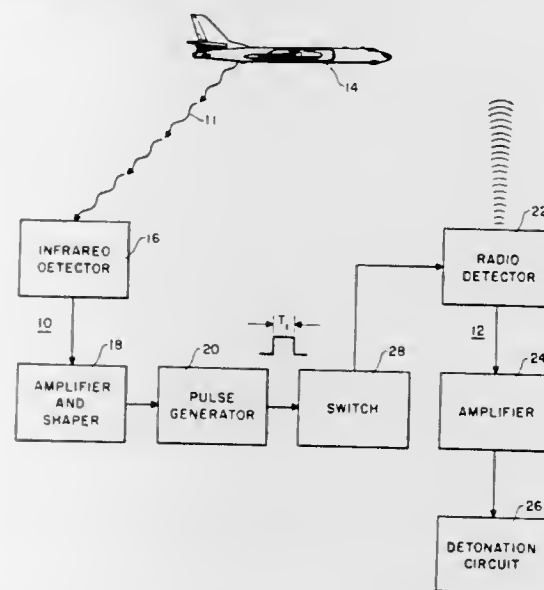
U.S. Cl. 343—6 ND

2 Claims

1. In an infrared gated radio fuzing system for use in a guided missile the combination comprising:

- first thermal-energy detecting means for producing an output signal in response to intercepted thermal-energy radiated from a thermal-energy radiating object,

- second circuit means for detecting radio energy reflected from said thermal-energy radiating object,
- pulse generator means coupled to said thermal-energy detecting means for generating an output pulse having a time duration approximately equal to the time required for the missile to traverse a distance of half the length of the radiating object,



- switching means coupled to said pulse generator means and to said second circuit means and being responsive to said output pulse for activating said second circuit means and being responsive to the cessation of said pulse for de-activating said second circuit means,
- third circuit means responsive to an output signal from said second circuit means in the event a desired target is detected during said predetermined time interval for actuating a detonation circuit.

3,902,173

DISTANCE RESPONSIVE CIRCUIT

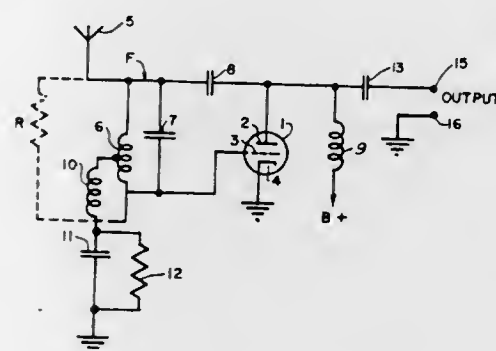
Paul Wilson Redcay, Washington, D.C., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 22, 1957, Ser. No. 635,550

Int. Cl. F42c 13/04; G01s 9/04

U.S. Cl. 343—7 PF

1 Claim



1. A proximity fuze, comprising in combination: an electron tube having at least an anode, a cathode, and a control grid; a resonant circuit connected to said electron tube elements to cause oscillations to be produced, variations in the loading of said resonant circuit varying the amplitude of said oscillations; a capacitor connected so that said capacitor is charged by grid rectification of said oscillations to a negative potential at a rate dependent upon the amplitude of said oscillations, said negative potential being applied to the grid of said electron tube to cause the blocking of said oscillations when the negative potential on said grid reaches a predetermined potential; a resistor effectively in parallel with said capacitor, said resistor having a resistance which allows said capacitor to charge to said predetermined potential, said resistor discharging said

3,902,175

METHOD AND APPARATUS FOR PHASE INTEGRATION OF RADAR PULSE TRAINS

Gerhard Winzer, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

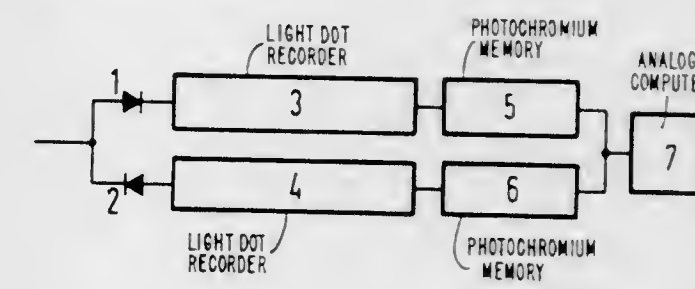
Filed Oct. 13, 1972, Ser. No. 297,306

Claims priority, application Germany, Sept. 29, 1971, 2148650

Int. Cl. G01s 7/32

U.S. Cl. 343—17.1 R

6 Claims



1. The method of reducing noise in radar echo pulses by in-phase integration of echo pulses which are produced during multiple sensing of radar targets comprising the steps of
 - separating said echo pulses into positive and negative amplitude signals,
 - storing the squares of said positive amplitude signals in a first two dimensional reversible intermediate optical carrier material memory,
 - storing the squares of said negative amplitude signals in a second two dimensional reversible intermediate optical carrier material memory,
 - transforming by Fourier transforms the contents of said first and second memories by an optical analogue computer and wherein the echo pulses of a given number of sensing processes are added in said first and second memories and said first and second memories convert said echo pulses into position functions by making a coordinate transformation wherein the amplitude distribution is represented by a spatial distribution.

3,902,174

PULSED DOPPLER RADAR DEVICE HAVING AT LEAST ONE RANGE CHANNEL

Harald Siegel, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

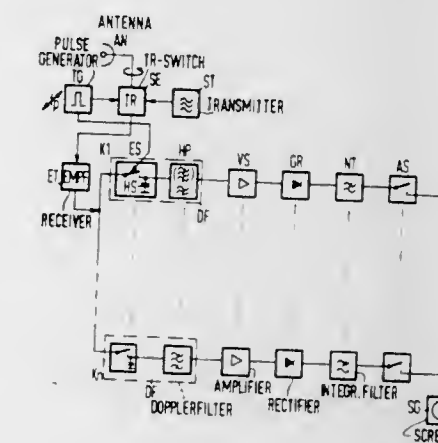
Filed Mar. 14, 1974, Ser. No. 451,033

Claims priority, application Germany, Apr. 16, 1973, 2318976

Int. Cl. G01s 9/42

U.S. Cl. 343—7.7

8 Claims



1. In a pulsed Doppler radar device with variable repetition frequency, having at least one range channel operatively connectable at the pulse rate of the pulse repetition frequency, a doppler filter which suppresses clutter interference in the low Doppler frequency range, and a device for the variation of the pulse repetition frequency, the combination of the doppler filter of each range channel comprising at least one sampling-and-holding circuit and a following high pass filter, the cut-off frequency of which is approximately equal to the upper frequency of the clutter band width whereby the latter is suppressed, the switching pulse rate of the sampling-and-holding circuit being changeable with changes in the pulse repetition frequency, with the same high pass filter being utilized for all repetition frequency variations.

3,902,176

ATMOSPHERIC PROBE SYSTEM FOR PASSIVE TELEMETRY

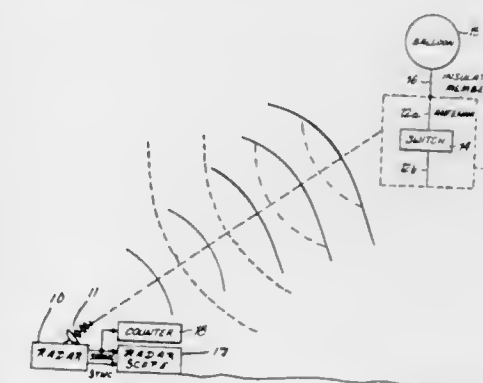
Edward A. Lewis, Harvard, and Charles B. Kalakowsky, Dorchester, both of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 27, 1973, Ser. No. 419,460

Int. Cl.² G01S 9/02, 9/60; H01Q 15/00

U.S. Cl. 343—18 B

1 Claim



1. An atmospheric probe for passive telemetry comprising a half-wave dipole antenna, said half-wave dipole antenna consisting of first and second approximately equal length sections, means in the central region of said half-wave antenna to electrically and automatically disconnect and connect said first and second sections of said half-wave dipole to electrically and automatically disconnect and connect said first and second sections of said half-wave dipole is comprised of a relay having a single winding with first and

second terminals and associated first and second relay contacts normally closed, said first relay contact being connected to said first section of said half-wave dipole antenna, a storage capacitor of a predetermined magnitude, an RF bypass capacitor in a parallel combination with said storage capacitor, said parallel combination interconnecting said second relay contact and said second section of said half-wave dipole antenna, and a gas discharge device connected between said second relay contact and said first terminal of said single winding, said second terminal of said single winding being also connected to said second section of said half-wave dipole antenna, said half-wave dipole antenna having current flow therein in the presence of strong electric fields thus operating to charge said storage capacitor to a predetermined magnitude thereupon passing current through said gas discharge device and said single winding to momentarily open said first and second relay contacts, means to suspend said half-wave dipole antenna in the atmosphere, a ground radar system operating at a predetermined wavelength, said radar system directing signals toward said half-wave dipole antenna and obtaining a return signal in response only upon each occurrence of the electrical connection of said first and second sections, and means to count the return signals over a preselected period.

3,902,177

ANTENNA FOR DIRECTION FINDERS

Kenzo Mori; Hyo Yasuda; Yujiro Katsube, all of Tokyo, and Norio Ikeda, Ichikawa, all of Japan, assignors to Taiyo Musen Co., Ltd., Tokyo, Japan

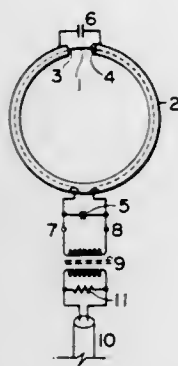
Filed Mar. 6, 1973, Ser. No. 338,419

Claims priority, application Japan, Sept. 19, 1972, 47-93217

Int. Cl. H01q 7/04, 11/12

U.S. Cl. 343-741

3 Claims



1. An antenna for direction finders comprising a first conductor forming a loop antenna having opposite ends, an auxiliary conductor having a cut at the top thereof arranged near and in parallel with said first conductor, first capacitor means connected between both ends of said loop antenna for providing a resonant circuit with said loop antenna which is resonant at a first frequency and second capacitor means connected between both ends of said cut of said auxiliary conductor at the top part of said antenna for providing a resonant circuit with said auxiliary conductor which is resonant at a second frequency higher than said first frequency, the values of inductance of said auxiliary conductor and of capacitance of said second capacitor means being selected with respect to the values of inductance of said loop antenna and of capacitance of said first capacitor means so that at a third frequency higher than said second frequency the combination of said auxiliary conductor and second capacitor means provides inductive impedance of such value as to cooperate with said first capacitor means and cause said loop antenna to be resonant at said third frequency permitting a high sensitivity in each narrow band of said first and third frequencies.

3,902,178 HELICAL ANTENNA WITH IMPROVED TEMPERATURE CHARACTERISTICS

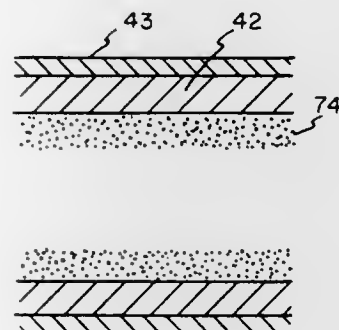
Charles P. Majkrzak, Nutley, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Mar. 22, 1974, Ser. No. 453,917

Int. Cl. H01q 1/36

U.S. Cl. 343-895

12 Claims



1. A helical antenna with improved temperature characteristics comprising:
an antenna housing;
a capacitive cylinder within said housing;
a helix coupled with said cylinder; and
a condensable fluid enclosed within the helix whereby heat energy is distributed uniformly along said helix by the condensation of said fluid.

3,902,179

MULTIPLE CHANNEL GRAPHIC RECORDER

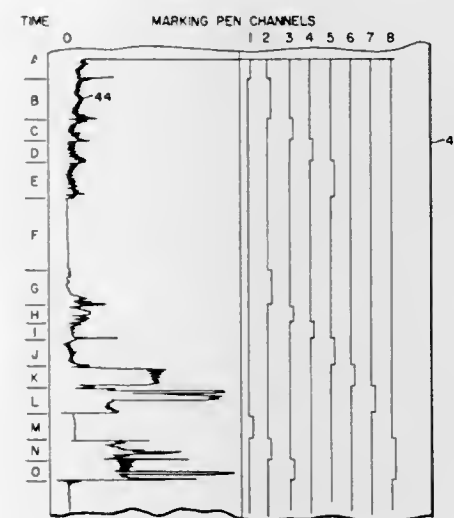
David A. Little, Methuen, Mass., assignor to Gibson Motor and Machine Service, Inc., Lawrence, Mass.

Filed Apr. 11, 1974, Ser. No. 460,194

Int. Cl. G01D 9/32

U.S. Cl. 346-49

7 Claims



1. A testing unit for recording electrical signals from a plurality of transducers, said testing unit including:
A. a multiple channel graphic recording means, each channel including means for marking a chart in response to an input signal to that channel, one channel being reserved for an incoming transducer signal and each of a plurality of remaining channels being reserved to respond to incoming identification signals, said remaining channels thereby constituting an identification set,
B. selection means for receiving all incoming transducer signals to couple one signal to said one channel, and
C. encoding means responsive to said selection means for transmitting to said channels in said identification set a pattern of identification signals corresponding to the selected transducer, said recording means thereby simultaneously and continuously recording the output of the

selected transducer and a pattern of identification marks discharge, placing said web in said space, and scanning the inner surface of said window with an electron beam to reduce representing the identification of the selected transducer.

3,902,180

METHOD FOR FORMING IMAGES

Shigenobu Sobajima; Hiroshi Okaniwa; Kiyoshi Chiba, all of Tokyo, and Norio Takagi, Ogaki, all of Japan, assignors to Teijin Limited, Osaka, Japan

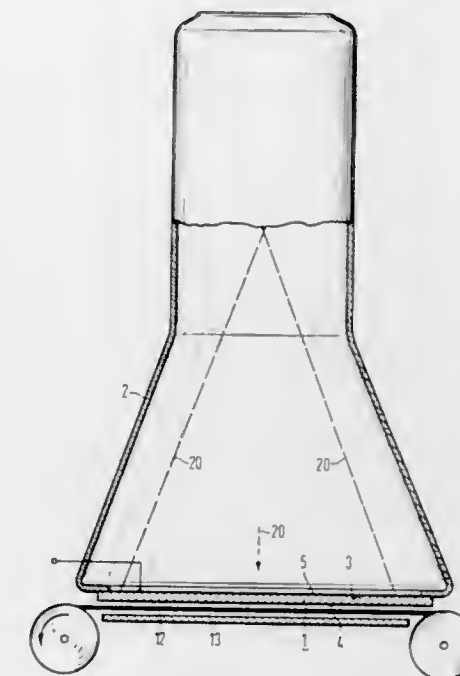
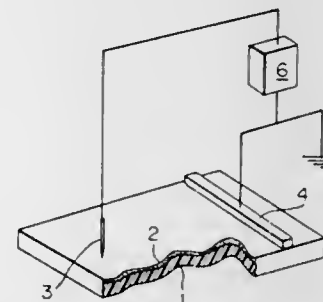
Filed July 11, 1973, Ser. No. 378,241

Claims priority, application Japan, July 12, 1972, 47-69039; July 17, 1972, 47-70726; Sept. 4, 1972, 47-87902; Dec. 25, 1972, 48-368; Dec. 27, 1972, 48-2232; May 4, 1973, 48-49014

Int. Cl. G03G 17/02; H01S 3/00

U.S. Cl. 346-74 E

11 Claims



the potential gradient within said window and to cause a gas discharge in said space.

3,902,182

PROCESS AND DEVICE FOR DETERMINING PHOTOGRAPHICALLY DIMENSIONS OF PERSONS AND OBJECTS

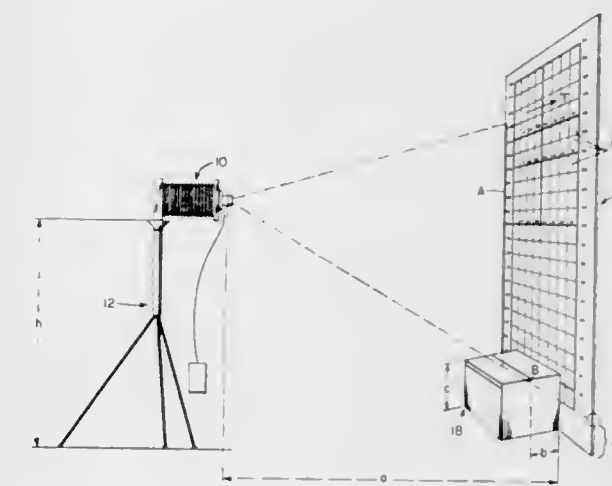
Lars Evert Bernhard Hillborg, Sodra Langgatan 36, S-171 49 Solna, Sweden

Filed Oct. 18, 1973, Ser. No. 407,490

Int. Cl. G03B 17/24

U.S. Cl. 354-105

1 Claim



3,902,181 REPRODUCING SYSTEM EMPLOYING AN ELECTRON TUBE AS A CHARGE RECORDING TUBE

Werner Veith, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Jan. 24, 1973, Ser. No. 326,291

Claims priority, application Germany, Jan. 28, 1972, 2204077

Int. Cl. G01D 15/08

U.S. Cl. 346-74 EB

18 Claims

1. A method of producing a charge image on an untreated paper web employing a cathode ray tube having a window formed of insulating material having a conductive inner surface and having an electrode disposed on the inner surface of said window, comprising the steps of applying a potential difference between the conductive inner surface of said window and an outer electrode spaced from said window, to produce a potential gradient across said window and across the space between said window and said outer electrode, said field being normally below the value required to sustain a gas

1. Apparatus for producing images of an object for measuring purposes comprising a plane background surface provided with a scale or grid, the divisions of the scale of the sidelength of an individual square in the grid being the unit length in which the object is to be measured, multiplied by the ratio between the distance between the camera and the object, a supporting surface for the object, which is provided with a straight line indicator marking for placement of the object and/or camera, and a straight line indicator marking on the background surface, wherein the camera and the supporting surface can be set so that the straight line indicator markings are parallel when photographed.

3,902,183

VIEW FINDER LIGHT CONTROL IN CAMERA WITH SELF-TIMER

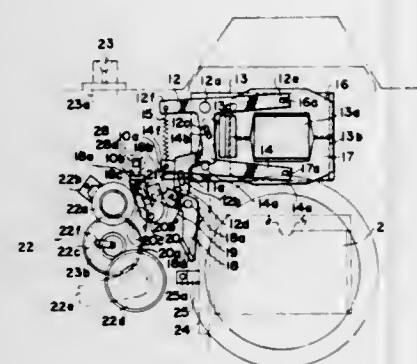
Mitsuru Saito, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed May 16, 1973, Ser. No. 360,851

Claims priority, application Japan, May 19, 1972, 47-57908
Int. Cl. G03b 13/00

U.S. Cl. 354-219

5 Claims



1. In a single lens reflex camera including a shutter, means including a selftimer for releasing said shutter a predetermined interval following the release of said selftimer, an objective lens, a view finder including a viewing aperture for viewing an object through said objective lens, a photosensitive element exposed to light traversing said objective lens and said viewing aperture and an automatic exposure network responsive to said photosensitive element, the improvement comprising a blind movable between an advanced position intercepting the light traversing said viewing aperture to prevent its incidence on said photosensitive element and a retracted position out of the path of said light, and means actuated with the advance and retraction of said blind for respectively enabling and disabling said selftimer.

3,902,184

SHUTTER RELEASE HAVING BULB EXPOSURE MECHANISM FOR AUTOMATIC SHUTTER CAMERA

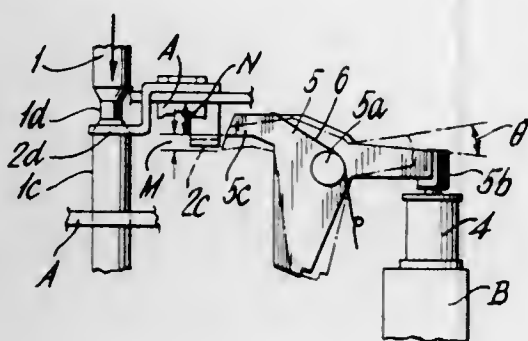
Takayoshi Miyamoto, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Dec. 2, 1974, Ser. No. 528,973

Claims priority, application Japan, Dec. 4, 1973, 48-138371
Int. Cl. G03B 9/58, 17/38

U.S. Cl. 354-266

7 Claims



1. A shutter assembly for a camera having a shutter release member movable between a rest position and an operative position, said shutter assembly comprising in combination: electro-magnetically controlled shutter mechanism comprising, as a unitary element, an electromagnet and a shutter locking lever having an armature cooperating with said electromagnet; said shutter locking lever being rotatably mounted about a first axis for movement between a first position for holding the camera shutter in open condition and a second position for causing the camera shutter to close; and bulb mechanism including a bulb member rotatably mounted about a second axis and operatively associated

with said shutter release member for rotational movement in response to movement of said shutter release member;

said bulb member being movable to a holding position in which it blocks movement of said shutter locking lever in response to movement of said shutter release lever to its operative position;

said bulb member being also movable to a release position in which it withdraws from blocking engagement with said shutter locking lever in response to movement of said shutter release lever to its rest position;

said bulb member and said shutter locking lever being so disposed that said first and second axis are substantially at right angles to each other.

3,902,185

IMAGE SIGNAL PROCESSING DEVICE

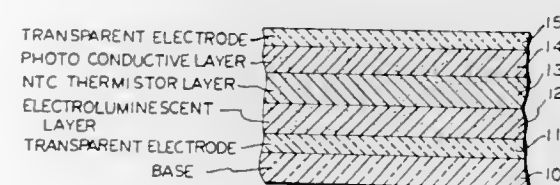
Shigeru Hayakawa, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jan. 19, 1973, Ser. No. 325,114

Int. Cl. H01L 17/00

U.S. Cl. 357-19

11 Claims



1. An image signal processing device comprising a plurality of sets of series connected elements, each of said sets comprising, in the recited order, a first transparent electrode element, an electricity-to-light conversion element having an electrical resistance R , a negative resistance element having a voltage-current curve which has a transition point from a portion of high resistance R_1 to a portion of low resistance R_2 at a critical voltage V_c , a light-to-electricity conversion element having electrical resistances R_1 and R_2 when irradiated with light having intensities L_1 and L_2 , respectively, where L_1 is lower than and L_2 is higher than a critical intensity L_c which causes said negative resistance element in each of said series connections to receive a voltage above or below said critical voltage V_c , respectively, when each of said series connections is provided with a given voltage V , and a second transparent electrode element, whereby when said light-to-electricity conversion elements are irradiated with a light image and said given voltage V is applied to said device, each electricity-to-light conversion element is energized by a voltage $RV/(R+R_1+R_2)$ or $RV/(R+R_2+R_1)$ when said light-to-electricity conversion element is irradiated with the light intensity L_1 or L_2 , and, accordingly, said light image has the contrast increased.

3,902,186

SURFACE CHARGE TRANSISTOR DEVICES

William E. Engeler, Scotia, and Jerome J. Tiemann, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 84,659, Oct. 28, 1970, abandoned.

This application Sept. 9, 1974, Ser. No. 504,269

Int. Cl. H01L 13/00

U.S. Cl. 357-24

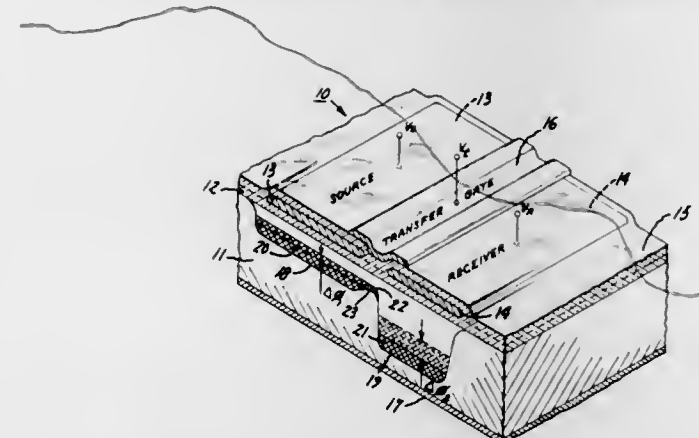
18 Claims

1. A semiconductor device comprising a substrate of semiconductor material of one conductivity type, a first source conductor member insulatingly overlying said substrate, a first receiver conductor member insulatingly overlying said substrate, a first transfer gate conductor member insulatingly overlying said substrate and having at least a portion thereof spaced between said first source conductor member and

said first receiver conductor member and insulated from said first source conductor member and said first receiver conductor member,

means applying a first voltage between said first source conductor member and said substrate to form a first charge storage region in said substrate,

means applying a second voltage between said first receiver conductor member and said substrate to form a second charge storage region in said substrate, said second charge storage region being spaced from said first charge



storage region to form a barrier region between said storage regions and underlying said first transfer gate conductor member,

means applying a third voltage different from said first and second voltages between said first transfer gate conductor member and said substrate for controllably varying the surface potential of said barrier region for controlling the transfer of charge from either one of said first storage region and said second storage region to the other one thereof.

3,902,187

SURFACE CHARGE STORAGE AND TRANSFER DEVICES

William E. Engeler, Scotia, and Jerome J. Tiemann, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

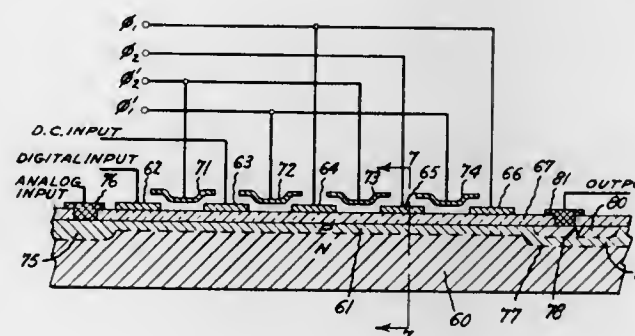
Continuation of Ser. No. 130,107, April 1, 1971, abandoned.

This application July 2, 1973, Ser. No. 375,752

Int. Cl. H01L 29/78

U.S. Cl. 357-24

9 Claims



1. In combination

a substrate of one conductivity type semiconductor material with a surface adjacent portion including a thin continuous channel region of opposite conductivity type of substantially uniform depth and having substantially uniform net dopant concentration along its length, an insulator layer overlying said surface adjacent portion, a plurality of conductor members overlying said insulator layer and said region of opposite conductivity type and spaced along the length of said channel region, biasing means for applying phase related voltages to said conductor members in relation to said substrate to form

a plurality of charge storage regions for opposite conductivity carriers in said channel region,

means for introducing charge of opposite conductivity carriers representing a signal into one of said charge storage regions,

said phase related voltages applied to said conductor members incrementally moving charge of opposite conductivity carriers from storage region to storage region along said channel,

means for removing charge of opposite conductivity carriers from another one of said charge storage regions.

3,902,188

HIGH FREQUENCY TRANSISTOR

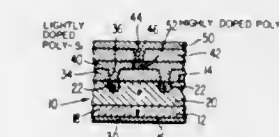
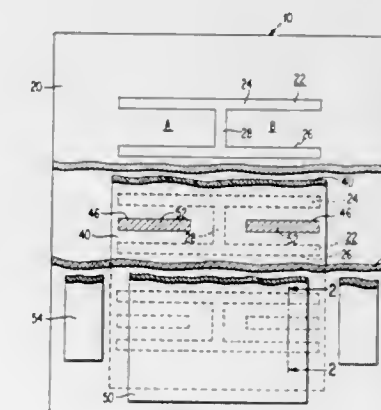
David Stanley Jacobson, Flemington, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 15, 1973, Ser. No. 388,435

Int. Cl. H01L 29/72

U.S. Cl. 357-36

1 Claim



1. A transistor comprising:

a body of semiconductor material having a surface, a number of spaced apart emitter sites and a base region surrounding, at said surface, each of said emitter sites, each said emitter site being generally in the shape of the letter H, including a pair of side-by-side elongated branches, and a transverse branch joining said elongated branches intermediate the ends thereof,

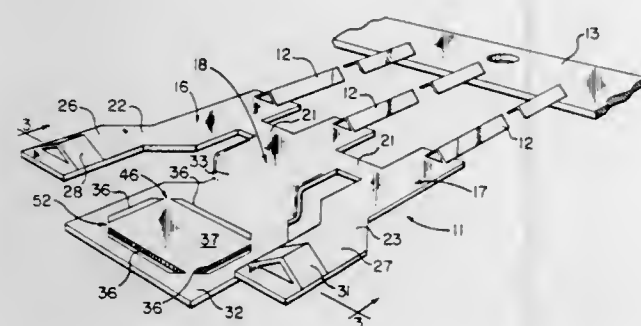
a layer of electrically resistive material overlying and in contact with surface portions of said emitter branches, and

a metal contact overlying said resistive layer, spaced apart portions of said resistive layer being contacted by said metal contact,

said metal-contacted resistive layer portions being disposed between said elongated branches and spaced from said transverse branch, the spacing between the edges of said metal-contacted resistive layer portions and the edges of said elongated branches being about one half the spacing between the edges of said metal-contacted resistive layer portions and the edges of said transverse branch to provide uniform ballasting over the extent of said branches.

3,902,189
PREFABRICATED ARTICLE AND METHODS OF MAINTAINING THE ORIENTATION OF PARTS BEING BONDED THERETO
 Frank M. Simpson, Richardson, Tex., assignor to Hunt Electronics, Dallas, Tex.
 Filed Apr. 10, 1974, Ser. No. 459,454
 Int. Cl.² B01J 17/00; H01L 1/10
 U.S. Cl. 357—70

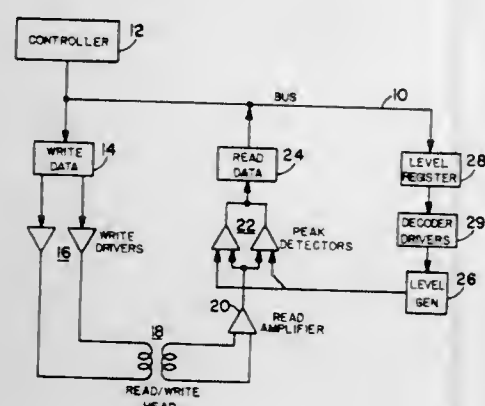
2 Claims



1. An improved lead frame of the type formed with a tab having a planar surface for mounting a semiconductor electronic device thereon and a pair of conductive coplanar legs spaced on opposite sides of the mounting surface of the tab, for supporting lead wires to be bonded thereto and to the device, wherein the improvement comprises:
 wire-receiving angular sections formed in the legs and aligned with one another on opposite sides of the tab.

3,902,190
PROGRAMMABLE TEST OF READ/WRITE CIRCUITRY BY VARYING CLIPPING LEVELS
 William Henry Donovan, Moorestown, N.J., assignor to RCA Corporation, New York, N.Y.
 Filed Nov. 23, 1973, Ser. No. 418,778
 Int. Cl. G11b 5/09
 U.S. Cl. 360—39

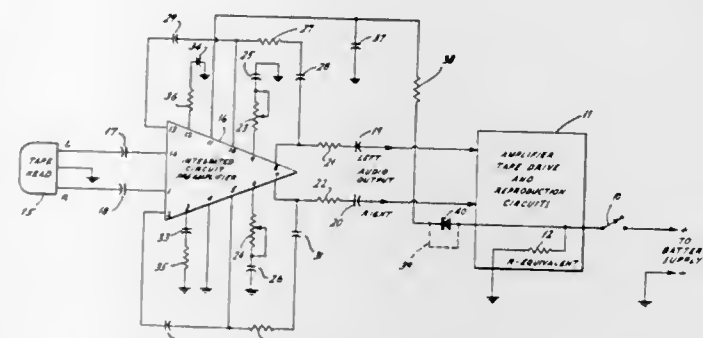
4 Claims



1. The combination comprising:
 storage system means for storing information;
 information reading means for converting the stored information to electrical signals, said reading means responsive to a voltage level for rejecting false information caused by noise signals having a level less than said voltage level; and
 means for selectively varying said voltage level, including register means for storing signals indicative of the desired voltage level;
 decoding means responsive to the signals in the register means for producing second signals; and
 means responsive to the second signals for determining the voltage level to the information reading means.

3,902,191
TRANSIENT SUPPRESSION FOR TAPE PLAYER INTEGRATED CIRCUIT PREAMPLIFIER
 Wilbur E. Lynn, Chalfont, Pa., assignor to Aeronutronic Ford Corporation, Blue Bell
 Filed Apr. 19, 1974, Ser. No. 462,255
 Int. Cl. G11b 15/12; H03k 17/16
 U.S. Cl. 360—61

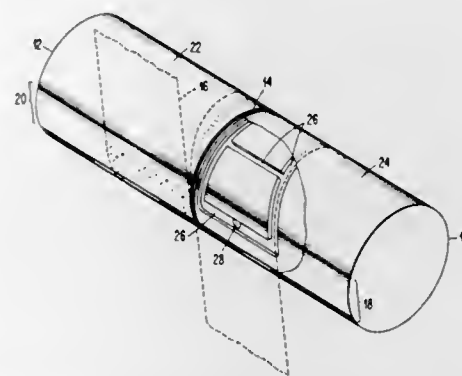
4 Claims



1. In a magnetic tape player circuit, said circuit comprising a tape head for producing electrical signals when in contact with a moving recorded magnetic tape, a preamplifier connected to said head for amplifying said electrical signals and having power supply terminals for energizing said preamplifier, and a switchable power supply for energizing said tape player, said circuit including a connection between said power supply and said power supply terminals of said preamplifier, said preamplifier having the characteristic of undesirably recording a noise burst on said tape via said tape head when said power supply is switched off and the voltage applied to said power supply terminals from said power supply falls rapidly, means for isolating said preamplifier power supply terminals from said power supply when said power supply is switched off, and means for reducing the rate of fall of voltage applied to said preamplifier when said isolating means acts to isolate said preamplifier.

3,902,192
CAM SURFACE MANDREL WITH AIR BEARING SUPPORT
 Edward G. Laenen, and Marvin E. Prah, both of Boulder, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.
 Filed Dec. 26, 1973, Ser. No. 428,144
 Int. Cl.² G11B 5/48, 5/54, 5/60
 U.S. Cl. 360—84

1 Claim



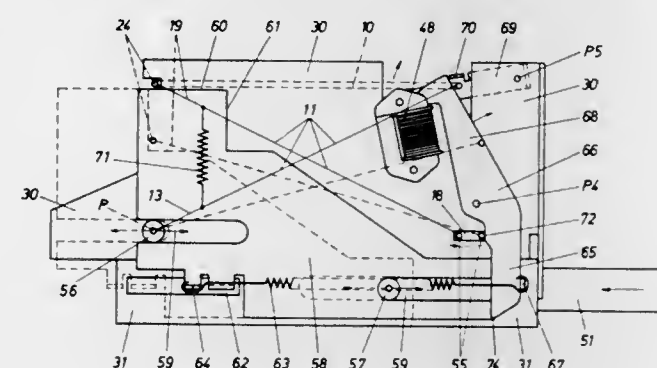
1. On mandrels for supporting magnetic tape wrapped about the mandrels with a rotor mounted between the mandrels carrying a magnetic head, each of said mandrels having a cylindrical surface about a portion of the circumference of the mandrel along which said magnetic head protrudes above the surface of the mandrel and transduces information onto or off of the magnetic tape; a cam surface about the remainder of the circumference of the mandrel, said cam surface having a peak higher than the protrusion of said magnetic head above said cylindrical surface and gradually decreasing in height until intersecting said cylindrical surface; a hydrostatic air

bearing on the mandrels from the entry point of tape on said cam surface, around the mandrels along said cylindrical surface and to the exit point of the tape from said cam surface, said hydrostatic air bearing being provided by a foil wrapping each mandrel with holes in the foil along the edge of the helical path of the tape and along the edge of the foil adjacent the rotor; a source of air under pressure inside the mandrels under the holes in the foils; and an improvement in hole location comprising:

extra holes 38 and 40 being located at the entry and exit points on the mandrel for additional air bearing support of the tape where the tape enters and exits the mandrel; extra holes 42 and 44 located under the edge of tape where the edge of tape crosses the rotor for additional air bearing support of the tape where the tape crosses the rotor; additional holes 39 also being located at intervals inside the helical path.

3,902,193
CASSETTE TYPE TAPE RECORDER/REPRODUCER WITH CASSETTE MOVING CARRIAGE
 Walter Hapke, Hildesheim, Germany, assignor to Blaupunkt-Werke GmbH, Hildesheim, Germany
 Filed Aug. 30, 1973, Ser. No. 393,224
 Claims priority, application Germany, Sept. 1, 1972, 2243184; Sept. 14, 1972, 2245004; Sept. 20, 1972, 2246019; Sept. 27, 1972, 2247244
 Int. Cl. G11b 23/10, 15/18
 U.S. Cl. 360—96

24 Claims



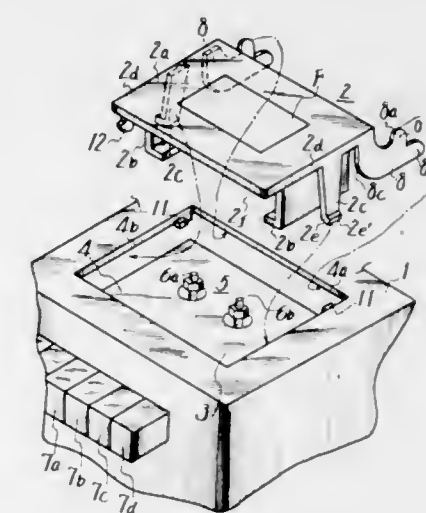
1. A magnetic tape sound recorder and/or reproducer for operation with tape cassettes, comprising:
 a chassis (30) provided with a substantially horizontal cassette guideway (31) into which a cassette (51) is insertable;
 movable carrier means (10) on which are mounted drive means for causing tape contained in a cassette that is inserted in said guideway to be moved from place to place in said cassette;
 scissor mount means (11,12) at each side of said chassis and of said carrier means supporting said carrier means on said chassis;
 first latch means (43,87,110,66) and electromagnet means (48) arranged for holding or releasing said first latch means;
 control means responsive to insertion of a cassette into said guideway for moving said carrier means vertically downward toward said cassette to engage said operating mechanism therewith immediately after said cassette reaches its operating position in said guideway, and responsive to release of said first latch means for moving said carrier means vertically away from said cassette to disengage said drive means therefrom and thereafter to at least partially eject said cassette, said control means including, as a source of power for moving said carrier means, a system of springs arranged to be loaded by insertion of a cassette into operating position;
 second latch means for latching said carrier means in a standby position, after a predetermined movement of said

carrier means away from said cassette, said second latch means being arranged so as not to be releasable to release said carrier following latching thereof until the cassette is substantially fully ejected or removed from said guideway; and
 means for controlling said electromagnet means to produce release of said first latch means in response to interruption of the supply of electric power to the sound recorder/reproducer.

3,902,194
COVER AND/OR HOLDING APPARATUS FOR A CASSETTE-TYPE RECORDER
 Yoshio Segawa, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan
 Filed Aug. 30, 1974, Ser. No. 502,060
 Claims priority, application Japan, Sept. 14, 1973, 48-107826

Int. Cl.² G11B 5/00
 U.S. Cl. 360—137

16 Claims



1. Apparatus for covering a recess disposed in a housing, the housing having outer walls wherein said recess is accessible through an opening in an outer wall, said apparatus comprising:
 a plate member rotatably supported in said housing for covering said recess;
 a pair of spaced apart arms coupled to said plate member and disposed in parallel planes that are substantially perpendicular to the plane of said plate member, said arms extending beyond the boundary defined by said plate member;
 a fulcrum provided on each of said arms, each fulcrum being in physical contact with the interior surface of said outer wall to thereby define pivot points for said plate member with respect to said outer wall;
 means disposed within said recess for exerting a bias force; each of said arms including a portion for contacting said means and for receiving said bias force, whereby each of said arms is subjected to a moment about an axis of rotation;
 each of said arms having an arcuate surface portion with a radius of curvature established at said axis of rotation; and
 guide members disposed within said recess for contacting said arcuate surface portion of each of said arms, whereby said arcuate surface portion rides along a guide member as said arm rotates about said axis of rotation, said guide members being positioned to maintain said fulcrums in contact with said interior surface of said outer wall while said bias force is exerted on said arms.

3,902,195

MAGNETIC DISC MEMORY UNIT

Hiroiyuki Osako, Hatano, and Yasuo Matsumiya, Odawara,
both of Japan, assignors to Hitachi, Ltd., Japan

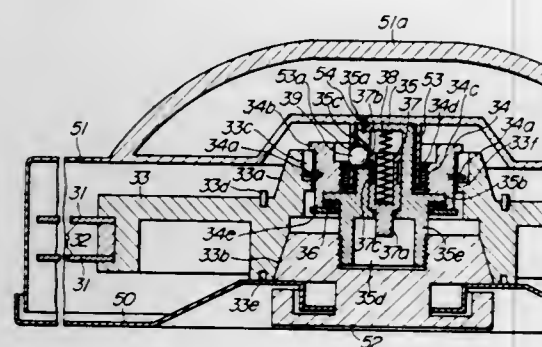
Continuation of Ser. No. 819,263, April 25, 1969. This
application Aug. 9, 1973, Ser. No. 386,972

Claims priority, application Japan, Apr. 30, 1968, 43-
28589; July 26, 1968, 43-52464

Int. Cl. G11b 23/02

U.S. Cl. 360-133

14 Claims



1. A magnetic disc memory unit comprising information
writing and reading means consisting of magnetic heads and

an information writing and reading circuit, a magnetic head
positioning mechanism for locating said magnetic heads in a
desired track position on the surfaces of magnetic discs, a
plurality of disc packs disengageable from each other and
each consisting of at least one magnetic disc, and a disc drive
apparatus for driving said plurality of disc packs by one driv-
ing shaft wherein each of said disc packs further comprises a
hub having at least one magnetic disc secured thereto and
having a tapered projection and a tapered cavity so as to be
stacked together with other disc packs and said driving shaft,
said hub being provided with an axial hole,

a sleeve inserted into said axial hole of the hub and being
moveable vertically within a predetermined distance with
respect to said hub, said sleeve being provided with an
axial hole having an internal thread therein,

a lock screw inserted into said axial hole of the sleeve and
being supported rotatably by said sleeve, said lock screw
being provided with an external thread on the outer per-
ipheral surface of the portion, said external thread of
said lock screw being engageable with an internal thread
at the top of said driving shaft, where said disc pack is the
one stacked at the bottom of said plurality of disc packs,
while said external thread of said lock screw being en-
gageable with an internal thread of said sleeve where said
disc pack is other than the one mentioned above,
whereby said plurality of disc packs and said driving shaft
can be engaged with each other by rotating said lock
screw alone.

DESIGN PATENTS

GRANTED AUGUST 26, 1975

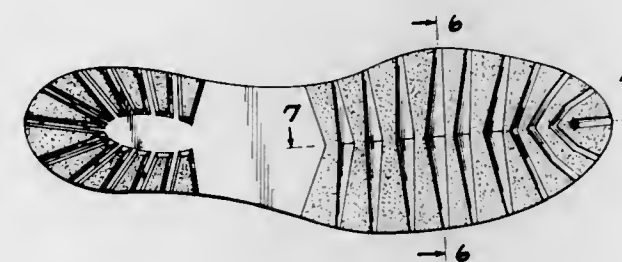
ERRATA

For	See
CLASS	PATENT NO.
023-003	236,463
013-001 H.....	236,477
023-139	236,508

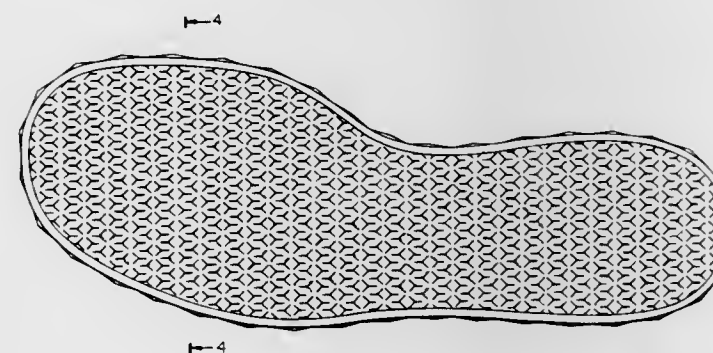
DESIGNS

AUGUST 26, 1975

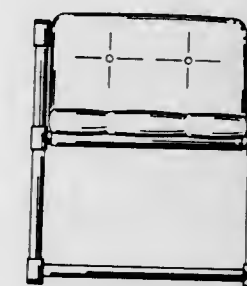
236,392
BOOT SOLE
 Guillaume Sacre, Goodhue, Minn., assignor to Red Wing
 Shoe Company, Inc., Red Wing, Minn.
 Filed Feb. 13, 1974, Ser. No. 442,207
 Term of patent 14 years
 Int. Cl. D2—04
 U.S. Cl. D2—320



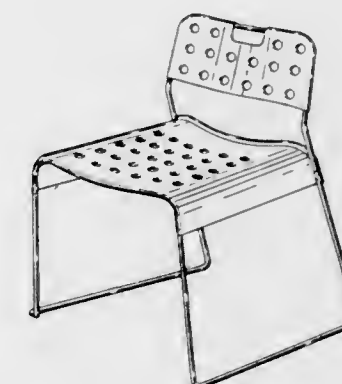
236,393
SOLE FOR FOOTWEAR
 Roger Tornero, Naugatuck, Conn., assignor to
 Uniroyal, Inc.
 Filed Mar. 8, 1974, Ser. No. 449,806
 Term of patent 14 years
 Int. Cl. D2—04
 U.S. Cl. D2—320



236,394
LOUNGE CHAIR
 Thomas C. Hoshall and Kent W. Bouldin, Oklahoma
 City, Okla., assignors to Thomas C. Hoshall, Piedmont,
 Okla.
 Filed May 21, 1973, Ser. No. 362,010
 Term of patent 14 years
 Int. Cl. D6—01
 U.S. Cl. D6—38



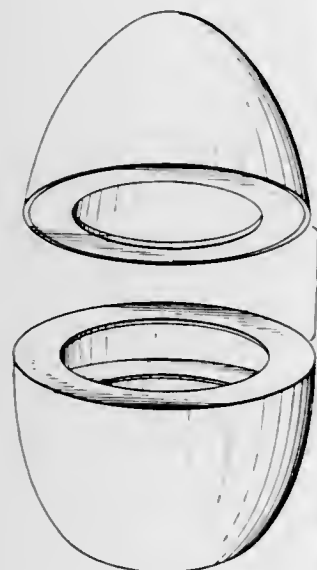
236,395
CHAIR
 Rodney William Kinsman, 14 Bruton Place,
 London, W. 1, England
 Filed Dec. 10, 1973, Ser. No. 423,288
 Claims priority, application Great Britain June 11, 1973
 Term of patent 14 years
 Int. Cl. D6—01
 U.S. Cl. D6—75



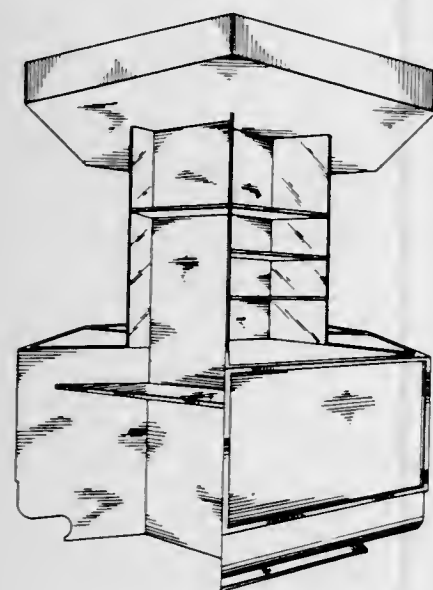
236,396
HOSE HOLDER
 Phillip H. Huyssen, 116 Baber St.,
 Hot Springs, Ark. 71901
 Filed Sept. 19, 1973, Ser. No. 398,680
 Term of patent 14 years
 Int. Cl. D6—99
 U.S. Cl. D6—85



236,397
COMBINED COUNTER AND CANOPY THEREFOR
 Hans Kramer, 6079 Buchschlag,
 Dreieichweg 15, Germany
 Filed Apr. 25, 1972, Ser. No. 247,508
 Claims priority, application Germany Oct. 26, 1971
 Term of patent 14 years
 Int. Cl. D6—05; XD6—04
 U.S. Cl. D6—146



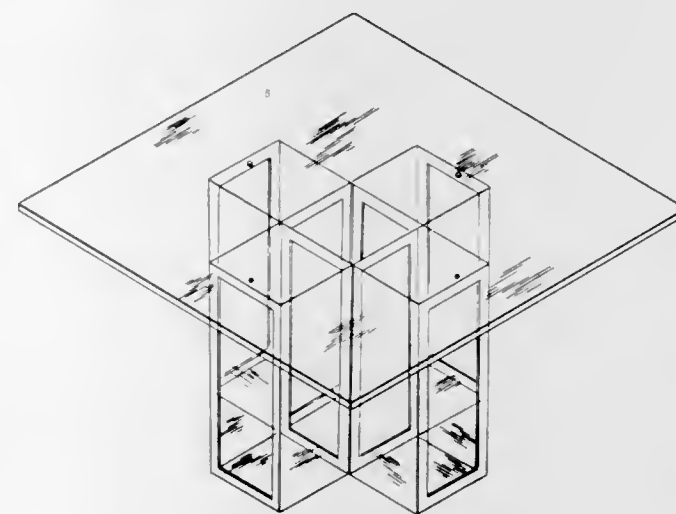
236,398
COSMETIC DISPLAY SELF-SERVICE COUNTER
 Douglas J. Alippe, Tuxedo, and Frank A. Desisto,
 Yonkers, N.Y., assignors to J. C. Penney Company,
 Inc., New York, N.Y.
 Original design application Sept. 24, 1970, Ser. No.
 25,564. Divided and this application, Feb. 9, 1972,
 Ser. No. 225,027
 Term of patent 14 years
 Int. Cl. D6—04
 U.S. Cl. D6—149



236,399
CABINET
 Ronald W. Rubin, Riverdale, N.Y., assignor to
 Living Walls Inc., Bronx, N.Y.
 Filed Sept. 26, 1973, Ser. No. 400,874
 Term of patent 14 years
 Int. Cl. D6—04
 U.S. Cl. D6—170



236,400
DINING TABLE
 Simon V. Waitzman, 195 Hicks St.,
 Brooklyn, N.Y. 11201
 Filed May 9, 1973, Ser. No. 358,718
 Term of patent 14 years
 Int. Cl. D6—03
 U.S. Cl. D6—177



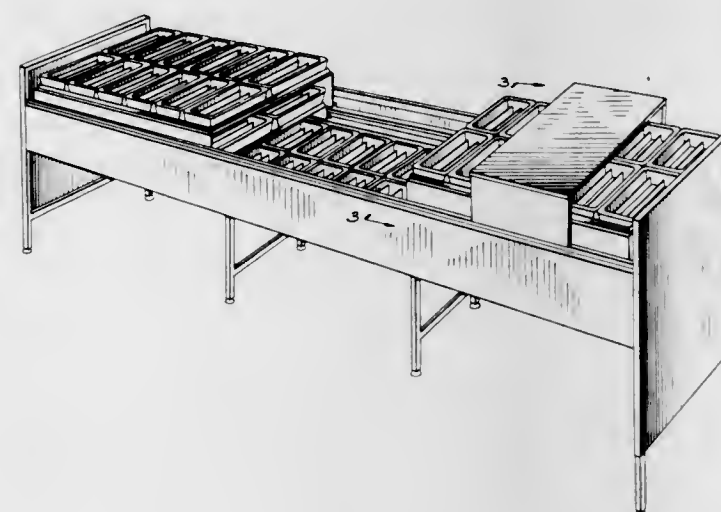
236,401
DINING TABLE OR SIMILAR ARTICLE
 Thomas C. Hoshall and Kent W. Bouldin, Oklahoma City,
 Okla., assignors to Thomas C. Hoshall, Piedmont, Okla.
 Filed May 21, 1973, Ser. No. 361,869
 Term of patent 14 years
 Int. Cl. D6—01
 U.S. Cl. D6—177



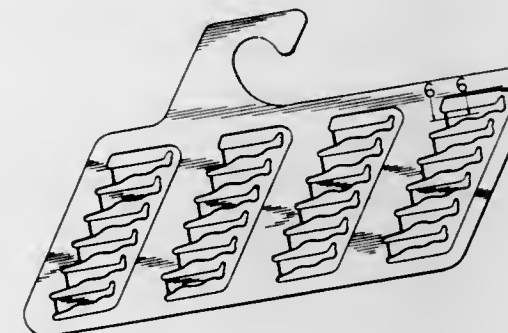
236,402
TABLE
 Karl Lubke, Rheda, Westphalia, Germany, assignor to
 Lubke KG, Rheda, Westphalia, Germany
 Filed Jan. 31, 1974, Ser. No. 438,389
 Claims priority, application Germany July 31, 1973
 Term of patent 7 years
 Int. Cl. D6—03
 U.S. Cl. D6—177



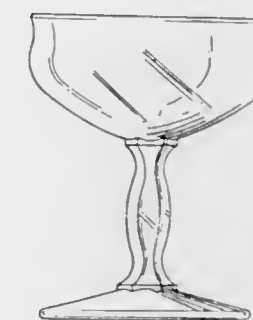
236,403
**MEDICINE DISPENSING CABINET OR
 SIMILAR ARTICLE**
 Charles V. Condon, Jamestown, N.Y., assignor to Watson
 Manufacturing Company, Inc., Jamestown, N.Y.
 Filed May 21, 1973, Ser. No. 362,112
 Term of patent 14 years
 Int. Cl. D6—04
 U.S. Cl. D6—190



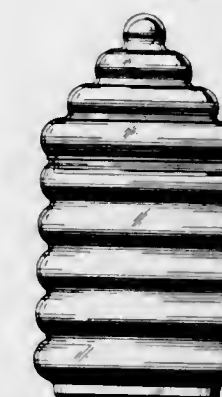
236,404
TIE HANGER
 Alan F. Meckstroth, 2357 Shelterwood Drive,
 Dayton, Ohio 45409
 Filed Sept. 7, 1973, Ser. No. 395,265
 Term of patent 14 years
 Int. Cl. D6—08
 U.S. Cl. D6—251



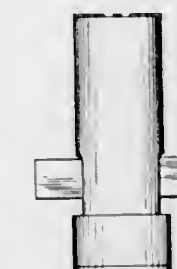
236,405
GOBLET OR SIMILAR ARTICLE
 James Lloyd Thrush, Lancaster, Ohio, assignor to Anchor
 Hocking Corporation, Lancaster, Ohio
 Filed Sept. 20, 1973, Ser. No. 399,134
 Term of patent 14 years
 Int. Cl. D7—01
 U.S. Cl. D7—13



236,406
CANISTER WITH LID OR SIMILAR ARTICLE
 Walter B. Achenbach, Toledo, Ohio, assignor to
 Owens-Illinois, Inc., Toledo, Ohio
 Filed Nov. 30, 1973, Ser. No. 420,524
 Term of patent 14 years
 Int. Cl. D7—01
 U.S. Cl. D7—17



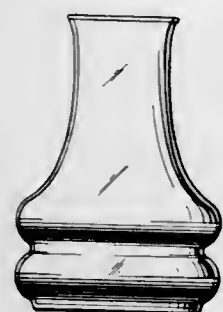
236,407
CONDIMENT DISPENSER
 Morton Saipe, Westport, Conn. (239 Danbury Road,
 Wilton, Conn. 06897), and George K. Maljanian, 67
 Blue Ridge Road, Wilton, Conn. 06897
 Filed Oct. 29, 1973, Ser. No. 410,434
 Term of patent 3½ years
 Int. Cl. D7—06
 U.S. Cl. D7—52



236,408

DECANTER OR SIMILAR ARTICLE
Walter B. Achenbach, Toledo, Ohio, assignor to
Owens-Illinois, Inc., Toledo, Ohio
Filed Dec. 17, 1973, Ser. No. 425,564
Term of patent 14 years
Int. Cl. D7—06

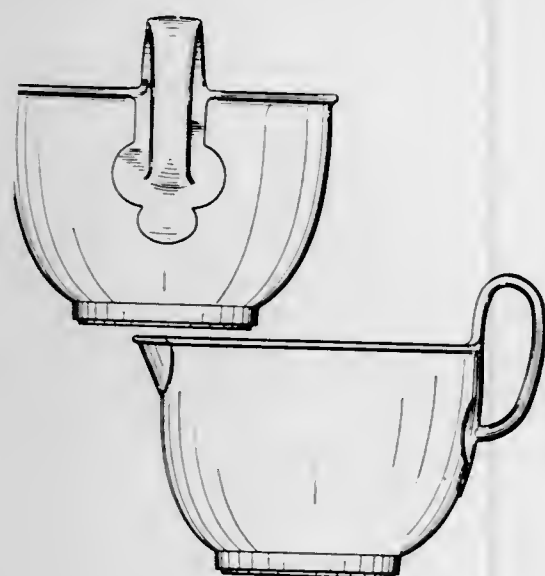
U.S. Cl. D7—52



236,409

MIXING BOWL
Gunnar Cyren, Gavle, Sweden, assignor to Dansk
International Designs Ltd., Mount Kisco, N.Y.
Filed Feb. 28, 1974, Ser. No. 447,110
Term of patent 14 years
Int. Cl. D7—01

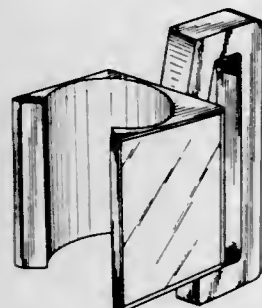
U.S. Cl. D7—64



236,410

HOLDER FOR A BEVERAGE CAN OR THE LIKE
Sheldon W. Jenkins, Natick, Mass. (164 South St., South
Natick, Mass. 01760), and Arnold J. Utstein, 58
Dwight St., Brookline, Mass. 02146
Filed Mar. 19, 1973, Ser. No. 342,673
Term of patent 14 years
Int. Cl. D7—99

U.S. Cl. D7—70



236,411

WINE RACK
James Daniel Horney, 715 Cedar Crest Lane,
Cincinnati, Ohio 45230
Filed Oct. 3, 1972, Ser. No. 282,199
Term of patent 14 years
Int. Cl. D6—04

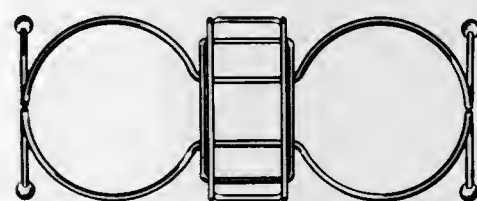
U.S. Cl. D7—71



236,412

**COMBINED NAPKIN HOLDER AND
CRUET STAND**
Arthur Koretz, 10—01 162nd St., Whitestone, N.Y.
11357, and Harry Lowenstein, 3475 Greystone Ave.,
Bronx, N.Y. 10463
Filed Feb. 21, 1974, Ser. No. 444,431
Term of patent 7 years
Int. Cl. D7—06

U.S. Cl. D7—72



236,413

CANISTER OR SIMILAR ARTICLE
Walter B. Achenbach, Toledo, Ohio, assignor to
Owens-Illinois, Inc., Toledo, Ohio
Filed Dec. 17, 1973, Ser. No. 425,563
Term of patent 14 years
Int. Cl. D9—02; D7—07

U.S. Cl. D7—79



236,414

PIE FRY BASKET
Steve Kroll, Schaumburg, Ill., assignor to Restaurant
Technology, Inc., Oak Brook, Ill.
Filed Oct. 15, 1973, Ser. No. 406,391
Term of patent 14 years
Int. Cl. D7—02

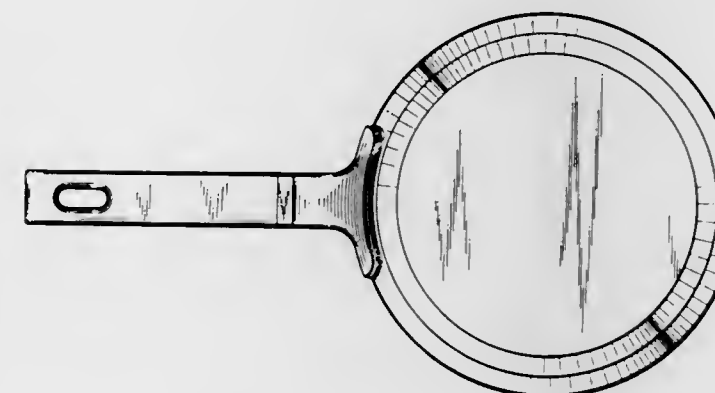
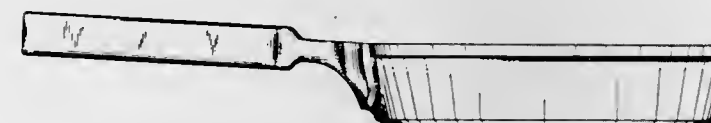
U.S. Cl. D7—95



236,415

SKILLET
Gunnar Cyren, Gavle, Sweden, assignor to Dansk
International Designs Ltd., Mount Kisco, N.Y.
Filed Feb. 28, 1974, Ser. No. 447,112
Term of patent 14 years
Int. Cl. D7—02

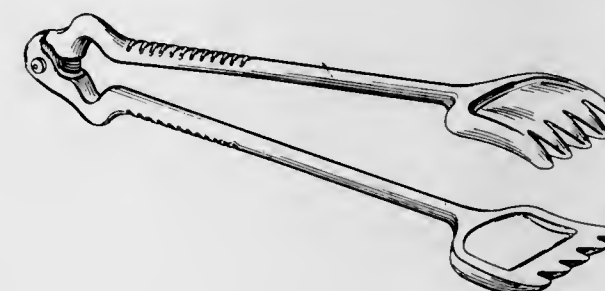
U.S. Cl. D7—95



236,416

FOOD LIFTING TONGS
Eugene E. Davis, 2726 W. 33rd St., Erie, Pa. 16506
Filed Oct. 11, 1973, Ser. No. 405,312
Term of patent 14 years
Int. Cl. D7—06, 08

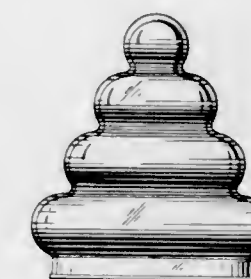
U.S. Cl. D7—105



236,417

CANISTER LID OR SIMILAR ARTICLE
Walter B. Achenbach, Toledo, Ohio, assignor to
Owens-Illinois, Inc., Toledo, Ohio
Filed Dec. 3, 1973, Ser. No. 420,912
Term of patent 14 years
Int. Cl. D7—01

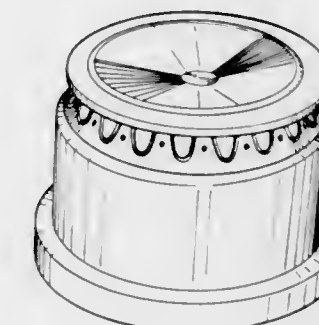
U.S. Cl. D7—131



236,418

GAS BURNER CAP
Donald E. Duperow and William J. Ferlin, Detroit,
Mich., assignors to Lincoln Brass Works, Inc., Detroit,
Mich.
Filed June 11, 1974, Ser. No. 478,258
Term of patent 14 years
Int. Cl. D7—02

U.S. Cl. D7—136



236,419

ARTICLE OF FLATWARE
Burr Sebring, Barrington, R.I., assignor to Gorham, a
Division of Tectron, Inc., Providence, R.I.
Filed Apr. 1, 1974, Ser. No. 457,139
Term of patent 14 years
Int. Cl. D7—03

U.S. Cl. D7—137



236,420
TEASPOON

William A. Dart and Laurence T. Uridge, Mason, Mich.,
assignors to Dart Container Corporation, Mason, Mich.
Filed June 22, 1973, Ser. No. 372,629
Int. Cl. D7—03

U.S. Cl. D7—138



236,421
FORK

William A. Dart and Laurence T. Uridge, Mason, Mich.,
assignors to Dart Container Corporation, Mason, Mich.
Filed June 22, 1973, Ser. No. 372,681
The term of this patent subsequent to June 3, 1989,
has been disclaimed
Term of patent 14 years
Int. Cl. D7—03

U.S. Cl. D7—138



236,422
KNIFE

Gunnar Cyren, Gavle, Sweden, assignor to Dansk
International Designs Ltd., Mount Kisco, N.Y.
Filed Feb. 19, 1974, Ser. No. 443,876
Term of patent 14 years
Int. Cl. D7—03

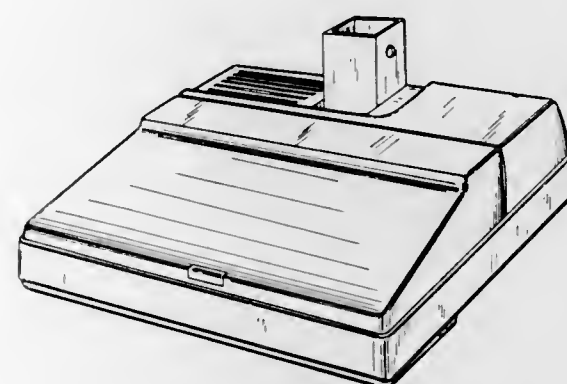
U.S. Cl. D7—151



236,423

HOUSING FOR A CARPET SWEEPER
Jean Mantelet, Paris, France, assignor to Moulinex,
Societe Anonyme, Bagnolet, France
Filed July 19, 1974, Ser. No. 490,127
Claims priority, application France Feb. 14, 1974
Term of patent 14 years
Int. Cl. D7—05

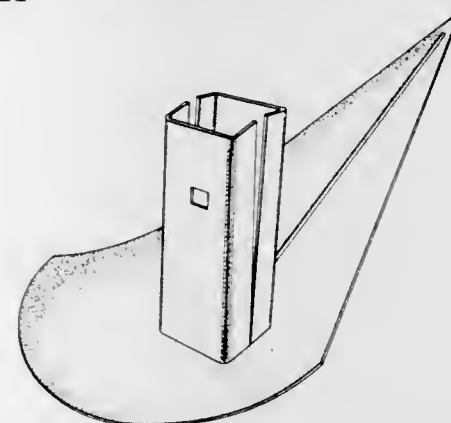
U.S. Cl. D7—175



236,424

GARDEN IMPLEMENT PICK HEAD OR
SIMILAR ARTICLE
George M. Philpott, Sr., 220 E. Grand Ave.,
South San Francisco, Calif. 94080
Filed Dec. 6, 1973, Ser. No. 422,361
Term of patent 14 years
Int. Cl. D8—01

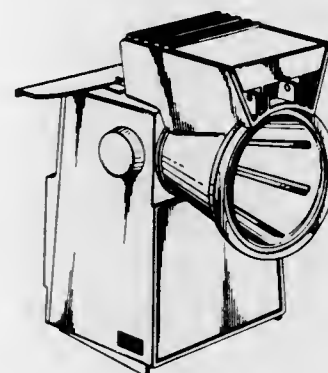
U.S. Cl. D8—11



236,425

COMBINED ELECTRIC CAN OPENER AND
FOOD SHREDDER
Daniel E. McCue, Santa Barbara, Calif., assignor to Rival
Manufacturing Company, Kansas City, Mo.
Filed May 24, 1973, Ser. No. 363,595
Term of patent 14 years
Int. Cl. D7—99

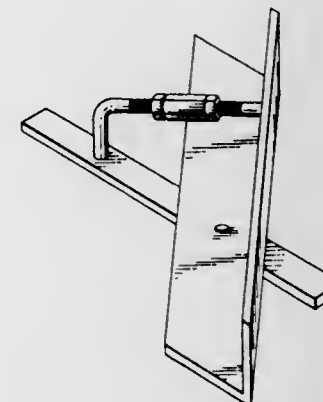
U.S. Cl. D8—34



236,426

MITRE TOOL
Maurice Leclaire, 34 Lawrence St., Chelmsford,
Ontario POM 1LO, Canada
Filed Jan. 18, 1974, Ser. No. 434,483
Claims priority, application Canada July 20, 1973
Term of patent 14 years
Int. Cl. D8—05

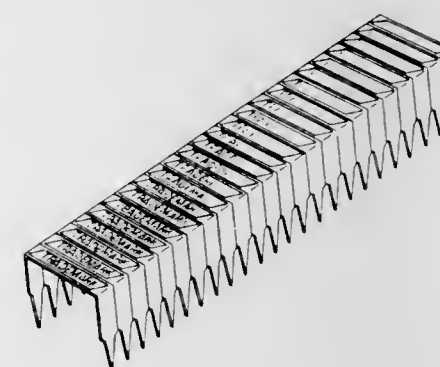
U.S. Cl. D8—106



236,427

STRIP OF STAPLES
Robert E. Olson, 9014 Callaghan Road,
San Antonio, Tex. 78230
Original design application May 18, 1972, Ser. No.
254,834, now Patent No. 231,902. Divided and this
application Dec. 17, 1973, Ser. No. 425,092
Term of patent 14 years
Int. Cl. D8—08

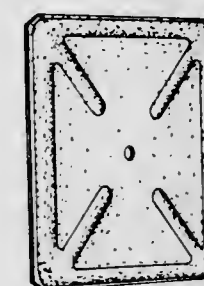
U.S. Cl. D8—266



236,428

SQUARE ROOFDECK WASHER
Sherman A. Stewart, Palos Verdes, Calif., Estel R. Snyder,
La Grange, Ill., and Harlan E. Tarbell, Torrance, Calif.,
assignors to Grefco, Inc., Bala Cynwyd, Pa.
Filed Nov. 23, 1973, Ser. No. 418,305
Term of patent 14 years
Int. Cl. D8—08

U.S. Cl. D8—274



236,429

PLASTIC SLEEVE-ENCASED JAR
Gordon A. Strand, Toledo, Ohio, assignor to
Owens-Illinois, Inc.
Filed Nov. 2, 1973, Ser. No. 412,381
Term of patent 14 years
Int. Cl. D9—01

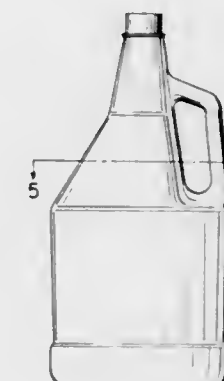
U.S. Cl. D9—12



236,430
BOTTLE

Gordon A. Strand, Toledo, Ohio, assignor to
Owens-Illinois, Inc.
Filed Nov. 2, 1973, Ser. No. 412,382
Term of patent 14 years
Int. Cl. D9—01

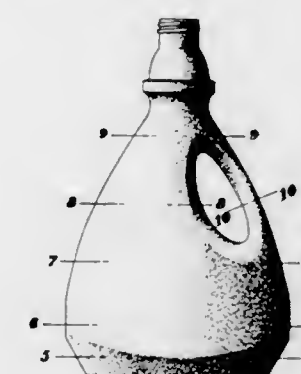
U.S. Cl. D9—39



236,431
JUG

John Pardo, 30 Roberts Lane, Yonkers, N.Y. 10701
Filed Oct. 9, 1973, Ser. No. 404,509
Term of patent 14 years
Int. Cl. D9—01

U.S. Cl. D9—42



**236,432
BOTTLE**

Kevin McKibben O'Brien, Westport, Conn., assignor to
The Clorox Company, Oakland, Calif.
Filed Oct. 26, 1973, Ser. No. 410,097
Term of patent 14 years
Int. Cl. D9—01

U.S. Cl. D9—143

**236,433
JAR**

Gordon A. Strand, Toledo, Ohio, assignor to
Owens-Illinois, Inc.
Filed Nov. 2, 1973, Ser. No. 412,383
Term of patent 14 years
Int. Cl. D9—01

U.S. Cl. D9—162

**236,434
BOTTLE**

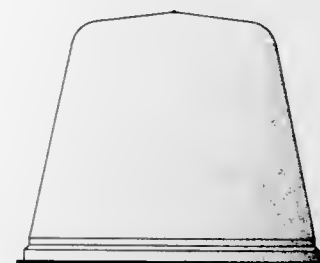
Dennis F. Shine, Huntington Beach, Calif., and Gunther
W. Torau, Buffalo Grove, Ill., assignors to Baxter Labo-
ratories, Inc., Morton Grove, Ill.
Filed Oct. 5, 1973, Ser. No. 404,074
Term of patent 14 years
Int. Cl. D9—01

U.S. Cl. D9—169



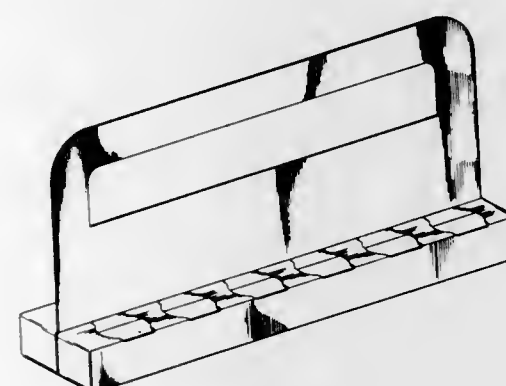
**236,435
PREFORM FOR A FOOD JAR OR THE LIKE**
Bryant Edwards, Clarendon Hills, Ill., assignor to
Illinois Tool Works Inc., Chicago, Ill.
Filed July 5, 1973, Ser. No. 376,639
Term of patent 14 years
Int. Cl. D3—99

U.S. Cl. D9—171



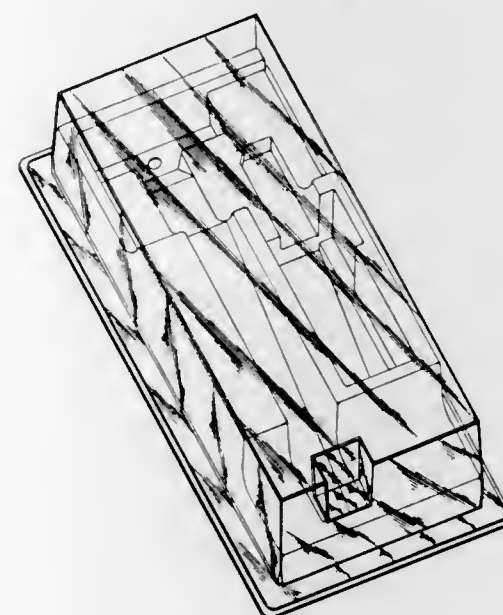
**236,436
COMBINED DISPLAY CARTON AND CARRIER
FOR BOTTLES**
Noel G. Fischer, Richardson, Tex., assignor to Liquid
Paper Corporation, Dallas, Tex.
Filed Dec. 3, 1973, Ser. No. 421,057
Term of patent 14 years
Int. Cl. D9—03

U.S. Cl. D9—179



**236,437
RAZOR CASE**
Donald A. Leathers, North Billerica, Mass., assignor to
The Gillette Company, Boston, Mass.
Filed Nov. 2, 1973, Ser. No. 412,339
Term of patent 14 years
Int. Cl. D9—03

U.S. Cl. D9—186



**236,438
DOLL PACKAGE**
J. W. McKenzie, 3300 Windsor Terrace,
Oklahoma City, Okla. 73112
Filed Dec. 26, 1972, Ser. No. 317,955
Term of patent 14 years
Int. Cl. D9—03

U.S. Cl. D9—193



**236,439
PACKAGING DISH FOR CANDY OR THE LIKE**
Marten Gottsegen, 1212 Lake Shore Drive,
Chicago, Ill. 60610
Filed Mar. 18, 1974, Ser. No. 451,848
Term of patent 14 years
Int. Cl. D9—03

U.S. Cl. D9—199



**236,440
COMBINED PACKAGING CUP AND
CLOSURE THEREFOR**
Richard P. Rendahl, 6400 Barrie Road, Edina, Minn.
55435, and John E. Schimschock, Rte. 2, Hudson, Wis.
54016

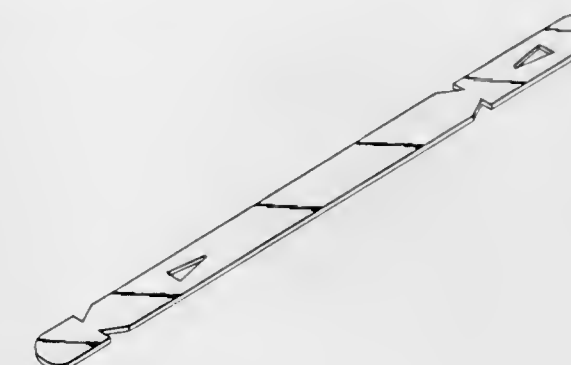
Filed Nov. 26, 1971, Ser. No. 202,732
Term of patent 14 years
Int. Cl. D9—03

U.S. Cl. D9—216



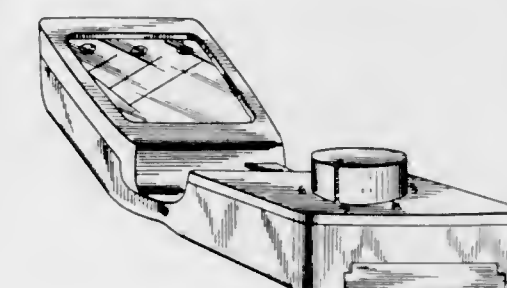
**236,441
STRAP FASTENER FOR SKI EQUIPMENT**
Edward A. Lloyd, Box 158, Glenridge Road,
Scotia, N.Y. 12302
Filed May 2, 1973, Ser. No. 356,523
Term of patent 14 years
Int. Cl. D9—06

U.S. Cl. D9—252



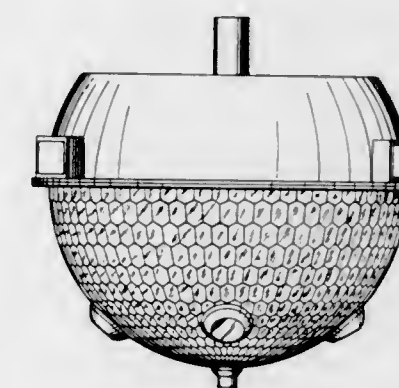
**236,442
MULTIPLE-SMALL-BATTERY TEST UNIT**
Peter F. Steele, 141 Hope St., Stamford, Conn. 06906
Filed Apr. 8, 1974, Ser. No. 458,521
Term of patent 14 years
Int. Cl. D10—05

U.S. Cl. D10—77



**236,443
HOUSING FOR A SURVEILLANCE DEVICE, FIRE
ALARM, SPEAKER, OR THE LIKE**
Everett H. Schroeder, Redding, Conn., assignor to
Electron-Scope Corp., Danbury, Conn.
Filed May 8, 1972, Ser. No. 251,597
Term of patent 14 years
Int. Cl. D10—06

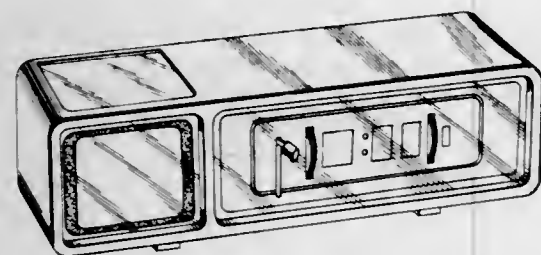
U.S. Cl. D10—106



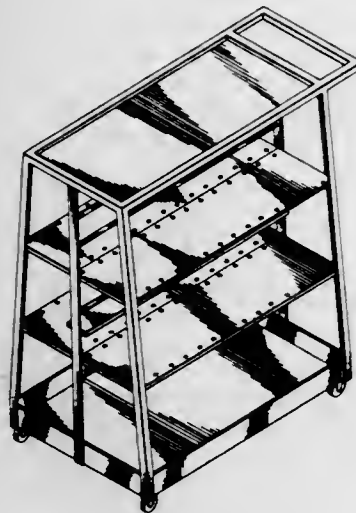
236,444
TRAFFIC SIGN
Bernard L. Nelson, 17015 San Bernardino Ave., Apt. 26,
Fontana, Calif., 92335
Filed Mar. 27, 1974, Ser. No. 455,271
Term of patent 14 years
Int. Cl. D10—06
U.S. Cl. D10—111



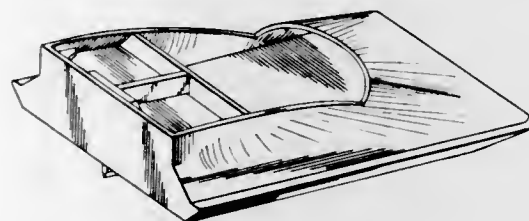
236,445
ALARM HOUSING
Ellworth R. Danz, La Salle, Ill., William H. Featherly,
Gadsden, Ala., and Roman J. Szalek, La Salle, Ill.,
assignors to General Time Corporation, Thomaston,
Conn.
Filed Apr. 10, 1974, Ser. No. 459,593
Term of patent 14 years
Int. Cl. D10—06; D13—03
U.S. Cl. D10—121



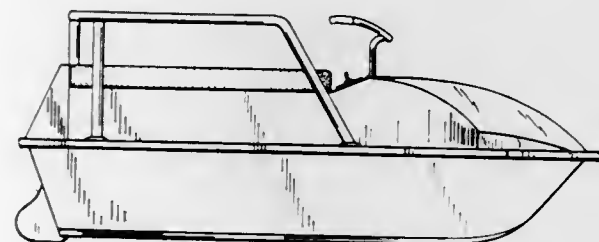
236,446
CART
Philip J. Schroeder, Wellesley, Mass., assignor to
Xerox Corporation, Stamford, Conn.
Filed Apr. 22, 1974, Ser. No. 462,902
Term of patent 14 years
Int. Cl. D12—02
U.S. Cl. D12—29



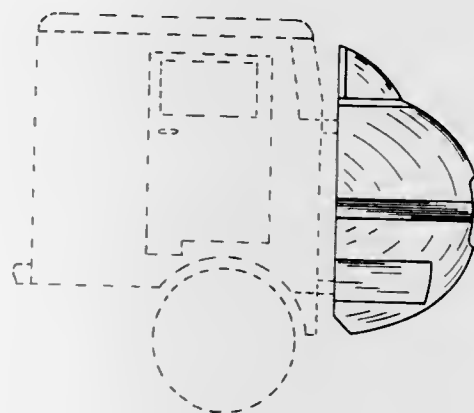
236,447
COMBINED BOAT AND PICKUP TRUCK
BODY COVER
Robert R. Roloff, Sr., 1155 Morningside Drive,
Hubbard, Ohio 44425
Filed July 24, 1972, Ser. No. 274,833
Term of patent 14 years
Int. Cl. D12—06, 16
U.S. Cl. D12—62



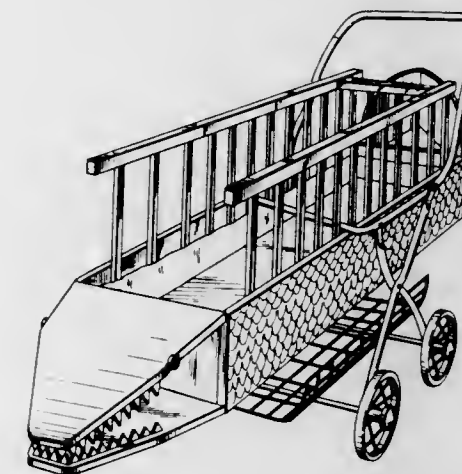
236,448
BOAT
Urban W. Simon, 1140 S. Raymond Ave., Suite A,
Fullerton, Calif. 92631
Filed July 22, 1974, Ser. No. 490,877
Term of patent 14 years
Int. Cl. D12—06
U.S. Cl. D12—69



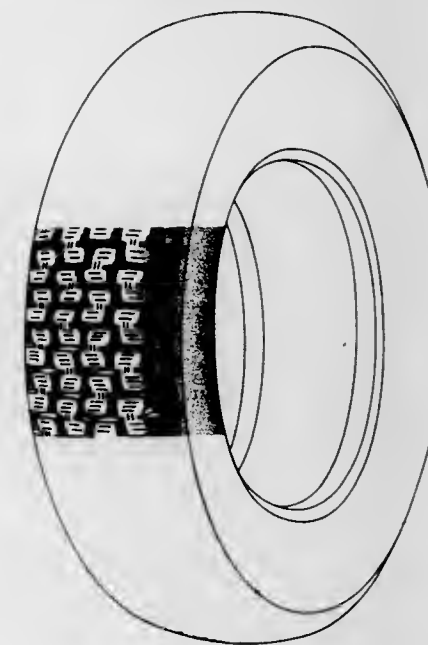
236,449
WINDBREAKER FOR VEHICLES
Marshall S. De Vaughn, P.O. Box 26,
Hope Hull, Ala. 36043
Filed Jan. 21, 1974, Ser. No. 434,885
Int. Cl. D12—16
U.S. Cl. D12—93



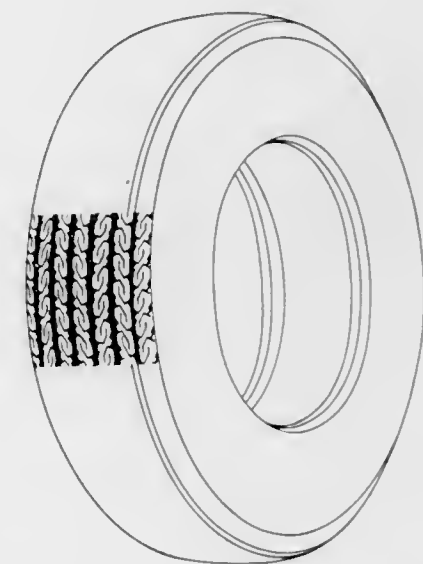
236,450
PERAMBULATOR
Clarine Johnson, 227 Lenox Ave., Apt. 1,
New York, N.Y. 10027
Filed May 13, 1974, Ser. No. 469,520
Term of patent 14 years
Int. Cl. D12—12
U.S. Cl. D12—128



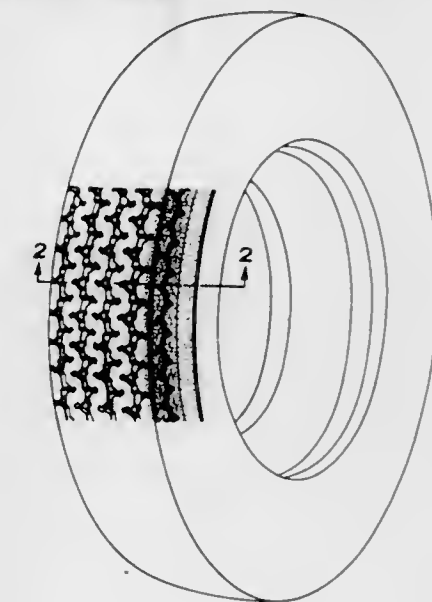
236,451
TIRE
Andre E. J. Baus, Welsdorf, Luxembourg, assignor to
The Goodyear Tire & Rubber Company
Filed Feb. 28, 1974, Ser. No. 446,994
Claims priority, application Great Britain Nov. 9, 1973
Term of patent 14 years
Int. Cl. D12—15
U.S. Cl. D12—136



236,452
TIRE
Harold D. Fetty, Birmingham, Mich., and James W.
Stiffler, Tallmadge, Richard H. Springford, Stow, John
C. Wagon, Akron, and Joseph V. Mendiola, Ravenna,
Ohio, assignors to The Goodyear Tire & Rubber Com-
pany
Filed May 16, 1974, Ser. No. 470,703
Term of patent 14 years
Int. Cl. D12—15
U.S. Cl. D12—141



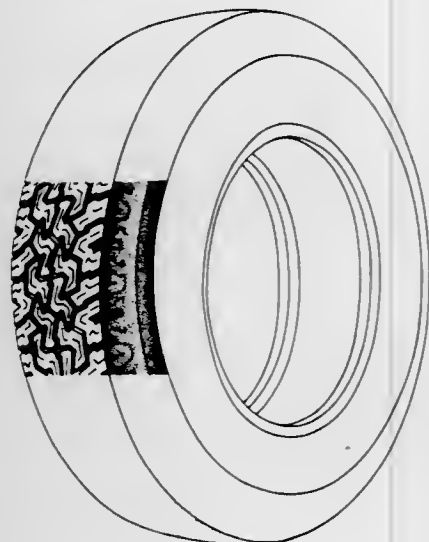
236,453
TIRE
Michael N. Young, Tucson, Ariz., assignor to The
Goodyear Tire & Rubber Company
Filed Oct. 15, 1973, Ser. No. 406,528
Term of patent 14 years
Int. Cl. D12—15
U.S. Cl. D12—143



236,454
TIRE

Philip S. Hammond, Akron, and Donald L. Roberts, Cuyahoga Falls, Ohio, assignors to The Goodyear Tire & Rubber Company
Filed Sept. 19, 1973, Ser. No. 398,613
Term of patent 14 years
Int. Cl. D12—15

U.S. Cl. D12—147

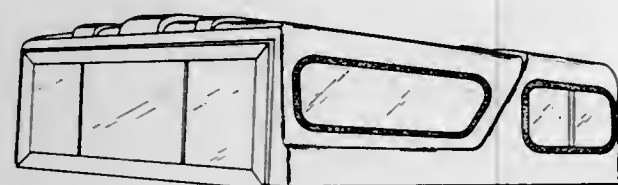


236,455

CANOPY FOR A PICKUP TRUCK BED

William C. Robertson, P.O. Box 338, Stroud, Okla. 74079
Filed Mar. 25, 1974, Ser. No. 454,267
Term of patent 14 years
Int. Cl. D12—16

U.S. Cl. D12—156



236,456

BUMPER CARRIER

Sterling W. Pelton, Western Springs, Paul M. Pelton, West Chicago, and Jerry E. Morgan, Clarendon Hills, Ill., assignors to Advanced Fibre-Glass, Ltd.
Filed Feb. 19, 1974, Ser. No. 443,714
Term of patent 14 years
Int. Cl. D12—16

U.S. Cl. D12—157

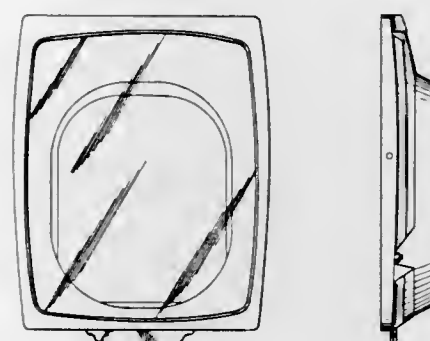


236,457

ATTACHABLE POLARIZED INNER WINDOW FOR CONVEYANCES SUCH AS AIRCRAFT VEHICLES
G. Kurt Davidyan, Gladwyne, Pa., and Richard W. Kraus, Claymont, Del., assignors to American Polarizers, Inc., Reading, Pa.

Filed June 4, 1973, Ser. No. 366,661
Term of patent 14 years
Int. Cl. D12—16

U.S. Cl. D12—183

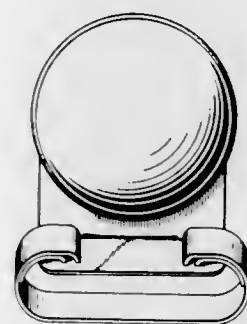


236,458

HAND MOUNTED REAR VIEW MIRROR

Albert Sargis, 300 Main St., P.O. Box 118, New Britain, Conn. 06050
Filed July 9, 1974, Ser. No. 486,761
Term of patent 14 years
Int. Cl. D12—16

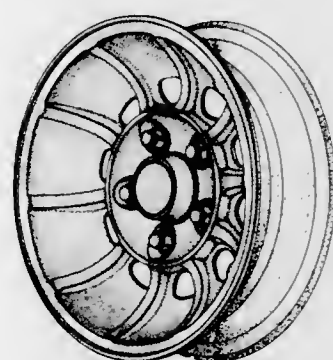
U.S. Cl. D12—189

236,459
WHEEL

Thomas L. Covert, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Dec. 26, 1973, Ser. No. 427,851

Term of patent 7 years
Int. Cl. D12—16

U.S. Cl. D12—211



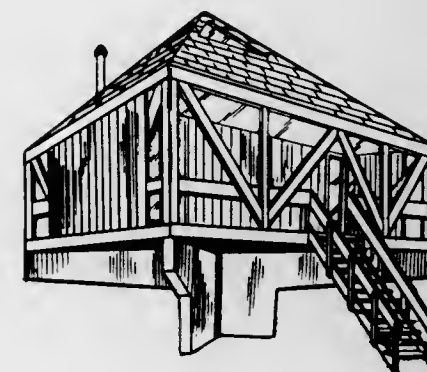
236,460

PEDESTAL COTTAGE

Michael W. Fisher, 11401 Berwick, Livonia, Mich. 48150, and John J. Dziurman, 4860 Balfour, Detroit, Mich. 48224

Filed Oct. 20, 1972, Ser. No. 299,291
Term of patent 14 years
Int. Cl. D25—03

U.S. Cl. D13—1 A



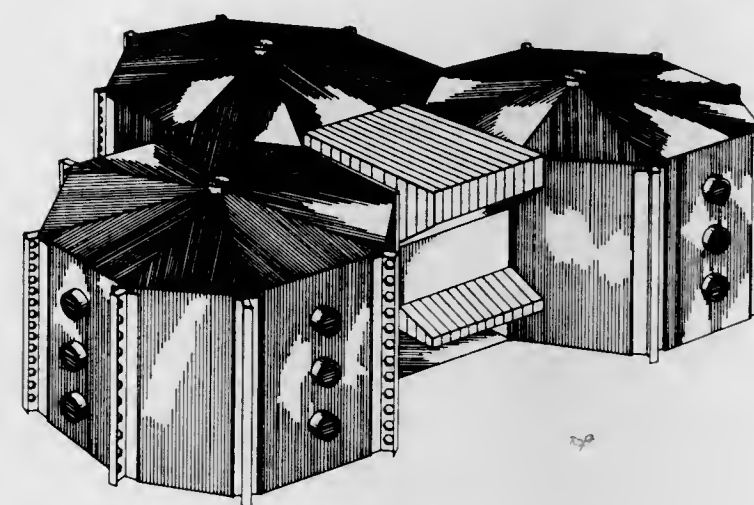
236,461

MULTI-LEVEL THREE POD STORAGE HANGAR FOR AIRCRAFT

Robert W. Fairburn, Suite 1100, 100 W. Clarendon, Phoenix, Ariz. 85013

Filed May 21, 1973, Ser. No. 361,967
Term of patent 14 years
Int. Cl. D25—03

U.S. Cl. D13—1 E

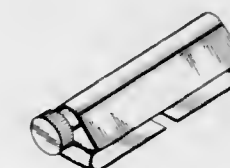
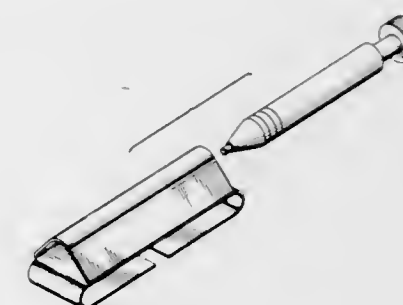


236,462

COMBINED WRIST MOUNTED PENCIL AND SHEATH THEREFOR

Kenneth E. Malberg, 1415 W. North St., Apt. 514, Anaheim, Calif. 92801
Filed Dec. 6, 1973, Ser. No. 422,589
Term of patent 3½ years
Int. Cl. D19—06

U.S. Cl. D19—35



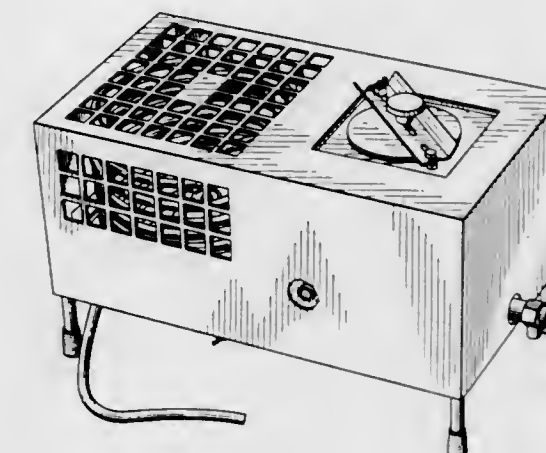
236,463

WATER STILL

Paul S. Giovagnoli, 4200 Birmingham Road, Kansas City, Mo. 64117

Filed May 21, 1973, Ser. No. 361,984
Term of patent 14 years
Int. Cl. D23—01

U.S. Cl. D23—3



236,464

ANGLING ARROW

Joseph P. Mole, Indianapolis, Ind.
(P.O. Box 50030-A, Castleton, Ind. 46250)
Continuation-in-part of design application Ser. No.
313,107, Dec. 7, 1972. This application Mar. 1,
1974, Ser. No. 446,649

Term of patent 14 years
Int. Cl. D22—03

U.S. Cl. D22—12



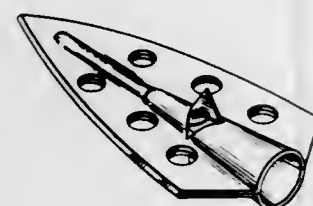
236,465

METAL ARROWHEAD

Wilton Hamilton, 733 S. 31st St.,
South Bend, Ind. 46615
Filed Aug. 19, 1974, Ser. No. 498,713

Term of patent 14 years
Int. Cl. D22—03

U.S. Cl. D22—12



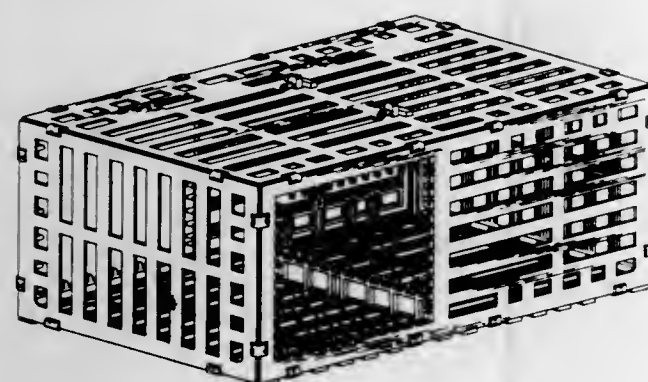
236,466

TRAP FOR TRAPPING CERTAIN CRUSTACEANS AND THE LIKE

Frank A. Torngren, 47 West St.,
Attleboro, Mass. 02703
Filed Jan. 31, 1973, Ser. No. 328,315

Term of patent 14 years
Int. Cl. D22—06

U.S. Cl. D22—18



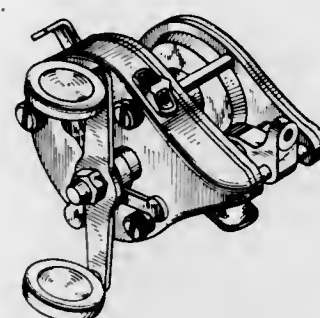
236,467

FISHING REEL

Lewis Childre, Box 535, Foley, Ala. 36535
Filed Aug. 8, 1974, Ser. No. 495,855

Term of patent 14 years
Int. Cl. D22—05

U.S. Cl. D22—25



236,468

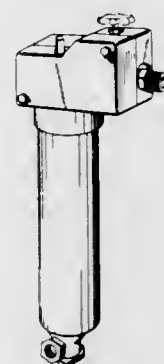
WATER SERVICE LINE CONNECTION

Burton Peters, Jr., 630 Edgevale Drive,
Erie, Pa. 16509

Filed Feb. 16, 1973, Ser. No. 332,784
Term of patent 14 years

Int. Cl. D23—01

U.S. Cl. D23—01



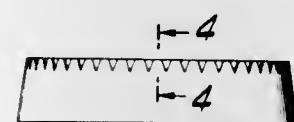
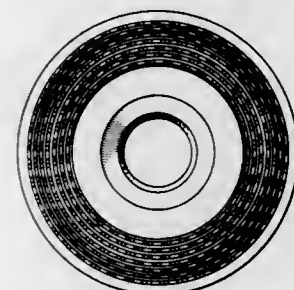
236,469

SPRINKLER HEAD STABILIZER AND PROTECTOR

Peter J. Shicca, 2895 Lorain Road,
San Marino, Calif. 97108
Filed Dec. 12, 1973, Ser. No. 423,939

Term of patent 14 years
Int. Cl. D23—01

U.S. Cl. D23—7



236,470

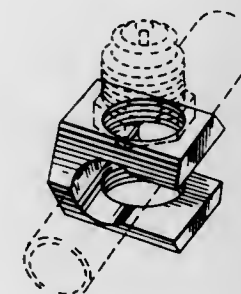
VALVE RECEIVING LINE CLAMP

John W. Mullins, P.O. Box 20524,
Oklahoma City, Okla. 73120
Filed Feb. 19, 1974, Ser. No. 443,896

Term of patent 14 years

Int. Cl. D23—01

U.S. Cl. D23—40



236,471

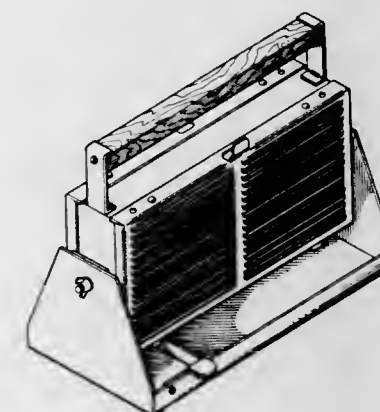
COMBINATION HEATER AND STOVE

Steven L. Wahlstrom, Salt Lake City, Utah, assignor to
Hydro-Flame Corporation, Salt Lake City, Utah
Filed June 3, 1974, Ser. No. 475,983

Term of patent 3½ years

Int. Cl. D23—03; D7—02

U.S. Cl. D23—73



236,472

INCINERATOR

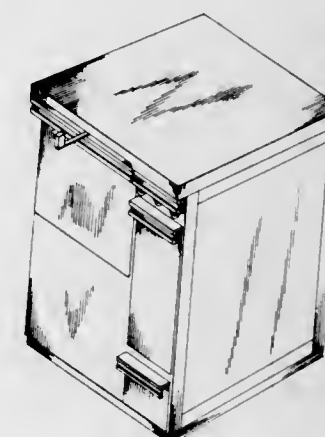
Seth R. Banks, Milwaukee, Wis., assignor to
Raytheon Company

Filed Aug. 7, 1974, Ser. No. 495,342

Term of patent 14 years

Int. Cl. D23—99

U.S. Cl. D23—85



236,473

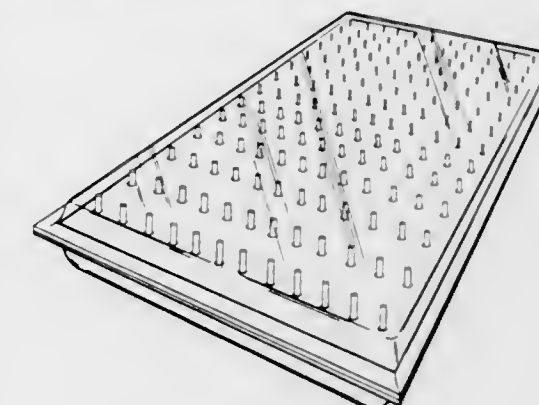
SOLAR COLLECTOR MODULE

Eliot E. Kerlin and James M. Estes, Fort Worth, Tex.,
assignors to Solar Systems, Inc., Tyler, Tex.
Filed Apr. 15, 1974, Ser. No. 460,934

Term of patent 14 years

Int. Cl. D23—03, 04

U.S. Cl. D23—127



236,474

COMBINATION AIR INTAKE AND VECTOR CONTROL FOR POULTRY BUILDINGS

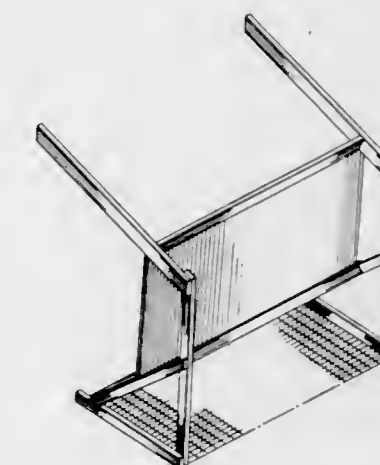
Gerald L. Kitson, 9709 Belding Road,
Rockford, Mich. 49341

Filed Oct. 9, 1973, Ser. No. 404,726

Term of patent 14 years

Int. Cl. D23—04; D25—02

U.S. Cl. D23—153



236,475

INJECTION NOZZLE RIM FOR VENTILATING APPARATUS

Jorgen Holt, Naestved, Denmark, assignor to Nordisk
Ventilator Co. Aktieselskab

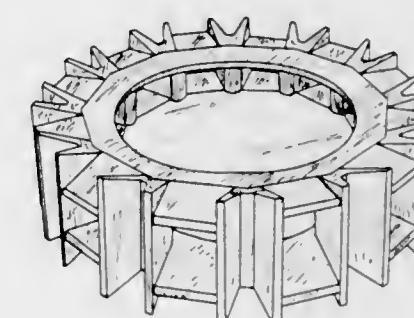
Filed June 20, 1972, Ser. No. 264,505

Claims priority, application Denmark Dec. 22, 1971

Term of patent 14 years

Int. Cl. D23—04

U.S. Cl. D23—163

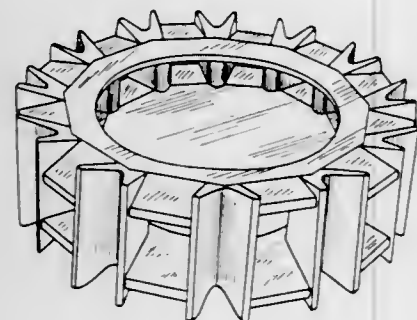


236,476

INJECTION NOZZLE RIM FOR VENTILATING APPARATUS

Jorgen Holt, Naestved, Denmark, assignor to Nordisk Ventilator Co. Aktieselskab
 Filed June 20, 1972, Ser. No. 264,574
 Claims priority, application Denmark Dec. 22, 1971
 Term of patent 14 years
 Int. Cl. D23—04

U.S. Cl. D23—163

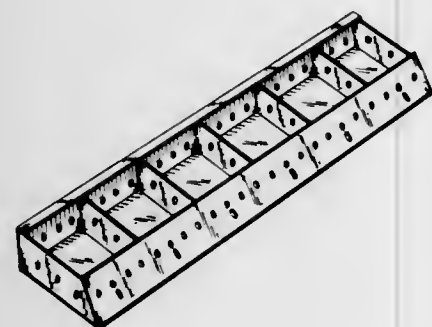


236,477

METAL FORM UNIT

Carl H. Niendorf, Des Moines, Iowa, assignor to Economy Forms Corporation
 Filed May 30, 1974, Ser. No. 474,696
 Term of patent 14 years
 Int. Cl. D25—99

U.S. Cl. D13—1 H

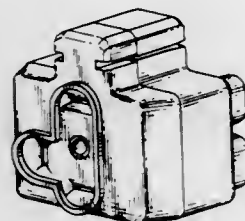


236,478

ELECTRICAL RECEPTACLE

Peter M. Schmidt, Decatur, Ga., assignor to National Service Industries, Inc., Atlanta, Ga.
 Filed Feb. 12, 1973, Ser. No. 331,990
 Term of patent 14 years
 Int. Cl. D13—03

U.S. Cl. D26—1 B

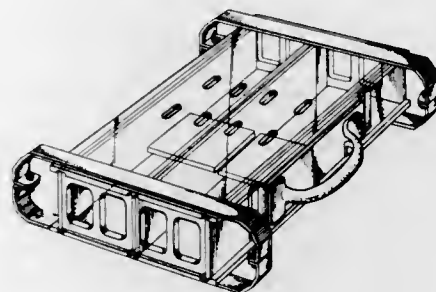


236,479

CABLE SPLICING UNIT

Daniel L. Aron, Van Nuys, Calif., assignor to Mole-Richardson Co., Hollywood, Calif.
 Filed Feb. 4, 1974, Ser. No. 439,217
 Term of patent 14 years
 Int. Cl. D13—03

U.S. Cl. D26—1 C

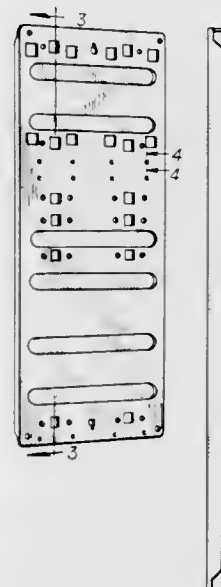


236,480

UNIVERSAL MOUNTING BACKBOARD FOR TELEPHONE INSTALLATIONS

Edmund J. Soltysik, Chicago, and Richard J. Lindeman, Elmwood Park, Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.
 Filed June 24, 1974, Ser. No. 482,215
 Term of patent 14 years
 Int. Cl. D13—03

U.S. Cl. D26—1 E



236,481

CABLE JUNCTION JACKET

James J. Johnston, Cheshire, Conn., assignor to Automatic Equipment Development Corporation, West Haven, Conn.
 Filed Jan. 19, 1973, Ser. No. 325,087
 Term of patent 14 years
 Int. Cl. D13—99

U.S. Cl. D26—5 B

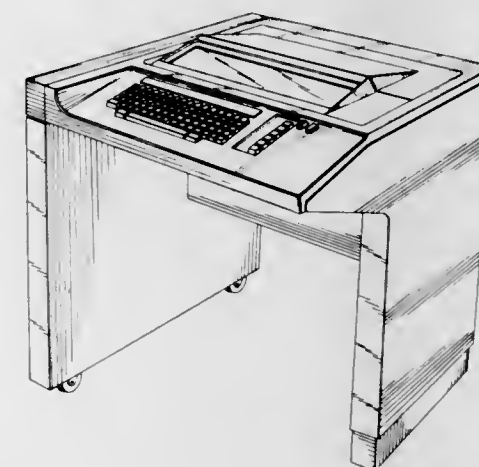


236,482

CONSOLE FOR A DATA SYSTEM

Richard G. Clayton, Detroit, and Jerry J. Sims, Southfield, Mich., assignors to Burroughs Corporation, Detroit, Mich.
 Filed Aug. 27, 1973, Ser. No. 391,787
 Term of patent 14 years
 Int. Cl. D14—02

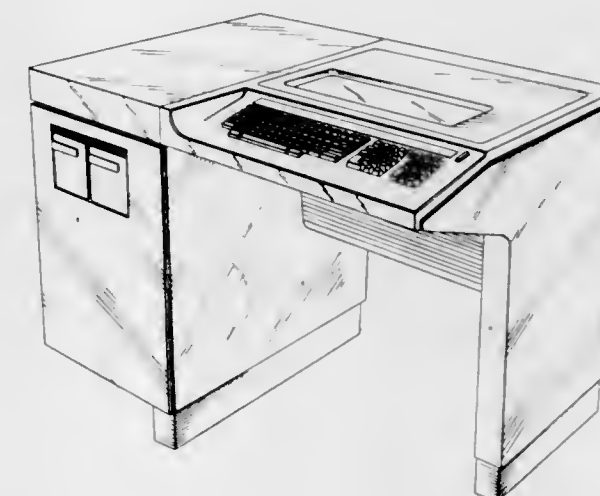
U.S. Cl. D26—5 C



236,484

CONTROL AND KEYBOARD UNIT
 Richard G. Clayton, Detroit, Mich., assignor to Burroughs Corporation, Detroit, Mich.
 Filed Nov. 2, 1973, Ser. No. 412,260
 Term of patent 14 years
 Int. Cl. D14—02

U.S. Cl. D26—5 C



236,483

CALCULATING MACHINE

Myron Beitler, West Orange, and Douglas H. Graham, Boonton, N.J., assignors to Litton Business Systems, Inc.
 Filed Sept. 13, 1973, Ser. No. 397,155
 Term of patent 3½ years
 Int. Cl. D18—01

U.S. Cl. D26—5 C



236,485

CALCULATOR

Dana W. Mox, Glenview, Ill., assignor to Victor Comptometer Corporation
 Filed Dec. 19, 1973, Ser. No. 426,319
 Term of patent 14 years
 Int. Cl. D18—01

U.S. Cl. D26—5 C



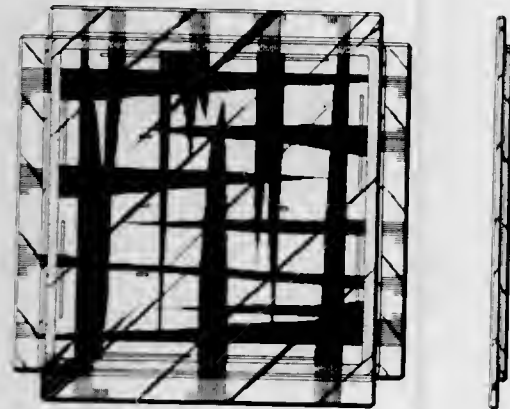
236,486

**LIGHT EMITTING GAS DISCHARGE MATRIX
DISPLAY PANEL**

Fred E. Mansur, Temperance, Mich., and Charles W. Salisbury, Rising Sun, and John C. Baker, Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio
Continuation-in-part of design application Ser. No. 159,081, July 1, 1971, now Patent No. 230,982, dated Mar. 26, 1974. This application Jan. 4, 1974, Ser. No. 430,999

The term of this patent subsequent to Mar. 26, 1988, has been disclaimed
Term of patent 14 years
Int. Cl. D14—02

U.S. Cl. D26—5 C



236,487

**LIGHT EMITTING GAS DISCHARGE MATRIX
DISPLAY PANEL**

John C. Baker, Toledo, Ohio, Fred E. Mansur, Temperance, Mich., and Charles W. Salisbury, Rising Sun, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio
Continuation-in-part of design application Ser. No. 137,096, Apr. 23, 1971, now Patent No. 231,232, dated Apr. 9, 1974. This application Jan. 4, 1974 Ser. No. 431,000

The term of this patent subsequent to Apr. 9, 1988, has been disclaimed
Term of patent 14 years
Int. Cl. D14—02

U.S. Cl. D26—5 C



236,488

CALCULATOR CASE

Gregory F. Fossella, Marshfield, Mass., assignor to Bowmar/Ali, Inc., Acton, Mass.

Filed Mar. 6, 1974, Ser. No. 448,478

Term of patent 14 years

Int. Cl. D18—01

U.S. Cl. D26—5 C



236,489

CARD READER OR THE LIKE

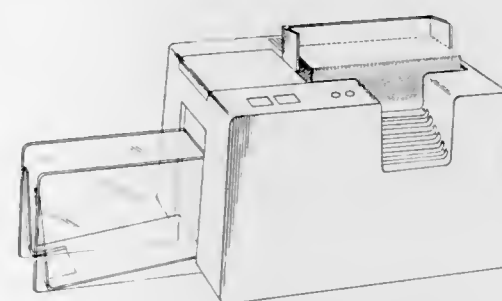
Charles A. Pycha and Frank Wilkey, Jr., Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 8, 1974, Ser. No. 459,247

Term of patent 14 years

Int. Cl. D14—02

U.S. Cl. D26—5 C



236,490

**CARD PUNCH AND PRINTER FOR
DATA PROCESSING**

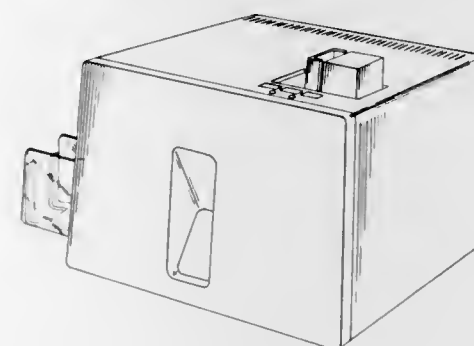
Charles A. Pycha, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 19, 1974, Ser. No. 462,480

Term of patent 14 years

Int. Cl. D14—02

U.S. Cl. D26—5 C



236,491

COMPUTER CABINET

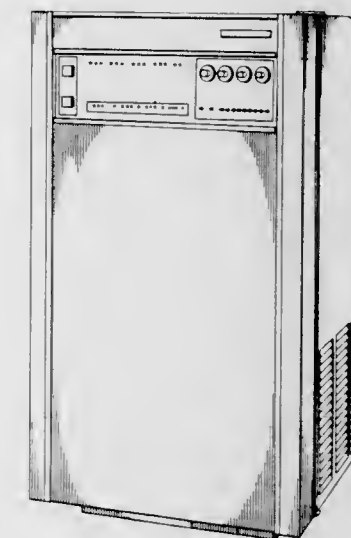
Robert M. Siegel, Los Angeles, F. Gordon Mackay, Tarzana, and James J. Hall, Encino, Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed June 17, 1974, Ser. No. 479,698

Term of patent 14 years

Int. Cl. D14—02

U.S. Cl. D26—5 C



236,492

BATTERY CASE

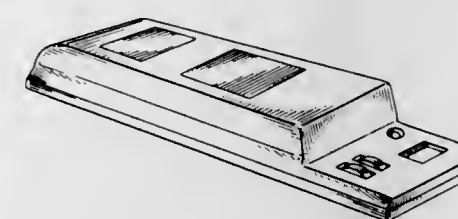
Ulf Helgesson, Woodland Hills, Calif., assignor to Diatek, Inc., San Diego, Calif.

Filed Jan. 8, 1973, Ser. No. 321,803

Term of patent 14 years

Int. Cl. D13—02

U.S. Cl. D26—6



236,493

ELECTRIC BATTERY

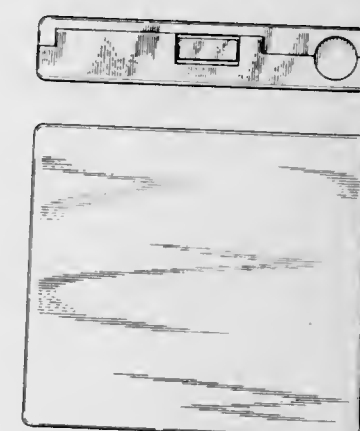
Gordon E. Kaye, R.D. 1, Howland Road, Garrison, N.Y. 10524

Filed Sept. 4, 1973, Ser. No. 393,764

Term of patent 14 years

Int. Cl. D13—02

U.S. Cl. D26—6



236,494

REED FOR A REED SWITCH

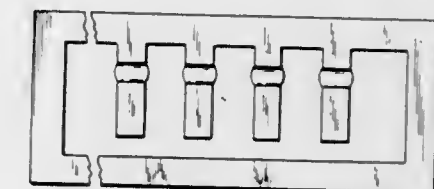
Bernard Edward Shlesinger, Jr., 9411 Macklin Court, Alexandria, Va. 22309

Filed July 9, 1974, Ser. No. 486,884

Term of patent 14 years

Int. Cl. D13—03

U.S. Cl. D26—13 R



236,495

REED FOR A REED SWITCH

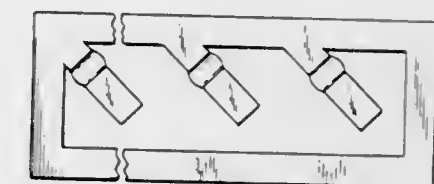
Bernard Edward Shlesinger, Jr., 9411 Macklin Court, Alexandria, Va. 22309

Filed July 9, 1974, Ser. No. 486,885

Term of patent 14 years

Int. Cl. D13—03

U.S. Cl. D26—13 R



236,496

REED FOR A REED SWITCH

Bernard Edward Shlesinger, Jr., 9411 Macklin Court, Alexandria, Va. 22309

Filed July 9, 1974, Ser. No. 486,887

Term of patent 14 years

Int. Cl. D13—03

U.S. Cl. D26—13 R

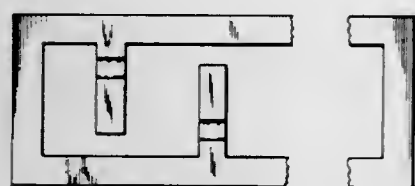


236,497

REED FOR A REED SWITCH

Bernard Edward Shlesinger, Jr., 9411 Macklin Court,
Alexandria, Va. 22309
Filed July 9, 1974, Ser. No. 486,888
Term of patent 14 years
Int. Cl. D13—03

U.S. Cl. D26—13 R



236,498

REED FOR A REED SWITCH

Bernard Edward Shlesinger, Jr., 9411 Macklin Court,
Alexandria, Va. 22309
Filed July 9, 1974, Ser. No. 486,890
Term of patent 14 years
Int. Cl. D13—03

U.S. Cl. D26—13 R

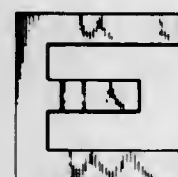


236,499

REED FOR A REED SWITCH

Bernard Edward Shlesinger, Jr., 9411 Macklin Court,
Alexandria, Va. 22309
Filed July 9, 1974, Ser. No. 486,894
Term of patent 14 years
Int. Cl. D13—03

U.S. Cl. D26—13 R



236,500

REED FOR A REED SWITCH

Bernard Edward Shlesinger, Jr., 9411 Macklin Court,
Alexandria, Va. 22309
Filed July 9, 1974, Ser. No. 486,895
Term of patent 14 years
Int. Cl. D13—03

U.S. Cl. D26—13 R

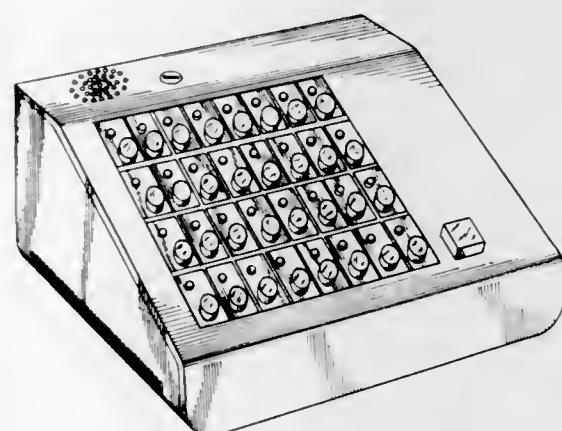


236,501

TELEPHONE CALL SUPERVISORY UNIT OR THE LIKE

Ronald I. Conway, Port Ewen, Robert V. Jones, Kingston,
John J. Natoli, Woodstock, and John V. Stram, Pough-
keepsie, N.Y., assignors to International Business
Machines Corp., Armonk, N.Y.
Filed Oct. 29, 1973, Ser. No. 410,863
Term of patent 14 years
Int. Cl. D14—03

U.S. Cl. D26—14 A

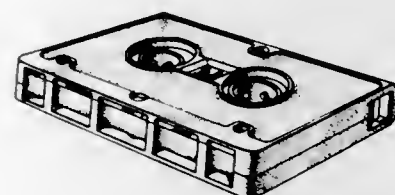


236,502

TAPE CARTRIDGE OR SIMILAR ARTICLE

Shoichi Saito, Tokyo-to, Japan, assignor to Olympus
Optical Co., Ltd., Tokyo-to, Japan
Filed Nov. 26, 1973, Ser. No. 419,131
Claims priority, application Japan May 25, 1973
Term of patent 14 years
Int. Cl. D14—99

U.S. Cl. D26—14 B

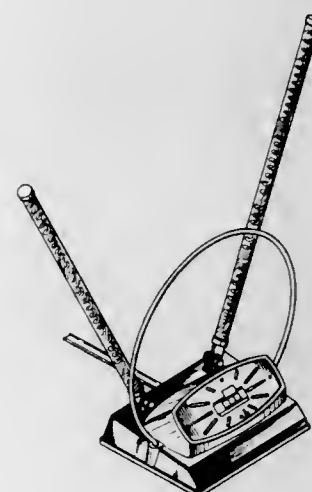


236,503

INDOOR TELEVISION ANTENNA

Marvin P. Middlemark, 96 Store Hill Road,
Old Westbury, N.Y. 11568
Filed Dec. 19, 1974, Ser. No. 534,233
Term of patent 14 years
Int. Cl. D14—03

U.S. Cl. D26—14 F



236,505

INDOOR TELEVISION ANTENNA

Marvin P. Middlemark, 96 Store Hill Road,
Old Westbury, N.Y. 11568
Filed Dec. 17, 1974, Ser. No. 535,198
Term of patent 14 years
Int. Cl. D14—03

U.S. Cl. D26—14 F

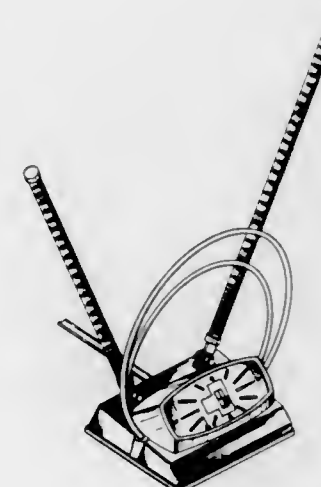


236,506

INDOOR TELEVISION ANTENNA

Marvin P. Middlemark, 96 Store Hill Road,
Old Westbury, N.Y. 11568
Filed Dec. 23, 1974, Ser. No. 535,219
Term of patent 14 years
Int. Cl. D14—03

U.S. Cl. D26—14 F

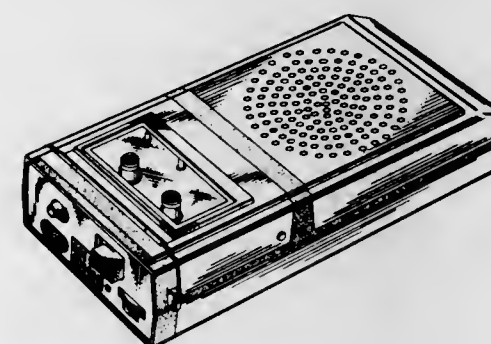


236,504

TAPE RECORDER

Yasuo Hattori, Musashino-shi, Tokyo, Japan, assignor to
Olympus Optical Company, Ltd., Tokyo, Japan
Filed Sept. 3, 1974, Ser. No. 502,609
Claims priority, application Japan Mar. 5, 1974
Term of patent 14 years
Int. Cl. D14—01

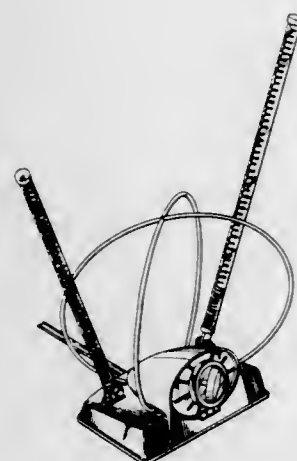
U.S. Cl. D26—14 B



236,507

INDOOR TELEVISION ANTENNA
 Marvin P. Middlemark, 96 Store Hill Road,
 Old Westbury, N.Y. 11568
 Filed Jan. 23, 1975, Ser. No. 543,422
 Term of patent 14 years
 Int. Cl. D14—03

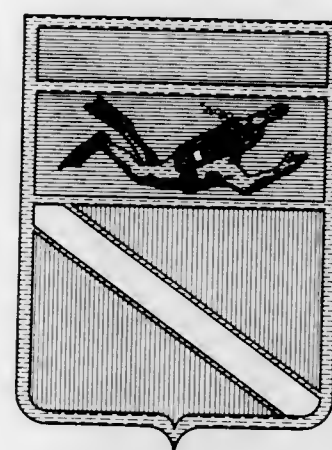
U.S. Cl. D26—14 F



236,509

SKIN DIVING INSIGNIA
 Erwin Feuer, Miami, Fla. (% Interwagen Corporation,
 8819 SW. 129th Terrace, Kendall, Fla. 33156)
 Filed Apr. 13, 1973, Ser. No. 350,725
 Term of patent 14 years
 Int. Cl. D11—02

U.S. Cl. D29—2 R



236,510

**COMBINED BUTTERFLY METAL SCULPTURE
 AND STAND**

Kenneth M. Scott, 2450 W. 18th St.,
 Eugene, Oreg. 97402
 Filed June 22, 1973, Ser. No. 372,476
 Term of patent 14 years
 Int. Cl. D11—02

U.S. Cl. D29—23 B



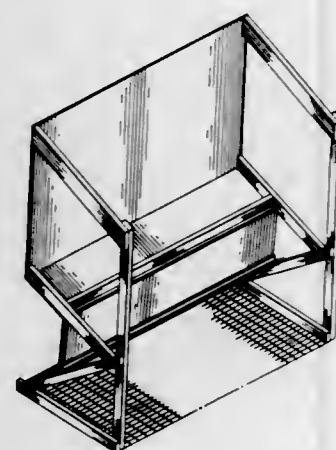
236,508

**COMBINED AIR INTAKE AND VECTOR CONTROL
 FOR POULTRY BUILDING**

Gerald L. Kitson, 9709 Belding Road,
 Rockford, Mich. 49341
 Continuation-in-part of design application Ser. No.
 404,726, Oct. 9, 1973. This application June 24,
 1974, Ser. No. 482,374

Term of patent 14 years
 Int. Cl. D23—04

U.S. Cl. D23—139

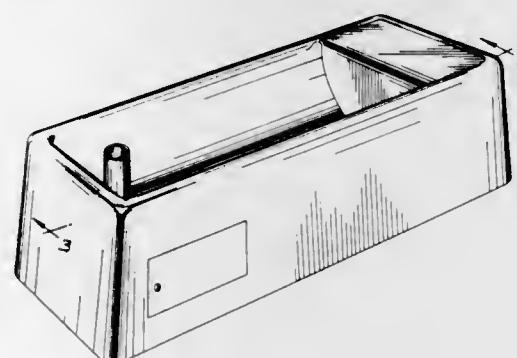


236,511

WATERING TROUGH

Richard E. Bunker, 5202 E. Washington St.,
 Phoenix, Ariz. 85034
 Filed Apr. 16, 1973, Ser. No. 351,282
 Term of patent 14 years
 Int. Cl. D30—03

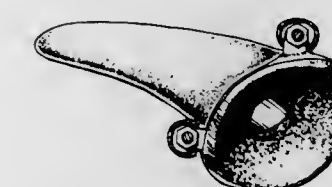
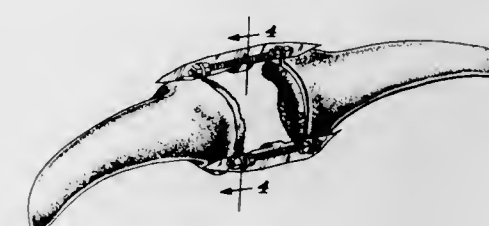
U.S. Cl. D30—13



236,512

ARTIFICIAL HORN SET FOR A STEER
 Robert L. Kelton, 1895 Hayden Lane,
 Tempe, Ariz. 85281
 Filed Apr. 25, 1974, Ser. No. 464,120
 Term of patent 14 years
 Int. Cl. D30—99

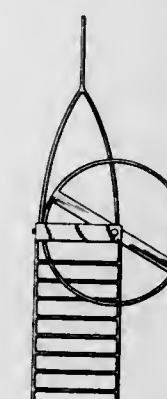
U.S. Cl. D30—33



236,513

ANIMAL EXERCISER
 James S. Palmer, 72—36 112th St.,
 Forest Hills, N.Y. 11375
 Filed May 15, 1974, Ser. No. 469,991
 Term of patent 14 years
 Int. Cl. D30—07

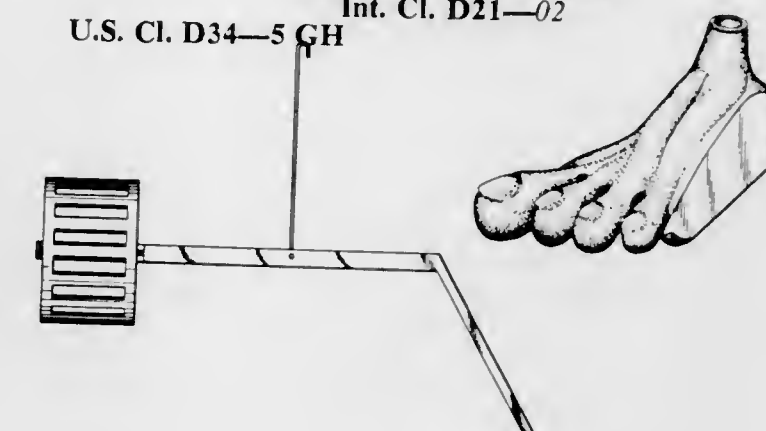
U.S. Cl. D30—42



236,514

GOLF PUTTER HEAD
 Fernand R. Descoteaux, 9 Lamplight Drive,
 Kensington, Conn. 06037
 Filed Jan. 12, 1973, Ser. No. 323,039
 Term of patent 14 years
 Int. Cl. D21—02

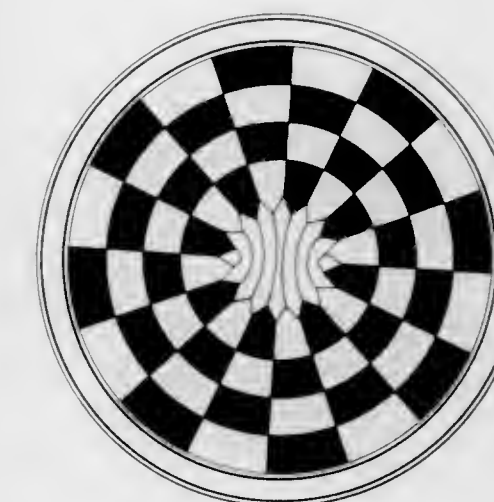
U.S. Cl. D34—5 GH



236,515

MULTIPLE GAME BOARD
 William A. Squiers, 1329 W. Maple St.,
 Kalamazoo, Mich. 49008
 Filed Dec. 10, 1973, Ser. No. 423,252
 Term of patent 14 years
 Int. Cl. D21—01

U.S. Cl. D34—5 SS



236,516

GOLF CLUB COVER
 Emile L. Bibeau, 5 Colony Way, Nashua, N.H. 03060
 Filed Apr. 29, 1974, Ser. No. 464,778
 Term of patent 14 years
 Int. Cl. D21—02

U.S. Cl. D34—5 GB

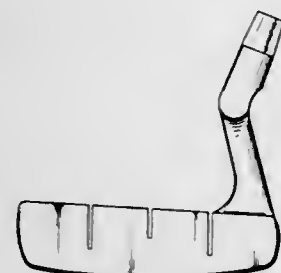


236,517

GOLF PUTTER HEAD

Raymon W. Cook, San Antonio, Tex., assignor to Ray Cook Golf Putters, Inc., San Antonio, Tex.
Continuation of abandoned design applications Ser. No. 392,536 and Ser. No. 392,537, both Aug. 29, 1973.
This application June 14, 1974, Ser. No. 479,451
Term of patent 14 years
Int. Cl. D21—02

U.S. Cl. D34—5 GH

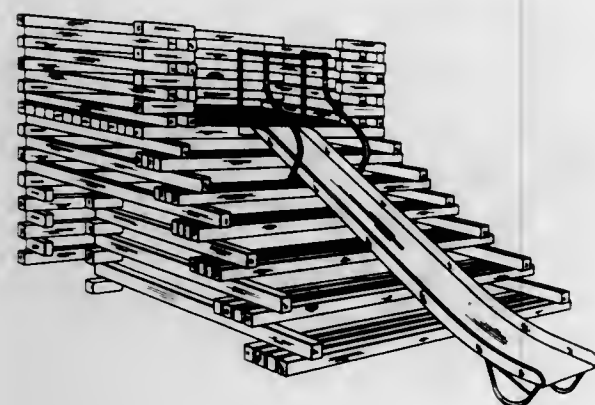


236,518

COMBINED PLAYGROUND CLIMBER AND SLIDE

Robert S. Wormser, Ocala, Fla., assignor to Game Time, Inc.
Filed June 14, 1974, Ser. No. 479,482
Term of patent 14 years
Int. Cl. D21—03

U.S. Cl. D34—5 E

236,519
STILT

Peter F. Boyce, 118 E. Rio Grande Ave., Wildwood, N.J. 08260
Filed Oct. 12, 1973, Ser. No. 405,793
Term of patent 14 years
Int. Cl. D21—01

U.S. Cl. D34—14 E

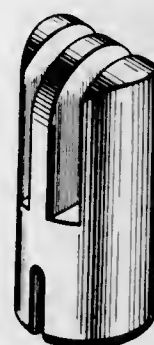


236,520

JOINT FOR A TOY FIGURE

Godtfred Kirk Christiansen, Billund, Denmark, assignor to Interlego, A.G., Zug, Switzerland
Filed Apr. 11, 1972, Ser. No. 243,123
Claims priority, application Denmark Oct. 15, 1971
Term of patent 14 years
Int. Cl. D21—01

U.S. Cl. D34—15 GG



236,521

DOUBLE JOINT FOR A TOY FIGURE

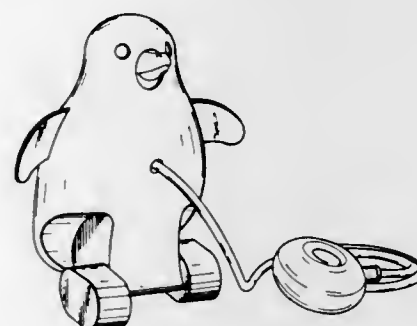
Godtfred Kirk Christiansen, Billund, Denmark, assignor to Interlego, A.G., Zug, Switzerland
Filed Apr. 11, 1972, Ser. No. 243,124
Claims priority, application Denmark Oct. 15, 1971
Term of patent 14 years
Int. Cl. D21—01

U.S. Cl. D34—15 GG

236,522
PULL TOY

Ronald J. Campanell, Blackwood, N.J., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Dec. 10, 1973, Ser. No. 423,406
Term of patent 14 years
Int. Cl. D21—01

U.S. Cl. D34—15 D



236,523

TOY TRAIN

Victor G. Reiling, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Dec. 20, 1973, Ser. No. 426,519
Term of patent 14 years
Int. Cl. D21—01

U.S. Cl. D34—15 MM

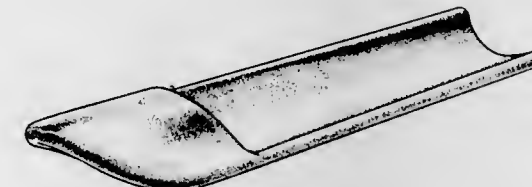


236,524

WATER SKI

Johnny L. Hughes, Lancaster, Calif. (4745 W. K-10, Quartz Hill, Calif. 93534), and Ross A. Rhodes, Riviera, Ariz. (P.O. Box 40, Greenfield, Okla. 73043)
Filed Apr. 8, 1974, Ser. No. 458,771
Term of patent 14 years
Int. Cl. D21—02

U.S. Cl. D34—40

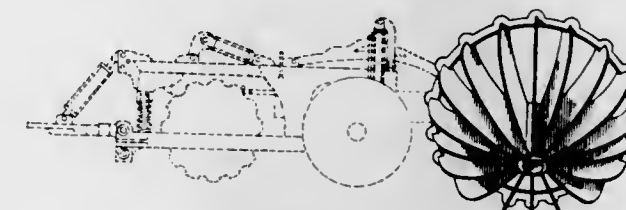


236,525

WHEEL FOR A STUMP PULLING MACHINE

Gene A. Ulve, Lake Mills, Iowa, assignor to Tree-Mate Corporation, Lake Mills, Iowa
Filed Feb. 9, 1973, Ser. No. 331,031
Term of patent 14 years
Int. Cl. D15—03

U.S. Cl. D40—1 E

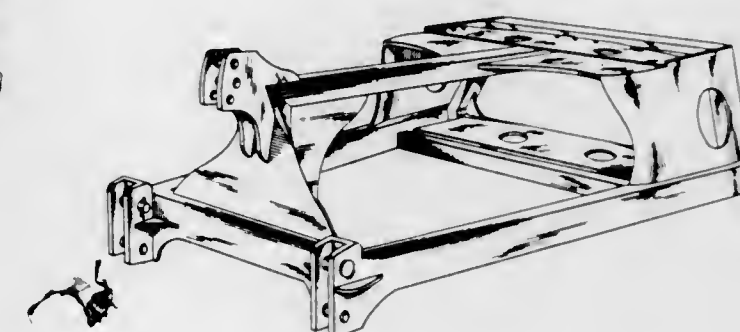


236,526

TRAILER FRAME FOR A STUMP PULLING MACHINE

Gene A. Ulve, Lake Mills, Iowa, assignor to Tree-Mate Corporation, Lake Mills, Iowa
Filed Feb. 9, 1973, Ser. No. 331,106
Term of patent 14 years
Int. Cl. D15—03

U.S. Cl. D40—1 E

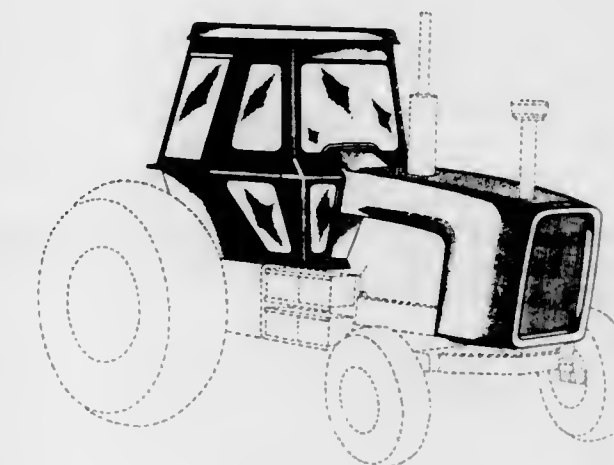


236,527

COMBINED TRACTOR CAB AND HOOD

Joseph A. Rinaldi, Oradell, N.J., and James F. Fulton, Mamaroneck, N.Y., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.
Continuation-in-part of design application Ser. No. 371,290, June 18, 1973, and abandoned application Ser. No. 371,291, June 18, 1973. This application Sept. 20, 1974, Ser. No. 507,939
Term of patent 14 years
Int. Cl. D12—09

U.S. Cl. D40—5



236,528

TRACTOR CAB

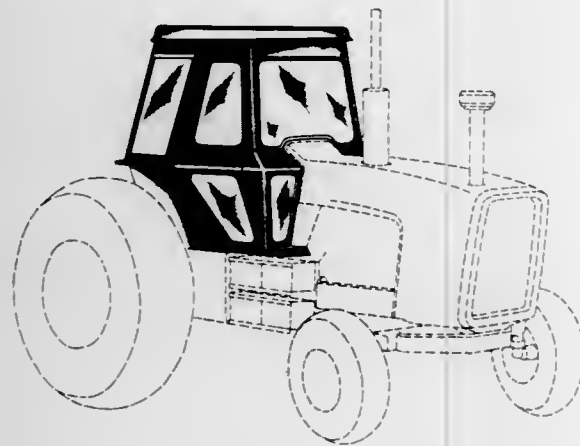
Joseph A. Rinaldi, Oradell, N.J., and James F. Fulton, Mamaroneck, N.Y., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed June 18, 1973, Ser. No. 371,290

Term of patent 14 years

Int. Cl. D12—09

U.S. Cl. D40—5



236,529

YARN HOLDER

Dolores M. Courtney, Alamo, Calif.
(P.O. Box 877, Danville, Calif. 94526)

Filed Mar. 18, 1974, Ser. No. 452,429

Term of patent 14 years

Int. Cl. D15—06

U.S. Cl. D47—5



236,530

FINGER RING

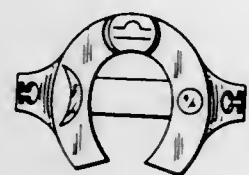
Eugene A. Poulin, 85 Royal Oak Road,
New Britain, Conn. 06053

Continuation-in-part of abandoned design application Ser. No. 242,915, Apr. 10, 1972. This application Jan. 21, 1974, Ser. No. 434,660

Term of patent 14 years

Int. Cl. D11—01

U.S. Cl. D45—10 B



236,531

CHARM OR SIMILAR ARTICLE

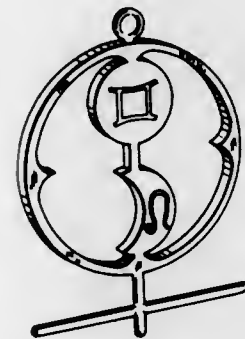
Eugene A. Poulin, 85 Royal Oak Road,
New Britain, Conn. 06053

Continuation-in-part of abandoned design application Ser. No. 309,956, Nov. 28, 1972. This application Jan. 21, 1974, Ser. No. 434,800

Term of patent 14 years

Int. Cl. D11—01

U.S. Cl. D45—17



236,532

CANDLESTICK

Christel Holmgren-Exner and Christer Holmgren, Naestved, Denmark, assignors to Illums Bolighus International A/S, Copenhagen, Denmark

Filed Feb. 25, 1974, Ser. No. 445,676

Claims priority, application Germany Aug. 28, 1973

Term of patent 14 years

Int. Cl. D26—01

U.S. Cl. D48—2



236,533

PROJECTION LAMP

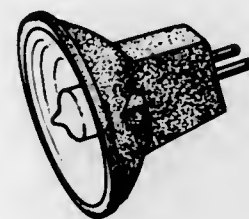
Julian J. Wierzbicki, Peabody, Mass., assignor to GTE Sylvania Incorporated, Danvers, Mass.

Filed Apr. 22, 1974, Ser. No. 462,900

Term of patent 14 years

Int. Cl. D26—05

U.S. Cl. D48—20 E



236,534

LAMP

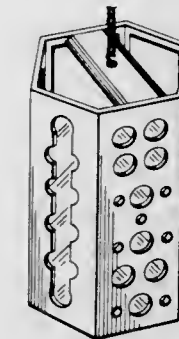
Earl L. Mixon, 424 W. Peach St.,
Compton, Calif. 90222

Filed July 5, 1974, Ser. No. 485,907

Term of patent 14 years

Int. Cl. D26—05

U.S. Cl. D48—23 R



236,535

VEHICLE LIGHT

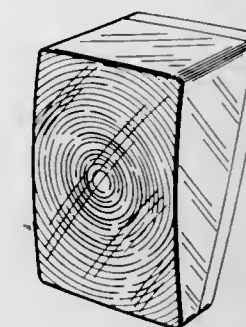
Harold H. Larsen, Long Beach, and Robert E. Oehring, Norwalk, Calif., assignors to Bates Industries, Inc.

Filed Oct. 12, 1973, Ser. No. 405,745

Term of patent 14 years

Int. Cl. D26—06

U.S. Cl. D48—32 R



236,536

CASH REGISTER OR SIMILAR ARTICLE

Hiromi Isozaki, Kanagawa, Japan, assignor to NCR Corporation

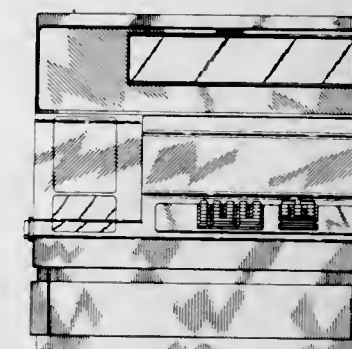
Filed Feb. 25, 1974, Ser. No. 445,195

Claims priority, application Japan Oct. 25, 1973

Term of patent 14 years

Int. Cl. D20—02

U.S. Cl. D52—4 A



236,537

COVER CASE FOR A CASH REGISTER OR SIMILAR ARTICLE

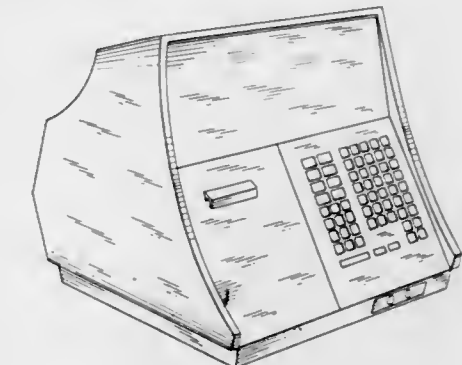
Arnaldo Hernandez, Fairfield, N.J., assignor to Digital Computer Controls, Inc., Fairfield, N.J.

Filed June 17, 1974, Ser. No. 479,848

Term of patent 14 years

Int. Cl. D20—01

U.S. Cl. D52—4 A



236,538

SORTING TRAY

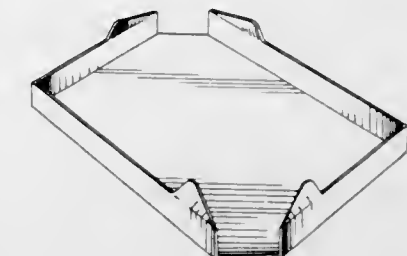
Thomas W. Adams, 43 Kayetan Drive NE.,
Sierra Vista, Ariz. 85635

Filed Aug. 31, 1973, Ser. No. 393,438

Term of patent 14 years

Int. Cl. D15—99

U.S. Cl. D55—1 H



236,539

BEGINNER'S HARP

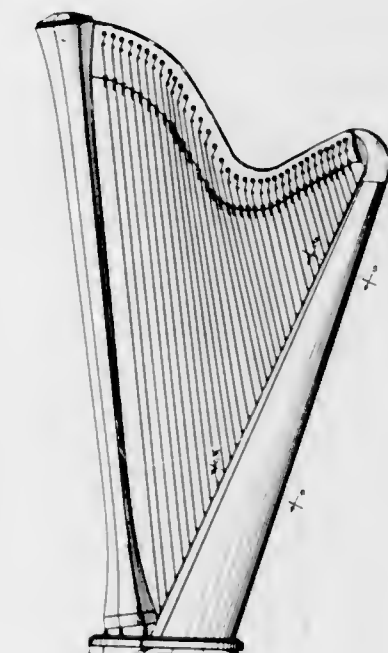
Walter Krasicki, 5810 W. Schubert,
Chicago, Ill. 60639

Filed Dec. 27, 1972, Ser. No. 319,027

Term of patent 14 years

Int. Cl. D17—03

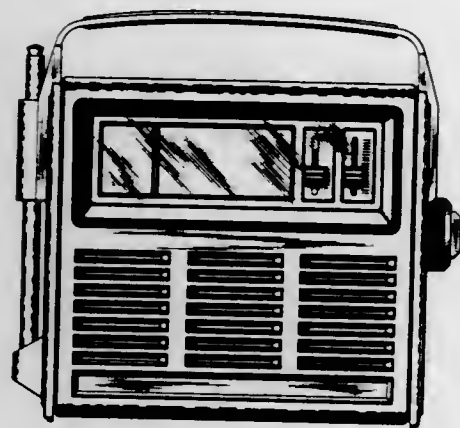
U.S. Cl. D56—1 A



236,540
PORTABLE RADIO

John T. Houlihan, Fayetteville, N.Y., assignor to General Electric Company, Syracuse, N.Y.
Filed Mar. 25, 1974, Ser. No. 454,089
Term of patent 14 years
Int. Cl. D14-03

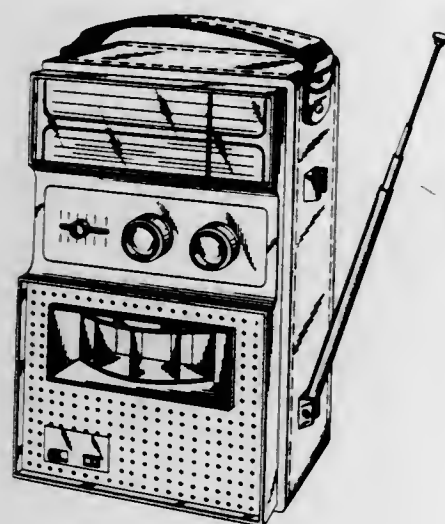
U.S. Cl. D56-4 B



236,541
RADIO

Morris Fink, 49 Remsen Road, Great Neck, N.Y. 11024
Original design application Jan. 11, 1973, Ser. No. 322,767, now Patent No. 233,067. Divided and this application Aug. 1, 1974, Ser. No. 493,545
Term of patent 14 years
Int. Cl. D14-03

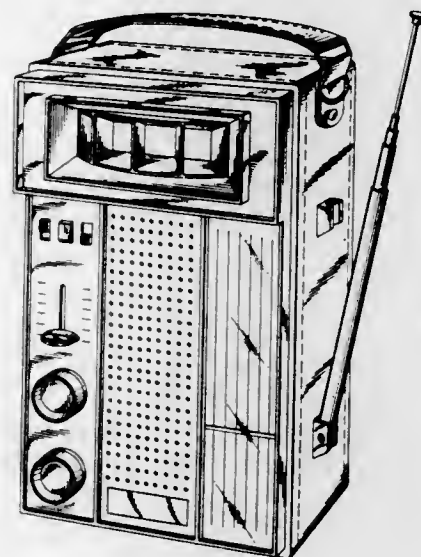
U.S. Cl. D56-4 B



236,542
RADIO

Morris Fink, 49 Remsen Road, Great Neck, N.Y. 11024
Original design application Jan. 11, 1973, Ser. No. 322,767, now Patent No. 233,067. Divided and this application Aug. 1, 1974, Ser. No. 493,546
Term of patent 14 years
Int. Cl. D14-03

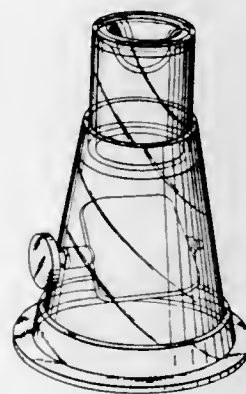
U.S. Cl. D56-4 B



236,543

TRANSPARENT LIQUID LENS MICROSCOPE
Carl F. Berger, Livonia, Mich., and Harold T. Neuberger, South Casco, Maine, assignors to Houghton Mifflin Company, Boston, Mass.
Filed Nov. 12, 1973, Ser. No. 414,871
Term of patent 14 years
Int. Cl. D16-06

U.S. Cl. D57-1 E



236,544

MICROFORM VIEWER
Norbert T. Kuypers, Lake Orion, Mich., assignor to Xerox Corporation, Stamford, Conn.
Filed Jan. 8, 1973, Ser. No. 321,892
Term of patent 14 years
Int. Cl. D16-03

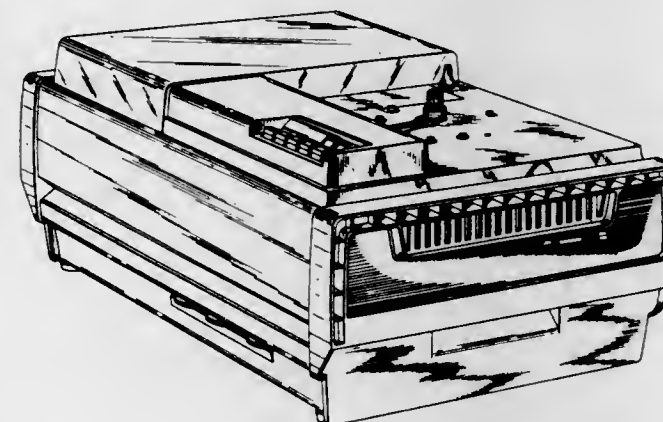
U.S. Cl. D61-1 N



236,545
VIDEOPLAYER

James H. Sias, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Jan. 12, 1973, Ser. No. 323,018
Term of patent 14 years
Int. Cl. D16-02

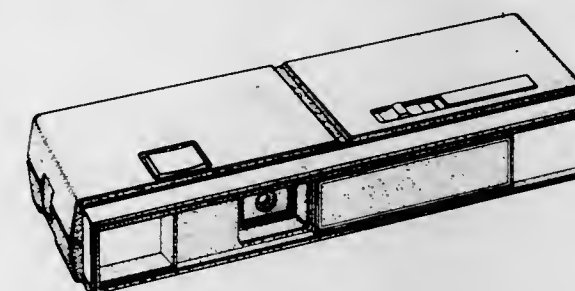
U.S. Cl. D61-1 K



236,546

CAMERA HOUSING
Moto Shimano and Walter Nakano, Los Angeles, Calif., assignors to Optigon Research & Development Corporation, Santa Monica, Calif.
Filed Nov. 28, 1973, Ser. No. 419,591
Term of patent 14 years
Int. Cl. D16-01

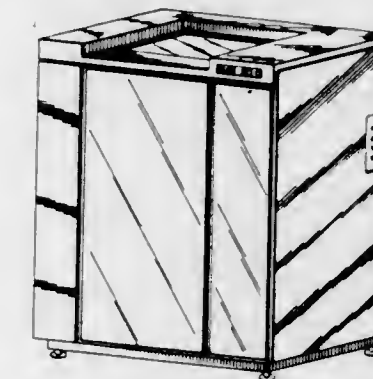
U.S. Cl. D61-1 B



236,547

CABINET FOR A LINE PRINTER
Richard G. Clayton, Detroit, and Jerry J. Sims, Southfield, Mich., assignors to Burroughs Corporation, Detroit, Mich.
Filed Aug. 13, 1973, Ser. No. 387,682
Term of patent 14 years
Int. Cl. D18-02

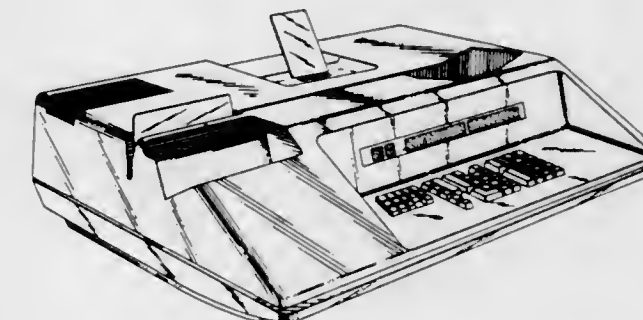
U.S. Cl. D64-11 R



236,548

CASE FOR A CHECK ENCODER
James W. Jacobson, St. Nom-la-Breteche, France, and Richard G. Clayton, Detroit, and Jerry J. Sims, Southfield, Mich., assignors to Burroughs Corporation, Detroit, Mich.
Filed Sept. 7, 1973, Ser. No. 395,276
The term of this patent subsequent to Aug. 12, 1989, has been disclaimed
Term of patent 14 years
Int. Cl. D11-01

U.S. Cl. D64-11 C



236,549

AERATOR FOR MINNOW BUCKETRobert S. Donaldson, 824 S. Central,
Chanute, Kans. 66720

Filed Oct. 9, 1973, Ser. No. 404,314

Term of patent 14 years

Int. Cl. D15—02

U.S. Cl. D65—1 R



236,550

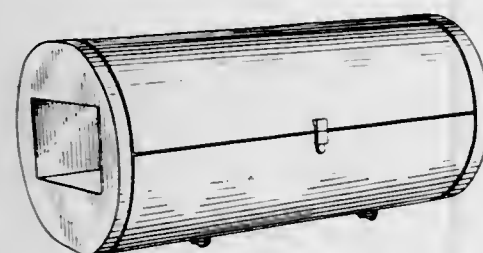
**CRYOGENIC FREEZER MODULE OR
SIMILAR ARTICLE**Lyle L. Cann, Peotone, Ill., assignor to
Chemetron Corporation

Filed Feb. 9, 1973, Ser. No. 331,123

Term of patent 14 years

Int. Cl. D15—07

U.S. Cl. D67—2 R



236,551

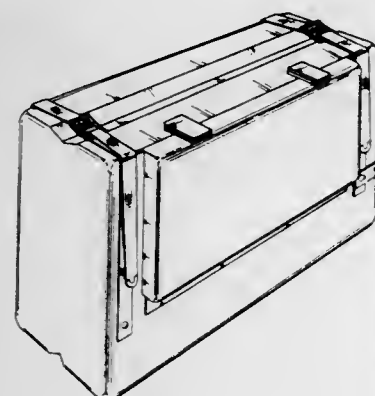
CONTAINER FOR A CANOEGerald D. Shook, 8 Wyoming Drive,
Huntington Station, N.Y. 11746

Filed Jan. 14, 1972, Ser. No. 218,052

Term of patent 14 years

Int. Cl. D3—02

U.S. Cl. D87—1 R



236,552

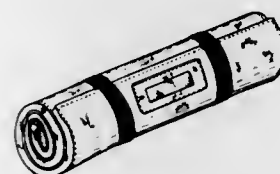
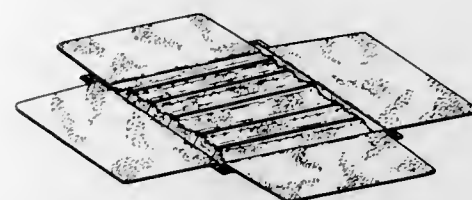
RING AND CUFF LINK DISPLAY ROLLLeo F. Wagner, 29 Capri Drive, Roslyn, N.Y. 11576,
and Milton N. Schreiber, 155—04 33rd Ave., Flushing,
N.Y. 11354

Filed May 2, 1973, Ser. No. 356,577

Term of patent 14 years

Int. Cl. D3—02

U.S. Cl. D87—1 R



236,553

**CARRYING CASE FOR HIGH FIDELITY
EQUIPMENT OR SIMILAR ARTICLES**Dieter Rams, Kronberg, Germany, assignor to Braun
Aktiengesellschaft, Frankfurt am Main, Germany

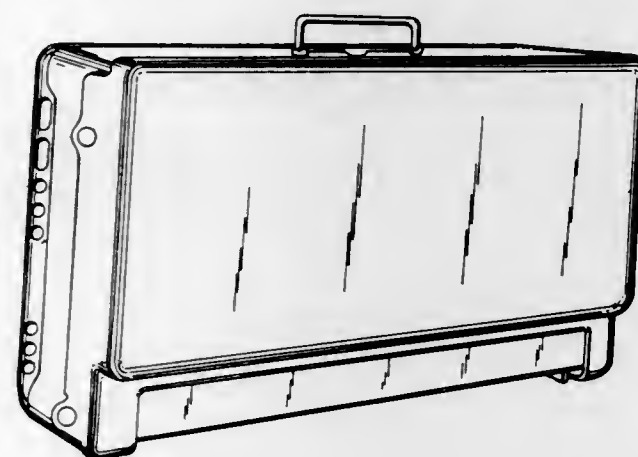
Filed Dec. 5, 1973, Ser. No. 421,759

Claims priority, application Germany Nov. 1, 1973

Term of patent 14 years

Int. Cl. D3—02

U.S. Cl. D87—1



236,554

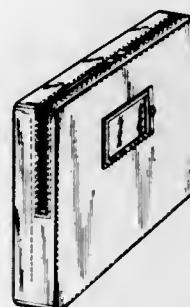
**SHIPPING CONTAINER FOR X-RAY FILM OR
SIMILAR ARTICLE**Woodrow W. Sands, 1810 38th St.,
Des Moines, Iowa 50310

Filed Dec. 26, 1973, Ser. No. 428,114

Term of patent 14 years

Int. Cl. D3—02

U.S. Cl. D87—1 R



236,555

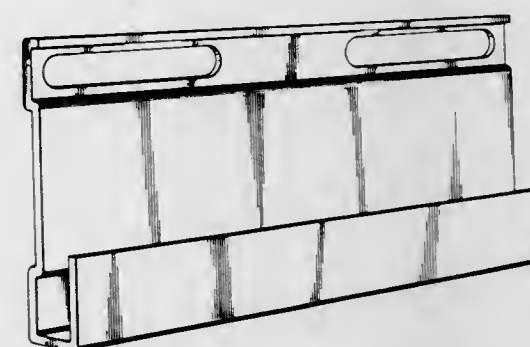
**PROTECTIVE STORAGE CARRIER FOR
A MACHINE KNIFE**Robert I. Becker, Paxton, and Edward J. Stephens, North
Attleboro, Mass., assignors to L. Hardy Company,
Worcester, Mass.

Filed Apr. 25, 1974, Ser. No. 463,994

Term of patent 14 years

Int. Cl. D3—02

U.S. Cl. D87—1 R



236,556

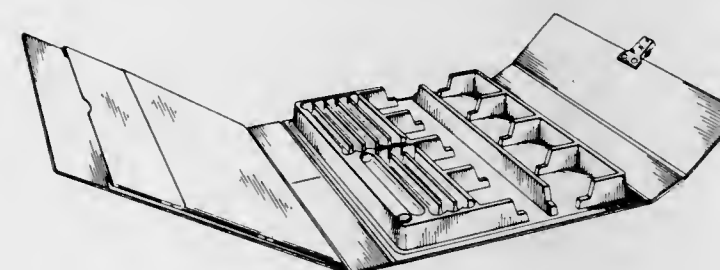
**CARRYING CASE FOR COLORISTS MATERIALS
OR THE LIKE**Albert E. Di Paola, Fishers and Louis C. Sandstrom,
Fairport, N.Y., assignors to Xerox Corporation, Stam-
ford, Conn.

Filed Oct. 15, 1973, Ser. No. 406,772

Term of patent 14 years

Int. Cl. D3—02

U.S. Cl. D87—3 R



236,557

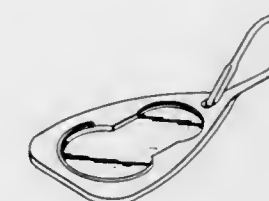
KEY RETAINERHarry S. Rubin, 7847 Williams Ave.,
Philadelphia, Pa. 19150

Filed Apr. 1, 1974, Ser. No. 457,015

Term of patent 14 years

Int. Cl. D3—07

U.S. Cl. D87—8



236,558

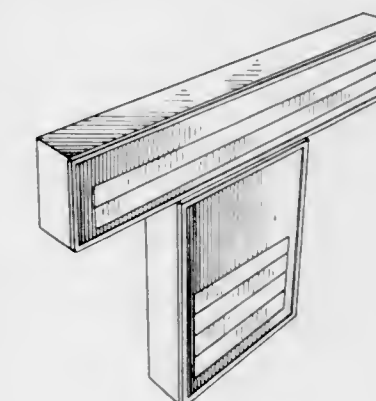
VARIABLE MESSAGE HIGHWAY SIGNRobert A. Nelson, 567 Deal Parkway,
West Allenhurst, N.J. 07711

Filed May 13, 1974, Ser. No. 469,629

Term of patent 14 years

Int. Cl. D20—03

U.S. Cl. D96—12 R



LIST OF PATENTEEES

TO WHOM

PATENTS WERE ISSUED ON THE 26TH DAY OF AUGUST, 1975

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- A. E. Staley Manufacturing Company: *See—*
Bond, John L.; Rogols, Saul; and Salter, John W., 3,901,725.
- A. J. Gerrard & Company: *See—*
Simich, Emil, 3,901,292.
- A/S Kongsberg Vapenfabrik: *See—*
Rognmo, Tore; and Schou, Tore, 3,901,156.
- Aarts, Hubertus Henricus: *See—*
Vermeulen, Geert Jan; and Aarts, Hubertus Henricus, 3,901,286.
- Aktiebolaget IRO: *See—*
Jacobsson, Kurt Arne Gunnar, 3,901,052.
- Aktiebolaget Leo: *See—*
Lichtneckert, Stefan; Lundgren, Claes; and Ferno, Ove, 3,901,248.
- AB Vargarda Armaturfabrik: *See—*
Riis, Voldemar, 3,901,261.
- Abbott Laboratories: *See—*
Nara, Takashi; Takasawa, Seigo; Okachi, Ryo; Kawamoto, Isao; Kumakawa, Masaru; Yamamoto, Mitsuyoshi; and Sato, Seiji, 3,901,972.
- Winn, Martin; Lynn, Kathleen Riley; and Martin, Yvonne Conolly, 3,901,926.
- Abraham, William W.: *See—*
Lanahan, John H.; and Abraham, William W., 3,901,796.
- ABU Aktiebolag: *See—*
Turesson, Karl Ture Ingvar, 3,901,457.
- Ackerman, Eugene J. Neck brace for athletes. 3,900,896, Cl. 2-2,000.
- Ackerman, Eugene J. Athletic shield. 3,900,898, Cl. 2-22,000.
- Ackermann, Otto: *See—*
Lenz, Arnold; Ackermann, Otto; and Bleh, Otto, 3,901,946.
- Adams, Frederick John, to Cam Gears Limited. Vehicle steering system. 3,901,344, Cl. 180-79,20R.
- Adams, John F. Bird feeder. 3,901,192, Cl. 119-51,00R.
- Addressograph Multigraph Corporation: *See—*
Deutsch, Fritz A., 3,901,144.
Holland, Norman, 3,901,147.
Shelffo, Loren E., 3,901,695.
- Adiutori, Eugene F., to Diamond Power Specialty Corporation. Soot blower with gas temperature or heat flow detecting means. 3,901,081, Cl. 73-357,000.
- Adkison, Maxie C. Cyclone separator. 3,901,799, Cl. 209-144,000.
- Adret-Electronic: *See—*
Charbonnier, Roger, 3,902,013.
- Advance Transformer Company: *See—*
Feinberg, Albert E., 3,902,099.
- Aerojet-General Corporation: *See—*
Gold, Marvin H.; and Marcus, Henry J., 3,901,974.
- Aeronca, Inc.: *See—*
Logsdon, Hillard Glenn, 3,901,275.
- Aeronutronic Ford Corporation: *See—*
Lynn, Wilbur E., 3,902,191.
- Agfa-Gevaert Aktiengesellschaft: *See—*
Ranz, Erwin; Bossert, Friedrich; Schutz, Heinz Dieter; Rintelen, Harald Von; Delzenne, Gerard Albert; and De Jaeger, Antoine August, 3,901,710.
- Schlagheck, Norbert; Schultes, Herbert; Schneider, Horst; and Huber, Hans-Peter, 3,901,435.
- Ugi, Ivar; Seibert, Heinrich; Hoffmann, Peter; Marquarding, Dieter; von Rintelen, Harald; Rapz, Erwin; and Himmelmann, Wolfgang, 3,901,708.
- Vanheerentals, Jacques, 3,901,598.
- Aglitsky, Vladimir Efimovich: *See—*
Alexandrov, Adolf Moritsovich; Aglitsky, Vladimir Efimovich; Kantor, Ilya Solomonovich; Topolyansky, Jury Arnoldovich; and Tsimbler, Jury Abramovich, 3,901,462.
- Agridustrial Electronics, Inc.: *See—*
Vogel, Ronald F., 3,901,079.
- Ahl, Bernhard. Apparatus for making concrete buildings in accordance with slide molding techniques. 3,901,477, Cl. 254-107,000.
- Ahlgren, Nils Harald. Adjustable apparatus for sliding form construction. 3,901,472, Cl. 249-20,000.
- Ahmed, Adel Abdel Aziz, to RCA Corporation. Switching circuit having multiple operating modes. 3,902,079, Cl. 307-255,000.
- Aikawa, Hideyuki: *See—*
Ueno, Haruo; Oizumi, Kyohei; Ishikawa, Hideo; Hamada, Hisawaki; and Aikawa, Hideyuki, 3,901,868.
- Ainsworth, Glenn C. Method of forming a rotary motor or pump. 3,900,942, Cl. 29-156,40R.
- Air Products and Chemicals, Inc.: *See—*
Conlon, William, 3,901,995.
Retallick, William B., 3,901,821.
- Airco, Inc.: *See—*
Wallace, Dean R., 3,901,246.
- Aisin Seiki Kabushiki Kaisha: *See—*
Inada, Masami, 3,901,559.
- Aizenberg, Julian Borisovich; Bukhman, Genokh Borukhovich; and Andreenko, Vladimir Ignatievich. Interior lighting fixture. 3,902,056, Cl. 240-1,0LP.
- Ajero, Fortunato S., to Hughes Company, Inc. Container filler with excess product removal assembly. 3,901,294, Cl. 141-124,000.
- Akey, John G.; and Wachter, William J. Method and apparatus for detecting malassembled nuclear fuel rods. 3,901,090, Cl. 73-67,200.
- Akzona Incorporated: *See—*
Callahan, John J.; and Shapiro, Sydney H., 3,901,715.
- Alberti, Alberto; Bacciarelli, Sergio; and Ballini, Giuliano, to B. F. Goodrich Company, The. Process for preventing discoloration of olefinic polymers containing vanadium catalyst residues. 3,901,859, Cl. 260-80,780.
- Alberts, Heinrich; and Bartl, Herbert, to Bayer Aktiengesellschaft. Graft copolymers. 3,901,954, Cl. 260-878,00R.
- Albrecht, Paul N.: *See—*
Schuller, James T.; Hendrickson, William W.; and Albrecht, Paul N., 3,901,366.
- Albright, Glenn W.: *See—*
Maltbie, Dale E.; and Albright, Glenn W., 3,901,444.
- Albright, Jay Donald, to American Cyanamid Company. Process of oxidation of primary and secondary alcohols to the corresponding carbonyl derivatives. 3,901,896, Cl. 260-288,00B.
- Alders, Kurt: *See—*
Meisen, Klaus; Alders, Kurt; Teetz, Wolfgang; and Schiffer, Gunter, 3,901,053.
- Aldred, Robert: *See—*
Staley, John George; and Aldred, Robert, 3,901,319.
- Alexander, Claude P., to Dow Chemical Company, The. Flare article. 3,901,152, Cl. 102-37,800.
- Alexander, Donald R.; and Johnson, Carl W., to Alexander, Donald R. Embossing press. 3,901,143, Cl. 101-18,000.
- Alexander, James C., to Quaker Oats Company, The. Resin shaft and bearing for sandbox toy. 3,901,570, Cl. 308-238,000.
- Alexandrov, Adolf Moritsovich; Aglitsky, Vladimir Efimovich; Kantor, Ilya Solomonovich; Topolyansky, Jury Arnoldovich; and Tsimbler, Jury Abramovich. Device for braking containers. 3,901,462, Cl. 243-38,000.
- Alich, Gunther. Method of and apparatus for measuring the distance between cooperating rollers of a rolling mill. 3,902,114, Cl. 324-34,00D.
- Allen, Fred E.; Flynn, Joseph C.; Panas, Walter; Bonino, Joseph S.; and Colgan, William, to Wheaton Industries, Inc. Apparatus for transfer and coating of bottles. 3,901,180, Cl. 118-2,000.
- Allen, Robert E., Jr., to DU-AL Corporation. Disposable cryosurgical instrument. 3,901,241, Cl. 128-303,100.
- Allert, Kurt. Hose clamp. 3,900,932, Cl. 24-274,00R.
- Allied Chemical Corporation: *See—*
Garner, Eugene F., 3,901,747.
Murphy, Kevin P., 3,901,817.
Radke, Donald G., 3,901,530.
Stephenson, Robert L.; Pfeiffer, Robert C.; and Loomba, Yogen-dra Singh, 3,901,461.
- Allinquant, Fernard Michel; and Allinquant, Jacques Gabriel. Motor-driven machine for tenderizing pieces of food such as pieces of meat. 3,900,918, Cl. 17-25,000.
- Allinquant, Jacques Gabriel: *See—*
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- Allis-Chalmers Corporation: *See—*
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- Allport, Dennis Charlton; and Briggs, Graham, to Imperial Chemical Industries Limited. Polymeric materials. 3,901,959, Cl. 264-51,000.
- Alpine Montan Aktiengesellschaft & Etablissement Wanderfeld & Co.: *See—*
Filter, Walther; and Filter, Claus, 3,901,289.
- Alt, Gerhard H. 1-Naphthoic acid, 2,2-dimethylhydrazide. 3,901,686, Cl. 71-118,000.
- Aluterv Aluminiumipari Tervezo Vallalat: *See—*
Harsanyi, Jozsef; and Nagy, Peter, 3,901,803.
- Alza Corporation: *See—*
Michaels, Alan S.; Bashwa, John D.; and Zaffaroni, Alejandro, 3,901,232.
- Amar, Henry E.; and Grady, John J., to Technicon Instruments Corporation. Method and apparatus for the peak monitoring the results of analysis apparatus. 3,902,052, Cl. 235-151,350.
- Amco Engineering Company: *See—*
Begitschke, Donald W.; and Olsen, Warren J., 3,901,571.
- Amdahl Corporation: *See—*
Amdahl, Gene M.; Chiba, Takashi; and Tobias, Richard J., 3,902,163.
- Amdahl, Gene M.; Chiba, Takashi; and Tobias, Richard J., to Amdahl Corporation. Buffered virtual storage and data processing system. 3,902,163, Cl. 340-172,500.
- Amerace Corporation: *See—*
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Americal Corporation: *See—*
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American Challenger Corporation: *See—*
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American Cyanamid Company: *See—*
Albright, Jay Donald, 3,901,896.
Anderson, George Washington, 3,901,871.
Bienenfeld, Harold, 3,901,589.
Shukla, Ravindra Shivprasad; and Pinto, Joseph Diago, 3,901,655.
Tomcufcik, Andrew Stephen, 3,901,944.
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Santilli, Arthur A.; Scotese, Anthony C.; and Tomarelli, Rudolph M., 3,901,887.
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American Monitor Corporation: *See—*
Durkos, Larry George; Christie, Charles Dewey; Denney, Jerry William; Trusty, Jon Caton; Reynolds, Walter Lee; Cole, Robert Wayne; Brinson, Fred Edwin; and Lovell, Allen Kent, 3,901,656.
American Optical Corporation: *See—*
Strack, Richard R.; Siegmund, Walter P.; and Smith, Merton L., 3,901,674.
Wu, Jimmy C. C., 3,901,718.
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AMF Incorporated: *See—*
Wireman, Jack; and Tellinghuisen, Richard Dean, 3,901,756.
Amor, William H., Jr.; and Di Franco, Thomas, to Picker Corporation. Support system for x-ray apparatus. 3,902,070, Cl. 250-525.000.
AMP Incorporated: *See—*
Dola, Frank Peter, 3,902,168.
Hoover, Charles Donald, 3,901,575.
Paulus, Clarence Leonard; and Stauffer, Larry Ronald, 3,901,574.
Amsted Industries Incorporated: *See—*
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Anchor Hocking Corporation: *See—*
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Anderson, Alan S., to Williamson Corporation. Radiometric apparatus. 3,902,067, Cl. 250-342.000.
Anderson, Charles J.; and Gould, David S., to Caterpillar Tractor Company. Nitrided boron steel. 3,901,740, Cl. 148-16.600.
Anderson Company, The: *See—*
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Anderson Development Company: *See—*
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Anderson, Franklin C.; and Dorschner, Irvin E. Folding car top carrier. 3,901,422, Cl. 224-42.10E.
Anderson, George H.: *See—*
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Anderson, George Washington, to American Cyanamid Company. Process of preparing alpha-L-aspartyl-L-phenylalanine methyl ester. 3,901,871, Cl. 260-112.500.
Andersson, Stig Olof; to Svensson, Sture. Universal jointing arrangement for tubular profiles. 3,901,613, Cl. 403-406.000.
Andreenko, Vladimir Ignatievich: *See—*
Aizenberg, Julian Borisovich; Bukhman, Genokh Borukhovich; and Andreenko, Vladimir Ignatievich, 3,902,056.
Angelov, Todor Dimitrov: *See—*
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Angner, Ronald Joseph; Feiner, Alexander; and Olsen, Merle Victor, to Bell Telephone Laboratories, Incorporated. Telephone switching system trunk and service circuits. 3,902,101, Cl. 317-137.000.
Angstadt, Howard P.; and Blackburn, Carl H., to Sun Research and Development Co. Process for vapor phase amoxidation. 3,901,900, Cl. 260-294.900.
Anheuser-Busch, Incorporated: *See—*
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Anthony, Thomas R.; and Cline, Harvey E., to General Electric Company. Method of making deep diode devices. 3,901,736, Cl. 148-1.500.
Anzalone, Robert S. Hair cutting apparatus. 3,900,949, Cl. 30-133.000.
Aoki, Yoshikazu, to Tachikawa Research Institute. Method for the aftertreatment of paper or nonwoven fabrics made of incompletely regenerated viscose fibers. 3,901,760, Cl. 162-157.00C.
Aoyama, Hiroshi: *See—*
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Aqua-Chem, Inc.: *See—*
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Arbaud, Paul Georges Louis, to Kuhlmann, Uguine. Composition for the colouration of polyurethanes. 3,901,648, Cl. 8-4.000.
Arco Industries Corporation: *See—*
Rubright, Phillip L., 3,901,964.
Armas, Gregorio Cardenas. Improved burning fuel oil burning system. 3,901,644, Cl. 431-217.000.
Armco Steel Corporation: *See—*
Johnson, Thomas B., 3,901,335.
Armington, Alton F.; and Posen, Harold, to United States of America, Air Force. Laser window materials. 3,901,723, Cl. 106-286.000.
Armstrong Cork Company: *See—*
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Armstrong, Henry P. Drawer extensible slide chassis. 3,901,564, Cl. 308-3.800.
Arnaud, Edwin H., Jr.: *See—*
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Arnold, Carter H., to Western Gear Corporation. Traction type hoist. 3,901,479, Cl. 254-174.000.
Arnold, Fred E., to United States of America, Air Force. Preparation of polybenzimidazoles. 3,901,855, Cl. 260-78.40R.
Armstein, Bennett R.; Cobin, Jacob C., deceased; and by Cobin, Evelyn, administratrix, to United States of America, Air Force. Flight control device. 3,901,464, Cl. 244-46.000.
Arthur D. Little, Inc.: *See—*
Potopinski, Michael A., 3,901,813.
Artom, Auro, to CSELT Centro Studi e Laboratori Telecomunicazioni. High-speed PCM data-transmission system. 3,902,165, Cl. 340-172.500.
Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Hokonoki, Hisao; Ishikawa, Tatsuo; Sakashita, Masahira; Kusunose, Tetsuhiro; and Fukuma, Noboru, 3,901,989.
Kohn, Mitsuo; Nomura, Minoru; Shibasaki, Akio; Yuasa, Takeo; and Mutoh, Yoshihiko, 3,901,851.
Ashida, Akira; and Takahashi, Kiyoshi, to Canon Kabushiki Kaisha. Loop control system in motion picture projector or the like. 3,901,590, Cl. 352-14.000.
Assarsson, Per G.; King, Paul A.; and Yen, Steven N., to Union Carbide Corporation. Disposable absorbent articles containing hydrogel composites having improved fluid absorption efficiencies and processes for preparation. 3,901,236, Cl. 128-284.000.
Asserback, Roy: *See—*
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Aubert, Jean. Driving unit for displacing the retention barrier of a water-slope system for inland navigation. 3,901,037, Cl. 61-9.000.
Auer, John H., Jr., to General Signal Corporation. Short headway switching system. 3,901,160, Cl. 104-130.000.
Auger, Bernard; Resnelle, Pierre; and Teisseire, Paul Jose, to Societe Anonyme des Etablissements Roure-Bertrand Fils & Justin Dupont. 1,1-Dialkyl naphthopyrans. 3,901,924, Cl. 260-345.200.
Automobiles Peugeot: *See—*
Lecaillet, Pierre; and Dressler, Bruno, 3,901,519.
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Axen, Udo F., to Upjohn Company, The. Acylated bicyclic lactones. 3,901,923, Cl. 260-343.300.
Ayer, Lloyd M., to High Precision Incorporated. Holder for chain-saw sharpening files. 3,901,105, Cl. 76-36.000.
Ayres, Waldemar A., to Becton, Dickinson and Company. Stopper-piston. 3,901,402, Cl. 215-248.000.
B. F. Goodrich Company, The: *See—*
Alberti, Alberto; Bacciarelli, Sergio; and Ballini, Giuliano, 3,901,859.
Kurtz, Donald M., 3,901,850.
Babcock & Wilcox Limited: *See—*
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Babin, Benton P. Irrigation system emitters with renewable filters. 3,901,448, Cl. 239-145.000.
Babler, Egon S., to Teletype Corporation. Pivoted actuator arm assembly. 3,901,145, Cl. 101-93.480.
Bacciarelli, Sergio: *See—*
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Bailey, Bill E., to Americal Corporation. Method for producing panty hose. 3,900,899, Cl. 2-224.00R.
Bailey, Edmond I.: *See—*
Parker, William H.; and Bailey, Edmond I., 3,901,315.
Bailey, Richard Elton, to O. M. Scott and Sons Company. Process for the selective control of weeds in Kentucky bluegrass. 3,901,687, Cl. 71-120.000.
Baillie, Robert A., to Great Canadian Oil Sands Limited. Method for upgrading bitumen froth. 3,901,791, Cl. 208-188.000.
Baird, James E.: *See—*
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Baker, John Gordon, to Baker Manufacturing Company. Drinking fountain pump stand. 3,901,440, Cl. 239-28.000.
Baker Manufacturing Company: *See—*
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Baker Oil Tools, Inc.: *See—*
Fortenberry, Dewitt L., 3,901,318.
Baker, Raymond N.: *See—*
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Baldwin-Gegenheimer Corporation: *See—*
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Balevski, Anguel Tonchev; and Nikolov, Ivan Dimov, to Institut Po Metaloznanie I Tehnologia Na Metalite. Apparatus for continuous casting of metals. 3,901,305, Cl. 164-259.000.
Ball Brothers Service Corporation: *See—*
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Ball Computer Products, Inc.: *See—*
Wilson, Rosser S., 3,902,127.
Ball, Harry; and Steward, Henry A., to Technical Fabricators, Inc. Rotary filter apparatus having continuous web supporting a sheet filter media. 3,901,809, Cl. 210-387.000.
Balle, Gerhard: *See—*
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Ballester, Gabriel. Expandable ring having segment with spring-engaged crossed arms. 3,901,045, Cl. 63-15.650.
Ballini, Giuliano: *See—*
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Balogh, Tibor: *See—*
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Banbury, Alan Reginald, to Marston Excelsior Limited. Pressure relief apparatus. 3,901,259, Cl. 137-68.000.
Banners, Delbert J.; and Simmons, Calvin J., to Ford Motor Company. Unidirectional flow control valve. 3,901,272, Cl. 137-513.500.
Barber-Colman Company: *See—*
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Barnes, Stephen John. Rotary mowers. 3,901,004, Cl. 56-17.300.
Barnoski, Michael K.: *See—*
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Basile, Peter A.; and Kolessar, Andrew, to Amerace Corporation. Taper-proof wire fabric fence clamps. 3,901,480, Cl. 256-32.000.
Bassett, William W.: *See—*
Hall, Thomas E.; and Bassett, William W., 3,902,151.
Bastian, Jean-Michel; Hasspacher, Klaus; and Strasser, Michael, to Sandoz Ltd. Certain spiro-pyrrolidines. 3,901,916, Cl. 260-326.380.
Baudner, Siegfried: *See—*
Haupt, Heinz; and Baudner, Siegfried, 3,901,870.
Baum, Helmut, to International Standard Electric Corporation. Xeroradiographic plate. 3,901,703, Cl. 96-1.500.
Bauman, John F. Apparatus for dispensing pavement sealer material. 3,901,411, Cl. 222-167.000.
Baut, Jacques; and Journee, Paul. Connecting device for oscillating arms of windshield wiper blade assemblies. 3,900,917, Cl. 15-250.320.
Baxter Laboratories, Inc.: *See—*
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Colln, Reimer; Sirrenberg, Wilhelm; Behrenz, Wolfgang; and Hammann, Ingeborg, 3,901,956.
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Hofer, Wolfgang; Schliebs, Reinhard; Schmidt, Robert Rudolf; and Eue, Ludwig, 3,901,679.
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Bear Manufacturing Corporation: *See—*
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Beard, Colin C., to Syntex (U.S.A.) Inc. 5(6)-Benzene ring substituted benzimidazole-2-carbamate derivatives having anthelmintic activity. 3,901,901, Cl. 260-306.70R.
Beard, Colin C., to Syntex (U.S.A.) Inc. Certain imidazo[1,2-b]-1,2,4-thiadiazole compounds. 3,901,903, Cl. 260-306.80F.
Beasley, Robert Malcolm; and Washington, Derek, to U.S. Philips Corporation. Channel plate matrix of tubes having twisted septa. 3,902,089, Cl. 313-105.000.
Beavers, Dorothy J., to Eastman Kodak Company. Low concentration sensitization and development acceleration. 3,901,712, Cl. 96-95.000.
Beck, Henry Nelson, to Dow Chemical Company, The. Nucleation of isotactic polystyrene. 3,901,867, Cl. 260-93.50A.

Beckman Instruments, Inc.: *See—*
Jones, Robert H.; and Hummel, Charles V., 3,901,653.
Wright, Herschel E., 3,901,434.
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Begitschke, Donald W.; and Olsen, Warren J., to Amco Engineering Company. Instrument cabinet. 3,901,571, Cl. 312-257.00R.
Beguini, Pierre-Andre: *See—*
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Bell Telephone Laboratories, Incorporated: *See—*
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Reitz, Richard J.; Nicolson, John M.; and Herold, Guenter K., 3,901,357.
Bendure, Harry, to Gardner-Denver Company. Drive unit for crawler vehicle. 3,901,336, Cl. 180-6.480.
Benedict, Charles E.; and Oliver, Calvin C., to Wayne H. Coloney Co., Inc.; and Controlled Acoustics, Inc. Picker stick drive mechanism for fly shuttle looms. 3,901,287, Cl. 139-147.000.
Benedict, Charles E.; and Oliver, Calvin C., to Wayne H. Coloney Co., Inc.; and Controlled Acoustics, Inc. Shuttle box for looms. 3,901,288, Cl. 139-185.000.
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Bennett, Harold F.; and Liu, Wai-Min, to Xerox Corporation. Zoom lens assembly. 3,901,585, Cl. 350-184.000.
Bentley, James Sidney, to Photographic Silver Recovery Limited. Recovery of silver from used photographic solutions. 3,901,777, Cl. 204-109.000.
Bentman, David M. Porcelain covered dental bridge, crown and the like. 3,900,951, Cl. 32-5.000.
Benz, Mark G.; and Martin, Donald L., to General Electric Company. Permanent magnets of cobalt, samarium, gadolinium alloy. 3,901,741, Cl. 148-31.570.
Berga, Jacques: *See—*
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Berger, Eugene; and Derroite, Jean-Louis, to Solvay & Cie. Polymerization of olefins. 3,901,863, Cl. 260-88.20R.
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Berger, Isaac, to Carrier Corporation. Electrical overload control for a combination apparatus. 3,901,308, Cl. 165-2.000.
Berman, Alby M. Chopper duty maximization circuit. 3,902,110, Cl. 321-43.000.
Berman, Sheldon Harvey, to Cook Electric Company. Arrestor holder. 3,901,576, Cl. 339-258.00F.
Bermel, Thomas W., to Corning Glass Works. Fluid operated signal apparatus. 3,901,178, Cl. 116-70.000.
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Berney, Jean-Claude, to Bernard Golay S.A. Quartz oscillator having very low power consumption. 3,902,141, Cl. 331-116.00R.
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Bertin, Jean Henri, to Bertin & Cie. Systems comprising a cogwheel and a longitudinal reaction member cooperating with the cogs thereon. 3,901,162, Cl. 105-29.00R.

Best, Walter E. High security lock and hasp. 3,901,058, Cl. 70-32.000.

Bethlehem Steel Corporation: See—
Szendroi, Imre, 3,901,419.

Betten, Carl B., to Boeing Company, The. Control system monitor and fault discriminator. 3,902,051, Cl. 235-150.100.

Bettters, Paul D. Game call device. 3,900,993, Cl. 46-180.000.

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Bezbatchenko, William; and Spelman, Rollin H., to General Tire & Rubber Company, The. Method of building dual chambered tires. 3,901,750, Cl. 156-119.000.

Bienenfeld, Harold, to American Cyanamid Company. Clip-on flip-up goggles. 3,901,589, Cl. 351-47.000.

Bierig, Robert W.; and Mozzi, Robert L., to Raytheon Company. Electron beam semiconductor amplifier with shielded diode junctions. 3,902,095, Cl. 313-367.000.

Biermann, Robert J.: See—
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Bills, Alan M., to Westvaco Corporation. Acidification of tall oil soap. 3,901,869, Cl. 260-97.500.

Binger, Wynn S.; and Shope, Robert E., to Construction Materials, Inc. Concrete pavement cutting machine. 3,901,553, Cl. 299-39.000.

Bio-Medical Research, Ltd.: See—
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Bio-Medical Sciences, Inc.: See—
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Black and Decker Manufacturing Company, The: See—
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Black, Lewis Granville. Apparatus for aligning hitches of towing and towed vehicles. 3,901,536, Cl. 280-477.000.

Blackburn, Carl H.: See—
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Blakely, Stephen W., to Olin Corporation. Quick-connect coupling. 3,901,538, Cl. 285-33.000.

Blanshine, Allison W.; and Crane, Jack W., to Sperry Rand Corporation. Hay roll forming machine. 3,901,007, Cl. 56-341.000.

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Blomgren, Oscar C.: See—
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Blomgren, Oscar C., Sr.; and Blomgren, Oscar C., to Tuxco Corporation. Hydraulic cylinder service machine. 3,900,938, Cl. 29-240.000.

Bloom, Joseph Louis, to Joseph Lucas (Industries) Limited. Control arrangements for fluid control valves. 3,901,260, Cl. 137-82.000.

Blouch, Roger D., to International Mobile Machines Corporation. Ringer blocking attachment for telephones. 3,902,016, Cl. 179-2.00A.

Boardman, William W., Jr.; and Johnson, Robert H., to General Motors, Inc. Semiconductor gas detector and method therefor. 3,901,067, Cl. 73-23.000.

Boari, Gianfranco: See—
Passino, Roberto; and Boari, Gianfranco, 3,901,781.

Bobbitt, John T.: See—
Kiowski, John W.; and Bobbitt, John T., 3,902,161.

Bobo, Frank E. Pipeline obturator device. 3,901,280, Cl. 138-89.000.

Bobrov, Anatoly Borisovich, deceased: See—
Buzhinskaya, Antonina Vladimirovna; Sergeev, Leonid Alexandrovich; Trofimov, Vladimir Ivanovich; Bobrov, Vyacheslav Borisovich; Migina, Anna Ilinichna; Perelygina, Tatyana Fedorovna; Bobrov, Anatoly Borisovich, deceased; Bobrova, Evdokia Nikolaevna, administrator; and Bobrova, Irina Maximovna, administrator, 3,901,785.

Bobrov, Vyacheslav Borisovich: See—
Buzhinskaya, Antonina Vladimirovna; Sergeev, Leonid Alexandrovich; Trofimov, Vladimir Ivanovich; Bobrov, Vyacheslav Borisovich; Migina, Anna Ilinichna; Perelygina, Tatyana Fedorovna; Bobrov, Anatoly Borisovich, deceased; Bobrova, Evdokia Nikolaevna, administrator; and Bobrova, Irina Maximovna, administrator, 3,901,785.

Bobrova, Evdokia Nikolaevna, administrator: See—
Buzhinskaya, Antonina Vladimirovna; Sergeev, Leonid Alexandrovich; Trofimov, Vladimir Ivanovich; Bobrov, Vyacheslav Borisovich; Migina, Anna Ilinichna; Perelygina, Tatyana Fedorovna; Bobrov, Anatoly Borisovich, deceased; Bobrova, Evdokia Nikolaevna, administrator; and Bobrova, Irina Maximovna, administrator, 3,901,785.

Bobrova, Irina Maximovna, administrator: See—
Buzhinskaya, Antonina Vladimirovna; Sergeev, Leonid Alexandrovich; Trofimov, Vladimir Ivanovich; Bobrov, Vyacheslav Borisovich; Migina, Anna Ilinichna; Perelygina, Tatyana Fedorovna; Bobrov, Anatoly Borisovich, deceased; Bobrova, Evdokia Nikolaevna, administrator; and Bobrova, Irina Maximovna, administrator, 3,901,785.

Bochmann, Carl E., to Morgan, Burton D. Can crusher. 3,901,141, Cl. 100-236.000.

Bochmann, Carl E., to H. D. Hudson Manufacturing Company. Cordless electric sprayer. 3,901,449, Cl. 239-332.000.

Boden, Heinrich; and Knipp, Ulrich, to Bayer Aktiengesellschaft. Machine including means for independently adjusting the dose of two reactive, flowable components into a mixing chamber. 3,901,408, Cl. 222-134.000.

Bodenseewerk Perkin-Elmer & Co., G.m.b.H.: See—
Lahmann, Werner K., 3,901,601.

Boehm, Herbert C., to Olin Corporation. Vibration damped ski. 3,901,522, Cl. 280-11.13L.

Boehringer Ingelheim GmbH: See—
Devlin, John; Stewart, Patrick Brian; and Freter, Kurt, 3,901,925.

Boehringer Mannheim G.m.b.H.: See—
Rhombert, Alfred; Berger, Herbert; Stach, Kurt; Vomel, Wolfgang; and Sauer, Winfriede, 3,901,895.

Boeing Company, The: See—
Betten, Carl B., 3,902,051.

Bohm, Klaus: See—
Speth, Winfried; Bohm, Klaus; and Dreiseitl, Walter, 3,902,109.

Bokros, Jack C., to General Atomic Company. Blood filter. 3,901,808, Cl. 210-263.000.

Bolger, Derek E.; and Pion, Martin, to International Standard Electric Corporation. Method of making semiconductor devices. 3,901,744, Cl. 148-171.000.

Bond, John L.; Rogols, Saul; and Salter, John W., to A. E. Staley Manufacturing Company. Size classified cereal starch granules. 3,901,725, Cl. 127-32.000.

Bongert, Wilhelm; and Kuhn, Horst, to Klockner-Humboldt-Deutz Aktiengesellschaft. Method and apparatus for continuously drying a dripping wet, granular or lumpy material. 3,900,958, Cl. 34-164.000.

Bonino, Joseph S.: See—
Allen, Fred E.; Flynn, Joseph C.; Panas, Walter; Bonino, Joseph S.; and Colgan, William, 3,901,180.

Boothroyd, William Arnold, to International Business Machines Corporation. Demodulating circuitry for pulse rate modulation data reproduction. 3,902,129, Cl. 329-107.000.

Boots Company Limited, The: See—
Kozlik, Antonin, 3,901,906.

Borgman, Robert J.: See—
Kohls, James P.; and Borgman, Robert J., 3,901,346.

Borisov, Valery Gavrilovich: See—
Chernichenko, Ivan Antonovich; Turchaninov, Vasily Vasilievich; Metlyaev, Vladimir Nikolaevich; Sobol, Ivan Ivanovich; Kuligin, Boris Nikolaevich; Borisov, Valery Gavrilovich; and Kostevich, Dmitry Nikolaevich, 3,901,662.

Bornholt, Siegfried; and Schmitt, Georg, to G. L. Rexroth GmbH. Hydraulic pump with air vent valve. 3,901,628, Cl. 417-299.000.

Boroschewski, Gerhard, to Schering Aktiengesellschaft. Process for the preparation of N-carbamoyloxyphenyl carbamates. 3,901,936, Cl. 260-471.00C.

Borsi, Jozsef: See—
Mago nee Karacsony, Erzsebet; Borsi, Jozsef; Balogh, Tibor; and Wolf, Lajos, 3,901,893.

Bossert, Friedrich: See—
Ranz, Erwin; Bossert, Friedrich; Schutz, Heinz Dieter; Rintelen, Harald Von; Delzenne, Gerard Albert; and De Jaeger, Antoine August, 3,901,710.

Bouchara, Emile. 1,2-Bis-(4-phenyl-1-piperazinyl)-ethanes. 3,901,889, Cl. 260-268.0PH.

Boucher, Andre, to U.S. Philips Corporation. Method and device for the deposition of doped semiconductors. 3,901,746, Cl. 148-175.000.

Bouteiller, Charles A.: See—
Vizzello, Vito M.; and Bouteiller, Charles A., 3,901,115.

Bowles, Samuel Vincen. Packing ram for a self-contained refuse handling and transporting apparatus. 3,901,394, Cl. 214-82.000.

Bowthorpe Hellermann Limited: See—
McCormick, Matthew, 3,900,922.

Boxer, Steve: See—
Yazawa, Keizo, 3,901,234.

Boyce, Meherwan P., to Howell Instruments, Inc. Method and apparatus for compressor surge control. 3,901,620, Cl. 415-1.000.

Boyd, James V.: See—
Taylor, Edwin K.; Boyd, James V.; and Williams, James H., 3,901,425.

Boyer, John Albert; Ludwig, David Paul; and Zwickel, Friedrich, to Western Electric Company, Incorporated. Apparatus for compliant bonding. 3,901,429, Cl. 228-5.500.

Brabets, Robert I.; and Levine, Seymour, to United States of America, Air Force. Wrapped laminated felted monolithic combustible cartridge case. 3,901,153, Cl. 102-38.000.

Brackenridge, David R., to Ethyl Corporation. Flame retardant polyurethane foams. 3,901,834, Cl. 260-2.5AJ.

Bradley, Ronnie A.; Reese, Charles R.; and Sease, John D., to United States of America, Energy Research and Development Administration. Apparatus for blending small particles. 3,901,409, Cl. 222-145.000.

Brailsford, Harrison D. Vacuum-operated sampler and distributor for multiple sampling operation. 3,901,084, Cl. 73-421.00B.

Brainard, Norman R., to General Motors Corporation. Apparatus for measuring angular position. 3,901,605, Cl. 356-152.000.

Brandl, Ben: See—
Montgomery, Ferman E., 3,901,258.

Braswell, James W. Flushing apparatus. 3,900,904, Cl. 4-41.000.

Braukmann, Heinz Dieter; Hattwig, Wolfgang; and Wichert, Manfred, to Rheinstahl GieBerei AG. Apparatus and method for casting composite cast rolls. 3,901,473, Cl. 249-109.000.

Breedon, Robert L.; and Stangel, James H., to Motorola, Inc. Multiplex system for paging terminals and method. 3,902,022, Cl. 179-41.00A.

Brenz, Richard E.: See—
Spitz, Eugene B.; Samuelson, Gene H.; Brenz, Richard E.; and Hansford, Charles C., 3,901,245.

Breschi, Enzo; and Williner, Mario, to Minnesota Mining and Manufacturing Company. Combined infra-red and air flow drying for photographic film. 3,900,959, Cl. 34-155.000.

Breston, Michael P.: See—
Finch, William C., 3,901,811.

Bretton, Rene Jean Georges. Automatic small arm. 3,901,126, Cl. 89-182.000.

Brickley, A. H.: See—
Halls, Kenneth F., 3,901,107.

Bridges, James R.; and Dowling, Donald J., to Texaco Inc. Means and method for inducing electrical polarization of an earth formation and for measuring the induced electrical polarization and for providing spontaneous potential correction. 3,902,113, Cl. 324-10.000.

Bridgewater, Horace Kenneth: See—
Shepherd, William Edwin; and Bridgewater, Horace Kenneth, 3,901,415.

Bridon Limited: See—
Mason, Thomas Ernest, 3,901,610.

Briggs, Graham: See—
Allport, Dennis Charlton; and Briggs, Graham, 3,901,959.

Briggs & Stratton Corporation: See—
Smith, Arnold E., 3,901,199.

Brille, Maurice G. Axial piston machine. 3,901,093, Cl. 74-60.000.

Brinson, Fred Edwin: See—
Durkos, Larry George; Christie, Charles Dewey; Denney, Jerry William; Trusty, Jon Caton; Reynolds, Walter Lee; Cole, Robert Wayne; Brinson, Fred Edwin; and Lovell, Allen Kent, 3,901,656.

Bristol-Myers Company: See—
Kawaguchi, Hiroshi; Konishi, Masataka; and Tomita, Koji, 3,901,877.

British Visqueen Limited: See—
Highfield, Peter Edward; and Hill, Gordon John, 3,901,759.

Broadbent, Leslie D., to Neil and Spencer Limited. Apparatus for treating textiles. 3,901,055, Cl. 68-152.000.

Broccardo, Ernesto; Grasselli, Giovanni; Rizzato, Elvio; Grasselli, Antonio; and Serman, Adriano. Two bladed saw to cut bars wherein the blades move in opposite directions. 3,901,116, Cl. 83-751.000.

Brock, Gibson E. Self-loading carrier. 3,901,397, Cl. 214-392.000.

Brockett, Bruce W.; and Miller, Robert E., to NCR Corporation. Ink supply transfer medium. 3,901,986, Cl. 428-411.000.

Brockway Glass Company, Inc.: See—
Lynn, Edwin W.; Tardiff, Hervey L.; and Judge, Paul, 3,901,401.

Bromberg, Robert: See—
Toy, Albert; Richardson, Neal A.; and Bromberg, Robert, 3,901,733.

Broomman, Johannes J., to B.V. Koninklijke Maatschappij "De Schelde". Apparatus and method for arc working work-pieces with a rotating arc. 3,902,035, Cl. 219-121.00P.

Brooks Equipment Co., Inc.: See—
Winston, Jack, 3,901,322.

Brooks, Thomas William; Gaefke, David William; and Guilbault, Lawrence James, to Calgon Corporation. Ultrafiltration membranes. 3,901,810, Cl. 210-500.00M.

Brotman, Phillip: See—
Taaffe, James L., 3,901,214.

Brouwer, Charles William; and Cowan, Larry Clyde, to Leesona Corporation. Fluid control system with on-line diagnosis means isolating malfunctions. 3,901,273, Cl. 137-552.000.

Brown, Boveri & Cie. A.G.: See—
Brungsberg, Heinrich-Josef, 3,901,205.

Brown, Cicero C.: See—
Slator, Damon T.; and Brown, Cicero C., 3,901,330.

Brown, Harold J., to Lorain Products Corporation. Circuit for protecting series-connected switches. 3,902,107, Cl. 321-12.000.

Brown Oil Tools, Inc.: See—
Slator, Damon T.; and Brown, Cicero C., 3,901,330.

Brown, Robert J. Therapeutic foot rest. 3,901,228, Cl. 128-133.000.

Browne, Frank L.: See—
Philibert, Robert A.; and Browne, Frank L., 3,901,577.

Browning, Jhonce N.; Lee, Nathan D.; and Smece, George H., to FMC Corporation. Process of regenerating a noble metal hydrogenation catalyst used in hydrogen peroxide production by the anthraquinone process. 3,901,822, Cl. 252-412.000.

Browning, Vernon D.; and Tell, Mayo B., to Dayco Corporation. Apparatus for and method of installing an expandible sleeve. 3,900,941, Cl. 29-450.000.

Brownlie, Alan W., to American Challenger Corporation. Marine forward-reverse clutches with pilot brakes. 3,901,361, Cl. 192-21.000.

Brueck, Erhard, to Wilhelm Loh Kommanditgesellschaft. Machine for producing surfaces of optical lenses, for example toric surfaces. 3,900,971, Cl. 51-100.000.

Bruene, Warren B., to Rockwell International Corporation. FM broadcast exciter apparatus. 3,902,019, Cl. 179-15.0BT.

Bruhms, Dieter, to Marryat Finance Limited. Angular guidance for conveyor belt systems. 3,901,379, Cl. 198-182.000.

Brumm, Gerald A.: See—
Helava, Uuno V.; Whiteside, Arliss E.; and Brumm, Gerald A., 3,901,595.

Brungsberg, Heinrich-Josef, to Brown, Boveri & Cie. A.G. Stabilized and transistorized ignition system for internal combustion engines. 3,901,205, Cl. 123-148.00E.

Bruzzese, Tiberio; Ghielmetti, Giuseppe; and Ferrari, Rodolfo, to SPA-Societa Prodotti Antibiotici S.p.A. 3,3-Bis-(p-phosphonoxy- and p-sulphoxy-phenyl)-2-indoliones. 3,901,912, Cl. 260-325.00R.

Brydges, William T., III; and Smith, Dennis W., to Corning Glass Works. Glasses and glass-ceramics containing rutile fibers. 3,901,719, Cl. 106-47.00R.

Bryerton, John; and Nichols, Elliot C., to Piper Aircraft Corporation. Aircraft engine fuel system. 3,901,025, Cl. 60-39.09F.

Brym, Stanley J., to Baldwin-Gegenheimer Corporation. Hydrometer assembly. 3,901,089, Cl. 73-441.000.

Bucalo, Louis, to Investors in Ventures, Inc. Thermal control of body functions. 3,901,224, Cl. 128-82.100.

Buchalter, Martin. Disposable electrode. 3,901,218, Cl. 128-2.06E.

Buchanan, Carl S.; Fargo, Harland E.; and Riebel, Charles F., to Owens-Corning Fiberglas Corporation. Apparatus for producing fibers and environmental control therefor. 3,901,675, Cl. 65-11.00R.

Buchot, Pierre Charles; Cohen-Alloro, Richard; and Robert, Jean-Claude E., to Bureau de Recherches Geologiques et Minieres. Process for the preconcentration of ores by induced measure of the superficial contents. 3,901,793, Cl. 209-1.000.

Buck, James G.: See—
Payne, Robert D.; and Buck, James G., 3,901,184.

Buck K.G. Firma: See—
Huber, Paul, 3,901,155.

Bucyrus-Erie Company: See—
Homagold, John T., 3,901,532.

Stoldt, Erwin F., 3,901,341.

Bukama GmbH Hannover: See—
Lange, Wilfried, 3,901,130.

Bukhman, Genokh Borukhovich: See—
Aizenberg, Julian Borisovich; Bukhman, Genokh Borukhovich; and Andreenko, Vladimir Ignatievich, 3,902,056.

Bunch Bellcrank Systems, Inc.: See—
Bunch, Harry J., 3,901,398.

Bunch, Harry J., to Bunch Bellcrank Systems, Inc. Semi-trailer a hinged ramp member. 3,901,398, Cl. 214-506.000.

Bureau de Recherches Geologiques et Minieres: See—
Buchot, Pierre Charles; Cohen-Alloro, Richard; and Robert, Jean-Claude E., 3,901,793.

Burger, Simon, to Heinrich Wunder K.G. Cable binding. 3,901,523, Cl. 280-11.35E.

Burgudjev, Eduard Todorov: See—
Slavinski, Ivan Assenov; Burgudjev, Eduard Todorov; Vukolov, Dmitri Dmitrievich; and Angelov, Todor Dimitrov, 3,901,108.

Burkett, Richard O., to Westinghouse Air Brake Company. Pneumatic/electro-pneumatic interlock circuitry for double-end control locomotive. 3,901,558, Cl. 303-16.000.

Burleigh Instruments, Inc.: See—
Bizzigotti, Richard A., 3,902,085.

May, William G., Jr., 3,902,084.

Burn, Ian, to Sprague Electric Company. Ceramic capacitor with base metal electrodes. 3,902,102, Cl. 317-258.000.

Burr, Harley W.: See—
Webb, John B.; and Burr, Harley W., 3,901,634.

Burrer, Donald W.: See—
Lee, Peter R.; and Burrer, Donald W., 3,901,384.

Burroughs Corporation: See—
Caras, Bernard, 3,900,935.

Mandelson, David R.; Miller, Leo H.; and Seeley, Dunham Briggs, 3,901,639.

Burroughs Wellcome & Co. (U.S.A.) Inc.: See—
Gorvin, John Henry, 3,901,934.

Bursk, William Michael; and Pease, David H., Jr., to Pease Company. Adjustable sill and threshold assembly. 3,900,967, Cl. 49-468.000.

Burtis, Carl A.; and Johnson, Wayne F., to United States of America, Energy Research and Development Administration. Whole blood analysis rotor assembly having removable cellular sedimentation bowl. 3,901,658, Cl. 23-259.000.

Butler, David Sydney: See—
Harding, John Patrick; Butler, David Sydney; and Lee, Frank James, 3,902,004.

Butler, Lee D.; Wynn, Edward J.; and Darnall, David L., to Sperry Rand Corporation. Machine for forming a compact stack of crop material. 3,901,009, Cl. 56-344.000.

Butler, Lee D.; Wynn, Edward J.; and Wadsworth, Thomas H., to Sperry Rand Corporation. Mode of operation selection for the first table of a bale wagon. 3,901,393, Cl. 214-6.00B.

- Butler, Louis L., to Bear Manufacturing Corporation. Lift mechanism. 3,901,356, Cl. 187-8.710.
- Butler, Louis L., to Bear Manufacturing Corporation. Apparatus for use in aligning wheels. 3,901,604, Cl. 356-152.000.
- Butterworth Hydraulic Developments Limited: *See—*
Butterworth, Philip, 3,901,129.
- Butterworth, Philip, to Butterworth Hydraulic Developments Limited. Fluid pressure operated reciprocating motors. 3,901,129, Cl. 91-299.000.
- Buzhinskaya, Antonina Vladimirovna; Sergeev, Leonid Alexandrovich; Trofimov, Vladimir Ivanovich; Bobrov, Vyacheslav Borisovich; Migina, Anna Ilinichna; Perelygina, Tatyana Fedorovna; Bobrov, Anatoly Borisovich, deceased; by Bobrova, Evdokia Nikolaevna, administrator; and by Bobrova, Irina Maximovna, administrator. Apparatus for producing a metal band. 3,901,785, Cl. 204-208.000.
- B.V. Koninklijke Maatschappij "De Schelde": *See—*
Broodman, Johannes J., 3,902,035.
- C. Evans & Sons Limited: *See—*
Gostling, Peter Eric, 3,901,609.
- C. H. Dana Company, Inc.: *See—*
Nichols, Harley E., 3,900,981.
- Cage, Kenneth C., to Black Clawson Company, The. Saw assembly. 3,901,114, Cl. 83-340.000.
- Calderon, Reynaldo; and Umphenour, Charles F., to Texaco Inc. Methods for cleaning and forming sand filters and a self-cleaning straight spring filter. 3,901,320, Cl. 166-311.000.
- Calgon Corporation: *See—*
Brooks, Thomas William; Gaefke, David William; and Guilhault, Lawrence James, 3,901,810.
- Callahan, John J.; and Shapiro, Sydney H., to Akzona Incorporated. Antistatic carboxyalkylated diamines. 3,901,715, Cl. 106-2.000.
- Callan, John E., to Cities Service Oil Company. Rubber compounding. 3,900,999, Cl. 52-744.000.
- Callis, Clayton F.: *See—*
Shen, Chung Y.; and Callis, Clayton F., 3,901,831.
- Cam Gears Limited: *See—*
Adams, Frederick John, 3,901,344.
- Campanelli, Ronald J., to Quaker Oats Company, The. Flipper foot pull toy. 3,900,990, Cl. 46-103.000.
- Canadian Patents and Development Limited: *See—*
Wood, James Clive, 3,901,761.
- Canin, Jacques. Releaseable joint. 3,901,612, Cl. 403-189.000.
- Canon Kabushiki Kaisha: *See—*
Ashida, Akira; and Takahashi, Kiyoshi, 3,901,590.
Goshima, Takeshi, 3,902,010.
Koyasu, Takeo; and Tokuhara, Mituhiko, 3,901,220.
Takatori, Yasushi; Haruta, Masahiro; Shimozaawa, Akemi; and Nishide, Katsuhiko, 3,901,769.
Terada, Toru; and Yamaguchi, Isao, 3,902,135.
- Canon Inc.: *See—*
Von Beckmann, Helmuth, 3,901,159.
- Capra, Nicholas G.; and Toth, Vincent. Liquid dispenser. 3,901,414, Cl. 222-340.000.
- Capt, Edmond; and Rochat, Donald, to Valjoux S.A. Chronograph watch. 3,901,020, Cl. 58-74.000.
- Capute, Milton C., to Euthenics Systems Corporation. Photogrammetric methods for the preparation of anaglyphic, orthophotographs. 3,901,707, Cl. 96-40.000.
- Caras, Bernard, to Burroughs Corporation. Method of making the seal in a panel device having a seal enclosing an electrode array. 3,900,935, Cl. 29-25.130.
- Cardwell, Paul H.: *See—*
Kane, William S.; and Cardwell, Paul H., 3,901,775.
- Cargill, Incorporated: *See—*
Smith, Thomas E., 3,901,191.
- Caris, Costa; Marc, Michel; and Hidden, William P., to Conceptual Engineering Associates. Valve mechanism and flushing system incorporating the same. 3,900,903, Cl. 4-41.000.
- Carlisle, Malcolm Norman. Winding fibres. 3,901,455, Cl. 242-18.00G.
- Carlson, Lloyd; and Schmitt, Robert A., to Columbia Machine, Inc. Article positioning and stacking apparatus. 3,901,391, Cl. 214-6.00G.
- Carlson, Richard Warren, to International Paper Company. Cylindrical leak-resistant, thermoplastic coated, paperboard container. 3,901,431, Cl. 229-21.000.
- Carpenter Technology Corporation: *See—*
Lafferty, James H., 3,901,492.
Philip, Thoni V.; and Dietrich, Douglas W., 3,901,690.
- Carrier Corporation: *See—*
Berger, Isaac, 3,901,308.
- Casciato, Candido: *See—*
Zier, George F.; Casciato, Candido; and Smith, Franklin G., 3,901,380.
- Casey, James T.; and Badia, Frank A., to International Nickel Company, Inc. The. Highly reflective aluminum flake. 3,901,688, Cl. 75-0.50R.
- Cashen, Norton A.; Reinhardt, Robert M.; and Reid, John D., to United States of America, Agriculture. Solvent vapor fiberset process for durable press finishing of cellulosic fabrics. 3,901,984, Cl. 427-335.000.
- Cashin Systems Corporation: *See—*
Dohm, Daniel, Jr., 3,901,140.
- Cass, Ralph Sherwill: *See—*
Tyler, Anton Roy; Sondhi, Vickram; and Cass, Ralph Sherwill, 3,902,047.
- Castaigne, Albert Rene, to Centre d'Etudes pour l'Industrie Pharmaceutique. New oxyacetic ether derivatives of ortho-thymol esters. 3,901,941, Cl. 260-472.000.
- Caterpillar Tractor Company: *See—*
Anderson, Charles J.; and Gould, David S., 3,901,740.
Day, Dennis M., 3,901,563.
Eftelfeld, Larry G., 3,901,329.
Gee, James E.; Grooss, Frank A.; and Moser, Raymond L., 3,901,535.
Maras, Frank Anthony; and Durham, Donald Franklin, 3,901,348.
Nieman, John R., 3,901,307.
Prillinger, Peter F. M.; Rosenberger, Paul C.; and Sieving, Alfred W., 3,901,556.
Riddle, Larry D., 3,901,488.
Smith, Roger M., 3,901,270.
Stanfield, Glenn H., 3,901,328.
- Causey, Burnice J. Open-end ratchet wrench. 3,901,106, Cl. 81-111.000.
- Caveney, T. John. Basketball retrieval apparatus and method. 3,901,506, Cl. 273-1.50A.
- Ceintrey, Marcel, to Societe Chimique Routiere et d'Entreprise Generale. Surface layer for roadways and a process for preparing said layer. 3,901,615, Cl. 404-20.000.
- Celanese Corporation: *See—*
Freed, William T., 3,901,846.
Jones, Rufus S., 3,901,854.
- Cellu Products Company: *See—*
Doll, Gregory W., 3,901,958.
- Central Glass Co., Ltd.: *See—*
Ikeda, Tsutomu; Nakano, Masamitsu; and Tokuda, Kazuyoshi, 3,902,040.
- Centre d'Etudes et de Recherches de l'Industrie des Liantes Hydrauliques: *See—*
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- Centre d'Etudes pour l'Industrie Pharmaceutique: *See—*
Castaigne, Albert Rene, 3,901,941.
- Century Mfg. Co.: *See—*
Berthelsen, Owen W., 3,900,906.
- Cepuritis, Gunta: *See—*
Cepuritis, Talivaldis; and Cepuritis, Gunta, 3,901,237.
- Cepuritis, Talivaldis; and Cepuritis, Gunta, to Johnson & Johnson. Fastening means for a disposable diaper. 3,901,237, Cl. 128-284.000.
- Cerutti, Rene: *See—*
Guillotin, Fernand; and Cerutti, Rene, 3,901,772.
- Chambers, Marshall R. Picture frame. 3,900,980, Cl. 40-152.100.
- Chambers, Marshall R. Picture frame. 3,901,496, Cl. 267-160.000.
- Chan, See Fong. Ground fertilizer device. 3,900,962, Cl. 47-48.500.
- Chancholle, Andre Robert; and Perisse, Jean Maurice Francois. Aspirator-ejector adapted to aspirate and to supply two fluids without mixing them. 3,901,629, Cl. 417-395.000.
- Chandler Evans Inc.: *See—*
Grennan, Charles W., 3,901,623.
- Chang, Yi-Chung, to Pullman Incorporated. Gas burner - lance construction. 3,901,445, Cl. 239-132.300.
- Chapman, John A., to Valmont Industries, Inc. Suspension distribution system. 3,901,442, Cl. 239-99.000.
- Chapon, Lucien: *See—*
Moll, Manfred; Kreel, Claude; and Chapon, Lucien, 3,901,068.
- Charboneau, Benny J., to Walbro Corporation. Catalytic heater control. 3,901,213, Cl. 126-350.00A.
- Charbonnier, Roger, to Adret-Electronic. Frequency synthesis control for a frequency-modulated telegraphic transmitter. 3,902,013, Cl. 178-66.00A.
- Chem-Paint Specialties, Inc.: *See—*
Kader, John A., 3,901,836.
- Chernichenko, Ivan Antonovich; Turchaninov, Vasily Vasilievich; Metlyayev, Vladimir Nikolaevich; Sobol, Ivan Ivanovich; Kuligin, Boris Nikolaevich; Borisov, Valery Gavrilovich; and Kostevich, Dmitry Nikolaevich. Metal ingots. 3,901,662, Cl. 29-187.000.
- Cherry Electrical Products Corporation: *See—*
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- Chervin, Michel: *See—*
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- Chiang, Ping-Wang, to Harris Corporation. Silicon source feed process. 3,901,182, Cl. 118-49.000.
- Chiba, Kiyoshi: *See—*
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- Chiba, Takashi: *See—*
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- Christiansson, Fingal, to Fingal Christiansson Ingeniorsbyra. Thermostat-regulated radiator valve for single or double conduit central heating systems. 3,901,438, Cl. 236-43.000.
- Christie, Charles Dewey: *See—*
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- Clark, James, to United States of America, Air Force. Vibration resistant geiger-mueller tube. 3,902,092, Cl. 313-269.000.
- Clark, Thomas Henry. Machine for printing labels. 3,901,148, Cl. 101-228.000.
- Clark, Thomas W. Sphygmomanometer and gauge therefor. 3,901,217, Cl. 128-2.05G.
- Clarke, Robert L.; and Daum, Sol J., to Sterling Drug Inc. 1,3-Ethanoindeno[2,1-c]-pyridines and 1,3-ethanobenz[glisoquinolines. 3,901,892, Cl. 260-283.00R.
- Clausen, Edward M.; and Clemmer, Robert G., to General Electric Company. Method of treating photoflash lamp construction. 3,901,748, Cl. 156-25.000.
- Clauss, Robert C.: *See—*
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- Clendinning, Robert A.; Potts, James E.; and Cornell, Stephen W., to Union Carbide Corporation. Environmentally degradable biodegradable blends of a dialkanoyl polymer and an environmentally degradable ethylene polymer. 3,901,838, Cl. 260-23.00H.
- Cleusix, Willy; and Othenin-Girard, John, to Societe Suisse pour l'Industrie Horlogere Management Services S.A. Time setting arrangement for an electronic watch. 3,901,022, Cl. 58-85.500.
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- Cochran, David S.; and Cutler, Leonard S., to Hewlett-Packard Company. Logic backup for a train detection system in an automatic block system. 3,901,468, Cl. 246-34.00R.
- Cochran, Michael J.; and Grant, Charles P., Jr., to Texas Instruments, Incorporated. Calculator system having keyboard with double entry protection and serialized encoding. 3,902,054, Cl. 235-156.000.
- Coenders, Willi; and Trockel, Franz, to Heinrich Koopers GmbH. Furnace construction. 3,901,646, Cl. 432-214.000.
- Coffen, David Llewellyn; and Fryer, Rodney I., to Hoffmann-La Roche Inc. 2-(2-Hydroxyethylthio)-2,3-dihydro-5-phenyl-1H-4-benzodiazepines. 3,901,879, Cl. 260-239.0BD.
- Cohen-Alloro, Richard: *See—*
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- Cohen, Arthur I.; Sim, James S. Y.; Van Horn, Maurice H.; Gordesky, Stanley E.; and Gordon, Stanley I., to Union Corporation. Sustained release of atropine. 3,901,967, Cl. 424-22.000.
- Cohen, Arthur I.; Sim, James S. Y.; Van Horn, Maurice H.; Gordesky, Stanley E.; and Gordon, Stanley I., to Union Corporation. Sustained release of methantheline. 3,901,968, Cl. 424-22.000.
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- Cohen, Arthur I.: *See—*
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- Coles, Alan V.; and Kocher, Lawrence H., to Textron, Inc. Inflatable trunk for air cushion supported vehicles. 3,901,988, Cl. 428-231.000.
- Coles, Manson Ivor, to Mancole Company Limited. Auger assembly. 3,901,621, Cl. 415-74.000.
- Coley, Clifford L., Sr. Padlock. 3,901,057, Cl. 70-20.000.
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- Collette, John Wilfred; Ro, Roland Shih-Yuan; and Sonnenberg, Fred Max, to du Pont de Nemours, E. I., and Company. Functionally substituted terpolymers and tetrapolymers of α -olefins and process for manufacturing functional substituted copolymers. 3,901,860, Cl. 260-80.780.
- Collins, John E.; Dietsche, Delmar A.; Jones, David C.; and Mitchell, Donald J., to Minnesota Mining and Manufacturing Company. Film processor chemical supply mechanism. 3,901,253, Cl. 134-57.00R.
- Collins, Walter W. Knife with removable blade. 3,900,950, Cl. 30-337.000.
- Colln, Reimer; Sirenberg, Wilhelm; Behrenz, Wolfgang; and Hammann, Ingeborg, to Bayer Aktiengesellschaft. Dichlorovinyl thionophosphoric acid diester amides. 3,901,956, Cl. 260-957.000.
- Colonna, Vincenzo: *See—*
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- Conlon, William, to Air Products and Chemicals, Inc. Edge protection device. 3,901,995, Cl. 428-174.000.
- Connick, Francis Glenn; and Veazie, Waldemar, Jr., to Swift & Company. Manufacture of cured meat product. 3,901,980, Cl. 426-231.000.
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- Cook, Mary. Luggage protector. 3,901,360, Cl. 190-26.000.
- Cooldidge, John T. Weather-vane lock. 3,901,056, Cl. 70-19.000.
- Copia, Sam F., to VCA Corporation. Child-resistant actuator for aerosol dispenser. 3,901,412, Cl. 222-182.000.
- Copp, Albert Leslie; and Ronson, George Lancaster, to Dowty Hydraulic Units Limited. Hydraulic jet propulsion apparatus suitable for waterborne vessels. 3,901,176, Cl. 115-12.00R.
- Cordier, Jean-Pierre Jules, to Westinghouse Electric Corporation. Frequency converter for power supply to variable speed synchronous machines. 3,902,112, Cl. 321-66.000.

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Cote, Gerald M., to Thermanil Chemical Company, Incorporated. Wet processing of leather. 3,901,929, Cl. 260-403,000.
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Danziger, Uzi; and Danziger, Reuven. Wheel chair with extensible wheel base to facilitate ingress and egress. 3,901,527, Cl. 280-34,00R.
Dardaine, Edgar; and Berry, Jean-Luc, to E. P. Remy et Cie. Continuously operating device for conveying and selecting cases. 3,901,376, Cl. 198-34,000.
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Demerest, Frances Edith. Reflecting harness for persons. 3,901,579, Cl. 350-98,000.
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Dent, Kenneth Henry; and Greenhalgh, Frank Geoffrey, to United Kingdom Atomic Energy Authority. Apparatus for carrying out ultrasonic inspection of pressure vessels. 3,901,073, Cl. 73-71,5US.
Denton, Kenneth J.; and Groot, John C., to Simpson Timber Company. Method and system for drying wood employing paper-reinforced, thermosetting resin laminate and method of making such. 3,900,957, Cl. 34-13,800.
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Diehn, Philip H., to Wheelabrator-Frye Inc. Portable apparatus for blast cleaning. 3,900,969, Cl. 51-9,00M.
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Dodson, Daniel P.; and Baird, James E., to Eastman Kodak Company. Stabilized polyolefin compositions. 3,901,849, Cl. 260-45,8NW.
Doherty, George O. P.; and Fuhr, Kenneth H., to Eli Lilly and Company. 1H-imidazo(4,5-b)pyridine compounds. 3,901,681, Cl. 71-92,000.
Dohm, Daniel, Jr., to Cashin Systems Corporation. Bacon press with slab ejector. 3,901,140, Cl. 100-53,000.
Doi, Shuji; Saito, Tomiji; and Tozaki, Shigenobu, to Meiji Seika Kaisha, Ltd. Process for the production of agar from a red alga. 3,901,873, Cl. 260-209,00R.
Dola, Frank Peter, to AMP Incorporated. Surge current indicator. 3,902,168, Cl. 340-253,00P.
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Doll, Gregory W., to Cellu Products Company. Method and apparatus for forming foamed plastic articles. 3,901,958, Cl. 264-45,500.
Doman, Robert C., to Corning Glass Works. Dolomite-magnesite refractory and batch therefor. 3,901,721, Cl. 106-58,000.
Domenico, Penelope B., to Dow Chemical Company. The Cyanophenyl sulfoxides and sulfones. 3,901,935, Cl. 260-465,00G.
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Donovan, William Henry, to RCA Corporation. Programmable test of read/write circuitry by varying clipping levels. 3,902,190, Cl. 360-39,000.
Dorner, Heinrich; and Michel, Eberhard, to Siemens Aktiengesellschaft. Reactor installation. 3,901,196, Cl. 122-510,000.
Dorren, Louis, to Quadracast Systems, Inc. Tandem audio dynamic range expander. 3,902,131, Cl. 330-126,000.
Dorschner, Irvin E.: *See—*
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Douglas, Bruce E., to United States of America, Navy. Technique for measuring the complex elastic (young's) modulus utilizing laser interferometry. 3,901,074, Cl. 73-92,000.
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Dow Badische Company: *See—*
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Dow Chemical Company, The: *See—*
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Thomas, Mary R.; Lalk, Robert H.; Evani, Syamalarao; and Schmidt, Donald L., 3,901,816.
Tigner, Reuben A.; and Mounts, Lewis S., 3,901,640.
Dow Corning Corporation: *See—*
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Dowty Hydraulic Units Limited: *See—*
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Doyle, Edward J.; and Waters, Robert S., to Schick Incorporated. Electrically heated towel steaming appliance. 3,902,044, Cl. 219-284,000.
Dragan, William B. Dental filling gun and nozzle tip therefor. 3,900,954, Cl. 32-60,000.
Draudt, Howard Ned, to Peter Eckrich & Sons, Inc. Process for manufacturing bacon. 3,901,981, Cl. 426-266,000.
Drees, Joseph M.; and Beyerlein, Fritz W., to Signetics Corporation. Semiconductor lead structure and assembly and method for fabricating same. 3,902,148, Cl. 357-70,000.
Dreibelbis, Richard C., to Emerson Electric Co. Plastic ball seat member with constant bleed means. 3,901,475, Cl. 251-360,000.
Dreiseitl, Walter: *See—*
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Dresser Industries, Inc.: *See—*
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Dressler, Bruno: *See—*
Lecaillet, Pierre; and Dressler, Bruno, 3,901,519.
Drumm, Arthur E. Core mounting assembly for rotary brooms. 3,900,913, Cl. 15-179,000.
DSO Mebel: *See—*
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DSO "ZMM": *See—*
Slavinski, Ivan Assenov; Burgudjiev, Eduard Todorov; Vukolov, Dmitri Dmitrievich; and Angelov, Todor Dimitrov, 3,901,108.
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Allen, Robert E., Jr., 3,901,241.
Dubuit, Jean Louis. Transfer device for automatic bottle handling machines. 3,901,374, Cl. 198-22,00B.
Duddy, Joseph C., to ESB Incorporated. Method and apparatus for terminating the charge of storage batteries. 3,901,729, Cl. 136-3,000.
Duffy, Geoffrey Graeme, to University of Auckland, The. Measuring device. 3,901,070, Cl. 73-59,000.
Duffy, James J.: *See—*
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Dugan, Bernard Baron; and Scholtz, Coenraad Jacobus Beukes, to Colgate-Palmolive Company. Detergent cake containing monoalkylsulfo succinate and preparation. 3,901,832, Cl. 252-557,000.
Dully, Floyd I.; Griffin, Henry W.; and Meyer, Barthold F., to General Motors Corporation. Restraint belt retractor with pendulum actuated locking. 3,901,460, Cl. 242-107,400.
Dunkley, James L., to National Semiconductor Corporation. Integrated circuit device and method utilizing ion implanted and up diffusion for isolated region. 3,901,735, Cl. 148-1,500.
Dunlop Company Limited, The: *See—*
Edwards, Reginald Harold, 3,901,301.
Dunn, Byron G. Fire alarm. 3,901,179, Cl. 116-104,000.
Dunning, Fred R. Attaching means for a facemask. 3,900,897, Cl. 2-9,000.
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Irvin, Robert A.; and Meredith, William H., 3,901,840.
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Long, James D., 3,901,682.
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Durand, Gilbert; Pareilleux, Alain; Goma, Gerard; and Monsan, Pierre, to Creusot-Loire. Hydrocarbon binding complex and process for its preparation. 3,901,818, Cl. 252-184,000.
Durham, Donald Franklin: *See—*
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Durkos, Larry George; Christie, Charles Dewey; Denney, Jerry William; Trusty, Jon Caton; Reynolds, Walter Lee; Cole, Robert Wayne; Brinson, Fred Edwin; and Lovell, Allen Kent, to American Monitor Corporation. Apparatus and method for preparing and presenting serum chemistries for analysis. 3,901,656, Cl. 23-230,00B.
Dyakov, Alexandr Petrovich: *See—*
Vasiliev, July Arsenievich; Orfani, Mikhail Petrovich; Markelov, Evgeny Vasilievich; Ivashkin, Jury Ivanovich; Dyakov, Alexandr Petrovich; and Kljukin, Vladimir Ivanovich, 3,901,072.
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 Lenz, Arnold; Ackermann, Otto; and Bleh, Otto, 3,901,946.
 E. P. Remy et Cie: *See—*
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 Ebato, Seigo: *See—*
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 Ebauches S.A.: *See—*
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 Eberlein, Dietmar C. H. Electrostatic liquid developing apparatus. 3,901,188, Cl. 118-637.000.
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 Ebner, Otmir; and Ebner, Franz, to Gebr. Boehler & Co. Aktiengesellschaft. Apparatus for removing detritus from drill holes. 3,901,332, Cl. 175-209.000.
 Ehy, John B. Fastener holding attachment. 3,901,298, Cl. 145-52.000.
 Edwards, John W.; and Mathias, Robert G., to Hammond Corporation. Rotary horn tremolo unit. 3,902,015, Cl. 179-1.00J.
 Edwards, Reginald Harold, to Dunlop Company Limited, The. Pneumatic tires and wheel assemblies. 3,901,301, Cl. 152-330.00L.
 Eftefield, Larry G., to Caterpillar Tractor Company. Bulldozer stabilizer linkage. 3,901,329, Cl. 172-804.000.
 Eggenschwiler, Herbert. Plate holder, particularly a license plate holder. 3,900,979, Cl. 40-209.000.
 Eggert, Noel B., to Owens-Illinois, Inc. Apparatus for tail removal in blow molding machines. 3,901,637, Cl. 425-387.00B.
 Eglinton, Robert Bruce, to Chromalloy American Corporation. Roll tapping mechanism. 3,901,757, Cl. 156-446.000.
 Ehrenberg, Kurt. Adjustable substructure for installing sheet roof. 3,900,995, Cl. 52-126.000.
 Eichorn, Roger H., deceased (by Rochester, Lincoln First Bank of, executor), to Xerox Corporation. Reverse path imaging and transfixing copying method. 3,902,062, Cl. 250-318.000.
 Ekkelboom, Tjepke Hendrik; and Vrieze, Wubbe, to U.S. Philips Corporation. Short-arc gas discharge lamp. 3,902,090, Cl. 313-217.000.
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 Ellington, Gordon H.; Mitchell, William O.; and Estapa, Don E., to Oxford Industries, Inc. Method of fabricating shirt cuffs. 3,901,173, Cl. 112-262.000.
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 Engeler, William E.; and Tiemann, Jerome J., to General Electric Company. Surface charge storage and transfer devices. 3,902,187, Cl. 357-24.000.
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Enomoto, Saburo; and Inoue, Masami, to Arakawa Rinsan Kagaku Kogyo Kaishiki Kaisha. Production of 2,6-xyleneol. 3,901,947, Cl. 260-621.00R.
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 Peterson, Carl M., 3,901,798.
 Erard, Raoul-Henri, to Ebauches S.A. Timepiece. 3,901,018, Cl. 58-59.000.
 Erdman, Leon Paul, to Deere & Company. Rotary mower deck structure including a sound- and vibration-isolated blade housing section. 3,901,003, Cl. 56-12.600.
 Erni, Bruno; and Beguin, Pierre-Andre, to Societe Suisse Pour l'Industrie Horlogere Management Services S.A. Calendar arrangement for a timepiece. 3,901,017, Cl. 58-5.000.
 Ernster, Peter Jacob, to Oster Corporation. Electric food blender. 3,901,484, Cl. 259-108.000.
 ESB Incorporated: *See—*
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 Euverard, Maynard R.; and Heide, Henry A., to Velten & Pulver, Inc. Transfer conveyor including supports movable to a bridging position. 3,901,377, Cl. 198-82.000.
 Evani, Syamalarao: *See—*
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 Siskin, Michael; Wristers, Jos P.; and Porcelli, Joseph J., 3,901,790.
 Fabritius, Hannes, to Ulmaelektra Oy. Sampling apparatus. 3,901,087, Cl. 73-421.00B.
 Facaros, George, to General Electric Company. Removal of lubricants and binders from sinterable powder components. 3,901,742, Cl. 148-105.000.
 Fahn, Rudolf: *See—*
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 Famolare, Joseph P., Jr., to Famolarf, Inc. Roller skate construction. 3,901,521, Cl. 280-11.200.
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 Fattore, Vittorio; and Notari, Bruno, to Snam Progetti S.p.A. Process for the ammoxidation of propylene. 3,901,938, Cl. 260-465.300.
 Faure, Jean Marie. Pipette or similar apparatus for measuring determined volumes of liquid. 3,901,085, Cl. 73-425.40P.
 Fecillas, Michael R., to Johnson & Johnson. Synthetic resin binder compositions from acrylic acid esters. 3,901,843, Cl. 260-29.6TA.
 Fehr, Theodor; and Hauth, Hartmut, to Sandoz Ltd. 13-Bromolysergic acid compounds. 3,901,891, Cl. 260-268.0PE.
 Feinberg, Albert E., to Advance Transformer Company. Energizing circuit for magnetron using parallel transformers. 3,902,099, Cl. 315-105.000.
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 Feistel, Robert B., Jr., to W.H. Stewart Company. Alignment means for pressure tank air bags or the like. 3,901,278, Cl. 138-30.000.

Fekete, Arisztid Z. Board game apparatus. 3,901,512, Cl. 273-134.0AE.
 Feldman, Jerome M., to Dairy Cap Corporation. Bottle cap. 3,901,404, Cl. 215-256.000.
 Felger, Milton R. Method for measuring endodontic working lengths. 3,901,216, Cl. 128-2.10Z.
 Ferb, Thomas E. Hypodermic projectile. 3,901,158, Cl. 102-92.000.
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 Fieni, Walter, to Societe Anonyme Francaise du Ferodo. Installation for increasing the safety of the occupants of an automobile vehicle. 3,901,345, Cl. 180-91.000.
 Figueroa, David R., to Coulter Electronics, Inc. Pre-set circuit for measuring a dividing particle size of a particulate system. 3,902,053, Cl. 235-151.300.
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 Filter, Walther, to Vereinigte Osterreichische Eisen- und Stahlwerke-Alpine Montan Aktiengesellschaft; and Etablissement Wanderfield & Co. Warp draw-off apparatus. 3,901,283, Cl. 139-99.000.
 Filter, Walther; and Filter, Claus, to Vereinigte Osterreichische Eisen- und Stahlwerke; and Alpine Montan Aktiengesellschaft & Etablissement Wanderfield & Co. Apparatus for forming a strong selvage in a fabric. 3,901,289, Cl. 139-291.00R.
 Finch, William C., to Finch, William C.; and Breston, Michael P., a part interest to each. Liquid skimmer method and apparatus. 3,901,811, Cl. 210-538.000.
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 Finkleman, David; and Weber, Robert F., to United States of America, Air Force. Rotating bladerow aerodynamic window for high power pulsed gaseous lasers. 3,902,136, Cl. 331-94.50G.
 Fischer, Gert; Seidel, Siegfried; and Pollmann, Fritz, to Siemens Aktiengesellschaft. Resilient mounting arrangement for the non-movable magnetic member of an electromagnetic switching apparatus. 3,902,144, Cl. 335-193.000.
 Fischer, Hanspeter, to Ciba-Geigy Corporation. Pyridylum-s-triazines for regulating plant growth. 3,901,678, Cl. 71-74.000.
 Fisher, Floyd L., to Hy-Play Corporation. Method and apparatus for replacing damaged turf. 3,901,324, Cl. 172-19.000.
 Fitz, Konrad; and Pfister, Rudolf, to Ciba-Geigy Corporation. 2-Alkyl- and 2-cycloalkyl-4,5-bis-phenyl-imidazoles. 3,901,908, Cl. 260-309.000.
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 Fletcher, Thomas Sydney, to Fletcher Brothers (Engineers) Limited. Cord knitting device. 3,901,051, Cl. 66-55.000.
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 Flynn, Kevin W., to Bio-Medical Sciences, Inc. Protective packages. 3,901,387, Cl. 206-525.000.
 Flynn, Robert, to Ciba-Geigy Corporation. Hardenable epoxy resin compositions and process for making the same. 3,901,833, Cl. 260-2.0EP.
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 Rose, Boyd W., 3,901,334.
 Rousseau, Richard B., 3,900,915.
 Fockens, Pieter, to Zenith Radio Corporation. Multiple channel FM stereo system employing AM vestigial sideband subcarrier modulation. 3,902,018, Cl. 179-15.0BT.
 Fontanella, Luigi; and Ocelli, Emilio, to Gruppo Lepetit S.p.A. Pyrrolol[1,2-c]imidazole-1-one derivatives. 3,901,911, Cl. 260-309.700.
 Fooladi, Mike Mehadi. Unsym p-phenylene-dicarbamate. 3,901,940, Cl. 260-471.00C.
 Ford, Alexander T., to Raymond Lee Organization, Inc., The, a part interest. Cordless electrical guitar and amplifier system. 3,901,118, Cl. 84-1.160.
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Forest, Edward; and Swanton, Paul C., to Xerox Corporation. Photoelectrophoretic imaging process using photoconductive electrode which alters spectral response. 3,901,701, Cl. 96-1.200.
 Formax, Inc.: *See—*
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 Freeborn, John C., to Honeywell Inc. Stable amplitude sine wave generator. 3,902,124, Cl. 328-27.000.
 Freed, William T., to Celanese Corporation. Thermoplastic polyoxymethylene molding resins. 3,901,846, Cl. 260-37.0AL.
 Freeman, Harvey L., to Eaton Corporation. Hoist control system having a photocoupled pendant. 3,902,104, Cl. 318-313.000.
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 Fuller, Clyde R.; and Reinberg, Alan R., to Texas Instruments, Incorporated. Method of contacting and connecting semiconductor devices in integrated circuits. 3,900,944, Cl. 29-578.000.
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 Furuoka, Hideto; Osa, Nobuyuki; and Nakata, Shikichi, to Gakken Co., Ltd. Apparatus for drawing composite pictorial patterns. 3,900,956, Cl. 33-174.00B.
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- Garaballo, Romano. Retractable landing gear. 3,900,988, Cl. 46-76.000.
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- Gardner-Denver Company: *See—*
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- Garellick, Herbert J., to Garellick Mfg. Co. Endless loop manipulatable to various positions. 3,900,984, Cl. 46-1.00R.
- Garellick Mfg. Co.: *See—*
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- Gargatagli, Guglielmo: *See—*
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- Garner, Eugene F., to Allied Chemical Corporation. Pyrotechnic composition with combined binder-coolant. 3,901,747, Cl. 149-42.000.
- Gassman, Paul G., to Ohio State University Research Foundation, The. Synthesis of indoles from anilines and intermediates therein. 3,901,899, Cl. 260-294.80C.
- Gath, Karl Heinz. Method and apparatus for producing copying sets. 3,901,500, Cl. 270-53.000.
- Gaudas, Claude Gustave: *See—*
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- Gebhard, Peter T. E., Jr., to Impco, Inc. Method of impregnating a sintered porous metal article to make the article liquid-tight. 3,900,940, Cl. 29-420.000.
- Gebr. Boehler & Co. Aktiengesellschaft: *See—*
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- Gebr. Hofmann KG: *See—*
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- Gehlrich, George. Feed grain distribution system. 3,901,193, Cl. 119-52.0AF.
- Gellert, Dale A.; Harden, Kendall L.; and Noel, John R., to Procter & Gamble Company. The. Disposable diaper having a resin treated absorbent pad to improve integrity, softness and dryness. 3,901,238, Cl. 128-287.000.
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- Gerechter, Ruth Margaret. Novelty matching game. 3,901,505, Cl. 273-1.00M.
- Geurts, Cletus J., to Geurts, Inc. Earthworking implement tool assembly. 3,901,326, Cl. 172-264.000.
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- Golborn, Peter; and Duffy, James J., to Hooker Chemicals and Plastics Corporation. Textile flame retardants. 3,901,650, Cl. 8-115.700.
- Gold, Marvin H.; and Marcus, Henry J., to Aerojet-General Corporation. Antibiotic and fungicidal agents. 3,901,974, Cl. 424-301.000.
- Goldfarb, Adolph E.; Benkoe, Erwin; Chesley, Ronald F.; Everett, Delmar K.; and Friedrich, Richard D., to Goldfarb, Adolph E.; and Benkoe, Erwin. Electrically heated tool for cutting designs in a surface. 3,902,042, Cl. 219-233.000.
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- Gorvin, John Henry, to Burroughs Wellcome & Co. (U.S.A.) Inc. Substituted salicylonitriles. 3,901,934, Cl. 260-465.00F.
- Goshima, Takeshi, to Canon Kabushiki Kaisha. Information recording device with record having layers with different intensity sensitivity. 3,902,010, Cl. 178-6.70A.
- Gostling, Peter Eric, to C. Evans & Sons Limited. Connector assembly for scaffold structures. 3,901,609, Cl. 403-49.000.
- Goto, Toru; and Kajino, Yukio, to Mitsubishi Kenki Kabushiki Kaisha. DC arc welding apparatus by high-frequency pulse current. 3,902,037, Cl. 219-135.000.
- Gottesman, Roy T.; Kagan, George M.; and Fath, Joseph, to Tenneco Chemicals, Inc. Metal salt solutions and surface-coating compositions containing same. 3,901,837, Cl. 260-22.00R.
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- Grayson, Robert E. Trolling drag meter. 3,901,076, Cl. 73-184.000.
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- Gregorian, Razmic S.; and Hoernle, Hans R., to United Merchants and Manufacturers, Inc. Process for treating fabrics and three-component fabrics obtained therefrom. 3,901,649, Cl. 8-114.500.
- Grennan, Charles W., to Chandler Evans Inc. Pivotal vaneentrifugal pump. 3,901,623, Cl. 415-141.000.
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- Gross, Stanley J., to Biological Developments, Inc. Receptor assays of biologically active compounds employing biologically specific receptors. 3,901,654, Cl. 23-230.00B.
- Gross, Thomas A. O., to Polaroid Corporation. Film speed control for sound motion picture projector. 3,902,103, Cl. 318-227.000.
- Grossan, Murray. Ear applicator. 3,901,233, Cl. 128-261.000.
- Groth, Rolf, to Flachglas Aktiengesellschaft Delog-Detag. Heat-reflecting glass sheets. 3,901,997, Cl. 428-428.000.
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- Guilbault, Lawrence James: *See—*
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- Haensel, Valdimir, to Universal Oil Products Company. Separation of strength-defective refractory inorganic oxide particles. 3,901,800, Cl. 209-162.000.
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- Hagen, Magnus F.; and Jordan, Fred A. Adaptor and latching means for removably attaching drawers to telescoping ball bearing drawer slides. 3,901,565, Cl. 308-3.800.
- Haile, Ernest. Framing and mounting means for a rear vision mirror. 3,901,587, Cl. 350-293.000.
- Haims, Murray J.; Hao, Hsieh T.; Lebizay, Gerald; and Weiss, Alfred, to International Business Machines Corporation. Binary adder circuit. 3,902,055, Cl. 235-175.000.
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- Hall, Thomas E.; and Bassett, William W., to Honeywell Inc. Switching device for operating a plurality of switches in sequences with ambient temperature compensation. 3,902,151, Cl. 337-340.000.
- Hallgren, Hans Lennart, to Satt Elektronik AB. Visibility meter using multiple light beams. 3,901,812, Cl. 250-565.000.
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- Hampton, Loyd D.; and Shirley, Donald J., to United States of America, Navy. Acoustic velocimeter for ocean bottom coring apparatus. 3,901,075, Cl. 73-170.00A.
- Hamy, Norbert, to Trebron Holdings Limited. Passive restraint seat system. 3,901,550, Cl. 297-390.000.
- Hanchett, Leland J., Jr., to Taplin Business Machines Incorporated. Binary bar code reader capable of reading skewed lines. 3,902,049, Cl. 235-61.11E.
- Hannah, John, to Merck & Co., Inc. 1-[Substituted phosphinothioyl, phosphinyl or phosphino]-substituted indole-3-acetic acids. 3,901,914, Cl. 260-326.12R.
- Hansen, Earl N., to LFE Corporation. Ultrasonic thickness gauge. 3,901,071, Cl. 73-67.80S.
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- Jacobson, James J. Apparatus for bending material in the edgewise plane. 3,901,064, Cl. 72-388.000.
- Jacobsson, Kurt Arne Gunnar, to Aktiebolaget IRO. Thread delivery device for textile machines. 3,901,052, Cl. 66-125.00R.
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- Jai, Marlyse Jeanne Baldwin. Piston for use with rotary piston rod. 3,901,132, Cl. 92-182.000.
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- Jentsch, Erwin, to General Motors Corporation. Hydraulic twin-tube vibration damper. 3,901,359, Cl. 188-269.000.
- Jersey Nuclear-Avco Isotopes, Inc.: See—
Pike, Charles T., 3,902,130.
- Jervis B. Webb Company: See—
Kohls, James P.; and Borgman, Robert J., 3,901,346.
- Jimenez, James A. Automatic enchilada machine. 3,901,137, Cl. 99-353.000.
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- Jenkins, Danny R., to Dotco, Inc. Angle drive unit. 3,901,098, Cl. 74-417.000.
- Joh, Yasushi; and Sugimori, Teruhiko, to Mitsubishi Rayon Co., Ltd. Method of preparing acrylonitrile polymers. 3,901,856, Cl. 260-79.3MU.
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Nilsson, Allan Elvir; and Johansson, Hans Gosta, 3,901,135.
- John, Erwin Roy. Method of testing the senses and cognition of subjects. 3,901,215, Cl. 128-2.10B.
- John Fluke Mfg. Co., Inc.: See—
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- John Zink Company: See—
Reed, Robert D.; Zink, John S.; and Schwartz, Robert E., 3,901,643.
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- Johnson, Carl W.: See—
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- Johnson, Edgar G., Jr.; Stonecypher, Thomas E.; and Lawson, Charles V., to Micromedex Systems, Inc. Apparatus for measuring enzyme concentrations using an optical instrument such as a spectrophotometer. 3,901,600, Cl. 356-88.000.
- Johnson, Edward F.: See—
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- Johnson, James M. Carrier for seismic exploder. 3,901,351, Cl. 181-114.000.
- Johnson & Johnson: See—
Cepuritis, Talivaldis; and Cepuritis, Gunta, 3,901,237.
- Fechillas, Michael R., 3,901,843.
- Tritsch, Ludwig, 3,901,239.
- Johnson, Peter Edwin: See—
Rogers, Philip Sydney; Williamson, James; and Johnson, Peter Edwin, 3,901,716.
- Johnson, Robert H.: See—
Boardman, William W., Jr.; and Johnson, Robert H., 3,901,067.
- Johnson Service Company: See—
Strawn, Charles F., 3,901,310.
- Johnson, Thomas B., to Armco Steel Corporation. Endless track vehicle and cooling system therefor. 3,901,335, Cl. 180-5.00R.
- Johnson, Wayne F.: See—
Burtis, Carl A.; and Johnson, Wayne F., 3,901,658.
- Johnston, James A. Dental floss dispensing and manipulation systems. 3,901,251, Cl. 132-91.000.
- Joklik, Otto; Elebracht, Gunter; and Siekmann, Gunter, to Rheinstahl AG. Reactor for carrying out catalytic reactions with solid bed catalysts. 3,901,659, Cl. 23-288.00K.
- Jones, David C.: See—
Collins, John E.; Dietsche, Delmar A.; Jones, David C.; and Mitchell, Donald J., 3,901,253.
- Jones, Robert H.; and Hummel, Charles V., to Beckman Instruments, Inc. Liquid sampling device. 3,901,653, Cl. 23-230.00R.
- Jones, Rufus S., to Celanese Corporation. Two stage process for preparing aromatic polyamides. 3,901,854, Cl. 260-78.00R.
- Jones, Wesley C., to Cherry Electrical Products Corporation. Momentary switch. 3,902,033, Cl. 200-160.000.
- Jordan, Fred A.: See—
Hagen, Magnus F.; and Jordan, Fred A., 3,901,565.
- Joseph Lucas (Industries) Limited: See—
Bloom, Joseph Louis, 3,901,260.
- Guy, Kenneth Theodore, 3,901,266.
- Holloway, Frank Raymond; and Farley, James Michael, 3,901,960.
- Lawson, Ralph Leonard Joseph, 3,901,061.
- Shepherd, William Edwin; and Bridgewater, Horace Kenneth, 3,901,415.
- Journee, Paul: See—
Baut, Jacques; and Journee, Paul, 3,900,917.
- Judge, Paul: See—
Lynn, Edwin W.; Tardiff, Hervey L.; and Judge, Paul, 3,901,401.
- Junkins, Ernest M. Automatic guiding apparatus for sewing machine. 3,901,172, Cl. 112-262.000.
- Justice, James W. H., to Westinghouse Electric Corporation. Audio and video plural source time division multiplex for an educational TV system. 3,902,007, Cl. 178-5.80R.
- K-Line Industries, Inc.: See—
Kammeraad, James A., 3,900,948.
- Kabushiki Kaisha Komatsu Seisakusho: See—
Ohnishi, Nobuo, 3,901,338.
- Kabushiki Kaisha Suwa Seikosha: See—
Yamazaki, Satoshi, 3,901,584.
- Kader, John A., to Chem-Paint Specialties, Inc. Rust preventative coating for metallic surfaces consisting of water-soluble resin and sodium benzoate-potassium tripolyphosphate rust inhibitor. 3,901,836, Cl. 260-17.00R.
- Kagan, George M.: See—
Gottesman, Roy T.; Kagan, George M.; and Fath, Joseph, 3,901,837.
- Kaganowicz, Grzegorz: See—
Mehalso, Robert Michael; and Kaganowicz, Grzegorz, 3,901,994.
- Kajino, Yukio: See—
Goto, Toru; and Kajino, Yukio, 3,902,037.
- Kalakowsky, Charles B.: See—
Lewis, Edward A.; and Kalakowsky, Charles B., 3,902,176.
- Kalicki, Richard J.; and Jalovec, Thomas W. Bicycle rack. 3,901,421, Cl. 224-29.00R.
- Kalnoki Kis, Tibor; and Reilly, Thomas A., to Union Carbide Corporation. Thin flat cell construction having a gas-permeable coated perforated anode. 3,901,732, Cl. 136-111.000.
- Kammeraad, James A., to K-Line Industries, Inc. Cutter for oil filter and like casings. 3,900,948, Cl. 30-17.000.
- Kanbara, Kenjiro; and Miyasita, Satoru, to Nippon Steel Corporation. Cutoff system for solid and gas provided on a reducing furnace of continuous operation. 3,901,490, Cl. 266-20.000.
- Kane, William S.; and Cardwell, Paul H., to Deepsea Ventures, Inc. Method of ocean floor nodule treatment and electrolytic recovery of metals. 3,901,775, Cl. 204-105.00M.
- Kanebo, Ltd.: See—
Hiroi, Takashi; Ichikawa, Michio; and Fukutani, Megumu, 3,901,014.
- Kanoh, Ikushi: See—
Hakamada, Takashi; Kanoh, Ikushi; and Narahara, Toshikazu, 3,902,087.
- Kantor, Ilya Solomonovich: See—
Alexandrov, Adolf Moritsovich; Aglitsky, Vladimir Efimovich; Kantor, Ilya Solomonovich; Topolyansky, Yuri Arnoldovich; and Tsimbler, Yuri Abramovich, 3,901,462.
- Kanzaki Paper Manufacturing Co., Ltd.: See—
Ohuchi, Motohiro; Kitahori, Tojiro; Maitoko, Toshinari; and Mizuguchi, Katuhiro, 3,901,804.
- Kao Soap Co., Ltd.: See—
Nakagawa, Yunosuke; Sato, Koitsu; and Hakozaiki, Shori, 3,901,819.
- Kasagi, Ryoichi. Multipurpose electrically melting wire metalizing machine provided with a multiple injection port. 3,901,441, Cl. 239-81.000.
- Katayama, Shigenari: See—
Yamamoto, Hisao; Nakao, Masaru; Sasajima, Kikuo; Maruyama, Isamu; and Katayama, Shigenari, 3,901,898.
- Katsube, Akinaga. Life-saving chute. 3,901,364, Cl. 193-25.00R.
- Katsube, Yujiro: See—
Mori, Kenzo; Yasuda, Hyo; Katsube, Yujiro; and Ikeda, Norio, 3,902,177.
- Katsuma, Yuji: See—
Sakai, Takuji; Takada, Kunihiko; and Katsuma, Yuji, 3,901,424.
- Katsur, Toyozoo: See—
Yoshikawa, Junichi; Katsur, Toyozoo; Fukita, Yoshikazu; Wada, Hiroo; and Tanigawa, Yukio, 3,901,762.
- Katz, Helmut: See—
Hofmann, Horst; and Katz, Helmut, 3,901,663.
- Kaufman, John Joseph: See—
Michael, Arthur Leroy; and Kaufman, John Joseph, 3,901,789.
- Kawa, Ryuichi, to Ricoh Co., Ltd. Pattern recognition system. 3,902,160, Cl. 340-146.3AQ.
- Kawaguchi, Hiroshi; Konishi, Masataka; and Tomita, Koji, to Bristol-Myers Company. Oxamicetin and process for its production. 3,901,877, Cl. 260-211.5AB.
- Kawamoto, Isao: See—
Nara, Takashi; Takasawa, Seigo; Okachi, Ryo; Kawamoto, Isao; Kumakawa, Masaru; Yamamoto, Mitsuyoshi; and Sato, Seiji, 3,901,972.
- Kawamura, Tsuguo: See—
Kondo, Yoshikazu; Kawamura, Tsuguo; Aoyama, Hiroshi; and Araki, Tomoyoshi, 3,901,661.
- Kay, Donald A., to Becton, Dickinson and Company. Blood collecting container and method. 3,901,219, Cl. 128-2.00F.
- Kay, Robert E.; and Walwick, Earle R., to Philco-Ford Corporation. Organic semiconductor solar cell. 3,900,945, Cl. 29-572.000.
- Kearns, Robert W., to Tann Co. Intermittent windshield wiper control device. 3,902,106, Cl. 318-443.000.
- Kees, Galen D. Bow string releasing device. 3,901,211, Cl. 124-35.00A.
- Kell, Wesley Francis. See-saw swing apparatus. 3,901,504, Cl. 272-85.000.
- Kelley, Warren J.; and Larson, Lawrence E., to International Business Machines Corporation. Method and means for reducing the amount of address translation in a virtual memory data processing system. 3,902,164, Cl. 340-172.500.
- Kelly, Leonard, to Sphere Investments Limited. Integrated reflectance photometric sorter. 3,901,388, Cl. 209-111.700.
- Kendall Company, The: See—
Patel, Bhupendra C.; and Dye, John F., 3,901,235.
- Kennebeck, William: See—
Ikrath, Kurt; and Kennebeck, William, 3,902,118.
- Kennedy, James D.; and Lindner, J. Henry, to Elgin Molded Plastics Co. Spoke mountable display device. 3,901,554, Cl. 301-37.0SA.
- Kerr, Wallace C.: See—
Woolsey, Robert; and Kerr, Wallace C., 3,901,209.
- Keser, Fridolin, to Werner & Pfleiderer. Continuously operable screw machine. 3,901,487, Cl. 259-191.000.
- Keuler, Joseph F.: See—
Schur, Paul E.; Gallotello, Peter E.; and Keuler, Joseph F., 3,901,050.
- Kidder, Jay T.: See—
Johnson, Clarence R.; and Kidder, Jay T., 3,900,905.
- Kieffaber, Clarence A., to Marion Corporation. Dough mixer. 3,901,482, Cl. 259-6.000.
- Kilmer, John B. Fluid motor, pump or the like having inner and outer fluid displacement means. 3,901,630, Cl. 418-59.000.
- Kim, Yung K., to Dow Corning Corporation. Imidoorganosilicon compounds. 3,901,913, Cl. 260-326.00E.
- Kimijima, Katsunori: See—
Tanaka, Toyosuke; Okuzumi, Isamu; Matsuda, Tsuneo; and Kimijima, Katsunori, 3,901,865.
- Kimantas, Charles L.: See—
Lynch, Charles R.; Harrison, Charles W.; Kimantas, Charles L., and White, William D., 3,901,062.
- King, Donald R., to J. I. Case Company. Implement stabilization method and apparatus. 3,901,395, Cl. 214-138.00R.
- King, Leslie W.: See—
Lemke, Walter G.; and King, Leslie W., 3,901,451.
- King, Paul A.: See—
Assarsson, Per G.; King, Paul A.; and Yen, Steven N., 3,901,236.
- Kingsland, David O., to Xerox Corporation. High aperture reflection photodetector apparatus. 3,901,607, Cl. 356-199.000.
- Kiowski, John W.; and Bobbitt, John T., to Petty-Ray Geophysical, Inc. Digital synchronizer system for remotely synchronizing operation of multiple energy sources and the like. 3,902,161, Cl. 340-147.0SY.

- Kirby, Raymond L., Jr., to Monarch Marking Systems, Inc. Ink fountain and supply system for a printing press. 3,901,150, Cl. 101-351.000.
- Kishimoto, Yoshio; and Yamamoto, Kazumasa, to Matsushita Electric Industrial Co., Ltd. Polymeric thermo-detective material. 3,901,952, Cl. 260-841.000.
- Kistner, Hermann F., to Maschinenbau Oppenweiler Binder & Co. Device for making a thrice parallel folded sheet in which the open bent covers are directed towards the middle. 3,901,501, Cl. 270-62.000.
- Kita, Yasuo; and Yamamoto, Masachika, to Sumitomo Electric Industries, Ltd. Worn brake lining detector. 3,902,157, Cl. 340-52.00A.
- Kitahori, Tojiro: *See—*
- Ohuchi, Motohiro; Kitahori, Tojiro; Maitoko, Toshinari; and Mizuguchi, Katuhiro, 3,901,804.
- Kitami, Yoshiaki, to Senko Kikai Kabushiki Kaisha. Dust collecting apparatus. 3,901,671, Cl. 55-304.000.
- Kitsuta, Toshiyuki; Mino, Iwao; and Nakagawa, Koji, to Japanese National Railways; and Denki Kagaku Kogyo Kabushiki Kaisha. Method for producing a high strength concrete. 3,901,722, Cl. 106-89.000.
- Kitts, William H., Jr. Device for supporting a coated abrasive. 3,900,976, Cl. 51-362.000.
- Kivett, Jerome S. Container. 3,901,406, Cl. 220-8.000.
- Kiyasu, Zeniti; and Tsuruhara, Homare, to Iwatsu Electric Co., Ltd. Memory apparatus using cylindrical magnetic domain materials. 3,902,166, Cl. 340-174.0YC.
- Klamer, Reuben B. Doll having limbs with hemispherical portions pivotally joined to its body. 3,900,992, Cl. 46-161.000.
- Klatskin, Morris, to Inventors Marketing & Mfg. Inc. Intravenous injection board. 3,901,227, Cl. 128-133.000.
- Klaus, Joseph J.; and Shapland, Earl P., to United States Steel Corporation. Operating mechanism for slidable gates. 3,901,418, Cl. 222-504.000.
- Klebe, Elmer C., Jr.; and Looper, Timothy J., to Singer Company, The. Portable surface-treating machine with improved platen-mounting construction. 3,900,974, Cl. 51-170.0MT.
- Kleiner, Carl J. Light emitting device. 3,901,121, Cl. 84-484.000.
- Kleinewefers Industrie-Compagnie GmbH: *See—*
- Meisen, Klaus; Alders, Kurt; Teetz, Wolfgang; and Schiffer, Gunter, 3,901,053.
- Klinger, Lance T. Coin acceptor/rejector. 3,901,368, Cl. 194-100.00A.
- Kljuev, Sergei Mikhailovich: *See—*
- Zagorevsky, Vladimir Alexeevich; Kljuev, Sergei Mikhailovich; Bendikov, Eduard Alexandrovich; and Lopatina, Klara Ivanovna, 3,901,884.
- Kljukin, Vladimir Ivanovich: *See—*
- Vasiliev, July Arsenievich; Orfani, Mikhail Petrovich; Markelov, Evgeny Vasilievich; Ivashkin, Jury Ivanovich; Dyakov, Alexandr Petrovich; and Kljukin, Vladimir Ivanovich, 3,901,072.
- Klockner-Humboldt-Deutz Aktiengesellschaft: *See—*
- Bongert, Wilhelm; and Kuhn, Horst, 3,900,958.
- Klose, Odo, to Mega product-u. Verpackungsentwicklung Marketing GmbH & Co. Kommanditgesellschaft. Weighted muscle exerciser. 3,901,503, Cl. 272-57.00R.
- Knapp, Kenneth K.; and Cornell, Charles R., to Eaton Corporation. Hydrostatic transmission control system. 3,901,031, Cl. 60-395.000.
- Knapp, Randolph H., to Shell Oil Company. Asphalt plug emplacement process. 3,901,316, Cl. 166-250.000.
- Knezevic, Vasilije; Pollock, Mark W.; Liauw, Koei-Liang; and Spiegelman, Gerald, to Witco Chemical Corporation. New catalyst in the direct synthesis of dimethyltin dichloride. 3,901,824, Cl. 252-429.00R.
- Knipp, Ulrich: *See—*
- Boden, Heinrich; and Knipp, Ulrich, 3,901,408.
- Kocher, Hans; Haenzi, Werner; Muff, Erwin; and Gygaz, Claude-Andre, to Societe Suisse pour l'Industrie Horlogere Management Services S.A. Watch movement. 3,901,019, Cl. 58-59.000.
- Kocher, Lawrence H.: *See—*
- Coles, Alan V.; and Kocher, Lawrence H., 3,901,988.
- Koderman, Ivan. Twin cylinder engine. 3,901,027, Cl. 60-39.630.
- Koepke, John A., to Illinois Tool Works Inc. Electrical switch with improved contact structure. 3,902,032, Cl. 200-153.00M.
- Koga, Koichi; and Ito, Yukiaki, to Sumitomo Chemical Company, Limited. Fluoran compounds. 3,901,918, Cl. 260-335.000.
- Koga, Tadashi: *See—*
- Tada, Fusao; Koga, Tadashi; Inaba, Shizuo; Sakata, Keiji; Hatanaka, Tutomu; and Nobata, Shoji, 3,901,932.
- Koga, Wataru: *See—*
- Watanabe, Takeyoshi; Sato, Morimasa; and Koga, Wataru, 3,901,953.
- Kogiso, Masahiro; Koike, Toshio; Yasui, Junichi; Igarashi, Yohsuke; Kuromori, Mitsuo; and Ishii, Kiyoshi, to Iwatsu Electric Co., Ltd. Copying machines of the variable magnifying power type. 3,901,593, Cl. 355-11.000.
- Kohls, James P.; and Borgman, Robert J., to Jervis B. Webb Company. Safety bumper for a driverless vehicle. 3,901,346, Cl. 180-96.000.
- Kohno, Mitsuo; Nomura, Minoru; Shibazaki, Akio; Yuasa, Takeo; and Mutoh, Yoshihiko, to Asahi Kasei Kogyo Kabushiki Kaisha. Strengthened films and method for producing same. 3,901,851, Cl. 260-47.00C.
- Koike, Toshio: *See—*
- Kogiso, Masahiro; Koike, Toshio; Yasui, Junichi; Igarashi, Yohsuke; Kuromori, Mitsuo; and Ishii, Kiyoshi, 3,901,593.
- Kolb, Gunter: *See—*
- Sackman, Gunter; Balle, Gerhard; Kolb, Gunter; and Muller, Friedhelm, 3,901,857.
- Kolbe, Joachim. Vehicle banking arm construction. 3,901,529, Cl. 280-112.00A.
- Kolessar, Andrew: *See—*
- Basile, Peter A.; and Kolessar, Andrew, 3,901,480.
- Komaki, Takao: *See—*
- Fukushima, Osamu; Osawa, Sadao; Komaki, Takao; and Sato, Masamichi, 3,901,698.
- Kondo, Katsumi; Noda, Fumiyoshi; and Watanabe, Yuji, to Toyota Jidosha Kogyo Kabushiki Kaisha. Manifold reactor. 3,901,029, Cl. 60-282.000.
- Kondo, Koji: *See—*
- Tsukamoto, Hideo; Otsuka, Katsumi; Tamura, Miyagi; Kondo, Koji; and Yoshisawa, Kosaku, 3,901,369.
- Kondo, Yoshikazu; Kawamura, Tsuguo; Aoyama, Hiroshi; and Araki, Tomoyoshi, to Toyo Kohan Co., Ltd. Prealloyed steel powder for formation of structural parts by powder forging and powder forged article for structural parts. 3,901,661, Cl. 29-182.000.
- Konishi, Masataka: *See—*
- Kawaguchi, Hiroshi; Konishi, Masataka; and Tomita, Koji, 3,901,877.
- Kooyer, Richard L.: *See—*
- Lutes, Olin S.; Holmen, James O.; and Kooyer, Richard L., 3,902,167.
- Kopp, Rudolf: *See—*
- Vorbruggen, Helmut; Kopp, Rudolf; Horowski, Reinhard; Paschelke, Gert; and Palenschat, Dieter, 3,901,876.
- Koppa, Daniel Anthony: *See—*
- Griner, Arthur J.; and Koppa, Daniel Anthony, 3,901,982.
- Kornfeld, Edmund C.; and Bach, Nicholas J., to Eli Lilly and Company. 8-Thiomethylergolines. 3,901,894, Cl. 260-285.500.
- Kosicki, Witold W.; and Hollingsworth, Charles M., to Horsman Dolls Inc. Ventriiloquist doll. 3,900,991, Cl. 46-116.000.
- Kosik, Samuel J., Jr.; and Robb, Frank B. Splash guard. 3,901,533, Cl. 280-154.50R.
- Kosson, Robert; and Swerdling, Burton, to Grumman Aerospace Corporation. Self-filling hollow core arterial heat pipe. 3,901,311, Cl. 165-105.000.
- Kostevich, Dmitry Nikolaevich: *See—*
- Chernichenko, Ivan Antonovich; Turchaninov, Vasily Vasilievich; Metlayev, Vladimir Nikolaevich; Sobol, Ivan Ivanovich; Kuligin, Boris Nikolaevich; Borisov, Valery Gavrilovich; and Kostevich, Dmitry Nikolaevich, 3,901,662.
- Kovacs, Andre. Lift and propulsion means for a vertical take-off and landing aerodyne. 3,901,463, Cl. 244-12.0CW.
- Koyasu, Takeo; and Tokuhara, Mituhiro, to Canon Kabushiki Kaisha. Endoscopes. 3,901,220, Cl. 128-6.000.
- Kozlik, Antonin, to Boots Company Limited, The. 2-(1-(2-Fluoro-4-biphenyl)ethyl)-2-oxazoline. 3,901,906, Cl. 260-307.00F.
- Kozlowski, Robert H.; and Rosenthal, Joel W., to Chevron Research Company. Motor fuel. 3,901,664, Cl. 44-56.000.
- Kramer, Charles F.; and Parks, Robert F., to Steel Heddle Manufacturing Company. Loom harness. 3,901,282, Cl. 139-92.000.
- Kreel, Claude: *See—*
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- Kreiger, Stanley: *See—*
- Petrekis, John A., Jr.; and Kreiger, Stanley, 3,901,446.
- Krein, Reuben J. Sliding closure assembly. 3,900,964, Cl. 49-214.000.
- Krenzer, John, to Velsicol Chemical Corporation. Heterocyclic thiadiazolylureas. 3,901,902, Cl. 260-306.80D.
- Krenzer, John, to Velsicol Chemical Corporation. Certain thiadiazolyl imidazolidinones. 3,901,904, Cl. 260-306.80D.
- Krenzer, John, to Velsicol Chemical Corporation. 1-Thiadiazolyl-3-alkyl-5-alkoxyimidazolidinones. 3,901,905, Cl. 260-306.80D.
- Krenzer, John: *See—*
- Richter, Sidney B.; and Krenzer, John, 3,901,917.
- Sommer, Harold Z.; and Krenzer, John, 3,901,937.
- Kresta, Erich: *See—*
- Goenter, Werner; Kresta, Erich; and Stumpf, Horst, 3,901,961.
- Krohn, Ivar T.; Luebbe, Ray H., Jr.; Page, Geoffrey A.; and Swanton, Paul C., to Xerox Corporation. Manifold imaging process using electrically photosensitive material subject to light fatigue. 3,901,697, Cl. 96-1.00M.
- Kruesi, Paul R.; and Goens, Duane N., to Cyprus Metallurgical Processes Corporation. Process for the recovery of copper from its sulfide ores. 3,901,776, Cl. 204-107.000.
- Kubota, Toichi: *See—*
- Niizeki, Kinya; Watanabe, Tohru; Yamamoto, Shoji; Takeuchi, Akihiro; and Kubota, Toichi, 3,901,787.
- Kubota, Yasuna, to Taimei Kinzoku Kogyo Kabushiki Kaisha. Rotary valve. 3,901,474, Cl. 251-159.000.
- Kuchuris, Louis G.; and Gemicki, Stanley, to Cutting Equipment Leasing, Inc. Method of making expanded polystyrene partition structure. 3,901,962, Cl. 264-154.000.
- Kugelfischer Georg Schafer & Co.: *See—*
- Schuster, Friedrich, 3,901,011.
- Kuhlmann, Uguine: *See—*
- Arbaud, Paul Georges Louis, 3,901,648.
- Kuhn, Horst: *See—*
- Bongert, Wilhelm; and Kuhn, Horst, 3,900,958.
- Kuligin, Boris Nikolaevich: *See—*
- Chernichenko, Ivan Antonovich; Turchaninov, Vasily Vasilievich; Metlayev, Vladimir Nikolaevich; Sobol, Ivan Ivanovich; Kuligin, Boris Nikolaevich; Borisov, Valery Gavrilovich; and Kostevich, Dmitry Nikolaevich, 3,901,662.
- Kulka, Kurt, to Fritzsche Dodge & Olcott Inc. Alkyl diacetate XY-dimethyl-ring substituted-benzoates. 3,901,830, Cl. 252-522.000.

- Kumakawa, Masaru: *See—*
- Nara, Takashi; Takasawa, Seigo; Okachi, Ryo; Kawamoto, Isao; Kumakawa, Masaru; Yamamoto, Mitsuyoshi; and Sato, Seiji, 3,901,972.
- Kummer, Franz: *See—*
- Mai, Gerhard; Siepmann, Reiner; and Kummer, Franz, 3,901,828.
- Kuncz, Frank, Jr. Rope caddy. 3,901,458, Cl. 242-85.100.
- Kuoper, Jacob Hermanus, to N.V. Appingedammer Bronsmotorenfabriek. Tunnel-frame for combustion engines. 3,901,206, Cl. 123-195.00R.
- Kureha Kagaku Kogyo K.K.: *See—*
- Shinoda, Kiyonori; Nakamura, Tadashi; Funabashi, Masayuki; and Okubo, Azuma, 3,901,949.
- Yoshikawa, Shinsuke; and Sawa, Yuji, 3,901,638.
- Kurita, Hideaki: *See—*
- Isowa, Yoshikazu; Takashima, Toshiyuki; Ohmori, Muneaki; Kurita, Hideaki; Sato, Masanari; and Mori, Kaoru, 3,901,890.
- Kuromori, Mitsuo: *See—*
- Kogiso, Masahiro; Koike, Toshio; Yasui, Junichi; Igarashi, Yohsuke; Kuromori, Mitsuo; and Ishii, Kiyoshi, 3,901,593.
- Kurr, Klaus: *See—*
- Pletsch, Hubert; and Kurr, Klaus, 3,901,047.
- Kurtz, Donald M., to B. F. Goodrich Company, The. Vinyl chloride polymers containing zinc tungstate. 3,901,850, Cl. 260-45.75W.
- Kusunose, Tetsuhiro: *See—*
- Hokonoki, Hisao; Ishikawa, Tatsuo; Sakashita, Masahira; Kusunose, Tetsuhiro; and Fukuma, Noboru, 3,901,989.
- L.B. (Plastics) Limited: *See—*
- Litchfield, Leon G., 3,901,572.
- L & R Industries: *See—*
- Woolsey, Robert; and Kerr, Wallace C., 3,901,209.
- La Compagnie Manufacturiere Lauouel Inc.: *See—*
- Ouellette, Laurent R., 3,901,524.
- Laenen, Edward G.; and Prah, Marvin E., to International Business Machines Corporation. Cam surface mandrel with air bearing support. 3,902,192, Cl. 360-84.000.
- Lafferty, James H., to Carpenter Technology Corporation. Apparatus for making metal powder. 3,901,492, Cl. 266-34.00R.
- Lafuze, David Logan, to General Electric Company. Starter generator electrical system utilizing phase controlled rectifiers to drive a dynamoelectric machine as a brushless DC motor in the starter mode and to provide frequency conversion for a constant frequency output in the generating mode. 3,902,073, Cl. 290-46.000.
- Lahmann, Werner K., to Bodenseewerk Perkin-Elmer & Co., G.m.b.H. Chopper arrangement for atomic absorption spectrophotometer. 3,901,601, Cl. 356-97.000.
- Laing, Ingeborg. Electric convection heater having a friction-type blower. 3,902,045, Cl. 219-371.000.
- Lalk, Robert H.: *See—*
- Thomas, Mary R.; Lalk, Robert H.; Evani, Syamalnaray; and Schmidt, Donald L., 3,901,816.
- Lamb, Raymond K.: *See—*
- Piazza, Andre L.; and Lamb, Raymond K., 3,901,546.
- Lambregts, Antonius A., to Boeing Company, The. Thrust and flight path control decoupling system. 3,901,466, Cl. 244-77.00D.
- Lanahan, John H.; and Abraham, William W., to GAF Corporation. Method and apparatus for sorting cards with coded vertical edge. 3,901,796, Cl. 209-80.500.
- Lancaster, Cecilia H., to Baker, Raymond N., a part interest. Collapsible box structure. 3,901,432, Cl. 229-23.00R.
- Landgraf, Hermann; and Hohmann, Eugen, to Siemens Aktiengesellschaft. Electrical motor, particularly for driving dental handpieces and angular pieces. 3,900,952, Cl. 32-27.000.
- Landis, James P.; and Williams, Robert O., to Pillar Corporation. Lift swing furnace. 3,901,999, Cl. 13-26.000.
- Lang, Francis Harold, to International Nickel Company, Inc., The. Ferritic steel welding material. 3,902,039, Cl. 219-145.000.
- Langheim-Pfannhauser Werke AG: *See—*
- Ludwig, Ralf, 3,901,773.
- Lange, Wilfried, to Bukama GmbH Hannover. Valve arrangement for the working cylinder of a pneumatically operated stapler. 3,901,130, Cl. 91-461.000.
- Laporte, Jean-Claude: *See—*
- Laporte, Jean-Michel; and Laporte, Jean-Claude, 3,901,208.
- Laporte, Jean-Michel; and Laporte, Jean-Claude. Manual target throwing device. 3,901,208, Cl. 124-5.000.
- Larsen, Jared Erle: *See—*
- Doniguan, Thaddeus M.; Larsen, Jared Erle; and Takabayashi, Susumu, 3,901,313.
- Larson, Lawrence E.: *See—*
- Kelley, Warren J.; and Larson, Lawrence E., 3,902,164.
- Lasar, William. Method and apparatus for mixing materials, including ground meat. 3,901,483, Cl. 259-41.000.
- La Torraca, Gerard A. Button attachment. 3,900,925, Cl. 24-90.000.
- La Violette, Paul A., to Spinnato, Paul, a part interest. Submersible trailer light. 3,902,057, Cl. 240-8.300.
- Lavoillotte, Maurice. Releasable panel fastening device. 3,900,931, Cl. 24-221.00R.
- Lawson, Charles V.: *See—*
- Johnson, Edgar G., Jr.; Stonecypher, Thomas E.; and Lawson, Charles V., 3,901,600.
- Lawson, Ralph Leonard Joseph, to Joseph Lucas (Industries) Limited. Die and punch sets. 3,901,061, Cl. 72-253.000.
- Lebizay, Gerald: *See—*
- Haims, Murray J.; Hao, Hsieh T.; Lebizay, Gerald; and Weiss, Alfred, 3,902,055.
- LeBlanc, Maurice: *See—*
- Riess, Jean G.; LeBlanc, Maurice; Santini, Georges; and Guion, Jacky, 3,901,948.
- Lecailtel, Pierre; and Dressler, Bruno, to Regie Nationale des Usines Renault; and Automobiles Peugeot. Clamping of parts by adherence on axial thrust support. 3,901,519, Cl. 279-1.00L.
- Lee, Frank James: *See—*
- Harding, John Patrick; Butler, David Sydney; and Lee, Frank James, 3,902,004.
- Lee, Nathan D.: *See—*
- Browning, Jhonce N.; Lee, Nathan D.; and Smea, George H., 3,901,822.
- Lee, Peter R.; and Burror, Donald W. Musical instrument carrying case. 3,901,384, Cl. 206-314.000.
- Leeds & Northrup Company: *See—*
- Pfisterer, George J., Jr., 3,902,111.
- Leeson Corporation: *See—*
- Brouwer, Charles William; and Cowan, Larry Clyde, 3,901,273.
- Lehnert, Gunther; Pampus, Gottfried; and Maertens, Dieter, to Bayer Aktiengesellschaft. Polypentenamers. 3,901,866, Cl. 260-93.100.
- Leimgruber, Willy; and Weigele, Manfred, to Hoffmann-La Roche Inc. Process for the preparation of 4-amino-2-methylpyrimidine 5-carboxamide. 3,901,888, Cl. 260-256.40N.
- Leingang, John L., to United States of America, Air Force. Ramjet with integrated rocket boost motor. 3,901,028, Cl. 60-225.000.
- Lekan, Henry N.; and Richards, Louis R., to Formax, Inc. Cuber-perforator for food patties. 3,900,919, Cl. 17-26.000.
- Lemke, Walter G.; and King, Leslie W. Device for dispersing animal excrement. 3,901,451, Cl. 241-38.000.
- Lenz, Arnold; Ackermann, Otto; and Bleh, Otto, to Dynamit Nobel Aktiengesellschaft. Method for the continuous manufacture of orthoformic acid alkyl esters. 3,901,946, Cl. 260-615.00A.
- Lenz, Manfred; Reynolds, Paul; and Westen, Willi, to Deutsche Texaco Aktiengesellschaft. Pipeline paraffin scraper. 3,900,912, Cl. 15-104.06R.
- Les Fabriques d'Assortiments Reunies: *See—*
- Revaz, Francis, 3,901,717.
- Leshner, George Y.; Gelotte, Karl O.; and Surrey, Alexander R., to Sterling Drug Inc. 1,5-Dioxaspiro[5.5] undecanes. 3,901,920, Cl. 260-340.700.
- Leslie, Donald J.: *See—*
- O'Brien, Roy E.; Leslie, Donald J.; and Leslie, Michael R., 3,901,525.
- Leslie, Michael R.: *See—*
- O'Brien, Roy E.; Leslie, Donald J.; and Leslie, Michael R., 3,901,525.
- Levine, J. Paul: *See—*
- Rosen, Edward R.; and Levine, J. Paul, 3,901,385.
- Levine, Seymour: *See—*
- Brabets, Robert I.; and Levine, Seymour, 3,901,153.
- Levis, Peter Stanley: *See—*
- Griffiths, William Edward; and Levis, Peter Stanley, 3,901,086.
- Levy, Claude Isaac, to L'Industrie de Chauffage. Heat exchanger employing condensation. 3,901,957, Cl. 261-6.000.
- Lewand, Susan H., to Danline Manufacturing Company. Rotary brush core assembly. 3,900,914, Cl. 15-181.000.
- Lewis, Edward A.; and Kalakowsky, Charles B., to United States of America, Air Force. Atmospheric probe system for passive telemetry. 3,902,176, Cl. 343-18.00B.
- Lewis, Mark T.: *See—*
- Lewis, William L.; Lewis, Mark T.; and Clark, Earl C., 3,901,006.
- Lewis, Minnie B. Portable telephone apparatus. 3,902,025, Cl. 179-157.000.
- Lewis, William L.; Lewis, Mark T.; and Clark, Earl C., to said William L. Lewis and said Mark T. Lewis, by said Earl C. Clark. Vine combing machine. 3,901,006, Cl. 56-330.000.
- LFE Corporation: *See—*
- Hansen, Earl N., 3,901,071.
- Liauw, Koei-Liang: *See—*
- Knezevic, Vasilije; Pollock, Mark W.; Liauw, Koei-Liang; and Spiegelman, Gerald, 3,901,824.
- "Licencia" Talalmanyakat Ertekisito Vallalat: *See—*
- Mandoki, Andor, 3,901,739.
- Licentia Patent-Verwaltungs-G.m.b.H.: *See—*
- Offermann, Bernd-Peter, 3,902,097.
- Lichtenberger, Werner: *See—*
- Martin, Wilhelm N.; and Lichtenberger, Werner, 3,901,755.
- Lichtneckert, Stefan; Lundgren, Claes; and Ferno, Ove, to Aktiebolaget Leo. Chewable smoking substitute composition. 3,901,248, Cl. 131-2.000.
- Liechti, Peter; and Schlaepfer, Hans, to Ciba-Geigy AG. Azole compounds. 3,901,883, Cl. 260-240.00D.
- Lightfoot, Charles L., to Sun Scientific, Incorporated. Device for testing solutions and body fluids. 3,901,657, Cl. 23-253.0TP.
- Lightstone, John Bernard; and Mazzarella, Richard Benedict, to Union Carbide Corporation. Cryogenic grinding of copper. 3,900,975, Cl. 51-322.000.
- Limpel, Lawrence E.; and Ignatoski, Joseph A., to Diamond Shamrock Corporation. Crop yields with ketoximes. 3,901,683, Cl. 71-98.000.
- Lin, Kang, to du Pont de Nemours, E. I., and Company. Method for altering plant flowering and sexual reproduction. 3,901,684, Cl. 71-100.000.
- Lindblom, Karl Thore, to Ostbergs Fabriks AB. Apparatus for processing and treating felled trees. 3,901,652, Cl. 21-63.000.

Lindell, Key Ake; and Pettersson, Goran Karl Arvid, to Telefonaktiebolaget LM Ericsson. Circuit arrangement for regenerating the modulation timing of a line signal in a data transmission equipment. 3,902,014, Cl. 178-69.50R.

Lindgren, Owe Gunnar, to Telefonaktiebolaget LM Ericsson. Loud speaking telephone set. 3,902,023, Cl. 179-81.00B.

Lindner, J. Henry: *See—*

Kennedy, James D.; and Lindner, J. Henry, 3,901,554.

L'Industrielle de Chauffage: *See—*

Levy, Claude Isaac, 3,901,957.

Liong, Henry. Shuttle ball. 3,901,509, Cl. 273-106.00A.

Lipson, Charles S.: *See—*

Nicholson, James E.; and Lipson, Charles S., 3,901,221.

Litchfield, Leon G., to L.B. (Plastics) Limited. Drawers. 3,901,572, Cl. 312-330.000.

Little, David A., to Gibson Motor and Machine Service, Inc. Multiple channel graphic recorder. 3,902,179, Cl. 346-49.000.

Litton Industrial Products, Inc.: *See—*

Orlomoski, Roger W., 3,901,066.

Litwin, Burkhard, to Siemens Aktiengesellschaft. Method for the production of microscopically small metal or metal alloy structures. 3,901,770, Cl. 204-15.000.

Liu, Wai-Min: *See—*

Bennett, Harold F.; and Liu, Wai-Min, 3,901,585.

Loevenich, Josef, to Babcock & Wilcox Limited. Beater for hammer mills. 3,901,452, Cl. 241-197.000.

Loffelhardt, Dietmar, to Eberspacher, J. Muffler for a rotor vehicle internal combustion engine. 3,901,350, Cl. 181-50.000.

Logsdon, Hillard Glenn, to Aerona, Inc. Compact control unit for air distributing systems. 3,901,275, Cl. 137-601.000.

Long, James D., to du Pont de Nemours, E. I., and Company. Methods for increasing crop yields. 3,901,682, Cl. 71-93.000.

Long, William C.: *See—*

Gadd, Francis O.; Hay, Charles N.; and Long, William C., 3,901,568.

Longhenry, David K., to Pfizer, Inc. Calibrating device for light scatter photometering instrument. 3,901,588, Cl. 350-314.000.

Lonning, Thor J. G., to Monsanto Company. Vinyl halide resin compositions having high flex endurance. 3,901,839, Cl. 260-23.70N.

Loomba, Yogendra Singh: *See—*

Stephenson, Robert L.; Pfeiffer, Robert C.; and Loomba, Yogendra Singh, 3,901,461.

Looper, Timothy J.: *See—*

Klebe, Elmer C., Jr.; and Looper, Timothy J., 3,900,974.

Lopatina, Klara Ivanovna: *See—*

Zagorevsky, Vladimir Alexeevich; Kljuev, Sergei Mikhailovich; Bendikov, Eduard Alexandrovich; and Lopatina, Klara Ivanovna, 3,901,884.

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Walker, Anthony B., 3,902,021.

Lorenz, Hans Joachim: *See—*

Wirth, Hermann Otto; Lorenz, Hans Joachim; and Friedrich, Hans-Helmut, 3,901,930.

Loudas, Basil L., to Minnesota Mining and Manufacturing Company. Process and composition for cleaning and imparting water and oil repellency and stain resistance to a substrate. 3,901,727, Cl. 134-4.000.

Louzos, Demetrios V., to Union Carbide Corporation. Cathode mix for solid electrolyte device. 3,901,730, Cl. 136-83.00R.

Loveless, Frederick Charles, to Uniroyal, Inc. Molecular weight jumping of elastomeric polymers. 3,901,861, Cl. 260-83.700.

Lovell, Allen Kent: *See—*

Durkos, Larry George; Christie, Charles Dewey; Denney, Jerry William; Trusty, Jon Caton; Reynolds, Walter Lee; Cole, Robert Wayne; Brinson, Fred Edwin; and Lovell, Allen Kent, 3,901,656.

Lovingood, Walter B., to Woodward, Glenn E., a part interest. Party control conversion system for telephone exchanges. 3,902,020, Cl. 179-18.00H.

Lowenstein, Karl: *See—*

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LTV Aerospace Corporation: *See—*

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Swogger, Emery C., 3,901,128.

Lucas Aerospace Limited: *See—*

Midgley, John, 3,901,088.

Lucien Ferraz & Cie.: *See—*

Guglielmo, Jean, 3,902,088.

Ludwig, David Paul: *See—*

Boyer, John Albert; Ludwig, David Paul; and Zwickel, Friedrich, 3,901,429.

Ludwig, Ralf, to Langbein-Pfanhauser Werke AG. Method of making microcrack chromium coatings. 3,901,773, Cl. 204-41.000.

Luebke, Ray H., Jr.: *See—*

Krohn, Ivar T.; Luebke, Ray H., Jr.; Page, Geoffrey A.; and Swanton, Paul C., 3,901,697.

Luft, Walter, and Bello, Salvatore, to Jacoby-Bender, Inc. Strap and buckle combination. 3,900,934, Cl. 24-265.0WS.

Lundgren, Claes: *See—*

Lichtneckert, Stefan; Lundgren, Claes; and Ferno, Ove, 3,901,248.

Lundkvist, Alfred Ingevald. Apertured sleeve-shaped members for use in carrying out roof-bolting by means of bolts fastened in bore holes. 3,901,039, Cl. 61-45.00B.

Lutes, Olin S.; Holmen, James O.; and Kooyer, Richard L., to Honeywell Inc. Magnetic thin film switch. 3,902,167, Cl. 340-174.0PW.

Lynch, Charles R.; Harrison, Charles W.; Kimantas, Charles L.; and White, William D., to Texaco Inc. Vapor pressure measuring apparatus. 3,901,062, Cl. 73-64.200.

Lynn, Edwin W.; Tardiff, Hervey L.; and Judge, Paul, to Brockway Glass Company, Inc. Container and safety closure therefor. 3,901,401, Cl. 215-223.000.

Lynn, Kathleen Riley: *See—*

Winn, Martin; Lynn, Kathleen Riley; and Martin, Yvonne Connolly, 3,901,926.

Lynn, Wilbur E., to Aeronutronic Ford Corporation. Transient suppression for tape player integrated circuit preamplifier. 3,902,191, Cl. 360-61.000.

Lyon, La Verne Dean, to International Telephone and Telegraph Corporation. Fluid pressure sensing system and differential pressure unit therefor. 3,901,082, Cl. 73-407.00R.

Machi, Suet; Shinano, Takayuki; Matui, Yasushi; and Hibi, Yoshiharu, to Japan Atomic Energy Research Institute; Maruzen Oil Company Ltd.; and Mitsubishi Kakoki Kaisha Ltd. Novel process for preparing calcium sulfate. 3,901,778, Cl. 204-157.10H.

Maeder, Arthur: *See—*

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Maertens, Dieter: *See—*

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Magnuson, Roland A.: *See—*

Jayne, Laurence I.; and Magnuson, Roland A., 3,901,123.

Mago nee Karacsony, Erzsébet; Borsi, Jozsef; Balogh, Tibor; and Wolf, Lajos, to Richter Gedeon Vegyeszeti Gyar Rt. New dihydro-lysergic acid derivative. 3,901,893, Cl. 260-285.500.

Mai, Gerhard; Siepmann, Reiner; and Kummer, Franz, to W. C. Heraeus GmbH. Oxidation catalyst for combustibles in gas mixtures. 3,901,828, Cl. 252-462.000.

Maitoko, Toshinari: *See—*

Ohuchi, Motohiro; Kitahori, Tojiro; Maitoko, Toshinari; and Mizuguchi, Katuhiro, 3,901,804.

Majkrzak, Charles P., to International Telephone and Telegraph Corporation. Helical antenna with improved temperature characteristics. 3,902,178, Cl. 343-895.000.

Majumdar, Amalendu Jyoti, to National Research Development Corporation. Glass fibres and compositions containing glass fibres. 3,901,720, Cl. 106-50.000.

Maksymiak, John: *See—*

Hoffman, Daniel S.; Maksymiak, John; and Sanza, Frank S., 3,901,186.

Maltbie, Dale E.; and Albright, Glenn W., to United States of America. Air Force. Window wash system. 3,901,444, Cl. 239-112.000.

Mancole Company Limited: *See—*

Coles, Manson Ivor, 3,901,621.

Mandelson, David R.; Miller, Leo H.; and Seeley, Dunham Briggs, to Burroughs Corporation. Sheet plastic article polishing apparatus. 3,901,639, Cl. 425-371.000.

Mandoki, Andor, to "Licencia" Talalmayokat Ertekesito Vallalat. Method of making light gage members of unalloyed low carbon steel sheets. 3,901,739, Cl. 148-12.400.

Mani, Inder, to Dow Chemical Company. The Vinyl ester resin and process for curing same with ionizing radiation in the presence of amines. 3,901,779, Cl. 204-159.160.

Manning, Ralph M.: *See—*

Van Bennekom, Carl F.; Schultz, William J.; and Manning, Ralph M., 3,901,436.

Manwaring, Richard C., to General Motors Corporation. Axle retaining differential mechanism. 3,901,102, Cl. 74-710.000.

Maras, Frank Anthony; and Durham, Donald Franklin, to Caterpillar Tractor Company. Pressurized fluid feed system for fluid bearings of mobile pallets and the like. 3,901,348, Cl. 180-116.000.

Marathon Oil Company: *See—*

Plummer, Mark A.; and Roszelle, Wayne O., 3,901,317.

Marc, Michel: *See—*

Caris, Costa; Marc, Michel; and Hidden, William P., 3,900,903.

Marconi Company Limited, The: *See—*

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Marcus, Henry J.: *See—*

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Marion Corporation: *See—*

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Mariton Limited: *See—*

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Markelov, Evgeny Vasilievich: *See—*

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Marquarding, Dieter: *See—*

Ugi, Ivar; Seibert, Heinrich; Hoffmann, Peter; Marquarding, Dieter; von Rintelen, Harald; Ranz, Erwin; and Himmelmann, Wolfgang, 3,901,708.

Marquez, Joseph A.: *See—*

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Marryat Finance Limited: *See—*

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Marsh, Ogden J.: *See—*

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Marston Excelsior Limited: *See—*

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Martin, Donald L.: *See—*

Benz, Mark G.; and Martin, Donald L., 3,901,741.

Martin, Wilhelm N.; and Lichtenberger, Werner, to Consolidated-Bathurst Limited. Bonding of polymers by surface activation. 3,901,755, Cl. 156-308.000.

Martin, William A. Two fluid solar boiler. 3,901,036, Cl. 60-641.000.

Martin, Yvonne Connolly: *See—*

Winn, Martin; Lynn, Kathleen Riley; and Martin, Yvonne Connolly, 3,901,926.

Maruyama, Isamu: *See—*

Yamamoto, Hisao; Nakao, Masaru; Sasajima, Kikuo; Maruyama, Isamu; and Katayama, Shigenari, 3,901,898.

Maruzen Oil Company Ltd.: *See—*

Machi, Suet; Shinano, Takayuki; Matui, Yasushi; and Hibi, Yoshiharu, 3,901,778.

Maschinenbau Oppenweiler Binder & Co.: *See—*

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Maschinenfabrik A. van der Linden: *See—*

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Masi, Paolo: *See—*

Bernardi, Luigi; Colonna, Vincenzo; De Castiglione, Roberto; and Masi, Paolo, 3,901,942.

Mason, David Robert; Cole, Susan Margaret; Rees, John Michael; and Coaton, James Richard, to Thorn Lighting Limited. Incandescent lamp. 3,902,091, Cl. 313-221.000.

Mason, Thomas Ernest, to Bridon Limited. Terminals for strands and ropes. 3,901,610, Cl. 403-78.000.

Massachusetts Institute of Technology: *See—*

Todd, Lee T., Jr., 3,902,096.

Massey-Ferguson, Inc.: *See—*

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Matsuda, Tsuneo: *See—*

Tanaka, Toyosuke; Okuzumi, Isamu; Matsuda, Tsuneo; and Kimijima, Katsunori, 3,901,865.

Matsuda, Yoshio: *See—*

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Matsui, Mitsuo, to Tokyo Tobari Co., Ltd. Apparatus for melting raw thermoplastic synthetic resin material. 3,901,486, Cl. 259-191.000.

Matsumiya, Yasuo: *See—*

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Matsumoto Seiyaku Kogyo Kahushiki Kaisha: *See—*

Sugiyama, Iwakichi; and Endo, Kiyoshi, 3,901,858.

Matsunaga, Akihiro. Process for making defatted peanut flour. 3,901,983, Cl. 426-427.000.

Matsushita Electric Industrial Co., Ltd.: *See—*

Hayakawa, Shigeru, 3,902,185.

Kishimoto, Yoshio; and Yamamoto, Kazumasa, 3,901,952.

Takemura, Takehide; and Oka, Shunzo, 3,902,077.

Yoshino, Hirokazu; Yamaguchi, Tetsuo; and Tsuboka, Eiichi, 3,902,121.

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Matui, Yasushi: *See—*

Machi, Suet; Shinano, Takayuki; Matui, Yasushi; and Hibi, Yoshiharu, 3,901,778.

May, Denis Ronald William, to J. E. Hanger & Company Limited. Length adjustable cosmetic leg covering. 3,900,901, Cl. 3-21.000.

May, Denis Ronald William, to J. E. Hanger & Company, Limited. Knee joints for leg irons. 3,901,223, Cl. 128-80.00F.

May, Fred C.: *See—*

Mitchell, Ronald P.; and May, Fred C., 3,901,407.

May, Joseph N., to Xerox Corporation. Dry film processing apparatus. 3,902,041, Cl. 219-216.000.

May, William G., Jr., to Burleigh Instruments, Inc. Piezoelectric electromechanical translation apparatus. 3,902,084, Cl. 310-8.100.

Mayo, Howard A., Jr.; and Peterson, Robert H., to Allis-Chalmers Corporation. Integrated gate operating servomotor. 3,901,624, Cl. 415-150.000.

Mazzarella, Richard Benedict: *See—*

Lightstone, John Bernard; and Mazzarella, Richard Benedict, 3,900,975.

Mazzei, Alessandro: *See—*

Cucinella, Salvatore; and Mazzei, Alessandro, 3,901,862.

McAlister, Roy E. Vapor pressurized hydrostatic drive. 3,901,033, Cl. 60-516.000.

McCabe, John M.: *See—*

Yoerger, William E.; McCabe, John M.; and Wright, John F., 3,901,700.

McCarthy, Denis L.; and D'Albert, Joseph. Laser instrument for viewing through dense atmospheres. 3,901,580, Cl. 350-96.00B.

McCarty, Kenneth; and Woodcock, John Patrick, to National Research Development Corporation. Ultrasonic flowmeter. 3,901,077, Cl. 73-194.00A.

McClain Industries Inc.: *See—*

Moriconi, Dario J., 3,901,139.

McCloskey, Albert R., to Rockwell International Corporation. Anti-friction ball bearing assembly. 3,901,567, Cl. 308-6.00C.

McConnell, Lorne D., to I-T-E Imperial Corporation. Puffer interrupter operating mechanism with magnetic assist and arcless and switchless coil cut-in. 3,902,031, Cl. 200-148.00A.

McCormick, Matthew, to Bowthorpe Hellermann Limited. Cable ties. 3,900,922, Cl. 24-16.0PB.

McElroy, Ralph D. Fault indicator for electrical circuits. 3,902,170, Cl. 340-373.000.

McGavern, Sanford A., to Wallace-Murray Corporation. Torsional vibration dampers. 3,901,101, Cl. 74-574.000.

McGraw-Edison Company: *See—*

Jawelak, Melbourne G., 3,900,946.

McKee, William H., to TRW Inc. Strain relief. 3,902,154, Cl. 339-223.00R.

McKinley, Wayne A.; and Sarantakis, Dimitrios, to American Home Products Corporation. P-Glu-His-Trp-Ser-Tyr-D-Pgl-Leu-Arg-Pro-Gly-NH₂ and intermediates. 3,901,872, Cl. 260-112.500.

McLain, Charles D., to Olin Corporation. Process for making welded corrugated tube. 3,901,430, Cl. 228-146.000.

McMahan, Charles Robert, to Raymond Lee Organization, Inc., The, a part interest. Skate. 3,901,520, Cl. 280-7.130.

McMurtry, David Harwood: *See—*

Fleischer, John Martin; and McMurtry, David Harwood, 3,902,048.

McMurtry, David Roberts, to Rolls-Royce (1971) Limited. Actuating mechanism for a variable pitch fan or propeller. 3,901,626, Cl. 416-157.000.

McNamara, Albert C., Jr., to Esquire, Inc. Light reflector system. 3,902,059, Cl. 240-103.00R.

McNeil Laboratories, Incorporated: *See—*

Schwartz, Norman; and Mohrbacher, Richard J., 3,901,885.

Schwartz, Norman; and Mohrbacher, Richard J., 3,901,886.

McPhee, Charles J., to American Hospital Supply Corporation. Offset hanger construction for sterile medical liquid bottle. 3,901,399, Cl. 215-100.00A.

McShane, James L., to Westinghouse Electric Corporation. Ultrasonic system for fluid flow measurement. 3,901,078, Cl. 73-194.00A.

Mead Corporation, The: *See—*

Hall, Miles L.; Farley, Lloyd M.; Myers, Huston E.; and Hagedorn, Charles F., 3,901,133.

Meccanica Marangoni S.p.A.: *See—*

Prodocimi, Tito, 3,901,632.

Medtronic, Inc.: *See—*

Walmsley, Frank R., 3,901,247.

Mega product-u. Verpackungsentwicklung Marketing GmbH & Co. Kommanditgesellschaft: *See—*

Klose, Odo, 3,901,503.

Mehalo, Robert Michael; and Kaganowicz, Grzegorz, to RCA Corporation. Metallized video disc having a dielectric coating thereon. 3,901,994, Cl. 428-163.000.

Mehl, Jack Judson, to Becton, Dickinson and Company. Method for the collection, cultivation and identification of microorganisms from body fluid. 3,901,765, Cl. 195-103.50R.

Meier, Werner: *See—*

Schmidt, Rudolf; Meier, Werner; Wietzeg, Rainer; and Schutz, Hartmut, 3,902,050.

Meier-Windhorst, Christian August. Apparatus for continuous treatment of webs with hot liquids. 3,901,054, Cl. 68-15.000.

Meiji Seika Kaisha, Ltd.: *See—*

Doi, Shuji; Saito, Tomiji; and Tozaki, Shigenobu, 3,901,873.

Meisen, Klaus; Alders, Kurt; Teetz, Wolfgang; and Schiffer, Gunter, to Kleinewefers Industrie-Compagnie GmbH. High temperature steaming device. 3,901,053, Cl. 68-5.00D.

Meldreth Electronics Limited: *See—*

Pieters, Leon Andre; and Wren, James Frank, 3,902,011.

Meloni, Robert Anthony: *See—*

Wickham, John Lupton; Meloni, Robert Anthony; and Veara, Jack Ralph, 3,901,631.

Melpar, Inc.: *See—*

Young, Clinton J. T., 3,902,155.

Meltzer, Steven D. Adjustable oral examination assistance device. 3,900,924, Cl. 24-81.0CL.

Menke, Eugene W., to West Company, The. Tear-open tamperproof closure seal. 3,901,403, Cl. 215-251.000.

Merck & Co., Inc.: *See—*

Hannah, John, 3,901,914.

Mercury Manufacturing Company: *See—*

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Meredith, William H.: *See—*

Irvin, Robert A.; and Meredith, William H., 3,901,840.

Meric, Jean Paul, to Centre d'Etudes et de Recherches de l'Industrie des Liantes Hydrauliques. Analysis of pulverulent material using a laser beam subjected to variable refraction to produce pulses. 3,901,599, Cl. 356-85.000.

Merten, Josef: *See—*

Schiller, Paul; Merten, Josef; and Vernaleken, Hugo, 3,901,844.

Metallurgical Exoproducts Corporation: *See—*

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Metlyayev, Vladimir Nikolaevich: *See—*

Chernichenko, Ivan Antonovich; Turchaninov, Vasily Vasilievich; Metlyayev, Vladimir Nikolaevich; Sobol, Ivan Ivanovich; Kuligin, Boris Nikolaevich; Borisov, Valery Gavrilovich; and Kostevich, Dmitry Nikolaevich, 3,901,662.

Meyer, Barthold F.: *See—*

Dully, Floyd I.; Griffin, Henry W.; and Meyer, Barthold F., 3,901,460.

Meyer, Jack G.; and Haines, Norman L. Apparatus for mixing and dispensing feed to animals. 3,901,194, Cl. 119-53.000.

Meyer, Jeffrey G.; and Phipps, Glennis L., to Anderson Development Company. Chrome catalyst. 3,901,825, Cl. 252-431.00P.

- Meyer, Kuno, to Hoffmann-La Roche Inc. 3-Amino cardenolides and bufadienolides, derivatives and salts thereof. 3,901,882, Cl. 260-239.570.
- Meyers, Elwood J.; and Anderson, George H., to Barber-Colman Company. Generator monitoring circuit. 3,902,076, Cl. 307-57.000.
- Michael, Arthur Leroy; and Kaufman, John Joseph, to Witco Chemical Corporation. Solvent dewaxing with oxidized high molecular weight alpha olefin wax aids. 3,901,789, Cl. 208-33.000.
- Michaels, Alan S.; Bashwa, John D.; and Zaffaroni, Alejandro, to Alza Corporation. Integrated device for administering beneficial drug at programmed rate. 3,901,232, Cl. 128-260.000.
- Michaels, Fred G.: See—
Williams, Richard D.; and Michaels, Fred G., 3,901,097.
- Michel, Eberhard: See—
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- Micromedex Systems, Inc.: See—
Johnson, Edgar G., Jr.; Stonecypher, Thomas E.; and Lawson, Charles V., 3,901,600.
- Midgley, John, to Lucas Aerospace Limited. Method of an apparatus for testing whether a solder connection can be made through an aperture in a circuit board. 3,901,088, Cl. 73-432.000.
- Midland Manufacturing Company, Inc.: See—
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- Migina, Anna Ilinichna: See—
Buzhinskaya, Antonina Vladimirovna; Sergeev, Leonid Alexandrovich; Trofimov, Vladimir Ivanovich; Bobrov, Vyacheslav Borisovich; Migina, Anna Ilinichna; Perelygina, Tatyana Fedorovna; Bobrov, Anatoly Borisovich, deceased; Bobrova, Evdokia Nikolaevna, administrator; and Bobrova, Irina Maximovna, administrator, 3,901,785.
- Mikawa, Tsuneaki. Corrosion resistant copper alloy and the method of forming the alloy. 3,901,692, Cl. 75-159.000.
- Miki, Isao; and Miyoshi, Masataka, to Nippon Light Metal Company Limited. Molten metal injector for an injection die casting machine. 3,901,306, Cl. 164-312.000.
- Miller, Leo H.: See—
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- Miller, Robert E.: See—
Brockett, Bruce W.; and Miller, Robert E., 3,901,986.
- Milton, A. Fenner, to United States of America, Navy. Mirrored optical connector. 3,901,582, Cl. 350-96.00C.
- Minami, Takeshi. Lubricant separating means for air driven machinery. 3,901,670, Cl. 55-219.000.
- Minckler, G. Mark: See—
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- Collins, John E.; Dietsche, Delmar A.; Jones, David C.; and Mitchell, Donald J., 3,901,253.
- Loudas, Basil L., 3,901,727.
- Nepper, Robert F., 3,901,592.
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- Miskowicz, Carl J.: See—
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- Mitchell, Donald J.: See—
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- Mitchell, James L., to Midland Manufacturing Company, Inc. Apparatus for supporting farm implements for working and towing. 3,901,327, Cl. 172-413.000.
- Mitchell, Ronald P.; and May, Fred C., to Mercury Manufacturing Company. Locking cap assembly for a filler neck. 3,901,407, Cl. 220-315.000.
- Mitchell, William O.: See—
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- Mitsubishi Denki Kabushiki Kaisha: See—
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- Mitsubishi Kizoku Kabushiki Kaisha: See—
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- Mitsubishi Paper Mills, Ltd.: See—
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- Mitsui Toatsu Chemicals, Inc.: See—
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- Mitsumasa, Sakae, to Rank Xerox Ltd. Mechanism for cooling photosensitive materials in an electrophotographic copying machine. 3,901,591, Cl. 355-3.00R.
- Miyagi, Takeshi. Baby carriage. 3,901,528, Cl. 280-36.00B.
- Miyamoto, Takayoshi, to Minolta Camera Kabushiki Kaisha. Shutter release having bulb exposure mechanism for automatic shutter camera. 3,902,184, Cl. 354-266.000.
- Miyasita, Satoru: See—
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- Miyazawa, Kuniaki, to Mitani Shoji Co., Ltd. Coin testing apparatus. 3,901,367, Cl. 194-100.00R.
- Miyoshi, Masataka: See—
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- Mizuno, Masasi: See—
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- Mobil Oil Corporation: See—
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- Modern Controls, Inc.: See—
Wood, Rex C., 3,902,068.
- Wood, Rex Chester, 3,901,820.
- Mohn, Eugen; and Hermann, Hansjurg, to Turlabor AG. Electrode-shunting method of producing electrophotographic pictures and apparatus therefor. 3,901,696, Cl. 96-1.0PE.
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- Schwartz, Norman; and Mohrbacher, Richard J., 3,901,886.
- Molava, Andrew P., to Stanley Works, The. Mat switch with cleaning oil film. 3,902,029, Cl. 200-86.00R.
- Moll, Manfred; Kreel, Claude; and Chapon, Lucien. Device for determining the colloidal stability of a liquid. 3,901,068, Cl. 73-53.000.
- Monarch Marking Systems, Inc.: See—
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- Kirby, Raymond L., Jr., 3,901,150.
- Monier, Albert; and Monier, Lisette nee Alperovith. Cover sheet for fitting various shaped mattresses. 3,900,909, Cl. 5-334.00C.
- Monier, Lisette nee Alperovith: See—
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- Monsanto Company: See—
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- Ratts, Kenneth W., 3,901,685.
- Shen, Chung Y.; and Callis, Clayton F., 3,901,831.
- Montgomery, Ferman E., to Brandl, Ben, a part interest. Adapter attachment for crutches, canes and walkers. 3,901,258, Cl. 135-47.000.
- Moon, William T., Jr., to Robertshaw Controls Company. Relay construction and method of making the same. 3,901,267, Cl. 137-270.000.
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Bochmann, Carl E., 3,901,141.
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- Motorola, Inc.: See—
Breedon, Robert L.; and Stangel, James H., 3,902,022.
- Perszyk, Thomas H., 3,902,128.
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- Muller, Jupp; Riegler, Harald; and Lowenstein, Karl, to Trilux-Lenz KG. Connecting member for the reception of electrical wiring between two lamp fittings in a strip lighting scheme. 3,901,540, Cl. 285-194.000.
- Mullinax, Harold L., Sr., to Owens-Illinois, Inc. Safety end of run feeder. 3,901,109, Cl. 83-5.000.
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- Mullins, John W. Copper tube service valve. 3,901,268, Cl. 137-318.000.
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- Munzinger, Friedrich. Rotary piston engine. 3,901,034, Cl. 60-519.000.
- Muralidharan, Ramachandran, to General Electric Company. Transformer with improved liquid cooled disc winding. 3,902,146, Cl. 336-57.000.
- Muramatsu, Toshiyuki. Chiropractic adjusting device. 3,901,222, Cl. 128-69.000.
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- Murchison, Craig B., to Dow Chemical Company. The. Treatment of aqueous liquors with uranyl ions. 3,901,806, Cl. 210-63.000.
- Murphy, Kevin P., to Allied Chemical Corporation. Halocarbon compositions. 3,901,817, Cl. 252-67.000.
- Musebeck, Horst: See—
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- Nakagawa, Yunosuke; Sato, Koitsu; and Hakozaiki, Shori, to Kao Soap Co., Ltd. Compositions for activating an inorganic peroxide bleaching agent. 3,901,819, Cl. 252-186.000.
- Nakagawa, Yutaka; Shibata, Yoshio; and Yoneta, Hajime, to Sony Corporation. Dynamic convergence circuit. 3,902,100, Cl. 315-371.000.
- Nakajima, Koe; Watanabe, Kazuo; Hamaizu, Shyuichi; and Tokita, Hideki, to Nippon Steel Corporation. Shape-rolling mill for working metallic section material. 3,901,059, Cl. 72-8.000.
- Nakamura, Tadashi: See—
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- Nakamura, Yoshiro; Umehara, Akira; and Yamada, Itsuyo, to Sankyo Kasei Company, Ltd. Method for improving soil. 3,901,677, Cl. 71-64.05C.
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- Narahara, Toshikazu: See—
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- Narozny, Ronald S., to Thomas & Betts Corporation. Circuit board socket. 3,902,153, Cl. 339-214.00R.
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- Nepper, Robert F., to Minnesota Mining and Manufacturing Company. Color printing apparatus. 3,901,592, Cl. 355-4.000.
- Neri, Carlo; and Perrotti, Emilio, to Snam Progetti S.p.A. Process for the preparation of organic compounds. 3,901,939, Cl. 260-465.80R.
- Neumann, Otto Walter, to Amsted Industries Incorporated. Snubbed truck bolster. 3,901,163, Cl. 105-197.0DB.
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- New Kon Industrial Co., Ltd.: See—
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- Nichols, Harley E., to C. H. Dana Company, Inc. Animal identification tag. 3,900,981, Cl. 40-300.000.
- Nicholson, James E.; and Lipson, Charles S., to Clinical Technology International, Inc. Pressure cycle for stimulating blood circulation in the limbs. 3,901,221, Cl. 128-24.00R.
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- Nileshwar, Vivek Baburao, to S.T.D. Services Limited. Plugs for use in tube-drawing. 3,901,063, Cl. 72-283.000.
- Nilsson, Allan Elvir; and Johansson, Hans Gosta, to Ar-Ventilation AB. Device for distributing ventilating air. 3,901,135, Cl. 98-40.00V.
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- Nishida, Katsuhiko: *See—*
- Takatori, Yasushi; Haruta, Masahiro; Shimozaawa, Akemi; and Nishida, Katsuhiko, 3,901,769.
- Nishizaki, Hiroki, to Director-General of the Agency of Industrial Science and Technology. Method for treating waste plastics. 3,901,951, Cl. 260-669.00R.
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- Inoue, Naohiko, 3,901,343.
- Mizuguchi, Norio; and Ozawa, Hiroshige, 3,901,201.
- Nisshin Flour Milling Co., Ltd.: *See—*
- Taguchi, Keizaburo; Tabata, Hitomi; and Yoshizaki, Tomozo, 3,901,975.
- NL Industries, Inc.: *See—*
- Stearns, Marvin O.; and Gill, James A., 3,901,254.
- Nobata, Shoji: *See—*
- Tada, Fusao; Koga, Tadashi; Inaba, Shizuo; Sakata, Keiji; Hatanaka, Tutomu; and Nobata, Shoji, 3,901,932.
- Noda, Fumiyoshi: *See—*
- Kondo, Katsumi; Noda, Fumiyoshi; and Watanabe, Yuji, 3,901,029.
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- Gellert, Dale A.; Harden, Kendall L.; and Noel, John R., 3,901,238.
- Nogai, Akira, to Yoshida Kogyo Kabushiki Kaisha. Slide fastener stringer with a continuous coupling element woven into a fabric tape. 3,901,291, Cl. 139-384.00B.
- Noguchi, Masaaki; and Sumiyoshi, Masaharu, to Toyota Jidosha Kogyo Kabushiki Kaisha. Method and device for reforming the quality of fuel oil in an internal combustion engine. 3,901,197, Cl. 123-3.000.
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- Kohno, Mitsuo; Nomura, Minoru; Shibasaki, Akio; Yuasa, Takeo; and Mutoh, Yoshihiko, 3,901,851.
- Nongbri, Govanon: *See—*
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- Norberg, Robert B. Hermetic closure member. 3,901,405, Cl. 220-287.000.
- Norden, Alexander R., to I-T-E Imperial Corporation. Screw-on electrical connector. 3,902,005, Cl. 174-87.000.
- Norlin, Stig Ivar, to Saab-Scania Aktiebolag. Vehicle bumper assembly. 3,901,543, Cl. 293-71.00R.
- Norton, Richard V., to Sun Research and Development Co. Production of nitriles by ammoxidation. 3,901,933, Cl. 260-465.00C.
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- Novak, Edward P. Miter table. 3,901,498, Cl. 269-81.000.
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- Vadasz, Gyorgy; and Parkany, Mihaly, 3,901,782.
- Novotny, Rudolph J., to United Aircraft Corporation. Variable expansion compression nut and bolt assembly. 3,901,122, Cl. 85-32.00T.
- Nunn, Harold D., Jr. Hydraulic power brake system incorporating auxiliary means for driving the pump thereof. 3,901,342, Cl. 180-79.20R.
- Nutter, Benjamin P., to Schlumberger Technology Corporation. Pressure controlled tester valve. 3,901,314, Cl. 166-152.000.
- N.V. Appingedammer Bronsmotorenfabriek: *See—*
- Kuoper, Jacob Hermanus, 3,901,206.
- O. M. E. Officine Meccaniche Emiliane S.p.A.: *See—*
- Corradini, Remo, 3,901,060.
- O. M. Scott and Sons Company: *See—*
- Bailey, Richard Elton, 3,901,687.
- Obayashi, Tomokazu: *See—*
- Nagasawa, Taro; Tomita, Mamoru; Watanabe, Tadashi; and Obayashi, Tomokazu, 3,901,979.
- Oberg Manufacturing Co., Inc.: *See—*
- Vecchi, John Calisto, 3,901,111.
- Oberg, Per Olof, to Sanera Projecting Aktiebolag. Boom and method of manufacturing the same. 3,901,753, Cl. 156-213.000.
- Oberstein, Rose: *See—*
- Scott, Ian G.; and Oberstein, Rose, 3,901,526.
- O'Brien, Roy E.; Leslie, Donald J.; and Leslie, Michael R. Ski construction for vehicles. 3,901,525, Cl. 280-14.000.
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- Offermann, Bernd-Peter, to Licentia Patent-Verwaltungs-G.m.b.H. Deflector horn for high-intensity electron beams. 3,902,097, Cl. 313-420.000.
- Oftedahl, Edwin N., to Eastman Kodak Company. Silver halide emulsions and elements including sensitizers of adamantane structure. 3,901,714, Cl. 96-107.000.
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- Iida, Teiji; Hisayama, Masahide; and Ogawa, Hisashi, 3,901,100.
- Ogawa, Mutsuo, to Ricoh Co., Ltd. Data transmission system. 3,902,008, Cl. 178-6.000.
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- Gassman, Paul G., 3,901,899.
- Ohmori, Muneki: *See—*
- Isoawa, Yoshikazu; Takashima, Toshiyuki; Ohmori, Muneki; Kurita, Hideaki; Sato, Masanari; and Mori, Kaoru, 3,901,890.
- Ohnishi, Nobuo, to Kabushiki Kaisha Komatsu Seisakusho. Steering device of wireless control tractor. 3,901,338, Cl. 180-6.700.
- Ohorodnik, Alexander; Sennewald, Kurt; Hundek, Joachim; and Stutzke, Paul, to Hoechst Aktiengesellschaft. Apparatus for the continuous carrying out heterogeneous catalytic reaction in liquid phase. 3,901,660, Cl. 23-288.00A.
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- Oi, Shigeo. Heat treatment apparatus for synthetic yarn. 3,902,046, Cl. 219-388.000.
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- Ueno, Haruo; Oizumi, Kyohei; Ishikawa, Hideo; Hamada, Hisawaki; and Aikawa, Hideyuki, 3,901,868.
- Oka, Shoji: *See—*
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- Okachi, Ryo: *See—*
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- Okuzumi, Isamu: *See—*
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- Oldham, Dorothy C. Checkbook. 3,901,537, Cl. 282-13.000.
- Olin Corporation: *See—*
- Blakely, Stephen W., 3,901,538.
- Boehm, Herbert C., 3,901,522.
- McLain, Charles D., 3,901,430.
- Oliva, George R., Jr., to United States of America, Army. Symmetric output, digital by three counter. 3,902,125, Cl. 328-39.000.
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- Benedict, Charles E.; and Oliver, Calvin C., 3,901,287.
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- Ollinger, James C.; and Roux, Henry J., to Armstrong Cork Company. Accessible tile with hold-down feature. 3,900,997, Cl. 52-496.000.
- Olsen, Kaare Ritter. Method for joining submerged structures. 3,901,038, Cl. 61-43.000.
- Olsen, Merle Victor: *See—*
- Angner, Ronald Joseph; Feiner, Alexander; and Olsen, Merle Victor, 3,902,101.
- Olsen, Warren J.: *See—*
- Begitschke, Donald W.; and Olsen, Warren J., 3,901,571.
- Olson, Raymond G., to Baxter Laboratories, Inc. Infusion pump apparatus. 3,901,231, Cl. 128-214.00F.
- Oltmanns, Heinrich; and Volckmann, Klaus. Device to cut holes within the wave troughs of a corrugated tube, especially for drainage. 3,901,113, Cl. 83-326.000.
- Onder, Harald, to Swiss Aluminum Ltd. Compacting step by step. 3,901,641, Cl. 425-406.000.
- Oomen, Johannes A. F., to Cincinnati Electronics Corporation. Digital circuit for determining if signal source consists primarily of noise or contains information. 3,902,123, Cl. 325-478.000.
- Opal, Jacques E. Dishware hold down plate and method. 3,901,728, Cl. 134-25.00A.
- Orfani, Mikhail Petrovich: *See—*
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- Orlomoski, Roger W., to Litton Industrial Products, Inc. Dies for making self-locking screws. 3,901,066, Cl. 72-469.000.
- Oros, Stefan. Car anti-theft device. 3,902,075, Cl. 307-10.0AT.
- Osa, Nobuyuki: *See—*
- Furuoka, Hideto; Osa, Nobuyuki; and Nakata, Shikichi, 3,900,956.
- Osako, Hiroyuki; and Matsumiya, Yasuo, to Hitachi, Ltd. Magnetic disc memory unit. 3,902,195, Cl. 360-133.000.
- Osawa, Sadao: *See—*
- Fukushima, Osamu; Osawa, Sadao; Komaki, Takao; and Sato, Masamichi, 3,901,698.
- Ostbergs Fabriks AB: *See—*
- Lindblom, Karl Thore, 3,901,652.
- Oster Corporation: *See—*
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- Ostoich, Eli: *See—*
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- Otsuka, Katsumi: *See—*
- Tsukamoto, Hideo; Otsuka, Katsumi; Tamura, Miyagi; Kondo, Koji; and Yoshisawa, Kosaku, 3,901,369.
- Otto Bock Orthopadische Industrie KG: *See—*
- Horvath, Eduard, 3,900,900.
- Ouellette, Laurent R., to La Compagnie Manufacturiere Lauouel Inc. Weight increasing device for skate. 3,901,524, Cl. 280-11.37E.
- Overacker, James L. Refractive spherical roadway marker. 3,901,614, Cl. 404-16.000.
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- Buchanan, Carl S.; Fargo, Harland E.; and Riebel, Charles F., 3,901,675.
- Hurley, Raymond E., 3,901,016.
- Owens-Illinois, Inc.: *See—*
- Eggert, Noel B., 3,901,637.
- Mullinax, Harold L., Sr., 3,901,109.
- Taylor, Lynn J., 3,901,752.
- Oxford Industries, Inc.: *See—*
- Ellington, Gordon H.; Mitchell, William O.; and Estapa, Don E., 3,901,173.
- Ozawa, Hiroshige: *See—*
- Mizuguchi, Norio; and Ozawa, Hiroshige, 3,901,201.
- P.A.L. Development Corporation: *See—*
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- Pacific Car and Foundry Company: *See—*
- Jayne, Laurence I.; and Magnuson, Roland A., 3,901,123.
- Pacific Chemical Industrial Co., Ltd.: *See—*
- Park, Woo Chang, 3,901,875.
- Page, Geoffrey A.: *See—*
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- Paiella, Roberto; and Giuliani, Giampaolo, to Snam Progetti S.p.A. Process for obtaining a foamed ethylene polymer and product obtained thereby. 3,901,835, Cl. 260-2.5HA.
- Pajunen, Toivo W. Self-cleaning rake. 3,901,010, Cl. 56-400.080.
- Palenschat, Dieter: *See—*
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- Palmer, Ronald S., to International Business Machines Corporation. Quadrature electronic tachometer. 3,902,116, Cl. 324-175.000.
- Pampus, Gottfried: *See—*
- Lehnert, Gunther; Pampus, Gottfried; and Maertens, Dieter, 3,901,866.
- Panas, Walter: *See—*
- Allen, Fred E.; Flynn, Joseph C.; Panas, Walter; Bonino, Joseph S.; and Colgan, William, 3,901,180.
- Paradis, Edouard L.: *See—*
- Quinn, Daniel J.; and Paradis, Edouard L., 3,901,784.
- Pareilleux, Alain: *See—*
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- Park, Woo Chang, to Pacific Chemical Industrial Co., Ltd. Extraction of ginseng saponin. 3,901,875, Cl. 260-210.500.
- Parkany, Mihaly: *See—*
- Vadasz, Gyorgy; and Parkany, Mihaly, 3,901,782.
- Parker Pen Company, The: *See—*
- Hill, Franklin J., 3,900,936.
- Parker, William H.; and Bailey, Edmond I., to Del Norte Technology, Inc. Downhole valve. 3,901,315, Cl. 166-224.00A.
- Parkinson, Kelvin L.; and Houde, Robert J., to Honeywell Information Systems, Inc. Data communication system incorporating programmable front end processor having multiple peripheral units. 3,902,162, Cl. 340-172.500.
- Parks, Robert F.: *See—*
- Kramer, Charles F.; and Parks, Robert F., 3,901,282.
- Parolin, John J., to Cole-Hersee Company. Vehicle warning signal switching apparatus including circuit momentarily interrupted only in response to movement in one or an opposed pair of directions. 3,902,159, Cl. 340-72.000.
- Paschelke, Gert: *See—*
- Vorhuggen, Helmut; Kopp, Rudolf; Horowski, Reinhard; Paschelke, Gert; and Palenschat, Dieter, 3,901,876.
- Passino, Roberto; and Boari, Gianfranco, to Consiglio Nazionale Delle Ricerche. Process for demineralizing water. 3,901,781, Cl. 204-180.00P.
- Pasternak, Stephen F., to Peerless of America, Incorporated. Heat exchangers and method of making same. 3,901,312, Cl. 165-181.000.
- Patel, Bhupendra C.; and Dye, John F., to Kendall Company, The. Anti-reflux device for urinary collection bags. 3,901,235, Cl. 128-275.000.
- Patel, Mahesh G.: *See—*
- Weinstein, Marvin J.; Wagman, Gerald H.; Patel, Mahesh G.; and Marquez, Joseph A., 3,901,764.
- Paullus, Clarence Leonard; and Stauffer, Larry Ronald, to AMP Incorporated. Electrical connector. 3,901,574, Cl. 339-90.00R.
- Payne, Charles C.; and Vossos, Peter H., to Nalco Chemical Company. Slip resistant composition for paper coating. 3,901,987, Cl. 428-219.000.
- Payne, Charles C.; Bloemke, Richard E.; and Schaefer, David P., to Nalco Chemical Company. Fabric for carpet and like materials containing a coating of colloidal silica with a layer of alumina. 3,901,992, Cl. 428-96.000.
- Payne, Robert D.; and Buck, James G., to Continental Can Company, Inc. Pneumatic powder flow diverting device. 3,901,184, Cl. 118-629.000.
- Pazos, Jose Francisco, to du Pont de Nemours, E. I., and Company. Method of using variable depth photopolymerization imaging systems. 3,901,705, Cl. 96-35.100.
- Pease Company: *See—*
- Bursk, William Michael; and Pease, David H., Jr., 3,900,967.
- Pease, David H., Jr.: *See—*
- Bursk, William Michael; and Pease, David H., Jr., 3,900,967.
- Pedersen, Richard C.: *See—*
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- Peerless of America, Incorporated: *See—*
- Pasternak, Stephen F., 3,901,312.
- Peeters, Karel; Van de Voorde, Norbert; and Dejonghe, Paul, to Belgonucleaire. Extraction of heavy metals from wastes. 3,901,802, Cl. 210-38.000.
- Pelton, John Franklin, to Union Carbide Corporation. Method for producing chromium-chromium carbide powder. 3,901,689, Cl. 75-50B.
- Penrod, William R.: *See—*
- Zink, Stanley C.; and Penrod, William R., 3,901,636.
- Perelygina, Tatyana Fedorovna: *See—*
- Buzhinskaya, Antonina Vladimirovna; Sergeev, Leonid Alexandrovich; Trofimov, Vladimir Ivanovich; Bobrov, Vyacheslav Borisovich; Migina, Anna Ilinichna; Perelygina, Tatyana Fedorovna; Bobrov, Anatoly Borisovich, deceased; Bobrova, Evdokia Nikolaevna, administrator; and Bobrova, Irina Maximovna, administrator, 3,901,785.
- Perisse, Jean Maurice Francois: *See—*
- Chancholle, Andre Robert; and Perisse, Jean Maurice Francois, 3,901,629.
- Perreault, Donald Arthur, to Xerox Corporation. Multi aperture scanning and printing for facsimile line skipping. 3,902,009, Cl. 178-6.000.
- Perrotti, Emilio: *See—*
- Neri, Carlo; and Perrotti, Emilio, 3,901,939.
- Perry, Clark William; and Teitel, Sidney, to Hoffmann-La Roche Inc. Optical resolution of organic carboxylic acids. 3,901,915, Cl. 260-326.14T.
- Perszyk, Thomas H., to Motorola, Inc. Frequency/phase comparator. 3,902,128, Cl. 328-134.000.
- Peter Eckrich & Sons, Inc.: *See—*
- Draudt, Howard Ned, 3,901,981.
- Peter, Strong Research and Development Co., Inc.: *See—*
- Hill, William H., 3,901,874.
- Peters, Leo. Method for sealing blister packages for easy opening. 3,901,000, Cl. 53-14.000.
- Peterson, Archibald J. Harvey: *See—*
- Powell, Peter H.; and Peterson, Archibald J. Harvey, 3,901,562.
- Peterson, Carl M., to Environmental Research Corporation. Aerosol concentrator and classifier. 3,901,798, Cl. 209-143.000.
- Peterson, Dean E., to Crystal Industries, Inc. Analog switch. 3,902,078, Cl. 307-251.000.
- Peterson, Earl A. Crane incorporating vertical motion apparatus. 3,901,478, Cl. 254-139.100.
- Peterson, Joseph C. Apparatus for recovering sulfuric acid and ferrous sulfate crystals from spent pickle solution. 3,900,955, Cl. 23-273.00R.
- Peterson, Robert H.: *See—*
- Mayo, Howard A., Jr.; and Peterson, Robert H., 3,901,624.
- Peterson, Wilbur E., to Harmony Enterprises, Inc. Baler door latch. 3,901,541, Cl. 292-100.000.
- Petrie, John A., Jr.; and Kreiger, Stanley, to United States of America, Air Force. Induced vortex swirler. 3,901,446, Cl. 239-132.500.
- Petrere, Robert E.: *See—*
- Rogers, Sidney; Rogers, Barry N.; and Petrere, Robert E., 3,902,026.
- Petrosky, Charles. Rat removing. 3,900,983, Cl. 43-58.000.
- Petrizzella, Nicholas L.: *See—*
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- Pettersson, Goran Karl Arvid: *See—*
- Lindell, Key Ake; and Pettersson, Goran Karl Arvid, 3,902,014.
- Pettit, Bruce Harold. Drum washer for vehicles. 3,901,255, Cl. 134-107.000.
- Petty-Ray Geophysical, Inc.: *See—*
- Kiowski, John W.; and Bobbitt, John T., 3,902,161.
- Pfeiffer, Robert C.: *See—*
- Stephenson, Robert L.; Pfeiffer, Robert C.; and Loomba, Yogen-dra Singh, 3,901,461.
- Pfister, Rudolf: *See—*
- Fitzi, Konrad; and Pfister, Rudolf, 3,901,908.
- Pfisterer, George J., Jr., to Leeds & Northrup Company. Controller output circuit. 3,902,111, Cl. 323-19.000.
- Pfizer, Inc.: *See—*
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- Philco-Ford Corporation: *See—*
- Kay, Robert E.; and Walwick, Earle R., 3,900,945.
- White, Matthew B., 3,901,597.
- Philibert, Robert A.; and Browne, Frank L., to General Signal Corporation. Grounding clamps and connectors therefor. 3,901,577, Cl. 339-265.00F.
- Philip, Thoni V.; and Dietrich, Douglas W., to Carpenter Technology Corporation. Wear resistant alloy steels containing Cb and one of Ti, Hf or Zr. 3,901,690, Cl. 75-123.00H.

Phillips, Jacques R., Jr. Non-skid bridging plate laminate assembly. 3,901,993, Cl. 428-148.000.

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Phillips, Phillip. Writing instrument. 3,901,608, Cl. 401-135.000.

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Photographic Silver Recovery Limited: *See—*
Bentley, James Sidney, 3,901,777.

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Picco, William A. Golf Bag. 3,901,299, Cl. 150-1.50R.

Picker Corporation: *See—*
Amor, William H., Jr.; and Di Franco, Thomas, 3,902,070.

Piedmont American Corporation: *See—*
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Pierce, Cyril M.: *See—*
Sprague, Robert A.; Henricks, Robert J.; Ruckle, Duane L.; Pierce, Cyril M.; and Hall, James A., 3,901,743.

Pieters, Leon Andre; and Wren, James Frank, to Meldreth Electronics Limited. Image analysing. 3,902,011, Cl. 178-7.200.

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Pillar Corporation: *See—*
Landis, James P.; and Williams, Robert O., 3,901,999.

Pinto, Joseph Diago: *See—*
Shukla, Ravindra Shivprasad; and Pinto, Joseph Diago, 3,901,655.

Pion, Martin, to International Standard Electric Corporation. Gallium arsenide photocathode. 3,901,745, Cl. 148-171.000.

Pion, Martin: *See—*
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Piper Aircraft Corporation: *See—*
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Pirck, Dietrich: *See—*
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Pitner, Alfred, to Nadella S.A., a part interest. Universal joint yoke. 3,901,048, Cl. 64-17.00R.

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Pletsch, Hubert; and Kurr, Klaus, to Freudenberg, Carl. Resilient coupling. 3,901,047, Cl. 64-11.000.

Plummer, Mark A.; and Roszelle, Wayne O., to Marathon Oil Company. Method of using sulfonate blends for improved oil recovery. 3,901,317, Cl. 166-274.000.

Pocock, Frank William: *See—*
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Polaroid Corporation: *See—*
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Poley, Neil M.: *See—*
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Pollmann, Fritz: *See—*
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Pollock, Mark W.: *See—*
Knezevic, Vasilije; Pollock, Mark W.; Liauw, Koei-Liang; and Spiegelman, Gerald, 3,901,824.

Polss, Perry, to du Pont de Nemours, E. I., and Company. Multifunctional fuel additive compositions. 3,901,665, Cl. 44-58.000.

Polysius AG: *See—*
Henne, Heinrich; and Vorloeper, Norbert, 3,901,794.

Poole, Thomas J.: *See—*
Sokoliski, Michael; and Poole, Thomas J., 3,900,961.

Popa, Laurentiu. Diverter switch for on-load changers. 3,902,030, Cl. 200-11.0TC.

Popken, Robert E. Convertible back rest-luggage rack combination for motorcycles or similar vehicles. 3,901,534, Cl. 280-289.000.

Porcelli, Joseph J.: *See—*
Siskin, Michael; Wristers, Jos P.; and Porcelli, Joseph J., 3,901,790.

Posen, Aaron L. Orthodontic measuring method and apparatus. 3,900,953, Cl. 32-40.00R.

Posen, Harold: *See—*
Armington, Alton F.; and Posen, Harold, 3,901,723.

Post Office, The: *See—*
Harding, John Patrick; Butler, David Sydney; and Lee, Frank James, 3,902,004.

Potopinski, Michael A., to Arthur D. Little, Inc. Light responsive switching circuit. 3,901,813, Cl. 250-209.000.

Potts, James E.: *See—*
Clendinning, Robert A.; Potts, James E.; and Cornell, Stephen W., 3,901,838.

Poulton, Curt A., to Minnesota Mining and Manufacturing Company. Tape embossing tool. 3,901,370, Cl. 197-6.700.

Powell, Peter H.; and Peterson, Archibald J. Harvey, to WABCO Ltd. Brake pipe reduction indicating apparatus. 3,901,562, Cl. 303-86.000.

Pozniak, Donald J., to General Motors Corporation. Exhaust gas recirculation system with high rate valve. 3,901,203, Cl. 123-119.00A.

Pradier, Rene, to Rhone-Poulenc-Textile. Automatic winding machine. 3,901,456, Cl. 242-18.00A.

Prahl, Marvin E.: *See—*
Laenen, Edward G.; and Prahl, Marvin E., 3,902,192.

Prasse, Herbert F., to Ramsey Corporation. Anti-emissions compression piston ring. 3,901,131, Cl. 92-182.000.

Pre-Germ Seeding Corporation: *See—*
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Precision Sampling Corporation: *See—*
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Priault, William J. Golf putter. 3,901,514, Cl. 273-168.000.

Priest, Rod M. Duct-making machine. 3,901,174, Cl. 113-54.000.

Priestly, Frank P. Hot wire cutting device. 3,901,110, Cl. 83-171.000.

Prillinger, Peter F. M.; Rosenberger, Paul C.; and Sieving, Alfred W., to Caterpillar Tractor Company. Vehicle brake control system having a plurality of master cylinders which are separately actuatable for different braking operations while being jointly actuatable for emergency braking. 3,901,556, Cl. 303-13.000.

Probst, John F., to P.A.L. Development Corporation. Safety barricade for a roof. 3,901,481, Cl. 256-59.000.

Prochazka, Arthur, to Bayern-Chemie Gesellschaft fur flugchemische Antriebe mit beschränkter Haftung. Safety mechanism for the occupants of vehicles, particularly of motor vehicles. 3,901,531, Cl. 280-150.0SB.

Procter & Gamble Company, The: *See—*
Gellert, Dale A.; Harden, Kendall L.; and Noel, John R., 3,901,238.

Produits Chimiques Ugine Kuhlmann: *See—*
Riess, Jean G.; LeBlanc, Maurice; Santini, Georges; and Guion, Jacky, 3,901,948.

Probsting, Robert James; and Green, Robert Sherman, to Mostek Corporation. Dynamic data input latch and decoder. 3,902,082, Cl. 307-279.000.

Proni, Oscar: *See—*
Hogg, Walter R.; Coulter, Wallace H.; Ginsberg, Guenter; Proni, Oscar; and Godin, Thomas J., 3,902,115.

Prosdociimi, Tito, to Meccanica Marangoni S.p.A. Vulcanizing mould for pneumatic tyres and the like. 3,901,632, Cl. 425-47.000.

Pruess, David L.: *See—*
Scannell, James P.; Pruess, David L.; and Demny, Thomas C., 3,901,880.

Pullman Incorporated: *See—*
Chang, Yi-Chung, 3,901,445.

Purdue Research Foundation: *See—*
Hillberry, Benny M.; and Myers, Robert J., 3,901,423.

Quadracast Systems, Inc.: *See—*
Dorren, Louis, 3,902,131.

Quaker Oats Company, The: *See—*
Alexander, James C., 3,901,570.

Campanell, Ronald J., 3,900,990.

Quartex Societe pour l'Application des Hautes Temperatures: *See—*
Guillotin, Fernand; and Cerutti, Rene, 3,901,772.

Quinn, Daniel J.; and Paradis, Edouard L., to United Aircraft Corporation. Cylindrical RF sputtering apparatus. 3,901,784, Cl. 204-192.000.

Quinn, Paul J. Wind turbine. 3,902,072, Cl. 290-44.000.

Quinn, Richard M., to Ball Brothers Service Corporation. Automatic ware handler. 3,901,381, Cl. 198-283.000.

Quinn, Ronald E., to General Motors Corporation. Gas turbine with auxiliary gasifier engine. 3,901,026, Cl. 60-39.160.

Radke, Donald G., to Allied Chemical Corporation. Multiple mini hybrid with direct bag connection. 3,901,530, Cl. 280-150.0AB.

Rajnoch, Miroslav: *See—*
Rohrbach, Roger Phillip; and Rajnoch, Miroslav, 3,901,005.

Raleigh Industries Limited: *See—*
Toplis, John Geoffrey, 3,901,300.

Ramirez, Richard D. Contoured chap-style cycling apron. 3,901,549, Cl. 296-78.100.

Ramsey Corporation: *See—*
Prasse, Herbert F., 3,901,131.

Ranft, Ernst L.: *See—*
Hollis, Thomas J., Jr.; and Ranft, Ernst L., 3,901,202.

Rank Xerox Ltd.: *See—*
Fukushima, Osamu; Osawa, Sadao; Komaki, Takao; and Sato, Masamichi, 3,901,698.

Mitsumasu, Sakae, 3,901,591.

Ranz, Erwin; Bossert, Friedrich; Schutz, Heinz Dieter; Rintelen, Harald Von; Delzenne, Gerard Albert; and De Jaeger, Antoine August, to Agfa-Gevaert Aktiengesellschaft. Photographic material comprising a light-sensitive 1,4-dihydropyridine derivative. 3,901,710, Cl. 96-67.000.

Ranz, Erwin: *See—*
Ugi, Ivar; Seibert, Heinrich; Hoffmann, Peter; Marquarding, Dieter; von Rintelen, Harald; Ranz, Erwin; and Himmelmann, Wolfgang, 3,901,708.

Raque, Robert G., to FMC Corporation. Package feeding and timing mechanism. 3,901,375, Cl. 198-34.000.

Rasberger, Michael; Rody, Johann; Moser, Paul; and Muller, Helmut, to Ciba-Geigy Corporation. Nickel stabilisers for synthetic polymers. 3,901,931, Cl. 260-439.00R.

Ratcliff, Ralph A. Claw type grab hook. 3,901,024, Cl. 59-93.000.

Ratts, Kenneth W., to Monsanto Company. Herbicidal acetanilides 2-halo-N-(amidoalkylene). 3,901,685, Cl. 71-118.000.

Raum, Helmut; and Segain, John E., to International Standard Electric Corporation. Method of producing selenium charge electrophotographic recording plates. 3,901,783, Cl. 204-192.000.

Raville, Clarence A. Handgun apparatus. 3,901,125, Cl. 89-163.000.

Raymond Corporation, The: *See—*
Delaney, Michael J.; and Ames, John W., 3,902,105.

Raymond Lee Organization, Inc., The: *See—*
Ford, Alexander T., 3,901,118.

McMahan, Charles Robert, 3,901,520.

Raytheon Company: *See—*
Bierig, Robert W.; and Mozzi, Robert L., 3,902,095.

RCA Corporation: *See—*
Ahmed, Adel Abdel Aziz, 3,902,079.

Donovan, William Henry, 3,902,190.

Hudson, Kenneth Clifford, 3,901,578.

Jacobson, David Stanley, 3,902,188.

Mehalso, Robert Michael; and Kaganowicz, Grzegorz, 3,901,994.

Scott, Philip Romeo, Jr., 3,901,371.

Wheeler, Clark Ramsey; and Reusch, Raymond Karl, 3,902,003.

Read, Lee. Ear piercing device. 3,901,243, Cl. 128-329.000.

Reale, John, Jr., to Texaco Inc. Synthetic aircraft turbine oil. 3,901,815, Cl. 252-46.700.

Rebane, Arnold, to Sandoz Inc. Storable high protein chocolate snacks. 3,901,977, Cl. 426-631.000.

Redcay, Paul Wilson, to United States of America, Army. Distance responsive circuit. 3,902,173, Cl. 343-7.0PF.

Reed, Robert D.; Zink, John S.; and Schwartz, Robert E., to John Zink Company. Temperature-pressure activated purge gas flow system for flares. 3,901,643, Cl. 431-202.000.

Rees, John Michael: *See—*
Mason, David Robert; Cole, Susan Margaret; Rees, John Michael; and Coaton, James Richard, 3,902,091.

Reese, Charles R.: *See—*
Bradley, Ronnie A.; Reese, Charles R.; and Sease, John D., 3,901,409.

Reese, Dale C. Waterproof, airtight closure. 3,901,167, Cl. 109-64.000.

Regie Nationale des Usines Renault: *See—*
Lecaillet, Pierre; and Dressler, Bruno, 3,901,519.

Remaud, Jacques, 3,901,207.

Reid, John D.: *See—*
Cashen, Norton A.; Reinhardt, Robert M.; and Reid, John D., 3,901,984.

Reiger, Arthur C., Jr., to Globe Tool and Engineering Company, The. Form retainer and insulator backup assembly for stator winding machines. 3,901,454, Cl. 242-1.10R.

Reilly, Thomas A.: *See—*
Kalnoki Kis, Tibor; and Reilly, Thomas A., 3,901,732.

Reinberg, Alan R.: *See—*
Fuller, Clyde R.; and Reinberg, Alan R., 3,900,944.

Reinhardt, Robert M.: *See—*
Cashen, Norton A.; Reinhardt, Robert M.; and Reid, John D., 3,901,984.

Reitz, Richard J.; Nicolson, John M.; and Herold, Guenter K., to Bendix Corporation. The. Automatic slack adjuster. 3,901,357, Cl. 188-79.50K.

Reizenstein, Harry S.; and Tanges, George W. Self-synchronized trailing edge folder assembly accessory for folder-gluer. 3,901,134, Cl. 93-49.0AC.

Relyea, Lloyd A., to Xerox Corporation. Low radiation open-boat crucibles. 3,901,647, Cl. 432-264.000.

Remaud, Jacques, to Regie Nationale des Usines Renault; and Automobiles Peugeot. Carburetor control safety. 3,901,207, Cl. 123-198.0DB.

Repik, Albert J.: *See—*
Dimitri, Mitchell S.; and Repik, Albert J., 3,901,823.

Research Corporation: *See—*
Rohrbach, Roger Phillip; and Rajnoch, Miroslav, 3,901,005.

Resnelle, Pierre: *See—*
Auger, Bernard; Resnelle, Pierre; and Teisseire, Paul Jose, 3,901,924.

Retallick, William B., to Air Products and Chemicals, Inc. Multi-component catalyst. 3,901,821, Cl. 252-410.000.

Reusch, Raymond Karl: *See—*
Wheeler, Clark Ramsey; and Reusch, Raymond Karl, 3,902,003.

Revaz, Francis, to Les Fabriques d'Assortiments Reunies. Hard precious material. 3,901,717, Cl. 106-42.000.

Revuelta, Antonio Lozano. Machine for ironing shirt collars. 3,901,420, Cl. 223-52.100.

Reynolds, Paul: *See—*
Lenz, Manfred; Reynolds, Paul; and Westen, Willi, 3,900,912.

Reynolds, Walter Lee: *See—*
Durkos, Larry George; Christie, Charles Dewey; Denney, Jerry William; Trusty, Jon Caton; Reynolds, Walter Lee; Cole, Robert Wayne; Brinson, Fred Edwin; and Lovell, Allen Kent, 3,901,656.

Rheinstahl AG: *See—*
Joklik, Otto; Elebracht, Gunter; and Siekmann, Gunter, 3,901,659.

Rheinstahl GieBerei AG: *See—*
Braukmann, Heinz Dieter; Hattwig, Wolfgang; and Wichert, Manfred, 3,901,473.

Rheinstahl Henschel Aktiengesellschaft: *See—*
Hausenblas, Helmut, 3,901,124.

Rhodes, Chester E., to Woodward Mfg. & Sales Co., Inc. Power control hand truck. 3,901,396, Cl. 214-152.000.

Rhomberg, Alfred; Berger, Herbert; Stach, Kurt; Vomel, Wolfgang; and Sauer, Winfriede, to Boehringer Mannheim G.m.b.H. Cyclopentenquinolone compounds and therapeutic compositions. 3,901,895, Cl. 260-287.00R.

Rhone-Poulenc-Textile: *See—*
Pradier, Rene, 3,901,456.

Sangalli, Silvio; and Vidal, Roger, 3,901,015.

Rhone-Progil: *See—*
Gouteron, Bernard; Jay, Pierre; and Rieux, Jean-Philippe, 3,902,006.

Ribouleau, Edmond Andre Henri. Sowing machine, in particular for corn or beet seeds. 3,901,169, Cl. 111-52.000.

Richards, Harold W. Cultivator having a floating plant guard. 3,901,325, Cl. 172-81.000.

Richards, John H.; and Stewart, Clare A., Jr., to du Pont de Nemours, E. I., and Company. Process for the chlorination of trans-1,4-dichloro-2-butene to meso-1,2,3,4-tetrachlorobutane. 3,901,950, Cl. 260-658.00R.

Richards, Louis R.: *See—*
Lekan, Henry N.; and Richards, Louis R., 3,900,919.

Richardson, Neal A.: *See—*
Toy, Albert; Richardson, Neal A.; and Bromberg, Robert, 3,901,733.

Richter Gedeon Vegeszeti Gyar Rt.: *See—*
Mago nee Karacsony, Erzebet; Borsi, Jozsef; Balogh, Tibor; and Wolf, Lajos, 3,901,893.

Richter, Sidney B.; and Krenzer, John, to Velsicol Chemical Corporation. N-thienylalkylacetanilides. 3,901,917, Cl. 260-329.0AM.

Ricketts, James M., to General Motors Corporation. Yieldable shroud support. 3,901,622, Cl. 415-134.000.

Ricoh Co., Ltd.: *See—*
Kawa, Ryuichi, 3,902,160.

Ogawa, Mutsuo, 3,902,008.

Suzuki, Shigeru; and Mochimaru, Hideaki, 3,901,586.

Riddle, Larry D., to Caterpillar Tractor Company. Workpiece support for thermal deburring apparatus. 3,901,488, Cl. 266-2.500.

Ridgeway, Curtis Allen: *See—*
Velez, Fernando I.; and Ridgeway, Curtis Allen, 3,901,365.

Riebe, Jerry J., to Dow Chemical Company, The. Tube cleaning apparatus. 3,901,252, Cl. 134-56.00R.

Riebel, Charles F.: *See—*
Buchanan, Carl S.; Fargo, Harland E.; and Riebel, Charles F., 3,901,675.

Riegler, Ernst; and Schmidt, Manfred, to Vereinigte Osterreichische Eisen und Stahlwerke - Alpine Montan Aktiengesellschaft. Tilttable converter self-aligning bearing. 3,901,566, Cl. 308-36.100.

Riegler, Harald: *See—*
Muller, Jupp; Riegler, Harald; and Lowenstein, Karl, 3,901,540.

Riess, Jean G.; LeBlanc, Maurice; Santini, Georges; and Guion, Jacky, to Produits Chimiques Ugine Kuhlmann. New fluorinated dienes and process for preparing same. 3,901,948, Cl. 260-653.300.

Rieux, Jean-Philippe: *See—*
Gouteron, Bernard; Jay, Pierre; and Rieux, Jean-Philippe, 3,902,006.

Rigdon, Orville W.: *See—*
Fuchs, Gundolf; Pirck, Dietrich; and Rigdon, Orville W., 3,901,841.

Riis, Voldemar, to AB Vargarda Armaturfabrik. Valve for mixing hot and cold water. 3,901,261, Cl. 137-100.000.

Rintelen, Harald Von: *See—*
Ranz, Erwin; Bossert, Friedrich; Schutz, Heinz Dieter; Rintelen, Harald Von; Delzenne, Gerard Albert; and De Jaeger, Antoine August, 3,901,710.

Riolet, Christian, to Saurer Diederichs S.A. Weft carrier for a shuttleless loom. 3,901,284, Cl. 139-122.00N.

Rizzardo, Ezio: *See—*
Hesse, Robert Henry; Rizzardo, Ezio; and Barton, Derek Harold Richard, 3,901,928.

Rizzato, Elvio: *See—*
Broccardo, Ernesto; Grasselli, Giovanni; Rizzato, Elvio; Grasselli, Antonio; and Serman, Adriano, 3,901,116.

Ro, Rolland Shih-Yuan: *See—*
Collette, John Wilfred; Ro, Rolland Shih-Yuan; and Sonnenberg, Fred Max, 3,901,860.

Robb, Frank B.: *See—*
Kosik, Samuel J., Jr.; and Robb, Frank B., 3,901,533.

Robert, Jean-Claude E.: *See—*
Buchot, Pierre Charles; Cohen-Alloro, Richard; and Robert, Jean-Claude E., 3,901,793.

Roberts, John A., to General Electric Company. Filter system for halogen gas detector. 3,901,672, Cl. 55-387.000.

Robertshaw Controls Company: *See—*
Moon, William T., Jr., 3,901,267.

Robertson, Donald A., to Xerox Corporation. Semi-automatic document handler. 3,901,594, Cl. 355-18.000.

Robinson, David S.: *See—*
Romanzi, Louis; and Robinson, David S., 3,901,459.

Robinson, Elmo C. Grain mill structure. 3,901,453, Cl. 241-259.100.

Roccaforte, Harry I., to Hoerner-Waldorf Corporation. Tube display carton. 3,901,382, Cl. 206-45.140.

Rochat, Donald: *See—*
Capt, Edmond; and Rochat, Donald, 3,901,020.

Rocher, George, to Metallurgical Exoproducts Corporation. Vessel addition apparatus. 3,901,493, Cl. 266-34.00T.

Rochester, Lincoln First Bank of, executor: *See—*
Eichorn, Roger H., deceased, 3,902,062.

Rockwell International Corporation: *See—*
Bruene, Warren B., 3,902,019.

McCloskey, Albert R., 3,901,567.

Rody, Johann: *See—*
Rasberger, Michael; Rody, Johann; Moser, Paul; and Muller, Helmut, 3,901,931.

Roeder, Richard C. Floor support mount. 3,901,470, Cl. 248-188.400.

- Rogan, Virgil Kenneth. Appliance for heating and applying dental wax. 3,902,043, Cl. 219-242.000.
- Rogers, Barry N.: *See—*
Rogers, Sidney; Rogers, Barry N.; and Petre, Robert E., 3,902,026.
- Rogers, Philip Sydney; Williamson, James; and Johnson, Peter Edwin, to National Research Development Corporation. Micro-crystalline material and method of preparation. 3,901,716, Cl. 106-39.600.
- Rogers, Raymond W.: *See—*
Wilson, Robert Gary; Rogers, Raymond W.; and Willien, Anthony George, 3,901,136.
- Rogers, Sidney; Rogers, Barry N.; and Petre, Robert E., to Electronic Control Systems, Inc. Method and apparatus for identifying wires. 3,902,026, Cl. 179-175.30A.
- Rognmo, Tore; and Schou, Tore, to A/S Kongsberg Vapenfabrik. Safety and arming device for fuses. 3,901,156, Cl. 102-70.200.
- Rogols, Saul: *See—*
Bond, John L.; Rogols, Saul; and Salter, John W., 3,901,725.
- Rohm and Haas Company: *See—*
Hoey, Charles E., 3,901,240.
- Rohrbach, Roger Phillip; and Rajnoch, Miroslav, to Research Corporation. Fruit harvester. 3,901,005, Cl. 56-330.000.
- Rokop, Joseph: *See—*
Vertesi, Tibor Miklos; and Rokop, Joseph, 3,901,491.
- Roland Offsetmaschinenfabrik Faber & Schleicher AG: *See—*
Schulte-Kulmann, Dieter, 3,901,149.
- Rolland, Burton A., to W. A. Whitney Corporation. Roller conveyor for asymmetrical members. 3,901,378, Cl. 198-127.00R.
- Rolls-Royce (1971) Limited: *See—*
Daniels, Douglas William, 3,901,557.
- McMurtry, David Roberts, 3,901,626.
- Romanzi, Louis; and Robinson, David S., to Irvin Industries, Inc. Safety belt retractor locking device. 3,901,459, Cl. 242-107.400.
- Rome Knitting Mills, Inc.: *See—*
Schur, Paul E.; Gallotello, Peter E.; and Keuler, Joseph F., 3,901,050.
- Romick, Rowland C., to Eaton Corporation. Four-wheel drive vehicle with drive transfer gear assembly. 3,901,092, Cl. 74-711.000.
- Ronson, George Lancaster: *See—*
Copp, Albert Leslie; and Ronson, George Lancaster, 3,901,176.
- Roosild, Sven A.; Shepherd, Freeman D., Jr.; Yang, Andrew C.; and Shedd, Walter M., to United States of America, Air Force. Schottky barrier infrared detector arrays with charge coupled device readout. 3,902,066, Cl. 250-332.000.
- Rosa, Salvatore, to Clinton Industries, Inc. Thread wiper. 3,901,171, Cl. 112-252.000.
- Rose, Boyd W., to FMC Corporation. Egg weighing apparatus. 3,901,334, Cl. 177-52.000.
- Rosen, Edward R.; and Levine, J. Paul. Washing machine packing braces. 3,901,385, Cl. 206-320.000.
- Rosenberger, Paul C.: *See—*
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- Rosenthal, Joel W.: *See—*
Kozlowski, Robert H.; and Rosenthal, Joel W., 3,901,664.
- Rosenwald, Robert H., to Universal Oil Products Company. Synergistic anti-icing composition. 3,901,666, Cl. 44-72.000.
- Rosseau, Richard B., to FMC Corporation. Rotary coiled broom. 3,900,915, Cl. 15-182.000.
- Roszel, Wayne O.: *See—*
Plummer, Mark A.; and Roszel, Wayne O., 3,901,317.
- Roth, Harold H.; Saunders, Frank L.; and Small, Hamish, to Dow Chemical Company. The Thixotropic liquid feed supplements for ruminants of carbohydrates, NPN and clay. 3,901,976, Cl. 426-69.000.
- Roux, Henry J.: *See—*
Ollinger, James C.; and Roux, Henry J., 3,900,997.
- Rovesti, William C.: *See—*
Wolk, Ronald H.; Nongbri, Govanon; and Rovesti, William C., 3,901,792.
- Rowland, George E., to Universal Kettle Company, Inc. Calcining kettle and system. 3,901,645, Cl. 432-16.000.
- Rubright, Phillip L., to Arco Industries Corporation. Method of making a plastic butterfly valve vane with peripheral seal. 3,901,964, Cl. 264-255.000.
- Rucker Company, The: *See—*
Piazza, Andre L.; and Lamb, Raymond K., 3,901,546.
- Ruckle, Duane L.: *See—*
Sprague, Robert A.; Henricks, Robert J.; Ruckle, Duane L.; Pierce, Cyril M.; and Hall, James A., 3,901,743.
- Rudzinat, Willy, to Hauni-Werke Korber & Co., KG. Conveyor for cigarettes or the like. 3,901,373, Cl. 198-20.00C.
- Rupp, Wiktor J., to Itek Corporation. Apparatus for polishing toroidal surfaces. 3,900,972, Cl. 51-119.000.
- Russell, Leslie John. Brush hand dryer. 3,901,249, Cl. 132-9.000.
- Ruti-Te Strake B.V.: *See—*
Vermeulen, Geert Jan; and Aarts, Hubertus Henricus, 3,901,286.
- Rutz, Peter: *See—*
Steiger, Anton; and Rutz, Peter, 3,901,032.
- S.T.D. Services Limited: *See—*
Nileshwar, Vivek Baburao, 3,901,063.
- Saab-Scania Aktiebolag: *See—*
Norlin, Stig Ivar, 3,901,543.
- SAB Brake Regulator Co. Ltd.: *See—*
Dahlkvist, Nils Goran, 3,902,158.
- Sackman, Gunter; Balle, Gerhard; Kolb, Gunter; and Muller, Friedrich, to Bayer Aktiengesellschaft. Process for the production of high molecular weight cationic acrylamide copolymers. 3,901,857, Cl. 260-79.30M.
- Safar, Vaclav, to ELITEX, Zavody textilniho strojrenstvi, generalni reditelstvi. Method of and device for processing fibrous material. 3,901,012, Cl. 57-58.890.
- Sagami Chemical Research Center: *See—*
Isowa, Yoshikazu; Takashima, Toshiyuki; Ohmori, Muneki; Kurita, Hideaki; Sato, Masanari; and Mori, Kaoru, 3,901,890.
- Saida, Takashi: *See—*
Takimoto, Masaaki; Saida, Takashi; and Honjo, Satoru, 3,901,704.
- St. Clair, Raymond Edward; and Hughes, Melvin A. Switching device. 3,902,080, Cl. 307-252.00B.
- Saipem S.p.A.: *See—*
Silvestri, Antonio; and Gargatagli, Guglielmo, 3,901,043.
- Saitama University: *See—*
Tanaka, Toyosuke; Okuzumi, Isamu; Matsuda, Tsuneo; and Kimijima, Katsunori, 3,901,865.
- Saito, Mitsuru, to Minolta Camera Kabushiki Kaisha. View finder light control in camera with self-timer. 3,902,183, Cl. 354-219.000.
- Saito, Tomiji: *See—*
Doi, Shuji; Saito, Tomiji; and Tozaki, Shigenobu, 3,901,873.
- Sakai Chemical Industry Co. Ltd.: *See—*
Tada, Fusao; Koga, Tadashi; Inaba, Shizuo; Sakata, Keiji; Hatanaka, Tutomu; and Nobata, Shoji, 3,901,932.
- Sakai, Takuji; Takada, Kunihiko; and Katsuma, Yuji, to Nippon Steel Corporation. Method and apparatus for forming loops of metal band materials with floor type looper. 3,901,424, Cl. 226-1.000.
- Sakashita, Masahira: *See—*
Hokonoki, Hisao; Ishikawa, Tatsuo; Sakashita, Masahira; Kusunose, Tetsuhiro; and Fukuma, Noboru, 3,901,989.
- Sakata, Keiji: *See—*
Tada, Fusao; Koga, Tadashi; Inaba, Shizuo; Sakata, Keiji; Hatanaka, Tutomu; and Nobata, Shoji, 3,901,932.
- Salter, John W.: *See—*
Bond, John L.; Rogols, Saul; and Salter, John W., 3,901,725.
- Salzman, Robert Stephen; and Goldman, Gerald Martin. Retro-fit lock kit and method of installing same. 3,901,542, Cl. 292-144.000.
- Samuelson, Gene H.: *See—*
Spitz, Eugene B.; Samuelson, Gene H.; Brenz, Richard E.; and Hansford, Charles C., 3,901,245.
- Sandberg, William A. Collision bumper for offshore structures. 3,901,040, Cl. 61-46.000.
- Sanders, Robert N.; and Valdo, Alex R., to Ethyl Corporation. Aluminum-silicon alloy. 3,901,691, Cl. 75-142.000.
- Sandoz Inc.: *See—*
Rebane, Arnold, 3,901,977.
- Sandoz Ltd.: *See—*
Bastian, Jean-Michel; Hasspacher, Klaus; and Strasser, Michael, 3,901,916.
- Fehr, Theodor; and Hauth, Hartmut, 3,901,891.
- Hofer, Kurt, 3,901,955.
- Sanera Projecting Aktiebolag: *See—*
Oberg, Per Olof, 3,901,753.
- Sangalli, Silvio; and Vidal, Roger, to Rhone-Poulenc-Textile. Method for cutting continuous yarns. 3,901,015, Cl. 57-157.00R.
- Sankus, Joseph G., Jr., to Xerox Corporation. Migration and agglomeration imaging method. 3,901,699, Cl. 96-1.0PS.
- Sankus, Joseph G., Jr.; and Petruzzella, Nicholas L., to Xerox Corporation. Imaging element with absorbent blotter overlay migration. 3,901,702, Cl. 96-1.500.
- Sankyo Kasei Company, Ltd.: *See—*
Nakamura, Yoshiro; Umehara, Akira; and Yamada, Itsuyo, 3,901,677.
- Sant'Agata, Patrick J. Grader. 3,901,618, Cl. 404-118.000.
- Santilli, Arthur A.; Scotese, Anthony C.; and Tomarelli, Rudolph M., to American Home Products Corporation. (2-Pyrimidinylthio) alkanolic acids, esters, amides and hydrazides. 3,901,887, Cl. 260-256.50R.
- Santini, Georges: *See—*
Riess, Jean G.; LeBlanc, Maurice; Santini, Georges; and Guion, Jacky, 3,901,948.
- Santini-Ormières, Jean; Spenle, Rene; and Chervin, Michel. Manufacture of metal frames for tennis and other rackets. 3,901,507, Cl. 273-73.00C.
- Santis, Dean C.: *See—*
Neuner, James A.; Traversi, Maurizio; and Santis, Dean C., 3,902,060.
- Sanza, Frank S.: *See—*
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- SAPAL Societe Anonyme des Plieuses Automatiques: *See—*
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- Sarantakis, Dimitrios: *See—*
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- Sasajima, Kikuo: *See—*
Yamamoto, Hisao; Nakao, Masaru; Sasajima, Kikuo; Maruyama, Isamu; and Katayama, Shigenari, 3,901,898.
- Sassler, Marvin Lawrence, to International Telephone and Telegraph Corporation. Single sideband generator. 3,902,126, Cl. 328-61.000.
- Sato, Hisaaki: *See—*
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- Sato, Koitsu: *See—*
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- Sato, Kotaro: *See—*
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- Sato, Masamichi: *See—*
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- Sato, Masanari: *See—*
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- Sato, Morimasa: *See—*
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- Sato, Seiji: *See—*
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- Satomi, Takeo; and Hino, Naganori, to Sumitomo Chemical Company, Limited. Combined herbicide. 3,901,680, Cl. 71-87.000.
- Satt Elektronik AB: *See—*
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- Sauer, Winfried: *See—*
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- Saunders, Frank L.: *See—*
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- Saurer Diederichs S.A.: *See—*
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- Sawa, Yuji: *See—*
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- Scan-Tron Corporation: *See—*
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- Scannell, James P.; Pruess, David L.; and Demny, Thomas C., to Hoffmann-La Roche Inc. (S)-alanyl-3-(a-(s)-chloro-3-(s)-hydroxy-2-oxo-azetidinylmethyl-(s)-alanine. 3,901,880, Cl. 260-239.00A.
- Scardanzan, Anthony. Protective guard for a hypodermic needle. 3,901,226, Cl. 128-133.000.
- Schaefer, David P.: *See—*
Payne, Charles C.; Bloemke, Richard E.; and Schaefer, David P., 3,901,992.
- Schaefer, Howard A., to Anchor Hocking Corporation. Reflective roadway marker. 3,901,583, Cl. 350-97.000.
- Schaer, Glenn R., to Dare Pafco Inc. Cup plating rack. 3,901,788, Cl. 204-297.00W.
- Schafer, Josef, to Telesco Brophey Limited. Umbrella. 3,901,257, Cl. 135-25.00R.
- Scherer Aktiengesellschaft: *See—*
Boroschewski, Gerhard, 3,901,936.
- Vorbruggen, Helmut; Kopp, Rudolf; Horowski, Reinhard; Paschelke, Gert; and Palenschat, Dieter, 3,901,876.
- Scherer Corporation: *See—*
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- Weinstein, Marvin J.; Wagman, Gerald H.; Patel, Mahesh G.; and Marquez, Joseph A., 3,901,764.
- Schermuly Limited: *See—*
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- Schertz, Burton D., to General Motors Corporation. Phase splitter circuit. 3,902,081, Cl. 307-262.000.
- Schick Incorporated: *See—*
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- Schiemann, Wolfram. Device for the venting of jerry cans. 3,901,417, Cl. 222-479.000.
- Schiffer, Gunter: *See—*
Meisen, Klaus; Alders, Kurt; Teetz, Wolfgang; and Schiffer, Gunter, 3,901,053.
- Schiller, Paul; Merten, Josef; and Vemaleken, Hugo, to Bayer Aktiengesellschaft. Polycarbonate plastics having improved tracking resistance. 3,901,844, Cl. 260-37.0PC.
- Schlaepfer, Hans: *See—*
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- Schlagheck, Norbert; Schultes, Herbert; Schneider, Horst; and Huber, Hans-Peter, to Agfa-Gevaert Aktiengesellschaft. Information carrier for use on exposed films and film-containing receptacles. 3,901,435, Cl. 235-61.12R.
- Schleicher, Louis C. Spot clinch means and method. 3,900,937, Cl. 29-200.00B.
- Schlesinger, Jill. Hanging shelf with levelling means. 3,901,165, Cl. 108-149.000.
- Schliebs, Reinhard: *See—*
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- Schlumberger Technology Corporation: *See—*
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- Schmehl, Glenn Lewis, to Western Electric Company, Incorporated. Multiple aperture die. 3,901,065, Cl. 72-468.000.
- Schmidt, Donald L.: *See—*
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- Schmidt, Manfred: *See—*
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- Schmidt, Robert Rudolf: *See—*
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- Schmidt, Rudolf; Meier, Werner; Wietzeg, Rainer; and Schutz, Hartmut, to Siemens Aktiengesellschaft. Serial programmable combination switching function generator. 3,902,050, Cl. 235-152.000.
- Schmitt, Georg: *See—*
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- Schmitt, Robert A.: *See—*
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- Schneider, Horst: *See—*
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- Schnell, Karl. Filling apparatus for pasty media, particularly for sausage meat. 3,901,279, Cl. 138-31.000.
- Scholtz, Coenraad Jacobus Beukes: *See—*
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- Schon, Manfred: *See—*
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- Schou, Tore: *See—*
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- Schuler, Ulrich, to Siemens Aktiengesellschaft. Composite machine for supplying speed and control signals to a speed controllable converter machine assembly. 3,902,086, Cl. 310-112.000.
- Schuller, James T.; Hendrickson, William W.; and Albrecht, Paul N., to UMC Industries, Inc. Vendor particularly for cartons of cigarettes or like packages. 3,901,366, Cl. 194-4.00C.
- Schulte-Kulmann, Dieter, to Roland Offsetmaschinenfabrik Faber & Schleicher AG. Device for determining the tackiness of inks, particularly printing inks. 3,901,149, Cl. 101-349.000.
- Schultes, Herbert: *See—*
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- Schultz, Robert S., to Schultz, Robert S. Captive tip-seal valve. 3,901,410, Cl. 222-153.000.
- Schultz, Robert S., to Schultz, Robert S. Top-loaded pressure operated container for dispensing viscous products. 3,901,416, Cl. 222-389.000.
- Schultz, William J.: *See—*
Van Bennekom, Carl F.; Schultz, William J.; and Manning, Ralph M., 3,901,436.
- Schulz, Klaus-Dieter: *See—*
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- Schur, Paul E.; Gallotello, Peter E.; and Keuler, Joseph F., to Rome Knitting Mills, Inc. Automatic knitting machine. 3,901,050, Cl. 66-5.000.
- Schuster, Friedrich, to Kugelfischer Georg Schaefer & Co. False twisting apparatus. 3,901,011, Cl. 57-77.400.
- Schutz, Hartmut: *See—*
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- Schutz, Heinz Dieter: *See—*
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- Schwartz, Norman; and Mohrbacher, Richard J., to McNeil Laboratories, Incorporated. Certain derivatives of 5,6-diphenyl pyrazinylmalonates and pyrazineacetic acids. 3,901,885, Cl. 260-250.00B.
- Schwartz, Norman; and Mohrbacher, Richard J., to McNeil Laboratories, Incorporated. Certain derivatives of pyrazinylmalonates. 3,901,886, Cl. 260-250.00B.
- Schwartz, Robert E.: *See—*
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- Schweizer, Edward E. Suture cartridge. 3,901,244, Cl. 128-334.00R.
- Schwing, Friedrich Wilhelm, to Schwing, Gerhard. Concrete delivery units. 3,901,485, Cl. 259-177.00A.
- Schwing, Gerhard: *See—*
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- Schwochow, Friedrich: *See—*
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- Sconce, Jerry W. Inflatable splint. 3,901,225, Cl. 128-89.00R.
- Scotese, Anthony C.: *See—*
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- Scott, Claude Worthington. Marine propulsion apparatus. 3,901,177, Cl. 115-41.00R.
- Scott, Ian G.; and Oberstein, Rose. Sled with steerable rudder. 3,901,526, Cl. 280-21.00R.
- Scott, Philip Romeo, Jr., to RCA Corporation. Print actuator arrangement and encoder. 3,901,371, Cl. 197-53.000.
- Scott, Russell F., Jr., to Varian Associates. Vane grid structures and method of making same. 3,902,094, Cl. 313-348.000.
- Scratchfield, Vernon A. Method and apparatus for aligning and machining surfaces in cylinder heads. 3,901,619, Cl. 408-1.000.
- Seal Incorporated: *See—*
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- Seaman, John A., Jr. Slidable cover assembly for a pickup truck. 3,901,548, Cl. 296-10.000.
- Sease, John D.: *See—*
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- Seebeck, Uwe, to U.S. Philips Corporation. Scanner for the recording of radioactivity distribution. 3,902,065, Cl. 250-327.000.

- Seeger, Ernst; Teufel, Helmut; Engel, Wolfhard; and Nickl, Josef, to Boehringer Ingelheim GmbH. 2-(4-Biphenyl)-tetrahydrofurans. 3,901,927, Cl. 260-346.10R.
- Seeley, Dunham Briggs. See—
- Mandelson, David R.; Miller, Leo H.; and Seeley, Dunham Briggs. 3,901,639.
- Segain, John E.: See—
- Raum, Helmut; and Segain, John E., 3,901,783.
- Segawa, Yoshio, to Sony Corporation. Cover and/or holding apparatus for a cassette-type recorder. 3,902,194, Cl. 360-137.000.
- Seibert, Heinrich: See—
- Ugi, Ivar; Seibert, Heinrich; Hoffmann, Peter; Marquarding, Dieter; von Rintelen, Harald; Ranz, Erwin; and Himmelmann, Wolfgang, 3,901,708.
- Seidel, Siegfried: See—
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- Seip, Hermann, to ITT Industries, Inc. Load-dependent brake force distributor. 3,901,561, Cl. 303-22.00R.
- Seitzer, Walter H., to Sun Ventures, Inc. Manufacture of oxygen from high temperature steam. 3,901,668, Cl. 55-16.000.
- Seitzer, Walter H., to Sun Ventures, Inc. Manufacture of hydrogen from high temperature steam. 3,901,669, Cl. 55-16.000.
- Sekisui Kagaku Kogyo Kaishiki Kaisha: See—
- Ueda, Harutoshi; Suzuki, Naoyuki; Nagao, Masami; Shiroza, Satoshi; and Hayashi, Hiroshi, 3,901,991.
- Selzer, Robert J., to International Harvester Company. Curved thrust plate on clutch throwout bearing. 3,901,362, Cl. 192-98.000.
- Semperit AG: See—
- Goerter, Werner; Kresta, Erich; and Stumpf, Horst, 3,901,961.
- Sena, Ernest H. Auxiliary vehicle spring installation. 3,901,494, Cl. 267-61.00R.
- Senko Kikai Kabushiki Kaisha: See—
- Kitami, Yoshiaki, 3,901,671.
- Sennewald, Kurt: See—
- Ohorodnik, Alexander; Sennewald, Kurt; Hudeck, Joachim; and Stutzke, Paul, 3,901,660.
- Senor, Ronald E., to Texas Instruments, Incorporated. Motor protector apparatus. 3,902,149, Cl. 337-110.000.
- Sergeev, Leonid Alexandrovich: See—
- Buzhinskaya, Antonina Vladimirovna; Sergeev, Leonid Alexandrovich; Trofimov, Vladimir Ivanovich; Bobrov, Vyacheslav Borisovich; Migina, Anna Ilinichna; Perelygina, Tatyana Fedorovna; Bobrov, Anatoly Borisovich, deceased; Bobrova, Evdokia Nikolaevna, administrator; and Bobrova, Irina Maximovna, administrator, 3,901,785.
- Serman, Adriano: See—
- Broccardo, Ernesto; Grasselli, Giovanni; Rizzato, Elvio; Grasselli, Antonio; and Serman, Adriano, 3,901,116.
- Shah, Tilak M., to Upjohn Company. The Thermoplastic polyurethanes prepared from 4,4'-methylenbis (phenyl isocyanate). 3,901,852, Cl. 260-47.0CB.
- Shapiro, Sydney H.: See—
- Callahan, John J.; and Shapiro, Sydney H., 3,901,715.
- Shapland, Earl P.: See—
- Klaus, Joseph J.; and Shapland, Earl P., 3,901,418.
- Sharp Kabushiki Kaisha: See—
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- Sharychenkov, Alexandr Alexeevich. Device for non-ring spinning of fibres. 3,901,013, Cl. 57-58.950.
- Shedd, Walter M.: See—
- Roosild, Sven A.; Shepherd, Freeman D., Jr.; Yang, Andrew C.; and Shedd, Walter M., 3,902,066.
- Shelffo, Loren E., to Addressograph Multigraph Corporation. Electrophotographic process using polyimide containing develop. 3,901,695, Cl. 96-1.05D.
- Shell Oil Company: See—
- Knapp, Randolph H., 3,901,316.
- Shen, Chung Y.; and Callis, Clayton F., to Monsanto Company. Method of making dense detergent granules. 3,901,831, Cl. 252-57.000.
- Shepherd, Freeman D., Jr.: See—
- Roosild, Sven A.; Shepherd, Freeman D., Jr.; Yang, Andrew C.; and Shedd, Walter M., 3,902,066.
- Shepherd, William Edwin; and Bridgewater, Horace Kenneth, to Joseph Lucas (Industries) Limited. Lading apparatus. 3,901,415, Cl. 222-357.000.
- Sheppard, David, to International Standard Electric Corporation. PCM error detection. 3,902,117, Cl. 325-38.00A.
- Shibata, Yoshio: See—
- Nakagawa, Yutaka; Shibata, Yoshio; and Yoneta, Hajime, 3,902,100.
- Shibazaki, Akio: See—
- Kohno, Mitsuo; Nomura, Minoru; Shibazaki, Akio; Yuasa, Takeo; and Mutoh, Yoshihiko, 3,901,851.
- Shigyo, Genshichi. Mobile cleaning and polishing device. 3,900,968, Cl. 51-5.00R.
- Shimozawa, Akemi: See—
- Takatori, Yasushi; Haruta, Masahiro; Shimozawa, Akemi; and Nishide, Katsuhiko, 3,901,769.
- Shinano, Takayuki: See—
- Machi, Sueo; Shinano, Takayuki; Matui, Yasushi; and Hibi, Yoshiharu, 3,901,778.
- Shinoda, Kiyonori; Nakamura, Tadashi; Funabashi, Masayuki; and Okubo, Azuma, to Kureha Kagaku Kogyo K.K. Process for the manufacture of vinylidene chloride and/or methylchloroform. 3,901,949, Cl. 260-654.00H.
- Shiraishi, Yoshiaki. Circulative catering table. 3,901,355, Cl. 186-1.00R.
- Shirley, Donald J.: See—
- Hampton, Loyd D.; and Shirley, Donald J., 3,901,075.
- Shiroza, Satoshi: See—
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- Shope, Robert E.: See—
- Binger, Wynn S.; and Shope, Robert E., 3,901,553.
- Shott, Michael. Ball pick up device. 3,901,545, Cl. 294-19.00A.
- Showa Oil Company, Ltd.: See—
- Tada, Fusao; Koga, Tadashi; Inaba, Shizuo; Sakata, Keiji; Hatanaka, Tutomu; and Nobata, Shoji, 3,901,932.
- Shukla, Ravindra Shivprasad; and Pinto, Joseph Diago, to American Cyanamid Company. Urine toxicology control. 3,901,655, Cl. 23-230.00B.
- Siberell, Stanley J.: See—
- Engman, Milton C.; and Siberell, Stanley J., 3,900,933.
- Sibley, Forbes S.; and Biemann, Robert J., to Hoskins Manufacturing Co. Thermocouple. 3,901,734, Cl. 136-241.000.
- Siegel, Harald, to Siemens Aktiengesellschaft. Pulsed doppler radar device having at least one range channel. 3,902,174, Cl. 343-7.700.
- Siegmund, Walter P.: See—
- Strack, Richard R.; Siegmund, Walter P.; and Smith, Merton L., 3,901,674.
- Siekmann, Gunter: See—
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- Siemens Aktiengesellschaft: See—
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- Dorner, Heinrich; and Michel, Eberhard, 3,901,196.
- Fischer, Gert; Seidel, Siegfried; and Pollmann, Fritz, 3,902,144.
- Hofmann, Horst; and Katz, Helmut, 3,901,663.
- Landgraf, Hermann; and Hohmann, Eugen, 3,900,952.
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- Schmidt, Rudolf; Meier, Werner; Wietzeg, Rainer; and Schutz, Hartmut, 3,902,050.
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- Speth, Winfried; Bohm, Klaus; and Dreiseitl, Walter, 3,902,109.
- Sporrer, Ludwig, 3,901,499.
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- Signetics Corporation: See—
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- Silvestri, Antonio; and Gargatagli, Guglielmo, to Saipem S.p.A. Apparatus for laying a pipeline on the sea-bottom from a floating vessel. 3,901,043, Cl. 61-72.300.
- Sim, James S. Y.; Van Horn, Maurice H.; Cohen, Arthur I.; Gordesky, Stanley E.; and Gordon, Stanley I., to Union Corporation. Sustained release of methantheline. 3,901,966, Cl. 424-22.000.
- Sim, James S. Y.: See—
- Cohen, Arthur I.; Sim, James S. Y.; Van Horn, Maurice H.; Gordesky, Stanley E.; and Gordon, Stanley I., 3,901,967.
- Cohen, Arthur I.; Sim, James S. Y.; Van Horn, Maurice H.; Gordesky, Stanley E.; and Gordon, Stanley I., 3,901,968.
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- Simich, Emil, to A. J. Gerrard & Company. Bale tie end former. 3,901,292, Cl. 140-73.000.
- Siminoff, Roger H. Neck truss structure for stringed musical instruments. 3,901,119, Cl. 84-293.000.
- Simmons, Calvin J.: See—
- Banners, Delbert J.; and Simmons, Calvin J., 3,901,272.
- Simonsen, Ole Finn, to Dominion Bridge Company, Ltd. Connector. 3,901,611, Cl. 403-187.000.
- Simpson, Arthur William; and Pocock, Frank William, to Spacials Limited. Method and apparatus for forming individual heat sealed articles. 3,901,754, Cl. 156-251.000.
- Simpson, Frank M., to Hunt Electronics. Prefabricated article and methods of maintaining the orientation of parts being bonded thereto. 3,902,189, Cl. 357-70.000.
- Simpson Timber Company: See—
- Denton, Kenneth J.; and Groot, John C., 3,900,957.
- Sims, Royal W. Transmission for concrete mixers. 3,901,104, Cl. 74-769.000.
- Sinfelt, John H.; and Cusumano, James A., to Exxon Research and Engineering Company. Multimetallic catalysts. 3,901,827, Cl. 252-455.00R.
- Singer Company, The: See—
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- Sion, Daniel. Voltage multiplier. 3,902,108, Cl. 321-15.000.
- Sirrenberg, Wilhelm: See—
- Colln, Reimer; Sirrenberg, Wilhelm; Behrenz, Wolfgang; and Hammann, Ingeborg, 3,901,956.

- Sirtl, Erhard; and Currin, Cedric G., to Dow Corning Corporation. Silicon semiconductor device array and method of making same. 3,900,943, Cl. 29-572.000.
- Siskin, Michael; Wristers, Jos P.; and Porcelli, Joseph J., to Exxon Research and Engineering Company. Catalytic hydrocracking with a mixture of metal halide and anhydrous protonic acid. 3,901,790, Cl. 208-108.000.
- Sisson, Ronald C.; and Spangler, Frederick E., to General Electric Company. Apparatus for speeding-up the attack time of a tone-coded radio receiver. 3,902,122, Cl. 325-466.000.
- Skarke, Peter; and Wichert, Hans, to Siemens Aktiengesellschaft. Servicing desk for an x-ray diagnosing device. 3,902,069, Cl. 250-402.000.
- Skingley, Brian Stanley, to Marconi Company Limited. The. Diverse signal combining arrangements. 3,902,119, Cl. 325-305.000.
- Skinner, Frank R., I. Multiple prehension mechanism. 3,901,547, Cl. 294-88.000.
- Skolnik, Phil. Disappearing stairway. 3,901,353, Cl. 182-78.000.
- Slator, Damon T.; and Brown, Cicero C., to Brown Oil Tools, Inc. Electric power drive assembly. 3,901,330, Cl. 173-57.000.
- Slavenburg, Antonie; van den Boogert, Johannes; and Swart, Antoon, to U.S. Philips Corporation. Magnetic correction device for a cathode ray tube. 3,902,145, Cl. 335-212.000.
- Slavinski, Ivan Assenov; Burgudjiev, Eduard Todorov; Vukolov, Dmitri Dmitrievich; and Angelov, Todor Dimitrov, to DSO "ZMM". One-seat holder for changeable tool units. 3,901,108, Cl. 82-36.00R.
- Slingluff, Eugene L.; and Ostoich, Eli, to Sunlite Plastics, Inc. Method of making radiographically opaque plastic tubing. 3,901,829, Cl. 252-478.000.
- Sloan, Robert Bryan, to Ethridge, Kenneth; and Stacy, Lee Roy, part interest to each. Advertising sign. 3,900,978, Cl. 40-30.000.
- Small, Hamish: See—
- Roth, Harold H.; Saunders, Frank L.; and Small, Hamish, 3,901,976.
- Smee, George H.: See—
- Browning, Jhonce N.; Lee, Nathan D.; and Smee, George H., 3,901,822.
- Smemo, Alfred Sigmund, to Deere & Company. Steering by driving control linkage. 3,901,340, Cl. 180-6.480.
- Smith, Arnold E., to Briggs & Stratton Corporation. Automatic compression relief mechanism. 3,901,199, Cl. 123-182.000.
- Smith, David E. Method and apparatus for producing charcoal. 3,901,766, Cl. 201-32.000.
- Smith, Dennis W.: See—
- Brydges, William T., III; and Smith, Dennis W., 3,901,719.
- Smith, Franklin G.: See—
- Zier, George F.; Casciato, Candido; and Smith, Franklin G., 3,901,380.
- Smith, Jack E.: See—
- D'Angelo, Albert; and Smith, Jack E., 3,900,927.
- Smith, James I., to General Electric Company. Grounding attachment for non-metallic enclosures. 3,902,002, Cl. 174-51.000.
- Smith, Merton L.: See—
- Strack, Richard R.; Siegmund, Walter P.; and Smith, Merton L., 3,901,674.
- Smith, Milbourn L.; Derencius, Joseph; and Griseimer, Robert E., to Continental Can Company, Inc. Method and apparatus for separating magnetic and non-magnetic substances. 3,901,795, Cl. 209-39.000.
- Smith, Robert A.: See—
- Hunter, Don L.; Smith, Robert A.; and Belles, Wayne S., 3,901,910.
- Smith, Roger M., to Caterpillar Tractor Company. Articulated support for hydraulic hose. 3,901,270, Cl. 137-351.000.
- Smith, Thomas E., to Cargill, Incorporated. Liquid supplement feeder. 3,901,191, Cl. 119-51.00R.
- Snam Progetti S.p.A.: See—
- Cucinella, Salvatore; and Mazzei, Alessandro, 3,901,862.
- Fattore, Vittorio; and Notari, Bruno, 3,901,938.
- Neri, Carlo; and Perrotti, Emilio, 3,901,939.
- Paiella, Roberto; and Giuliani, Giampaolo, 3,901,835.
- Sneary, Grady K. Ultrasonic watch cleaning method. 3,901,726, Cl. 134-1.000.
- Sobajima, Shigenobu; Okaniwa, Hiroshi; Chiba, Kiyoshi; and Takagi, Norio, to Teijin Limited. Method for forming images. 3,902,180, Cl. 346-74.00E.
- Sobol, Ivan Ivanovich: See—
- Chernichenko, Ivan Antonovich; Turchaninov, Vasily Vasilievich; Metlyayev, Vladimir Nikolaevich; Sobol, Ivan Ivanovich; Kuligin, Boris Nikolaevich; Borisov, Valery Gavrilovich; and Kostevich, Dmitry Nikolaevich, 3,901,662.
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- Societe Alsacienne de Constructions Mecaniques de Mulhouse: See—
- Stierlein, Gerard, 3,901,146.
- Societe Anonyme des Etablissements Roure-Bertrand Fils & Justin Dupont: See—
- Auger, Bernard; Resnelle, Pierre; and Teisseire, Paul Jose, 3,901,924.
- Societe Anonyme Francaise du Ferodo: See—
- Fieni, Walter, 3,901,345.
- Societe Anonyme of Compagnie Francaise des Petroles: See—
- Djurovic, Branko, 3,901,331.
- Societe Chimique Routiere et d'Entreprise Generale: See—
- Ceintrey, Marcel, 3,901,615.
- Societe Generale de Constructions Electriques et Mecaniques (ALSTHOM): See—
- Warszawski, Bernard; Verger, Bernard; and Demange, Philippe, 3,901,731.
- Societe Nationale d'Etude et de Construction de Moteurs d'Aviation: See—
- Grunert, Wilhelm; and Gaudas, Claude Gustave, 3,901,263.
- Societe Suisse pour l'Industrie Horlogere Management Services S.A.: See—
- Cleusix, Willy; and Othenin-Girard, John, 3,901,022.
- Erni, Bruno; and Beguin, Pierre-Andre, 3,901,017.
- Kocher, Hans; Haenzi, Werner; Muff, Erwin; and Gyaz, Claude-Andre, 3,901,019.
- Sokolski, Michael; and Poole, Thomas J., to Scan-Tron Corporation. Test scoring apparatus. 3,900,961, Cl. 35-48.00A.
- Sollami, Phillip A. Cutter bit grinder. 3,900,970, Cl. 51-98.08S.
- Solomon, Arie. Method for applying pattern to candles. 3,901,990, Cl. 428-400.000.
- Solvay & Cie: See—
- Berger, Eugene; and Derroite, Jean-Louis, 3,901,863.
- Sommer, Harold Z.; and Krenzer, John, to United States of America, Army. Quaternary carbamates. 3,901,937, Cl. 260-482.00C.
- Sondhi, Vickram: See—
- Tyler, Anton Roy; Sondhi, Vickram; and Cass, Ralph Sherwill, 3,902,047.
- Sonnenberg, Fred Max: See—
- Collette, John Wilfred; Ro, Roland Shih-Yuan; and Sonnenberg, Fred Max, 3,901,860.
- Sony Corporation: See—
- Nakagawa, Yutaka; Shibata, Yoshio; and Yoneta, Hajime, 3,902,100.
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- Taylor, Edwin K.; Boyd, James V.; and Williams, James H., 3,901,425.
- Southern Pacific Transportation Company: See—
- Giovanelli, Armand, 3,901,390.
- SPA-Societa Prodotti Antibiotici S.p.A.: See—
- Bruzzese, Tiberio; Ghielmetti, Giuseppe; and Ferrari, Rodolfo, 3,901,912.
- Spacials Limited: See—
- Simpson, Arthur William; and Pocock, Frank William, 3,901,754.
- Spangler, Frederick E.: See—
- Sisson, Ronald C.; and Spangler, Frederick E., 3,902,122.
- Spangler, Robert W. Table basketball. 3,901,508, Cl. 273-85.00C.
- Spastics Society, The: See—
- Cragg, Harold, 3,901,337.
- Spelman, Rollin H.: See—
- Bezbatchenko, William; and Spelman, Rollin H., 3,901,750.
- Spence, Rene: See—
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- Sperry Rand Corporation: See—
- Blanshine, Allison W.; and Crane, Jack W., 3,901,007.
- Butler, Lee D.; Wynn, Edward J.; and Darnall, David L., 3,901,009.
- Butler, Lee D.; Wynn, Edward J.; and Wadsworth, Thomas H., 3,901,393.
- Speth, Winfried; Bohm, Klaus; and Dreiseitl, Walter, to Siemens Aktiengesellschaft. Device for the regulation of a converter over a full range of operation including operation in a pulsating mode. 3,902,109, Cl. 321-18.000.
- Sphere Investments Limited: See—
- Kelly, Leonard, 3,901,388.
- Spiegelman, Gerald: See—
- Knezevic, Vasilije; Pollock, Mark W.; Liauw, Koei-Liang; and Spiegelman, Gerald, 3,901,824.
- Spinnato, Paul: See—
- La Violette, Paul A., 3,902,057.
- Spitz, Eugene B.; Samuelson, Gene H.; Brenz, Richard E.; and Hansford, Charles C., to Bio-Medical Research, Ltd. Bio-medical pressure control device. 3,901,245, Cl. 128-350.00V.
- Spivack, John Denon: See—
- Dibattista, Anthony Dominic; and Spivack, John Denon, 3,901,848.
- Spohn, Robert H. Board game apparatus. 3,901,513, Cl. 273-135.00R.
- Sporrer, Ludwig, to Siemens Aktiengesellschaft. Mounting device for crystalline rods. 3,901,499, Cl. 269-156.000.
- Sprague Electric Company: See—
- Burn, Ian, 3,902,102.
- Sprague, Robert A.; Henricks, Robert J.; Ruckle, Duane L.; Pierce, Cyril M.; and Hall, James A., to United Aircraft Corporation. Processing for the high strength alpha-beta titanium alloys. 3,901,743, Cl. 148-133.000.
- Stach, Kurt: See—
- Rhomberg, Alfred; Berger, Herbert; Stach, Kurt; Vomel, Wolfgang; and Sauer, Winfriede, 3,901,895.
- Stacy, Lee Roy: See—
- Sloan, Robert Bryan, 3,900,978.
- Staley, John George; and Aldred, Robert, to Coal Industry (Patents) Ltd. Sealing a tube in a bore. 3,901,319, Cl. 166-286.000.
- Stanfield, Glenn H., to Caterpillar Tractor Company. Implement mounting arrangement for earthmoving equipment. 3,901,328, Cl. 172-699.000.
- Stangel, James H.: See—
- Breedon, Robert L.; and Stangel, James H., 3,902,022.

- Stanley Works, The: *See—*
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- Staub, David E.: *See—*
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- Stauffer, Larry Ronald: *See—*
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- Stearns, Marvin O.; and Gill, James A., to NL Industries, Inc. Pollution-free well cuttings disposal apparatus. 3,901,254, Cl. 134-104,000.
- Steel Heddle Manufacturing Company: *See—*
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- Steiger, Anton; and Rutz, Peter, to Sulzer Brothers Limited. Reversible hydrostatic transmission. 3,901,032, Cl. 60-460,000.
- Steinberg, Marvin P.: *See—*
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- Steinbruehl, Armando B., to Aqua-Chem, Inc. Distillation method and apparatus. 3,901,768, Cl. 202-174,000.
- Stephens, William T., to Gresen Manufacturing Company. Adjustable flow control for hydraulic valves having high pressure main supply and controls fluid flow to cylinder and exhaust ports. 3,901,264, Cl. 137-118,000.
- Stephenson, Robert L.; Pfeiffer, Robert C.; and Loomba, Yogendra Singh, to Allied Chemical Corporation. Vehicle sensitive retractor with improved universal inertia mechanism. 3,901,461, Cl. 242-107,400.
- Sterling Drug Inc.: *See—*
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- Leshner, George Y.; Gelotte, Karl O.; and Surrey, Alexander R., 3,901,920.
- Steven Manufacturing Company: *See—*
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- Steward, Henry A.: *See—*
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- Steward, James A., to GTE Automatic Electric Laboratories Incorporated. Ring guard circuitry for subscriber carrier telephone system. 3,902,017, Cl. 179-2,50R.
- Stewart, Clare A., Jr.: *See—*
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- Stewart, Patrick Brian: *See—*
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- Stewart, Richard C. Support structure. 3,901,271, Cl. 137-364,000.
- Stewart, Ronald, to Dow Badische Company. Removing toxic chromium from industrial effluents. 3,901,805, Cl. 210-50,000.
- Stewart, Scott. Livestock dusting bag. 3,901,195, Cl. 119-159,000.
- Stewart, William R. Archery bow having limbs with multiple reversible curvatures. 3,901,210, Cl. 124-24,00R.
- Stichting Instituut Voor Grafische Techniek Tno: *See—*
van Gastel, Leonard A., 3,901,069.
- Stierlein, Gerard, to Societe Alsacienne de Constructions Mecaniques de Mulhouse. Squeeze mount for independent pressure and angle adjustments. 3,901,146, Cl. 101-119,000.
- Stites, James S. Fireplace heat extractor. 3,901,212, Cl. 126-121,000.
- Stoldt, Erwin F., to Bucyrus-Erie Company. Traction mechanism. 3,901,341, Cl. 180-8,00D.
- Stone, Edward P. Mechanism for positioning a work piece. 3,901,127, Cl. 90-58,00R.
- Stone, Jack C. Granular-floor supported cargo hauling trailer apparatus. 3,901,552, Cl. 298-24,000.
- Stoneypher, Thomas E.: *See—*
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- Storage, Anthony; and Zucker, Fredric E., to Pitney-Bowes, Inc. Automatic continuous mail handling system. 3,901,797, Cl. 209-121,000.
- Storz-Endoskop GmbH: *See—*
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- Storz, Karl, to Storz-Endoskop GmbH. Electric surgical instrument. 3,901,242, Cl. 128-303,150.
- Strack, Richard R.; Siegmund, Walter P.; and Smith, Merton L., to American Optical Corporation. Method of making optical fiber. 3,901,674, Cl. 65-3,000.
- Strasser, Michael: *See—*
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- Strawn, Charles F., to Johnson Service Company. Multizone environmental control system. 3,901,310, Cl. 165-22,000.
- Streckert, Thomas E. Material handling machine. 3,901,392, Cl. 214-6,0FS.
- Stump, Galen L. Water closet evacuation means. 3,900,908, Cl. 4-213,000.
- Stumpf, Horst: *See—*
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- Stutzke, Paul: *See—*
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- Suarez, Esteban Duran. Horizontally-pivotable double-glazed window. 3,900,966, Cl. 49-390,000.
- Sud-Chemie AG: *See—*
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- Suehiro Takatsu: *See—*
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- Sugimori, Teruhiko: *See—*
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- Sugiyama, Iwakichi; and Endo, Kiyoshi, to Matsumoto Seiyaku Kogyo Kabushiki Kaisha. Two-component composition. 3,901,858, Cl. 260-80,720.
- Sullivan, Matthew A., to Sullivan Products, Inc. Spinner assembly for model airplanes. 3,901,627, Cl. 416-245,000.
- Sullivan Products, Inc.: *See—*
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- Sulzer Brothers Limited: *See—*
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- Sumitomo Chemical Company, Limited: *See—*
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- Satomi, Takeo; and Hino, Naganori, 3,901,680.
- Yamamoto, Hisao; Nakao, Masaru; Sasajima, Kikuo; Maruyama, Isamu; and Katayama, Shigenari, 3,901,898.
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- Sumitomo Electric Industries, Ltd.: *See—*
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- Sumiyoshi, Masaharu: *See—*
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- Sun Research and Development Co.: *See—*
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- Norton, Richard V., 3,901,933.
- Sun Scientific, Incorporated: *See—*
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- Sun Ventures, Inc.: *See—*
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- Sunlite Plastics, Inc.: *See—*
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- Surrey, Alexander R.: *See—*
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- Suzuki, Masuo, to Suehiro Takatsu. Resilient cushion member. 3,901,495, Cl. 267-153,000.
- Suzuki, Naoyuki: *See—*
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- Suzuki, Shigeru; and Mochimaru, Hideaki, to Ricoh Co., Ltd. Device for varying magnification produced by an optical system. 3,901,586, Cl. 350-202,000.
- Suzuki, Takashi; and Tachimoto, Kazuo, to Mitsubishi Kizoku Kabushiki Kaisha. Continuous process for refining sulfide ores. 3,901,489, Cl. 266-11,000.
- Svensson, Sture: *See—*
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- Swanton, Paul C.: *See—*
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- Krohn, Ivar T.; Luebbe, Ray H., Jr.; Page, Geoffrey A.; and Swanton, Paul C., 3,901,697.
- Swart, Antoon: *See—*
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- Swift & Company: *See—*
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- Swiss Aluminum Ltd.: *See—*
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- Swogger, Emery C., to LTV Aerospace Corporation. Fluid powered control system and fail-safe valving system for a fluid powered system. 3,901,128, Cl. 91-31,000.
- Syntex (U.S.A.) Inc.: *See—*
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- Beard, Colin C., 3,901,903.
- Szendroi, Imre, to Bethlehem Steel Corporation. Flow promoting device for batch hoppers. 3,901,419, Cl. 222-506,000.
- Szmuskovicz, Jacob, to Upjohn Company, The. 2-Thioxo-1H-1,4-benzodiazepine-1-acetic acid alkyl esters. 3,901,881, Cl. 260-239,30D.
- Taaffe, James L., to Brotman, Phillip. Human resistivity sensing device. 3,901,214, Cl. 128-2,10Z.
- Tabata, Hitomi: *See—*
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- Taber, Bruce D.; and Cronin, Michael J., to General Electric Company. Valve actuating system. 3,901,274, Cl. 137-567,000.
- Tachikawa Research Institute: *See—*
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- Tachimoto, Kazuo: *See—*
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- Tada, Fusao; Koga, Tadashi; Inaba, Shizuo; Sakata, Keiji; Hatanaka, Tutomu; and Nobata, Shoji, to Sakai Chemical Industry Co., Ltd.; and Showa Oil Company, Ltd. Novel sulfur-containing organic phosphorus compounds and their production and use. 3,901,932, Cl. 260-455,00P.
- Tagai, Hideo: *See—*
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- Taguchi, Keizaburo; Tabata, Hitomi; and Yoshizaki, Tomozo, to Nishin Flour Milling Co., Ltd. Process for the preparation of a frozen dough for bakery products. 3,901,975, Cl. 426-23,000.

- Taimei Kinzoku Kogyo Kabushiki Kaisha: *See—*
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- Taiyo Musen Co., Ltd.: *See—*
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- Tajima, Tatsuya: *See—*
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- Takabayashi, Susumu: *See—*
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- Takagi, Norio: *See—*
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- Takahashi, Kihai; and Higuchi, Yosataka, to Yoshida Kogyo Kabushiki Kaisha. Separable slide fastener. 3,900,926, Cl. 24-205,00R.
- Takahashi, Kiyoshi: *See—*
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- Takahashi, Minoru: *See—*
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- Takamatsu, Ikuo, to Yoshida Kogyo Kabushiki Kaisha. Concealed slide fastener. 3,900,928, Cl. 24-205,10C.
- Takamatsu, Ikuo, to Yoshida Kogyo Kabushiki Kaisha. Slide fastener stringer. 3,900,929, Cl. 24-205,16R.
- Takamatsu, Ikuo, to Yoshida Kogyo Kabushiki Kaisha. Presser foot. 3,901,170, Cl. 112-235,000.
- Takanashi, Junichi: *See—*
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- Takano, Toshiichi: *See—*
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- Takasawa, Seigo: *See—*
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- Takashima, Toshiyuki: *See—*
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- Takatori, Yasushi; Haruta, Masahiro; Shimozawa, Akemi; and Nishide, Katsuhiko, to Canon Kabushiki Kaisha. Image recording member. 3,901,769, Cl. 204-2,000.
- Takemura, Takehide; and Oka, Shunzo, to Matsushita Electric Industrial Co., Ltd. Variable attenuating circuit. 3,902,077, Cl. 307-237,000.
- Takeuchi, Akihiro: *See—*
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- Takimoto, Masaaki; Saida, Takashi; and Honjo, Satoru, to Fuji Photo Film Co., Ltd. Bichargeable electrophotographic light-sensitive materials. 3,901,704, Cl. 96-1,700.
- Takimoto, Masaaki: *See—*
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- Tamai, Yasuo: *See—*
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- Tamura, Miyagi: *See—*
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- Tanaka, Hiroshi; Sato, Hisaaki; and Ueda, Isao, to Nippon Electric Company Limited. Linear beam microwave tube having means coupled to the beam upstream of input coupler and/or downstream of output coupler for varying amplitude and/or phase of r.f. component in the beam. 3,902,098, Cl. 315-5,390.
- Tanaka, Toyosuke; Okuzumi, Isamu; Matsuda, Tsuneo; and Kimijima, Katsunori, to Saitama University. Polymerization of conjugated diene compounds. 3,901,865, Cl. 260-93,100.
- Tanges, George W.: *See—*
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- Tanigawa, Yukio: *See—*
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- Tanikella, Murty S., to du Pont de Nemours, E. I., and Company. Acid-dyeable fibers of polyester modified with a tetramethylpiperidine compound having two ester-forming groups. 3,901,853, Cl. 260-76,000.
- Tann Co.: *See—*
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- Tanner, Terry F.: *See—*
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- Taplin Business Machines Incorporated: *See—*
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- Tardiff, Herve L.: *See—*
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- Taylor, Edwin K.; Boyd, James V.; and Williams, James H., to Sooner Products Co. Wire moving apparatus. 3,901,425, Cl. 226-108,000.
- Taylor, Howard W.; and Pedersen, Richard C. Crop gathering apparatus. 3,901,008, Cl. 56-344,000.
- Taylor, Leonard, to Schermuly Limited. Line throwing equipment. 3,901,157, Cl. 102-89,000.
- Taylor, Lynn J., to Owens-Illinois, Inc. Laminating process utilizing mixtures of pyrolyzable and polymerizable binders. 3,901,752, Cl. 156-155,000.
- TDK Electronics Co., Ltd.: *See—*
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- Technical Fabricators, Inc.: *See—*
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- Technicon Instruments Corporation: *See—*
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- Teetz, Wolfgang: *See—*
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- Teijin Limited: *See—*
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- Teisseire, Paul Jose: *See—*
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- Teitel, Sidney: *See—*
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- Telefonaktiebolaget LM Ericsson: *See—*
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- Lindgren, Owe Gunnar, 3,902,023.
- Telesco Brophey Limited: *See—*
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- Teletype Corporation: *See—*
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- Denley, Ronald S., 3,901,372.
- Tell, Mayo B.: *See—*
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- Tellinghuisen, Richard Dean: *See—*
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- Tenneco Chemicals, Inc.: *See—*
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- Terada, Toru; and Yamaguchi, Isao, to Canon Kabushiki Kaisha. Laser oscillator with a wavelength stabilizing device. 3,902,135, Cl. 331-94,50S.
- Tescom Corporation: *See—*
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- Teufel, Helmut: *See—*
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- Texaco Inc.: *See—*
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- Calderon, Reynaldo; and Umphenour, Charles F., 3,901,320.
- Lynch, Charles R.; Harrison, Charles W.; Kimintas, Charles L.; and White, William D., 3,901,062.
- Reale, John, Jr., 3,901,815.
- Texas Instruments, Incorporated: *See—*
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- Fuller, Clyde R.; and Reinberg, Alan R., 3,900,944.
- Senor, Ronald E., 3,902,149.
- Watts, Roderick Kent, 3,902,133.
- Textron, Inc.: *See—*
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- Thebert, Glenn W., to General Motors Corporation. Regenerator disk flexible rim. 3,901,309, Cl. 165-8,000.
- Thermanil Chemical Company, Incorporated: *See—*
Cote, Gerald M., 3,901,929.
- Thiel, Frank L., to Corning Glass Works. Tapered coupler for optical communication system. 3,901,581, Cl. 350-96,00C.
- Thomas & Betts Corporation: *See—*
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- Thomas, Mary R.; Lalk, Robert H.; Evani, Syamalarao; and Schmidt, Donald L., to Dow Chemical Company, The. Magnetic tape coating. 3,901,816, Cl. 252-62,540.
- Thomas, Reet W., to Steven Manufacturing Company. Combination strap and buckle. 3,900,923, Cl. 24-16,0PB.
- Thorn Lighting Limited: *See—*
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- Tiemann, Jerome J.: *See—*
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- Engeler, William E.; and Tiemann, Jerome J., 3,902,187.
- Tigner, Reuben A.; and Mounts, Lewis S., to Dow Chemical Company. The Expandable forming plug. 3,901,640, Cl. 425-403,000.
- Tilt-A-Bed Corporation, The: *See—*
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- Tobias, Richard J.: *See—*
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- Todd, Lee T., Jr., to Massachusetts Institute of Technology. Method of and apparatus for exciting luminescence in a cathode ray tube having an image screen composed of a material that is both cathodochromic and cathodoluminescent. 3,902,096, Cl. 313-398,000.
- Tokico Ltd.: *See—*
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- Tokita, Hideki: *See—*
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- Tokuda, Kazuyoshi: *See—*
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- Tokuhara, Mitsuhiro: *See—*
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- Tokuyama Soda Kabushiki Kaisha: *See—*
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- Tokyo Tobari Co., Ltd.: *See—*
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- Tomac, John. Hammer roll converter. 3,901,296, Cl. 145-29.00C.
- Tomarelli, Rudolph M.: *See—*
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- Tomeufcik, Andrew Stephen, to American Cyanamid Company. 1,3-Bis(substituted benzylideneamino)guanidines. 3,901,944, Cl. 260-564.00F.
- Tommati, Umberto. Automatic electrical device for forming and drying hair curls and the relative electrical supply unit. 3,901,250, Cl. 132-33.00R.
- Tomita, Koji: *See—*
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- Tomita, Mamoru: *See—*
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- Tomoguchi, Sunao: *See—*
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- Toplis, John Geoffrey, to Raleigh Industries Limited. Non-inflatable tire and apparatus for producing same. 3,901,300, Cl. 152-246.000.
- Topolyansky, Jury Arnoldovich: *See—*
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- Torres, Noel M. Whistling flying saucer toy. 3,900,986, Cl. 46-74.00D.
- Toth, Peter, to Contraves AG. Accumulator radar echo detector. 3,902,171, Cl. 343-5.0DP.
- Toth, Vincent: *See—*
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- Toy, Albert; Richardson, Neal A.; and Bromberg, Robert, to TRW Inc. Thin film solid electrolyte structures and process of making same. 3,901,733, Cl. 136-153.000.
- Toyoko Kabushiki Kaisha: *See—*
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- Toyo Kogyo Co., Ltd.: *See—*
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- Toyo Kohan Co., Ltd.: *See—*
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- Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
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- Kondo, Katsumi; Noda, Fumiyoshi; and Watanabe, Yuji, 3,901,029.
- Noguchi, Masaaki; and Sumiyoshi, Masaharu, 3,901,197.
- Tozaki, Shigenobu: *See—*
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- Trebron Holdings Limited: *See—*
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- Tremain, David L., to Houdaille Industries, Inc. Pressure responsive switch. 3,902,028, Cl. 200-81.00R.
- Trench, Anthony B., to Trench Electric Limited. Air core duplex reactor. 3,902,147, Cl. 336-65.000.
- Trench Electric Limited: *See—*
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- Trevoux, Pierre: *See—*
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- Trilux-Lenz KG: *See—*
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- Tritsch, Ludwig, to Johnson & Johnson. Disposable diaper with permanently attached adhesive tabs and permanently attached cover strips. 3,901,239, Cl. 128-287.000.
- Trockel, Franz: *See—*
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- Trofimov, Vladimir Ivanovich: *See—*
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- Trump, John G., to High Voltage Engineering Corporation. High energy electron treatment of water. 3,901,807, Cl. 210-198.000.
- Trusty, Jon Caton: *See—*
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- Tuy, Albert; Richardson, Neal A.; and Bromberg, Robert, 3,901,733.
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- Tsuboi, Masayoshi; Sato, Kotaro; and Takanashi, Junichi, to Fuji Photo Film Co., Ltd. Photo-plate making process and apparatus therefor. 3,901,706, Cl. 96-33.000.
- Tsuboka, Eiichi: *See—*
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- Tsuchiya, Yoshinori: *See—*
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- Tsukamoto, Hideo; Otsuka, Katsumi; Tamura, Miyagi; Kondo, Koji; and Yoshisawa, Kosaku, to New Kon Industrial Co., Ltd. Electric indicia embossing machine. 3,901,369, Cl. 197-6.600.
- Tsuruhara, Homare: *See—*
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- Tucciarone, Lucien. Pet scoop, sanitation device. 3,901,544, Cl. 294-19.00R.
- Tukacs, George, to Pre-Germ Seeding Corporation. Method and means of pregerminating grass seeds. 3,900,963, Cl. 47-58.000.
- Turchaninov, Vasily Vasilievich: *See—*
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- Turesson, Karl Ture Ingvar, to ABU Aktiebolag. Arrangement in centrifugal brakes for fishing reels. 3,901,457, Cl. 242-84.52C.
- Turlabor AG: *See—*
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- Tutiya, Hidetaka, to Citizen Watch Co., Ltd. Automatic winding watch. 3,901,021, Cl. 58-82.00A.
- Tuxco Corporation: *See—*
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- Tyler, Anton Roy; Sondhi, Vickram; and Cass, Ralph Sherwill, to Ferranti-Packard Limited. Label reader with rotatable television scan. 3,902,047, Cl. 235-61.11E.
- Ube Industries, Ltd.: *See—*
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- Uchida, Yasuo, to Ishikawa Tekko Kabushiki Kaisha. Dust seal cover for ball joint. 3,901,518, Cl. 277-212.00B.
- Uebelhardt, Roger. Wrist-watch case. 3,901,023, Cl. 58-88.00R.
- Ueda, Harutoshi; Suzuki, Naoyuki; Nagao, Masami; Shiroza, Satoshi; and Hayashi, Hiroshi, to Sekisui Kagaku Kogyo Kabushiki Kaisha. Non-combustible shaped articles and process for the preparation thereof. 3,901,991, Cl. 428-446.000.
- Ueda, Isao: *See—*
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- Uehara, Takeo, to Yoshida Kogyo Kabushiki Kaisha. Roller thrust bearing. 3,901,569, Cl. 308-230.000.
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- Ugi, Ivar; Seibert, Heinrich; Hoffmann, Peter; Marquarding, Dieter; von Rintelen, Harald; Ranz, Erwin; and Himmelmann, Wolfgang, to Agfa-Gevaert Aktiengesellschaft. Process for hardening layers which contain gelatin within a silver halide photographic material with an aldehyde and an isonitrile. 3,901,708, Cl. 96-50.0PT.
- Ulmalektra Oy: *See—*
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- UMC Industries, Inc.: *See—*
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- Umehara, Akira: *See—*
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- Clendinning, Robert A.; Potts, James E.; and Cornell, Stephen W., 3,901,838.
- Kalnoki Kis, Tibor; and Reilly, Thomas A., 3,901,732.
- Lightstone, John Bernard; and Mazzarella, Richard Benedict, 3,900,975.
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- United Kingdom Atomic Energy Authority: *See—*
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- United Merchants and Manufacturers, Inc.: *See—*
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- United States Borax & Chemical Corporation: *See—*
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- Arnstein, Bennett R.; Cobin, Jacob C., deceased; and Cobin, Evelyn, administratrix, 3,901,464.
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- Forsyth, Eric B.; and Jensen, Jack E., 3,902,000.
- Heichel, Lawrence J., 3,902,038.
- Wheelwright, Earl J.; and Fox, Richard D., 3,901,786.
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- George, James, 3,902,134.
- Hampton, Loyd D.; and Shirley, Donald J., 3,901,075.
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- Shah, Tilak M., 3,901,852.
- Szmukovicz, Jacob, 3,901,881.
- Urmanov, Urman Alexandrov; and Ivanov, Veselin Georgiev, to DSO Mebel. Apparatus for the production of pressure-shaped parts from oriented wood particles. 3,901,642, Cl. 425-410.000.
- Urry, Wilbert Herbert; and Mullenbach, Guy Towns, to Commercial Solvents Corporation. Synthesis of zearalanone and related compounds and intermediates useful in the syntheses thereof. 3,901,921, Cl. 260-343.20R.
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- Urti, Michael L., to Gibson Greeting Cards, Inc. Modular display structure. 3,901,164, Cl. 108-106.000.
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- Uyeda, Roy Teruyuki, to du Pont de Nemours, E. I., and Company. 1,1A,6,10b-Tetrahydrodibenz(o,a,e) cyclopropa (c) cyclohepten-6-imines. 3,901,945, Cl. 260-566.00R.
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- Vahl, Laszlo. Preparation of solid carbon dioxide. 3,901,044, Cl. 62-10.000.
- Valdo, Alex R.: *See—*
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- Valmont Industries, Inc.: *See—*
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- Van Bennekum, Carl F.; Schultz, William J.; and Manning, Ralph M., to General Electric Company. Time meter assembly. 3,901,436, Cl. 235-104.000.
- Van Benthuyzen, John D., to CTS Corporation. Electrical control having an insulated shaft extension. 3,902,152, Cl. 338-162.000.
- van den Berg, Max, to European Atomic Energy Community (Euratom). Laser beam control apparatus. 3,902,142, Cl. 332-7.510.
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- Van der Lely, Cornelis. Prefabricated buildings made-up of a plurality of box-shaped sections. 3,900,994, Cl. 52-236.000.
- van der Linden, Jacob Arie, to Maschinenfabrik A. van der Linden. Abrading machine. 3,900,973, Cl. 51-135.0BT.
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- Vanheerentals, Jacques, to Agfa-Gevaert AG. Apparatus for exposure of color calibrating film. 3,901,598, Cl. 355-71.000.
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- VCA Corporation: *See—*
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- Veera, Jack Ralph: *See—*
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- Veazie, Waldemar, Jr.: *See—*
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- Vecchi, John Calisto, to Oberg Manufacturing Co., Inc. Stripper plate spring unit. 3,901,111, Cl. 83-140.000.
- Veith, Werner, to Siemens Aktiengesellschaft. Reproducing system employing an electron tube as a charge recording tube. 3,902,181, Cl. 346-74.0EB.
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- Velsicol Chemical Corporation: *See—*
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- Vermeulen, Geert Jan; and Aarts, Hubertus Henricus, to Ruti-Te Strake B.V. Weft tensioning and cutting means. 3,901,286, Cl. 139-127.00P.
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- Vertesi, Tibor Miklos; and Rokop, Joseph, to Gamma Engineering Ltd. Apparatus for cutting billets from a continuous cast strand. 3,901,491, Cl. 266-23.00K.
- Vetter, Arthur, to Multivac Sepp Haggenmueller KG. Feed advance drive mechanism especially for a packaging machine. 3,901,002, Cl. 53-389.000.
- Vi-Con, Inc.: *See—*
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- Vidal, Roger: See—
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- Viets, Hermann, to United States of America, Air Force. Variable fluidic impedance feedback loop for oscillating jet nozzle. 3,901,277, Cl. 137-829.000.
- Vincent, Daniel; and Trevoux, Pierre, to Compagnie Generale d'Electricite. Laser telemeter. 3,901,596, Cl. 356-4.000.
- Vits, Hilmar. Tilting suction device for lifting objects with flat top surfaces. 3,901,502, Cl. 271-103.000.
- Vizzello, Vito M.; and Bouteiller, Charles A., to New England Log Homes, Inc. Feed and guide apparatus for angle end cutting. 3,901,115, Cl. 83-449.000.
- Vogel, Ronald F., to Agridustrial Electronics, Inc. Two-mode capacitive liquid level sensing system. 3,901,079, Cl. 73-304.00C.
- Volckmann, Klaus: See—
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- Volkswagenwerk Aktiengesellschaft: See—
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- Vomel, Wolfgang: See—
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- Von Beckmann, Helmut, to Canon Inc. Tamping tool head. 3,901,159, Cl. 104-12.000.
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- Vorloeper, Norbert: See—
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- Vornberger, Walter, to International Shoe Machine Corporation. Cement applying mechanism. 3,901,181, Cl. 118-7.000.
- Vossos, Peter H.: See—
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- Voswinckel, Gerhard, to H. Krantz, Firma. Apparatus for severing moving webs. 3,901,112, Cl. 83-171.000.
- Vrieze, Wubbe: See—
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- Wada, Yuichi; Mori, Teiji; and Hamano, Suenobu, to Mitsubishi Denki Kabushiki Kaisha. Self-restoring type current limiting device. 3,902,150, Cl. 337-116.000.
- Wadsworth, Thomas H.: See—
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- Wagman, Gerald H.: See—
Weinstein, Marvin J.; Wagman, Gerald H.; Patel, Mahesh G.; and Marquez, Joseph A., 3,901,764.
- Wahman, Lorentz, to Asserback, Roy. Reinforced concrete pile and a method of manufacturing such a pile. 3,901,042, Cl. 61-56.000.
- Walbro Corporation: See—
Charboneau, Benny J., 3,901,213.
- Walker, Anthony B., to Lorain Products Corporation. Nuisance call trap circuit. 3,902,021, Cl. 179-18.0FH.
- Walker Manufacturing Company: See—
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- Wallace, Dean R., to Aircor, Inc. Balloon tracheal catheter with inflation valve and indicator. 3,901,246, Cl. 128-351.000.
- Wallace, Lindsay A., to Tescom Corporation. Liquid manometer. 3,901,083, Cl. 73-409.000.
- Wallace-Murray Corporation: See—
McGavern, Sanford A., 3,901,101.
- Walmsley, Frank R., to Medtronic, Inc. End of life increased pulse width and rate change apparatus. 3,901,247, Cl. 128-419.0PG.
- Walser, Armin: See—
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- Walwick, Earle R.: See—
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- Warszawski, Bernard; Verger, Bernard; and Demange, Philippe, to Societe Generale de Constructions Electriques et Mecaniques (ALSTHOM). Thin sheet apparatus for supplying and draining liquid. 3,901,731, Cl. 136-86.00R.
- Washington, Derek: See—
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- Washizuka, Isamu, to Sharp Kabushiki Kaisha. Drive system for liquid crystal display units. 3,902,169, Cl. 340-336.000.
- Wasley, William L.; and Bittman, Allen G., to United States of America, Agriculture. Highly fluorinated derivatives of copolymers of fluoroalkyl ethers and maleic anhydride. 3,901,998, Cl. 428-507.000.
- Waso Limited: See—
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- Watanabe, Kazuo; and Mizuno, Masasi, to Daido Seiko Kabushiki Kaisha. Non-contact type dimension measuring device. 3,901,606, Cl. 356-159.000.
- Watanabe, Kazuo: See—
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- Watanabe, Tadashi: See—
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- Watanabe, Takeyoshi; Sato, Morimasa; and Koga, Wataru, to Director-General (Mr. Keishin Matsumoto) Agency of Industrial Science & Technology. Process for manufacturing unsaturated polyester resins. 3,901,953, Cl. 260-865.000.
- Watanabe, Tohru: See—
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- Watanabe, Yuji: See—
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- Waters, Robert S.: See—
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- Watts, Roderick Kent, to Texas Instruments, Incorporated. Monolithic source for integrated optics. 3,902,133, Cl. 331-94.50H.
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- Webb, John B.; and Burr, Harley W. Compactor for producing cement wall panels. 3,901,634, Cl. 425-115.000.
- Weber, Edward V.: See—
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- Weber, Robert F.: See—
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- Wechsler, Joseph W. Bicycle gear shift. 3,901,095, Cl. 74-217.00B.
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- Weigele, Manfred: See—
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- Weinstein, Marvin J.; Wagman, Gerald H.; Patel, Mahesh G.; and Marquez, Joseph A., to Schering Corporation. Process for producing rifamycin SV. 3,901,764, Cl. 195-96.000.
- Weisenthal, Marvin L. Balloon clamp. 3,900,989, Cl. 46-88.000.
- Weiss, Albert; and Holmes, Daniel D., to United States of America, Navy. Infrared gated radio fuzing system. 3,902,172, Cl. 343-6.0ND.
- Weiss, Alfred: See—
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- Weiss, Eberhard, to International Standard Electric Corporation. Cathode heater element with a dark heat radiating coating and method of producing such. 3,902,093, Cl. 313-345.000.
- Wenninger, Josef, to Volkswagenwerk Aktiengesellschaft. Safety steering wheel for vehicles. 3,901,091, Cl. 74-552.000.
- Werges, Darrell L., to Nalco Chemical Company. Process for making acrylamide. 3,901,943, Cl. 260-561.00N.
- Werner, Arthur D. Reinforcement for pipe coatings. 3,901,963, Cl. 264-228.000.
- Werner & Pfeleiderer: See—
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- Westvaco Corporation: See—
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- Dimitri, Mitchell S.; and Repik, Albert J., 3,901,823.
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- Wheaton Industries, Inc.: See—
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- Wheelwright, Earl J.; and Fox, Richard D., to United States of America, Energy Research and Development Administration. Electrolytic dissolver. 3,901,786, Cl. 204-225.000.
- White, Donald R. Instantaneous dry to liquid sugar unit. 3,901,724, Cl. 127-22.000.
- White, Matthew B., to Philco-Ford Corporation. Laser distance measuring device. 3,901,597, Cl. 356-4.000.
- White, Peter G., to TRW Inc. Polarimeter and polarimetric method. 3,901,603, Cl. 356-117.000.
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- Whitehurst, Marcus G., to Piedmont American Corporation. Method and apparatus for removing textile fiber from a compacted bale. 3,900,920, Cl. 19-81.000.
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- Wiebe, Ervin R.: See—
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- Willis, Lovell J. Portable miniature waterfall. 3,901,439, Cl. 239-12.000.
- Wilson, Melvin A., to Goodyear Tire & Rubber Company, The. Method of making radial ply tires. 3,901,751, Cl. 156-133.000.
- Wilson, Robert Gary; Rogers, Raymond W.; and Willien, Anthony George, to said Robert G. Wilson, by said Raymond W. Rogers and Anthony George Willien. Display oven. 3,901,136, Cl. 99-352.000.
- Wilson, Rosser S., to Ball Computer Products, Inc. Electronic circuit and technique for extracting a video signal from an array of photodetectors. 3,902,127, Cl. 328-127.000.
- Winn, Martin; Lynn, Kathleen Riley; and Martin, Yvonne Connolly, to Abbott Laboratories. Alkylphenyl benzopyrans. 3,901,926, Cl. 260-345.300.
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- Wireman, Jack; and Tellinghuisen, Richard Dean, to AMF Incorporated. Closed loop line follower. 3,901,756, Cl. 156-361.000.
- Wirth, Hermann Otto; Lorenz, Hans Joachim; and Friedrich, Hans-Helmut, to Ciba-Geigy Corporation. Hydrophilic and difficultly volatile biocidal triorganolead compounds. 3,901,930, Cl. 260-437.00R.
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- Witt, Manfred, to Ferrero GmbH. Transport and display package for slab-form objects. 3,901,383, Cl. 206-45.150.
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- Witzel, Karlheinz, to Walker Manufacturing Company. Self-adjusting fan vane. 3,901,625, Cl. 416-132.000.
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- Wolk, Ronald H.; Nongbri, Govanon; and Rovesti, William C., to Hydrocarbon Research, Inc. Multi-zone method for demetallizing and desulfurizing crude oil or atmospheric residual oil. 3,901,792, Cl. 208-210.000.
- Wonn, Quinby E., to General Motors Corporation. Torque converter with a controlled stator for limiting the torque ratio. 3,901,030, Cl. 60-341.000.
- Wood, James Clive, to Canadian Patents and Development Limited. Nuclear fuel element and a method of manufacture thereof. 3,901,761, Cl. 176-82.000.
- Wood, Rex C., to Modern Controls, Inc. Method and apparatus for measuring the gas transmission through packaging materials. 3,902,068, Cl. 250-343.000.
- Wood, Rex Chester, to Modern Controls, Inc. Pressure modulated gas measuring method and apparatus. 3,901,820, Cl. 250-343.000.
- Wood, William Robert, to Deere & Company. Door control mechanism for stack-forming implement. 3,901,142, Cl. 100-255.000.
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- Woody, Willis F. Automobile overdrive. 3,901,096, Cl. 74-413.000.
- Woolsey, Robert; and Kerr, Wallace C., to I. & R. Industries. Wrist braced slingshot. 3,901,209, Cl. 124-20.00R.
- Wren, James Frank: See—
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- Wright, Herschel E., to Beckman Instruments, Inc. Non-extruding lid seal for centrifuges. 3,901,434, Cl. 233-27.000.
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- Wu, Jimmy C. C., to American Optical Corporation. Absorptive glass. 3,901,718, Cl. 106-47.00R.
- Wubbe, Leo J., to Anderson Company, The. Double latch connector. 3,900,916, Cl. 15-250.320.
- Wyant, Reece E., to Dresser Industries, Inc. Method of grouting a pile in a hole involving the optimized vibration of the grouting material. 3,901,041, Cl. 61-53.520.
- Wynn, Edward J.: See—
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- Yamasue, Koutarou; Tajima, Tatsuya; and Tsuchiya, Yoshinori, to Fuji Photo Film Co., Ltd. Process for the manufacture of silver halide photographic emulsion containing iridium and rhodium. 3,901,713, Cl. 96-95.000.
- Yamazaki, Satoshi, to Kabushiki Kaisha Suwa Seikosha. Solid-state electro-optic display device. 3,901,584, Cl. 350-150.000.
- Yang, Andrew C.: *See—*
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- Yoerger, William E.; McCabe, John M.; and Wright, John F., to Eastman Kodak Company. Repellent compositions of fluorinated polymers and oils in electrophotographic processes. 3,901,700, Cl. 96-1.00R.
- Yohe, Dale. Hollow wall structure. 3,900,996, Cl. 52-241.000.
- Yoneta, Hajime: *See—*
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- Yoshikawa, Junichi; Katsur, Toyozoo; Fukita, Yoshikazu; Wada, Hiroo; and Tanigawa, Yukio, to Sumitomo Chemical Company, Limited. Process for production of a fermentation product. 3,901,762, Cl. 195-49.000.
- Yoshikawa, Shinsuke; and Sawa, Yuji, to Kureha Kagaku Kogyo K.K.; and Mitsui Toatsu Chemicals, Inc. Apparatus for producing biaxially stretched receptacles by blow molding. 3,901,638, Cl. 425-326.00B.
- Yoshino, Hirokazu; Yamaguchi, Tetsuo; and Tsuboka, Eiichi, to Matsushita Electric Industrial Co., Ltd. Automatic tuner. 3,902,121, Cl. 325-335.000.
- Yoshisawa, Kosaku: *See—*
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- Young, Clinton J. T., to Melpar, Inc. Submarine object locator. 3,902,155, Cl. 340-5.00R.
- Young, Joseph E. Hammer-head mounting. 3,901,297, Cl. 145-29.00R.
- Young, Robert A. Ion mobility mass spectrometer. 3,902,064, Cl. 250-287.000.
- Youngquist, John S. Electronic tuning device for musical instruments. 3,901,120, Cl. 84-454.000.
- Yuasa, Takeo: *See—*
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- Yuki, Yoshiyuki, and Ishii, Tsutomu, to Nippon Gakki Seizo Kabushiki Kaisha. Apparatus for preventing oblique movement of a pickup for a record player during its ascending or descending movement. 3,901,516, Cl. 274-1.00D.
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- Zafiroglu, Dimitri P., to du Pont de Nemours, E. I., and Company. Process for making staple fiber webs by air-laydown. 3,900,921, Cl. 19-156.300.
- Zagorevsky, Vladimir Alexeevich; Kljuev, Sergei Mikhailovich; Bendikov, Eduard Alexandrovich; and Lopatina, Klara Ivanovna. Bases and salts of 2-aminomethyl-4,4-dialkyl-4H-1,3-benzoxazines and method for preparing same. 3,901,884, Cl. 260-244.00R.
- Zahn, Carl W.; and Clayton, Hadwen A., to Phillips Petroleum Company. Recovery of natural gas liquids by partial condensation. 3,901,673, Cl. 62-21.000.
- Zaleckas, Vincent Joseph, to Western Electric Company, Incorporated. Control system using multiplexed laser beams. 3,902,036, Cl. 219-121.00L.
- Zaruba, Karl; and Graham, Douglas L., to General Motors Corporation. Engine with improved cooling system. 3,901,200, Cl. 123-41.730.
- Zatopek, Edward J.; and Zatopek, Shirley A. Portable motorized yarn dispenser. 3,901,426, Cl. 226-134.000.
- Zatopek, Shirley A.: *See—*
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- Zenith Radio Corporation: *See—*
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- Zier, George F.; Casciato, Candido; and Smith, Franklin G., to Vi-Con, Inc. Vibrating conveyor drive. 3,901,380, Cl. 198-220.0DA.
- Zink, John S.: *See—*
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- Zink, Stanley C.; and Penrod, William R., to Beloit Corporation. Plastic extrusion and odor elimination apparatus. 3,901,636, Cl. 425-378.000.
- Zoltan, Steven I., to Gould Inc. Pulsed droplet ejecting system. 3,902,083, Cl. 310-8.100.
- Zucker, Fredric E.: *See—*
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TO WHOM

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- Aktiebolaget Astra: *See—*
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- Arne, Christian, to Chicago Bridge & Iron Company. Stress oriented corrugations. Re. 28,534, Cl. 428-180.000.
- Carlsson, Lars Anders Fritz; Helgstrand, Ake John Erik; Sjoberg, Berndt Olof Harald; and Stjernstrom, Nils Erik, to Aktiebolaget Astra. 5-Fluoro-3-pyridinemethanol, esters thereof and therapeutically acceptable salts thereof. Re. 28,532, Cl. 260-294.80R.
- Chicago Bridge & Iron Company: *See—*
Arne, Christian, Re. 28,534.
- Citizen Watch Co., Ltd.: *See—*
Kushida, Hachiro, Re. 28,527.
- D'Alessio, Joseph R., to Federal Paper Board Company, Inc. Display carton. Re. 28,530, Cl. 206-45.140.
- de Vries, Edward R., to Prismo Universal Corporation. Quick drying road marking composition and method. Re. 28,531, Cl. 260-22.0CB.
- Drawert, Manfred; and Griebisch, Eugen, to Schering Aktiengesellschaft. Synthetic polyamides of a dimeric fatty acid, a lower aliphatic carboxylic acid, ethylene diamine, and a co-diamine. Re. 28,533, Cl. 260-404.500.
- Edenhofer, Harry J., to Survival Technology, Inc. Heartbeat monitor with audio and visual outputs. Re. 28,529, Cl. 128-2.06F.
- Farmer, Ernest L. Patterning mechanism for circular knitting machines. Re. 28,528, Cl. 66-50.00B.
- Federal Paper Board Company, Inc.: *See—*
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 Stewart, Sherman A., Snyder, and Tarbell. 236,428.
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 Siegel, Robert, F. G. Mackay, and J. J. Hall, to Xerox Corp. Computer cabinet. 236,491, S-26-75, Cl. D26-5.
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 Squiers, William A. Multiple game board. 236,515, S-26-75, Cl. D34-5.
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 Steele, Peter F. Multiple-small-battery test unit. 236,442, S-26-75, Cl. D10-77.
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 Uridge, Laurence T.: See—
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 Watson Mfg. Co., Inc.: See—
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 Wilkey, Frank, Jr.: See—
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NOTE.—First number, class; second number, subclass; third number, patent number

2	CLASS 2	133	3,900,949	344	3,901,008	283	3,901,063	461	3,901,130	CLASS 112	235	3,901,170
9	3,900,896	337	3,900,950		3,901,009	388	3,901,064		CLASS 92	252	3,901,171	
22	3,900,897		CLASS 32	400.08	3,901,010	468	3,901,065	182	3,901,131	262	3,901,172	
224R	3,900,898	5	3,900,951		CLASS 57	469	3,901,066		3,901,132		3,901,173	
	3,900,899	27	3,900,952	58.89	3,901,012		CLASS 73		CLASS 93	41	3,901,133	
		40R	3,900,953	58.95	3,901,013	23	3,901,067	41	3,901,133		CLASS 113	
12.4	3,900,900	60	3,900,954	77.4	3,901,011	53	3,901,068	49AC	3,901,134	54	3,901,174	
21	3,900,901		CLASS 33	153	3,901,014	58	3,901,069		CLASS 96		CLASS 114	
		174B	3,900,956	157R	3,901,015	59	3,901,070		1PE	3,901,696	102	3,901,175
7	3,900,902		CLASS 34	162	3,901,016	64.2	3,901,062		1PS	3,901,699		CLASS 115
41	3,900,903	13.8	3,900,957		CLASS 58	67.2	3,901,090		1SD	3,901,695	12R	3,901,176
	3,900,904	155	3,900,959	5	3,901,017	67.8S	3,901,071		1M	3,901,697	41R	3,901,177
213	3,900,908	164	3,900,958	59	3,901,018	70.1	3,901,072		1R	3,901,694		CLASS 116
			CLASS 35	74	3,901,020	71.5US	3,901,073			3,901,698	70	3,901,178
2R	3,900,905	32	3,900,960	82A	3,901,021	92	3,901,074			3,901,700	104	3,901,179
62	3,900,906	48A	3,900,961	85.5	3,901,022	170A	3,901,075	1.2		3,901,701		CLASS 118
100	3,900,907		CLASS 37	88G	Re.28,527	184	3,901,076	1.5		3,901,702	2	3,901,180
334C	3,900,909	8	3,900,977	88R	3,901,023	194A	3,901,077			3,901,703	7	3,901,181
341	3,900,910		CLASS 40		CLASS 59	304C	3,901,079	1.7		3,901,704	49	3,901,182
		30	3,900,978	93	3,901,024	343R	3,901,080			3,901,706	49.1	3,901,183
4	3,901,648	152.1	3,900,979		CLASS 60	357	3,901,081	35.1		3,901,705	629	3,901,184
114.5	3,901,649	209	3,900,980	39.09F	3,901,025	407R	3,901,082	40		3,901,707	630	3,901,185
115.7	3,901,650	300	3,900,981	39.16	3,901,026	421B	3,901,084	50PT		3,901,708	637	3,901,186
			CLASS 43	39.63	3,901,027		3,901,085	66R		3,901,709		3,901,187
26	3,901,999	7	3,900,982	225	3,901,028	425.4P	3,901,087	67		3,901,710		3,901,188
	CLASS 15	58	3,900,983	282	3,901,029		3,901,088	95		3,901,711		3,901,189
41R	3,900,911		CLASS 44	341	3,901,030	441	3,901,089			3,901,712		CLASS 119
104.06R	3,900,912	56	3,901,664	395	3,901,031	490	3,901,086	107		3,901,713	4	3,901,190
179	3,900,913	58	3,901,665	460	3,901,032		3,901,093		CLASS 98		51R	3,901,191
181	3,900,914	72	3,901,666	516	3,901,033	60	3,901,094	40V		3,901,135	52AF	3,901,192
182	3,900,915		CLASS 46	519	3,901,034	89.15	3,901,094		CLASS 99		53	3,901,193
250.32	3,900,916	1R	3,900,984	636	3,901,035	217B	3,901,095	352		3,901,136	159	3,901,194
	3,900,917	74D	3,900,985	641	3,901,036	413	3,901,096	353		3,901,137		CLASS 122
25	3,900,918		3,900,986		CLASS 61	417	3,901,098		CLASS 100		510	3,901,196
26	3,900,919	76	3,900,987	9	3,901,037	475	3,901,097	4		3,901,138		CLASS 123
		88	3,900,988	43	3,901,038	495	3,901,099	48		3,901,139	3	3,901,197
81	3,900,920	103	3,900,989	45B	3,901,039	530	3,901,100	53		3,901,140	8.09	3,901,198
156.3	3,900,921	116	3,900,990	46	3,901,040	552	3,901,091	236		3,901,141	41.73	3,901,200
	CLASS 21	161	3,900,991	53.52	3,901,041	574	3,901,101	255		3,901,142	117R	3,901,201
2.7A	3,901,651	180	3,900,992	56	3,901,042	710	3,901,102		CLASS 101		119A	3,901,202
63	3,901,652		3,900,993	72.3	3,901,043	711	3,901,092	18		3,901,143		3,901,203
	CLASS 23	48.5	3,900,962		CLASS 62	713	3,901,103	56		3,901,144	139A	3,901,204
230B	3,901,654	58	3,900,963	10	3,901,044	769	3,901,104	93.48		3,901,145	148E	3,901,205
	3,901,655		CLASS 48	21	3,901,673		CLASS 75		CLASS 99		182	3,901,199
	3,901,656	214	3,901,667		CLASS 63	.5B	3,901,689	119		3,901,146	195R	3,901,206
230R	3,901,657		CLASS 49	15.65	3,901,045	.5R	3,901,688	141		3,901,147	198DB	3,901,207
253TP	3,901,653	103	3,900,965		CLASS 64	123H	3,901,690	228		3,901,148		CLASS 124
259	3,901,658	214	3,900,964	1V	3,901,046	142	3,901,691	349		3,901,149	5	3,901,208
273R	3,900,955	390	3,900,966	11	3,901,047	159	3,901,692	351		3,901,150	20R	3,901,209
288A	3,901,660	468	3,900,967	17A	3,901,049	169	3,901,693	463		3,901,151	24R	3,901,210
288K	3,901,659		CLASS 51	17R	3,901,048		CLASS 76		CLASS 102		35A	3,901,211
		5R	3,900,968		CLASS 65	36	3,901,105	37.8		3,901,152		CLASS 126
16PB	3,900,922	9M	3,900,969	3	3,901,674		CLASS 81		CLASS 103		121	3,901,212
	3,900,923	98BS	3,900,970	11R	3,901,675	111	3,901,106	38		3,901,153	350A	3,901,213
81CL	3,900,924	100	3,900,971	33	3,901,676	170	3,901,107	70R		3,901,155		CLASS 127
90	3,900,925	119	3,900,972		CLASS 66		CLASS 82		CLASS 104		22	3,901,214
201BN	3,900,927	135BT	3,900,973	5	3,901,050	36R	3,901,108	89		3,901,157	32	3,901,225
205R	3,900,926	170MT	3,900,974	50B	Re.28,528		CLASS 83		CLASS 105			CLASS 128
205.1C	3,900,928	322	3,900,975	55	3,901,051	5	3,901,109	12		3,901,159	2F	3,901,219
205.16R	3,900,929	362	3,900,976	125R	3,901,052	140	3,901,111	130		3,901,160	2.05G	3,901,217
	3,900,930		CLASS 52		CLASS 68	171	3,901,112		CLASS 106		2.06E	3,901,218
221R	3,900,931	72	3,900,994	5D	3,901,053	326	3,901,113			3,901,161	2.06F	Re.28,529
265WS	3,900,934	126	3,900,995	15	3,901,054	340	3,901,114	29R		3,901,162	2.1B	3,901,215
274R	3,900,932	241	3,900,996	152	3,901,055	449	3,901,115	197BD		3,901,163	2.1Z	3,901,216
277	3,900,933	496	3,900,997		CLASS 70	751	3,901,116		CLASS 107			3,901,217
	CLASS 29	698	3,900,998	19	3,901,056	835	3,901,117	2		3,901,175	6	3,901,220
25.13	3,900,935	744	3,900,999	20	3,901,057		CLASS 84	39.6		3,901,176	24R	3,901,221
156.4R	3,900,942		CLASS 53	32	3,901,058	1.16	3,901,118	42		3,901,177	69	3,901,222
182	3,900,936	14	3,901,000		CLASS 71	293	3,901,119	47R		3,901,178	80F	3,901,223
	3,901,661	21FW	3,901,001	64SC	3,901,677	454	3,901,120		CLASS 85		82.1	3,901,224
187	3,901,662	389	3,901,002	74	3,901,678	484	3,901,121	50		3,901,179	89R	3,901,225
195	3,901,663		CLASS 55	76	3,901,679		CLASS 86	58		3,901,180	133	3,901,226
200B	3,900,937		3,901,668	87	3,901,680	32T	3,901,122	89		3,901,181		3,901,227
240	3,900,938	16	3,901,669	92	3,901,681		CLASS 87	286		3,901,182		3,901,228
401	3,900,939		3,901,670	93	3,901,682		CLASS 88		CLASS 89		134	3,901,229
420	3,900,940	219	3,901,671	98	3,901,683	33C	3,901,123			3,901,183	188	3,901,230
450	3,900,941	304	3,901,672	100	3,901,684	36H	3,901,124	106		3,901,184	214F	3,901,231
572	3,900,943	387	3,901,672	118	3,901,685	163	3,901,125	149		3,901,185	260	3,901,232
	3,900,945		CLASS 56	120	3,901,686	182	3,901,126		CLASS 90		261	3,901,233
578	3,900,944	12.6	3,901,003		3,901,687		CLASS 90	64		3,901,167	268	3,901,234
592	3,900,946	17.3	3,901,004		CLASS 72	58R	3,901,127		CLASS 91		275	3,901,235
599	3,900,947	330	3,901,005	8	3,901,059		CLASS 91	8R		3,901,168	284	3,901,236
	CLASS 30		3,901,006	179	3,901,060	31	3,901,128		CLASS 111		287	3,901,237
17	3,900,948	341	3,901,007	253	3,901,061	299	3,901,129	52		3,901,169		3,901,238

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303.1	3,901,241	25	3,901,748	96	3,901,346	210	3,901,792	61.11E	3,902,048	107	3,901,477	3,901,922	73C	3,901,507	22R	3,901,561	305	3,902,119	18B	3,902,176	118	3,901,618	
303.15	3,901,242	73.3	3,901,749	114	3,901,347	CLASS 209	3,901,793	61.12R	3,902,049	139.1	3,901,478	3,901,923	106A	3,901,509	86	3,901,562	310	3,902,120	741	3,902,177	CLASS 408		
329	3,901,243	119	3,901,750	116	3,901,348	1	3,901,793	104	3,901,436	174	3,901,479	3,901,924	113	3,901,510	CLASS 305	3,901,563	335	3,902,121	895	3,902,178	1	3,901,619	
334R	3,901,244	133	3,901,751	33K	3,901,349	11	3,901,794	150.1	3,902,051	32	3,901,480	3,901,925	119A	3,901,511	10	3,901,564	466	3,902,122	49	3,902,179	CLASS 415	3,901,620	
350V	3,901,245	155	3,901,752	50	3,901,350	39	3,901,795	151.35	3,902,052	59	3,901,481	3,901,926	134AE	3,901,512	CLASS 307	3,902,075	478	3,902,123	74EB	3,902,181	74	3,901,621	
351	3,901,246	213	3,901,753	114	3,901,351	80.5	3,901,796	152	3,902,053	6	3,901,482	3,901,927	135R	3,901,513	10AT	3,902,076	27	3,902,124	74E	3,902,182	134	3,901,622	
419PG	3,901,247	251	3,901,754	175	3,901,352	111.7	3,901,797	156	3,902,054	41	3,901,483	3,901,928	168	3,901,514	10SB	3,902,077	39	3,902,125	335	3,902,183	141	3,901,623	
CLASS 131	3,901,248	308	3,901,755	78	3,901,353	121	3,901,798	175	3,902,055	177A	3,901,484	3,901,929	201	3,901,515	237	3,902,078	61	3,902,126	96B	3,902,184	150	3,901,624	
2	3,901,249	446	3,901,756	172	3,901,354	143	3,901,799	15B	3,901,437	191	3,901,485	403	3,901,930	CLASS 274	3,901,516	251	3,902,079	127	3,902,127	96C	3,902,185	157	3,901,625
CLASS 132	3,901,250	499	3,901,757	395	3,901,801	144	3,901,800	43	3,901,438	CLASS 260	3,901,833	439R	3,901,931	1D	3,901,517	252B	3,902,080	134	3,902,128	245	3,901,626	245	3,901,627
9	3,901,251	515	3,901,758	CLASS 186	3,901,355	162	3,901,801	CLASS 239	3,901,439	2EP	3,901,834	455P	3,901,932	CLASS 277	3,901,518	255	3,902,081	107	3,902,129	97	3,901,628	299	3,901,629
33R	3,901,252	183	3,901,302	CLASS 187	3,901,356	38	3,901,802	CLASS 240	3,901,440	2.5AJ	3,901,835	465C	3,901,933	CLASS 279	3,901,519	262	3,902,082	107	3,902,130	98	3,901,629	395	3,901,630
91	3,901,253	348	3,901,303	CLASS 188	3,901,357	44	3,901,803	CLASS 241	3,901,441	2.5HA	3,901,836	465F	3,901,934	CLASS 280	3,901,520	279	3,902,083	126	3,902,131	99	3,901,631	395	3,901,632
CLASS 134	3,901,254	157C	3,901,760	CLASS 189	3,901,358	50	3,901,804	CLASS 242	3,901,442	17R	3,901,837	465G	3,901,935	7.13	3,901,521	3.8	3,902,084	15	3,902,132	100	3,901,633	395	3,901,634
1	3,901,255	159	3,901,304	CLASS 190	3,901,359	63	3,901,805	CLASS 243	3,901,443	22CB	3,901,838	465H	3,901,936	11.13L	3,901,522	15	3,902,085	15	3,902,133	101	3,901,635	395	3,901,636
4	3,901,256	259	3,901,305	CLASS 191	3,901,360	198	3,901,806	CLASS 244	3,901,444	22H	3,901,839	465I	3,901,937	11.2	3,901,523	15	3,902,086	15	3,902,134	102	3,901,637	395	3,901,638
25A	3,901,257	312	3,901,306	CLASS 192	3,901,361	263	3,901,807	CLASS 245	3,901,445	23H	3,901,840	465J	3,901,938	11.35E	3,901,524	15	3,902,087	15	3,902,135	103	3,901,639	395	3,901,639
56R	3,901,258	410	3,901,307	CLASS 193	3,901,362	387	3,901,808	CLASS 246	3,901,446	23.7N	3,901,841	465K	3,901,939	11.37E	3,901,525	15	3,902,088	15	3,902,136	104	3,901,640	395	3,901,641
57R	3,901,259	2	3,901,308	CLASS 194	3,901,363	500M	3,901,810	CLASS 247	3,901,447	29.6W	3,901,842	465L	3,901,940	14	3,901,526	15	3,902,089	15	3,902,137	105	3,901,641	395	3,901,642
104	3,901,260	8	3,901,309	CLASS 195	3,901,364	538	3,901,811	CLASS 248	3,901,448	29.6TA	3,901,843	465M	3,901,941	21R	3,901,527	15	3,902,090	15	3,902,138	106	3,901,642	395	3,901,643
107	3,901,261	22	3,901,310	CLASS 196	3,901,365	74	3,901,389	CLASS 249	3,901,449	29.6T	3,901,844	465N	3,901,942	34R	3,901,528	15	3,902,091	15	3,902,139	107	3,901,643	395	3,901,644
138	3,901,262	105	3,901,311	CLASS 197	3,901,366	75D	3,901,390	CLASS 250	3,901,450	37AL	3,901,845	465O	3,901,943	36B	3,901,529	15	3,902,092	15	3,902,140	108	3,901,644	395	3,901,645
CLASS 135	3,901,263	181	3,901,312	CLASS 198	3,901,367	6FS	3,901,392	CLASS 251	3,901,451	37PC	3,901,846	465P	3,901,944	112A	3,901,530	15	3,902,093	15	3,902,141	109	3,901,645	395	3,901,646
25R	3,901,264	64	3,901,313	CLASS 199	3,901,368	103R	3,901,393	CLASS 252	3,901,452	37N	3,901,847	465Q	3,901,945	150AB	3,901,531	15	3,902,094	15	3,902,142	110	3,901,646	395	3,901,647
47	3,901,265	152	3,901,314	CLASS 200	3,901,369	24	3,901,394	CLASS 253	3,901,453	45.08N	3,901,848	465R	3,901,946	150SB	3,901,532	15	3,902,095	15	3,902,143	111	3,901,647	395	3,901,648
CLASS 136	3,901,266	224A	3,901,315	CLASS 201	3,901,370	38	3,901,395	CLASS 254	3,901,454	45.7PS	3,901,849	465S	3,901,947	150.5R	3,901,533	15	3,902,096	15	3,902,144	112	3,901,648	395	3,901,649
3	3,901,267	250	3,901,316	CLASS 202	3,901,371	103R	3,901,396	CLASS 255	3,901,455	45.75W	3,901,850	465T	3,901,948	289	3,901,534	15	3,902,097	15	3,902,145	113	3,901,649	395	3,901,650
83R	3,901,268	274	3,901,317	CLASS 203	3,901,372	197	3,901,397	CLASS 256	3,901,456	45.8NW	3,901,851	465U	3,901,949	423R	3,901,535	15	3,902,098	15	3,902,146	114	3,901,650	395	3,901,651
86R	3,901,269	286	3,901,318	CLASS 204	3,901,373	259.1	3,901,398	CLASS 257	3,901,457	47CB	3,901,852	465V	3,901,950	477	3,901,536	15	3,902,099	15	3,902,147	115	3,901,651	395	3,901,652
CLASS 137	3,901,270	314	3,901,319	CLASS 205	3,901,374	100A	3,901,399	CLASS 258	3,901,458	76	3,901,853	465W	3,901,951	13	3,901,537	15	3,902,100	15	3,902,148	116	3,901,652	395	3,901,653
68	3,901,271	314	3,901,320	CLASS 206	3,901,375	100A	3,901,400	CLASS 259	3,901,459	78.4R	3,901,854	465X	3,901,952	61R	3,901,538	15	3,902,101	15	3,902,149	117	3,901,653	395	3,901,654
82	3,901,272	43	3,901,321	CLASS 207	3,901,376	221	3,901,401	CLASS 260	3,901,460	79.3MU	3,901,855	465Y	3,901,953	33	3,901,539	15	3,902,102	15	3,902,150	118	3,901,654	395	3,901,655
100	3,901,273	7	3,901,322	CLASS 208	3,901,377	223	3,901,402	CLASS 261	3,901,461	80.72	3,901,856	465Z	3,901,954	41	3,901,540	15	3,902,103	15	3,902,151	119	3,901,655	395	3,901,656
101.11	3,901,274	19	3,901,323	CLASS 209	3,901,378	248	3,901,403	CLASS 262	3,901,462	83.7	3,901,857	465AA	3,901,955	194	3,901,541	15	3,902,104	15	3,902,152	120	3,901,656	395	3,901,657
117	3,901,275	81	3,901,324	CLASS 210	3,901,379	256	3,901,404	CLASS 263	3,901,463	85.1	3,901,858	465AB	3,901,956	44	3,901,542	15	3,902,105	15	3,902,153	121	3,901,657	395	3,901,658
118	3,901,276	264	3,901,325	CLASS 211	3,901,380	121L	3,902,036	CLASS 264	3,901,464	88.2R	3,901,859	465AC	3,901,957	46	3,901,543	15	3,902,106	15	3,902,154	122	3,901,658	395	3,901,659
218	3,901,277	413	3,901,326	CLASS 212	3,901,381	121P	3,902,037	CLASS 265	3,901,465	89.5H	3,901,860	465AD	3,901,958	46	3,901,544	15	3,902,107	15	3,902,155	123	3,901,659	395	3,901,660
219	3,901,278	699	3,901,327	CLASS 213	3,901,382	135	3,902,038	CLASS 266	3,901,466	91.1	3,901,861	465AE	3,901,959	100	3,901,545	15	3,902,108	15	3,902,156	124	3,901,660	395	3,901,661
270	3,901,279	804	3,901,328	CLASS 214	3,901,383	145	3,902,039	CLASS 267	3,901,467	93.5A	3,901,862	465AF	3,901,960	144	3,901,546	15	3,902,109	15	3,902,157	125	3,901,661	395	3,901,662
318	3,901,280	82	3,901,329	CLASS 215	3,901,384	203	3,902,040	CLASS 268	3,901,468	94.3	3,901,863	465AG	3,901,961	71R	3,901,547	15	3,902,110	15	3,902,158	126	3,901,662	395	3,901,663
340	3,901,281	186R	3,901,330	CLASS 216	3,901,385	216	3,902,041	CLASS 269	3,901,469	97.5	3,901,864	465AH	3,901,962	19A	3,901,548	15	3,902,111	15	3,902,159	127	3,901,663	395	3,901,664
351	3,901,282	20C	3,901,331	CLASS 217	3,901,386	233	3,902,042	CLASS 270	3,901,470	107.4	3,901,865	465AI	3,901,963	44	3,901,549	15	3,902,112	15	3,902,160	128	3,901,664	395	3,901,665
364	3,901,283	22B	3,901,332	CLASS 218	3,901,387	242	3,902,043	CLASS 271	3,901,471	83.7	3,901,866	465AJ	3,901,964	100	3,901,550	15	3,902,113	15	3,902,161	129	3,901,665	395	3,901,666
513.5	3,901,284	25	3,901,333	CLASS 219	3,901,388	256	3,902,044	CLASS 272	3,901,472	88.2R	3,901,867	465AK	3,901,965	144	3,901,551	15	3,902,114	15	3,902,162	130	3,901,666	395	3,901,667
552	3,901,285	34																					

CLASSIFICATION OF DESIGNS

D2—	320	236,392	138	236,420	69	236,448	153	236,474	236,504	D48—	2	236,532
		236,393		236,421	93	236,449	163	236,475	F	20E	236,533	
D6—	38	236,394		236,422	128	236,450		236,476	236,505	23R	236,534	
	75	236,395		236,423	136	236,451		236,478	236,506	32	236,535	
	85	236,396	D8—	11	236,424	141	236,452		236,507	D52—	4A	236,536
	146	236,397		34	236,425	143	236,453		236,508			236,537
	149	236,398		106	236,426	147	236,454		236,509	D55—	1H	236,538
	170	236,399		266	236,427	156	236,455		236,510	D56—	A	236,539
	177	236,400		274	236,428	157	236,456		236,511		4B	236,540
		236,401	D9—	12	236,429	183	236,457		236,512			236,541
		236,402		39	236,430	189	236,458		236,513	D57—	1E	236,543
	190	236,403		42	236,431	211	236,459		236,514	D61—	B	236,546
	251	236,404		143	236,432		236,460		236,515		K	236,545
D7—	13	236,405		162	236,433	D13—	1A	236,461	236,516		N	236,544
	17	236,406		169	236,434		E	236,462	236,517	D64—	11C	236,548
	52	236,407		171	236,435	D19—	35	236,463	236,518		R	236,547
		236,408		179	236,436	D22—	12	236,464	236,519	D65—	1	236,549
	64	236,409		186	236,437			236,465	236,520	D67—	2	236,550
	70	236,410		193	236,438		18	236,466	236,521	D87—	1	236,551
	71	236,411		199	236,439		25	236,467	236,522			236,552
	72	236,412		216	236,440	D23—	1	236,468	236,523			236,553
	79	236,413		252	236,441		3	236,469	236,524			236,554
	95	236,414	D10—	77	236,442		7	236,470	236,525			236,555
		236,415		106	236,443		40	236,471	236,526			236,556
	105	236,416		111	236,444		73	236,472	236,527			236,557
	131	236,417		121	236,445		85	236,473	236,528		3R	236,558
	136	236,418	D12—	29	236,446		127	236,474	236,529			
	137	236,419		62	236,447		139	236,508		D96—	12R	236,559

CLASSIFICATION OF PLANTS

P. —	26	3,774	P. —	3,770	P. —	3,771	P. —	56	3,773	P. —	68	3,772	P. —	88	3,775
P. —	51	3,769													

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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 : 3,901,162	3,901,399	3,902,094	3,901,684	3,901,307	3,902,018
3,901,600	3,901,411	3,902,116	3,901,693	3,901,312	3,902,025
3,902,080	3,901,434	3,902,124	3,901,705	3,901,326	3,902,028
2 : 3,901,462	3,901,447	3,902,127	3,901,853	3,901,329	3,902,032
4 : 3,901,033	3,901,451	3,902,129	3,901,860	3,901,348	3,902,033
3,901,508	3,901,464	3,902,131	3,901,933	3,901,372	3,902,076
5 : 3,901,143	3,901,468	3,902,137	3,901,945	3,901,377	3,902,099
3,901,726	3,901,469	3,902,140	3,901,582	3,901,378	3,902,156
3,902,104	3,901,478	3,902,143	3,902,173	3,901,382	3,900,916
6 : 3,900,915	3,901,479	3,902,148	3,901,045	3,901,400	3,900,955
3,900,945	3,901,483	3,902,153	3,901,122	3,901,412	3,900,969
3,900,960	3,901,494	3,902,154	3,901,182	3,901,418	3,901,026
3,900,961	3,901,505	3,902,163	3,901,217	3,901,421	3,901,058
3,900,986	3,901,509	3,902,170	3,901,246	3,901,430	3,901,101
3,900,987	3,901,515	3,902,172	3,901,287	3,901,439	3,901,133
3,900,992	3,901,529	3,901,107	3,901,288	3,901,446	3,901,194
3,900,996	3,901,536	3,901,317	3,901,458	3,901,471	3,901,238
3,901,009	3,901,545	3,901,614	3,901,504	3,901,488	3,901,309
3,901,024	3,901,551	3,901,630	3,901,520	3,901,511	3,901,362
3,901,036	3,901,565	3,901,663	3,902,022	3,901,535	3,901,381
3,901,040	3,901,585	3,901,776	3,902,053	3,901,538	3,901,395
3,901,067	3,901,603	3,902,192	3,902,058	3,901,554	3,901,423
3,901,082	3,901,618	3,902,072	3,902,072	3,901,556	3,901,633
3,901,095	3,901,619	3,900,954	3,902,115	3,901,563	3,901,656
3,901,110	3,901,634	3,900,963	3,902,120	3,901,571	3,901,681
3,901,125	3,901,653	3,901,089	3,902,128	3,901,576	3,901,771
3,901,127	3,901,654	3,901,105	3,902,168	3,901,645	3,901,894
3,901,137	3,901,664	3,901,115	3,900,950	3,901,666	3,901,981
3,901,154	3,901,733	3,901,172	3,901,096	3,901,695	3,902,081
3,901,165	3,901,735	3,901,185	3,901,109	3,901,715	3,902,152
3,901,168	3,901,737	3,901,367	3,901,173	3,901,724	3,900,933
3,901,191	3,901,738	3,901,385	3,901,174	3,901,740	3,900,964
3,901,209	3,901,747	3,901,410	3,901,243	3,901,795	3,901,008
3,901,212	3,901,756	3,901,416	Re.28,534	3,901,800	3,901,049
3,901,225	3,901,757	3,901,522	3,900,919	3,901,829	3,901,079
3,901,226	3,901,768	3,901,542	3,900,938	3,901,842	3,901,094
3,901,227	3,901,799	3,901,567	3,900,970	3,901,842	3,901,142
3,901,228	3,901,808	3,901,577	3,900,977	3,901,902	3,901,142
3,901,230	3,901,867	3,901,588	3,901,145	3,901,904	3,901,340
3,901,232	3,901,901	3,901,623	3,901,153	3,901,905	3,900,908
3,901,233	3,901,903	3,901,743	3,901,163	3,901,917	3,901,167
3,901,308	3,901,910	3,901,758	3,901,184	3,901,921	3,901,325
3,901,313	3,901,950	3,901,784	3,901,193	3,901,922	3,901,336
3,901,322	3,901,974	3,901,839	3,901,231	3,901,926	3,901,342
3,901,334	3,901,998	3,901,852	3,901,235	3,901,943	3,901,444
3,901,365	3,902,017	3,901,861	3,901,237	3,901,962	3,901,482
3,901,368	3,902,042	3,902,002	3,901,239	3,901,978	3,901,398
3,901,384	3,902,048	3,902,029	3,901,255	3,901,980	3,902,138
3,901,390	3,902,061	3,902,057	3,901,270	3,901,987	3,901,318
3,901,393	3,902,071	3,900,921	3,901,292	3,901,992	3,901,356
3,901,394	3,902,078	3,901,665	3,901,297	3,902,015	3,901,413

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

3,901,426	3,901,525	3,901,587	3,901,714	3,902,026	3,901,548
3,901,448	3,901,530	3,901,530	3,901,719	3,902,070	3,901,658
3,901,604	3,901,537	3,901,667	3,901,721	3,902,083	48 : 3,900,944
3,901,691	3,901,547	3,901,688	3,901,728	3,902,107	3,900,978
3,901,984	3,901,573	3,901,764	3,901,736	3,901,741	3,901,041
24 : 3,900,998	3,901,579	3,901,765	3,901,741	3,901,268	3,901,062
3,901,074	3,901,595	3,901,780	3,901,796	3,901,278	3,901,075
3,901,216	3,901,605	3,901,790	3,901,797	3,901,351	3,901,080
3,901,241	3,901,622	3,901,792	3,901,814	3,901,425	3,901,121
3,901,271	3,901,640	3,901,809	3,901,815	3,901,552	3,901,128
3,901,299	3,901,651	3,901,827	3,901,817	3,901,643	3,901,132
3,901,432	3,901,734	3,901,833	3,901,824	3,901,673	3,901,151
3,901,465	3,901,742	3,901,837	3,901,830	3,901,324	3,901,179
3,901,549	3,901,752	3,901,838	3,901,848	3,901,380	3,901,251
3,901,602	3,901,779	3,901,843	3,901,892	3,901,617	3,901,276
3,901,631	3,901,806	3,901,846	3,901,896	41 : 3,901,324	3,901,310
3,901,682	3,901,816	3,901,854	3,901,920	3,901,617	3,901,314
3,901,685	3,901,825	3,901,871	3,901,966	42 : Re.28,529	3,901,315
3,901,840	3,901,834	3,901,879	3,901,967	3,900,946	3,901,316
3,901,937	3,901,845	3,901,880	3,901,968	3,900,951	3,901,320
3,901,993	3,901,856	3,901,888	3,901,970	3,900,982	3,901,321
3,902,136	3,901,881	3,901,897	3,901,971	3,900,997	3,901,330
25 : Re.28,530	3,901,913	3,901,907	3,901,988	3,901,006	3,901,335
3,900,903	3,901,923	3,901,909	3,901,995	3,901,007	3,901,353
3,900,942	3,901,964	3,901,914	3,902,000	3,901,025	3,901,470
3,900,972	3,901,976	3,901,915	3,902,005	3,901,065	3,901,477
3,901,056	3,902,106	3,901,944	3,902,012	3,901,078	3,901,546
3,901,066	3,902,110	3,901,973	3,902,017	3,902,005	3,901,620
3,901,071	27 : 3,900,905	3,901,982	3,902,027	3,901,111	3,901,699
3,901,181	3,900,984	3,901,994	3,902,041	3,901,158	3,901,767
3,901,183	3,901,010	3,902,003	3,902,052	3,901,214	3,901,811
3,901,192	3,901,083	3,902,003	3,902,055	3,901,245	3,901,847
3,901,219	3,901,247	3,902,036	3,902,062	3,901,298	3,901,849
3,901,221	3,901,264	3,902,039	3,902,075	3,901,328	3,901,963
3,901,274	3,901,370	3,902,079	3,902,084	3,901,333	3,902,009
3,901,371	3,901,386	3,902,101	3,902,085	3,901,354	3,902,019
3,901,401	3,901,405	3,902,118	3,902,105	3,901,397	3,902,020
3,901,436	3,901,422	3,902,125	3,902,146	3,901,403	3,902,043
3,901,506	3,901,532	3,902,126	3,902,164	3,901,419	3,902,054
3,901,597	3,901,534	3,902,178	3,902,186	3,901,429	3,902,059
3,901,672	3,901,541	3,902,188	3,902,187	3,901,445	3,902,082
3,901,674	3,901,553	3,902,190	3,902,187	3,901,492	3,902,113
3,901,718	3,901,592	3,902,190	3,902,187	3,901,493	3,902,133
3,901,723	3,901,727	3,902,190	3,902,187	3,901,498	3,902,139
3,901,807	3,901,798	3,902,190	3,902,187	3,901,558	3,902,161
3,901,919	3,901,820	3,902,190	3,902,187	3,901,574	3,902,189
3,901,928	3,901,874	3,902,190	3,902,187	3,901,575	3,901,104
3,901,965	3,902,068	3,902,190	3,902,187	3,901,578	3,901,453
3,902,049	3,902,151	3,902,190	3,902,187	3,901,624	3,900,981
3,902,066	3,902,167	3,902,190	3,902,187	3,901,627	3,900,983
3,902,067	28 : 3,901,057	3,902,190	3,902,187	3,901,635	3,901,775
3,902,095	3,901,327	3,902,190	3,902,187	3,901,668	3,901,805
3,902,096	3,901,940	3,902,190	3,902,187	3,901,669	3,901,935
3,902,102	29 : 3,900,923	3,902,190	3,902,187	3,901,690	3,902,122
3,902,103	3,901,131	3,902,190	3,902,187	3,901,707	3,902,134
3,902,130	3,901,140	3,902,190	3,902,187	3,901,729	3,902,155
3,902,149	3,901,366	3,902,190	3,902,187	3,901,789	3,900,957
3,902,159	3,901,406	3,902,190	3,902,187	3,901,791	3,901,114
3,902,162	3,901,616	3,902,190	3,902,187	3,901,801	3,901,123
3,902,176	3,901,686	3,902,190	3,902,187	3,901,810	3,901,190
3,902,179	3,901,766	3,902,190	3,902,187	3,901,821	3,901,252
26 : 3,900,896	3,901,831	3,902,190	3,902,187	3,901,872	3,901,256
3,900,937	3,901,878	3,902,190	3,902,187	3,901,885	3,901,263
3,900,948	30 : 3,901,076	3,902,190	3,902,187	3,901,886	3,901,295
3,900,980	31 : 3,900,906	3,902,190	3,902,187	3,901,887	3,901,391
3,900,989	3,901,442	3,902,190	3,902,187	3,901,900	3,901,466
3,901,000	33 : 3,901,813	3,902,190	3,902,187	3,901,929	3,901,786
3,901,031	34 : Re.28,531	3,902,190	3,902,187	3,902,001	3,902,051
3,901,092	3,900,914	3,902,190	3,902,187	3,902,007	3,902,132
3,901,102	3,900,925	3,902,190	3,902,187	3,902,016	3,901,437
3,901,103	3,900,930	3,902,190	3,902,187	3,902,031	3,901,822
3,901,117	3,900,935	3,902,190	3,902,187	3,902,038	3,900,898
3,901,139	3,900,949	3,902,190	3,902,187	3,902,044	3,900,902
3,901,152	3,900,990	3,902,190	3,902,187	3,902,060	3,900,936
3,901,200	3,900,999	3,902,190	3,902,187	3,902,073	3,901,003
3,901,203	3,901,099	3,902,190	3,902,187	3,902,111	3,901,195
3,901,213	3,901,119	3,902,190	3,902,187	3,902,191	3,901,211
3,901,258	3,901,171	3,902,190	3,902,187	3,900,927	3,901,253
3,901,272	3,901,180	3,902,190	3,902,187	3,900,940	3,901,294
3,901,323	3,901,218	3,902,190	3,902,187	3,901,273	3,901,349
3,901,339	3,901,236	3,902,190	3,902,187	3,900,974	3,901,389
3,901,346	3,901,240	3,902,190	3,902,187	3,900,991	3,901,392
3,901,363	3,901,387	3,902,190	3,902,187	3,901,136	3,901,440
3,901,407	3,901,402	3,902,190	3,902,187	3,901,282	3,901,481
3,901,433	3,901,414	3,902,190	3,902,187	3,901,649	3,901,484
3,901,459	3,901,475	3,902,190	3,902,187	3,901,823	3,901,514
3,901,460	3,901,476	3,902,190	3,902,187	3,901,869	3,901,636
3,901,461	3,901,480	3,902,190	3,902,187	3,900,976	3,901,986
3,901,496	3,901,513	3,902,190	3,902,187	3,901,267	3,901,999
3,901,497	3,901,544	3,902,190	3,902,187	3,901,280	
		3,902,190	3,902,187	3,901,360	
		3,902,190	3,902,187	3,901,409	
		3,902,190	3,902,187	3,901,517	

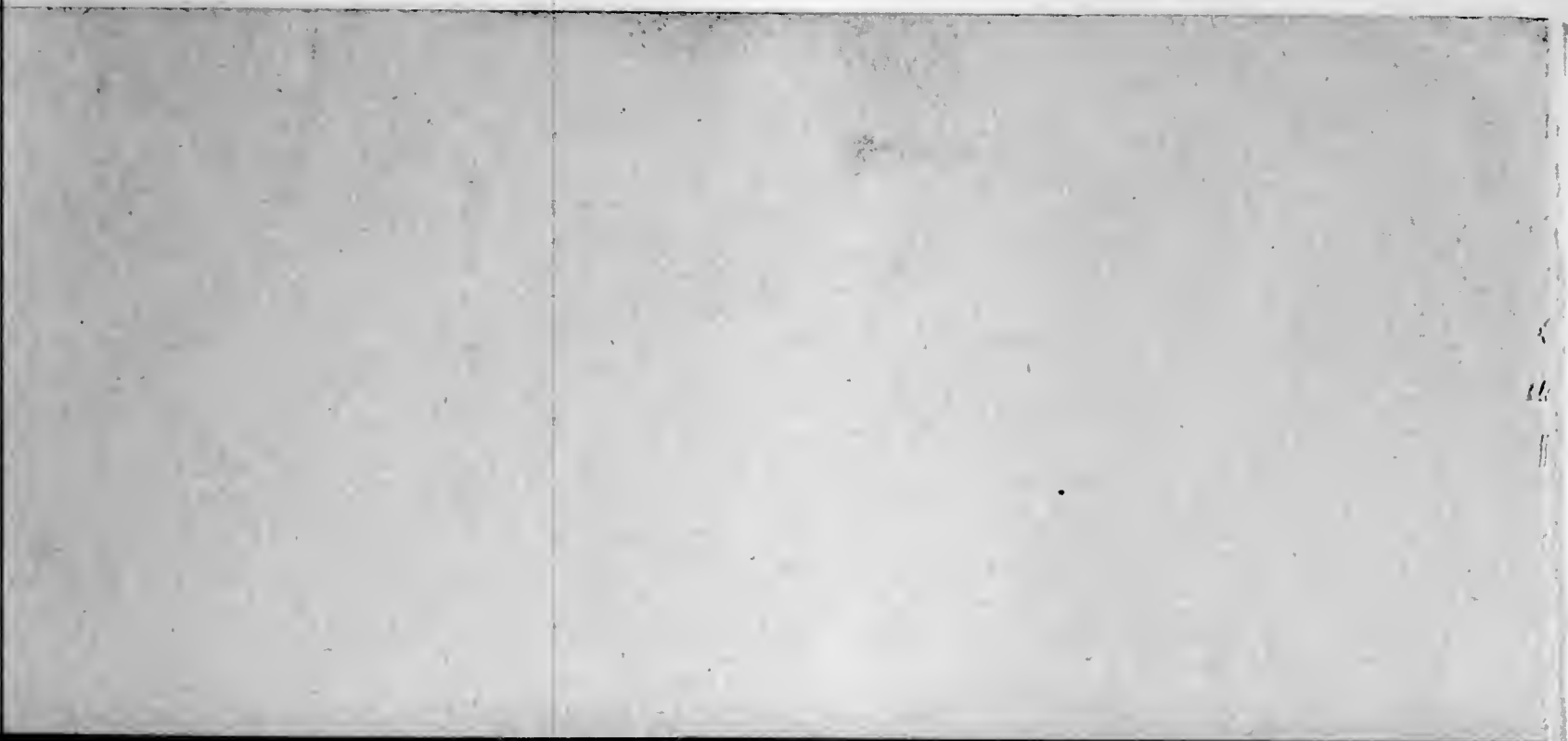
DESIGN PATENTS

1 : 236,449	236,407	236,526	27 : 236,392	236,506	40 : 236,394
4 : 236,467	236,432	236,554	236,440	236,507	236,401
236,453	236,442	236,510	236,489	236,513	236,438
236,461	236,443	236,437	236,490	236,523	236,455
236,511	236,458	236,446	29 : 236,463	236,540	236,470
236,512	236,481	236,466	33 : 236,516	236,541	41 : 236,510
236,538	236,514	236,488	34 : 236,483	236,542	42 : 236,416
236,396	236,530	236,533	236,519	236,545	236,457
6 : 236,424	236,531	236,555	236,522	236,551	236,468
236,425	12 : 236,509	236,418	236,527	236,552	236,557
236,428	236,518	236,420	236,528	236,556	44 : 236,419
236,434	13 : 236,478	236,421	236,537	236,558	48 : 236,427
236,444	17 : 236,414	236,452	236,558	236,405	236,436
236,448	236,435	236,459	236,398	236,406	236,473
236,462	236,439	236,460	236,399	236,408	236,517
236,469	236,445	236,474	236,400	236,411	49 : 236,471
236,479	236,456	236,482	236,403	236,413	236,494
236,491	236,480	236,484	236,412	236,417	236,495
236,492	236,485	236,486	236,431	236,429	236,496
236,524	236,539	236,508	236,441	236,430	236,497
236,529	236,550	236,515	236,450	236,433	236,498
236,534	18 : 236,464	236,543	236,493	236,447	236,499
236,535	236,465	236,544	236,501	236,454	236,500
236,546	19 : 236,477	236,547	236,503	236,487	236,472
9 : 236,393	236,525	236,549	236,505		

PLANT PATENTS

12 : 3,775	3,770	3,771	18 : 3,774	34 : 3,773	39 : 3,772
17 : 3,769					

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